

# BORONIA ACTIVITY CENTRE

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## MOVEMENT AND ACCESS

Adopted by Council 26 August 2019



# Executive Summary: Context

**Boronia Activity Centre is an area in transition with many advantages that need to be supported and developed to provide more activity, a better amenity and improved livability for those accessing it.**

The Boronia Activity Centre has changed over recent years, with growth in population but a shift away from retail uses toward the food services industry. The area suffers from a number of issues in terms of how it is laid out, the dominance of the car and its disparate offerings. The nearby Knox Central shopping centre has had an impact on Boronia's attractiveness. Meanwhile, residential provision is changing from traditional single-storey offerings to townhouses, medium density apartments and block divisions. This is leading to a growth in the residential population bringing with it a series of other challenges.

The current environment does not offer a sustainable long term future for the centre which unless addressed will lead to increased congestion, and reducing amenity, viability and livability. The Boronia Railway Station provides a key connection to the wider Victorian transport network and needs to be integrated within an ongoing vision for the area.

People will need to change how they access the Boronia Activity Centre in order to futureproof its vibrancy and amenity as a place and key destination. How the road network is set out needs to change to support this vision, and it needs to promote a more vibrant and active outcome for the businesses, residents and visitors. Boronia has many advantages and aspects including its proximity to the Dandenongs, the railway station and its vibrant community, which need to be supported.

This report has been developed over several stages to provide an understanding of the existing conditions and issues of the area, prior to identifying interventions and opportunities. It uses the Movement and Place approach as a framework to give a better balance to the movement needs of the area and the place aspects associated with the activities that will happen into the future. In this way, it sets out a more balanced approach to how the area should operate.

# Executive Summary: Existing Issues

A number of issues are prevalent within the study area, which are outlined by mode below.



## Pedestrians

- 2% of people working in Boronia walked to work
- Pedestrian crossings are inadequate or non-existent
- Long wait times to cross at intersections
- Narrow, uneven or no footpaths provided
- Dark and narrow arcades, that close in the evenings
- Pedestrian connectivity between the four quadrants is poor
- Fencing along main roads preventing pedestrians from crossing mid-block
- It is easier and quicker to drive between the four key quadrants than it is to walk
- Lack of consistent wayfinding signage in the centre



## Cyclists

- 0.4% of people working in Boronia cycled to work
- No safe east-west cycling options
- North-south shared path is disconnected at Boronia Road / Dorset Road intersection
- Parkiteer is provided at station, though underutilised. There is also conflict with buses or car park entrance to access facility
- Bicycle hoops are provided, but are used as parking barriers and for shop storage
- Lack of wayfinding signage within the centre. Where provided it is scattered and shows inconsistent information



## Public Transport

- 7% of Boronia workers arrive on public transport
- Boronia train station is well used
- The bus network is comprehensive and provides access to key areas surrounding Boronia, however services are indirect, infrequent and not well timed with one another
- Bus stops near the retail core are located outside of the complex, rather than inside adjacent to the uses
- The lack of activity around the station reduces the amenity and safety of the station
- There is an undersupply of seating and shelter at most bus stops and the train station



## Road Network

- The arterial road network provides key connections through Boronia
- Boronia Road allocates 85% of its space to vehicles and only 12% to pedestrians.
- The road network is not at capacity, with Google Maps Historical Traffic Data indicating most of the network is flowing well at peak times
- Roads dominate the landscape, with vast amounts of space provided, including hard surfaces, reducing the safety and amenity for pedestrians and cyclists
- Poor intersection and road design has resulted in drivers making unsafe movements



## Car Parking

- A significant amount of land within the study area is car parking, with most provided in the retail core
- Car parking is provided adjacent to active frontages
- Most car parks are at-grade
- Parking for community facilities is often provided adjacent to these uses
- On-street parking is provided, though conflicts with pedestrian safety, accessibility and amenity
- Car park accessways frequently have poor visibility to pedestrians
- There is limited directional signage for car parks
- It is easier and quicker to drive between the four key quadrants than it is to walk

# Executive Summary: Vision and Objectives

The Vision and Objectives have formed the starting point in which Movement has been applied to Boronia

*A vibrant and active Boronia as a destination and gateway to the Dandenongs, that supports safe access by all modes*

## Objectives

- Improve amenity, connectivity and legibility of the pedestrian network to, and within the Boronia Activity Centre.
- Support increased use of Boronia Activity Centre for leisure, recreation, commercial and visitor use.
- Provide a connected bicycle network with dedicated facilities linking key destinations with Boronia.
- Reduce impact of car parking and associated activity on the amenity and environment.
- Efficiently manage the road network, particularly along Boronia Road and Dorset Road.

# Executive Summary: Place Network

The Vision and Objectives were the foundation of applying Place to Boronia

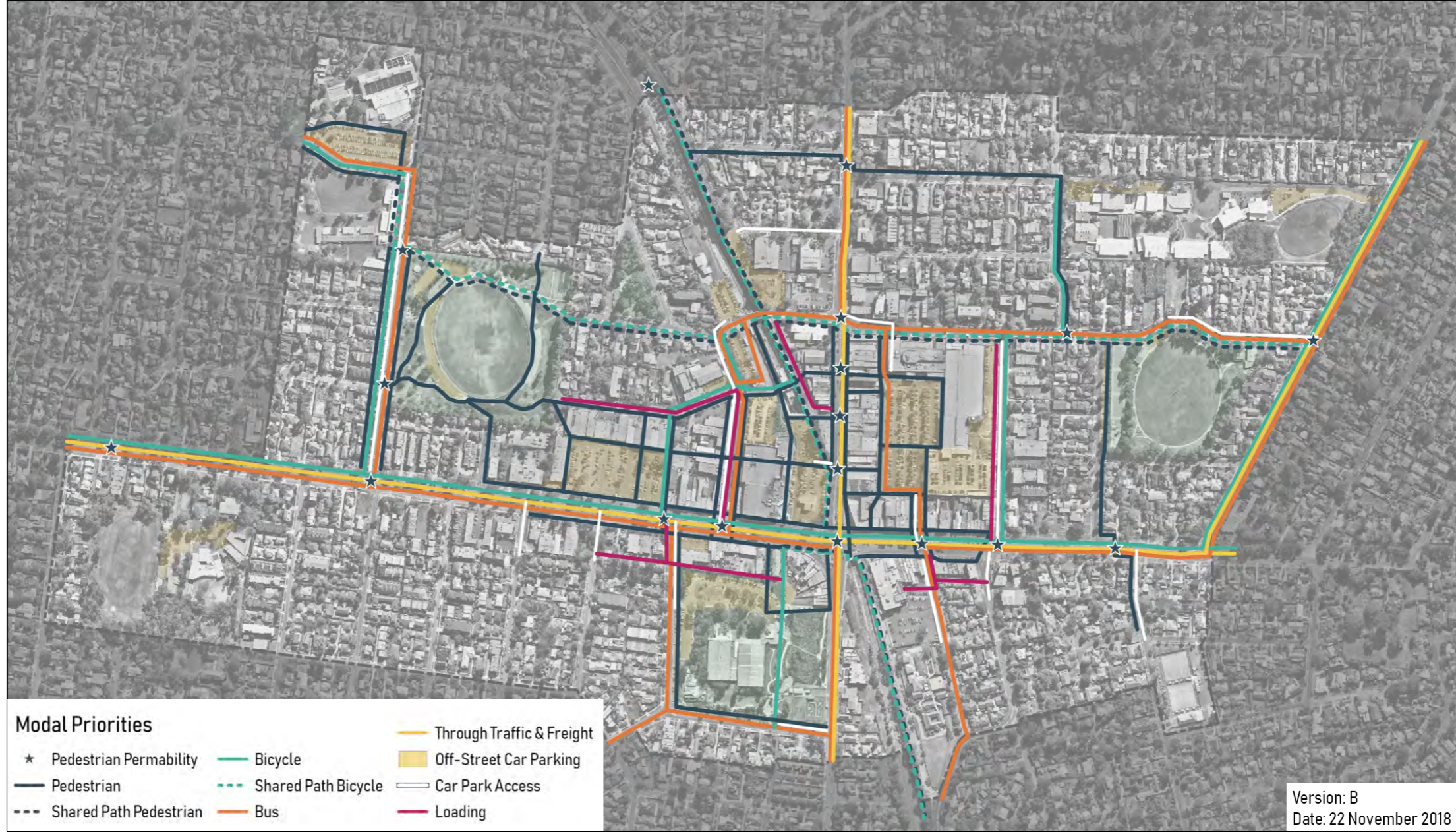


Each section of road and laneways within the study area was assigned a Place value. Most of the Town Centre core has been classified as a P3, with the exception of streets that do not offer any activity or reason to dwell. Outside of the core, streets were categorised based on their level of significance on the Movement and Place scale, that is, on the Municipal (P3), Neighbourhood (P4) or Local (P5) significance.

The classification applied is aspirational and may include some streets or laneways that do not currently exist. The outcome sought is creating a street where people want to linger and dwell.

# Executive Summary: Movement Network

The Vision and Objectives and Place network allowed the modal priorities to be determined



The Movement function relates to how people travel through, to or within the street. Within the Movement classification is an underlying set of modal priorities which helps establish which modes to prioritise to support either the Movement function, or indirectly the Place aspect.

Boronia is currently dominated by the high movement function associated with cars and trucks. To achieve the Vision and Objectives, an understanding of the modal priorities is required.

# Executive Summary: Proposed Interventions

A number of opportunities actions have been identified to help achieve the objectives of this strategy



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# 01 Introduction, Purpose & Process

# The Boronia Activity Centre has changed over recent years, with growth in population but a shift away from retail uses toward the food services industry

01

Introduction, Purpose & Process

## Context

The Boronia Activity Centre is located approximately 28km east of the Melbourne CBD and is listed as a Major Activity Centre in Plan Melbourne.

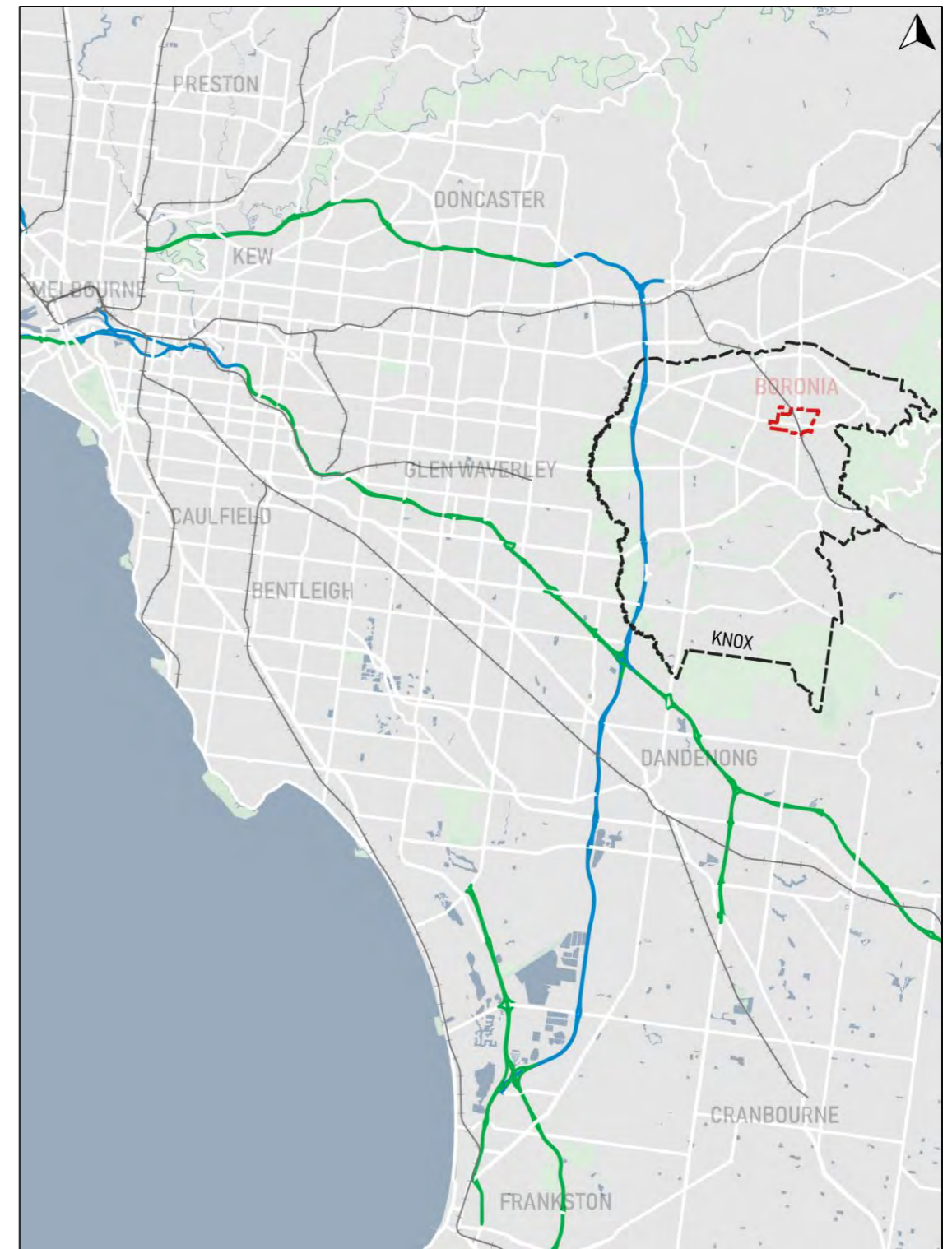
The centre has changed significantly in recent years, with rapid growth in population and number of dwellings within the area.

Boronia Railway Station has also seen an increase in patronage, particularly during the commuter peak hours, with the private vehicle remaining the most convenient way to access the railway station. Boronia is one of three centres within Knox to be served by trains.

Overspill from the station car park is continuing to extend further into the residential areas, likely as a result of the low frequency of bus services between the station and surrounding suburbs, along with the indirect nature of certain routes.

A Parkiteer facility is provided at Boronia Railway Station, along with several bicycle hoops provided within various car parks across the Activity Centre.

The local shopping strips along Boronia Road and Dorset Road adjacent to the station, were traditionally occupied by retail uses, though in recent years have seen a shift toward food services, including cafes, restaurants and supermarkets, and clinical uses such as medical centres.



# People will need to change how they access the Boronia Activity Centre in order to futureproof its vibrancy and amenity as a place and key destination

01

Introduction, Purpose & Process

The recent growth and shift in land use mix has resulted in a significant increase in the number of trips travelling into and through the Boronia Activity Centre.

While many of these trips are contained locally, some trips are derived from nearby catchments and others are through movements to surrounding employment and entertainment activity. This increase in trips has resulted in a rise in a perception of congestion on many roads within and connecting the centre, not only along Boronia Road and Dorset Road, but also on many of the local roads.

As most of these trips are occurring by private vehicle, car parking within the centre has also increased over time. Limited availability of car parking spaces, increased demand for trips and poor perceptions of pedestrian safety has seen a high number of vehicles circulating around the centre, rather than walking, adding to in the network.

The current layout and associated congestion has a poor outcome for the activity centre with poor place making, amenity, severance, street activation, and impact on economic viability.

The role of streets is arguably the most important aspect in place-making and planning. Roads play a multi-faceted role in the transport network, promoting local connectivity with high amenity and safety, encouraging sustainable and active transport modes and facilitating throughput across the precinct.

## Key Questions to be Answered

What type of transport network do we want / need to support increasing access demands and help create a sense of place?

How do we break the current high reliance on private car use and encourage more space efficient transport modes?

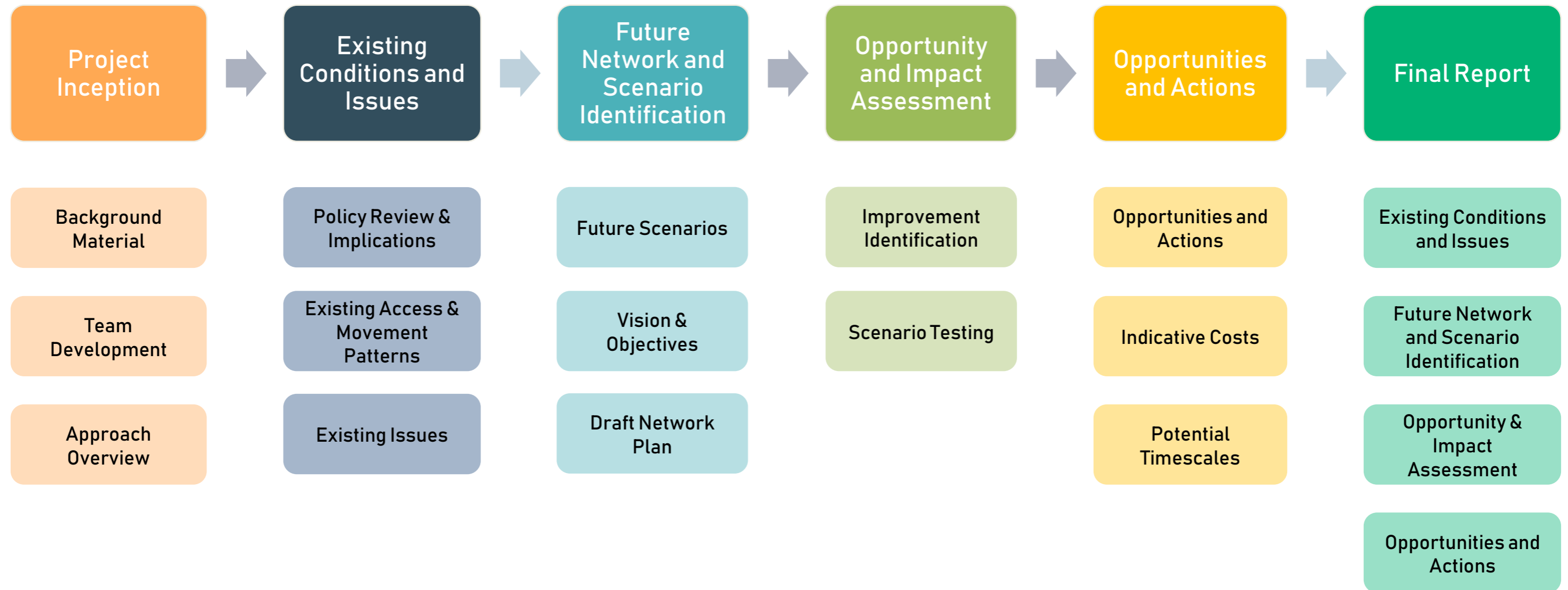
Where should alternative transport modes be, and what type of facilities and services should be provided?

This report has been developed over several stages to provide an understanding of the existing conditions and issues prior to identifying interventions and opportunities

01

Introduction, Purpose & Process

Process

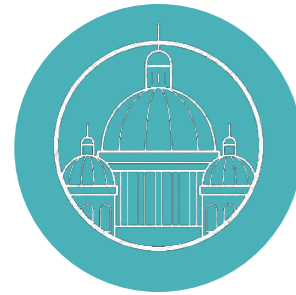


# 02 Policy Review & Implications

# State policy focuses on integration of transport and land use in order to provide convenient and safe access for users undertaking their daily activities

02

Policy Review & Implications



## Plan Melbourne, 2017 – 2050 Victorian State Government, 2016

The Victorian Government released Plan Melbourne in 2016 (update of the previous plan released in 2014). The Plan looks to build on Melbourne's reputation as a global city of opportunity and choice, as it caters for an almost doubling of the population over the next 35 years (i.e. out to 2051).

The Plan includes the following key concepts to cater for the anticipated population growth:

- protecting the suburbs by delivering density in defined locations
- delivering a pipeline of large scale, city shaping infrastructure and urban renewal projects
- better use of existing assets, including increasing efficiency of road based transport and transport – land use integration
- 20 minute neighbourhoods – places where people have access to local shops, schools, parks, jobs and a range of community services within 20 minutes of their home.

The Plan identifies Boronia Activity Centre as an Major Activity Centre. This suggests that Boronia will provide a suburban focal point for services, employment, housing, public transport and social interaction.



## Transport Integration Act, 2010 Victorian State Government, 2010

The Transport Integration Act is the primary transport statute for Victoria, and has caused significant change to the way transport and land use authorities make decisions and work together. The Act enshrines a triple bottom line approach to decision making about transport and land use matters. Decision makers must have regard to the following objectives and principles:

- social and economic inclusion
- economic prosperity
- environmental sustainability

The Act requires that all transport agencies work together to achieve an integrated and sustainable transport system, and that land use agencies such as the DEDJTR take account of transport issues in land use decisions. The Act has been effective to date in changing the focus of organisations that traditionally only considered a single transport mode.



## Metropolitan Rail Network Development Plan Public Transport Victoria, 2012

Public Transport Victoria (PTV) have examined how Melbourne's train system needs to evolve to meet the needs of the city and of train passengers in the short, medium and long term. They have assessed how travel needs are likely to change as Melbourne grows, how the demand for train travel will evolve and ways of expanding the network to meet these needs.

The plan is designed to:

- expand the capacity of the existing network to meet the growing needs of Metropolitan Melbourne
- re-design train services to maximise opportunities for seamless coordination with buses and trams; and
- extend the network to areas currently not served by metropolitan rail.

This plan will result in additional train services to and from Boronia, along with better, more timely connections between the rail services and the buses at the station. Ultimately this will provide a more cohesive and reliable network for people to utilise, ideally reducing peoples reliance on the private car to get around.

# The notion of providing new infrastructure that follows the movement and place approach is becoming more prevalent in recent State Government policies

02

Policy Review & Implications



## Victoria's 30-Year Infrastructure Strategy Infrastructure Victoria, 2016

This is Victoria's first ever 30-year infrastructure strategy. It is a state-wide, evidence-based plan covering all types of infrastructure. It sets out a pipeline of initiatives to be delivered over the next three decades to help create the best possible future for the state.

The Strategy has been created for the community, developed through consultation and delivered to Parliament. It is a product of the input of people from all over Victoria on how to create a future where everyone has good access to jobs, education and services, where communities and businesses thrive and where the environment is valued.



## Victorian Infrastructure Plan Victorian State Government, 2017

The Victorian Infrastructure Plan aims to provide world-class infrastructure strengthens Victoria as a globally connected economy, an equitable society and an environmental leader. The document is the State Government's response to the Infrastructure Victoria Strategy and their approach recognises the importance of strengthening our infrastructure resilience in partnership with government, the public and the private sectors.

The plan contains commitments to a number of schemes, including the following in the short-term:

- Level Crossing Removal Program
- Western Suburbs Road Package
- Mernda Rail Extension
- Mordialloc Bypass
- Strengthening of walking and cycling networks
- Melbourne Metro Rail Tunnel
- West Gate Tunnel



## Network Development Strategy (NDS) Victorian State Government, 2017

The State Government released the NDS, providing an overview of the key components and strategic approach to development of the transport network and system. It identifies five key phases to deliver the strategic approach, noting that people should be held at the centre of each of these phases.

The NDS also states that a *"review of the transport system is underway to apply the concepts of the network development strategic approach and develop options,"* and that this work, which incorporates the organising and design principles of the NDS.



## Movement and Place VicRoads, 2018

VicRoads has superseded their SmartRoads policy with a new Movement and Place approach. The Movement and Place approach, based on the original Link and Place book produced in 2007 (Jones), recognises that transport links performs two functions: movement of people and goods, and serving as a place (a destination in its own right). The movement function is about minimising travel time and throughput whilst the place function is about a destination in its own right and seeking to dwell and spend time in the location.

There is often an inherent conflict between the two. The Movement and Place approach seeks to recognise the competition between movement and place uses and decide on the balance that needs to be achieved for each of these functions at the desired locations.

This approach forms the foundation for the Boronia Movement and Access Study.

# The current City of Knox transport strategies aim to increase active travel modes for both commuting and recreational purposes

02

## Policy Review & Implications



### City of Knox Integrated Transport Plan 2015-2025 City of Knox, 2015

The Knox Integrated Transport Plan provides a framework for both the development and management of an integrated transport network to service the future needs of the Knox community and business. The Plan seeks to review the transport needs in Knox and identify key priorities and initiatives that will best deliver on these.

The Transport Integration Act 2010 provides a framework with six transport system objectives which Victorian transport agencies must have regard to when making decisions. This framework provides a well-grounded basis for articulating transport aspirations for Knox. For this Integrated Transport Plan, each Transport Integration Act objective has been replicated below with themes and actions, as identified through the consultation process, to achieve desired outcomes:

- Social and Economic Inclusion
- Economic Prosperity
- Environmental Sustainability
- Integration of Transport & Land Use
- Efficiency, Coordination and Reliability
- Safety and Health and Wellbeing



### City of Knox Pedestrian Plan City of Knox, 2005

The Knox Pedestrian Plan developed out of a desire to encourage more people to walk both as a leisure activity and as a mode of transport. The vision of the plan is to enhance the walkability of Knox.

The Plan identifies the main characteristics of a walkable environment as:

- Interesting and attractive environments,
- Supporting infrastructure e.g. signage and seating,
- Continuous links between major destinations,
- Overlooked streets from shops and residential properties,
- Frequent opportunities to meet, sit and rest, and
- Improved safety by lighting and footpath maintenance.



### City of Knox Bicycle Plan Review City of Knox, 2008

Knox City Council undertook a review of the Knox Bicycle Plan in 2008, with the vision that *“the City of Knox will, through well planned bicycle networks and programs, increase the use of bicycles for commuting and recreation in a safe, convenient and sustainable manner for residents and visitors.”*

The objectives of the review were to consider the progress of bicycle facility implementation since the last review, identify the underlining principles for future development, consider the community’s needs, develop new programs for bicycle facilities and encourage and support an increase in the use of bicycles as a means of transport throughout the City of Knox.

As part of the investigations into the Bicycle Plan Review a series of recommendations relating to future directions, encouragement, education, enforcement and planning have been identified.



### City of Knox Parking Policy City of Knox, 2018

The Knox Parking Policy aims to facilitate the provision of on-street parking and parking in Council owned and/or controlled car parks. It aims to prioritise the differing needs of parking user groups while improving parking management within activity centres and the surrounding residential areas.

The purpose of the policy is to:

- Establish a framework that Council will follow in order to apply parking restrictions, permits and other parking measures.
- Support access and movement for road and parking users.
- Ensure the equitable use of available parking spaces across the municipality.
- Provide safe and accessible parking for residents, employees and visitors to the municipality.
- To inform and support the development of parking management plans.
- To inform and educate residents, employees and visitors to activity centres and trip attractors as to Council’s approach to managing competing parking demands.



# 03 Existing Access & Movement Patterns

# The Boronia Activity Centre is a Major Activity Centre of Melbourne, and provides a number of key transport, community, retail facilities to the outer east

03

Existing Access & Movement Patterns

Boronia is listed as a Major Activity Centre in Plan Melbourne and is centred around, and divided by Boronia Road and Dorset Road. These roads provide access to the centre, while also segmenting it into four main areas.

The Retail Core is severed by arterial roads, and primarily located to the north of Boronia Road, with Boronia Mall and Dorset Square to the east and Boronia Junction and Boronia Village to the west. These centres include large anchor stores, which are supplemented by local small scale retail.



To the south-west of the study area, there are community facilities, including Boronia Park which contains the Boronia Library.

Further afield, a number of schools are located in all directions, along with Knox Leisureworks to the north-west corner of the study area.

# According to ABS, in 2016, over 4,100 people live and over 1,300 people work within the Boronia Activity Centre, which is a higher density than the remainder of the City of Knox

At the 2016 Census, there was a residential population of 4,000 in the within the Boronia Activity Centre. This equates to a population density of 21 people per hectare, which is higher than the Greater Melbourne Average.

A total of 1,734 dwellings were located within the Activity Centre at the 2016 Census, which means that there is an average of 2.4 people per dwelling.

Across these dwellings, there were 2,525 vehicles which equates to an average of 1.5 vehicles per household within the Boronia Activity Centre. This is lower than the City of Knox average of 2 vehicles per household. Over 3% of households stated they had 4 or more vehicles.

10% of dwellings (171) within the Boronia Activity Centre reported having no motor vehicle at the 2016 Census, which is higher than the entire City of Knox where only 4% had no motor vehicle.

Job densities in the area are very low compared to the CBD. At the 2016 Census, there were over 1,300 employees in the Boronia Activity Centre, which represents a density of 17 jobs per hectare.

Population	ABS 2016	Area (ha)	Population Density (people/ha)
Boronia Activity Centre	4,127	194.5	21
City of Knox	154,109	11,392	14
Melbourne (suburb)	47,285	650	73
Greater Melbourne	4,485,211	999,251	4

Source: 2016 ABS Census

Employment	ABS 2016	Area (ha)	Employment Density (jobs/ha)
Boronia Activity Centre	1,329	0.76	17
City of Knox	55,496	11,392	5
Melbourne CBD	199,221	2.37	841
Greater Melbourne	1,762,781	999,251	2

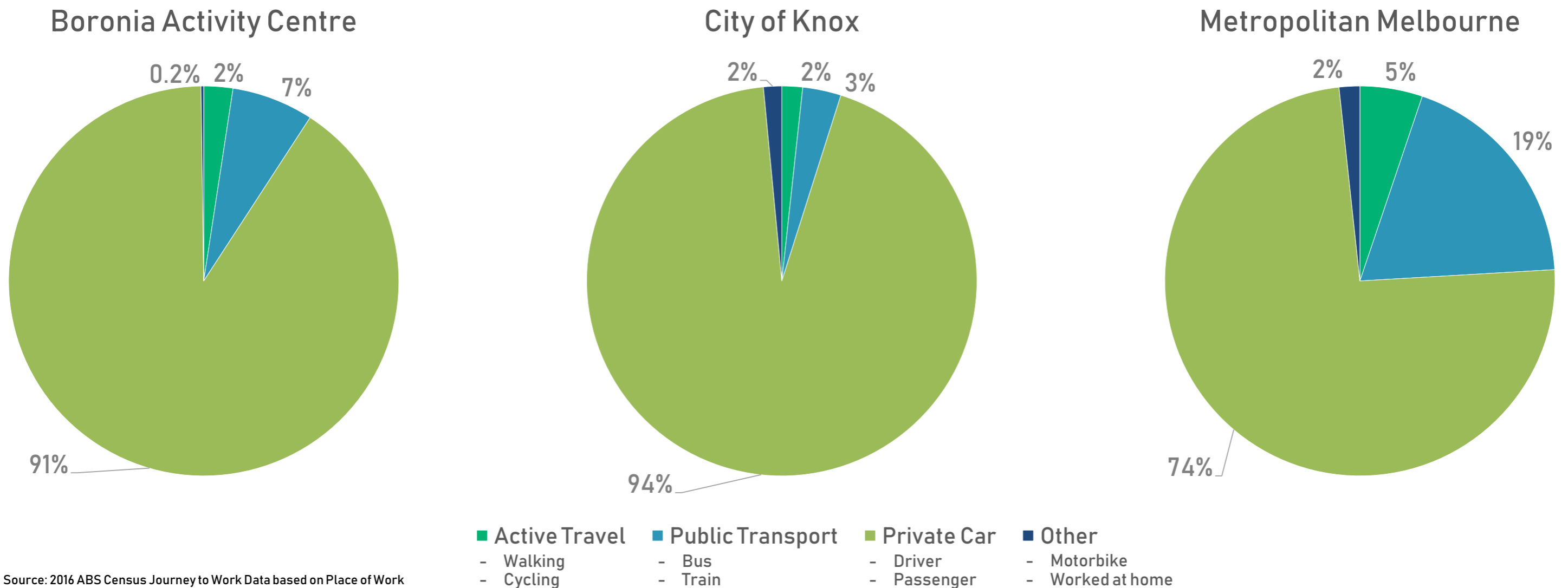
Source: 2016 ABS Census

# There is currently a high level of car use in accessing the Boronia Activity Centre and City of Knox more broadly for work, with both being higher than the metropolitan average

Those travelling to the Boronia Activity Centre for work currently use more than twice as much public transport (7%) than those in working in the City of Knox (3%), but significantly less than those within the entire Greater Melbourne area (19%).

Conversely, car use to work is currently very high for those travelling to jobs in the Boronia Activity Centre (91%), which is higher than in all of Greater Melbourne (74%), but slightly lower than everyone working in the City of Knox (94%).

The higher public transport use to Boronia compared with the rest of Knox is due to the train station being at the centre of Boronia, whereas other centres are more reliant on buses or limited public transport options.

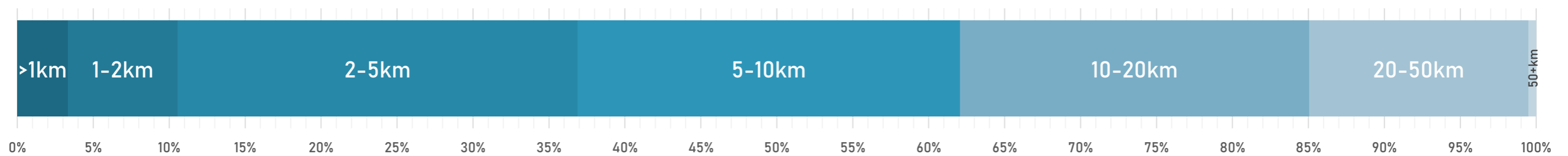


Source: 2016 ABS Census Journey to Work Data based on Place of Work

# A third of Boronia's workers travel less than 5km to get to work, which is a suitable distance for active travel modes

More than 35% of workers travel less than 5km to get to the Boronia Activity Centre for work.

- 3% of workers travel less than 1km
- 7% travel between 1km and 2km
- 26% travel between 2km and 5km



Source: 2016 ABS Census Journey to Work Data based on Place of Work

Typically, less than 2km is considered appropriate to walk to work and between 2km and 5km is considered appropriate to cycle to work. However, some users would consider these modes for greater distances. In Holland, the rise of e-bikes has led to an increase in average bike commutes to more than 10km.

Therefore, 35% of workers could be utilising active travel modes, however only 2.4% currently do (with 2% walking and 0.4% cycling).

# The pedestrian network within the Retail Core of the Boronia Activity Centre is not prioritised, and accessibility beyond this area is poor, with narrow or non-existent footpaths

03

Existing Access & Movement Patterns

Pedestrian crossing points are provided along Boronia and Dorset Roads, allowing for connectivity across the busy street using signals. However, they are far apart, crossing points are not located on all legs of the intersection, and wait times are lengthy.

Parts of both Boronia and Dorset Roads are fenced off, likely for safety, however this prevents pedestrians from crossing mid-block, at key pedestrian desire lines.

Pedestrian connectivity between the four quadrants is poor, with some car parks not providing dedicated routes or safe permeability for pedestrians. As a result, it is commonly easier and quicker to drive between each quadrant, as opposed to walking.



Chandler Road appears to be an important east-west pedestrian link on both sides of the railway line, connecting Knox Leisureworks, Boronia West Primary School and Tormore Reserve in the west, via the Bus Interchange, Railway Station in the centre, to Boronia Mall, Boronia Shopping Centre, Dorset Square, Chandler Park and Boronia K-12 College in the east. However, conditions along Chandler Road are quite poor with narrow footpaths on both sides, several high conflict side roads and access points and dangerous sight lines to pedestrians.

The map above highlights key access, crossing points and connectivity for pedestrians, and also locations of missing footpaths.

# The bicycle facilities within Boronia are limited and disconnected, with unsafe connections over major roads and no existing east-west link provided

03

Existing Access & Movement Patterns

Connectivity for cyclists within and around Boronia is poor, with limited and unattractive options, including riding along and/or crossing various high speed and high traffic volume roads, such as Boronia Road and Dorset Road. There are no on-road lanes provided within the study area.

The only route that exists within the study area is an off-road shared path that travels along the railway line from north to south, through the middle of the Activity Centre. This route is a Strategic Cycling Corridor (SCC).

This shared path, however, has inadequate connectivity through the Activity Centre, between the railway station and the Boronia Road / Dorset Road intersection. Cyclists are required to dismount through the Boronia Junction car park then continue along the western side of Dorset Road on the footpath. There is no defined cyclist path across the Dorset Road / Boronia Road intersection.

A Parkiteer cage is provided at the station, which allows users to cycle as opposed to drive, though it is often underutilised, highlighting that there is an incomplete network of dedicated, safe and direct cycle routes connecting the surrounding area.

Several bicycle hoops are provided within various car parks across the Activity Centre.



# Boronia Railway Station provides mass transit access to the study area and wider network for those living along the rail corridor, with bus services filling some gaps in other areas

03

Existing Access & Movement Patterns

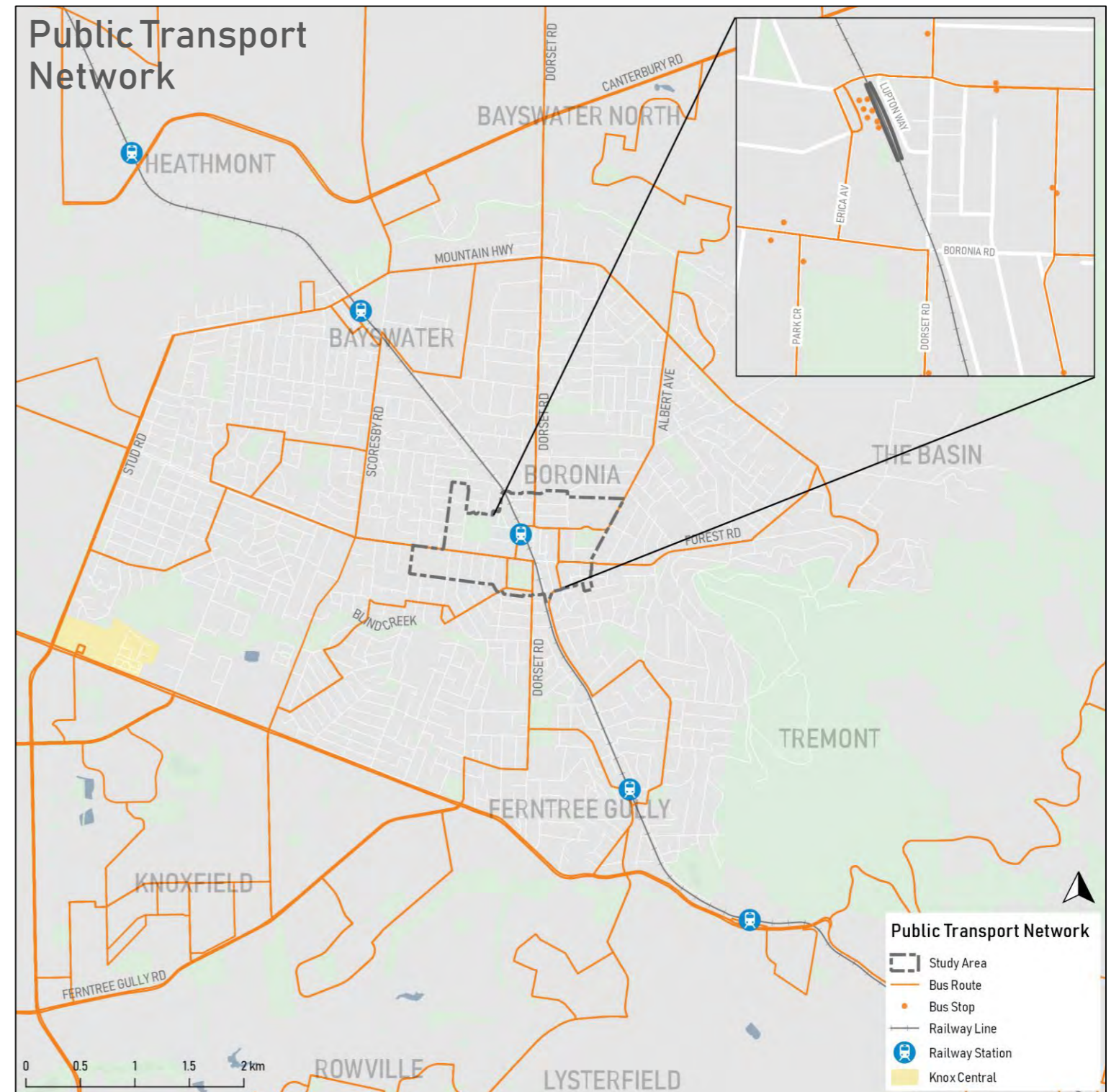
Boronia Station is located on the Belgrave rail line and is well utilised, with comparable patronage to Mordialloc Station or Sunbury Station. The Belgrave line connects to key employment hubs including Ringwood, Box Hill, Camberwell and the CBD.

A number of key bus routes provide connections to the surrounding areas including Bayswater, Ferntree Gully, Knox Central and Rowville.

A night bus also passes nearby the Activity Centre, on Albert Avenue, along the eastern boundary of the study area, which connects the Glen Waverley Railway Station to Bayswater, via Boronia, however is quite indirect.

Within the Boronia Activity Centre, bus stops are located at the railway station, where many passengers transfer between train and bus.

There are also some bus stops located along Chandler Road and Floriston Road, which service the northern and eastern edges of the town, however these are located on the outside of the Dorset Square complex.

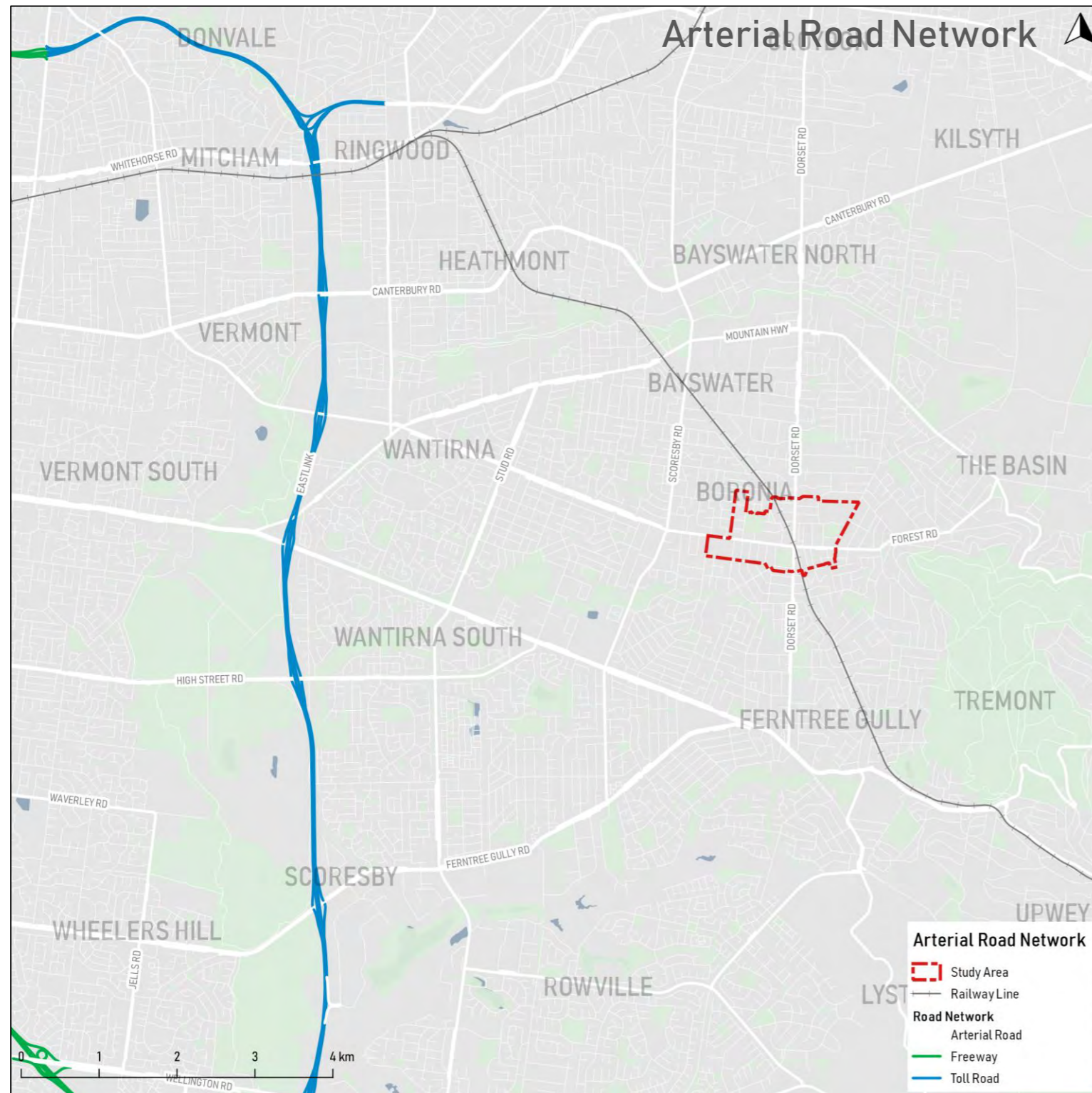




# The arterial road network within and around Boronia is quite uniform, allowing good accessibility in all directions, but ultimately directs traffic into the Boronia Activity Centre

03

Existing Access & Movement Patterns



The Boronia Activity Centre is located approximately 6km east of Eastlink, along Boronia Road.

The uniform grid-patterned arterial road network west of the area means the area is well-connected, allowing vehicle movements in all directions.

The key roads within Boronia are Dorset Road and Boronia Road:

- Dorset Road is the easternmost north-south spine within Metropolitan Melbourne, providing access from Croydon North to Ferntree Gully
- Boronia Road provides a key link from Eastlink to the Dandenongs.

Both of these roads are important arterials from a regional perspective, however within the Boronia Town Centre, they conflict with the Activity Centre uses.

There is also a well developed local road network. Chandler Road, Erica Avenue, Floriston Road and Park Crescent are often used as a ring-road, though otherwise, rat-running in the area is relatively low compared to other activity centres.

However, this also means vehicles accessing the Centre tend to use the arterial roads to do so.

In the previous five-year period, a total of 66 accidents were recorded in Study Area, 30% of these involving vulnerable road users: 11 involved pedestrians and 8 involved cyclists\*

03

Existing Access & Movement Patterns

A review of the latest available five-year period of CrashStats\* has been sourced for the Study Area. A total of 66 crashes were recorded within and surrounding the town centre, of which 19 involved pedestrians and/or cyclists.

Of these pedestrians and/or cyclists crashes, six were of a serious nature whereby at least one individual went to hospital.

There were 11 incidents within the study area involving pedestrians, four of which were serious. The majority of these (64%) occurred within the Retail Core. Four of these crashes were recorded along Boronia Road, at signals, at other intersections and mid-block, potentially indicating the lack of safe and direct crossing locations for pedestrians.



\*Source: VicRoads CrashStats from 01-May-13 to 30-April-18.

In addition, eight incidents involved cyclists, with most of these (63%) occurring along Boronia Road. This highlights the lack of safe east-west infrastructure for cyclists.

*Note: Not all crashes are accounted for, as accidents without any injury are not reported, especially those involving vulnerable road users such as cyclists and pedestrians. In addition, VicRoads only report data for VicRoads managed roads. Data for incidents occurring on local roads are not reflected in the above statistics.*

# There are several car parks located within Boronia, with each anchor store having its own car park. Some of these are underutilised, and others appearing near capacity

03

Existing Access & Movement Patterns

Approximately 9% of the land within the Study Area is off-street car parking that facilitates access to the station, community, retail and commercial uses of the area.

The publicly available retail spaces are primarily located in three at-grade and one multi deck car parks. These spaces cater for those accessing the shops and services within the retail core. These car parks each service a different anchor store, within each quadrant, allowing visitors to easily park at each of their destinations. It is commonly easier and quicker to drive between car parks than it is to walk.

Several commuter car parks are provided for those using Boronia Railway Station, which are located along Erica Avenue and Chandler Road.

Both the retail and commuter car parks can be accessed by the local ring-road network consisting of Chandler Road, Erica Avenue, Floriston Road and Park Crescent.

There is also ample parking provided for the community facilities, adjacent to each of these land uses. In addition, there are on-street spaces provided along Dorset Road, Boronia Road, Erica Avenue, Floriston Avenue and Chandler Road.



# Boronia Road is currently serving both through and local vehicle movements, as well as trying to provide a supportive environment for retail customers – no one is winning

03

Existing Access & Movement Patterns

In the wider network, Boronia Road functions as an east-west link, connecting the Dandenong Ranges in the east to the Eastlink freeway in the west.

At a local level Boronia Road facilitates the connection between the retail and community activities of the Boronia Activity Centre.

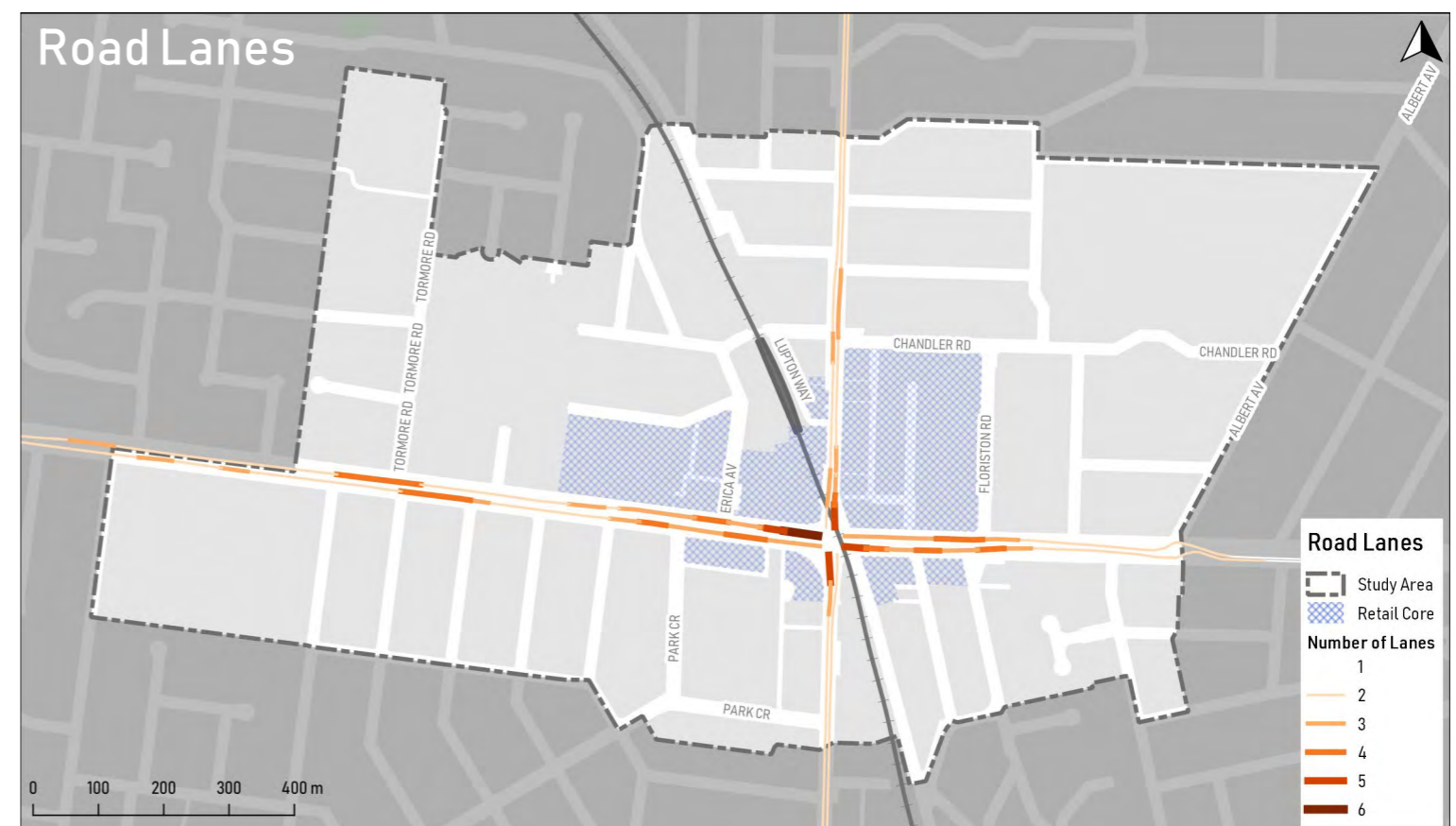
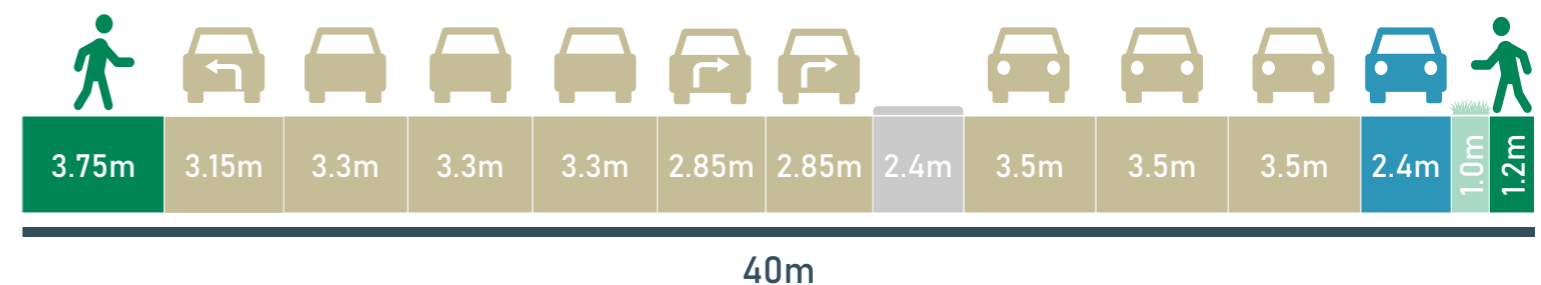
The current 40m wide carriageway allocates 85% of its space (34.1m) to vehicles, and only 12% (4.95m) to pedestrians. There are no dedicated cycle facilities.

The Boronia Road corridor has inconsistent lanes throughout and beyond the study area, varying from as little as one lane in each direction to up to six in each direction. In various locations, Boronia Road only has two lanes in each direction, which does not appear at capacity.

The locations where additional lanes are provided conflicts with the retail and community activities, and reduces the amenity and safety for pedestrians using the centre.

## Existing Cross Section

(At Boronia Junction pedestrian entrance, 50m west of Dorset Road intersection, looking east)



# The volumes and speeds within the study area highlight that the road is the priority over the safety and amenity of pedestrians and cyclists

03

## Existing Access & Movement Patterns

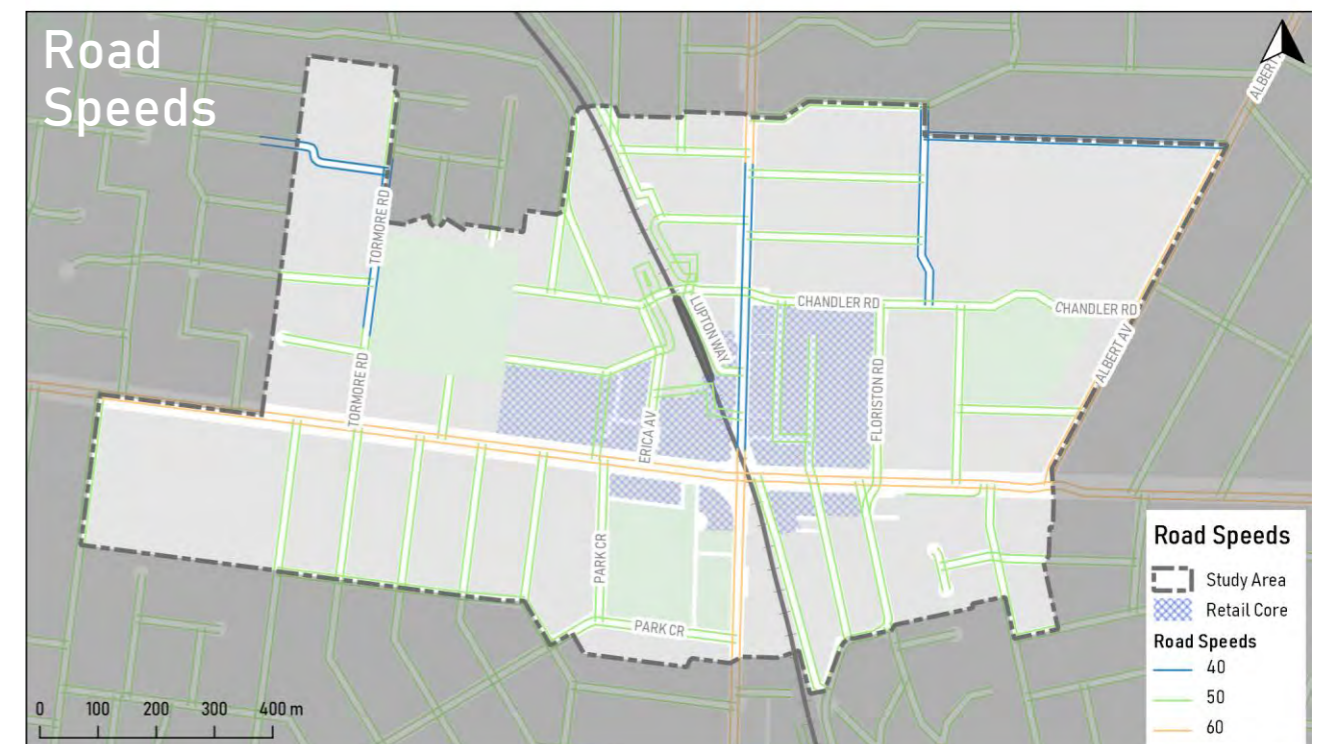
Volumes within the study area appear inconsistent with the lanes provided. For example, Dorset Road south of Boronia Road has two-way volumes of 34,000 vehicles per day\*, but there are only two lanes in each direction, south of the intersection.

Compared with Boronia Road west of the intersection, which has fewer vehicles, with two-way volumes of 30,000 vehicles per day, but up to nine, and frequently six lanes. While Boronia Road carries more traffic at peak times rather than over the whole day like Dorset Road, there is a potential over supply of lanes along Boronia Road, where daily volumes do not match the number of lanes provided.

The current road speeds within the study area are between 40km/hr and 60km/hr:

- Boronia Road is 60km/hr, except adjacent to schools
- Dorset Road is 60km/hr south of the Boronia Road/Dorset Road intersection and 40km/hr north of it.
- Residential streets are 50km/hr, except adjacent to schools

The speeds along Boronia Road adjacent to the retail core are indicating that the road has a priority over the retail accessibility for pedestrians and cyclists.



\*Source: VicRoads Traffic Volume Data: <https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/datasets/traffic-volume>

# 04 Existing Issues

# Pedestrians within Boronia are faced with many challenges, including no crossing provision, lack of, inadequate or unsafe footpaths and dark and uninviting arcades

04

Existing Issues



Boronia Rd at Erica Ave

Pedestrian crossings are not provided at all sets of traffic lights, resulting in long delays for users having to cross twice, rather than once



Looking down Henry St at William St

Footpaths around the study area, especially in the residential areas, are quite narrow, or in some cases, do not exist (see right side of street)

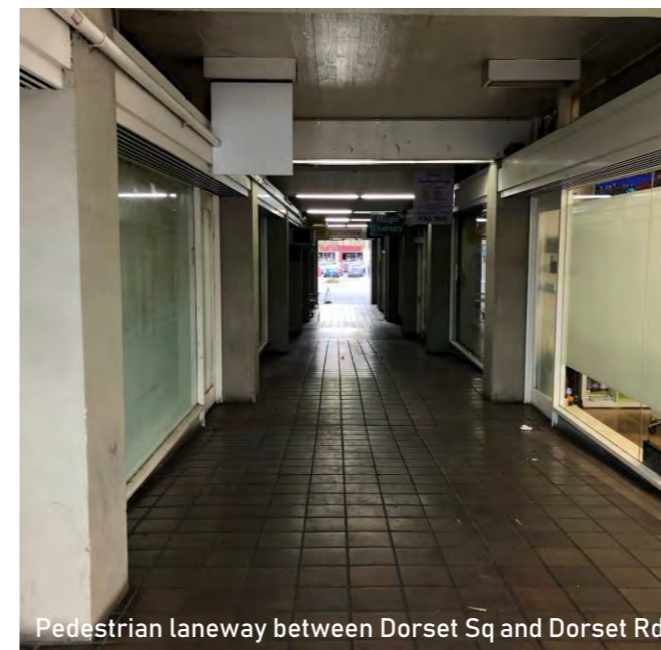


Boronia Rd north of Turner Rd



Crossing William St, north of Henry St

Footpaths are constructed with inconsistent materials, which is difficult for some users to navigate, and creates an unsafe surface for many



Pedestrian laneway between Dorset Sq and Dorset Rd



Pedestrian laneway between Dorset Sq and Dorset Rd

Many arcades connect Dorset Road to the Dorset Square shops and car park, but these can feel dark, narrow and uninviting, with some of them closing in the evening

# Provision for cyclists within Boronia is lacking, there is no dedicated cycling network, and poor or no signage and bike parking is provided to primarily block cars from the footpath

04

Existing Issues



Dorset Sq

Bicycle hoops are provided in some areas, though these are being used as parking barriers, and as physical support for shopkeepers' products



Boronia Rd at Turner Rd

There are no on- or off-road bicycle paths in an east-west direction along, or adjacent to Boronia Road



End of Shared Path within Boronia Junction car park

There is a significant lack of wayfinding signage for cyclists throughout the centre. Existing signage is placed in low visibility locations, and directs people along the existing shared path.

There is no cyclist wayfinding to guide cyclists around the centre



Shared Path on footpath at entry to Boronia Junction



Shared Path on footpath at entry to Boronia Junction

The existing north-south shared path along the railway line stops at the railway station, where cyclists must dismount through a car park, continue on a footpath of poor quality, then navigate the large Boronia Road / Dorset Road intersection



The public transport network is located along the edge of the retail core, with stops not located directly adjacent to retail activity and inadequate seating and shelter provided at stops

04

Existing Issues



Bus Stop on Chandler Road

Bus stops are well-utilised, but not enough seating and shelter is provided for those waiting at the stops



Boronia Station Platforms

A significant amount of the train station is not undercover, and the lack of activity around the station itself reduces the amenity and safety of the station for users

Bus stops are located on the outside of the active retail frontages, though car parks are located directly adjacent

# The road network is dominating the landscape, with large amounts of space provided to cars and poor design resulting in unsafe movements by drivers

04

Existing Issues



Southbound on Dorset Rd at Chandler Rd



Northbound on Dorset Rd at Boronia Rd

Arterial roads and intersections are taking up vast amounts of space, reducing the amenity and safety for pedestrians and cyclists within the centre



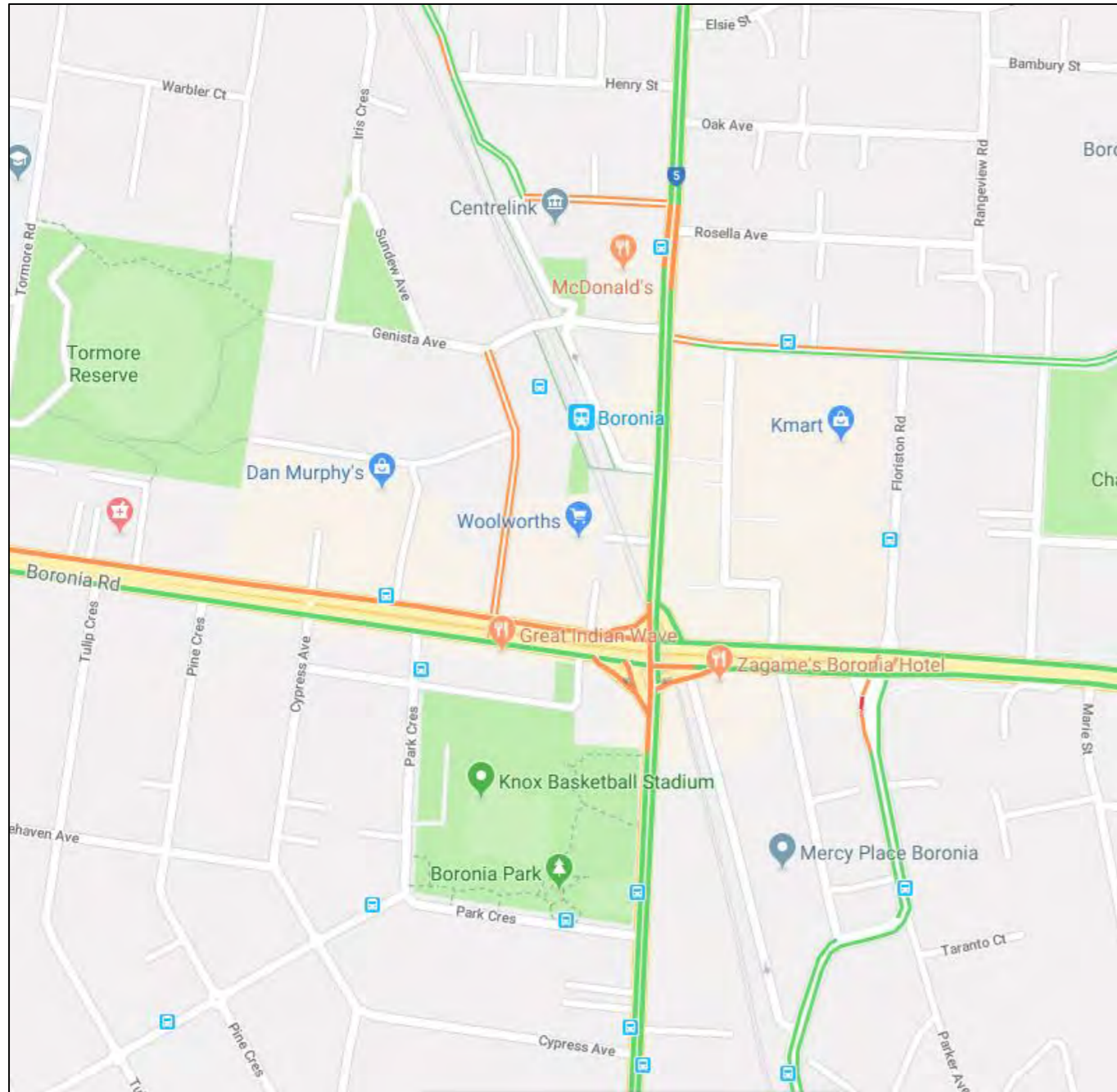
Vehicles exiting Turner Rd right onto Boronia Rd



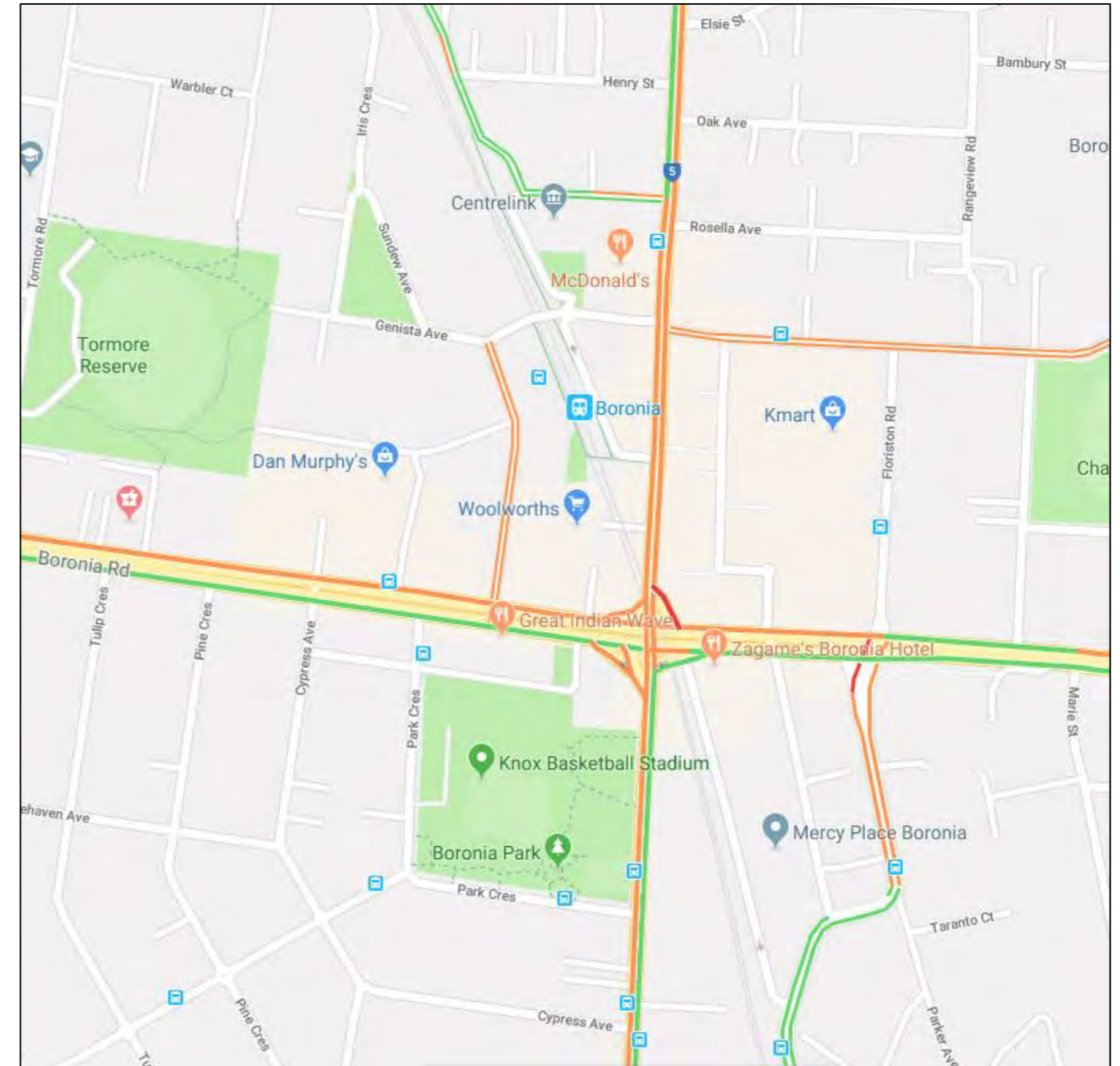
Erica Ave intersection at Boronia Rd

Poor intersection and road design has resulted in lack of clarity of right of way, unsafe movements by drivers, including vehicles turning a one lane road into two lanes

# The road network is currently not at capacity, with very few parts of the network showing slow traffic during peaks



Typical Thursday at 8am



Typical Thursday at 6pm

Source: Google Maps Historical Traffic Data

# Parking is a dominant feature within the Boronia Activity Centre, with limited directional signage and often compromising the safety and accessibility of other users



McDonalds Accessway on Chandler Rd

Car park accessways have poor visibility to pedestrians, resulting in potential for conflict between vehicles and pedestrians



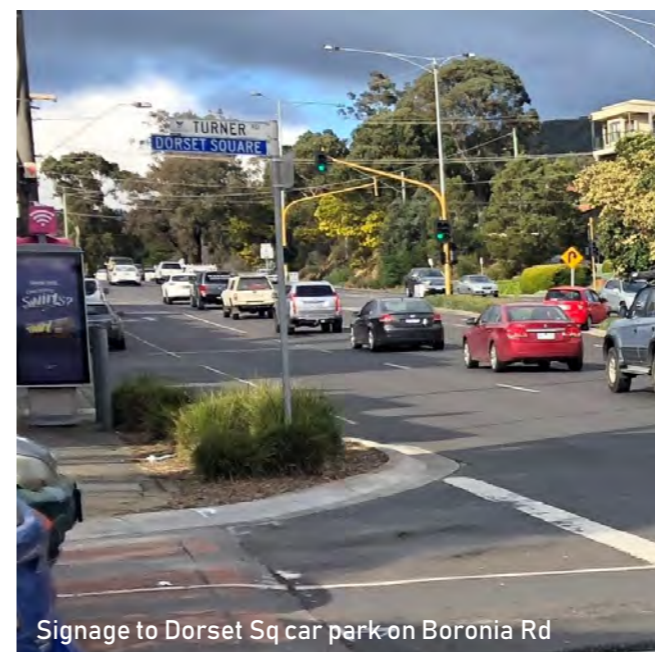
Car Park within Dorset Sq

Car park designs increase vehicle conflicts where vehicles are forced to unnecessarily cross each others paths



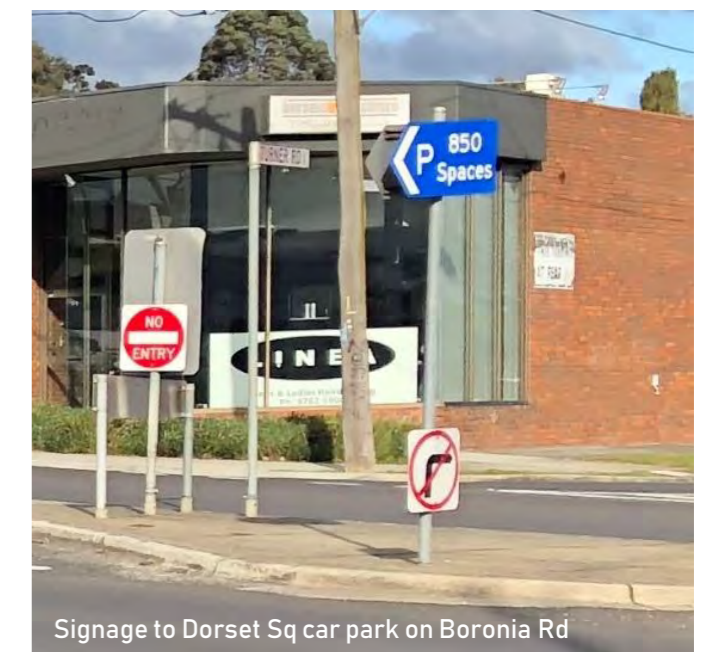
Slip lane north-westbound from Dorset Rd into Boronia Rd

On-street parking is prioritised over pedestrian accessibility, amenity and safety



Signage to Dorset Sq car park on Boronia Rd

There is very limited, and where it is provided, low-profile and hard to see directional signage from the road network to car parks

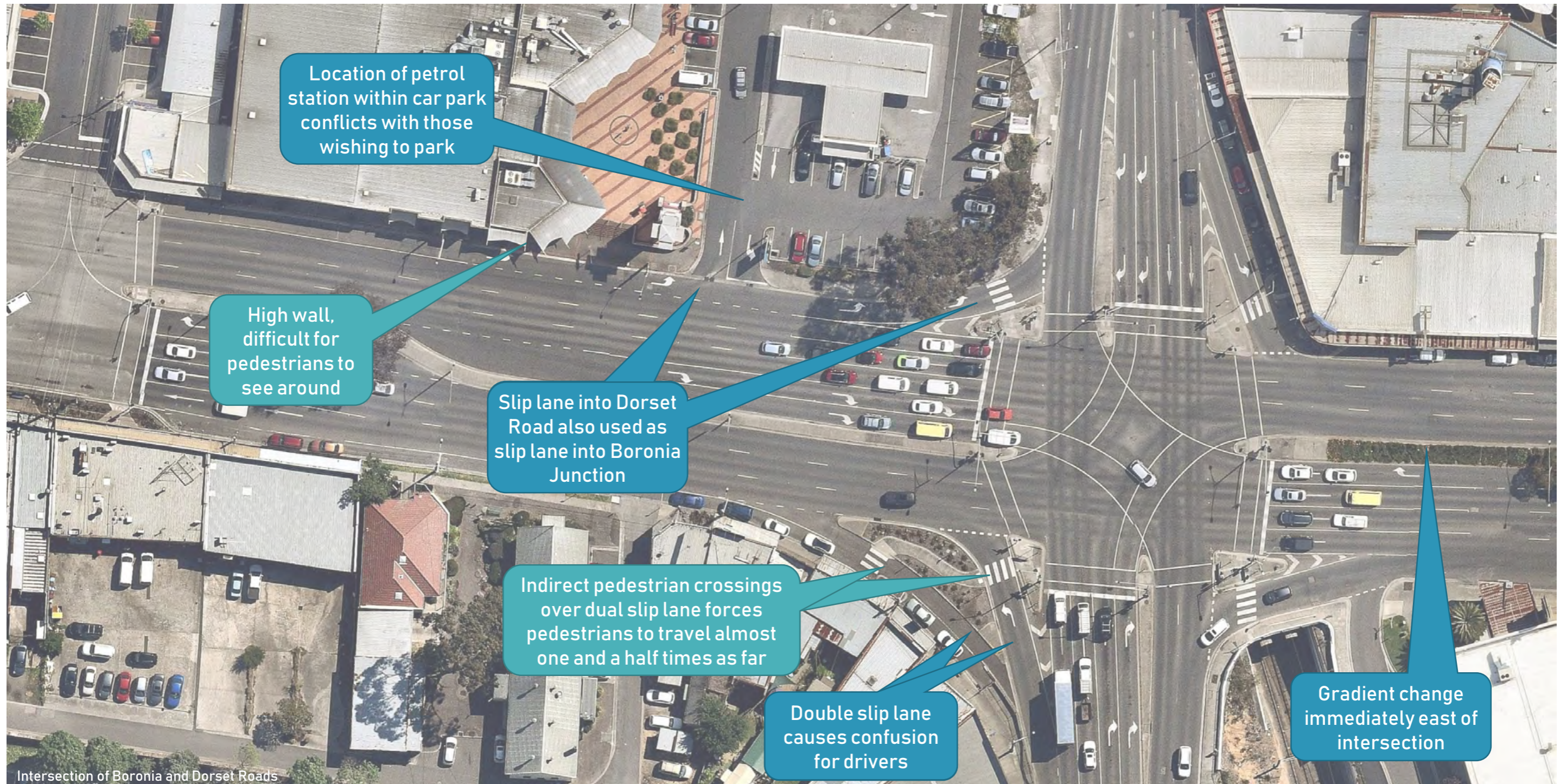


Signage to Dorset Sq car park on Boronia Rd

# The Boronia Road and Dorset Road intersection and surrounds are particularly difficult for pedestrians to navigate, and confusing for drivers

04

Existing Issues



# It is important to weigh up the safety and amenity of vulnerable road users and ensure that road space is suitably allocated throughout the Study Area



## Pedestrians

- 2% of people working in Boronia walked to work
- Pedestrian crossings are inadequate or non-existent
- Long wait times to cross at intersections
- Narrow, uneven or no footpaths provided
- Dark and narrow arcades, that close in the evenings
- Pedestrian connectivity between the four quadrants is poor
- Fencing along main roads preventing pedestrians from crossing mid-block
- It is easier and quicker to drive between the four key quadrants than it is to walk
- Lack of consistent wayfinding signage in the centre



## Cyclists

- 0.4% of people working in Boronia cycled to work
- No safe east-west cycling options
- North-south shared path is disconnected at Boronia Road / Dorset Road intersection
- Parkiteer is provided at station, though underutilised. There is also conflict with buses or car park entrance to access facility
- Bicycle hoops are provided, but are used as parking barriers and for shop storage
- Lack of wayfinding signage within the centre. Where provided it is scattered and shows inconsistent information



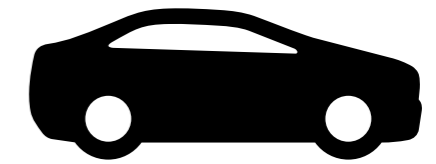
## Public Transport

- 7% of Boronia workers arrive on public transport
- Boronia train station is well used
- The bus network is comprehensive and provides access to key areas surrounding Boronia, however services are indirect, infrequent and not well timed with one another
- Bus stops near the retail core are located outside of the complex, rather than inside adjacent to the uses
- The lack of activity around the station reduces the amenity and safety of the station
- There is an undersupply of seating and shelter at most bus stops and the train station



## Road Network

- The arterial road network provides key connections through Boronia
- Boronia Road allocates 85% of its space to vehicles and only 12% to pedestrians.
- The road network is not at capacity, with Google Maps Historical Traffic Data indicating most of the network is flowing well at peak times
- Roads dominate the landscape, with vast amounts of space provided, including hard surfaces, reducing the safety and amenity for pedestrians and cyclists
- Poor intersection and road design has resulted in drivers making unsafe movements



## Car Parking

- A significant amount of land within the study area is car parking, with most provided in the retail core
- Car parking is provided adjacent to active frontages
- Most car parks are at-grade
- Parking for community facilities is often provided adjacent to these uses
- On-street parking is provided, though conflicts with pedestrian safety, accessibility and amenity
- Car park accessways frequently have poor visibility to pedestrians
- There is limited directional signage for car parks
- It is easier and quicker to drive between the four key quadrants than it is to walk

# 05 Vision & Objectives

***A vibrant and active Boronia as a destination and gateway to the Dandenongs, that supports safe access by all modes***

**Objectives**

- Improve amenity, connectivity and legibility of the pedestrian network to, and within the Boronia Activity Centre.
- Support increased use of Boronia Activity Centre for leisure, recreation, commercial and visitor use.
- Provide a connected bicycle network with dedicated facilities linking key destinations with Boronia.
- Reduce impact of car parking and associated activity on the amenity and environment.
- Efficiently manage the road network, particularly along Boronia Road and Dorset Road.



# Movement and Place is the notion that you can classify streets on how people move through it and how people dwell within its place, and use this to reduce conflicts

The Boronia Activity Centre is a perfect candidate for the Movement and Place classification that is currently being rolled out by VicRoads.

Movement and Place is based on the philosophy that transport links performs two functions:

- The movement of people and goods, and
- Serving as a place, a destination in its own right.

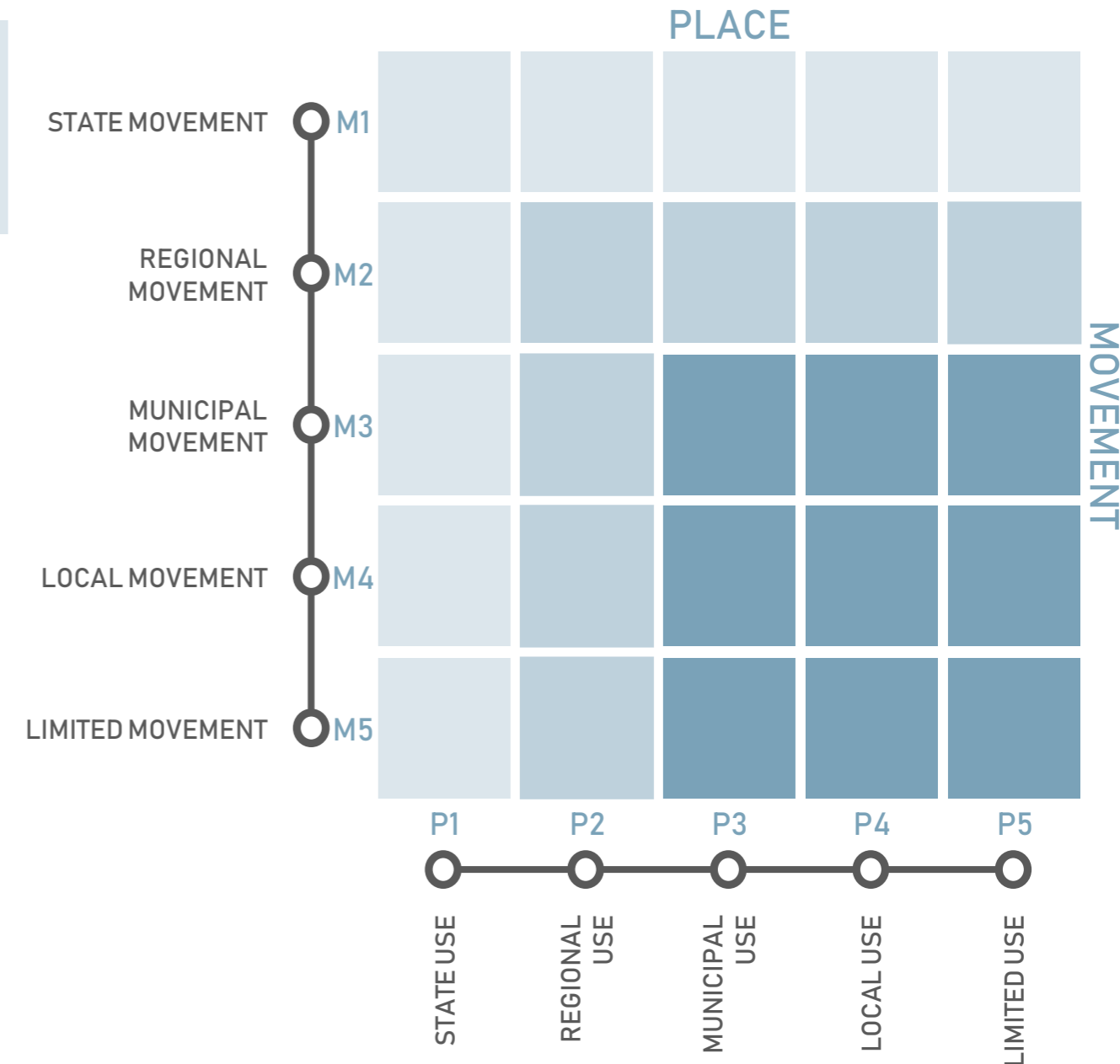
The movement function is about minimising travel time and maximising throughput whilst the place function is about the destination and people seeking to dwell and spend time in the location.

These two functions are vying for the same amount of road space, and thus are in conflict with one another.

In order to better manage these conflicts, it is proposed to classify the streets within the Boronia Activity Centre on the Movement and Place matrix.

Movement and Place proactively establishes a Vision to achieve that is not based on a numbers driven predict and provide approach.

This classification will provide clear direction for each street: whether the street is important for its ability to move people through it, or whether the street is important for its ability to provide a place for people to dwell.



# The Vision and Objectives have formed the starting point in which Place has been applied to Boronia.

## Applying Place

Each section of road and laneways within the study area was assigned a Place value.

This resulted in most of the core being classified as a P3, with the exception of streets that do not offer any activity or reason to dwell. Outside of the core, streets were categorised based on their level of significance on the Movement and Place scale, that is, on the Municipal (P3), Neighbourhood (P4) or Local (P5) significance.

The classification applied is aspirational and may include some streets or laneways that do not currently exist.

Place classification helps identify streets where the movement function should potentially be reduced, or changed in the mode of transport that provides the access, that is, a higher pedestrian focus.

Areas with a high Place (i.e. P1, P2, P3) are associated with high utilisation of active travel and public transport in accessing these places. The high place influences the desire to walk to the destination.

The outcome sought is creating a street where people want to linger and dwell.

The Place classification within the study area primarily provides P3 around the Town Centre, with other neighbourhood significant land uses being classified as P4

05

Vision & Objectives



*Note: All of the streets within Boronia are considered to be of Municipal Significance (P3), Neighbourhood Significance (P4) or Local Significance (P5). As such, GTA Consultants has not proposed to classify any streets as P1 (State Significance) or P2 (Regional Significance).*

# The Vision and Objectives have formed the starting point in which Movement has been applied to Boronia

05

Vision & Objectives

## Applying Movement

The Movement function relates to how people travel through, to or within the street. Boronia is dominated by two streets with high movement values – Boronia Road and Dorset Road.

Within the Movement classification is an underlying set of modal priorities which helps establish which modes to prioritise to support either the Movement function, or indirectly the Place aspect.

Boronia is currently dominated by the high movement function associated with cars and trucks. To achieve the Vision and Objectives understanding modal priorities is required.

## Applying the Modal Priorities

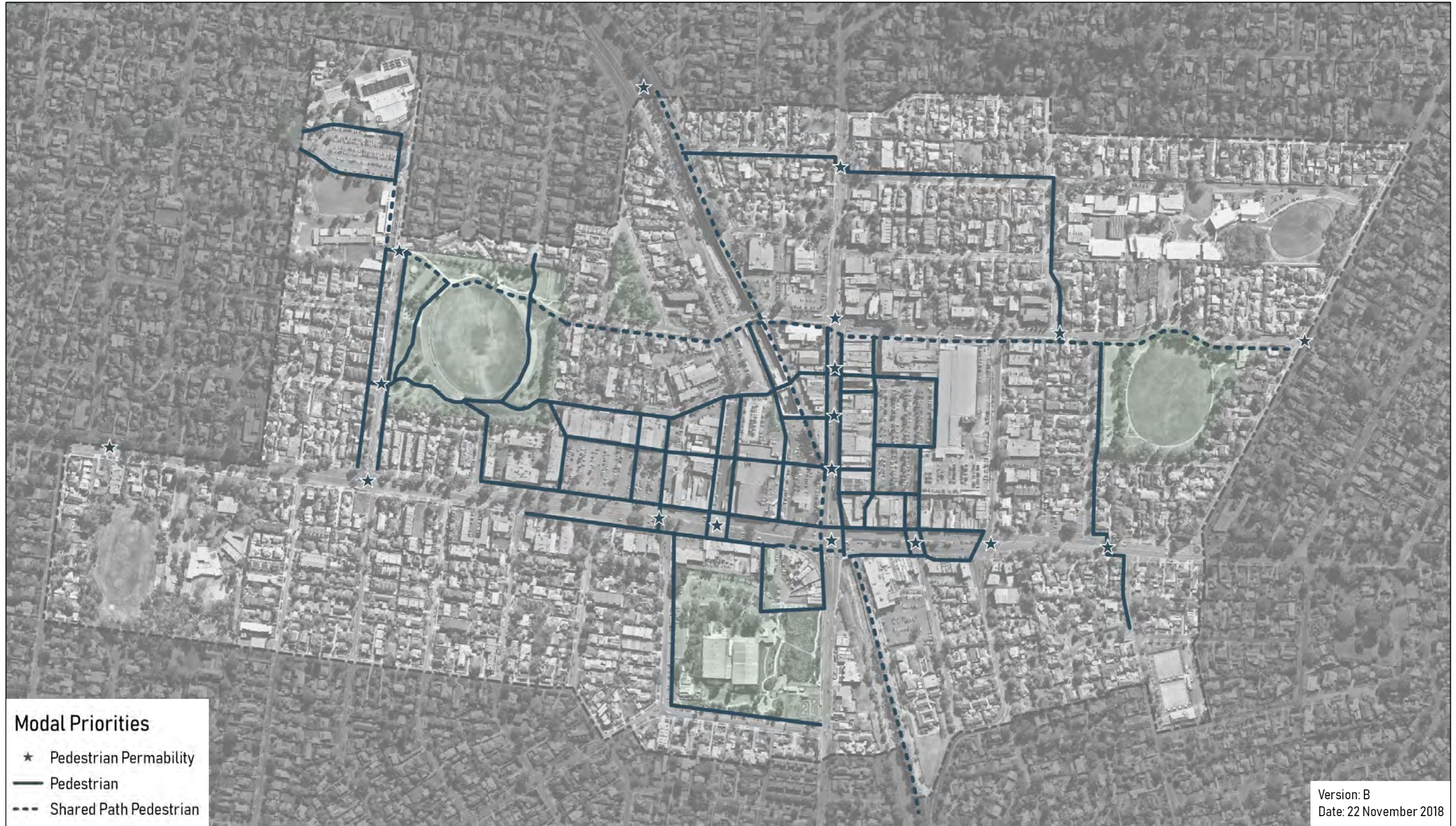
Modal priorities have been allocated to many streets within the study area (except those only performing a local movement function).

- Pedestrian priority was identified first to ensure that in areas of high pedestrian activity, pedestrians would be afforded more amenity, connectivity and legibility and support the Place.
- Bicycle priority was identified second, often complementing the pedestrian network, but providing the connected bicycle network linking key destinations, such as the missing east-west connection, proposed along Boronia Road
- Bus priority was next identified, mostly following the existing bus network, however identifying new areas where the bus network could provide better accessibility within the Activity Centre
- Access priority, that is vehicle accessibility to future car parking, was identified as the shortest route to car parks from the arterial road network
- Through traffic priority has been allocated to the arterial road network, to ensure vehicles not visiting the Boronia Activity Centre do not rat run within local streets

Pedestrian priority ensures that in areas of high pedestrian activity, pedestrians would be afforded more amenity, connectivity and legibility and support the Place.

05

Vision & Objectives



# Bicycle priority provides a connected bicycle network linking key destinations, such as the missing east-west connection, proposed along Boronia Road

05

Vision & Objectives



# Bus priority mostly follows the existing bus network, however identifying new areas where the bus network could provide better accessibility within the Activity Centre

05

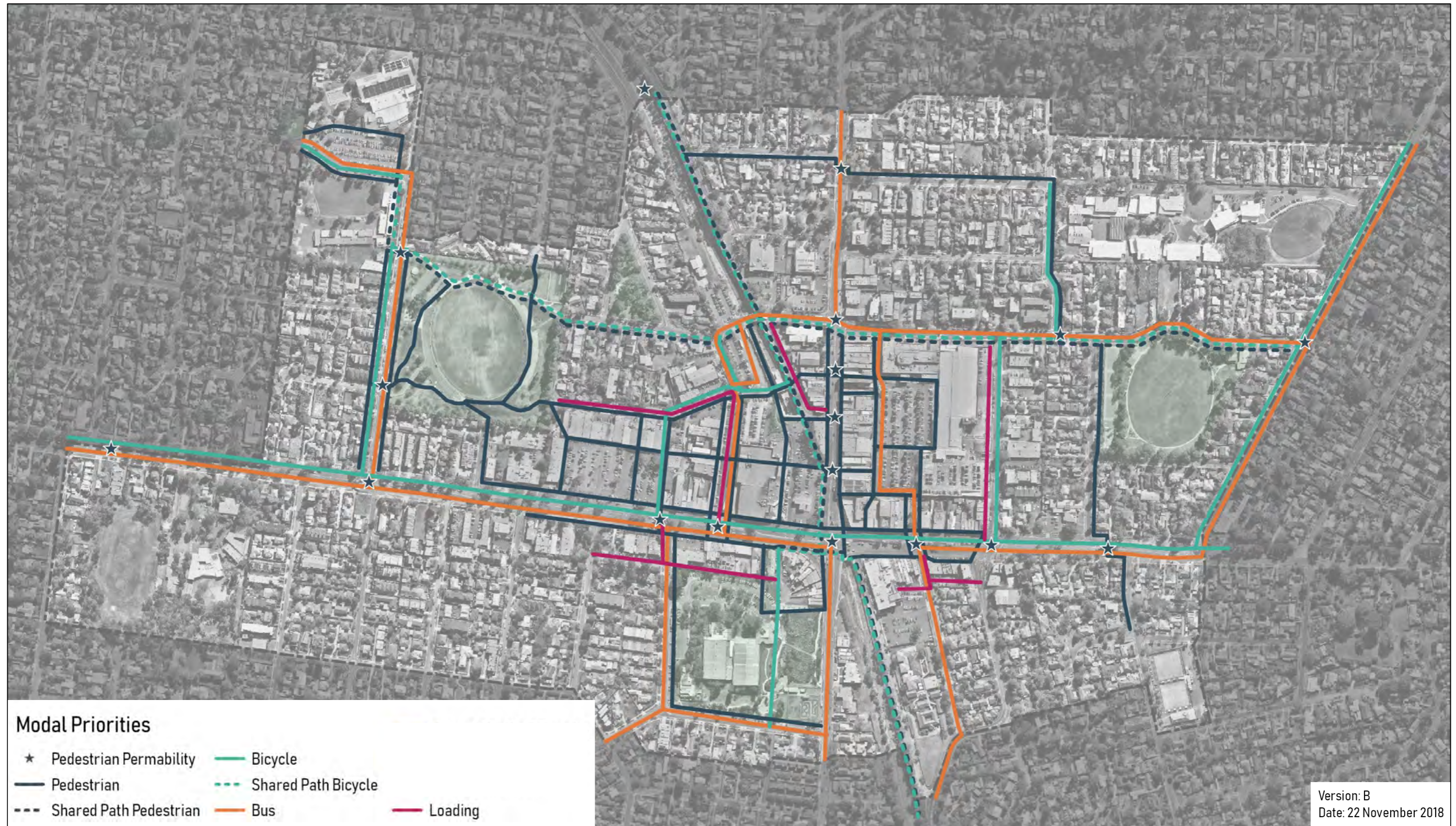
Vision & Objectives



# Loading is required to facilitate the land uses within the Boronia Activity Centre, and key loading routes have been designated to minimise conflict with other modes

05

Vision & Objectives

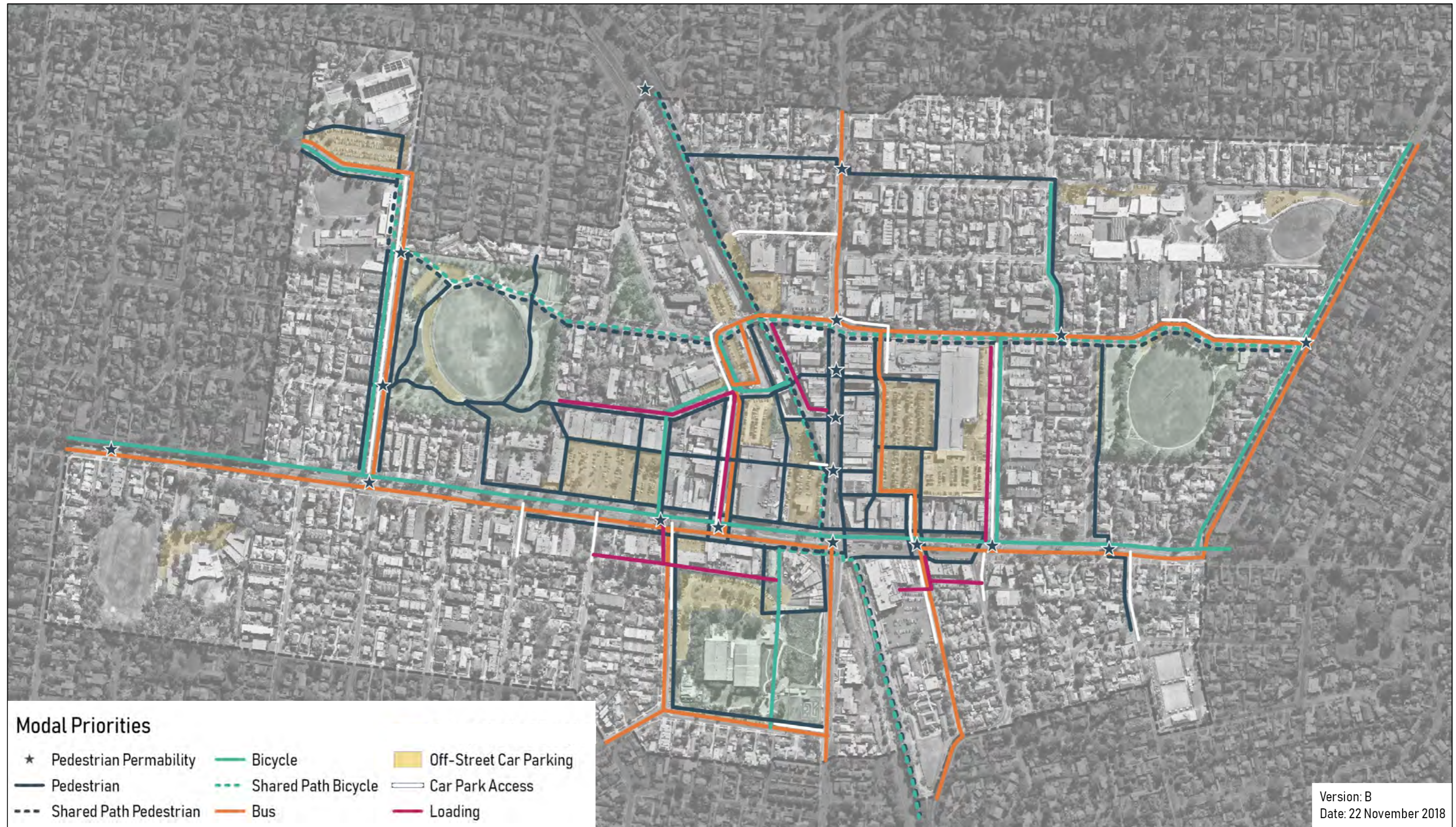




# Access to car parks have been identified as the shortest route to car parks from the arterial road network

05

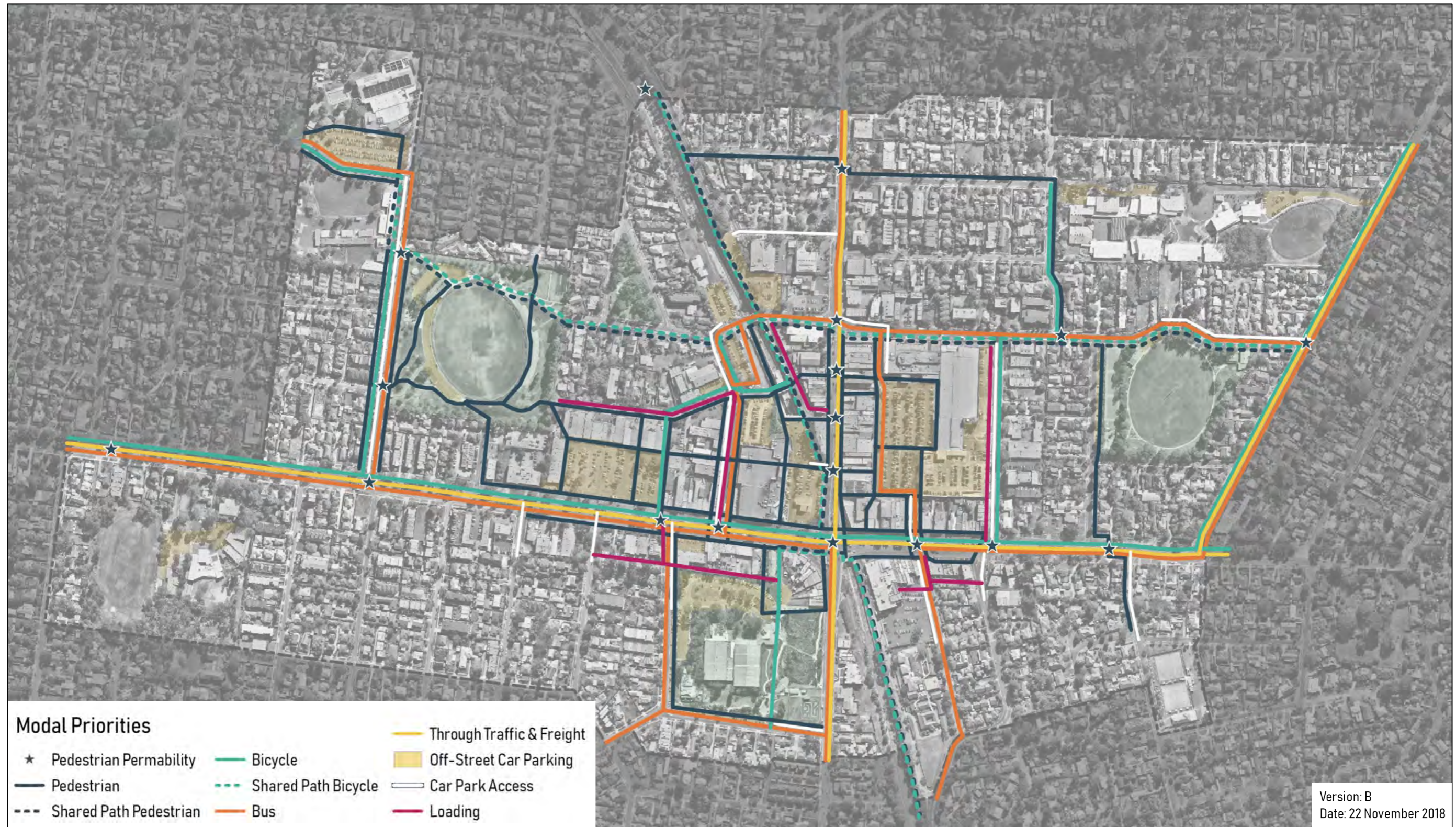
Vision & Objectives



# Through traffic priority has been allocated to the arterial road network, to ensure vehicles not visiting the Boronia Activity Centre do not rat run within local streets

05

Vision & Objectives



# Two land use scenarios were identified to understand how the vision and objectives, and the proposed interventions could look into the future

The Boronia Activity Centre and wider study area is planned to grow and develop. There are two different associated land use scenarios that relate to the type of development and particularly, its density. A higher development rate has an impact on transport in that new residents and workers generate additional movements and trips within, to and from the area.

The City of Knox have provided two growth scenarios:

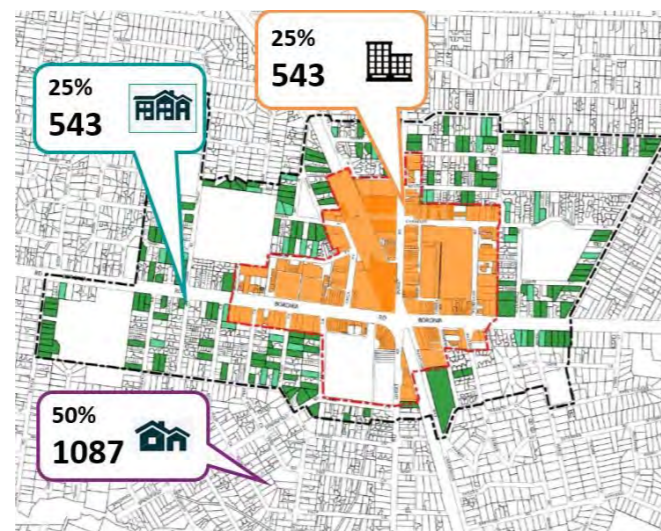
- Scenario 1: Business as Usual
- Scenario 2: High Growth

These scenarios can both influence the mode splits and can be used to influence mode splits.

## Scenario 1: Business As Usual

- Existing scale and nature of development e.g. splitting of blocks, townhouses and small scale apartments
- This type of development distributed across the study area will in all likelihood encourage car use for those outside needing to drive into Town Centre, or drive elsewhere
- Less residential population within Town Centre results in less nightlife activities

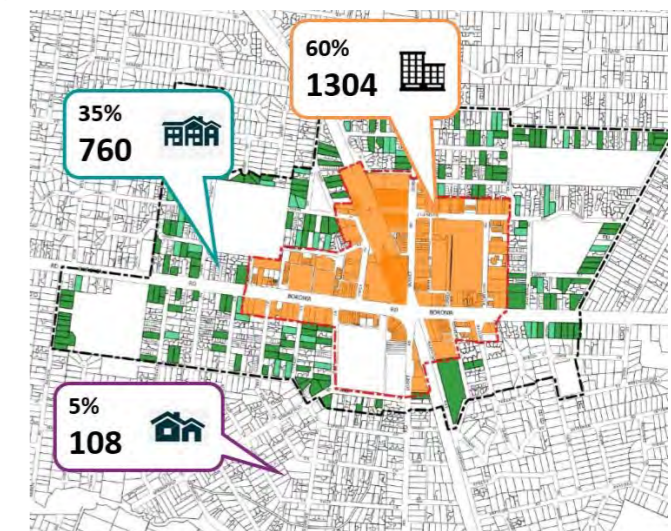
- 1,086 new dwellings in the study area, equating to 2,585 new people\*



## Scenario 2: High Growth

- Focuses growth to the centre with higher growth and development within the Activity Centre
- A population residing within the Town Centre is more likely to walk around to shop, etc
- Higher population within the centre is likely to be accompanied by leisure land uses such as cafes, bars and restaurants

- 2,064 new dwellings in the study area, equating to 4,912 new people\*



\*Based on the 2016 ABS Census rate of 2.4 people per dwelling within the Boronia Activity Centre.

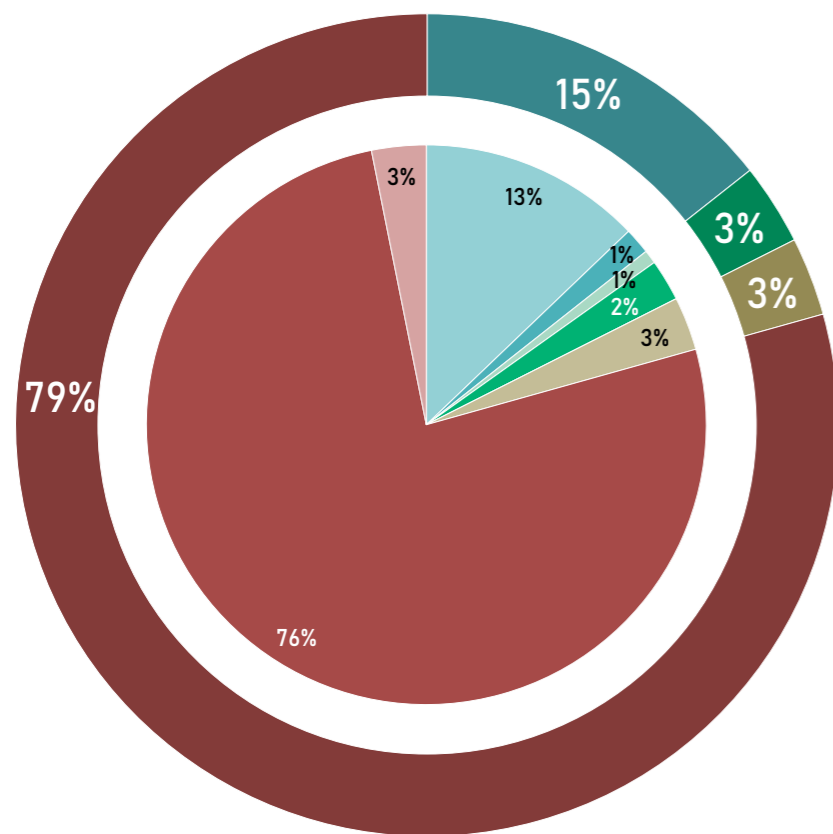
# Target mode splits have been identified for residents, with Scenario 1 using existing mode splits (BAU) and Scenario 2 aiming for higher active travel and public transport utilisation

The below graphs demonstrate target mode splits for journey to work for each of the Scenarios.

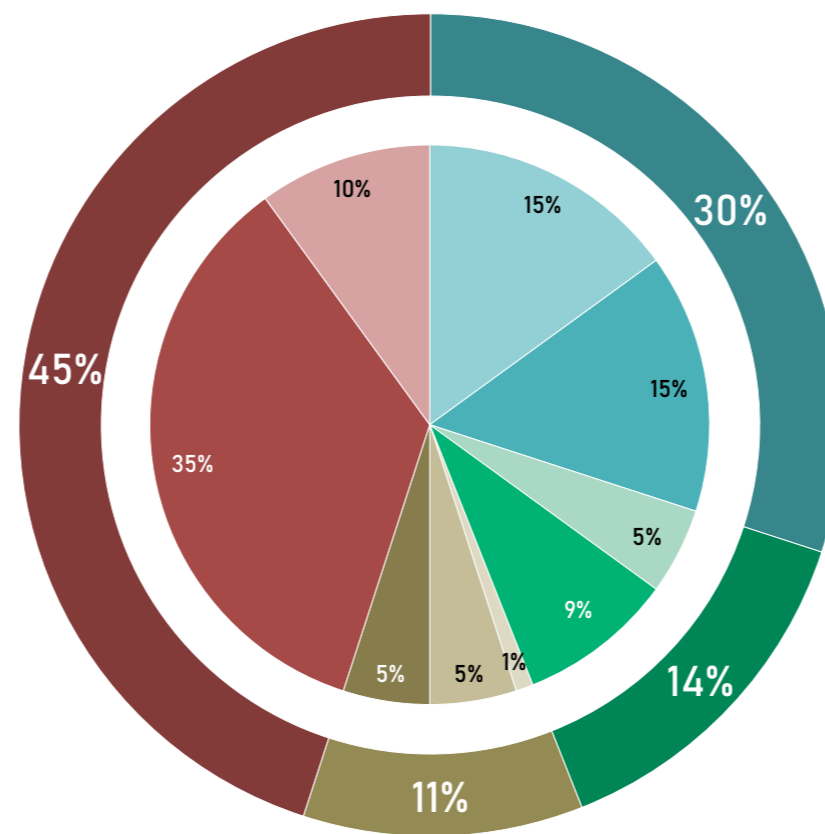
In Scenario 1, both the Town Centre and Neighbourhood areas have the same mode split, which is the existing mode split for the Study Area.

In Scenario 2, the Neighbourhood area has a higher private car mode share, and a greater reliance on the bus, with the Town Centre Area having a higher proportion of people walking to their workplace, and more people taking the train.

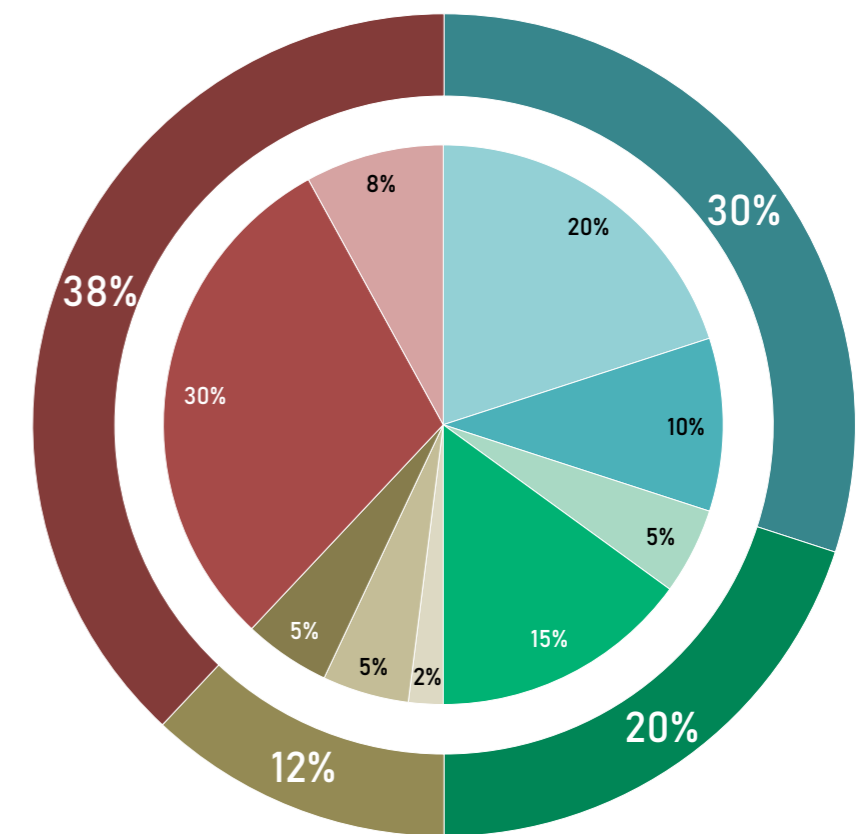
Scenario 1 – BAU  
Town Centre & Neighbourhoods



Scenario 2 – High Growth  
Neighbourhoods Only



Scenario 2 – High Growth  
Town Centre Only



■ Train ■ Bus ■ Bicycle ■ Walked only ■ Motorbike/scooter ■ Car Share ■ Worked at home ■ Car, as driver ■ Car, as passenger

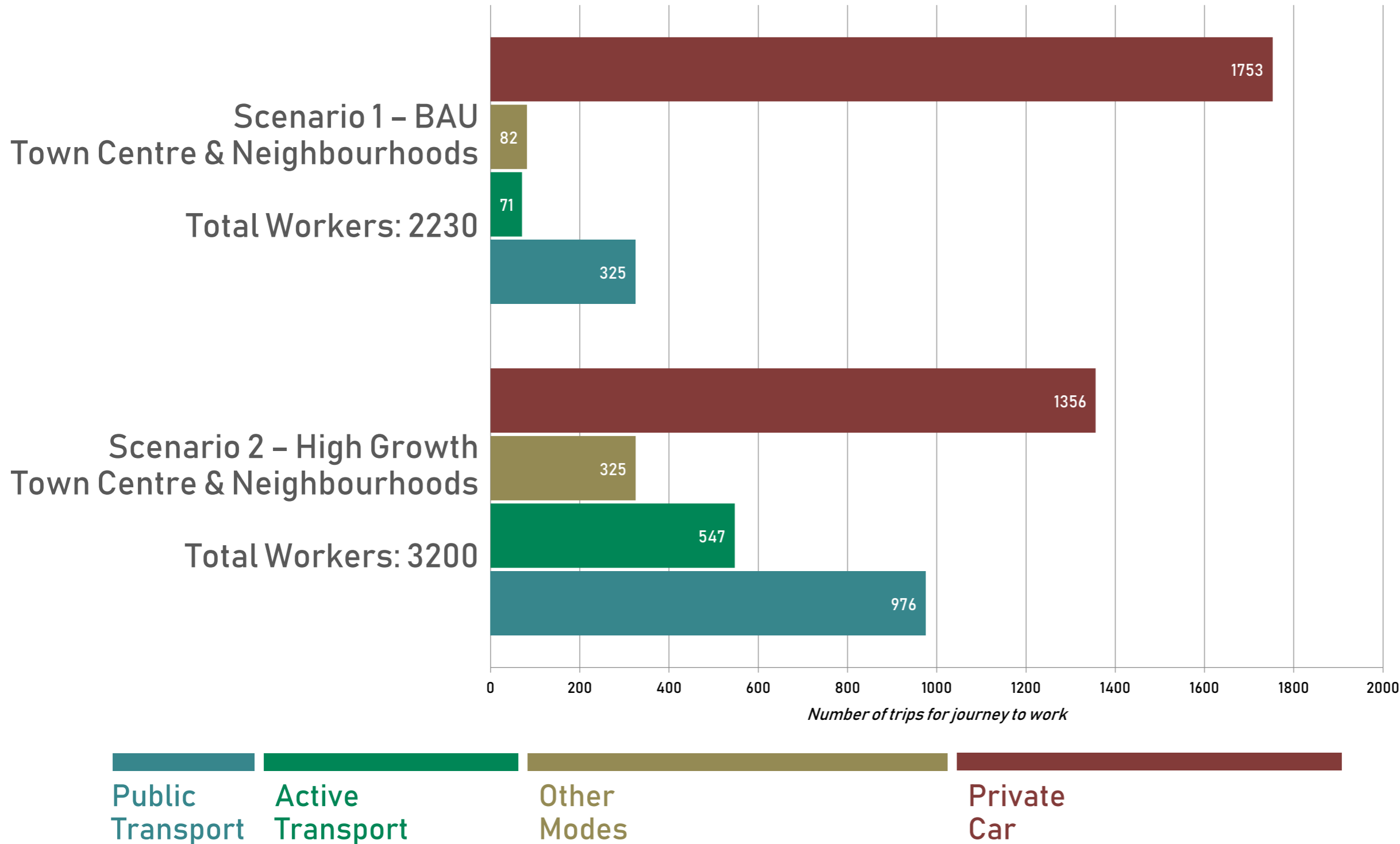
Public Transport

Active Transport

Other Modes

Private Car

# The application of these mode splits on the future population numbers means that fewer people are relying on the private car in the high growth scenario (Scenario 2)



Translating the mode split for work-related trips based on the land use scenarios, the table to the right demonstrates the likely increased demand that the network needs to accommodate by mode.

This approach shows how a denser more centrally based land use option supports non-car use and reduces overall car based trips.

# 06 Identification of Improvements

The overall amenity of Boronia Activity Centre could be enhanced by providing a central square as a hub for activity



Dorset Square could become a market square area, offering a pedestrian friendly area, where markets could thrive, children can play and cafes can operate.

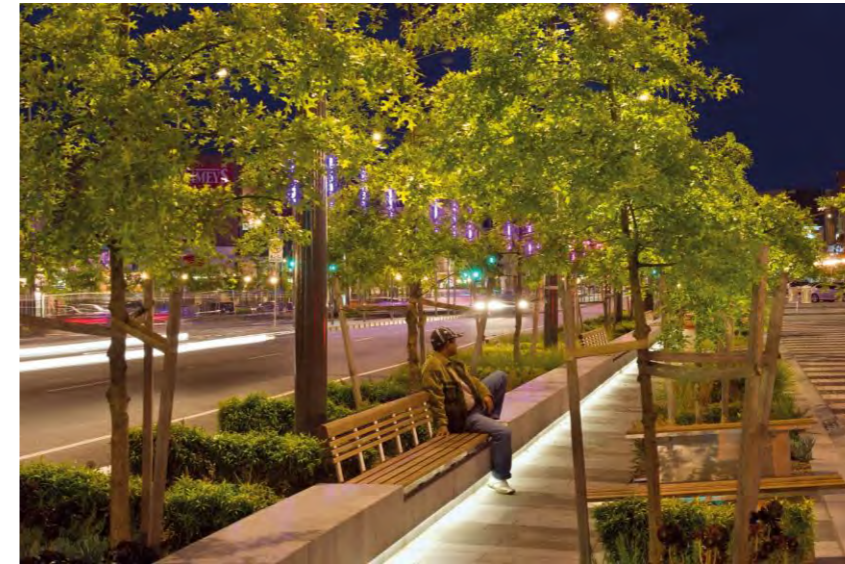
Car parking would be relocated underneath (similar to Cato Square, in Prahran)



# The environment for pedestrians could be improved by providing greater priority and amenity throughout the area



Lupton Way could become a shared zone, providing easy and safe pedestrian access for those using the station, but still allowing vehicles to use the space for pick-up and drop off. The shared zone would be low speed and pedestrians would have right of way.



General improvements to the amenity of the area will increase use of the Activity Centre

Scramble crossings at Dorset Road / Chandler Road



Raised enhanced pedestrian crossings at Dorset Road



# An east-west 'Green Spine' would enhance both pedestrian and cyclist accessibility and provide a safe and direct route connecting a number of key destinations within Boronia

06

Improvements



A 'Green-Spine' comprising of a shared path along the southern side of Chandler Road and a bicycle boulevard and upgraded footpaths along Genista Avenue. This will provide a safe, inviting and easy option for people to walk and cycle along.

This 'Green-Spine' will connect most of the major destinations within Boronia, including:

- Chandler Park
- Boronia K-12 College
- Boronia Central
- Boronia Railway Station and Bus Interchange
- Boronia Junction
- Tormore Reserve
- Boronia West PS
- Knox Leisureworks



# Cyclist safety improvements and filling in the gap in the shared path would provide a more connected cycling network and may reduce the number of crashes in the area

06

Improvements



Improvements to the existing north-south shared path along the railway line at the Boronia Road / Dorset Road intersection.



A segregated bicycle lane along Boronia Road (in both directions) will provide that key missing east-west bicycle link, connecting into The Dandenongs, provide a safer environment for those cycling and reduce conflicts between bikes and cars



The addition of bus priority at intersections and along key roads, and enhancing bus stops could improve reliability, travel times and increase the number of passengers

06

Improvements



Providing bus priority at key signals within the study area



Enhancing bus stops throughout the area



Provision of bus priority measures along Erica Avenue



# Providing dynamic parking information may reduce circulation, and ensuring pedestrians have space to walk within car parks will improve the amenity

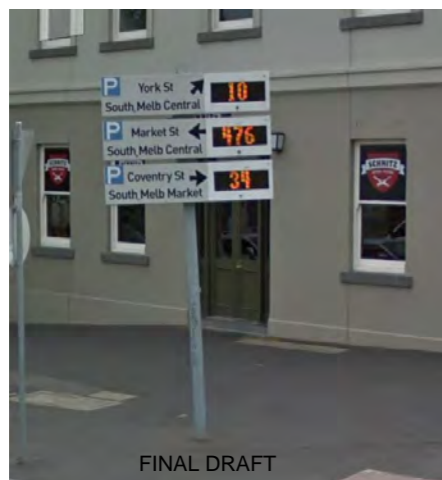


Improved pedestrian priority throughout car parks will allow people to get to their destination safely once out of the car.

Provide shared zones where parking is located, to improve the safety for pedestrians, but not lose any car parking



Conversion of on-street parking in key locations (such as Erica Avenue and along Dorset Road) to Parklets which encourage dwelling on-street at land uses such as cafes



Dynamic parking information may reduce circulation

Ensuring that loading areas are provided, but also allowing for these spaces to be flexible and used by other modes will improve the amenity and flow of the area

06

Improvements



Provide flexible loading space that can be used as footpath when unused within Dorset Square and Erica Avenue



Consider provision of combined Bus and Freight Lanes



Announcing the entry to Boronia at each key point and reducing the speeds will notify road users that the Activity Centre is an important place with others using the area



Implementing a Gateway Feature on both ends of Boronia Road and Dorset Road to announce entry into the Boronia Activity Centre



Reducing the speed to 40km/hr within the Town Centre and introducing speed control measures on local roads, to improve safety of vulnerable road users, and reduce rat running



				
Lane Width in Meters	2.60 - 2.80	2.80 - 3.25	3.25 - 3.60	3.60 and higher
City	Jakarta, Singapore	Amsterdam, Berlin, Copenhagen, Paris, Tokyo, Toronto	New Delhi, Mumbai, Knoxville, Greensboro, New York, Sao Paulo	Beijing, Chennai, Fortaleza
Fatality Rate per 100,000 population	3.6 - 6.4	1.3 - 3.2	6.1 - 11.8	20.0 - 27.2
Safety Index	Less safe	Safe	Unsafe	Very unsafe

Source: Fatality rate data from WRI Cities Safer By Design, Qiu J et al. (2014), Strak and Schoettle (2015); Lane width data from Masud Karim (2015), Motian D et al. (2015)

Reducing lane width to support lower speeds

In order to support the vision and objectives in the longer term, a number of additional infrastructure ideas are recommended for further consideration



Providing a Green Bridge over the rail line as part of the Green Spine on Chandler Road

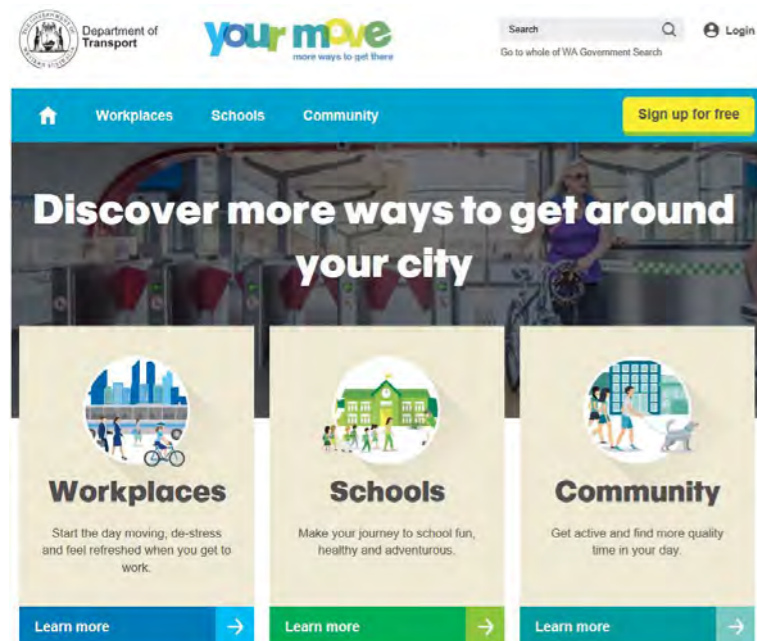
Introduction of dockless bikes and scooters to encourage people to use active travel modes within and around the Centre

They could be placed along the green-spine to encourage more movement along this corridor

They could also be aimed at those that live far away from the centre and drive to it, but to make getting around it much easier



Reducing speeds on local roads within the study area to 30km/hr, starting along roads allocated as pedestrian priority and/or classified as a P3



Behavioural change programs engaging with residents, businesses, schools, etc.



# 07 Opportunities and Actions



# A number of opportunities actions have been identified which could help achieve the various objectives of this strategy

07

Opportunities & Actions

## Chandler Road

- Development of a 'Green Spine' to facilitate east-west access to the majority of the key destinations within the Activity Centre

## Boronia Road / Dorset Road

- Reduction of speed to 40 kph permanently
- Provision of narrower lanes in 40 kph zones
- Gateway entry sculpture to signify entering the activity centre

## Boronia Road

- Provision of separated bike lane to improve safety for cyclists
- New Pedestrian Operated Signals (POS) in key locations (such as at Turner Rd and just west of Park Cres)

## Dorset Road

- Widening of footpaths
- Removal of on-street parking and introduction of parklets
- New POS including raised crossing platforms

## Dorset Square

- Creating a public square for improved amenity and community events
- Providing Bus access to ensure public transport users are placed in the centre of the activity

## Lupton Way

- Implementing a shared space where pedestrians have priority, though still facilitating station pick-up and drop off and loading to retail

## Erica Avenue

- Provision of bus priority along road and at intersection
- Widening of footpaths and provision of parklets
- Improved bicycle connectivity

## Chandler Road / Dorset Road

- Provision of a scramble crossing to improve pedestrian connectivity in line with key desire lines

## Town Centre Wide

- Reduction of speed to 40 kph permanently
- Implementation of speed humps or other traffic calming measures on local roads to reduce rat running for through vehicles

A number of the proposed interventions should occur within the short-term, while others will require more liaison with key stakeholders prior to implementation

Intervention	Location	Stakeholders	Timeframe	Indicative Capital Cost*
Green-Spine	Chandler Road	n/a	Short	\$2-5 million
Gateway entry sculpture	Boronia and Dorset Roads	VicRoads	Short	\$500,000
Parklets	Dorset Road and Erica Avenue	VicRoads (Dorset Road)	Short	\$5,000 – 15,000 per space
Reduction of speed to 40kph	Throughout Town Centre	VicRoads (on Arterials)	Short	\$50,000 <i>excl. complementary traffic calming</i>
Speed humps on local roads	Local roads within Town Centre	n/a	Short-Medium	\$5,000 – \$8,000 per site
Separated bike lanes	Boronia Road	VicRoads	Medium	\$500,000 per km (two-way)
Widened footpaths	Dorset Road and Erica Avenue	VicRoads (Dorset Road)	Medium	\$600 /sqm
Removal of on-street parking	Dorset Road	VicRoads	Medium	\$70 per sign <i>would occur in conjunction with widening footpaths</i>
Narrowed road lanes	Boronia and Dorset Roads	VicRoads	Medium	<i>would occur in conjunction with widening footpaths and installing separated bike lanes</i>
Shared zone	Lupton Way	VicTrack	Medium	\$100,000
Improved bus priority	Erica Avenue	TfV, PTV and VicRoads	Medium	\$15,000 – \$100,000
New pedestrian operated signals (POS)	Along Boronia Road	VicRoads	Medium-Long	\$200,000 per site
New POS with raised crossing platforms	Along Dorset Road	VicRoads	Medium-Long	\$200,000 per site
Scramble Crossing	Chandler Road / Dorset Road intersection	VicRoads	Long	\$15,000 – \$20,000
Public square (underground parking)	Dorset Square	n/a	Long	\$60-80 million
Re-routed bus access	Dorset Square	PTV	Long	Up to \$4 million

\*The above opinion of indicative costs should be considered current to the date of the document only. GTA Consultants cannot provide any form of assurance that the indicative costings provided will not change. The future outcome may vary, and this variation may be material. Any party requiring detailed costing for budgeting, quoting or construction purposes should seek a detailed cost estimate from a suitably qualified quantity surveyor.

More detail around the location of some of these opportunities are provided in the map below

**Interventions**

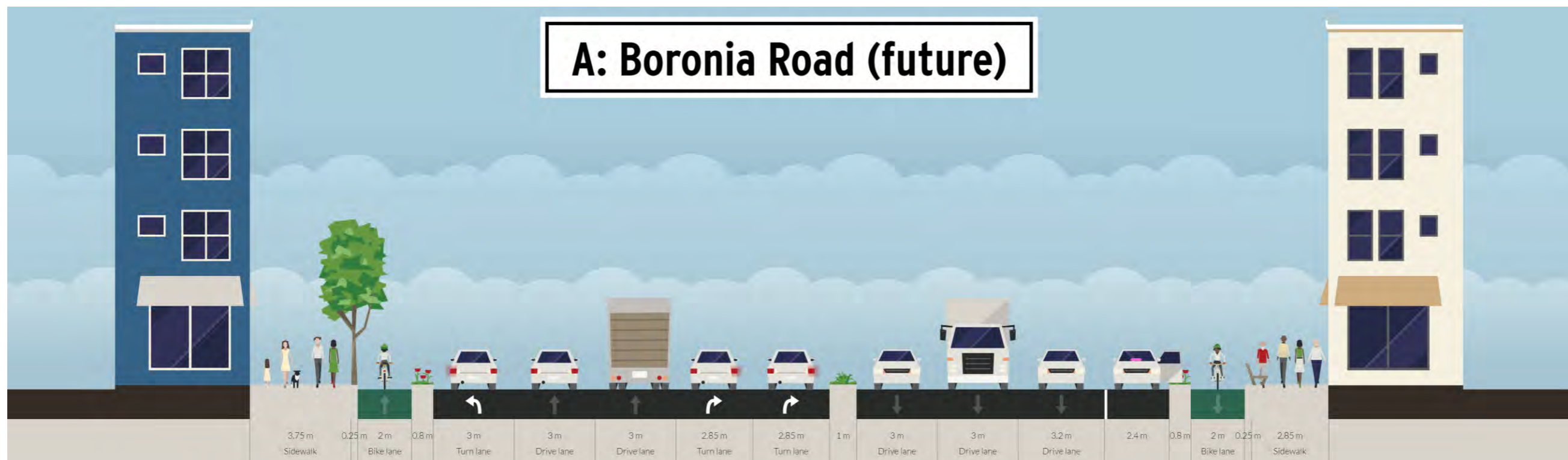
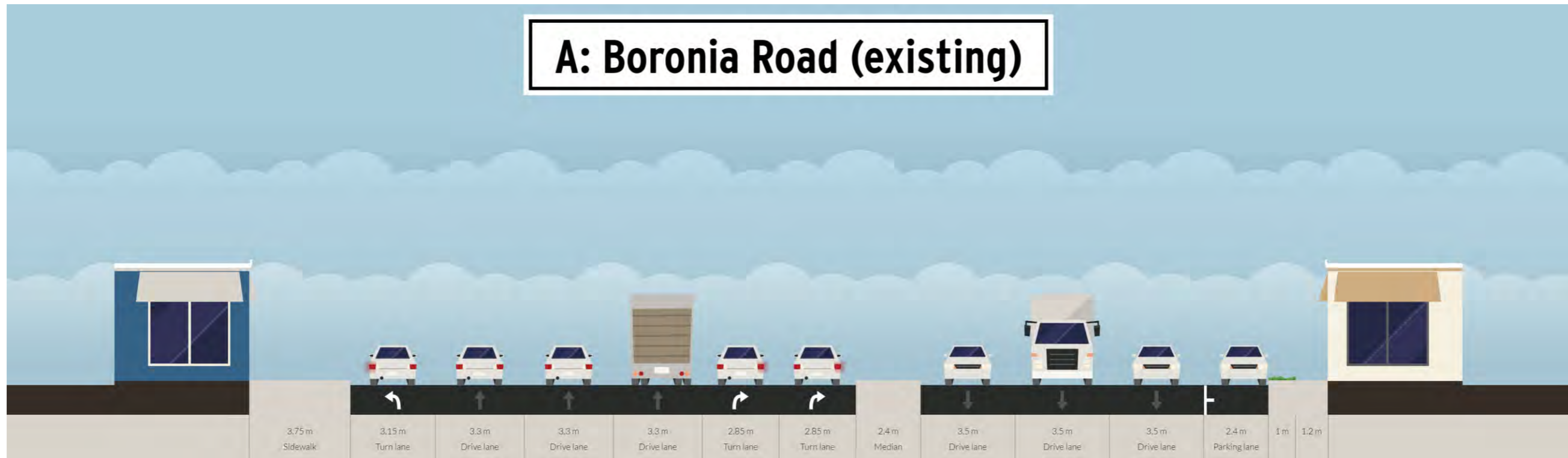
- Green Spine
- Shared Path Connection
- Separated Bike Lane
- Bus Priority
- Realigned Bus Route
- ◆ Bus Priority at Signals
- ◆ Gateway
- ◆ New Pedestrian Operated Signal (POS)
- ◆ New POS and Raised Pedestrian Crossing
- ◆ New Intersection
- Public Square
- Scramble Crossing
- New 40km/hr Zone
- Removed Parking & Widened Footpath
- Lupton Way Shared Zone



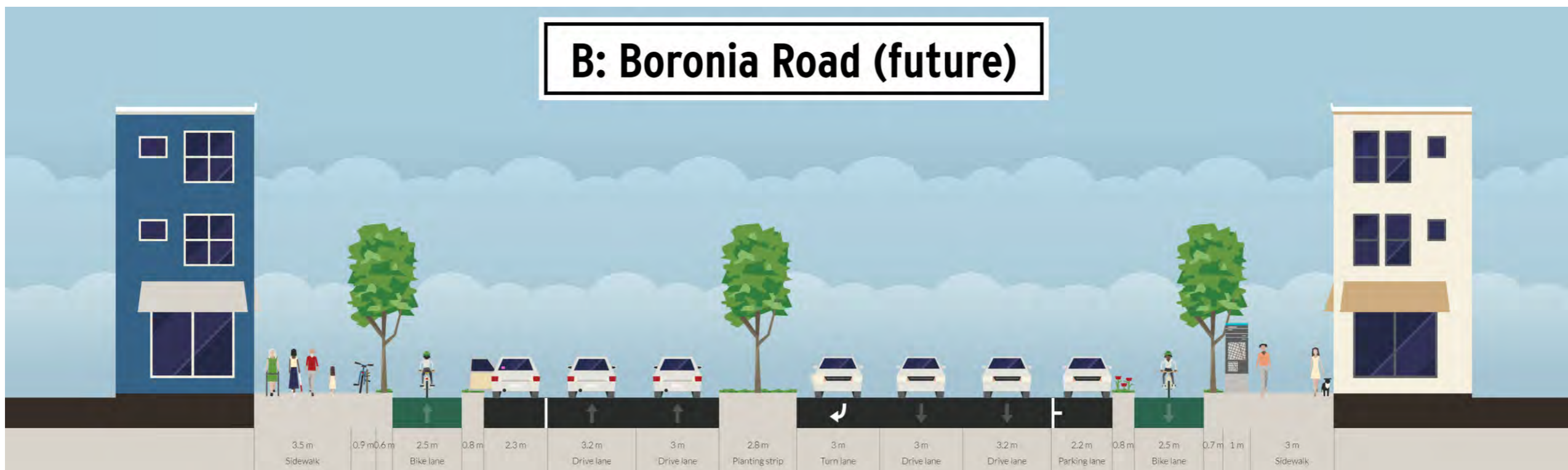
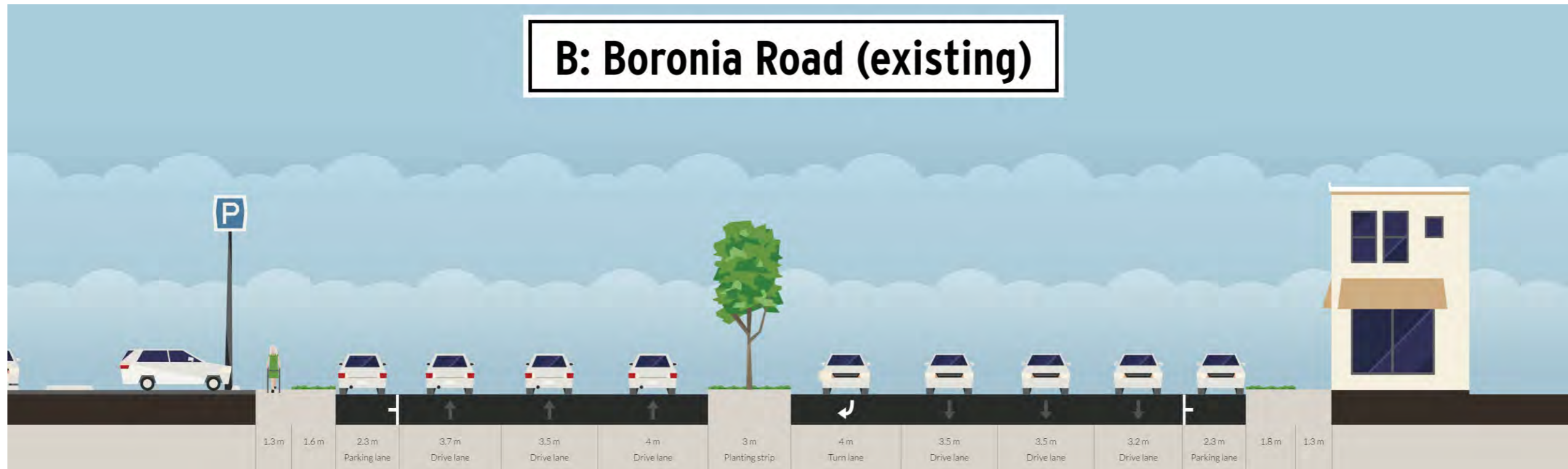
Based on the proposed interventions, a number of existing and future cross-sections have been prepared to show what the future of Boronia could look like



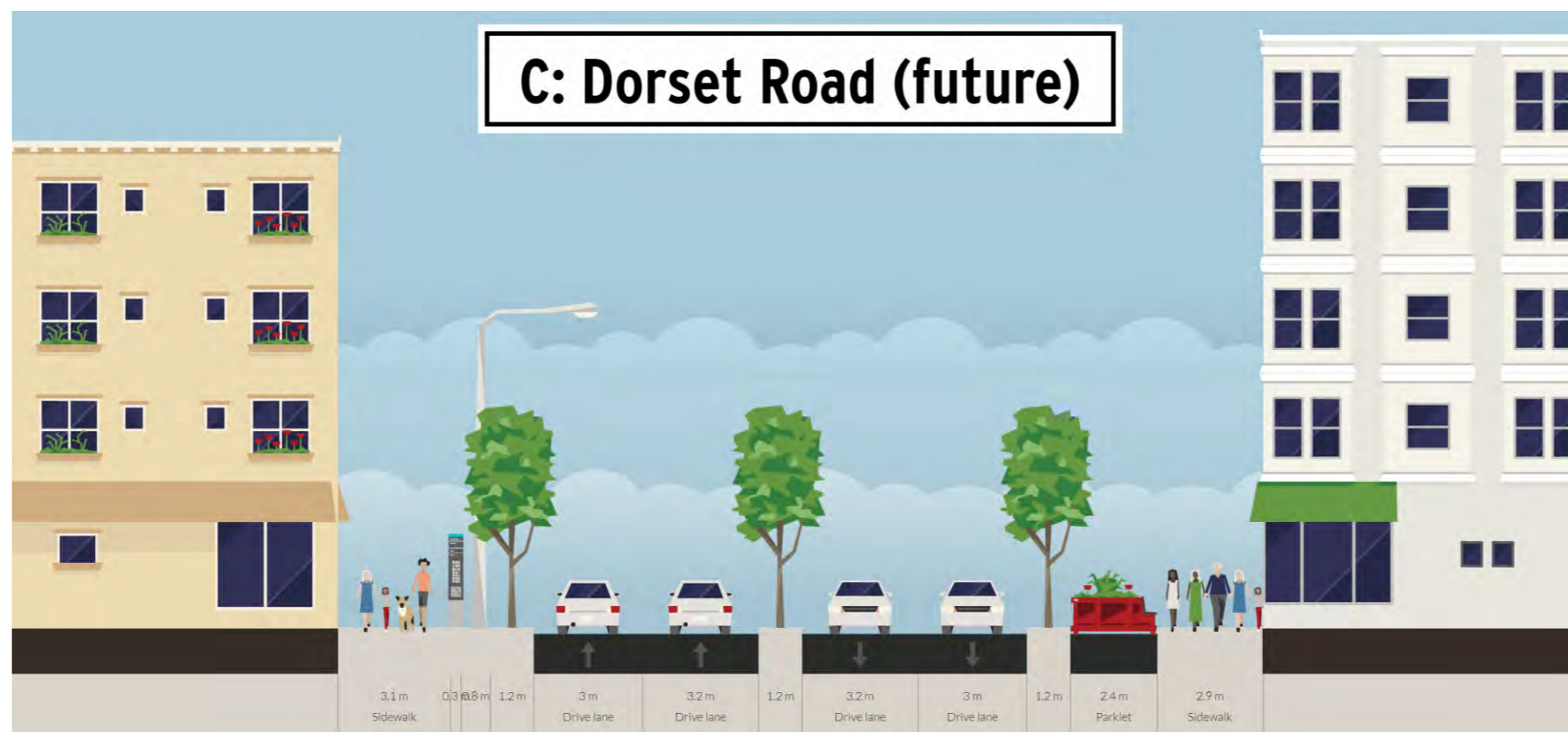
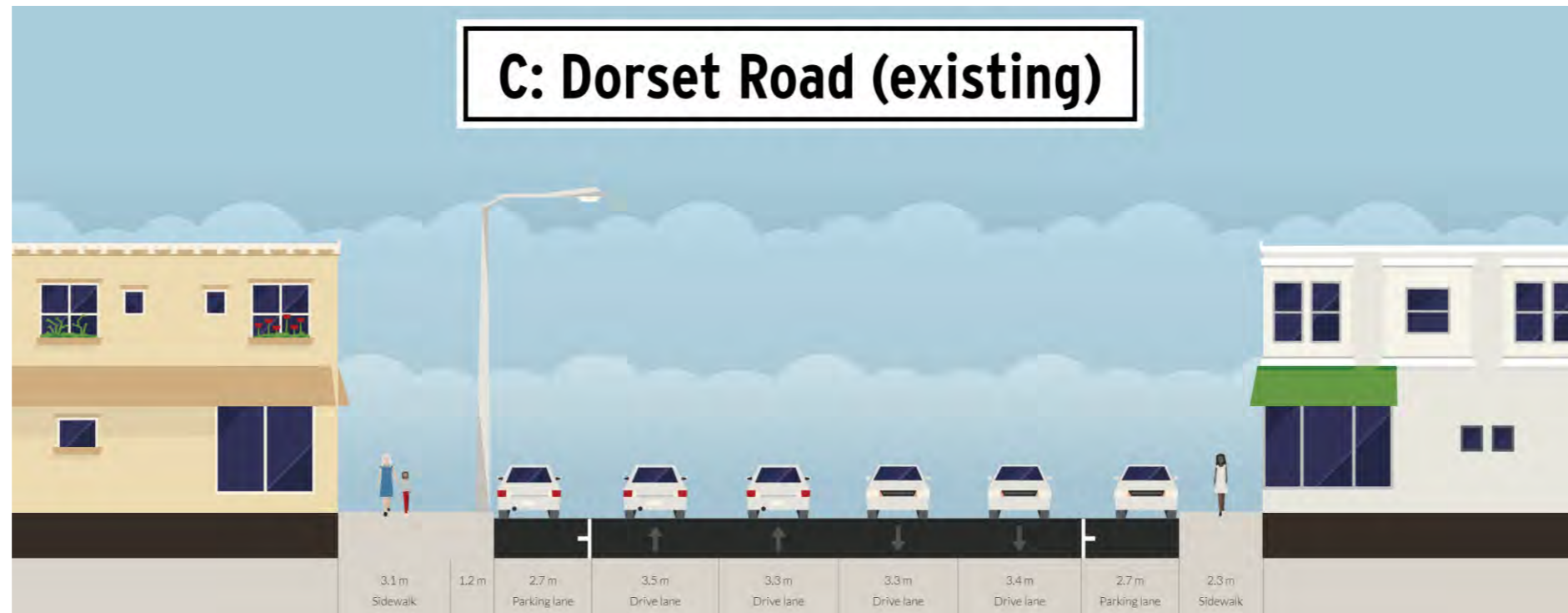
# Boronia Road at Dorset Road could provide separated bike lanes on both sides and widened footpaths with street furniture, by only reducing by one through-lane eastbound



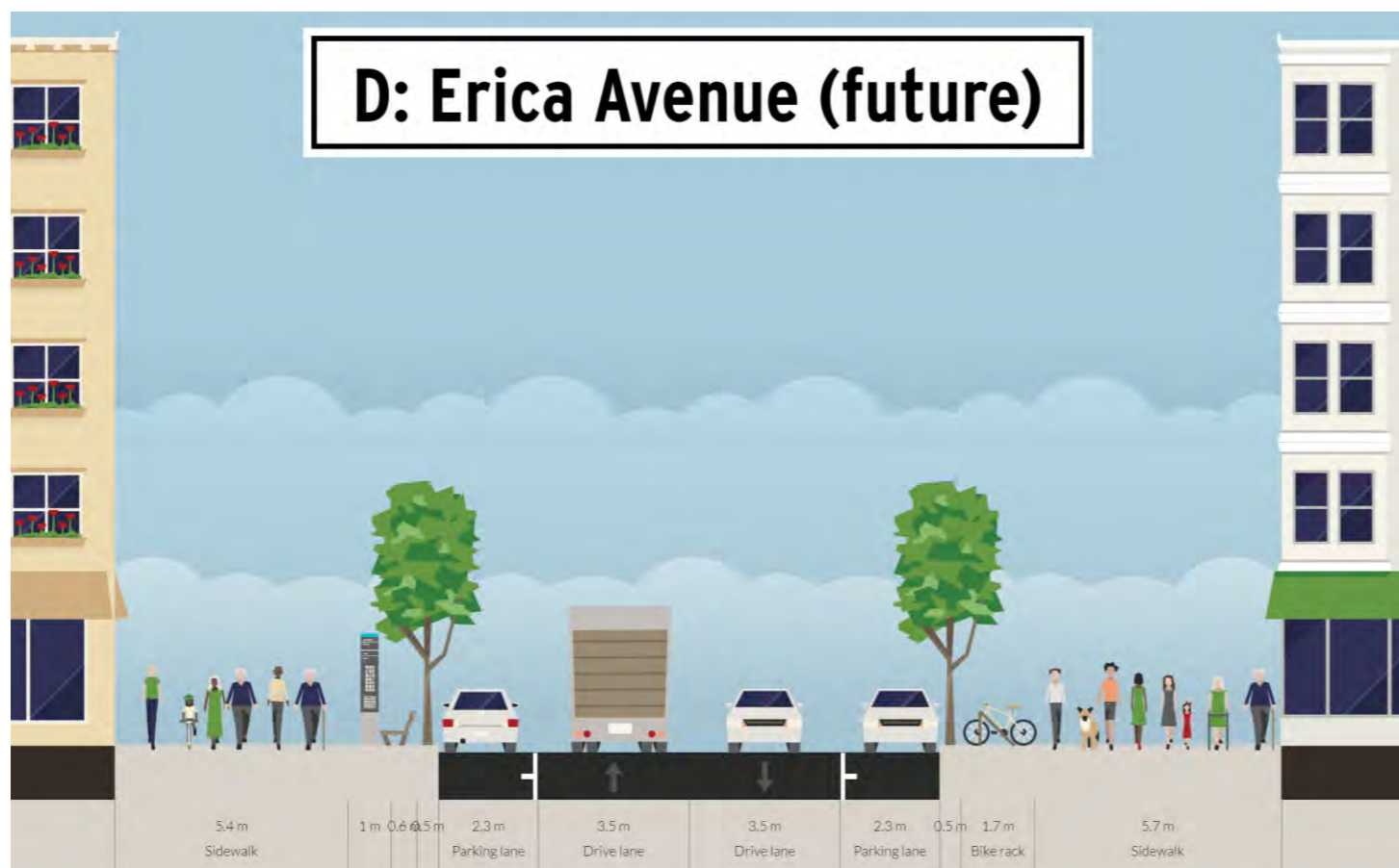
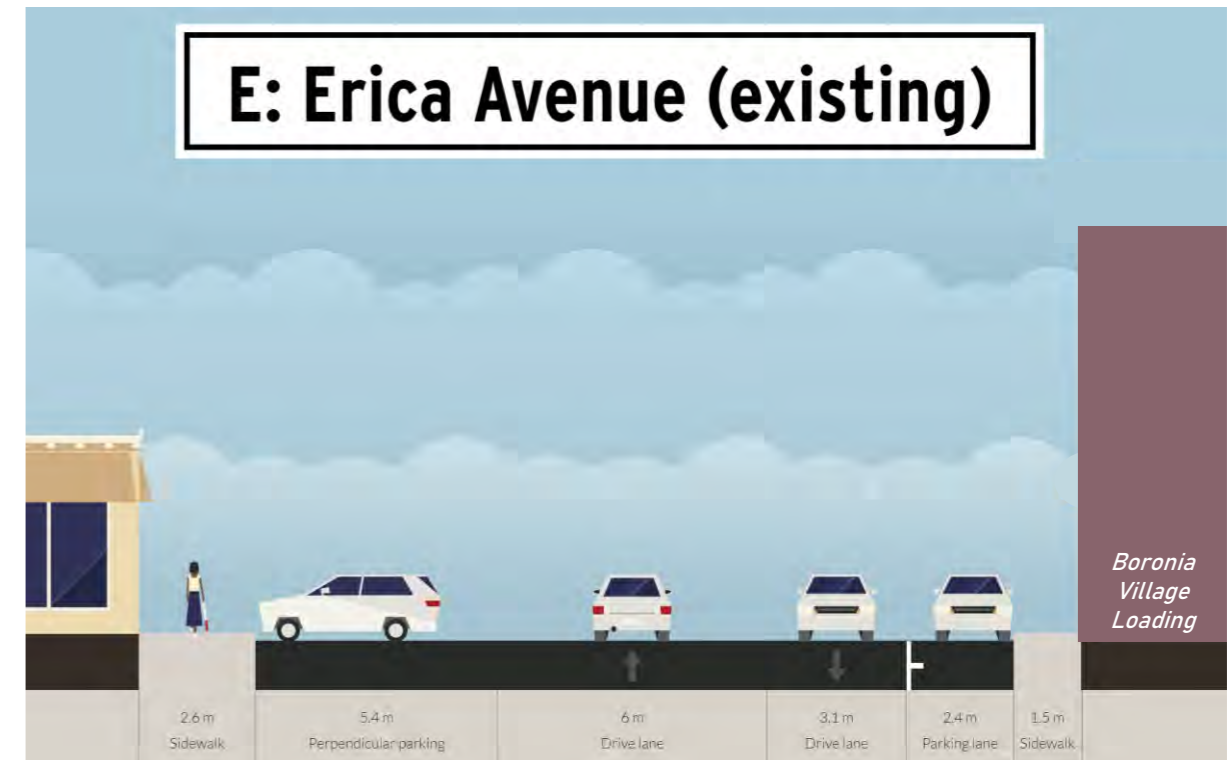
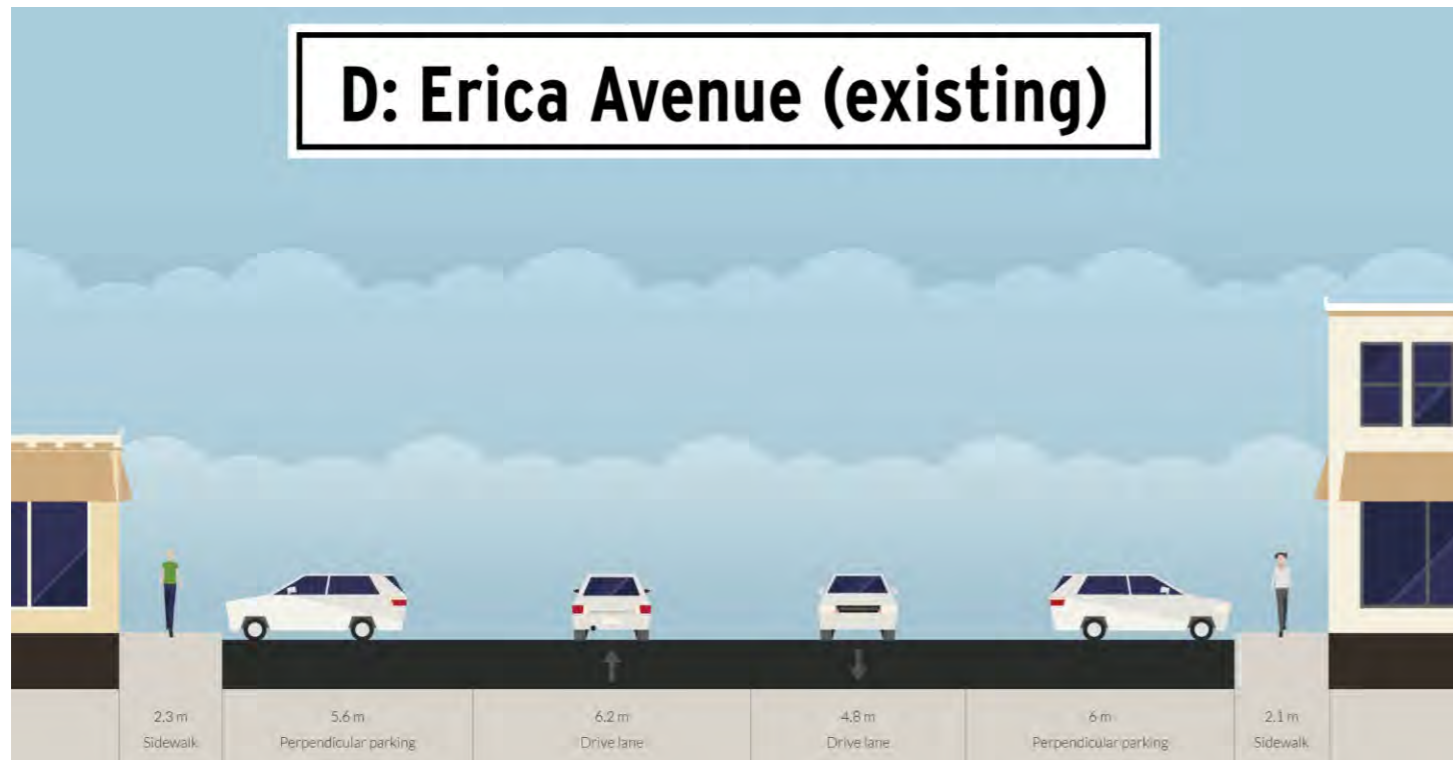
# Boronia Road at Boronia Village could see enhanced amenity through the provision of separated bike lanes, wider footpaths and wayfinding signage



# Removal of on-street parking, introduction of parklets, widened footpaths and provision of wayfinding could see cafes flourish and more people dwell along Dorset Road



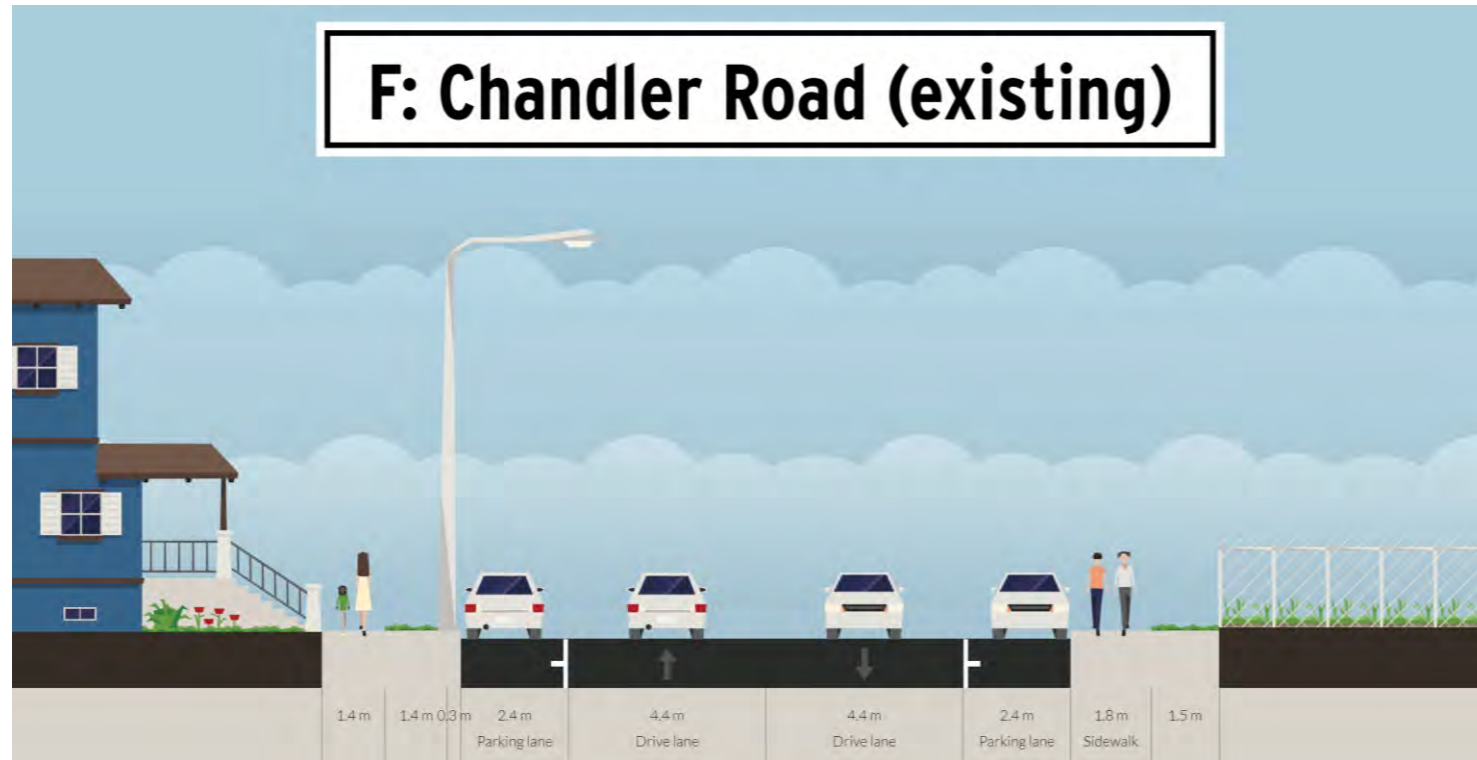
# New shared bus and freight lanes, along with bike lanes and widened footpaths will improve accessibility along Erica Avenue for those wishing to use active and public transport



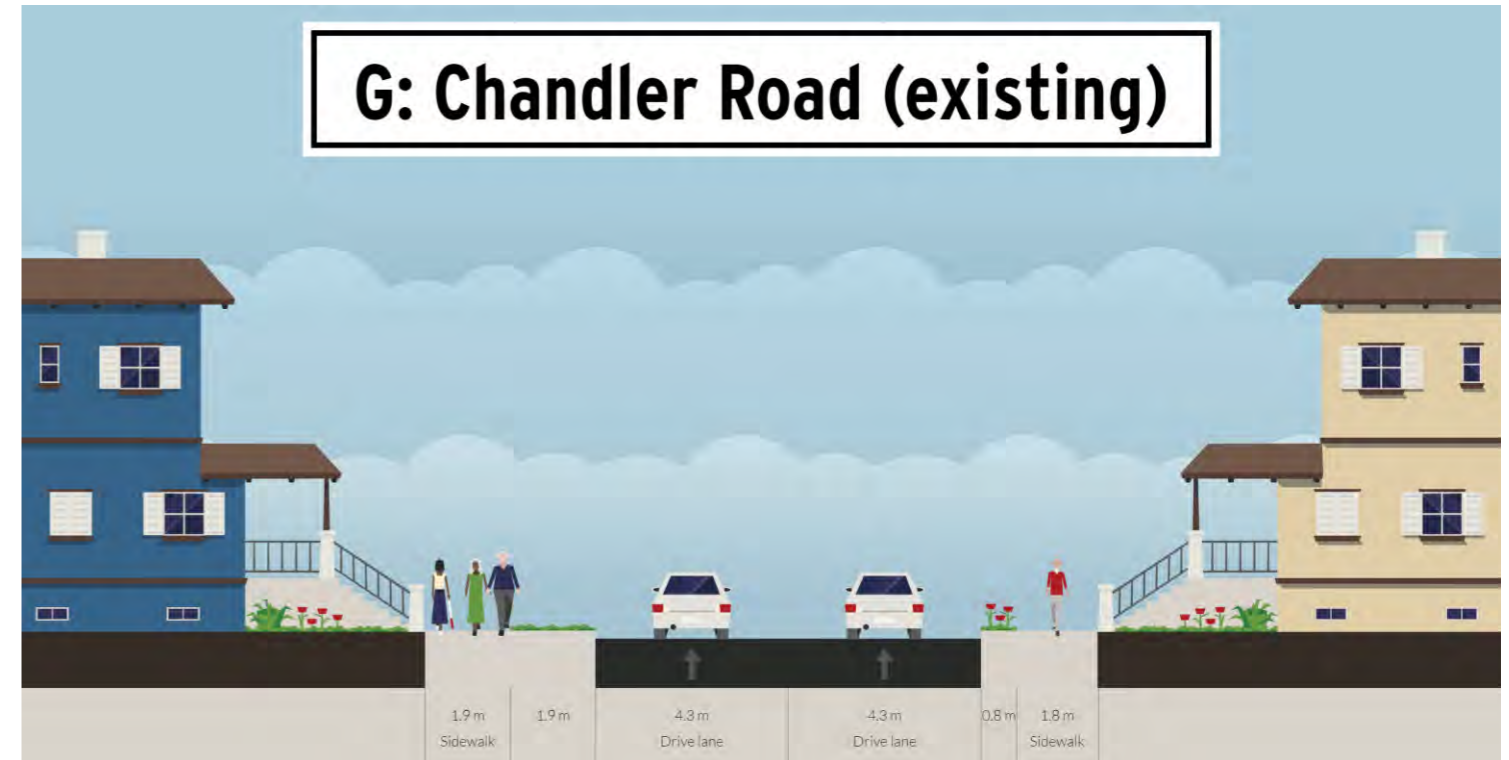


The 'Green Spine' along Chandler Road will significantly increase east-west connectivity for pedestrians and cyclists, while also improving safety and amenity

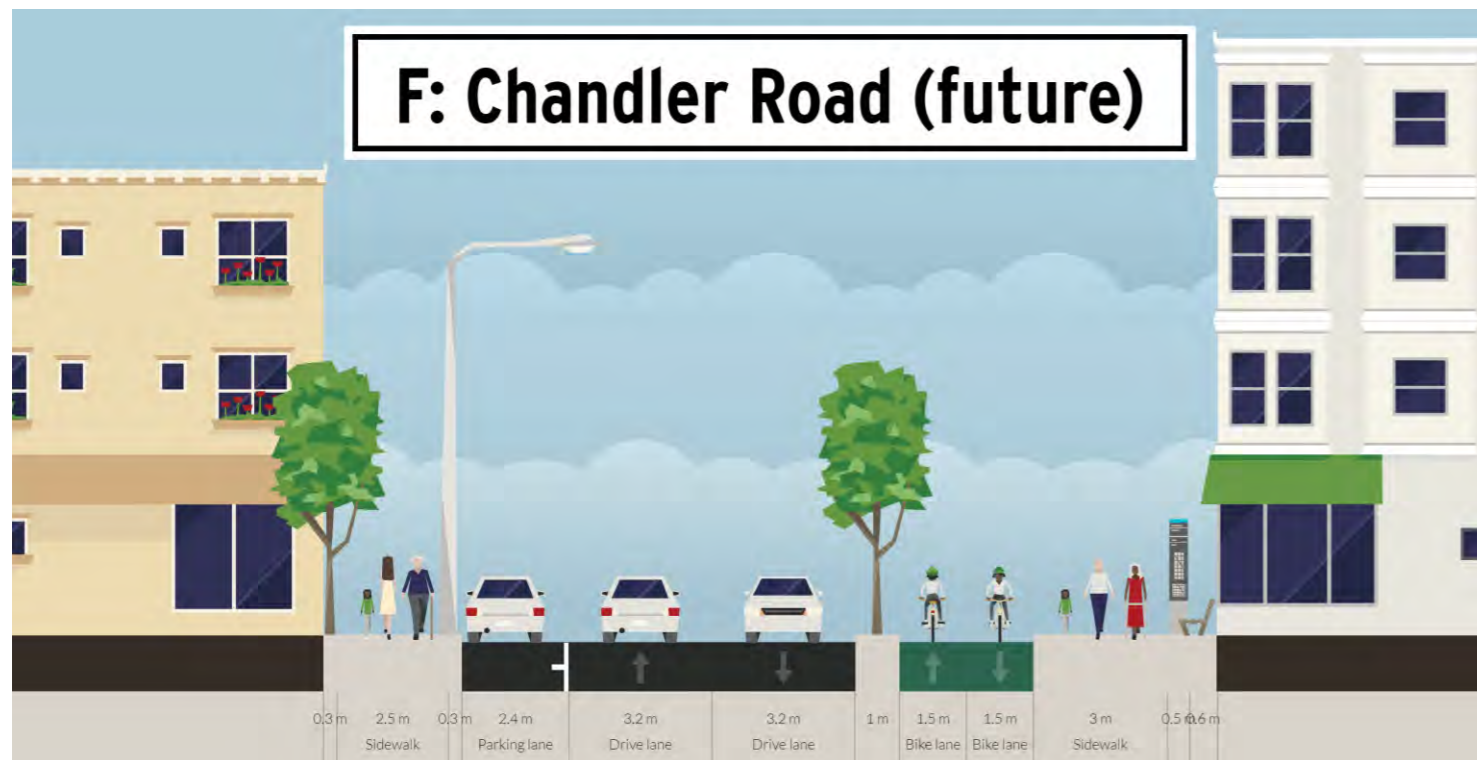
**F: Chandler Road (existing)**



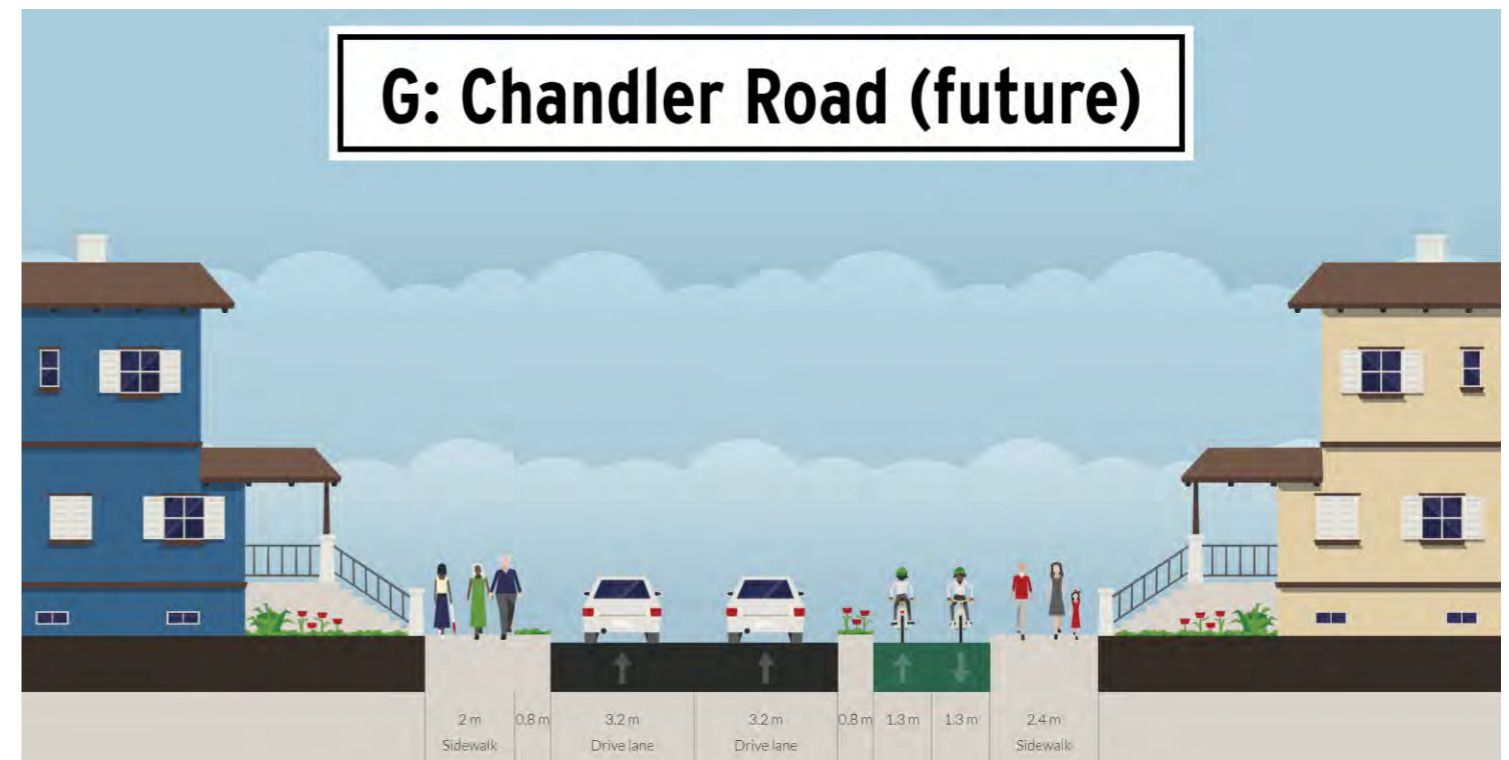
**G: Chandler Road (existing)**



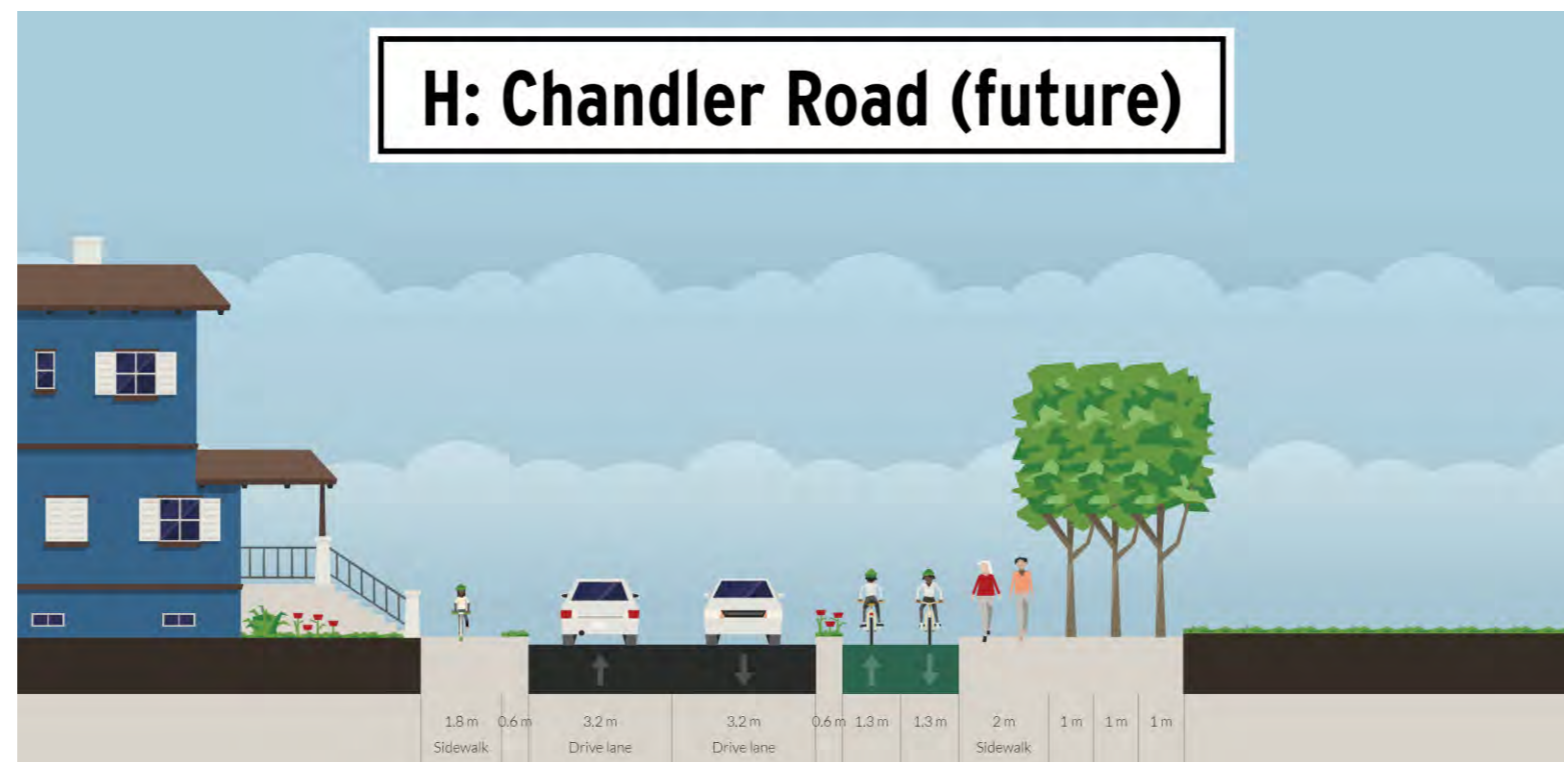
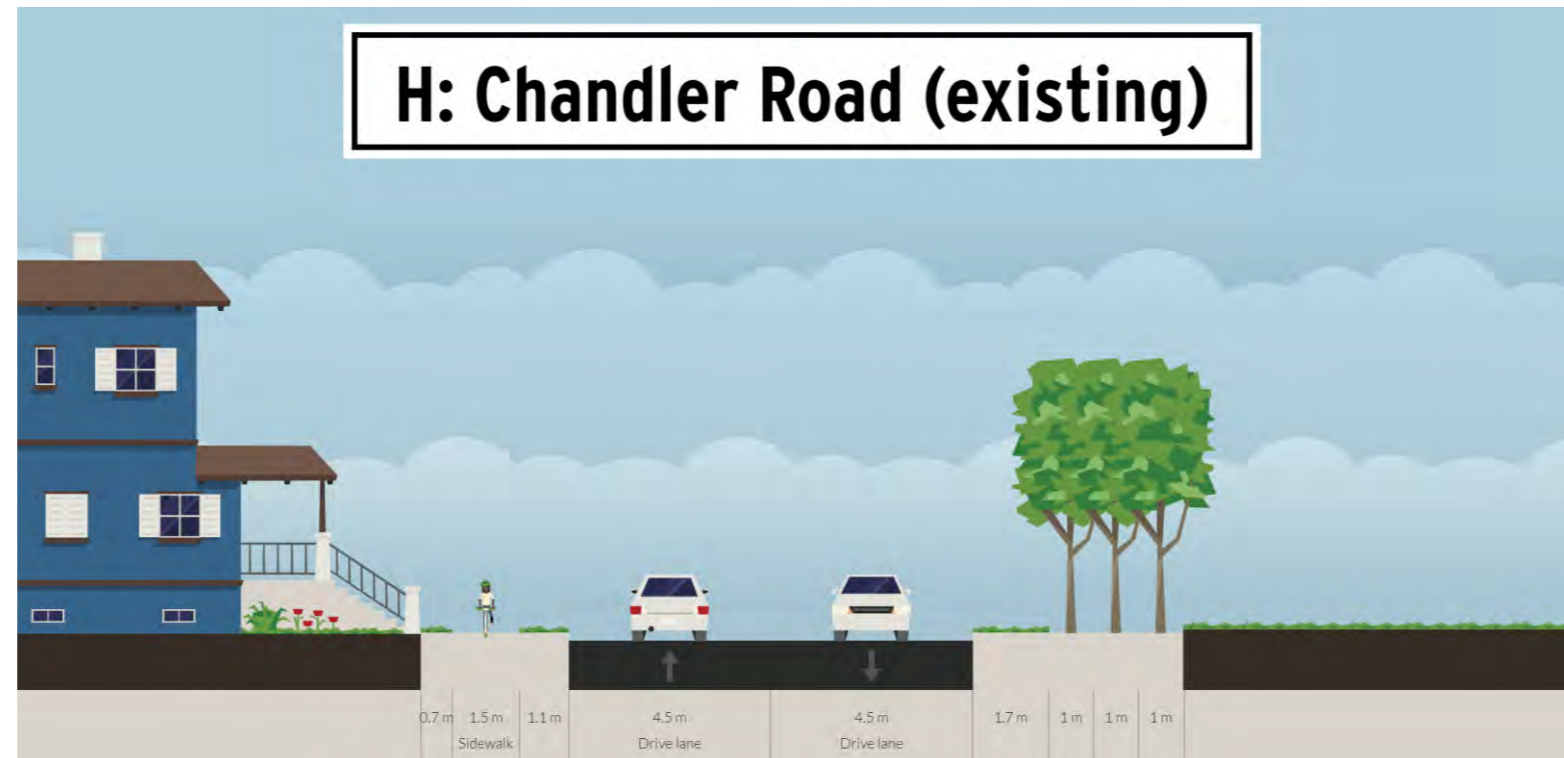
**F: Chandler Road (future)**



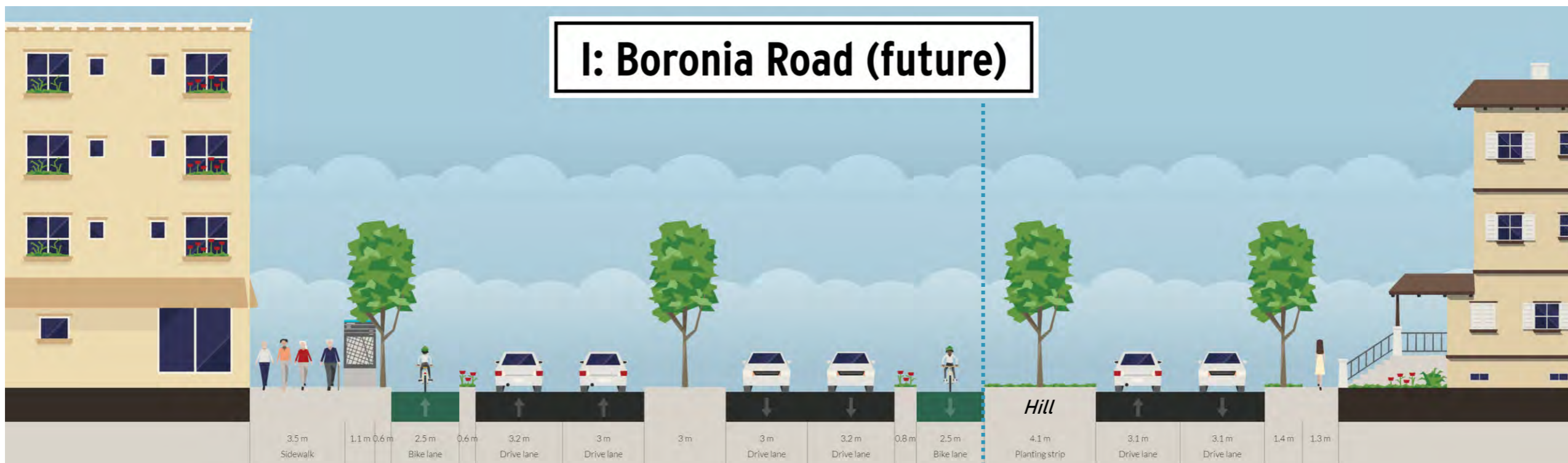
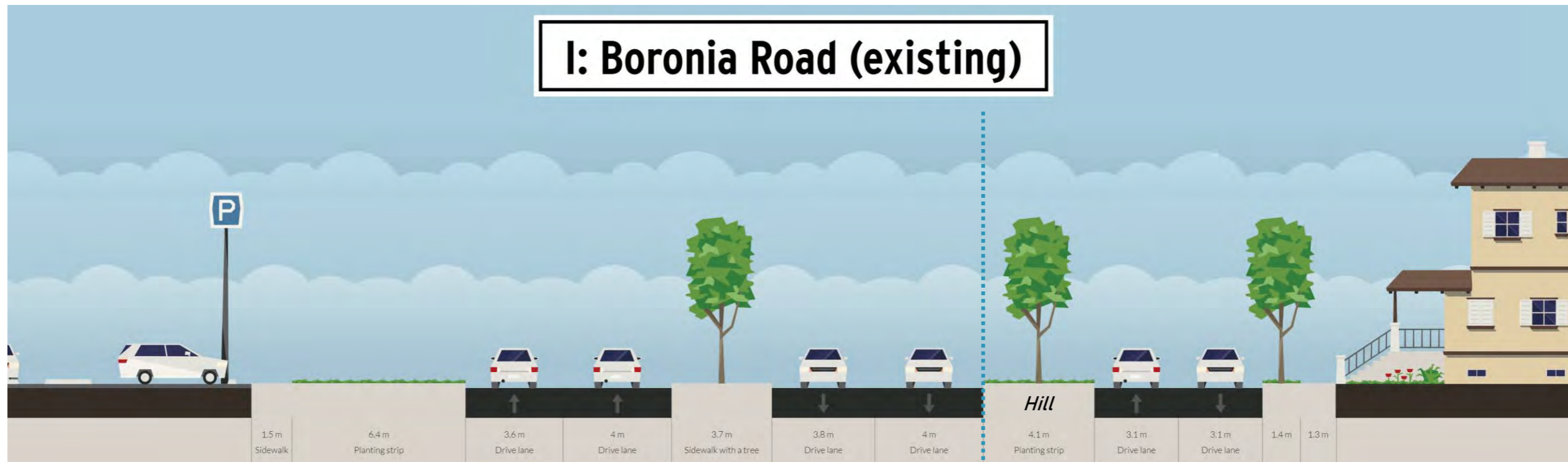
**G: Chandler Road (future)**



Several significant trees exist on the southern side of Chandler Road next to Chandler Park, though even with these, the road can be narrowed to cater for the Green Spine



Boronia Road east of Floriston Road has ample road space to provide separated bike lanes and wider footpaths, even when considering the existing steep hill on the southern side



*This section of Boronia Road involves a steep hill and as such, has not been altered*

# In addition to the interventions already recommended, several other initiatives are also recommended for future consideration

- Consolidation and reduction of vehicular access to car parks from Dorset and Boronia Road, such as Boronia Village which has four entry/exit locations, which could be reduced to one or two. This will reduce conflicts at entry/exit locations between cars and pedestrians or cyclists
- Relocate and consolidate land uses from the four quadrants into key hubs
- Consolidation of car parks (ideally located along the periphery of the activity centre where people can then walk rather than drive between destinations)
- Relocate the service station from the centre of town and place more suitable land uses in this central location
- Landscape and streetscape enhancements
- Provision of parklets / pocket parks in additional locations across Boronia
- Develop behaviour change program with businesses and key destinations to encourage non-car use.
- Safe Routes to School program to co-ordinate with Green spine
- Advocate with Transport for Victoria for review of bus services

# 08 Appendices

ABS Census, 2016, Australian Bureau of Statics

Bicycle Plan Review, 2008, City of Knox

Boronia Growth Distribution Slides

Draft Land Use & Planning Background Report, 2017, City of Knox

Google Maps Historical Traffic Data, accessed 2018

Integrated Transport Plan 2015-2025, 2015, City of Knox

Jones, Marshall, Boujenko, 2007, *Link and place: a guide to street planning and design*, Local Transport Today Ltd, London, U.K

Metropolitan Rail Network Development Plan, 2012, Public Transport Victoria

Movement and Place, 2018, VicRoads

Network Development Strategy (NDS), 2017, Victorian State Government

Parking Policy, 2018, City of Knox

Pedestrian Plan, 2005, City of Knox

Plan Melbourne, 2017-2050, 2016, Victorian State Government

Transport Integration Act, 2010, Victorian State Government

VicRoads CrashStats, from 01-May-13 to 30-April-18

VicRoads Traffic Volume Data: <https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/datasets/traffic-volume>

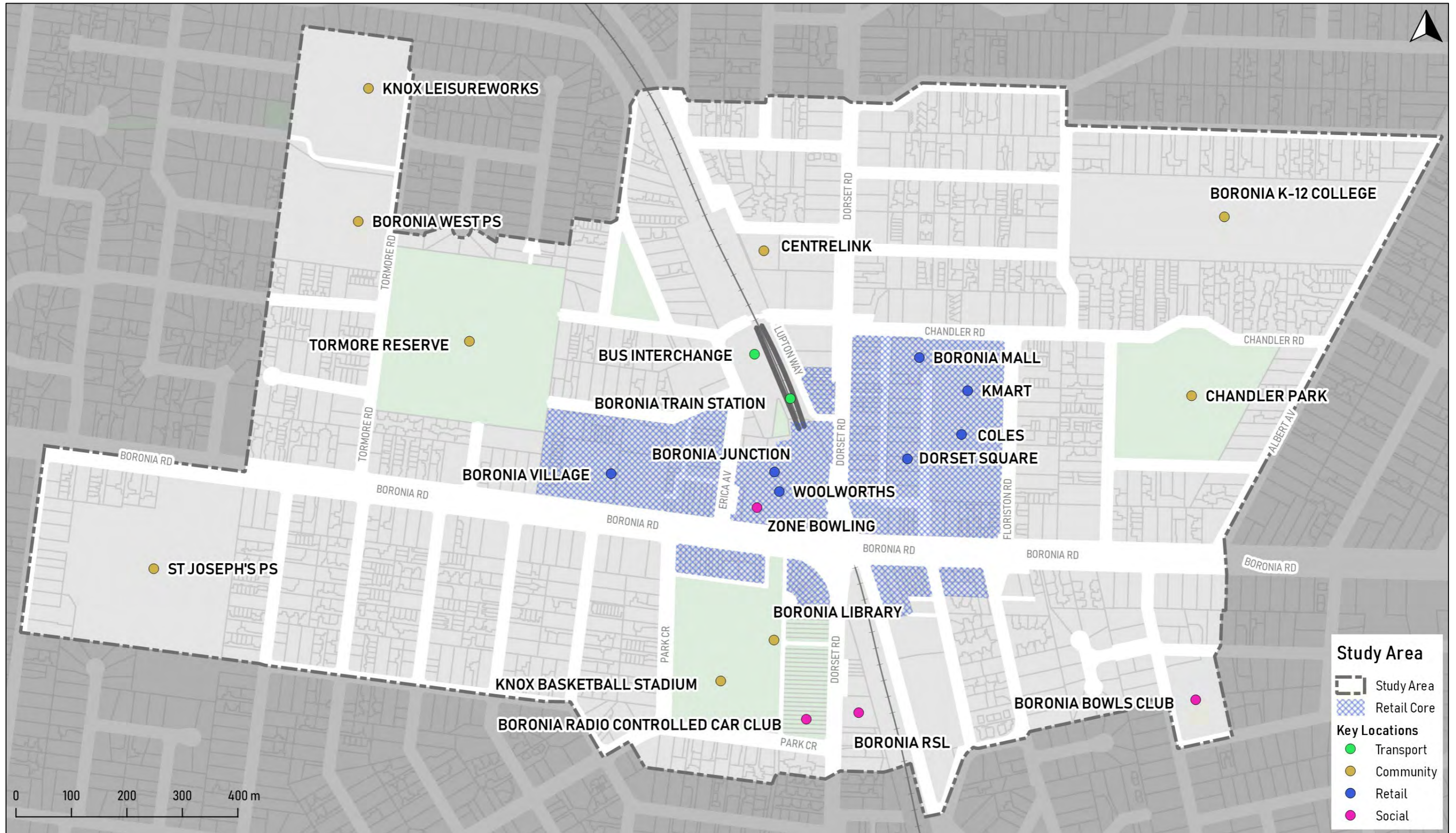
Victoria's 30-Year Infrastructure Strategy, 2016, Infrastructure Victoria

Victorian Infrastructure Plan, 2017, Victorian State Government

# Glossary of Terms

<b>ABS</b>	<b>Australian Bureau of Statistics</b>
<b>BAU</b>	<b>Business as Usual</b>
<b>CrashStats</b>	<b>Information about road crashes on VicRoads managed roads in Victoria, provided by VicRoads</b>
<b>Parkiteer</b>	<b>Bike cages located at train stations. They are undercover and secure.</b>
<b>POS</b>	<b>Pedestrian Operated Signals</b>
<b>Shared Path</b>	<b>A path that both pedestrians and cyclists can use</b>
<b>SCC</b>	<b>Strategic Cycling Corridor</b>
<b>Wayfinding</b>	<b>Signage provided to direct users to their destination, and the quickest way to get there</b>

# Plans: Existing Conditions – Study Area and Key Locations

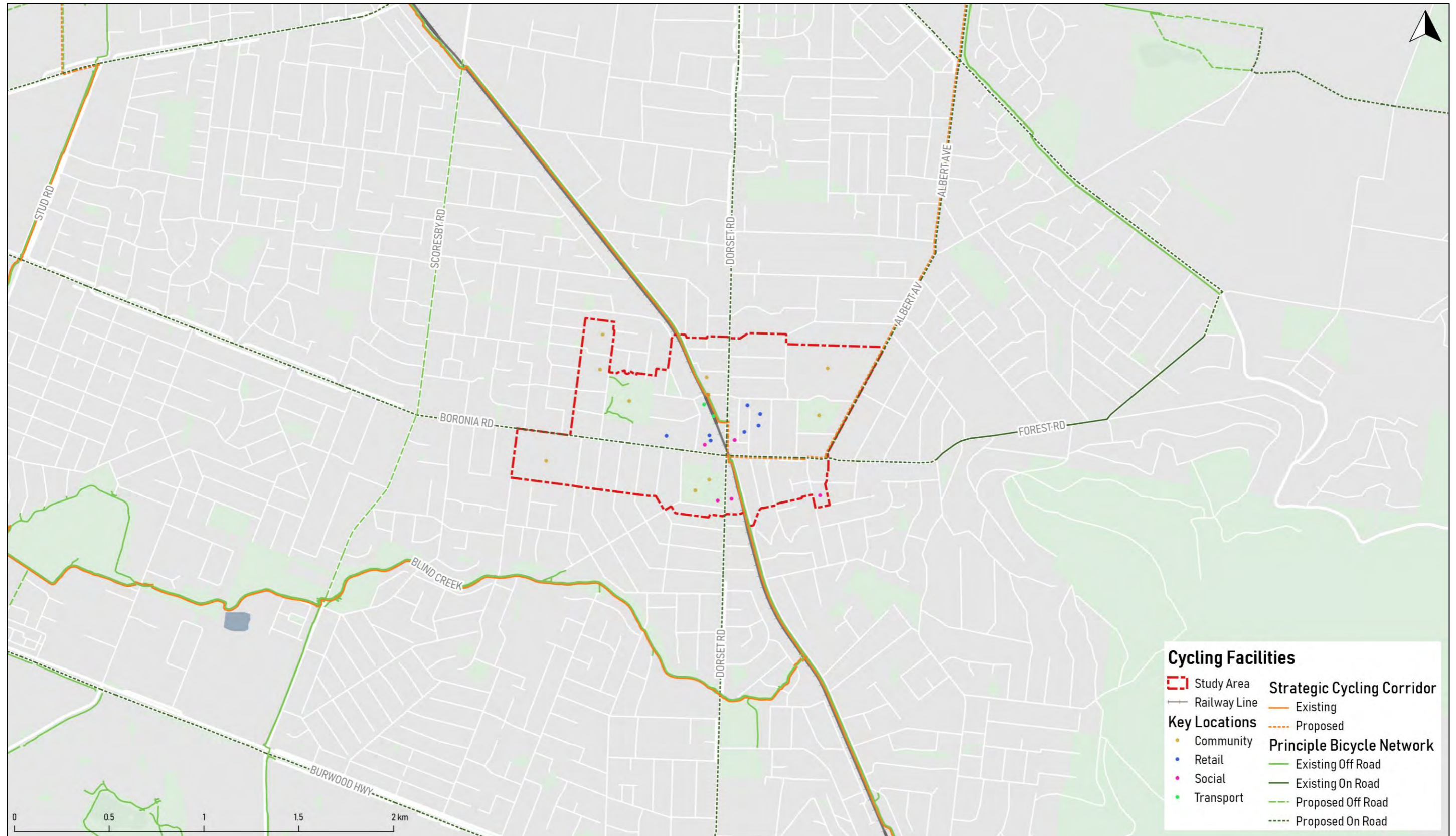




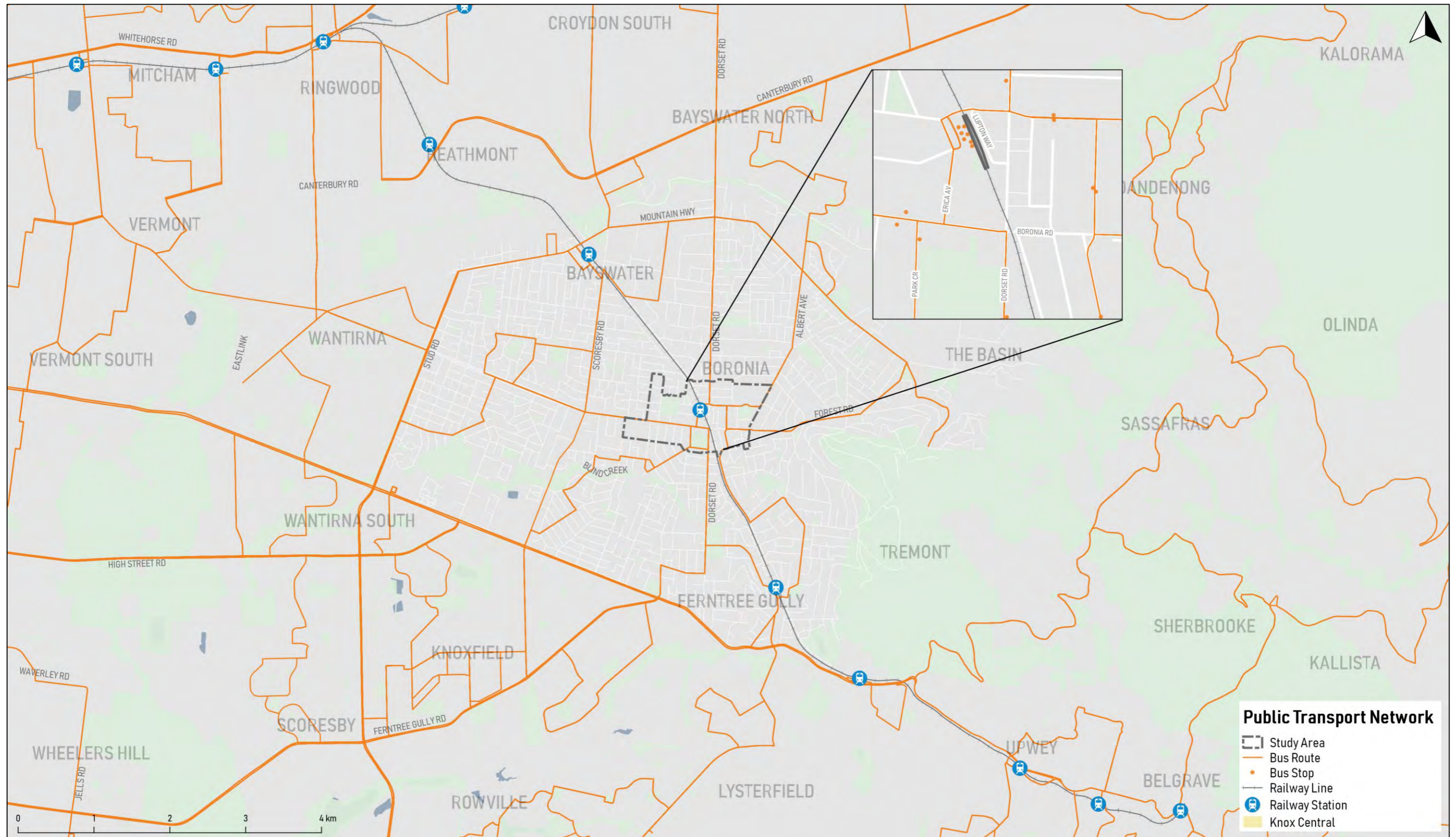
# Plans: Existing Conditions – Pedestrian Network



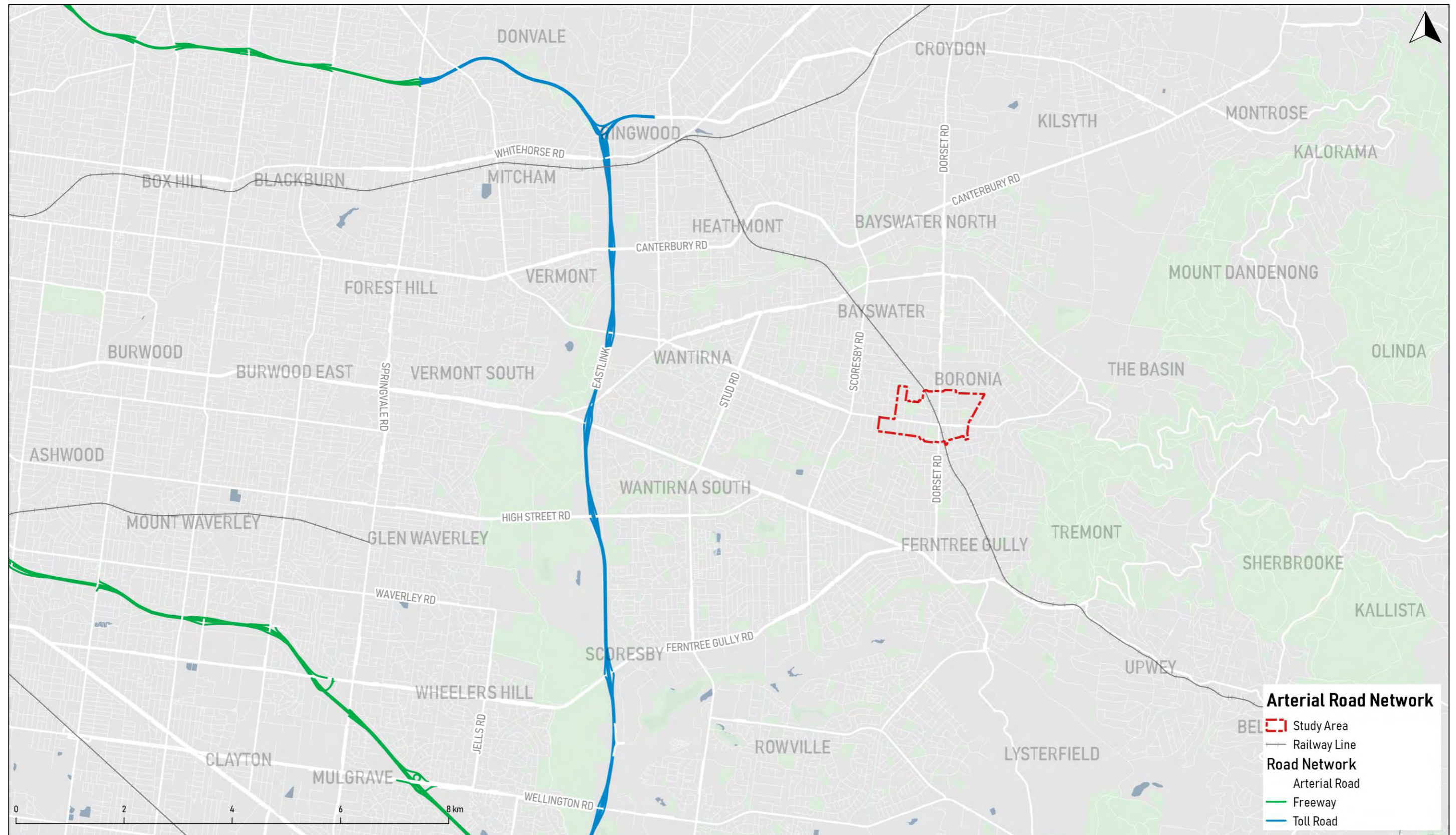
# Plans: Existing Conditions – Bike Network



# Plans: Existing Conditions – Public Transport Network



# Plans: Existing Conditions – Arterial Road Network



# Plans: Existing Conditions – CrashStats



# Plans: Existing Conditions – Off-Street Car Parking



# Plans: Existing Conditions – Road Lanes

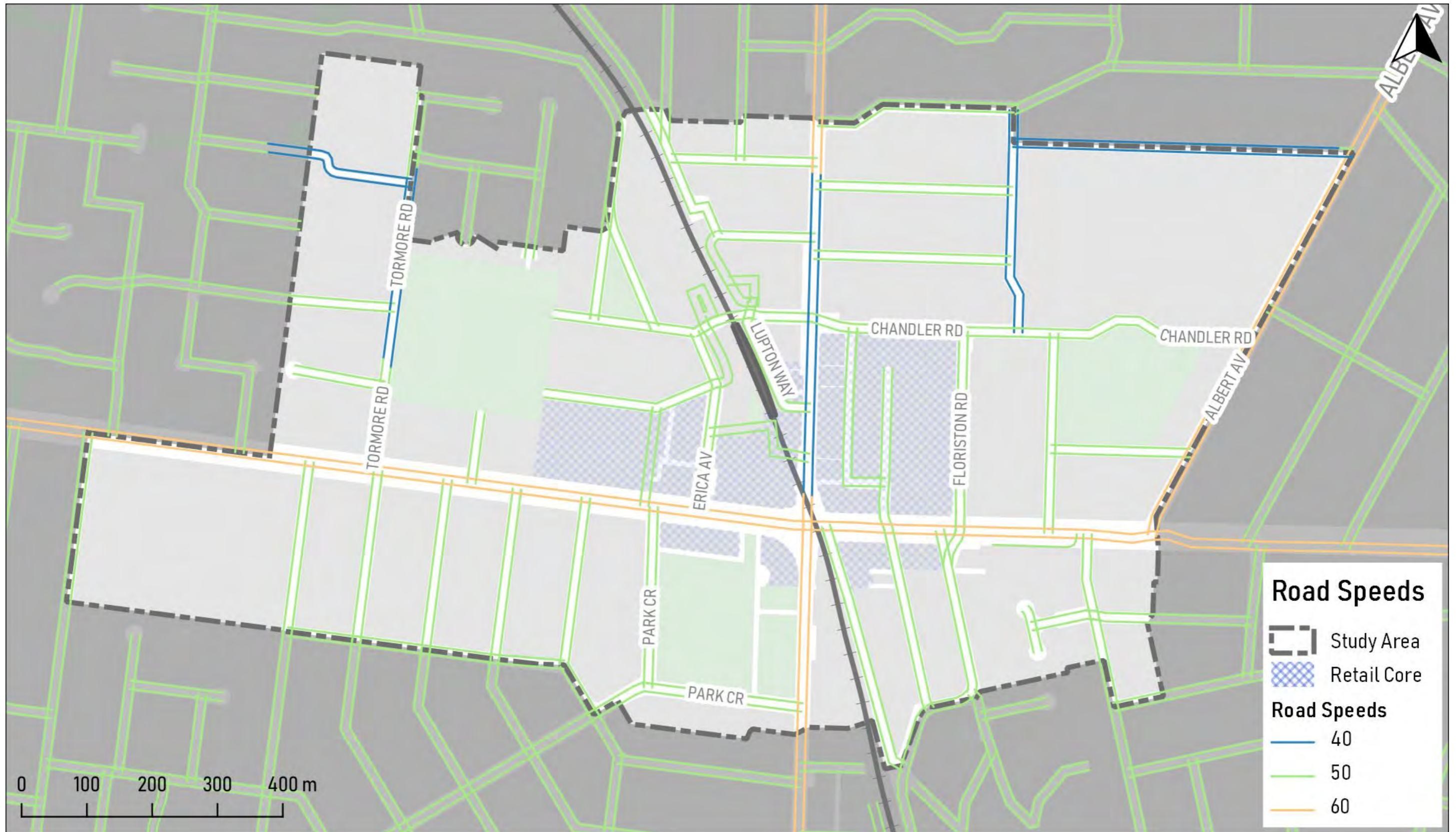


# Plans: Existing Conditions – Traffic Volumes





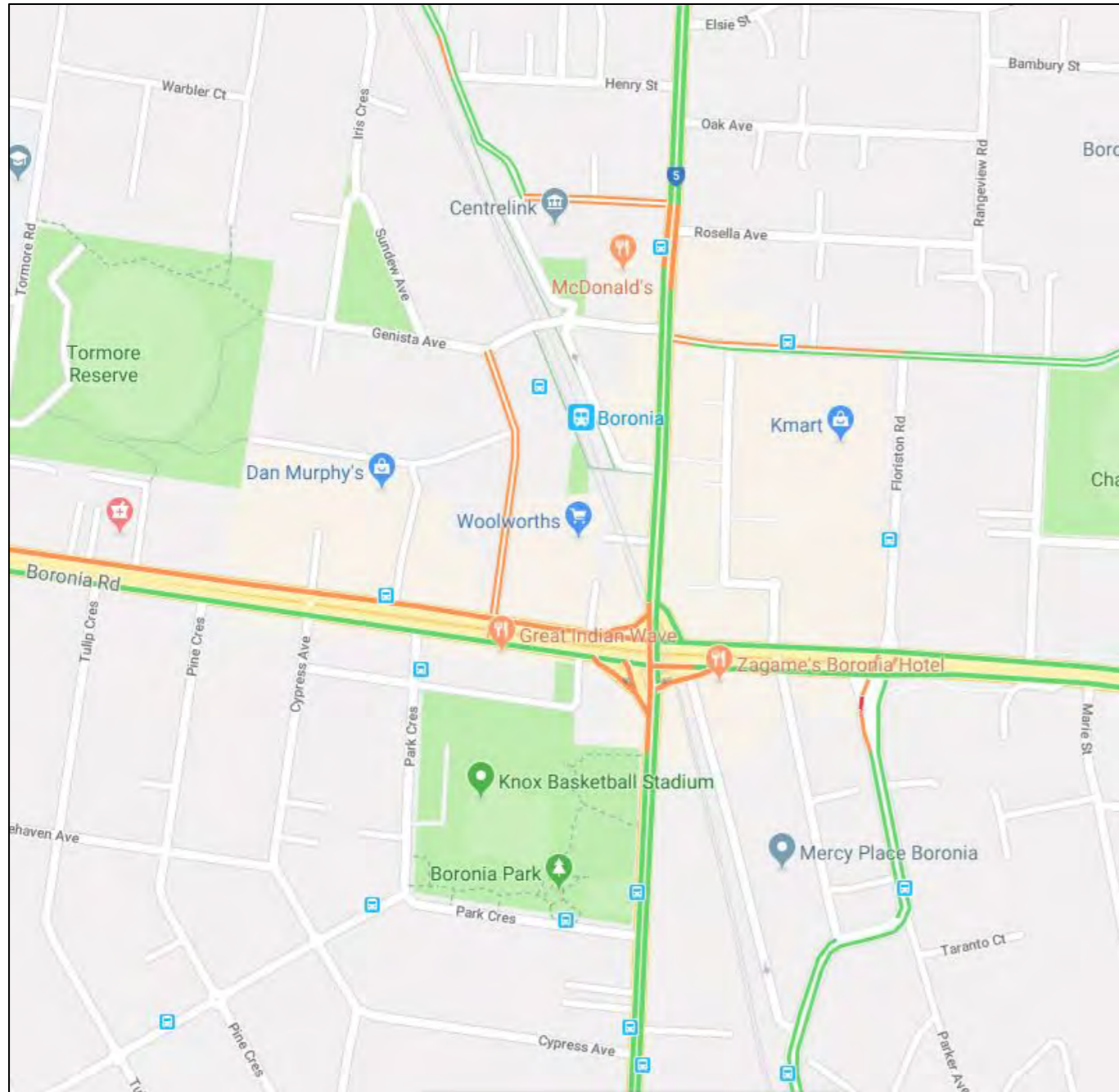
# Plans: Existing Conditions – Posted Road Speeds



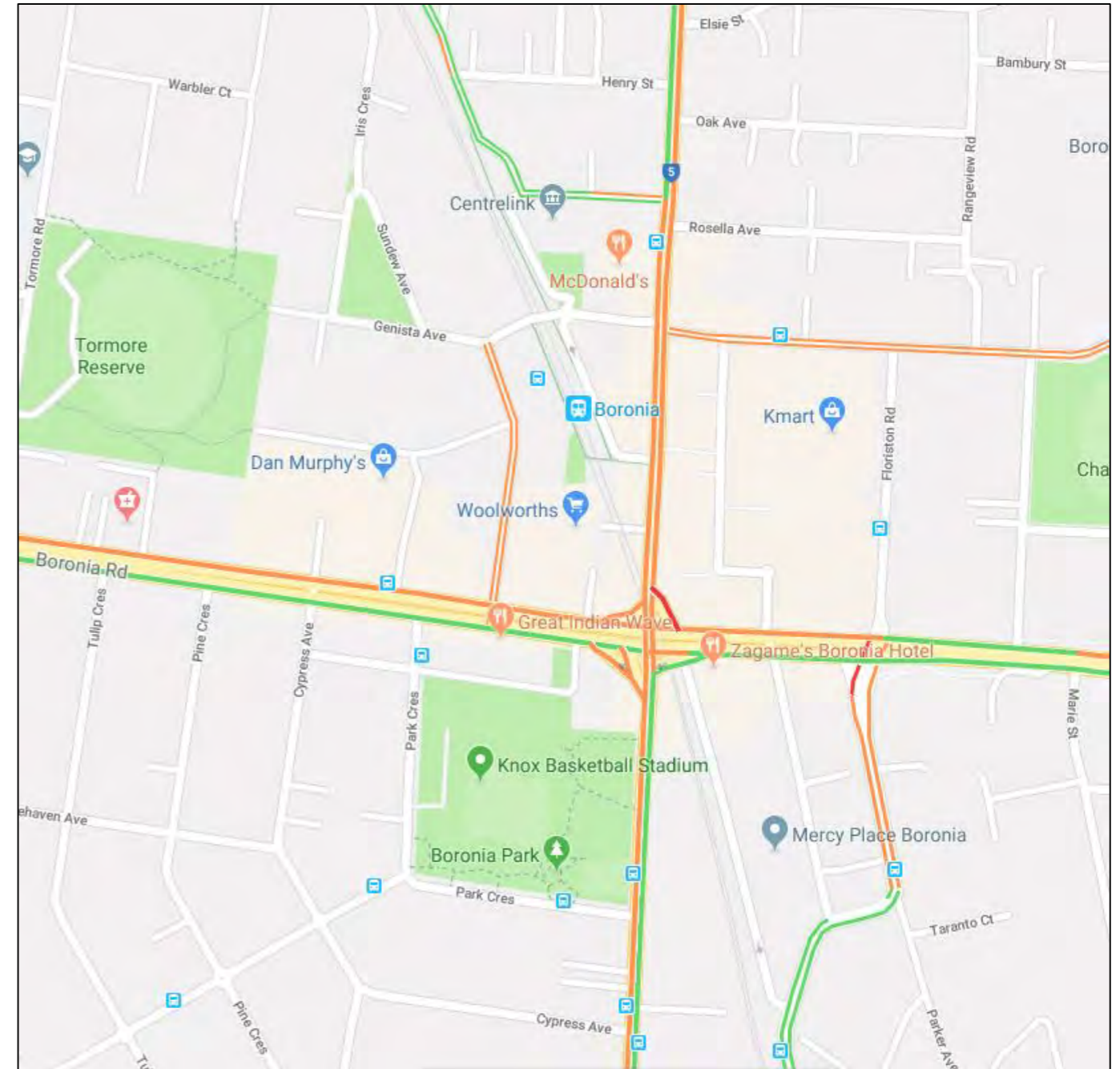
# Plans: Issues – Public Transport and Active Frontages



# Plans: Issues – Road Network Capacity



Typical Thursday at 8am

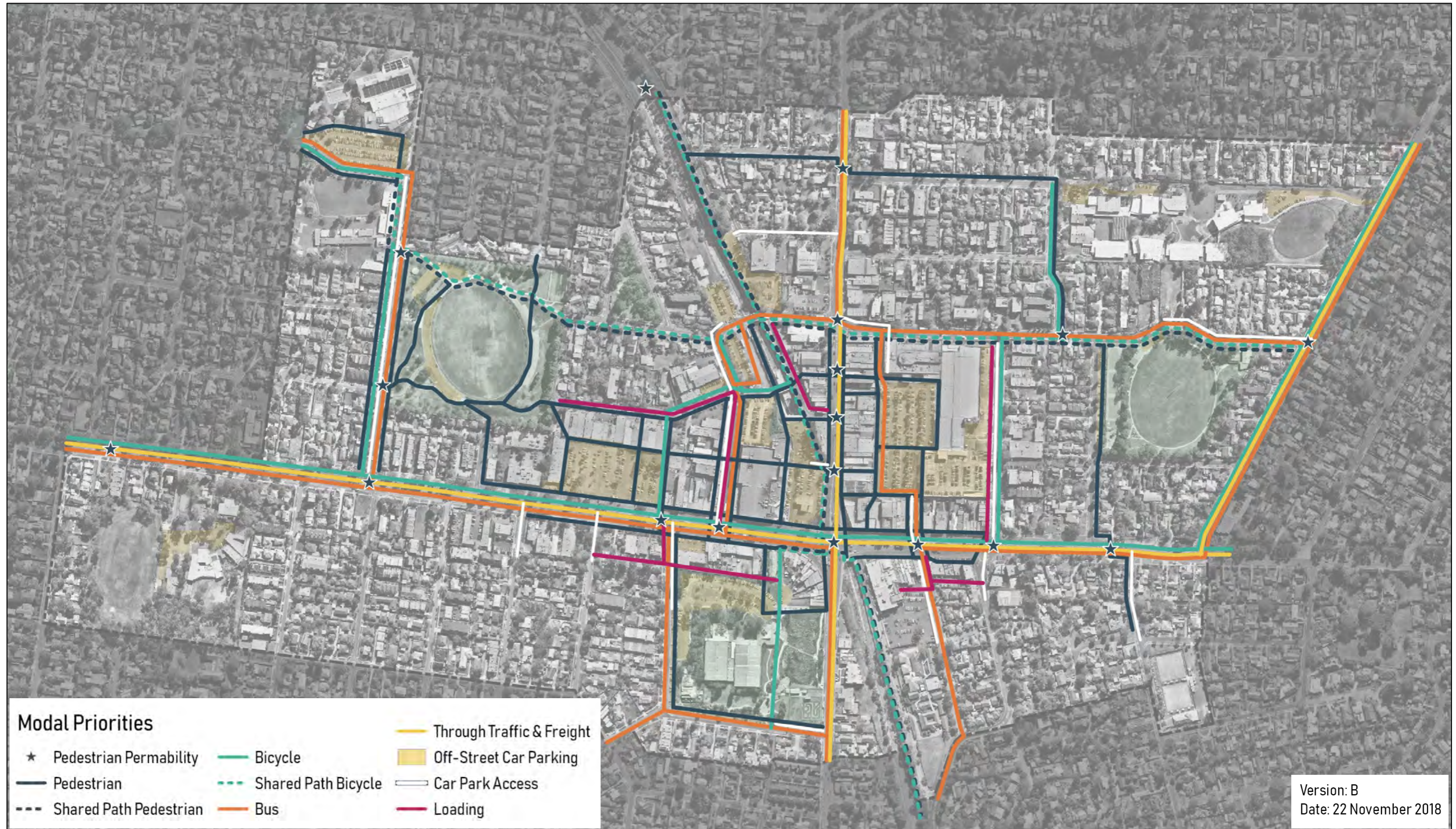


Typical Thursday at 6pm

# Plans: Movement and Place – Place Network



# Plans: Movement and Place – Modal Priorities



## Interventions

- Green Spine
- Shared Path Connection
- Separated Bike Lane
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- ◆ Gateway
- ◆ New Pedestrian Operated Signal (POS)
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