



Issues Analysis and Design Response

Victoria Street, Williamstown

Reference No. 30041915
Prepared for Hobsons Bay City Council
3 September 2019

Document Control

Document:	Issues Analysis and Design Response
File Location:	I:\Projects\30041915 - Victoria St Williamstown TP\100 Concept-Feasibility\Example Report
Project Name:	Victoria Street, Williamstown
Project Number:	30041915
Revision Number:	3

Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED FOR ISSUE BY
0	14 May 2019	D Rebbechi	A Backman	L Smith – as draft
1	22 July 2019	D Rebbechi	A Backman	L Smith
2	9 August 2019	D Rebbechi	A Backman	L Smith
3	3 September 2019	D Rebbechi	A Backman	L Smith

Issue Register

DISTRIBUTION LIST	DATE ISSUED	NUMBER OF COPIES
Hobsons Bay City Council – Douglas Rowland	3 September 2019	1 x pdf

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Executive Summary

The purpose of this report is to document deficiencies in the road environment within Victoria Street, Williamstown that impact on the safety of pedestrians and cyclists and provide potential treatment responses or countermeasures that could be used to address these deficiencies. These works are being delivered as part of the Local Government Grants Program as funded by the Transport Accident Commission (TAC), which aims to encourage local government involvement in cyclist and pedestrian safety projects that are consistent with the Towards Zero 2016-2020 Road Safety Strategy and Action Plan.

The following analyses were undertaken as part of this investigation to assist in the identification road safety issues and risk factors for vulnerable road users.

- Pedestrian, cyclist and vehicle counts;
- Dominant movements of vulnerable road users;
- Detailed Crash Statistics (5-year and long term); and
- Community feedback.

Some of the issues associated with the safety and manoeuvrability in and around Victoria Street identified as part of this analysis include:

Victoria Street:

- wide crossing distance
- higher vehicle speeds at the northern end (~60km/h)
- lack of east-west aligning kerb ramps
- key activity generators located to west (schools), south (beach) and north (Williamstown North Station)
- PTV Bus route (potentially also location of bus stops in relation to crossing points and side streets)
- Westbourne Grammar Bus Route
- High proportion of children
- Parking behaviour/obstructing footpath

Esplanade:

- Limited north-south connectivity
- Key activity generator to south (beach, coastal trail, cafe)

Kororoit Creek Road/Ferguson Street:

- High traffic volumes
- Four traffic lane crossing (with median)
- Traffic speed 60km/h
- Roundabouts do not give pedestrians right of way
- Rail line creates a barrier
- Key activity generators located to west (school) and north (Williamstown North Station, Williamstown North PS)

A summary of the above issues is illustrated in Figure 1.

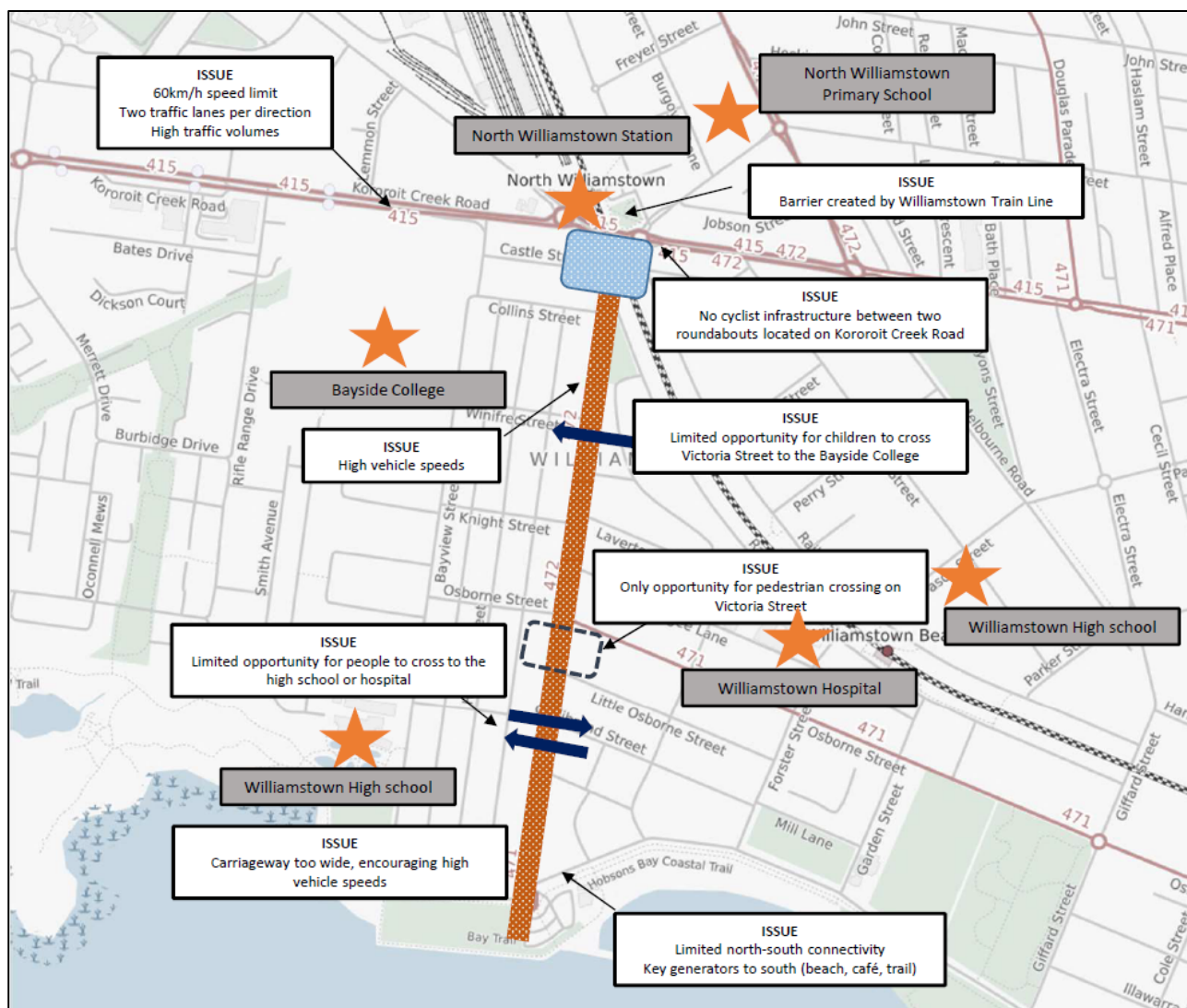


Figure 1: Transport Issues in the vicinity of Victoria Street (Map Source: www.openstreetmap.org)

A high-level analysis of crash data revealed a total of 5 crashes in the project extent, 3 of which involved cyclists. A number of opportunities have been identified that offer improved safety conditions for vulnerable road users while minimising potential impacts to key stakeholders.

TREATMENT TYPE	ISSUE ADDRESSED	PROS	CONS
<i>Intersection Opportunities and Impacts</i>			
Path Priority Crossings (Side Road)	Pedestrian north-south crossing conditions.	The pavement markings highlight a crossing point.	Potential discomfort to passenger vehicle and large vehicle occupants. Drainage considerations.
Raised Safety Platforms	Vehicle speeds.	Potential reduction in speed at the device and along route (when used in series).	Potential discomfort to passenger vehicle and large vehicle occupants. Potential for increase in traffic noise at device locations.
Kerb Extensions	Pedestrian east-west crossing conditions. Parking behaviour.	Reduces the crossing distance for pedestrians and increases visibility. The treatment delineates parking. Opportunity for landscaping/water sensitive urban design (WSUD).	Drainage considerations. Limited impact on vehicle speeds.
<i>Midblock Opportunities</i>			
Anti-dooring lanes	Parking behaviour. Cyclist on road positioning. Passing motorist behaviour.	Potential to improve positioning of parked vehicles, cyclist and motorists on carriageway.	No physical separation provided and suited towards confident cyclists.
One-way protected bicycle lanes with median	Cyclist on road positioning. Pedestrian east-west crossing conditions.	Provides physical separation from moving (motorised) traffic and may encourage inexperienced cyclists to route. Provides an area for pedestrians to stage their crossing.	Impacts on-street parking. Potential impacts to bus stop operation and waste collection. Potential to increase conflicts at intersections and driveways.
One-way off-road bicycle paths	Cyclist positioning.	Provides physical separation from moving (motorised) traffic and may encourage inexperienced cyclists to route.	Potential impacts to bus stop operation and waste collection. Potential to increase conflicts at intersections and driveways.
Two-way off-road bicycle path	Cyclist positioning. Pedestrian east-west crossing conditions.	Provides physical separation from moving (motorised) traffic and may encourage inexperienced cyclists to route.	Potential impacts to bus stop operation and waste collection. Potential to increase conflicts at intersections and driveways. Cyclists will only have direct access to destinations on one side of the road.

SMEC has identified two key opportunities for Hobsons Bay City Council to consider implementing to address these safety concerns that account for site constraints and area limitations.

TREATMENT TYPE	ISSUE ADDRESSED	PROS	CONS
<i>Intersection Opportunities and Impacts</i>			
Path Priority Crossings (Side Road)	Pedestrian north-south crossing conditions.	The pavement markings highlight a crossing point.	Potential discomfort to passenger vehicle and large vehicle occupants. Drainage considerations.
<i>Midblock Opportunities</i>			
Anti-dooring lanes	Parking behaviour. Cyclist on road positioning. Passing motorist behaviour.	Potential to improve positioning of parked vehicles, cyclist and motorists on carriageway.	No physical separation provided and suited towards confident cyclists.

As part of these works, there is an opportunity to implement several supporting projects that will encourage widespread adoption of active transport as a safe and legitimate transport mode within Hobsons Bay and specifically along Victoria Street. Some of these include:

- Adoption of a 40km/h zone for the Williamstown area (contained by the Rifle Range development, the Williamstown Railway Line and Port Phillip Bay) to support the existing treatments in the area and improve drivers' ability to stop and avoid crashes;
- Review of bus stop locations to ensure appropriate bus accessibility;
- Improve road surface quality; and
- Develop an active travel plan or School Travel Plan that can address local traffic issues around schools and encourage active, safe and sustainable travel methods such as walking and cycling.

There are significant challenges present in developing a design that best services the area, particularly in regard to the complex intersection at the northern extremity of Victoria Street as the design for the level crossing removal at North Williamstown Station is yet to be finalised. The concept designs developed as part of this investigation provide an opportunity to integrate the Victoria Street corridor with the level crossing removal project (as well as other projects and adjacent facilities in the area), by ensuring vulnerable road users and their movement through the area are advocated for during future liaisons between Hobsons Bay City Council and the Level Crossing Removal Authority.

Alignment between all key stakeholders on the desired outcomes is important to ensure a successful outcome for this project. Two design responses were developed in collaboration with Council following a detail analysis of issues outlined within this report. The two design responses incorporate key design considerations to ensure an increase in safety outcomes to the vulnerable road users along the Victoria Street corridor.

A preferred design response was developed aligning with desired project outcomes, key stakeholder considerations and identified constraints. The preferred design response provides the general form of an 'anti-dooring' lane treatment while incorporate aspects of a two-way off-road path for the section north of Collins Street.

The overall works have been estimated to cost **\$880,000**. In an effort to minimise the financial commitment for an individual financial year it is suggested that Council adopt a staging approach to deliver these improvements works. A suggested staging approach with indicative costings could be as follows:

- **Stage 1A** – Reconfiguration Victoria Street (Kororoit Creek Rd to Collins Street) - **\$340,000** (approx.)
- **Stage 1B** – Installation of 'anti-dooring' lanes - **\$210,000** (approx.)
- **Stage 2A** – Construction of raised side road treatments and east-west path crossing points north - **\$175,000** (approx.)
- **Stage 2B** – Construction of raised side road treatments and east-west path crossing points south - **\$155,000** (approx.)

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1 Abbreviations

TAC	Transport Accident Commission
LGA	Local Government Area
HBCC	Hobsons Bay City Council
PBN	Principle Bicycle Network
CHARMS	Customer Help and Resolution Management System
ABS	Australian Bureau of Statistics
LXRA	Level Crossing Removal Authority
HPS	High Pressure Sodium

2 Introduction

2.1 Background

The Transport Accident Commission (TAC) is currently delivering road safety improvements to Local Government Areas (LGAs) in Victoria for small-scale infrastructure treatments to address pedestrian and cyclist safety under the Local Government Grants Program. This program aims to encourage local government involvement in cyclist and pedestrian safety projects that are consistent with the *Towards Zero 2016-2020 Road Safety Strategy and Action Plan*, as well as provide opportunities for LGAs to develop and implement low cost, effective infrastructure treatments targeting cyclist and pedestrian safety issues¹.

In line with its *Integrated Transport Plan 2017-2030*, Hobsons Bay City Council (HBCC) has identified a need for pedestrian and cyclist safety improvements on Victoria Street, Williamstown. Victoria Street is a key cycling linkage as identified in the Principal Bicycle Network (PBN). Victoria Street provides a direct north-south link for pedestrians and cyclists to access Williamstown Beach. Victoria Street also forms a barrier for school children accessing Williamstown High School and Bayside College from the residential area to the east as there are limited crossing facilities.

2.2 Project Details and Scope

SMEC has been engaged by HBCC to undertake an issues analysis to outline potential road treatments and interventions that will improve safety outcomes along Victoria Street, Williamstown for vulnerable road users. The findings from this analysis will ultimately feed into the detailed concept design plan package outlining the preferred road safety measures to address these road safety issues and risks as indicated by Council through a consultative process with the local community and key stakeholders. The design options will be developed to align with the *Towards Zero Road Safety Strategy and Action Plan's* objectives, the Safe System philosophy and principles and HBCC's *Integrated Transport Plan 2017-30* and will consider factors such as cost, innovation and sustainability.

To integrate this project with the surrounding precinct and road network, the project scope includes Victoria Street as well as its interface with connecting roads, the surrounding precinct and other key active transport connections within the precinct. The study area is illustrated in Figure 2: Project Scope (source: www.openstreetmap.org).

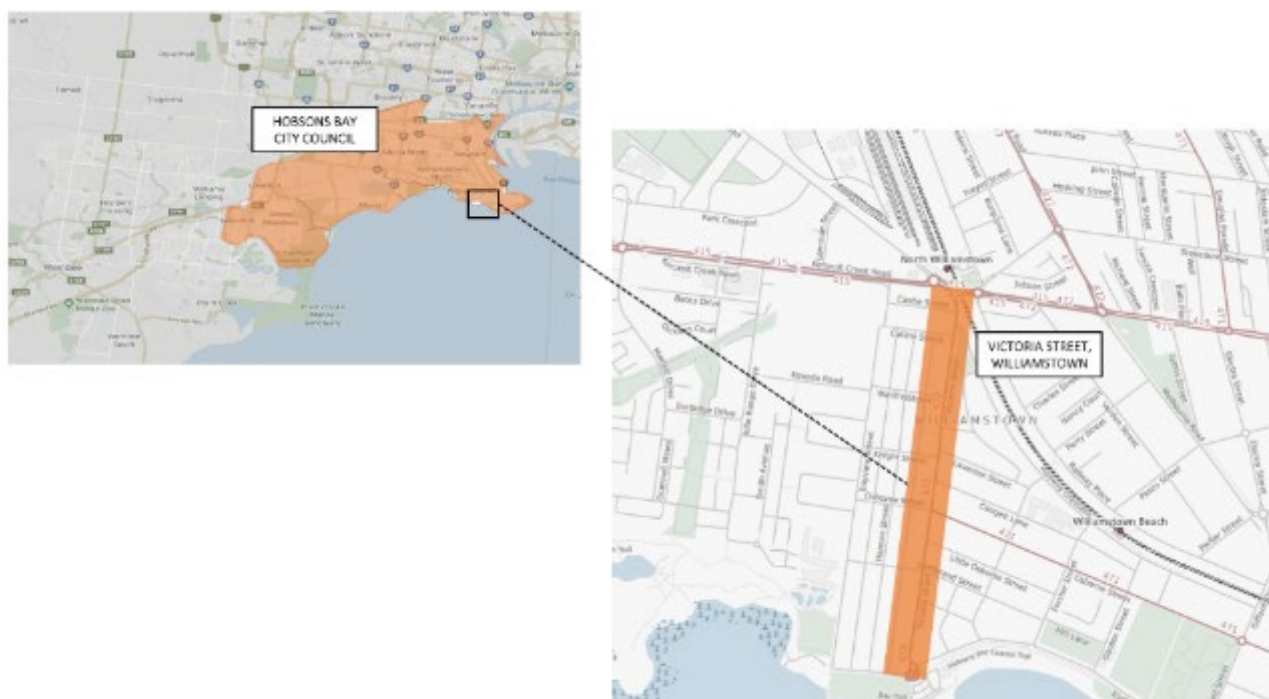


Figure 2: Project Scope (source: www.openstreetmap.org)

¹ Transport Accident Commission. Accessed at: <http://www.tac.vic.gov.au/about-the-tac/grants/local-government-grants> on 1/05/2019 on 1/05/2019

2.3 Purpose of Report

SMEC's team, consisting of experienced traffic engineers from SMEC's Traffic and Road Safety Team, has undertaken an analysis of the pedestrian and cyclist road safety issues and risk factors for Victoria Street, Williamstown including its interaction with the surrounding road and active transport network. This report aims to inform HBCC of the safety gaps within the project extent and potential safety treatments that can be implemented to improve safety outcomes.

The purpose of this report is to:

- Consider any deficiencies in road environment that impacts the safety of pedestrians and cyclists for the project area based on analyses of:
 - Pedestrian, cyclist and vehicle counts;
 - Dominant movements of vulnerable road users;
 - Detailed Crash Statistics; and
 - Community feedback.
- Document findings from a public lighting and signage review in the context of pedestrian and cyclist safety;
- Highlight road safety issues and risk factors that are present within the project area; and
- Present potential treatment responses or countermeasures that could be used to address the identified safety deficiencies for pedestrians and cyclists.

In accordance with best practice road safety design and using the information provided by HBCC, this assessment seeks to identify existing safety issues and risks for vulnerable road users. However, SMEC cannot guarantee that every safety issue has been identified or that the suggested treatment response will completely address these issues. Rather, this report should help HBCC better understand road safety deficiencies or potential risks for vulnerable road users, so they can make informed decisions regarding potential road safety countermeasures.

3 Policy Context

There are local, state, regional and national influences on the transport planning within the Hobsons Bay municipality. The issues analysis and design work undertaken for this project has been informed by the local, state, regional and national policies as summarised in Figure 3.

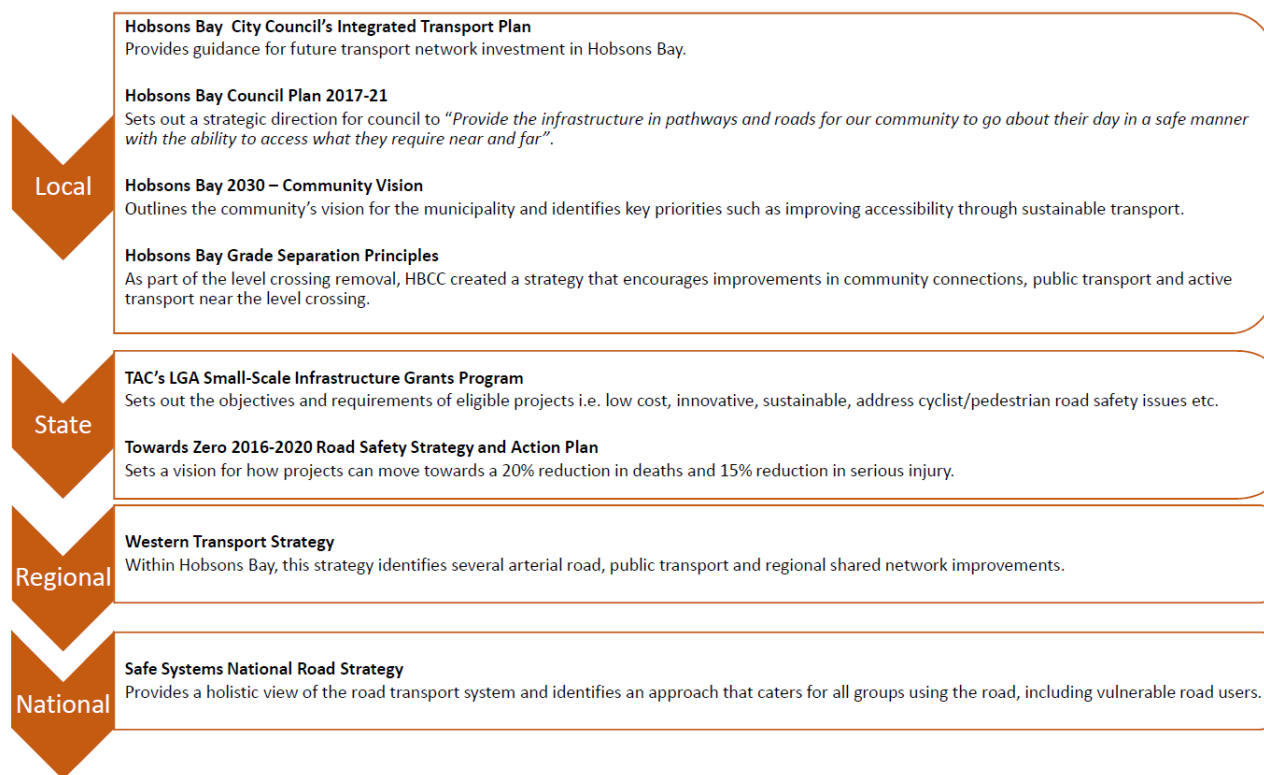


Figure 3: Local, State, Regional and National Policy

These policies have contributed to the development of a set of design options that are well integrated with the adjacent transport and land use within Hobsons Bay, and ensures alignment with the larger vision for a better-connected municipality.

4 What We Know

4.1 Locality

The city of Hobsons Bay is an area approximately 7km south-west of Melbourne's CBD with generous open space and a shared trails network. Hobsons Bay is 'landlocked' by waterways and major roads and split by the national freight line. As a result, there are limited north-south connections. Hobsons Bay is located close to the Port of Melbourne, as well key regional centres at Footscray, Sunshine and Werribee. Hobsons Bay is likely to be subject to significant population growth in the coming years, as well as rapid growth in the neighbouring City of Wyndham. This is expected to contribute to increased local travel demand and road congestion.

Victoria Street is a local road, located in Williamstown in the Hobsons Bay municipality and is identified as a Principal Bicycle Network route and Bus Priority Route². It is a council managed collector road³ that provides north-south access from Kororoit Creek Road and Williamstown North train station to the Williamstown Beach precinct.

Figure 4 illustrates the Victoria Street corridor in the context within Hobsons Bay and proximity to the Melbourne CBD.

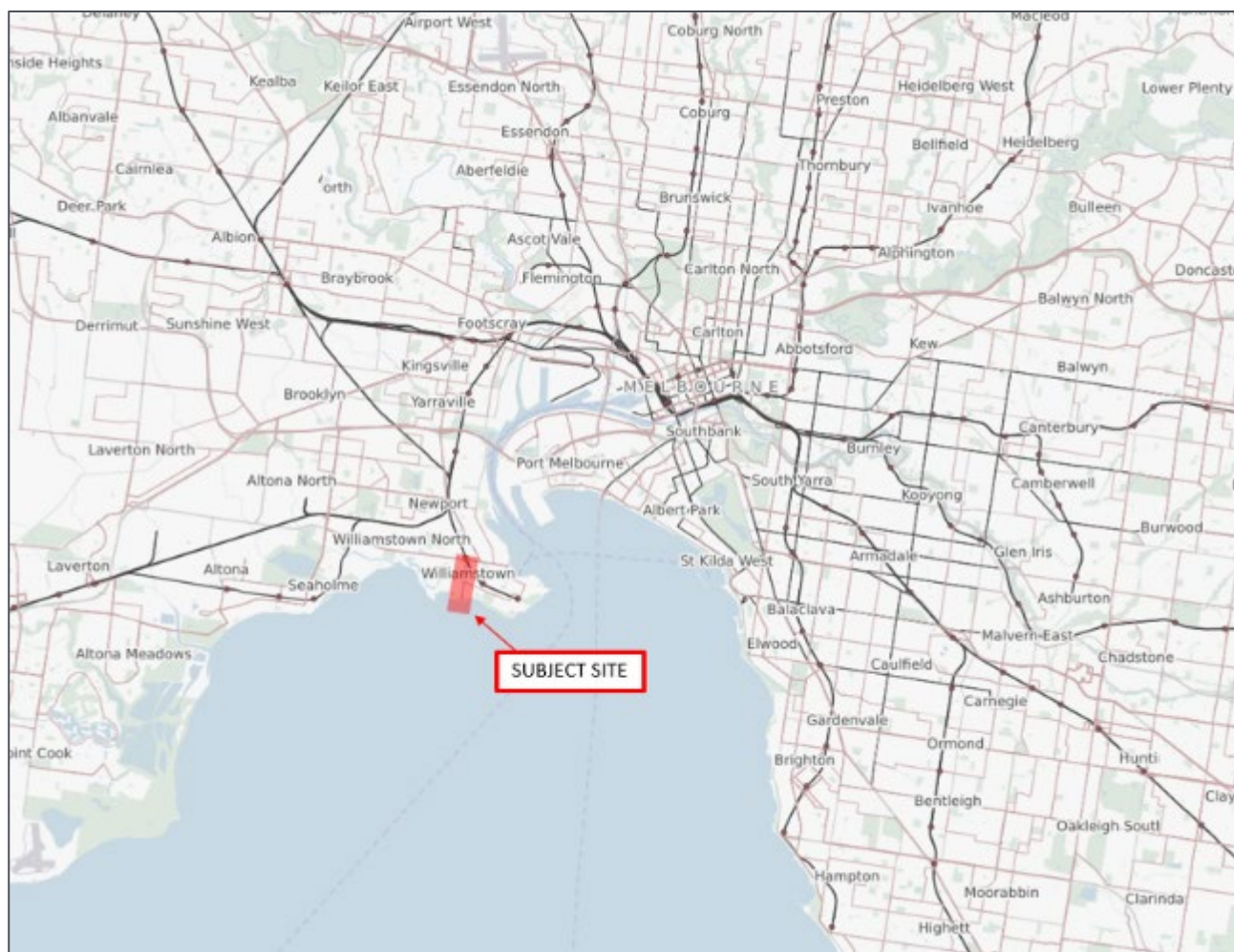


Figure 4: Site Locality (Source: www.openstreetmap.org)

² Vic Roads Open Data. Accessed at: <https://data.vicroads.vic.gov.au/smartroads/index.html> on 1/05/2019

³ Hobsons Bay City Council. Accessed at: <https://www.hobsonsbay.vic.gov.au/Council/Roads-Transport>

4.2 Land Use

The municipality is home to a large industrial area that generates considerable freight and employment travel. Hobsons Bay is also a tourist area, with many people visiting the area to attend beach, boating, park, museum, sportsground and tourist facilities. Significant inter-municipality travel occurs in Hobsons Bay, some of which are separated by long stretches of arterial road, open space and industrial land use. These long stretches of road create a physical barrier to pedestrians and cyclists in many of these locations⁴.

As illustrated in Figure 5 and Figure 6, Victoria Street is in a General Residential Zone (GRZ) with regular driveways to private residential properties leading off the corridor.

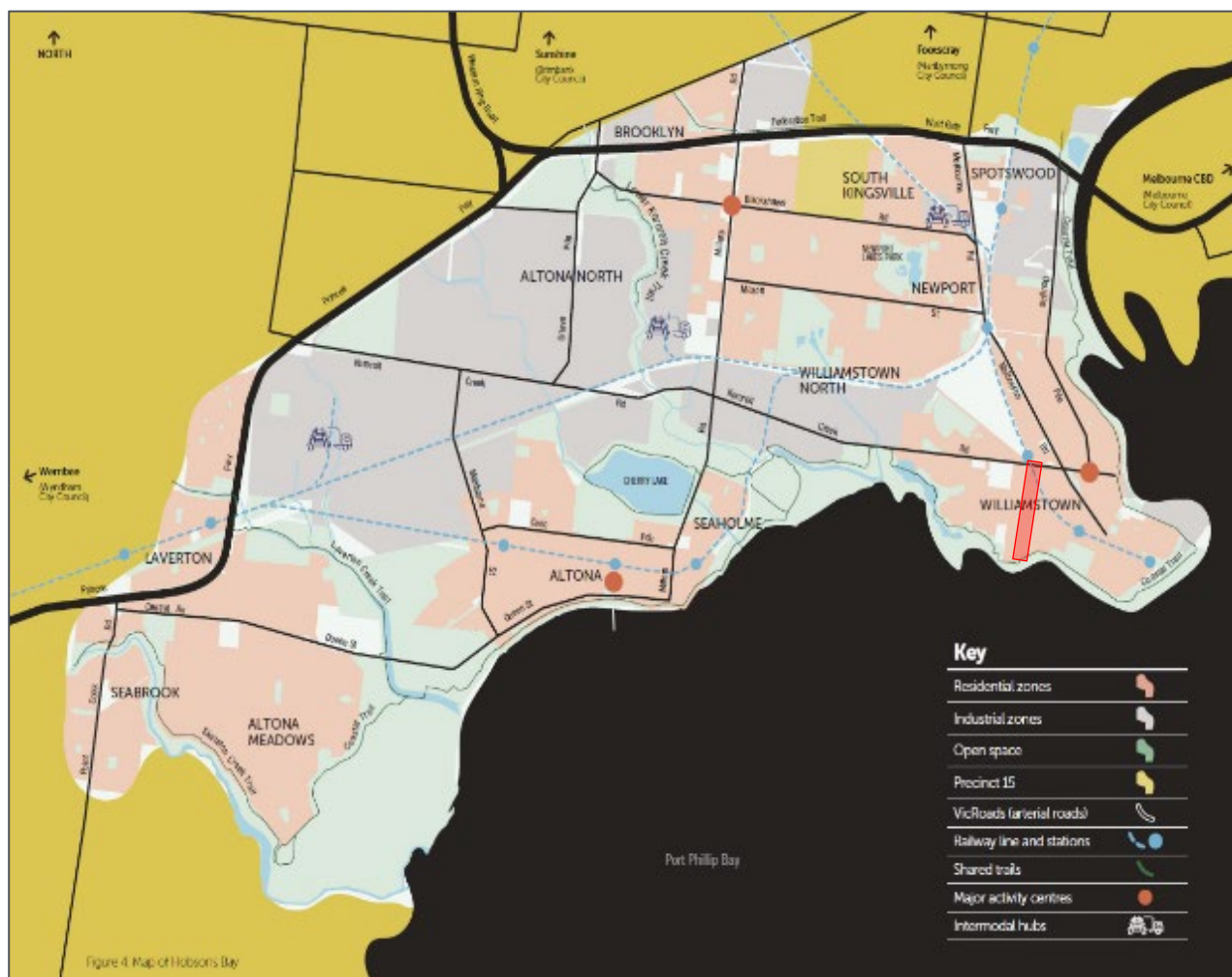


Figure 5: Hobsons Bay Land Use (Source: HBCC Integrated Transport Plan 2017-2030)

⁴ HBCC Integrated Transport Plan 2017-2030

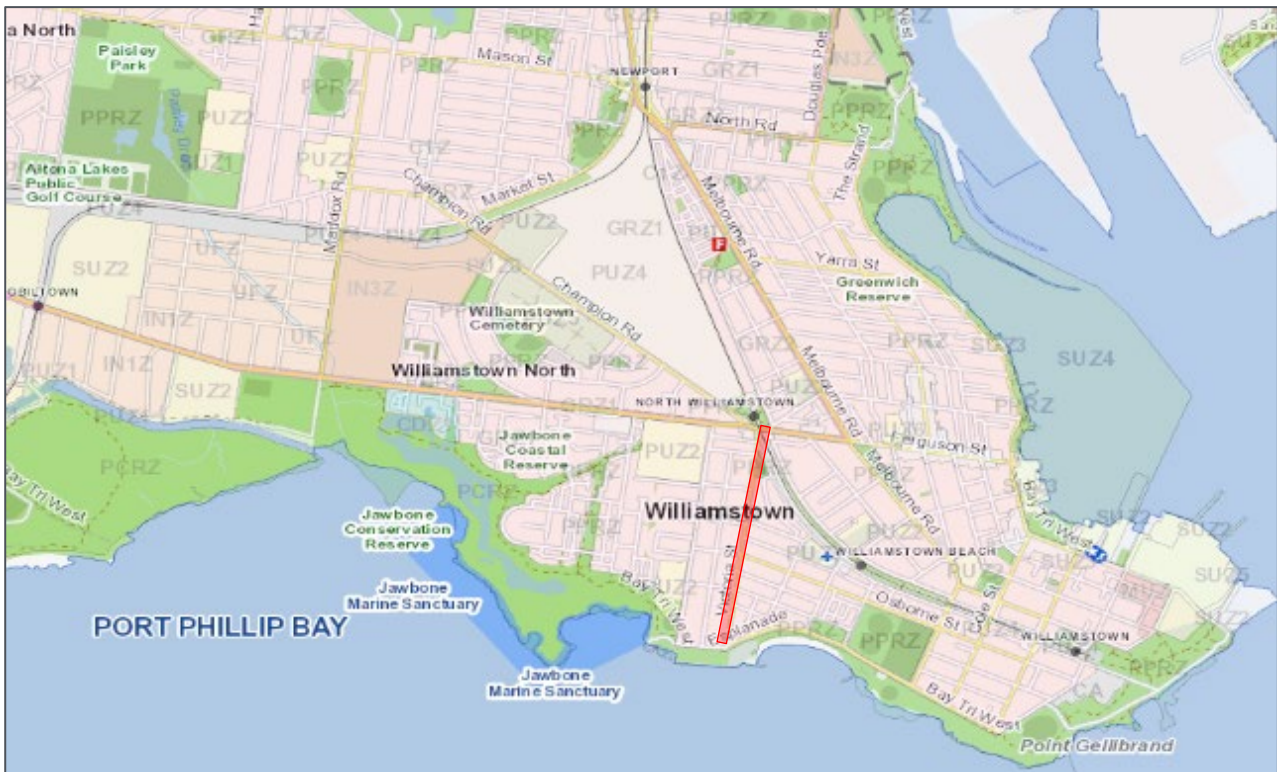


Figure 6: Surrounding Land Use (Source: Planning Schemes Online)

The Williamstown, Altona and Werribee train lines also provide physical separation between different parts of Hobsons Bay (as illustrated in Figure 7), making inter-municipality travel challenging, particularly from the north to the south (and vice versa).

The physical separation between different parts of the municipality contributes to the creation of barriers between sections of the community, reduces the opportunities for residents of Hobsons Bay to move freely and safely about the neighbourhood and to engage with the local community. It also encourages car usage and therefore discourages public and active transport.

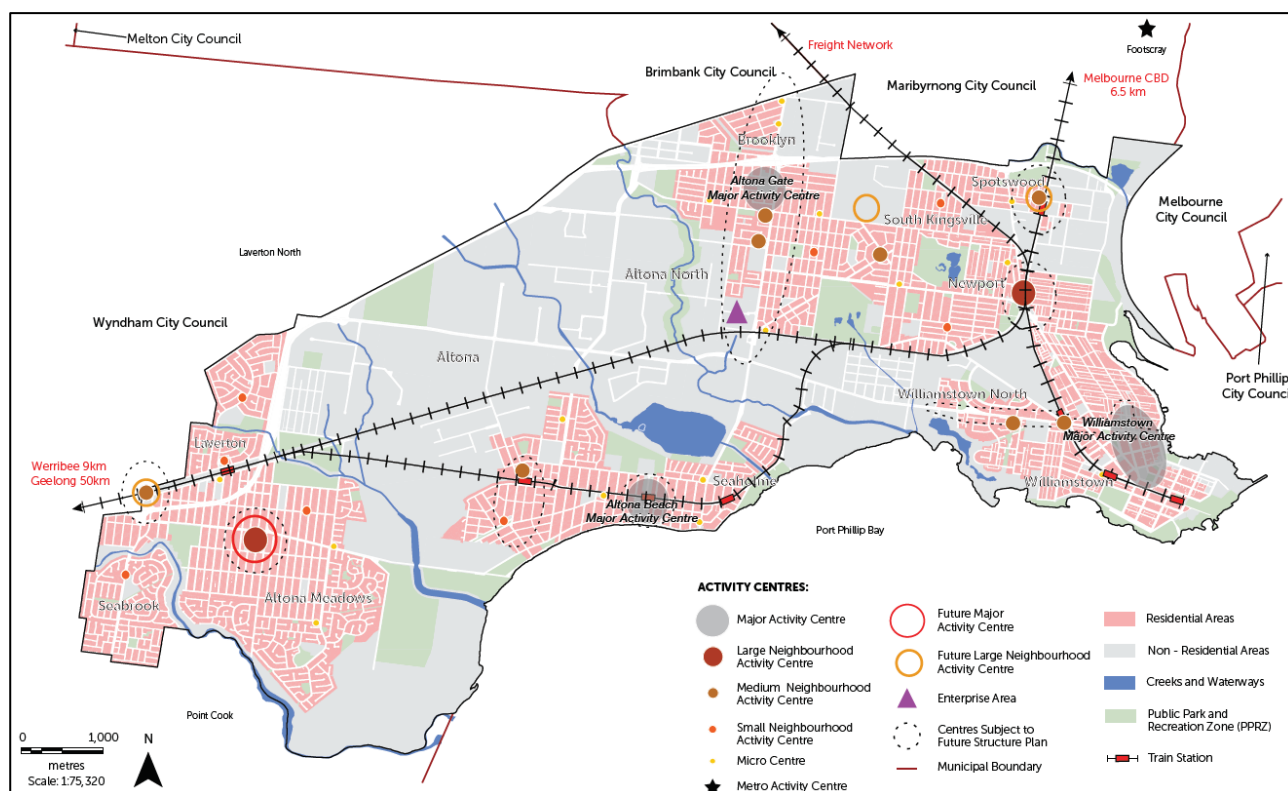


Figure 7 Hobsons Bay Train Line Configuration (Source: Know Your Activity Centre Strategy 2018)

4.3 Demographics

Williamstown is home to approximately 15,453 people (as per ABS 2016 data), with the population expected to increase to 12% for population under the working age and 37.3% in population of retirement age, as shown in Figure 8.

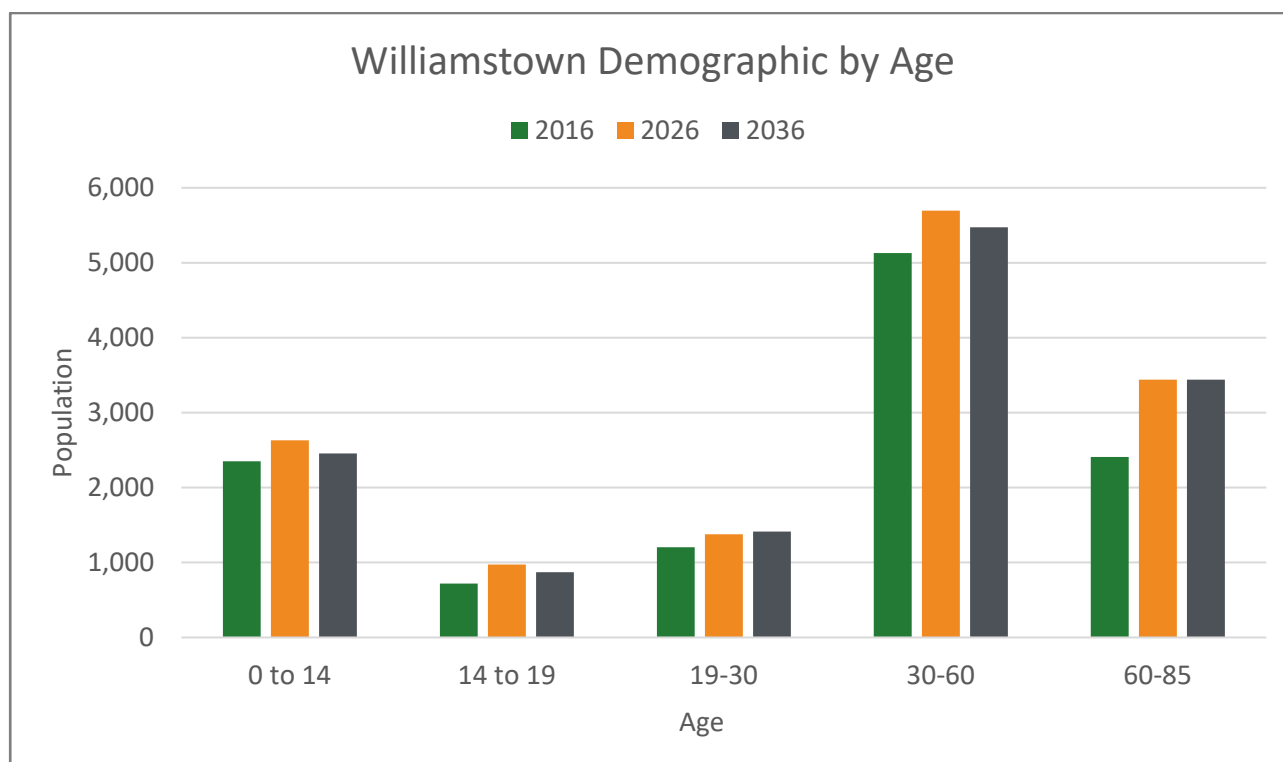


Figure 8: Williamstown Age Demographic (Data Source: Hobsons Bay City Council)

Hobsons Bay is home to approximately 95,000 people (as per ABS 2016 data), with population expected to increase to around 107,000 people by 2030⁵. Close to a quarter of the population is over 55 years, with population growth within the municipality occurring exclusively among adults over 18 years of age and the number of young people and children declining.⁶ Its population is expected to continue to age, with growing numbers of people aged 70 years and above.

4.4 Road Network

4.4.1 Victoria Street

Victoria Street is a two lane, two-way road running in a north-south direction that provides a 3.5m traffic lane and a shared bicycle and parking lane approximately 4.4m per direction of travel. This typical cross-section is illustrated in Figure 9. The northern end of Victoria Street typically carries 7,300 vehicles per day while the southern end typically carries 3,600 vehicles per day. Victoria Street has a posted speed limit of 50km/h.

Bus Route 471 and 472 operate on Victoria Street. Both bus routes terminate at Williamstown Beach, utilising the terminus south of the roundabout at the Victoria Street/Esplanade intersection. Route 471 turns into/out of Osborne Street towards Williamstown and Route 472 continues the length of Victoria Street to Kororoit Creek Road, where it turns towards Williamstown, then travels up Melbourne Road.



Figure 9: Stylised cross-section of Victoria Street (source: Streetmix)

4.4.2 Kororoit Creek Road/Ferguson Street

Kororoit Creek Road/Ferguson Street is located at the northern end of Victoria Street and is a four lane, two-way road running in an east-west direction.

West of Victoria Street, Kororoit Creek Road provides two 3.5m traffic lanes in each direction of travel, with a 4.4m shared bicycle and parking lane. It is noted this lane terminates at Swanston Street, adjacent to Bayside College. This typical cross-section is illustrated in Figure 10.

East of Victoria Street, Ferguson Street (Kororoit Creek Road) provides two 3.5m traffic lanes per direction of travel with a 2.5m parking lane in each direction. This typical cross-section is illustrated in Figure 11.

Kororoit Creek Road typically carries 26,000 vehicles per day with 12% heavy vehicles (between Millers Road and Melbourne Road)⁷. A posted speed limit of 60km/h applies to Kororoit Creek Road/Ferguson Street in the vicinity of the study area.

⁵ HBCC Integrated Transport Plan 2017-2030

⁶ HBCC Ageing Well Strategy 2007-2017

⁷ VicRoads Open Data. Accessed at: <https://data.vicroads.vic.gov.au/smartroads/index.html> on 1/05/2019



Figure 10: Stylised cross-section of Kororoit Creek Road – west of Victoria Street (source: Streetmix)



Figure 11: Stylised cross-section of Ferguson Street – east of Victoria Street (source: Streetmix)

The intersection of Kororoit Creek Road/Ferguson Street with Victoria Street is a complex intersection which also incorporates several other streets, including Champion Road, Power Street and Railway Place. The complex intersection comprises of two roundabouts, a set of pedestrian operated signals (POS) and a level rail crossing. The intersection provides roundabout metering signals which activates at the start of the green walk signal for the POS. The layout of the complex intersection is shown in Figure 12.



Figure 12: Victoria Street/Kororoit Creek Road complex intersection layout (source: www.nearmap.com.au)

4.4.3 Esplanade

The Esplanade is located at the southern end of Victoria Street and is a two lane, two-way road running in a generally east-west direction. In the vicinity of Victoria Street, the Esplanade has a width of 11.4m between kerbs. West of Victoria Street, parallel parking occurs on both sides of the Esplanade, however east of Victoria Street parking is prohibited on the north side. These typical cross-sections are illustrated in Figure 13 and Figure 14. A seasonal speed limit of 40km/h applies to the Esplanade during the summer months, with the default urban speed limit of 50km/h applying the rest of the year.

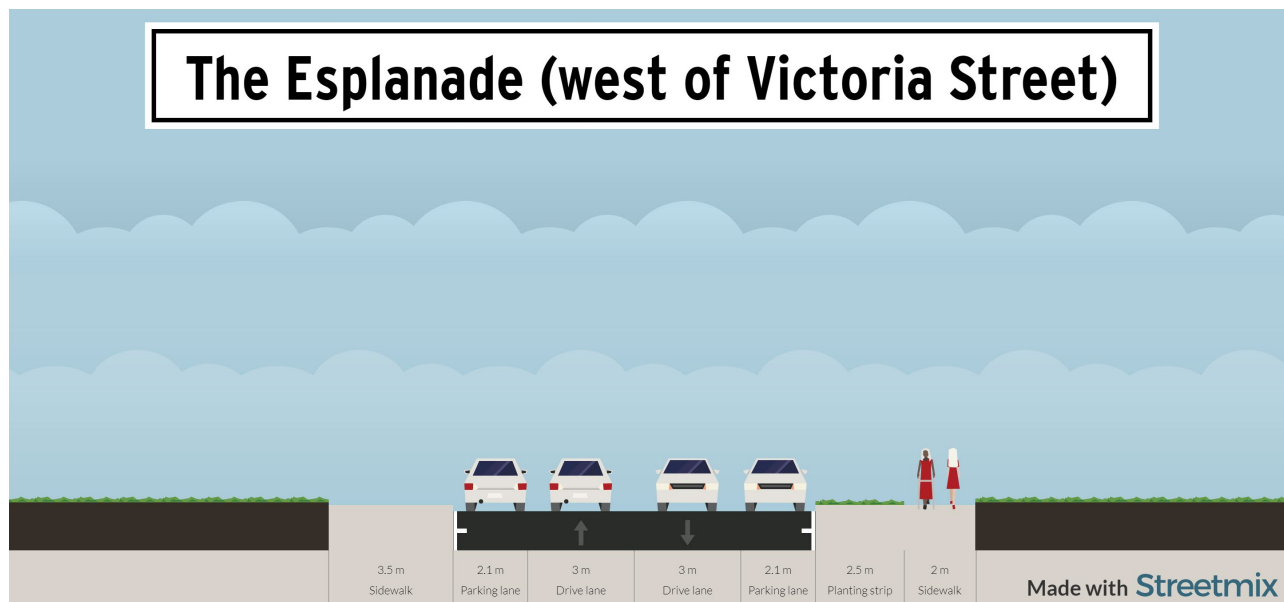


Figure 13: Stylised cross-section of the Esplanade – west of Victoria Street (source: Streetmix)

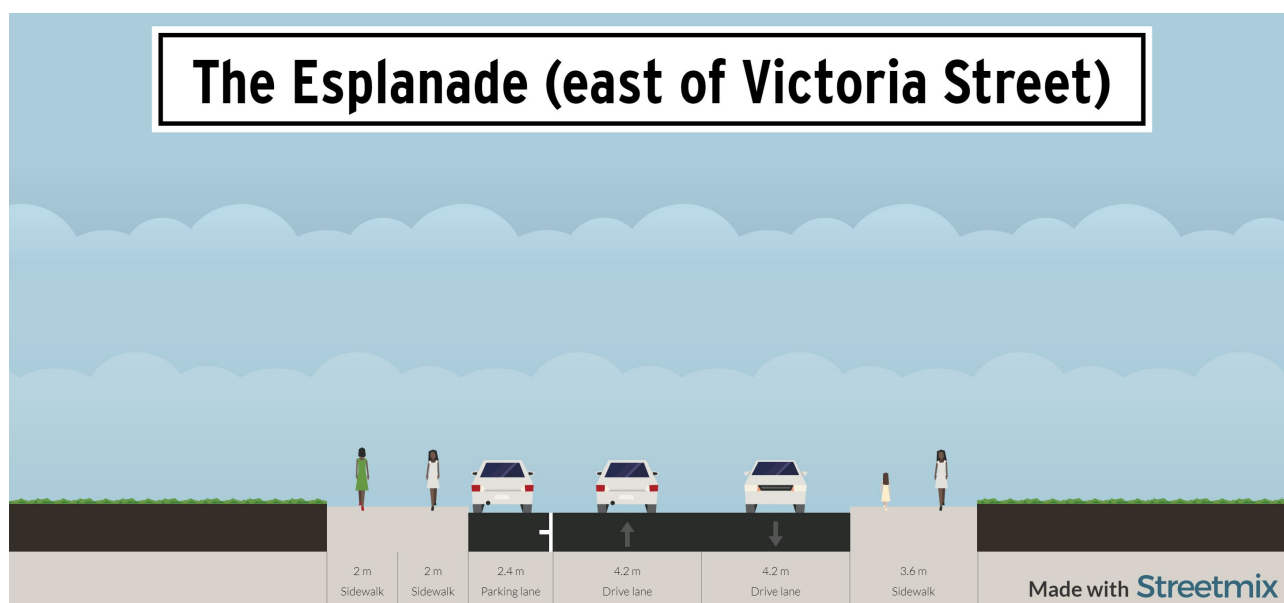


Figure 14: Stylised cross-section of the Esplanade – east of Victoria Street (source: Streetmix)

The intersection of the Esplanade with Victoria Street is controlled by a roundabout. Access to a bus terminus and the Williamstown Swimming and Life Saving Club car park is provided from the roundabout. The layout of the intersection is shown below in Figure 15.



Figure 15: Esplanade / Victoria Street intersection layout (Source: www.nearmap.com.au)

4.5 Road User Hierarchy

A Hobsons Bay Road User Hierarchy Plan has been included as a recommended action with the Integrated Transport Plan. It is understood this action is on Council's medium to long term action list. In lieu of a Hobsons Bay Road Hierarchy, the VicRoads Movement and Place framework has been reviewed for guidance. The VicRoads Movement and Place framework indicates that Victoria Street is a Bus Priority Route and also forms part of the Principal Bicycle Network as shown in Figure 16.

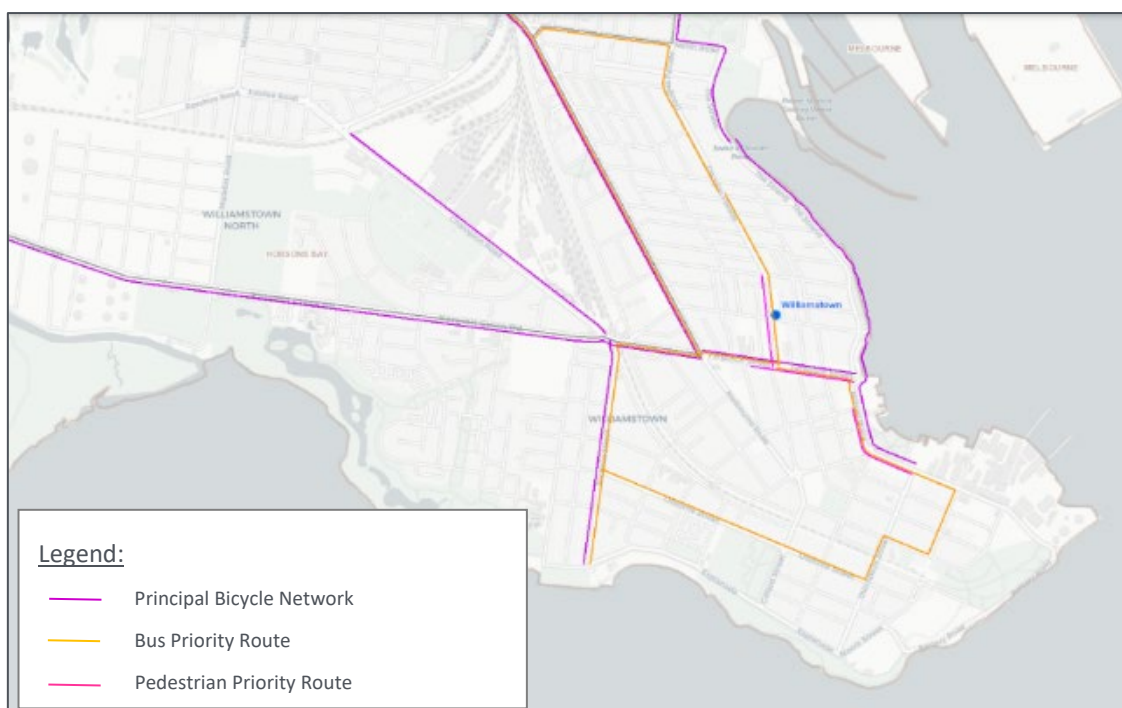


Figure 16: VicRoads Movement and Place Framework (Source: <https://data.vicroads.vic.gov.au/smartroads/index.html>)

4.6 Public Transport

Hobsons Bay is served by trains and buses, with two train lines (Werribee, including the Altona Loop, and Williamstown Lines) and a network of bus routes providing links within the area and to neighbouring municipalities.

The Williamstown Line runs in close proximity to the Victoria Street study area, with North Williamstown Station located at the north end of Victoria Street.

Figure 17 provides the nearby bus and train routes and Figure 18 provides a map of the public transport stops proximate to Victoria Street.



Figure 17: Bus and Train Routes proximate to project area (source: PTV)



Figure 18: Public Transport Stops Proximate to Victoria Street (image source www.openstreetmap.org)

4.6.1 Train Network

North Williamstown Station (Williamstown Line) is located at the northern end of Victoria Street, on the north side of Kororoit Creek Road. The greater Hobsons Bay municipality is serviced by both the Werribee and Williamstown lines

and provides a direct service to Flinders Street, with the Altona Loop only providing a direct service during peak hours and on weekends.

4.6.2 Bus Network

Bus routes 471 (Williamstown to Sunshine Station via Newport & Altona) and 472 (Williamstown to Moonee Ponds via Footscray) operate within the Victoria Street corridor and bus route 415 operates along Kororoit Creek Road.

4.6.2.1 Bus Route 415

In the vicinity of the subject site, Route 415 runs along Ferguson Street from Nelson Place towards Millers Road and vice versa, as shown in Figure 19.

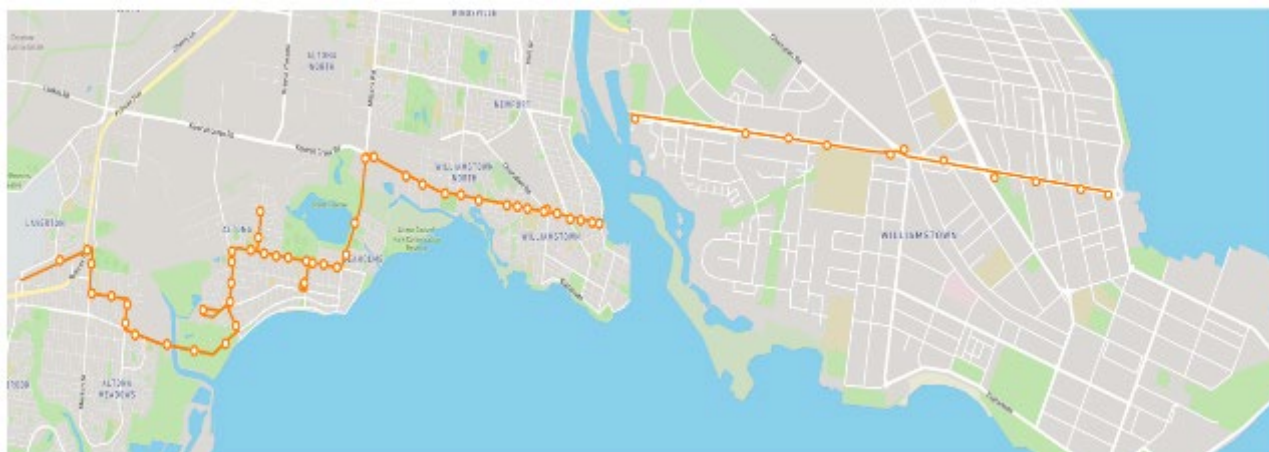


Figure 19: Bus Route 415 (Source: PTV)

4.6.2.2 Bus Route 471

In the vicinity of the subject site, Route 471 runs from the Williamstown Beach terminus, up Victoria Street to Osborne Street and heads towards Williamstown Station, around Williamstown and up Douglas Parade and vice versa, as shown in Figure 20.

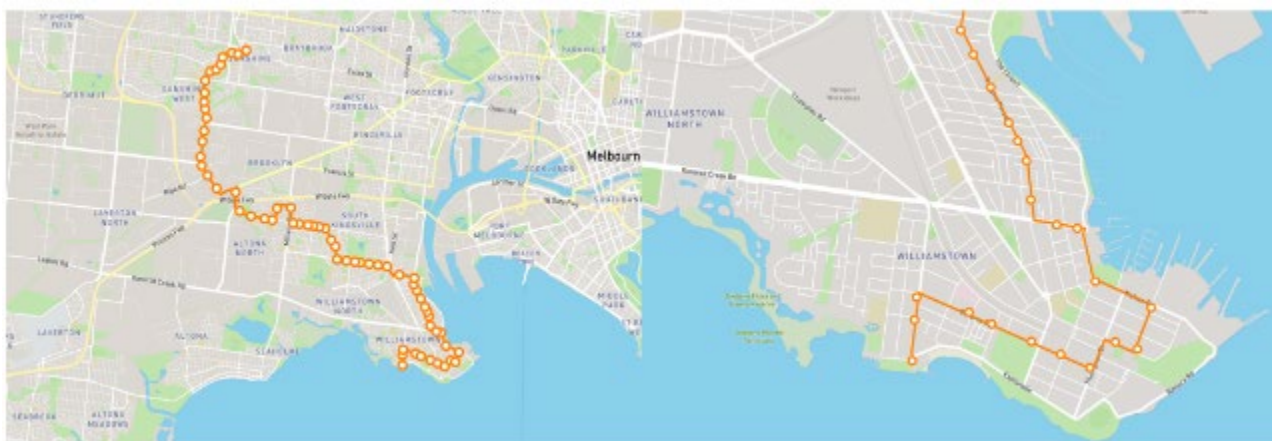


Figure 20: Bus Route 471 (Source: PTV)

4.6.2.3 Bus Route 472

In the vicinity of the subject site, Route 472 runs from the Williamstown Beach terminus, up Victoria Street to Kororoit Creek Road where it heads towards east after performing a U-turn manoeuvre at the Champion Road roundabout before turning north up Melbourne Road and vice versa, as shown in Figure 21.

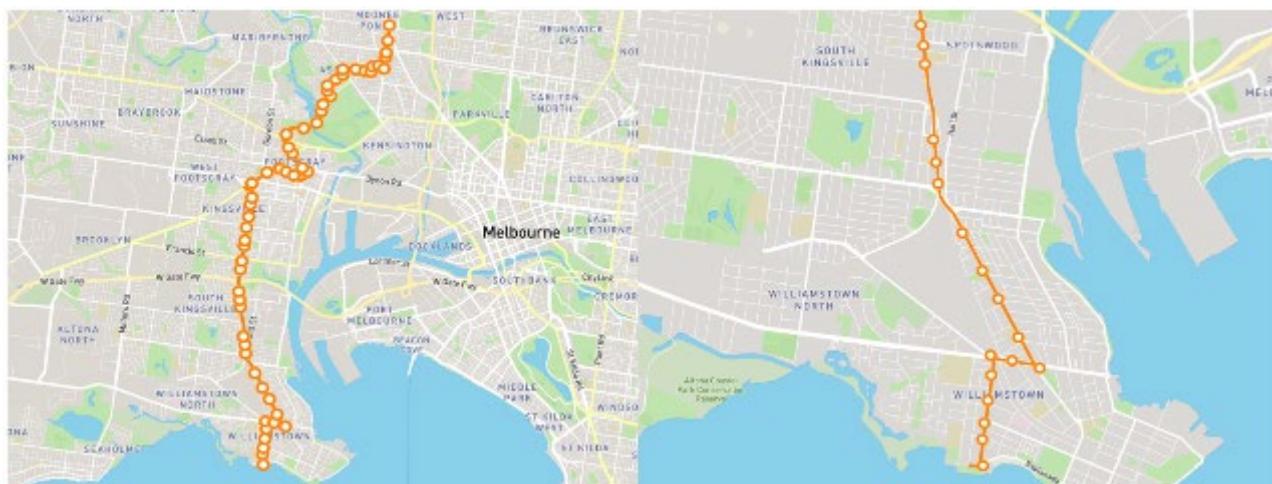


Figure 21: Bus Route 472 (Source: PTV)

4.7 Pedestrian and Cycling Facilities

Hobsons Bay has 700 kilometres of footpath and one of the largest shared path networks in Melbourne used for both transport and recreation.

There are several on-road and off-road pedestrian and cycling facilities in Hobsons Bay that interconnect with one another intermittently. Although, there are many gaps in this network, limiting inter-municipality mobility within the area. The key trails in Hobsons Bay include:

- Hobsons Bay Coastal Trail;
- Skeleton Creek Trail;
- Laverton Creek Trail; and
- Kororoit Creek Trail.

Pedestrian and cycling facilities within Hobsons Bay are illustrated in Figure 22 and Figure 23.

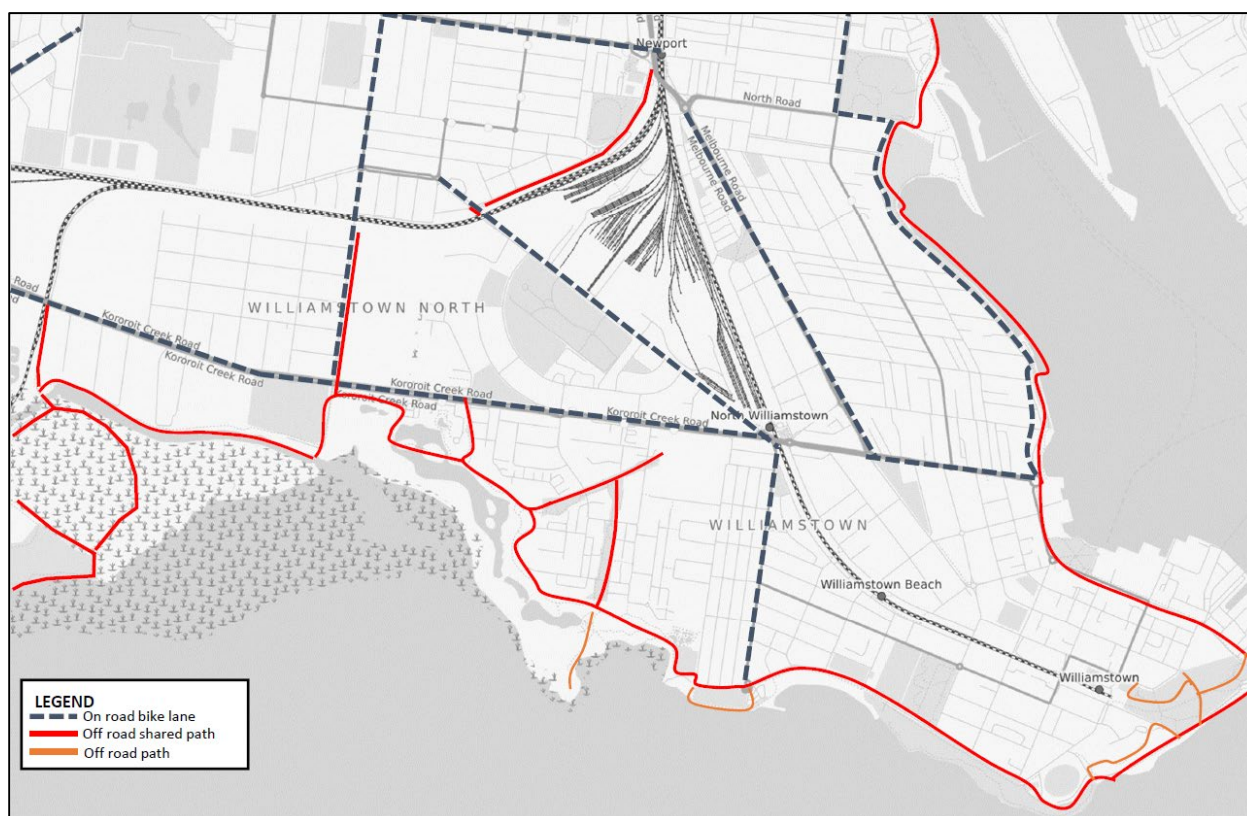


Figure 22: Cycling Facilities (Map Source: Open Street Map)

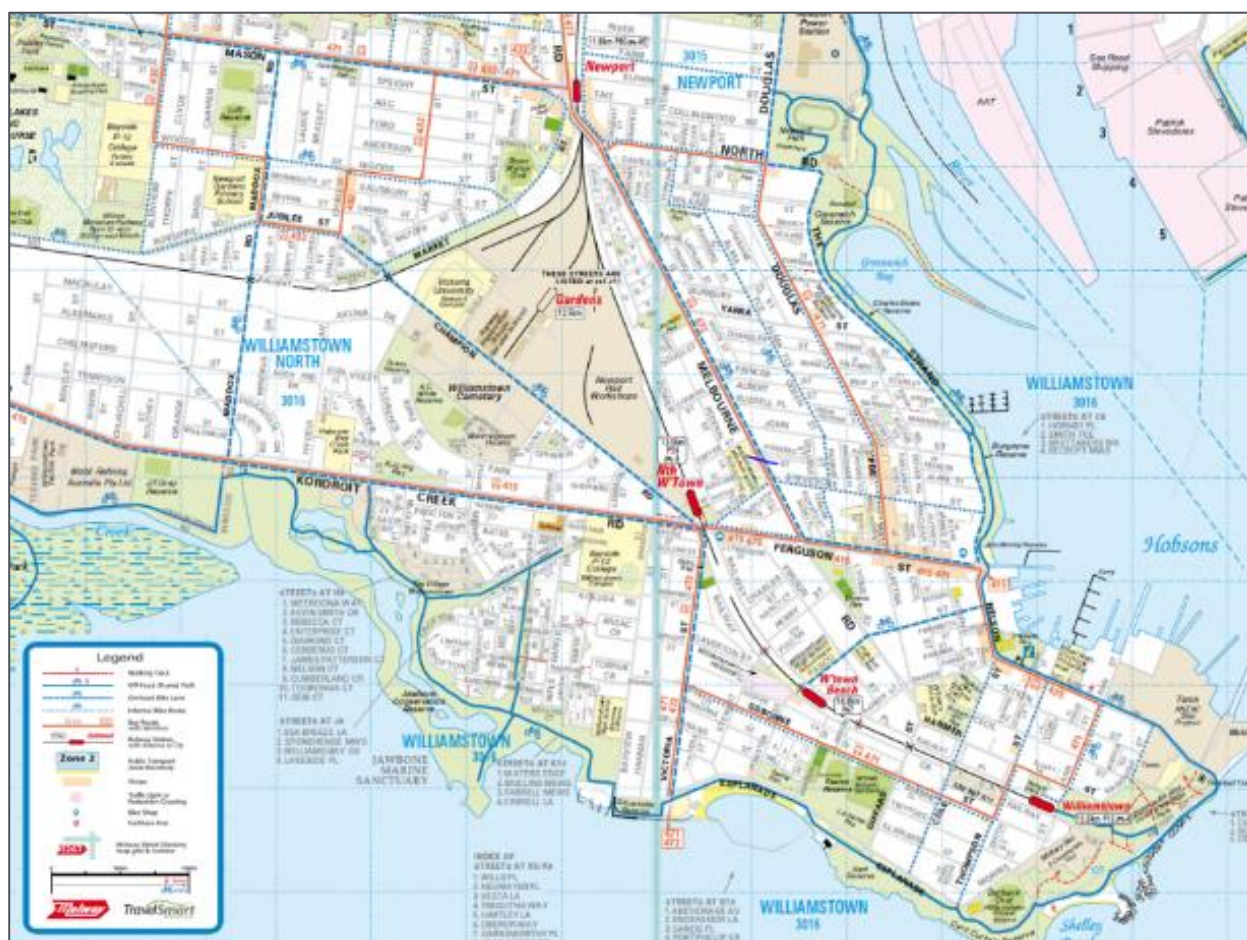


Figure 23: Public Transport, Walking & Cycling Facilities (Source: Hobsons Bay City Council)

These trails form a network traversing north, south, east and west across Hobsons Bay. These trails also connect with on-road bicycle paths and pedestrian footpaths to complement the network and enable access to facilities and services that support education, employment and recreation. In addition, the Federation Trail is located along the northern boundary of Hobsons Bay and provides a critical east-west connection, which also links to off road trails in the Hobsons Bay network.

These trails, if fully connected to one another and to larger trails in metropolitan Melbourne, will close gaps so that walking and cycling can become a key transport mode for all. This is part of HBCC's *Integrated Transport Plan 2017-30* that supports the regional provision of connected and shared user pathways.

As detailed in the Western Regional Trails Strategy, improving safety of the trails is also a key gap to be resolved. Improving wayfinding signage, eliminating on-road segments, increasing width of the trails and providing line markings will all contribute to the safety of these trails.

4.7.1 Victoria Street

The pedestrian and cycling facilities on Victoria Street are limited, with a shared bicycle and parking lane approximately 4.1 metres wide with restrictions near bus stops along the corridor. There is limited to no traffic calming employed in the corridor.

There are no pedestrian crossing facilities except for a pedestrian island at Osborne Street.

4.7.2 Kororoit Creek Road

Kororoit Creek Road provides pedestrian operated signals between the Champion Road roundabout and level rail crossing. The roads adjacent to the Kororoit Creek Road/Champion Road/Victoria Street/Station Road/Railway Place intersections provide the following pedestrian facilities:

- Champion Road provides a zebra crossing 20m north of the Kororoit Creek Road roundabout (including a crossing supervisor during school times);
- Power Street provides a raised pavement treatment at Station Road;
- Station Road provides a median island, truck ban and permanent 40km/h zone; and
- Railway Place provides a coloured threshold treatment at the Station Road roundabout.

4.7.3 The Esplanade

There are raised pavement treatments employed along the Esplanade, with an off-road shared pedestrian and cyclist path on its southern side that continues around the bay as part of the Bay Trail.

Bollards have been used for traffic calming during the summer months between Giffard Street and Victoria Street in combination with 40km/h speed signs. HBCC has received feedback from the community that these bollards create confusion and thus are subject to damage from vehicles. In response, HBCC has completed an upgrade project for Esplanade between Victoria Street and Giffard Street, as shown in Figure 24. The project commenced in June 2019 and comprises of the following improvements:

- raised zebra pedestrian crossings at Victoria Street, Williamstown Botanic Gardens and Giffard Street;
- a pedestrian refuge island at the intersection of the Esplanade and Stewart Street;
- mid-block speed cushions; and
- lighting upgrades.

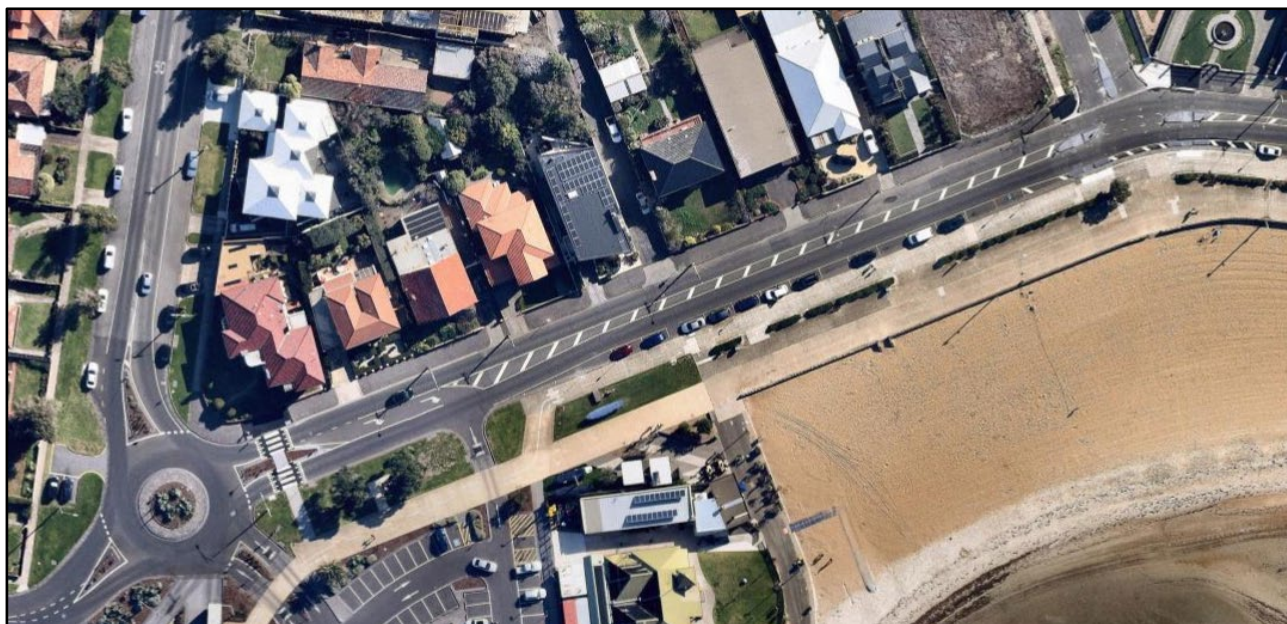


Figure 24: Traffic Calming Device on the Esplanade east of Victoria Street (Source: www.nearmap.com.au)

4.8 Travel Demand

Hobsons Bay's primary mode of travel is driving, with 72% of people owning one or more vehicles and 60% of people travelling to work by car (Australian Bureau of Statistics). This is illustrated in Figure 25, Figure 26 and Figure 27.

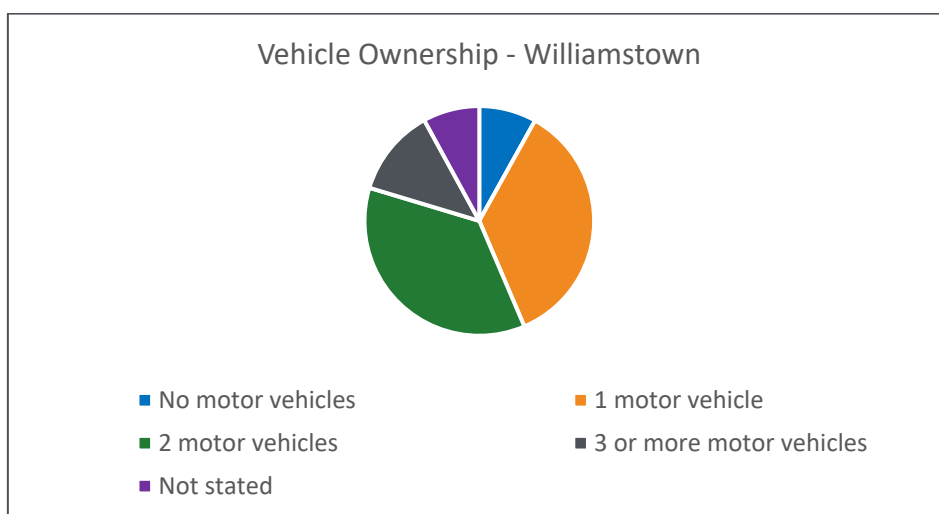


Figure 25: Vehicle Ownership in Williamstown

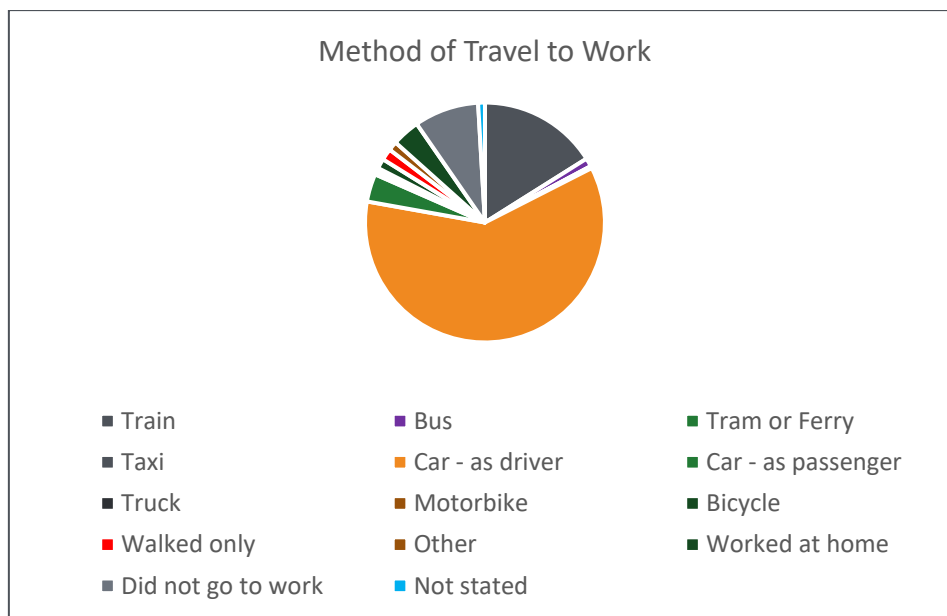


Figure 26: Method of Travel to Work (Williamstown)

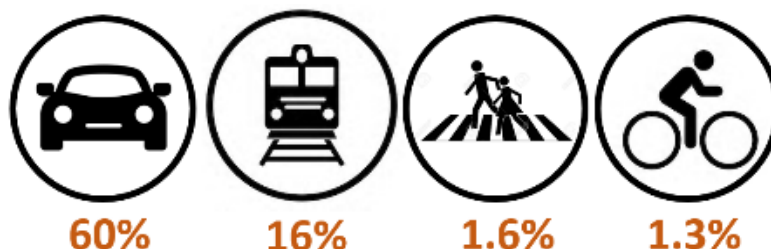


Figure 27: Method of Travel to Work Statistics (Williamstown)

The numbers presented above are in a state of flux with travel demands shifting away from private vehicle ownership and towards other transport modes. This trend is likely to continue as the population grows in some parts of Hobsons Bay and the road network approaches capacity.

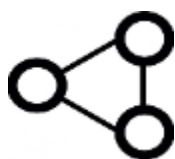
A travel demand management program has been prioritised as part of HBCC's Integrated Transport Plan to re-distribute travel activity towards modes, times or routes with spare capacity. It has been suggested that one way this can be achieved is through active travel promotion and the delivery of safer infrastructure for vulnerable road users (such as connected and consistent on and off-road cycling routes). The work undertaken as part of this project will directly contribute this objective.

4.9 Transport Issues

HBCC, as part of their development of the *Integrated Transport Strategy 2017-30*, has identified several issues associated with the widespread adoption of active transport as a safe travel mode within Hobsons Bay and specifically along Victoria Street. These are listed below and illustrated in Figure 28.



The Victoria Street carriageway is too wide with little or no road separation for cyclists or speed limiting infrastructure. This width, coupled with the road's straight alignment, encourages high speeds often at or above 60km/h. Pedestrians also find it difficult to cross the road due to these high speeds and lack of controlled crossing points.



There are significant gaps in the cycling network that limit connectivity within the municipality and discourage cycling as a primary transport mode. There is no wayfinding guidance for cyclists to navigate these paths and limited line marking to separate cyclists from vehicles.



Pedestrian routes are indirect or discontinuous within the Hobsons Bay municipality, with some walking paths inaccessible due to hazards and many inaccessible by wheelchairs or prams.



Arterial roads within Hobsons Bay experience congestion due to population pressures, limited public transport services, incomplete walking and cycling connections and the impact of major transport projects and residential developments, in which Victoria Street is not immune. Hobsons Bay residents also have a high reliance on cars.



Cycling within the Victoria Street corridor is not conducive to all ages or levels of cycling experience. The current infrastructure directing cyclists along busy roads acts as a barrier for a less experienced cyclist or a child.



The presence of rail crossings and roads proximate to Victoria Street make walking difficult and dangerous, particularly for children and young people wishing to walk or ride to school. There is only one pedestrian crossing point on Victoria Street, located at Osborne Street, providing pedestrians with a limited opportunity to cross the road.

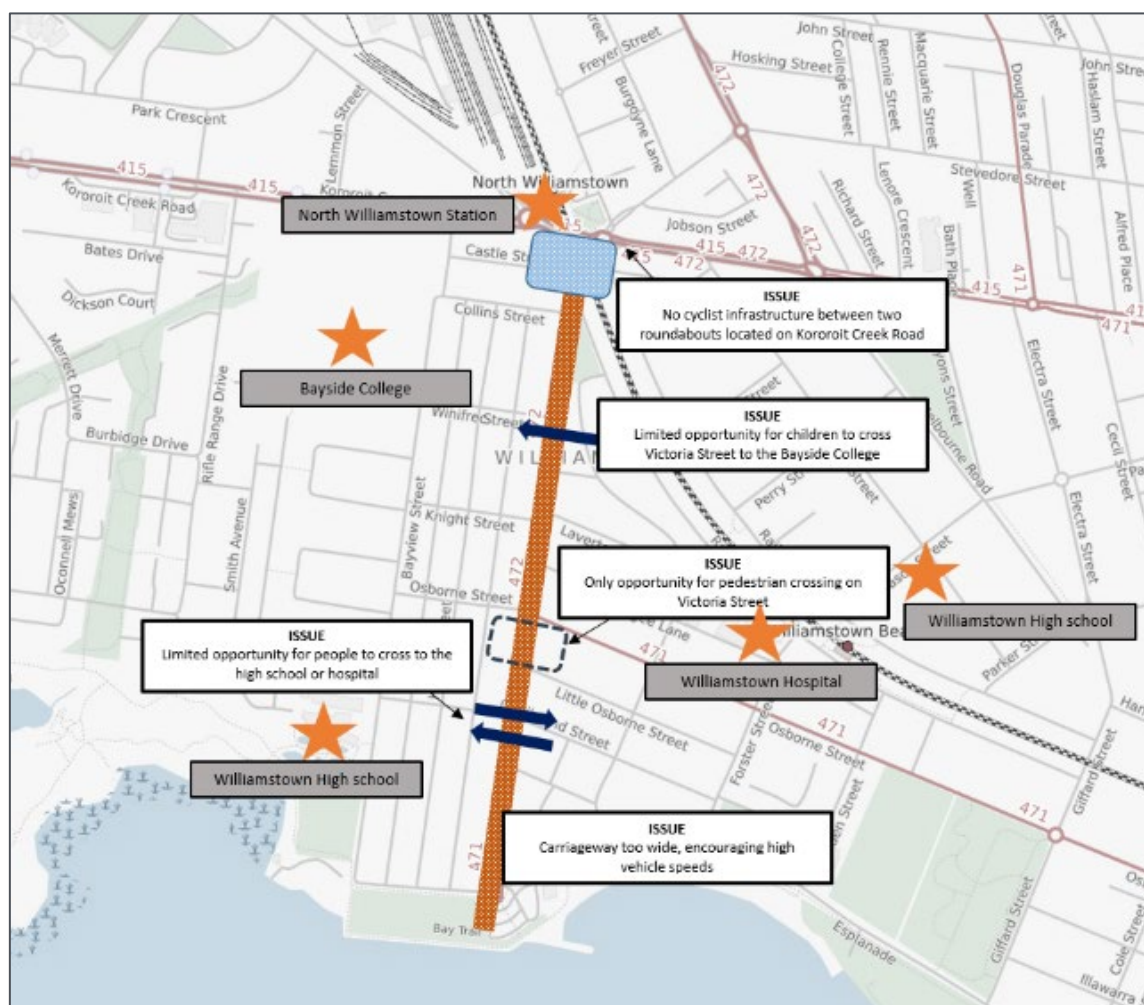


Figure 28: Transport Issues in Victoria Street (Map Source: www.openstreetmap.org)

4.10 Cultural Heritage

The Victoria Street corridor is located within the Victoria Street Heritage Precinct, which comprises all land including properties with a frontage or side boundary to Victoria Street. Bluestone kerbing and guttering extending the length of the corridor (as well as housing facades and mature trees planted in the nature strip) are an important feature of the street and are protected under the *Victorian Heritage Act 1995*.

Hobsons Bay has adopted a Heritage Streets and Laneway Policy and Management Plan (2008) to provide clear policy and guidelines in managing and conserving historic public assets. This plan identifies Victoria Street and Williamstown Beach as areas of significance. The document indicates that the surviving historic fabric in the road reserves to be protected include:

- Bluestone kerb and channelling and drains, and
- Street trees (Ash species).

Concept designs need to consider the streetscape and landscape design and minimise disruption to bluestone kerbing or other heritage features wherever possible.

4.11 Street Lighting

This area of Hobsons Bay is located within the Jemena Power Distribution area. The existing lighting scheme provides 150w HPS luminaires typically in a staggered arrangement. The luminaires are located on power poles that are offset 1.5m from the back of kerb. Victoria Street is tree lined street with significant foliage, which has the potential to impact light spill to the footpath.

A site inspection was undertaken along the Victoria Street corridor to undertake a subjective assessment of the current lighting levels to understand if any concerns exist with the current lighting provision and potential impacts on pedestrians and cyclist movements.

The site inspection was undertaken on the evening of Monday 1st April 2019 between 8:30pm and 8:40pm and the weather was fine. The conditions along the corridor at the time of the inspection recorded using rear and forward-facing bicycle mounted recording devices.

The main carriageway appeared well illuminated with no obvious dark areas. The footpath appeared shielded from light at various locations, however the lighting was sufficient to orientate yourself and detect potential hazards. During the inspection, no failed or damaged lights were observed.

4.12 Signage

The existing condition and provision of the street signage on Victoria Street has been reviewed. Parking signage has been omitted as part of this review.

The existing road signage is generally in good condition however a number of signage issues were observed. These issues include:

- Low reflectivity,
- Too many signs per installation (maximum of 3 signs per installation),
- Vandalism/graffiti

The sign types that have been provided along the corridor are adequate and no additional signs warranted.

Consolidation of the directional fingerboard signage at both Osborne Street and Kororoit Creek Road should be considered to ensure that drivers have the ability to safely read, make decisions and turn if required without impacting on road safety. According to VicRoads, a maximum of three fingerboard signs (including the street name) should be visible to the approaching motorist.⁸

⁸ VicRoads Sign Rationalisation Guidelines

5 What the Community Told Us

As part of this project, a high-level analysis of community concerns within the project area has been completed to ensure that relevant community issues have been identified. Council uses a Customer Help and Resolution Management System (CHARMS), which is used to record a customer request to Council by phone or email. By engaging with the community in this way, Council can establish patterns and common themes within the community and local areas. Through this approach, Council can respond with appropriate actions to address the community's needs.

A review of Council CHARMS from 2009 to 13th March 2019 was undertaken for this project. During this time, a total of 1,005 requests were received by Council from residents or visitors, of which 114 were relevant to this project. The community concerns that are considered relevant to this project fell into one of the following categories:

1. Parking issues
2. Footpath conditions
3. Public transport
4. Lighting
5. Road

Figure 29 represents the percentage of requests made in each of the five categories identified above.

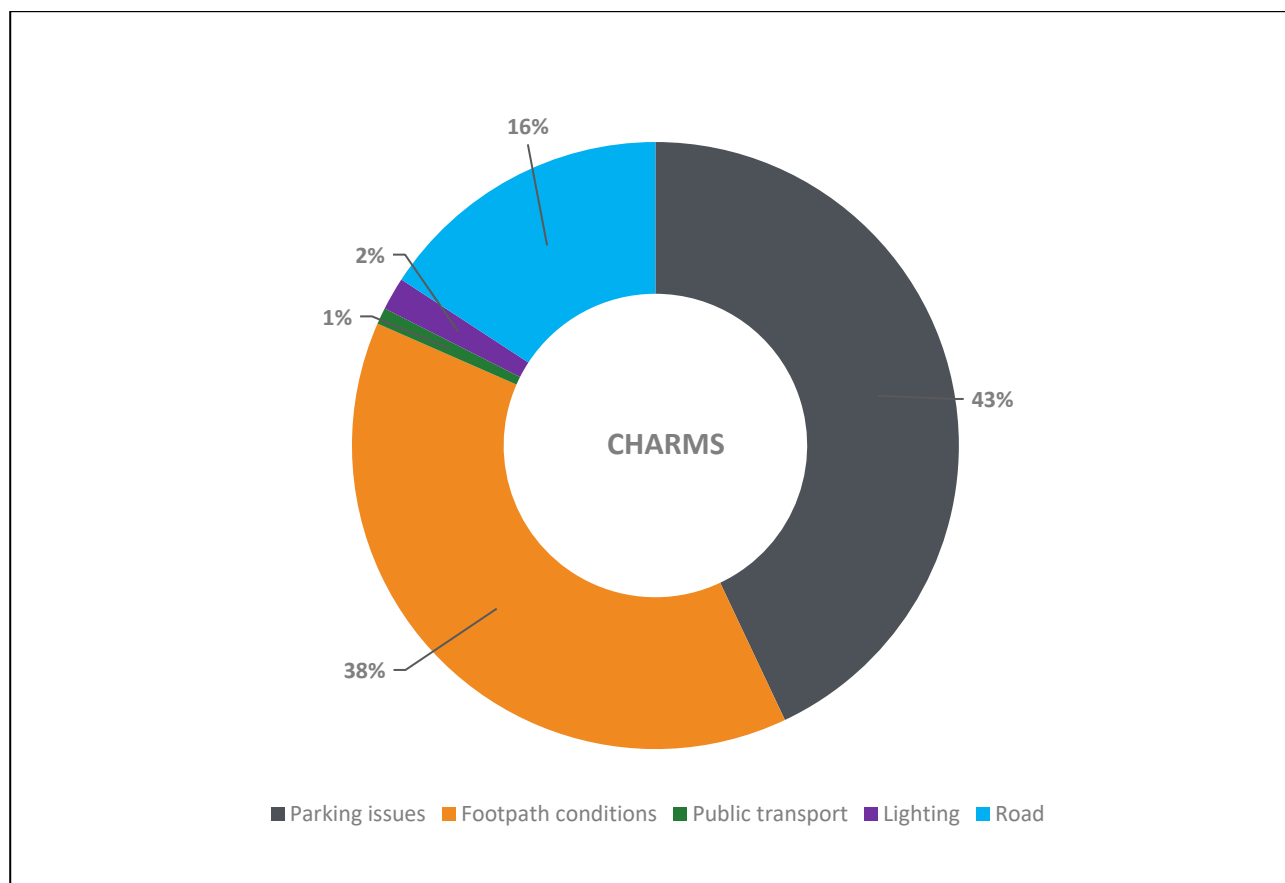


Figure 29: CHARMS Results (by category)

An analysis of the community requests has indicated several emerging response themes to the issues along the Victoria Street corridor, which are summarised in Figure 30.

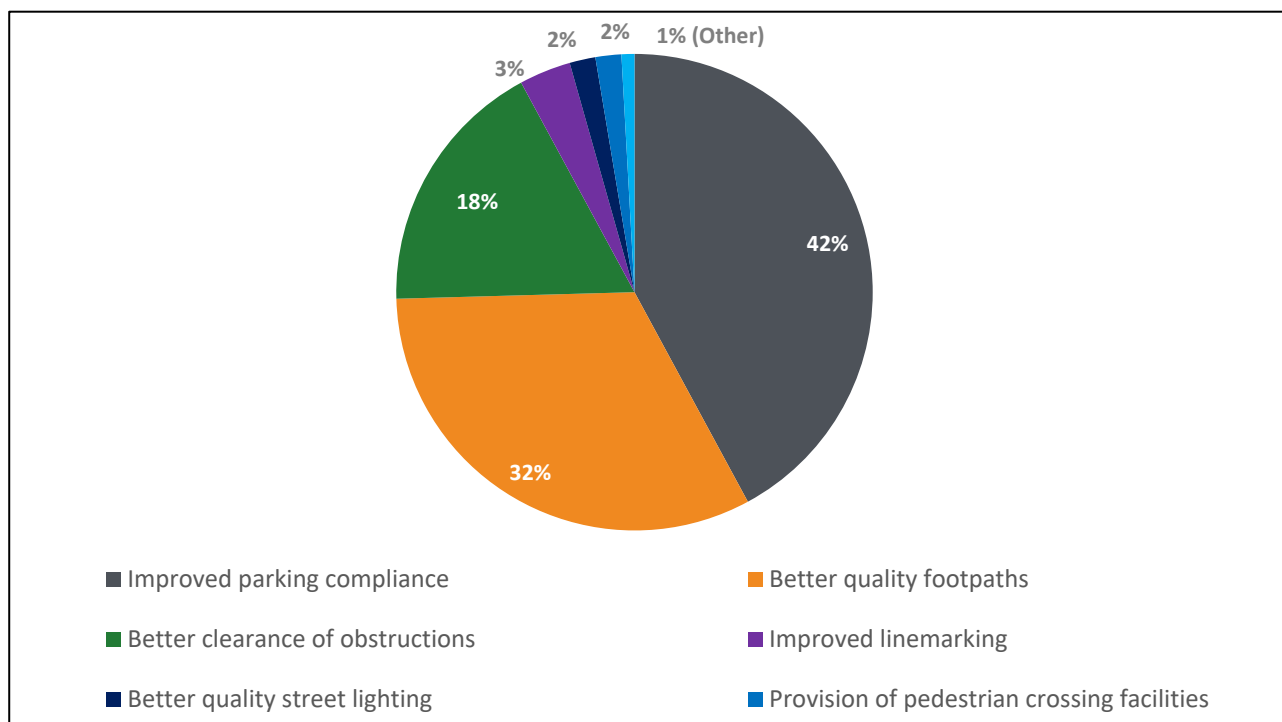


Figure 30: CHARMS Response Themes

5.1 Parking compliance

Parking behavioural issues were the most commonly referenced issue that was raised by the community. Council has received 48 requests, contributing 42% of all relevant responses.

The community has identified illegal parking in Victoria Street (predominantly by tradesmen or working vehicles during business hours or early in the morning) in proximity to bus stops, over driveways or on the nature strip as a primary concern. The feedback from the community indicates that this leads to the reduced sight lines to cyclists and other vehicles either exiting driveways or travelling along the Victoria Street.

The community feedback has indicated that vehicles often park in the southbound bus zone for the Laverton Street stop. This parking behaviour impacts accessibility of the bus stop with buses often overhanging the traffic lane. This results in cars crossing the centreline to pass buses at this stop location.

Additional community feedback indicates parking behaviour (such as parking in driveways or on the nature strip) is obstructing pedestrian paths and results in the need for pedestrian to walk out on to the road to pass the parked vehicle.

The community has provided suggested treatments to Council for implementation to improve parking behavioural issues. The suggestion includes the following:

- Introduction of bus zone signage at bus stops; and
- Linemarking of parking bays outside properties.

5.2 Quality of footpaths and roads

Surface quality of footpaths and road was the next most commonly issue raised by the community. Council has received 37 requests relating to this issue and contributing to 32% of all responses.

The community has identified many locations where the footpath provides uneven surfaces leading to tripping hazards. Some residents have reported injuries due to falls attributed to the footpath conditions. The road surface quality has also been identified by the community as being poor with a number of potholes, nails and cracking reported along the length.

It has been suggested by the community that tradesman's vehicles and construction trucks are the main contributor to conditions on the footpath and road.

5.3 Hazards or obstructions

Hazards and/or obstructions has been identified by the community as issue with 20 requests relating to this issue and contributing to 18% of all responses.

Many of these requests identified hazards on the footpath obstructing pedestrians' path or on the road obstructing a cyclist or motorist. These included:

- Illegal parking of working vehicles and trucks over the nature strip and footpath;
- Garbage;
- Hard waste;
- Soil/crushed rock piles;
- Large potholes;
- Broken street signs; and
- Mud due to construction vehicles.

Of particular safety concern is the presence of syringes, gloves and broken glass from Williamstown Hospital (near Kororoit Creek Road and Coogee Lane).

5.4 Linemarking

The community has indicated that condition of pavement markings as a concern.

These requests identified the need for enhanced linemarking along the Victoria Street corridor, with some faded or not visible (particularly bicycle linemarking and centrelines).

Some residents requested linemarking for cyclists (where they are not provided) to better separate them from vehicles and parked cars along the entire length of the corridor.

5.5 Pedestrian crossing facilities

The community has indicated that pedestrian crossing provision is a concern on Victoria Street.

The community has identified the need for improved pedestrian crossing facilities, indicating that it is particularly difficult for children to cross the road during school peak times in the mornings and afternoons, leading to dangerous and 'illegal' crossing wherever an opportunity is available.

The community has indicated a desire for a pedestrian island on Victoria Street near Collins Street or Winifred Street, as many children use these roads to access Bayside College to the west of the corridor.

5.6 Better quality street lighting

The community has identified street lighting as a concern for Victoria Street, in particular there are poor levels of street lighting in some areas, with some instances where street lighting was not working.

6 What the Data Tells Us

6.1 Traffic Profiles

Traffic data has been collected by Council at four major sites along Victoria Street to produce daily traffic profiles. These counts include traffic volumes at:

1. Victoria Street – Collins Street and Winifred Street midblock
2. Victoria Street – Gellibrand Street and Esplanade midblock
3. Victoria Street – at the intersection of Osborne Street
4. Railway Crescent – Victoria Street and Stewart Street midblock

The locations of these counts are illustrated in Figure 31.



Figure 31: Travel Count Locations (Image Source: www.openstreetmap.org)

The traffic counts on Victoria Street and Railway Crescent were collected from Tuesday 19th March to Tuesday 26th March 2019, and the traffic counts at the Victoria Street/Osborne Street intersection were collected on Thursday 21st February 2019 at 7:30am to 5:00pm.

These counts were used to produce daily traffic profiles for the northbound and southbound directions combined, as well as determine peak travel periods at each location. These are illustrated in Figure 32, Figure 33 and Figure 34.

Victoria Street (Collins Street to Winifred Street)

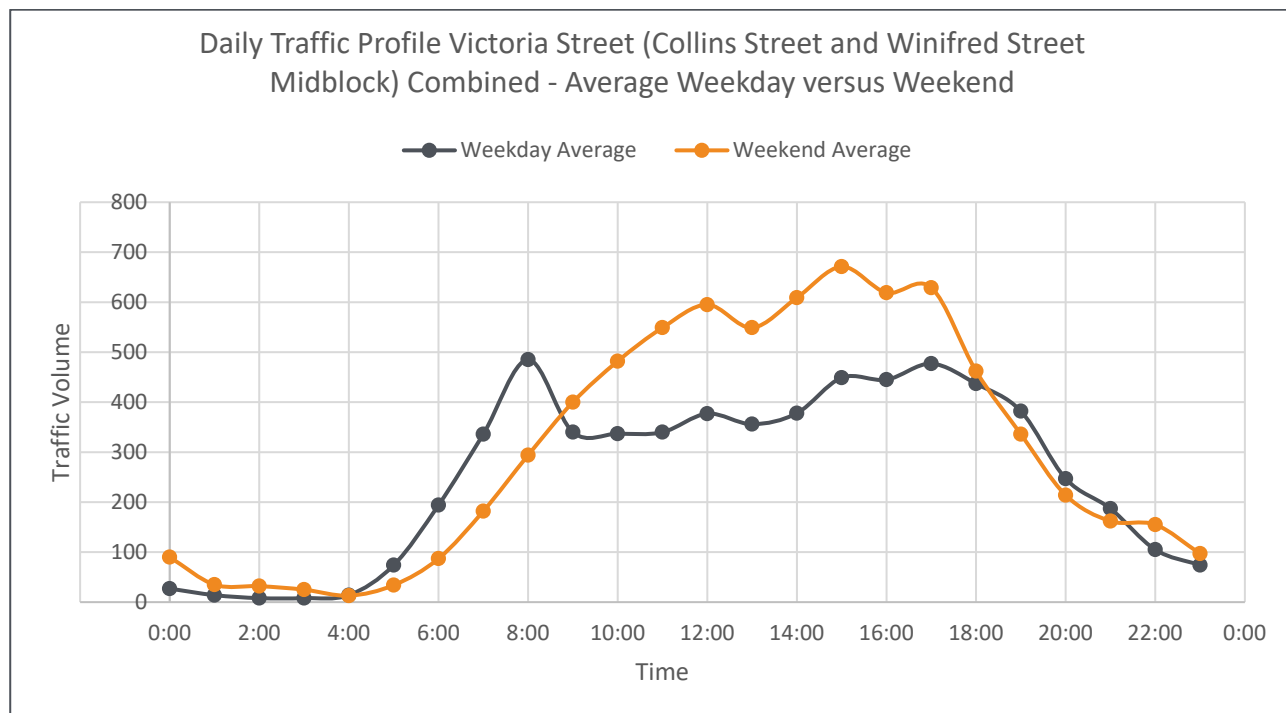


Figure 32: Daily Traffic Profile (Victoria Street at Collins Street and Winifred Street Midblock)

Victoria Street (Gellibrand Street to Esplanade)

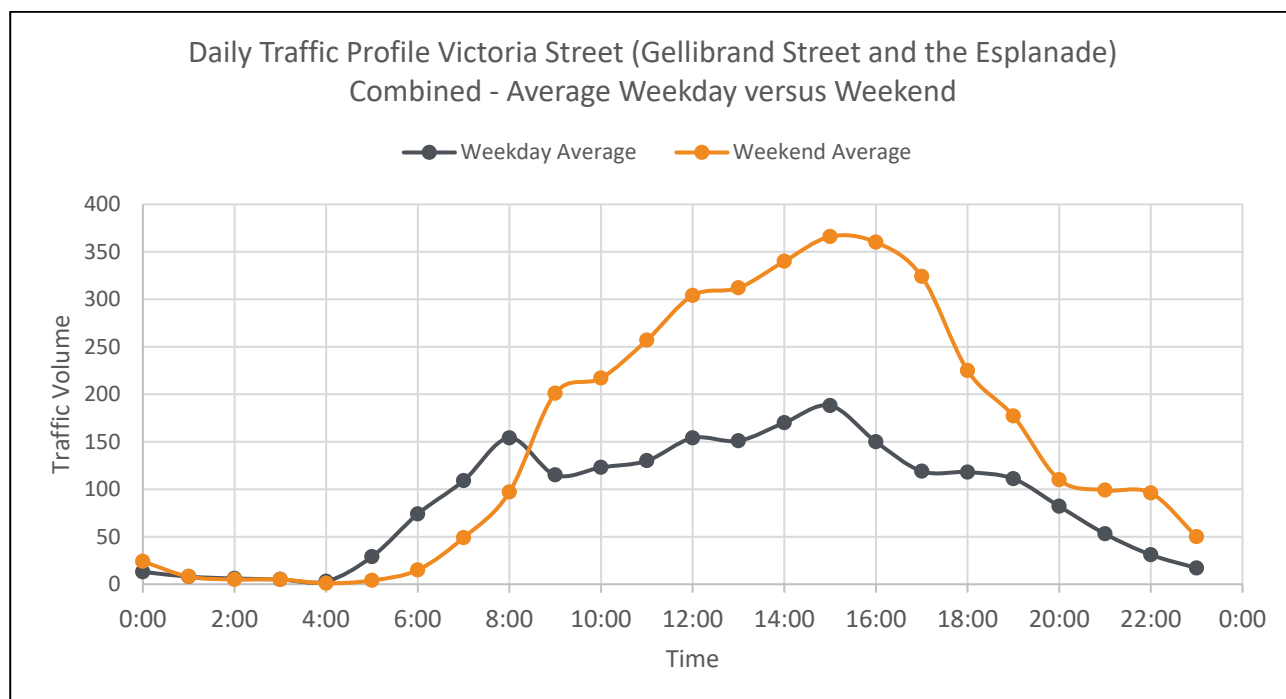


Figure 33: Daily Traffic Profile (Victoria Street at Gellibrand and the Esplanade Midblock)

Railway Crescent (Victoria Street to Stewart Street)

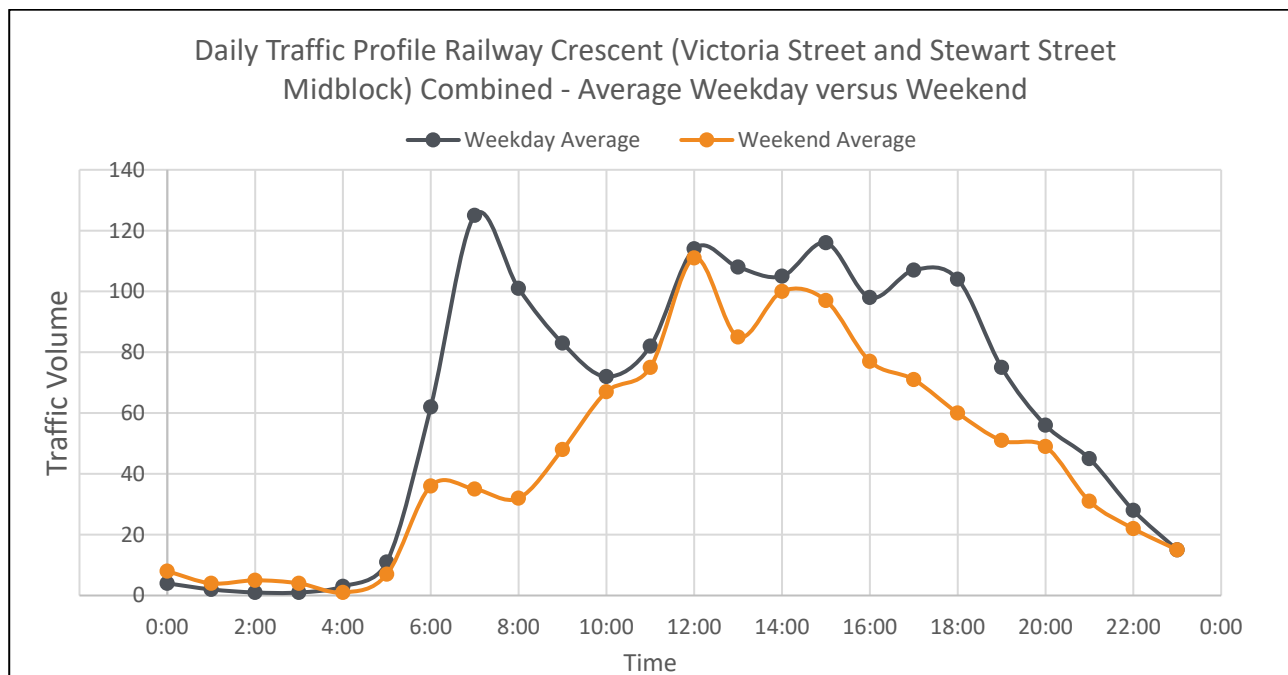


Figure 34: Daily Traffic Profile (Railway Crescent at Victoria Street and Stewart Street Midblock)

Kororoit Creek Road near Victoria Street

Traffic data for Kororoit Creek Road (near Ferguson Street) has been obtained from VicRoads Open Data. Figure 35 illustrates the traffic profile for each day of the week.

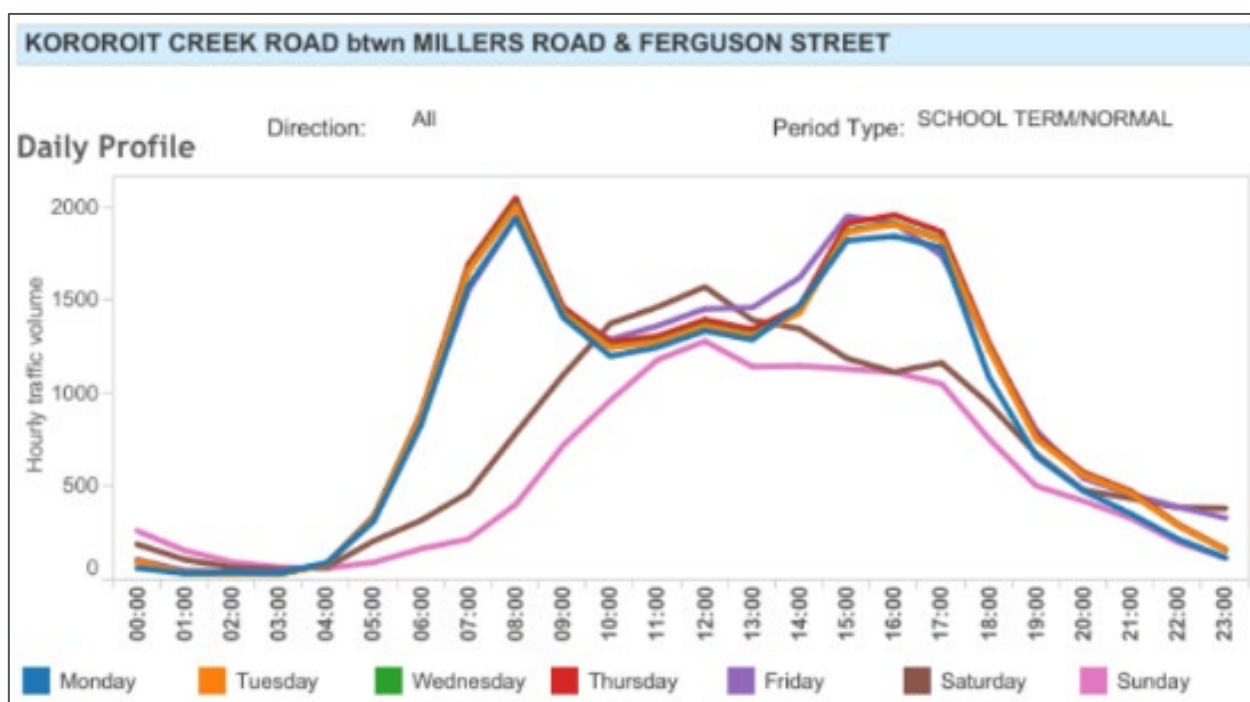


Figure 35: Kororoit Creek Road between Millers Road Ferguson Street (Source: VicRoads Open Data)

6.2 Peak Periods and Volumes

The peak periods and traffic volumes have been deduced from the figures above and are summarised in Table 1 and illustrated in Figure 36

36

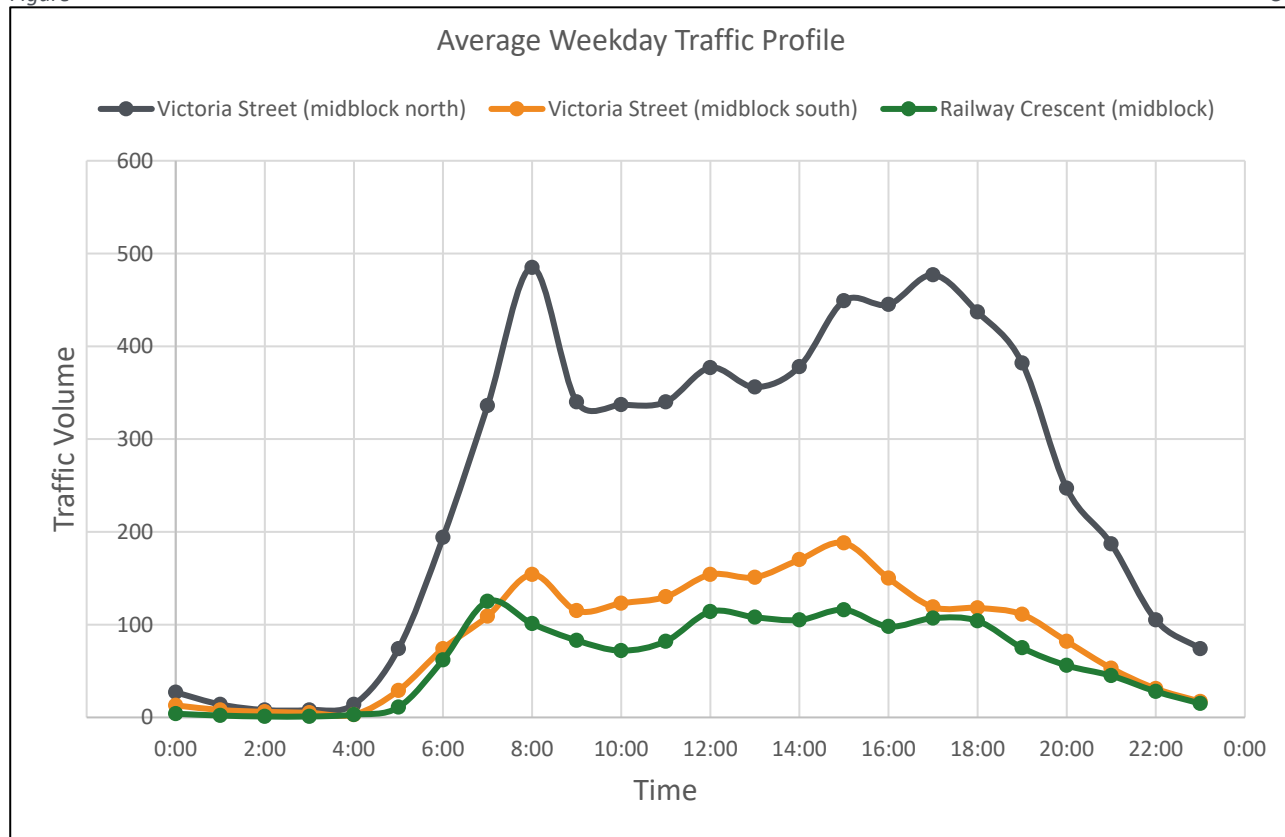


Figure 36.

Table 1: Average Weekday Peak Period Volumes

LOCATION	PEAK PERIOD (AM)	PEAK PERIOD (PM)	TRAFFIC VOLUME (AM)	TRAFFIC VOLUME (PM)
Victoria Street (Collins Street and Winifred Street Midblock)	8:00-9:00	15:00-16:00	485	671
Victoria Street (Gellibrand Street and the Esplanade Midblock)	8:00-9:00	15:00-16:00	154	188
Victoria Street (at Osborne Street)	8:15-9:15	16:30-17:30	308	233
Railway Crescent (Victoria Street and Stewart Street Midblock)	7:00-8:00	15:00-16:00	125	116
Kororoit Creek Road (near Ferguson Street)	7:00-8:00	15:00-16:00	1962	1914

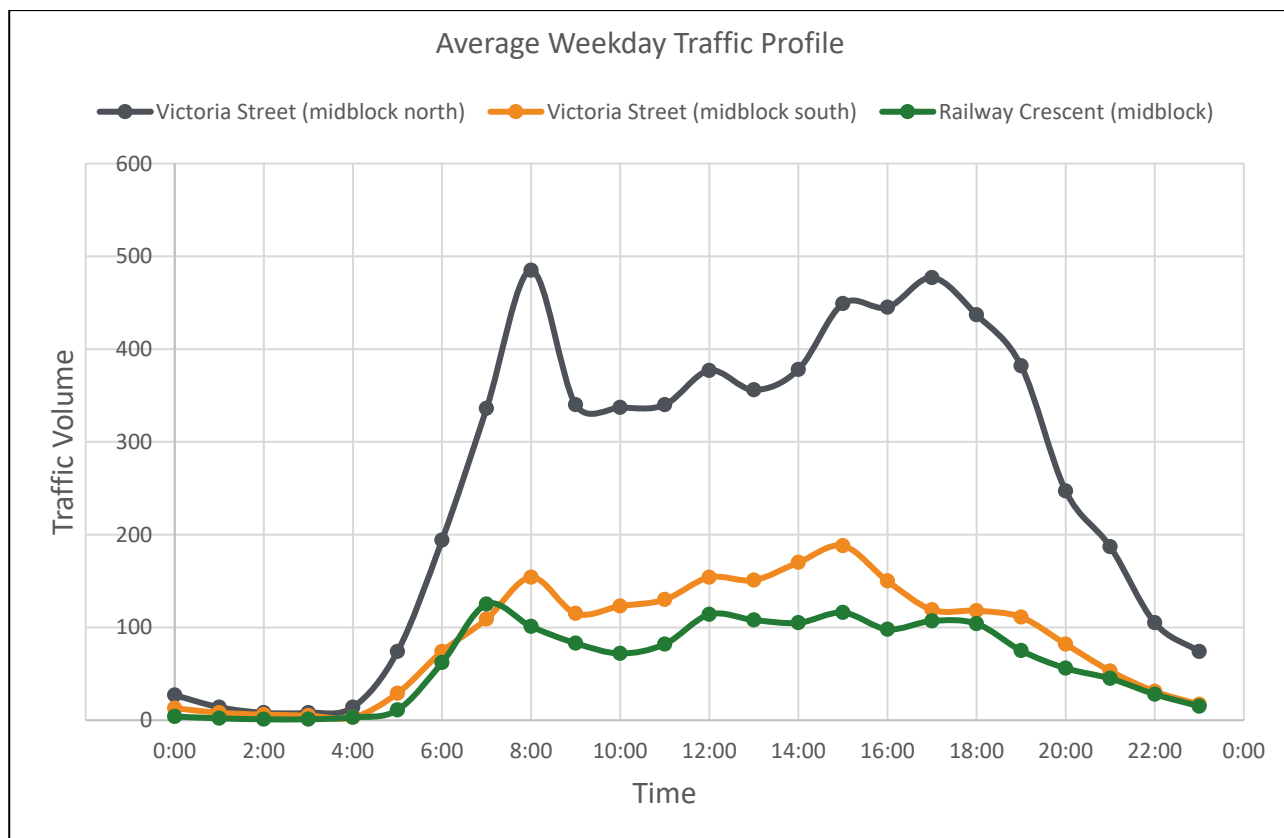


Figure 36: Average Weekday Traffic Profiles at count locations

6.3 Average Daily Traffic Volumes

The average daily weekday and weekend traffic volumes have been deduced from the figures above and are summarised in Table 2.

Table 2: Average Daily Traffic Volumes

LOCATION	AVERAGE WEEKDAY DAILY TRAFFIC VOLUME (2-WAY)	AVERAGE WEEKEND DAILY TRAFFIC VOLUME
Victoria Street (Collins Street and Winifred Street Midblock)	6091	7321
Victoria Street (Gellibrand Street and the Esplanade Midblock)	2113	3646
Victoria Street (at Osborne Street)	No daily counts obtained	No daily counts obtained
Railway Crescent (Victoria Street and Stewart Street Midblock)	1518	1091
Kororoit Creek Road (near Ferguson Street)	10,000*	NA

*Average daily two-way traffic volume in 2015 (VicRoads Open Data)

6.4 Speed Profiles

Speed data has also been collected by Council at 3 of the major sites listed above, including:

- Victoria Street (Collins Street and Winifred Street Midblock),
- Victoria Street (Gellibrand Street and the Esplanade Midblock), and

- Railway Crescent (Victoria Street and Stewart Street Midblock).

Figure 37 shows the 85th percentile speed profiles (averaged during the week) at each of these intersections.

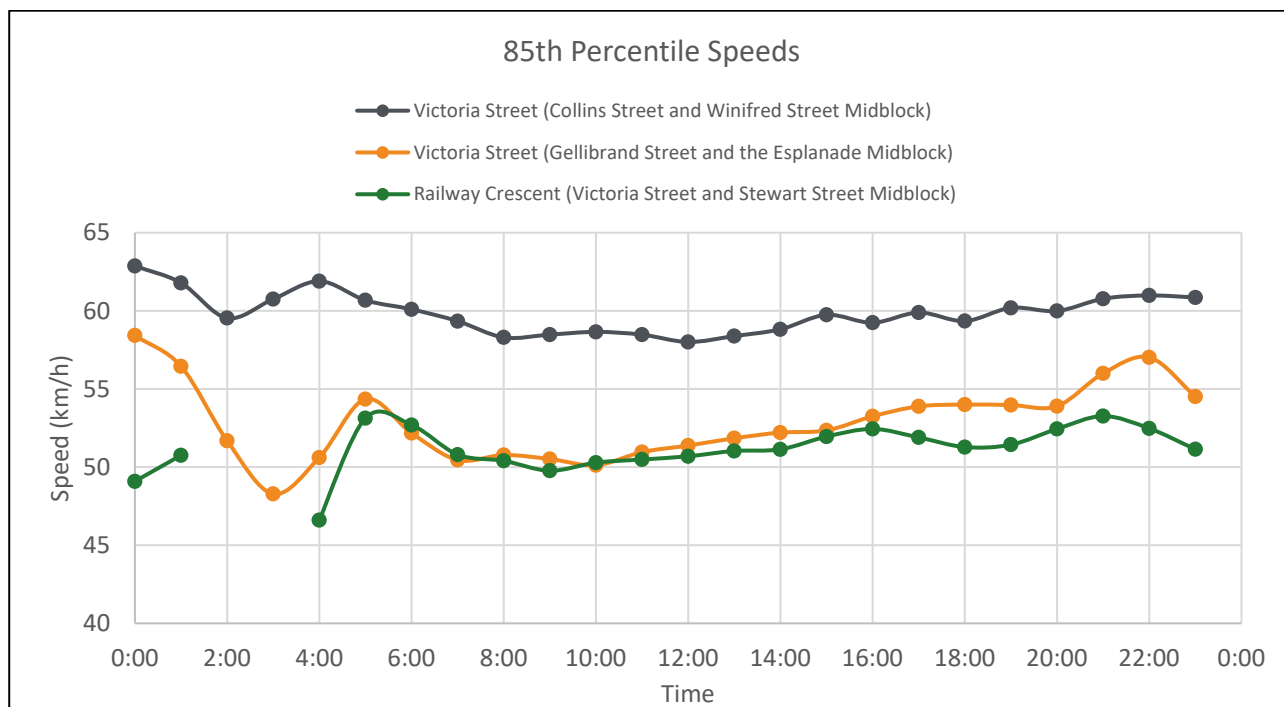


Figure 37: 85th Percentile Speed Profile (Weekly Average)

Note that outliers and/or missing data has been removed from the dataset to ensure accurate results.

Figure 38, show the speed range distribution across the 3 sites.

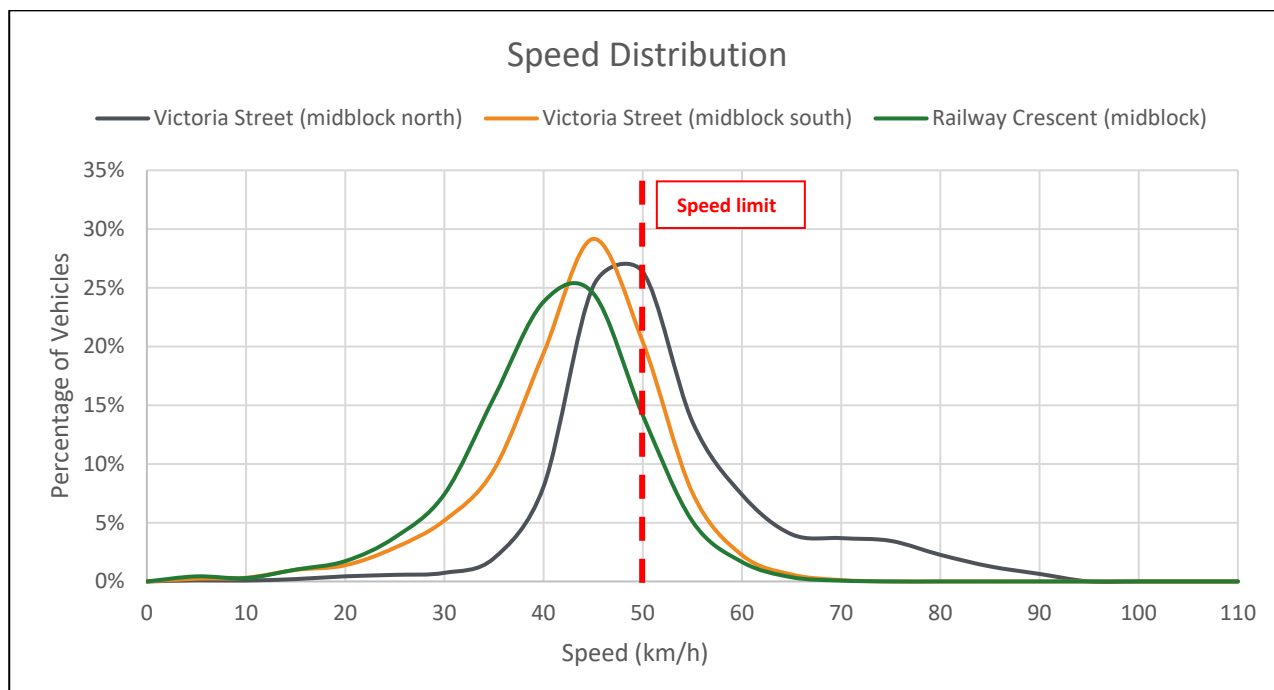


Figure 38: Speed Range Distribution - Victoria Street and Railway Crescent

The following observations have been made based on the above information:

- Vehicles have a greater compliance with the posted speed limit on Railway Crescent and the southern section of Victoria Street with only 21% and 31% of vehicles travelling at 50km/h or greater; and
- 63% of vehicles in the northern section of Victoria Street are travelling at 50km/h or greater.

It is expected that the higher speeds experienced on Victoria Street is due in part to the wide carriageway width and lack of traffic calming devices.

6.5 Heavy Vehicle Proportion

The average weekly proportion of heavy vehicles at each traffic count location is summarised in Table 3.

Table 3: Heavy vehicle proportions

LOCATION	AVERAGE WEEKDAY HEAVY VEHICLE PROPORTION	AVERAGE WEEKEND HEAVY VEHICLE PROPORTION
Victoria Street (Collins Street and Winifred Street Midblock)	5.8%	4.7%
Victoria Street (Gellibrand and the Esplanade Midblock)	7.5%	2.6%
Victoria Street (at Osborne Street)	No heavy vehicle % obtained	No heavy vehicle % obtained
Railway Crescent (Victoria Street and Stewart Street Midblock)	5.4%	3.7%
Kororoit Creek Road (at Ferguson Street)	8.6%*	NA

*Average heavy vehicle percentage 2015 (VicRoads Open Data)

Figure 39 summarises the heavy vehicle percentage over the week for the traffic count locations on Victoria Street and Railway Crescent. At these locations, the highest proportion of heavy vehicles is experienced at the beginning of the week on average.

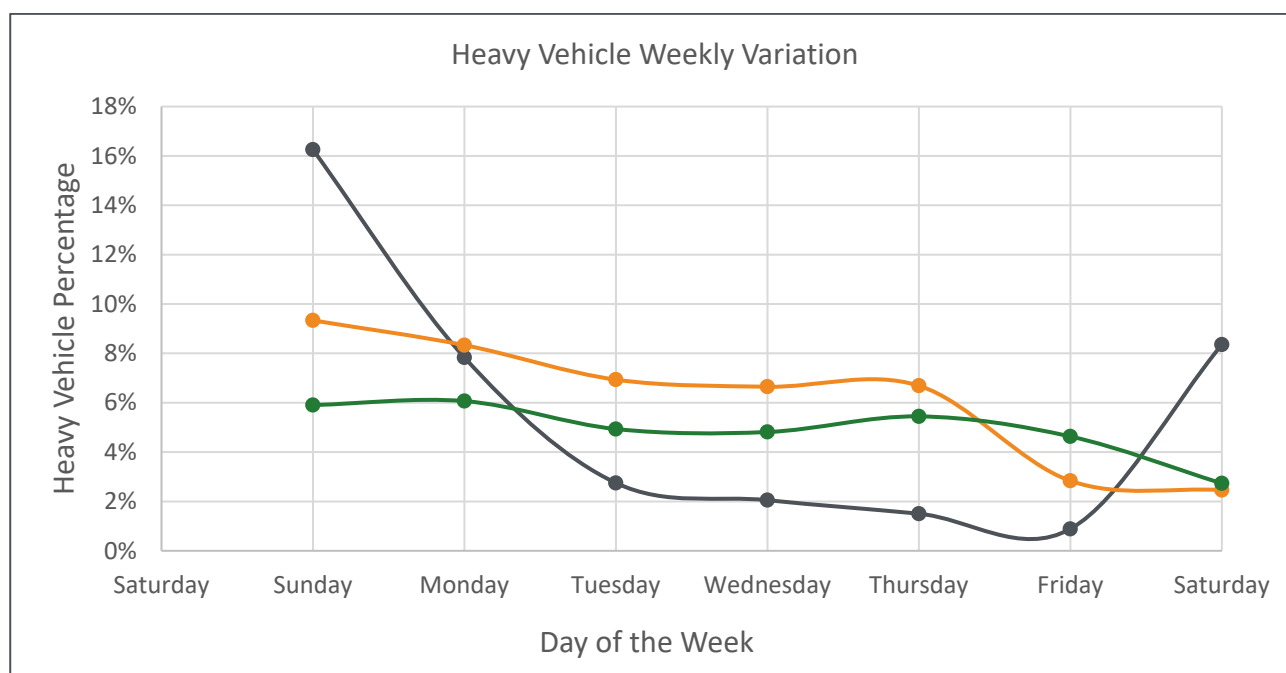


Figure 39: Heavy Vehicle Weekly Variation

6.6 Cyclist Volumes

Cyclist volumes have been collected for the Victoria Street/Osborne Street intersection at 15-minute intervals in the peak periods on Thursday 21st February 2019, as illustrated in Figure 40 and Figure 41. Based on this information, peak cycling volumes occur between 7:30-7:45am and 4:45-5:00pm.

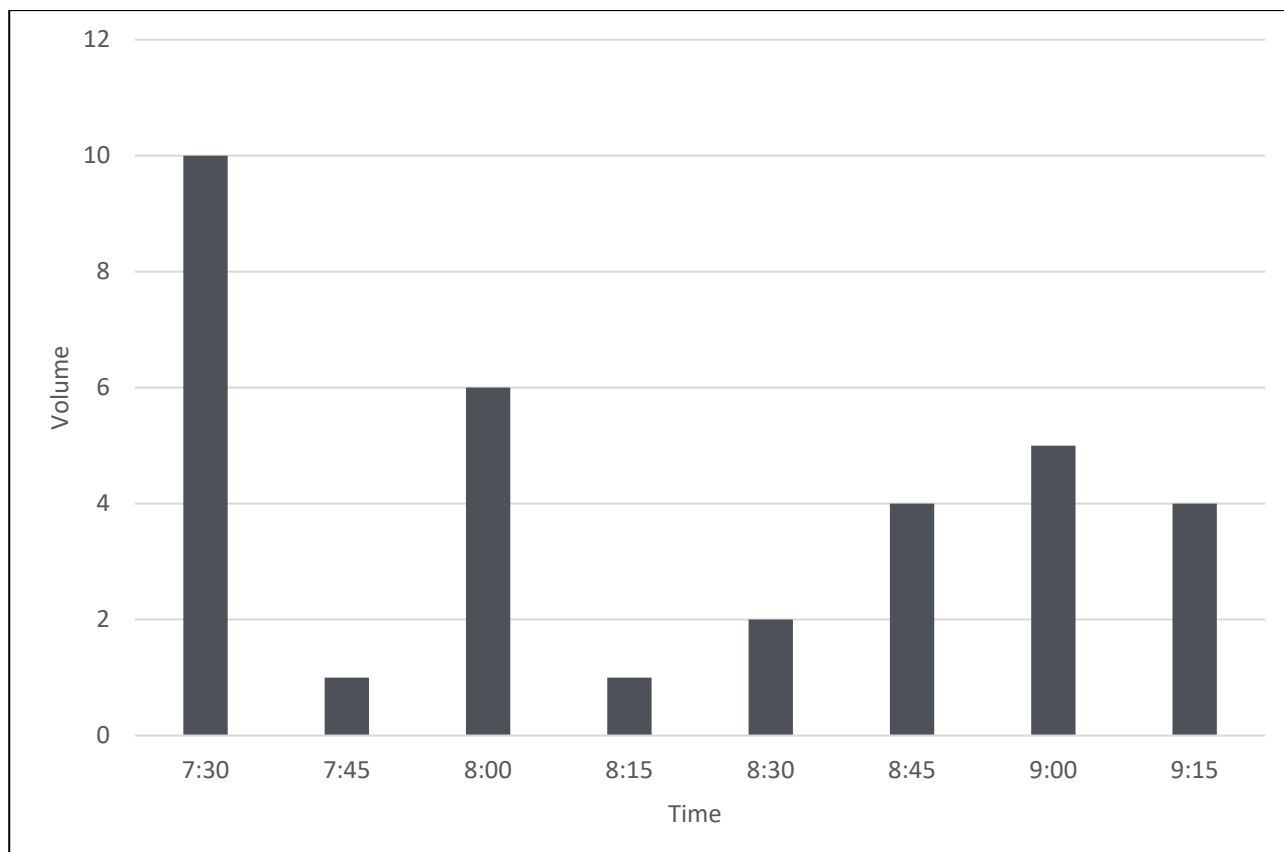


Figure 40: Cycling Volumes in the AM Peak

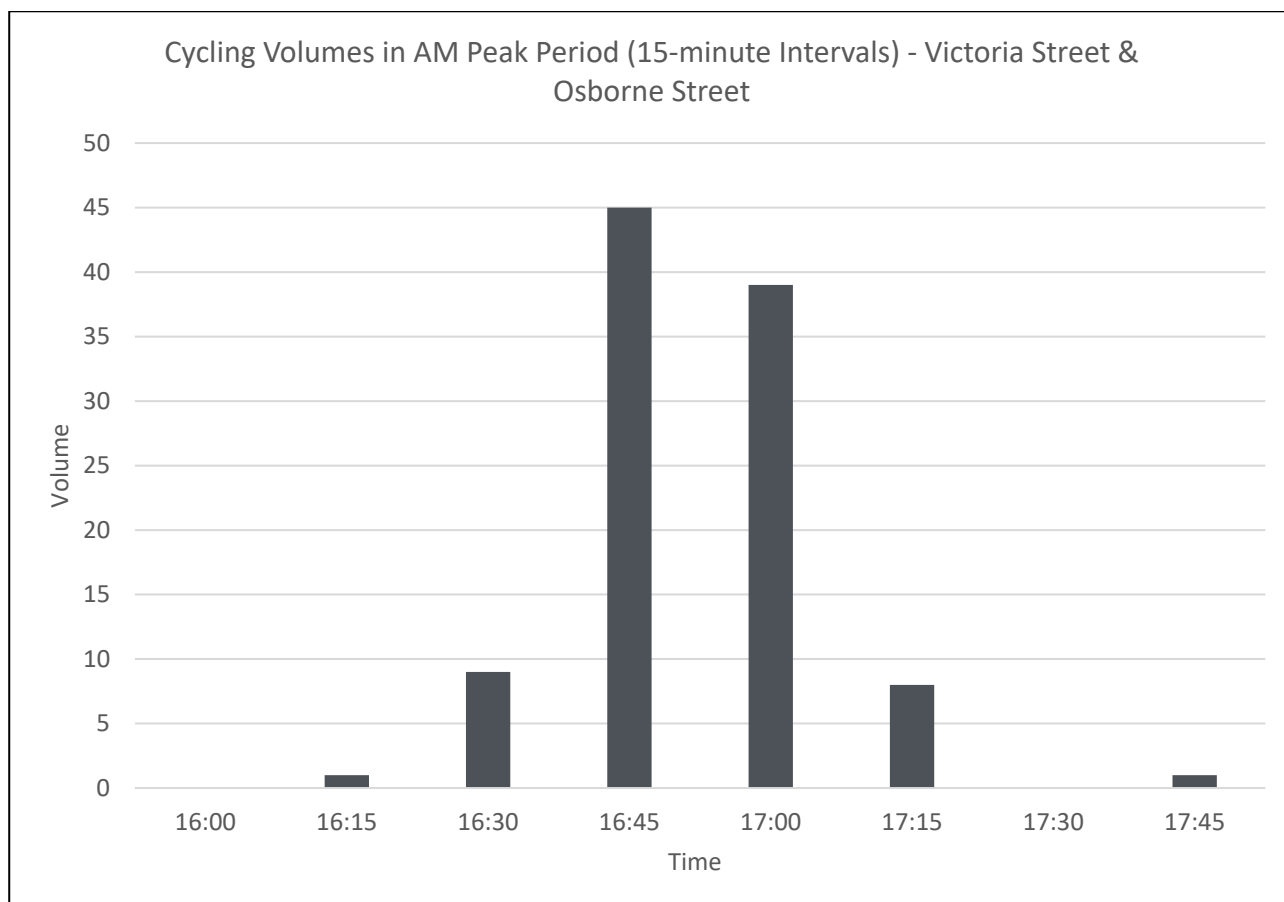


Figure 41: Cycling Volumes in the PM Peak

Figure 42 illustrates the cycling volumes for each movement of the east, west, north and south approaches of the Victoria Street and Osborne Street intersection (AM and PM peaks combined). Figure 43 illustrates the movements surveyed for this study.

Based on this information, the dominant movement (average across the AM And PM peaks) occurs on the north approach of Victoria Street for cyclists travelling southbound towards the Esplanade.

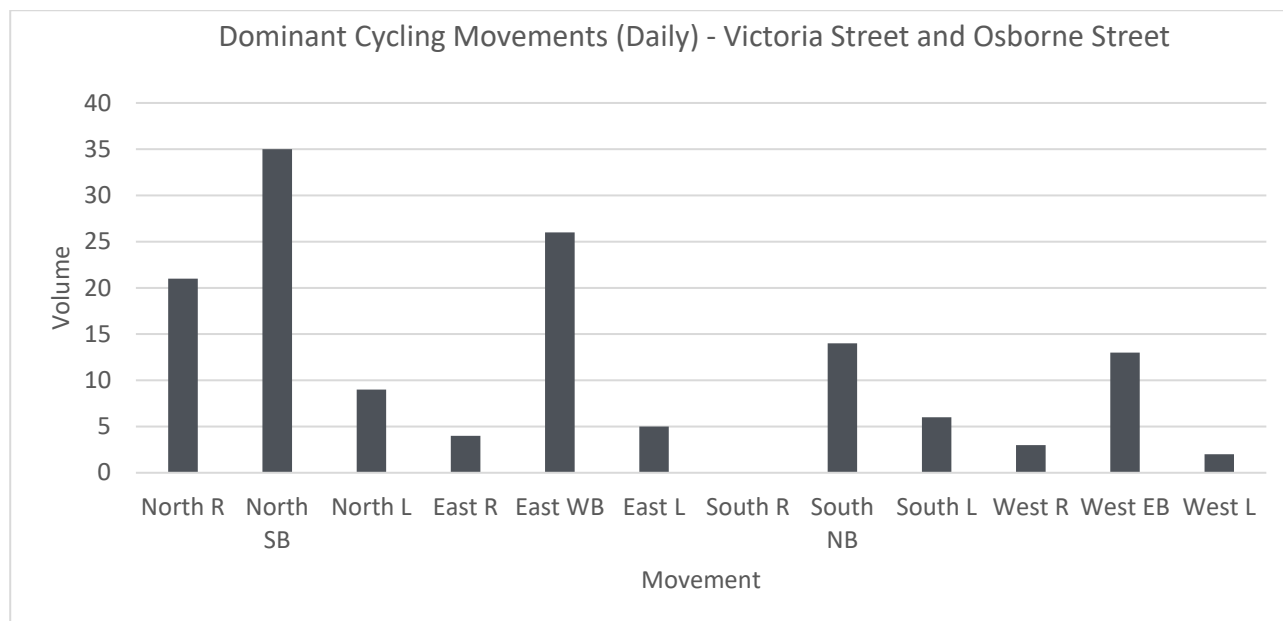


Figure 42: Dominant Cycling Movements

Figure 43: Surveyed movements (Source: www.nearmap.com.au)

6.7 Crash History

6.7.1 5-Year Crash History

A crash analysis has been conducted for Victoria Street, Williamstown. A review of the historical crash data from VicRoads Interactive Crash Statistics website for the period of 1st January 2013 to 31st December 2017 revealed a total of 5 crashes in the project extent. The total crashes included one serious injury crash and four other injury crashes. Since the start of 2013 there have been 3 casualty crashes on this road involving cyclists. The Fatality and Serious Injury (FSI) crash ratio for the project area is 20%. Table 4 presents the most recent 5-year crash history and Figure 44 illustrates the location of each crash.

Table 4: Crash Statistics Summary – Project Area 5 Year Crash History (Victoria Street, Williamstown)

CRASH TYPE	FATAL	SERIOUS INJURY	OTHER INJURY	TOTAL CRASHES
Manoeuvring (emerging from driveway)			1	1
Off Path Curve (off left bend into object)			1	1
Vehicles from same direction		1	1	2
Vehicles from opposing directions (vehicle turning through median opening)			1	1
TOTAL		1	4	5

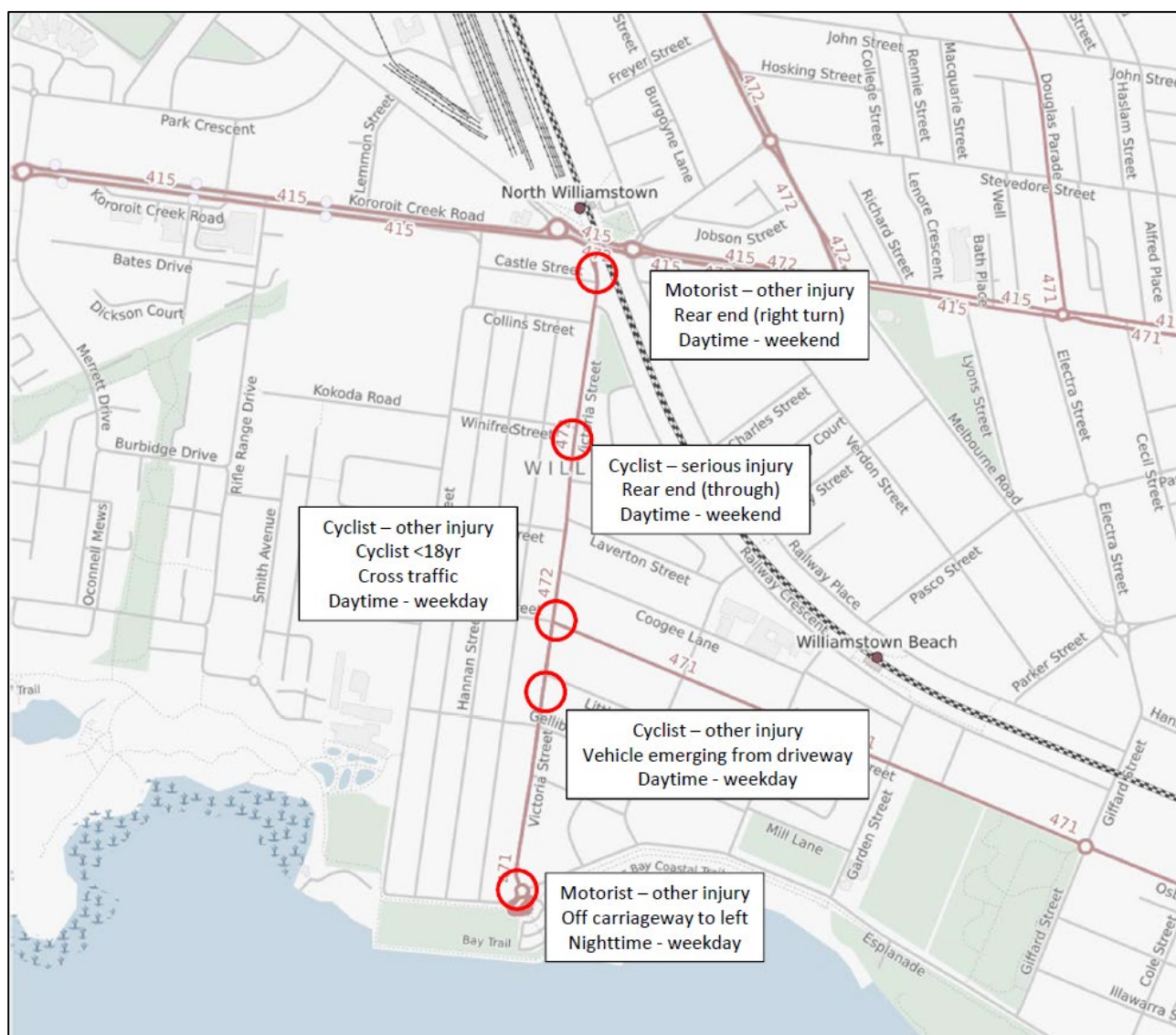


Figure 44: 5-year Crash Locations (Source: www.openstreetmap.org)

The following observations have been made regarding the crash data presented above for Victoria Street:

- Cyclists represented 60% of the crashes in this review with:
 - A cyclist being struck on their nearside by a vehicle reversing out of driveway;
 - A cyclist being struck when crossing Victoria Street at Osborne Street, by a northbound through vehicle whose view was obstructed by a third vehicle propped in the median opening (cyclist was a minor aged 13); and
 - A cyclist travelling southbound on Victoria Street falling from bicycle as a peloton of cyclists passed.
- The remaining crashes involved motorists, with one collision involving both alcohol and night-time conditions as contributing factors.

6.7.2 Long-term Crash History

A review of the long-term historical crash data from VicRoads Interactive Crash Statistics website for the period of 1st January 2006 to 31st December 2018 revealed a total of 9 crashes in the project extent, 5 of which have occurred in the last 5 years. The total crashes included 2 serious injury crashes and 7 other injury crashes since 2006. It is noted that there were no cyclist crashes before 2013.

Table 5 presents the long-term crash history.

Table 5: Crash Statistics Summary – Project Area Long-term Crash History (Victoria Street, Williamstown)

CRASH TYPE	FATAL	SERIOUS INJURY	OTHER INJURY	TOTAL CRASHES
Manoeuvring (emerging from driveway)			2	2
Vehicles from same direction		1	1	2
Vehicles from opposing directions		1	1	2
Vehicles from adjacent directions			1	1
Off path on straight			1	1
Off path on curve			1	1
TOTAL		2	7	9

7 Key Issues

The key issues derived from the above investigations are summarised in the following.

7.1 Walking

Victoria Street:

- wide crossing distance
- higher vehicle speeds at the northern end (~60km/h)
- lack of east-west aligning kerb ramps
- key activity generators located to west (schools), south (beach) and north (Williamstown North Station)
- PTV Bus route (potentially also location of bus stops in relation to crossing points and side streets)
- Westbourne Grammar Bus Route
- High proportion of children
- Parking behaviour/obstructing footpath

Esplanade:

- Limited north-south connectivity
- Key activity generator to south (beach, coastal trail, cafe)

Kororoit Creek Road/Ferguson Street:

- High traffic volumes
- Four traffic lane crossing (with median)
- Traffic speed 60km/h
- Roundabouts do not give pedestrians right of way
- Rail line creates a barrier
- Key activity generators located to west (school) and north (Williamstown North Station, Williamstown North PS)

7.2 Cycling

Victoria Street:

- Parking discipline, obstructing bicycle and traffic lane, in particular at bus stop locations
- Road surface – pavement cracking and debris

Esplanade:

- No on-road facilities (driver confusion regarding temporary traffic management treatments)

Kororoit Creek Road/Ferguson Street:

- Dysconnectivity of on-road facilities between Melbourne Road and Swanston Street
- Turning movements to/from Victoria Street difficult during peak periods
 - Collins Street/Swanston Street popular north to west alternative movement

8 Key Opportunities

Proposed countermeasures will be considered to address any identified safety issues that are both cost effective and best practise. The options development will consider factors such as cost, innovation and alignment with the Safe System principles. The implications of the design options will be outlined in the report.

8.1 Project Integration Opportunities

As was briefly discussed in Section 4.7, Victoria Street forms an integral part of Hobsons Bay's cycling and pedestrian network. This connection, amongst others in the municipality, lacks the appropriate safety facilities to make it a viable option for non-experienced cyclists and a potentially dangerous option for experienced cyclists. This project presents an opportunity to begin closing the gap in this network, thereby moving towards HBCC's vision for a fully connected municipality that encourages active, sustainable travel.

Closing these gaps would also be impactful at a regional level, as it would provide increased opportunities for better connection to other trails and the provision of cycling loops. Connected and consistent on and off-road cycling routes will also bring employment, school and other destinations into reach for more people. Commuter and recreational cyclists will feel safer and more confident to travel longer distances between neighbourhoods and to the CBD and key regional destinations. The design work undertaken as part of this project creates an opportunity for targeted advocacy and best practice design that will create better separation between motorists and vulnerable road users on Victoria Street and the surrounding area.

A significant challenge exists in developing a design that best services the complex intersection at the northern extremity of Victoria Street as the design for the level crossing removal at North Williamstown Station is yet to be finalised. However, with this challenge comes an opportunity for better integration of these two projects, in that the design options developed to improve safety of vulnerable road users could be fed into the design of the level crossing removal. This, in combination with HBCC's recently adopted Grade Separate Principles, ensures that vulnerable road users and their movement through the intersection are advocated for during future liaison between HBCC and the Level Crossing Removal Project (LXRP).



Figure 45: Project Opportunities

Council is proposing a number of projects parallel to (or in proximity with) the Victoria Street corridor. There is opportunity for the effective integration of the Victoria Street project into the surrounding environment and allowing a holistic approach to improving the transport network. The Victoria Street project corridor is shown in the context of adjacent Council projects in Figure 46, and are discussed in the subsequent sections.



Figure 46: Supporting Projects within proximity to the site (Map Source: www.openstreetmap.org)

8.1.1 Champion Road Shared Path

At the northern extent of the site, Council proposes to construct a shared path along the northern side of Champion Road (in combination with the existing on road cycle lanes). The Champion Road shared path will connect North Williamstown Station to an existing shared path that follows Market Street, between Newport Station and Champion Road.

There is opportunity to use the Victoria Street project to provide a connection with the Hobsons Bay Coastal Trail located at the southern end of Victoria Street. The ability to link these facilities with improved cycling treatments along the Victoria Street corridor would allow connectivity of cycling infrastructure, thus acting to close current gaps in the network and move towards cycling as a legitimate transport mode in the municipality. The integration of these two projects would assist in Council achieving the objectives outlined in Council's *Integrated Transport Plan 2017-30*.

8.1.2 Esplanade Traffic Calming

The Esplanade is adjacent to the Hobsons Bay Coastal Trail which is a shared path providing a connection from Sanctuary Lakes/Point Cook to Footscray. Connectivity from the north to south along the Esplanade is limited to a few safe crossing points adjacent to Sadler Reserve. During the summer months, traffic volumes increase and provide further difficulty in crossing the Esplanade to access the Coastal Trail. As outlined in Section 174.7.3, Council has commenced an upgrade project in June 2019 which comprises of the following improvements⁹:

- raised zebra pedestrian crossings at Victoria Street, Williamstown Botanic Gardens and Giffard Street;
- a pedestrian refuge island at the intersection of the Esplanade and Stewart Street;
- mid-block speed cushions; and
- lighting upgrades.

A typical view of the treatment is shown in Figure 47.

⁹ Hobsons Bay City Council. Retrieved from <https://www.hobsonsbay.vic.gov.au/Council/Current-Projects/Roads-Streetscapes-Traffic-Projects/Road-projects/Traffic-Projects/Williamstown-Beach-Traffic-Improvement-Project> on 01/05/2019



Figure 47: Typical Traffic Calming Treatment for the Esplanade (Source: Hobsons Bay City Council)

8.1.3 Level Crossing Removal (North Williamstown Station)

At the northern extent of the site is the Ferguson Street level crossing at North Williamstown Station. This level crossing is located in the centre of a complex intersection that includes two roundabouts, one pedestrian crossing and the meeting of several roads. The Ferguson Street level crossing is planned for removal between 2019 and 2022 with works at the early planning stage and a decision about the design for removing the crossing has not yet been decided.

This level crossing is currently used by approximately 26,000 vehicles per day and is a major safety hazard for pedestrians, cyclists and motorists in the area, with two pedestrian fatalities and one serious injury incident involving a cyclist occurring at this site¹⁰.

The level crossing removal will improve safety in the area by eliminating the risk of incidents between passenger trains and road vehicles, including large freight vehicles that use the road daily and provide safer passage for pedestrians and cyclists.

The final design for the removal of this crossing will significantly impact the intersection's operation and traffic flow in the area, as well as safety issues for vulnerable road users. With the final design unknown, it is essential that concept designs for Victoria Street are developed to be adaptable (easily integrated into the final level crossing removal design) and provide a means for HBCC to advocate for the safety of vulnerable road users as a priority in the area during future engagement with LXRP. The Victoria Street design should complement the Hobsons Bay Grade Separation Principles determined by Council to provide¹¹:

- Conservation of the special values and neighbourhood character.
- A connected community.
- Quality public places.
- A value for money outcome.
- A safer community.
- An efficient road network.

¹⁰ Level Crossing Removal Authority. Retrieved from <https://levelcrossings.vic.gov.au/projects/ferguson-street-williamstown> on 01/05/2019

¹¹ Hobsons Bay City Council Grade Separation Principles

8.2 Intersection Opportunities and Impacts

8.2.1 Path Priority Crossings (Side Road)

Path priority crossing treatments allow off-road paths to continue across a road. These types of crossings typically include a raised platform and pavement markings to increase the conspicuity of the crossing and to encourage motorists to slow down and give way to people crossing the road. This opportunity would improve north-south crossing conditions of side roads for pedestrians. This opportunity would also slow entry and exit speeds reducing the likelihood of car vs vehicle crashes at side road location.

Pros:

- The pavement markings highlight a pedestrian/cyclist crossing point to motorists.
- May achieve a reduction in side road entry/exit speeds.
- May reduce vehicle-pedestrian/cyclist conflicts.

Cons:

- The treatment may be uncomfortable for vehicle passengers.
- There may be impacts on bus and commercial vehicle access.
- Drainage needs to be adequately designed and maintained.

8.2.2 Raised Safety Platforms

A raised safety platform is a section of raised roadway with a platform that extends over more than a standard car length (at least 6m). The raised platform allows a vehicle to bring both sets of wheels onto the platform at the same time, reducing vehicles speeds but to a lesser extent than a road hump.

Pros:

- There may be a reduction in speed at the device.
- There may be a reduction in route speed if used in a series.

Cons:

- The ramp grades would need to be sympathetic to a bus and bicycle route.
- There may be an increase in traffic noise due to braking, accelerating and load shifts.
- The treatment may be uncomfortable for vehicle passengers.
- There may be impacts on bus, commercial vehicle and emergency vehicle access.

8.2.3 Kerb Extensions

Kerb extensions narrow the trafficable carriageway by extending the kerbs inwards. This treatment would modify the kerbs at intersections to minimise the pedestrian crossing distances (reducing exposure to conflict) and defining the start/end of the on-street parking. This opportunity would look to address the large crossing distances presented to pedestrian looking to undertake an east-west movement.

Pros:

- Reduces the crossing distance for pedestrians.
- The treatment may improve visibility of pedestrians and vehicles.
- The treatment delineates and provides protected parking.
- Provides an opportunity for landscaping/water sensitive urban design (WSUD).

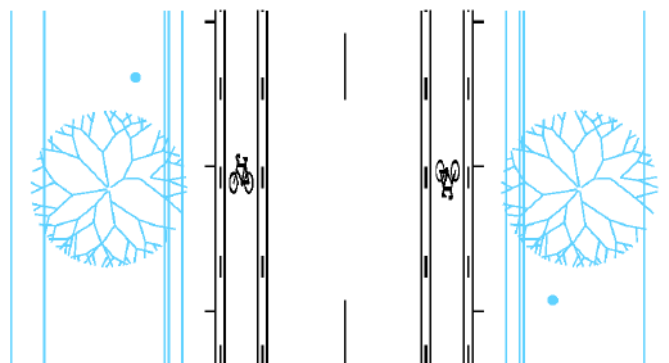
Cons:

- The treatment is unlikely to reduce traffic speed.
- Drainage needs to be adequately designed and maintained.

8.3 Mid-Block Opportunities and Impacts

8.3.1 Anti-dooring lanes

Anti-dooring or dooring buffers are similar to the conventional (existing) bicycle lanes where the lane is positioned between on-street parking and the through traffic lane. However, this treatment provides additional buffers adjacent to the parking lane and traffic lane to encourage cyclists to ride out from the “door zone”. The existing pavement and kerb lines would be retained for this treatment. This treatment would provide the opportunity to address concerns about parking behaviour by clearly delineating the traffic, bicycle and parking lane locations.



Pros:

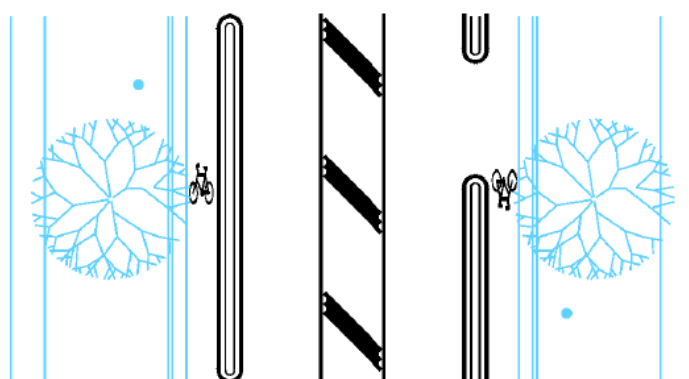
- The pavement markings may act as a reminder for cyclists to be aware of car doors.
- Can improve the positioning of cyclists on the carriageway, as they will be further away from parked vehicles.
- May encourage safer overtaking of cyclists as the higher level of delineation promote the section as a cyclist route.

Cons:

- May push cyclists closer to through traffic, which may be uncomfortable for cyclists who are inexperienced or lacking confidence.
- The treatment does not provide physical separation from parking or through traffic.

8.3.2 One-way protected bicycle lanes with median

One-way protected bicycle lanes (commonly known as ‘Copenhagen’ style bicycle lanes) is a treatment where the bicycle lane is provided to the left of the parking lane or traffic island. This treatment improves the level of safety for cyclists by positioning away from the narrow passage between moving traffic and parked vehicles. The median could be provided in the form of either a physical island or linemarking (e.g. to allow for property access). The median would enable pedestrians to stage their crossing rather than crossing both north and southbound traffic lanes in one crossing movement. The existing pavement and kerb lines would be retained for this opportunity. To accommodate the median, on-street parking would be removed.



Pros:

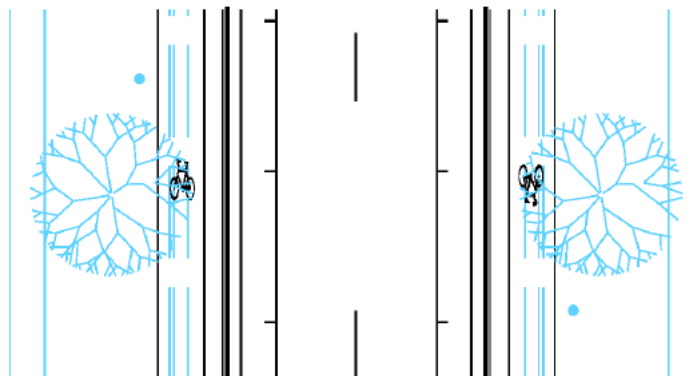
- Removes bicycles from the vicinity of car doors.
- Provides physical separation from moving (motorised) traffic.
- May encourage inexperienced or people lacking confidence to cycle.
- Provides connections to other on-road bicycle lanes and infrastructure more easily.
- Provides an area for pedestrians to stage their crossing.

Cons:

- Treatment may not be used by 'training/group' cyclists.
- There may be an increase to conflicts at intersections and property access where vehicles are turning to cross the bicycle lane.
- May impact waste collection as bins have traditionally placed in line with parked cars.
- May impact bus stop operation and result in the increase in pedestrian type crashes.
- There will be a reduction of on-street parking.

8.3.3 One-way off-road bicycle paths

The one-way off-road bicycle paths positions cyclists behind the kerb line between the verge and the parking lane. This treatment aims to improve the level of safety for cyclists by providing (physical) separation from other motor traffic while maintaining directness of travel. This opportunity would relocate the existing kerb lines to provide 3.5m traffic lanes and 2.1m parking lanes. A 1m buffer would be provided between the bicycle path and the parking lane. Pedestrians would be required to crossing Victoria Street in one movement. The crossing distance would be 11.2 which is a 30% reduction in distance from the existing 15.8m.



Pros:

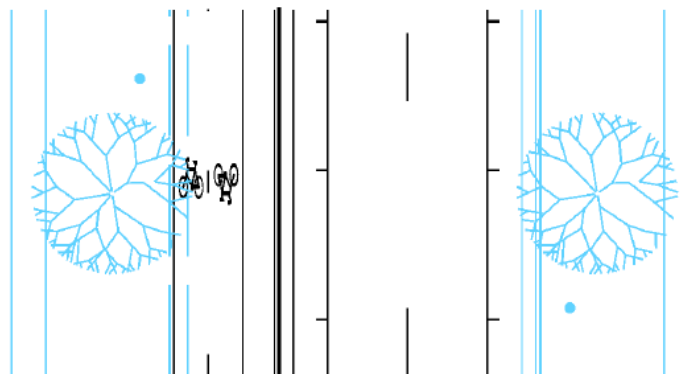
- Removes bicycles from the vicinity of car doors.
- Provides physical separation from moving (motorised) traffic.
- May encourage inexperienced or people lacking confidence to cycle.
- Provides connections to other on-road bicycle lanes and infrastructure more easily.
- The crossing distance for pedestrians is reduced by 30%.

Cons:

- Treatment may not be used by 'training/group' cyclists.
- People accessing the parking lane may not be used to looking for cyclists and this may lead to an increase in cyclist-pedestrian type crashes.
- There may be an increase to conflicts at intersections and property access where vehicles are turning to cross the bicycle path.
- May impact waste collection.
- May impact bus stop operation and result in the increase in cyclist-pedestrian type crashes.

8.3.4 Two-way off-road bicycle path

The two-way off-road bicycle path positions cyclists away from the moving traffic by providing the facility between the on-street parking lane and footpath (similar to the one-way off-road bicycle paths). This treatment improves the level of safety for cyclists by ensuring physical separation from moving traffic. This opportunity would relocate one existing kerb line to provide 3.5m traffic lanes and 2.1m parking lanes. A 1m buffer would be provided between the bicycle path and the parking lane. Pedestrians would be required to cross Victoria Street in one movement. The crossing distance would be 11.2m which is a 30% reduction in distance from the existing 15.8m.



Pros:

- Removes bicycles from the vicinity of car doors.
- Provides physical separation from moving (motorised) traffic.
- May encourage inexperienced or people lacking confidence to cycle.
- Provides connections to other on-road bicycle lanes and infrastructure more easily.
- The crossing distance for pedestrians is reduced by 30%.

Cons:

- May lead to an increase in head-on crashes between cyclists.
- Treatment may not be used by 'training/group' cyclists.
- People accessing the parking lane may not be used to looking for cyclists and this may lead to an increase in pedestrian type crashes.
- Cyclists will only have direct access to destinations on one side of the road.
- There may be an increase in conflicts at intersections and property accesses where vehicles are turning to cross the bicycle path.
- May impact waste collection on one side of the road.
- May impact bus stop operation and result in the increase in cyclist-pedestrian type crashes.
- May be mistaken as a shared path by pedestrians leading to an increase in cyclist-pedestrian crashes (noting that the two-way protected bicycle lane on the Coastal Trail between the Kiosk and the Rotunda has low compliance by pedestrians).

8.4 Supporting Opportunities

8.4.1 Speed limits

There is opportunity to implement a 40km/h zone for Williamstown area contained by the Rifle Range development, the Williamstown Railway Line and Port Phillip Bay as shown in Figure 48. The lower speed limit will support existing 40km/h limits on Swanston Street, Bayview Street, the Esplanade and Battery Road (Steve Bracks Boulevard).

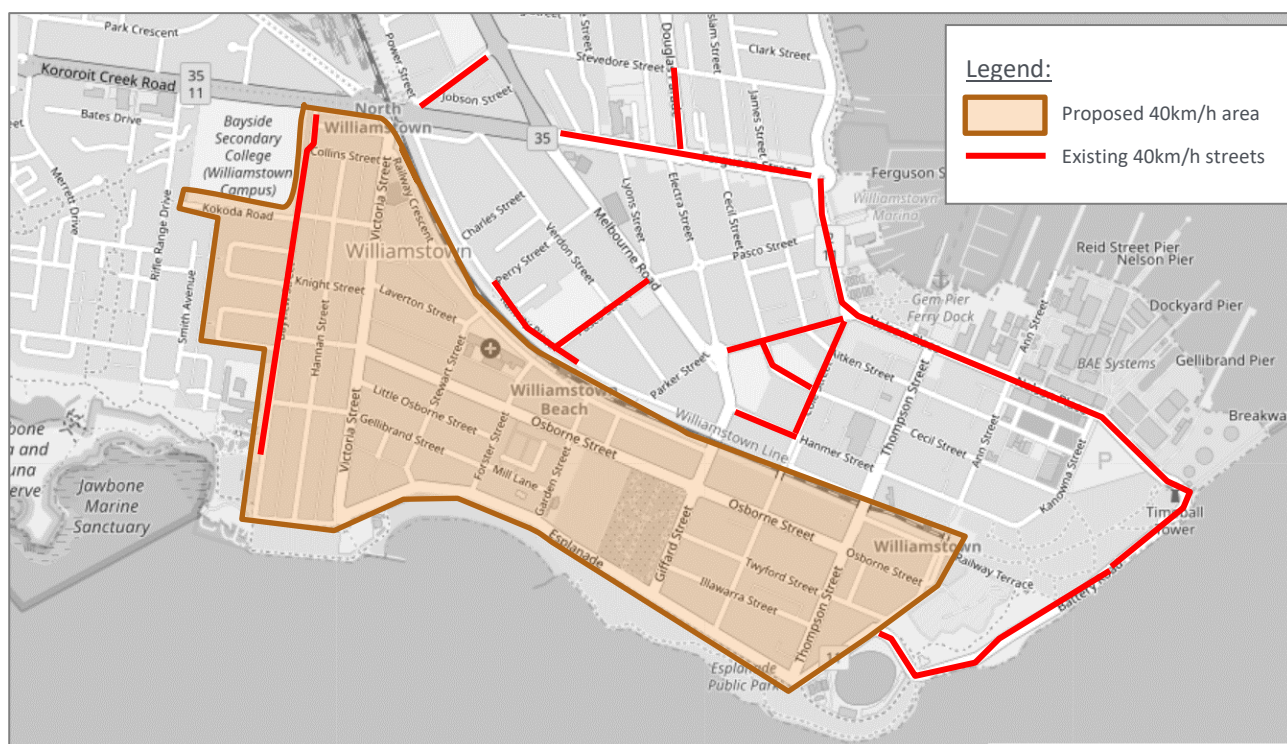


Figure 48: Potential Lower Speed Limit Area (map source: www.openstreetmap.org)

Lower speed limits in built-up areas will help to reduce the number of pedestrian and cyclist fatalities and injuries. Travelling at lower speeds improves a driver's ability to stop and avoid crashes, especially in areas of high pedestrian and cyclist activity. Where crashes do occur they are less severe, especially for children and the elderly.

Consider the example of one car travelling at 40 km/h, another at 50 km/h. Both drivers see a child about 27 metres ahead, recognise the danger and brake. The car travelling at 40 km/h will stop safely after 26 metres, avoiding the child. The car travelling at 50 km/h will take an extra 9 metres to stop and will still be travelling at 41km/h when it hits the child, as represented in Figure 49.



Figure 49: Braking Distance Comparisons
(source: <https://roadsafety.transport.nsw.gov.au/speeding/speedlimits/safespeedlimits.html>)

8.4.2 Public Lighting

The existing high-pressure sodium (HPS) luminaires are a superseded lighting technology. There is opportunity to improve lighting along the Victoria Street corridor. The existing tree lined nature of Victoria Street impacts the amount of light that can spill onto the footpath and often results in the impression that lighting levels are low. Uplift of the tree canopies can improve light spill and reduce the amount of shadow created. It is recommended to upgrade of the existing HPS luminaires to a light emitting diodes (LED) equivalent. LED luminaires provide a higher output and colour rendering index (CRI) in the evening hours and therefore likely to have a positive effect on overall public safety within residential streets. An additional advantage to upgrading to LED include reduced energy consumption which equates to lower operating costs and lower greenhouse gas emissions.

8.4.3 Temporary Works/Work Within Road Reserve

There is often a need for works to be undertaken within the road reserve to repair, renew or install new assets. To ensure the safety of pedestrians and cyclists during the works, appropriate traffic management that accords with the relevant Acts, Standards and Codes of Practice needs to be provided. Community feedback and site observation indicate poor traffic management practises are occurring and include the following:

- Closing footpaths and not providing a safe alternate route.
- Unnecessarily placing temporary signage within the bicycle lane.
- Closing a marked bicycle lane and not lowering the adjacent traffic speed to 40km/h to allow cyclists to safely share the traffic lane.

There is opportunity for Council Engineers to carry out random traffic management audits of works being undertaken on any HBCC road asset. Audits are to be conducted using the checklist as set out in the *Road Management Act 2004 Worksite Safety – Traffic Management Code of Practice*.

8.4.4 Parking Behaviour

Parking behaviour concerns make up a high proportion of comments to Council for Victoria Street. Poor parking behaviour impacts pedestrian and cyclist safety in ways such as impairing sight lines and causing pedestrians and cyclists to unnecessarily deviate from a safe path.

There is opportunity to improve parking behaviour through awareness campaigns and enforcement of the statutory parking restrictions. Community feedback and site observation indicate the behaviours requiring improvement (based on the requirements outlined in the Road Safety Road Rules 2017) include:

- Parking near bus stops.
- Parking in driveway area and overhanging the footpath and/or bicycle lane.
- Parking on the nature strip.
- Parking as near as practical to the left side of the road.
- Parking of registered vehicles and/or trailers greater than 4.5 tonnes (GVM) and/or greater than 7.5m long for greater than 1 hour.

8.4.5 Bus Stop Locations

Two bus routes utilise Victoria Street providing Williamstown residents connectivity to number of destinations such as Footscray, Moonee Ponds, Altona North and Sunshine. Community feedback and site observation indicate stopping buses have difficulty accessing stop locations and often overhang the bicycle lane into the through traffic lane.

There is opportunity to review bus stop locations and design to improve bus accessibility.

8.4.6 On-Road Bicycle Lane

On-road bicycle lanes generally provide separation between bicycles and other vehicles. The Kororoit Creek Road/Ferguson Street corridor is identified on the Principal Bicycle Network and generally provides on-road bicycle lanes from Princes Freeway to Nelson Place. However, the Kororoit Creek Road/Ferguson Street corridor on-road bicycle lanes are discontinuous between Swanston Street and Melbourne Road, Williamstown.

There is opportunity to improve cyclist conditions by completing the missing section of on-road bicycle lanes from Swanston Street to Melbourne Road, Williamstown.

8.4.7 Road Maintenance/Surface Quality

Road surfaces can be destabilising for cyclists and may result in impaired handling and braking performance. The existing road surface within the Victoria Street on-road bicycle lanes presents users with large sections of longitudinal cracking with openings up to 20mm in width. The cracking is located at an offset where cyclists typically ride to be in a central position from parked vehicles and moving traffic.

Subject to selection of the preferred treatment, there is opportunity to improve the road surface quality by removing the existing pavement cracking.

8.4.8 Active Travel Plans

There is opportunity to work with the local and catchment schools to develop active travel plans. A School Travel Plan is a document that outlines how a school intends to make travel to and from their campuses safer and more sustainable for students, families and teachers.

The School Travel Plan can address local traffic issues around schools and encourage active, safe and sustainable travel methods, such as walking, cycling, scooting or public transport. The School Travel Plan should tie in with the school's overall aspirations and is a document that should be monitored and regularly reviewed.

North Williamstown Primary School, Bayside College and Williamstown High School are in close proximity to Victoria Street. Westbourne Grammar School provide a bus service⁸¹² along Victoria Street. The process of developing a School Travel Plan for these schools will inform Council where efforts can be focussed to achieve desirable outcomes for vulnerable users.

8.5 Level Crossing Opportunities

Key principles developed and adopted by Council for the Ferguson Street Level Crossing Removal Project include:

- Retaining the existing station building.
- Improving the appearance at this gateway to Williamstown.
- Ensuring that the build response does not provide a rail or vehicle overpass.
- Ensuring that existing views are retained or improved.
- Retaining, improving and creating public spaces connected to the station.
- Providing a cost-efficient outcome.
- Achieving safer pedestrian and cyclist connections.
- Achieving an efficient road network.

The four options available for the level crossing removal include road over, rail over, road under and rail under. The key principles adopted by Council result in the rail under option with the greatest key principle alignment, as discussed in the following.

8.5.1 Road Over Rail Option

The road over rail option would see the road elevated, beginning several hundred metres on the approaches to the rail crossing. Given the complex road network adjacent to the rail crossing, this option would require not only Kororoit Creek Road and Ferguson Street to be elevated on the approaches, but also Victoria Street, Champion Road, Station Road, Power Street and Railway Place. Elevating these roads would create property issues, so is not considered a viable option.

The alternative would be to terminate some of the streets which connect at this location, which would cause connectivity and access issue and again is not considered a viable option.

8.5.2 Rail Over Road Option

The rail over road option would allow the road network to remain as per existing, or with minor modifications. However, this option does not satisfy some of the HBCC key principles listed above.

8.5.3 Road Under Rail Option

The road under rail option would see the road lowered, beginning several hundred metres on the approaches to the rail crossing. Similar to the road over rail option, the complex road network adjacent to the rail crossing, this option would require not only Kororoit Creek Road and Ferguson Street to be lowered on the approaches, but also Victoria Street, Champion Road, Station Road, Power Street and Railway Place. Lowering these roads would create property issues as well as sight line issues at intersections within the lowered portion, so is not considered a viable option.

The alternative would be to terminate some of the streets which connect at this location, which would cause connectivity and access issue and again is not considered a viable option.

¹² <https://www.westbournegrammar.com/transport/>

8.5.4 Rail Under Road Option

The rail under road option would allow the road network to remain as per existing, or with minor modifications. The design of the deck may in fact allow for improved movements for traffic as well as dedicated areas for cyclists and pedestrians. The design options for the station forecourt can open up the frontages to Kororoit Creek Road/Ferguson Street over the rail corridor.

9 Design Response

9.1 Key Design Considerations

Alignment between all key stakeholders on the desired outcomes is important to ensure a successful outcome for this project. The following discusses the considerations of the key stakeholders.

9.1.1 Heritage and Planning Considerations

Part of the identified heritage character of sections of Williamstown is the wide road reserves with often informal road verges next to the carriageway. The aim is to avoid changing the street environment too much and overly narrowing the carriageway. As such, a key consideration is to make changes as minimal as possible to retain Victoria Street's 'grand boulevard' feel.

9.1.2 User Group Considerations

The user groups being catered for in this project consists of pedestrians and cyclists, but the sub-groups of each group have individual challenges. The sub-groups and their challenges are generally as follows:

- School children:
 - A general desire to cross the priority road (east – west movement to/from school precincts).
 - Ability to judge gaps in traffic less developed than adults.
 - Often smaller than adults and 'less visible' to motorists.
- Seniors/Elderly:
 - Often have a slower reaction time and/or slower crossing speed.
- Training/Recreational cyclists:
 - Preference to maintain on-road position and higher travel speeds.
 - Aversion to routes/treatments that cause delays to travel.
- Commuting/Utility cyclists:
 - Preference for separation from motor vehicles and content with lower travel speed if provided with separation.

9.1.3 Asset/Service Owner Considerations

There are several infrastructure assets and services found in the study area. These assets include:

- Power distribution poles (with overhead wires and public lighting).
- Underground drainage.
- Underground telecommunications.
- Underground water.
- Underground gas.
- Underground sewer.

It is desirable to minimise the impact to existing assets and services. Where possible, the design response is to be sympathetic to existing assets and minimise the need to modify and/or relocate.

9.1.4 Victoria Street Resident Considerations

Victoria Street residents will be the long-term beneficiary of the treatment. It is important to recognise aspects of Victoria Street that residents enjoy and consider important. Aspects of Victoria Street to maintain where possible include:

- The wide tree lined boulevard feel of Victoria Street is to be maintained where possible.
- On-street parking and ease of access to properties (i.e. driveway access).
- Waste collection (treatment ideally would have minimal impact on placement of waste (general and green) and recycle bins for collection).

9.1.5 Public Transport Provider Considerations

Two bus routes operate along Victoria Street. The bus operator has indicated that treatments that introduce delay to their operation are not preferred. The bus timetable is a key performance indicator of the bus operator. The introduction of slow points could impact the bus operator's ability to achieve meet the schedule outlined in the PTV timetable.

9.1.6 Funding Partner Considerations

The TAC has developed a Local Government Grant program that aims to encourage local government involvement in pedestrian and cyclist road safety projects that are aligned with the Towards Zero Strategy and Action Plan 2016-2020 and Safe System Principles and deliver positive outcomes in the community.

Council is seeking to partner with the TAC in the delivery of this project. The TAC is supportive of projects that provide the following:

- Supported by a community engagement activity plan and/or provides evidence of existing community support for the project.
- Aligned to sound research and/or established road safety design principles and safety treatments (i.e. Safe System Principles which, for this context, are summarised below).
- Identifies how the project will eliminate, or will come close to eliminating, the risk of severe crashes for pedestrians and cyclists in the local area.

9.1.7 Council Budgetary Considerations

Safety outcomes are a key driver in the development in the design response, however it is noted that Council has finite resources. It is desirable to develop a design response that maximises safety while taking into consideration Council's commitment to delivery of other essential community services.

9.2 Design Response Approach

Two design responses have been developed in collaboration with Council following a detail analysis of issues outlined in the report above. The two design responses incorporate the key design considerations where possible to ensure an increase in safety outcomes to the vulnerable road users of Victoria Street.

9.2.1 Anti-dooring Lanes

This design response has been developed to address a number of items raised by the community and improve safety outcomes for the key user groups. This design response incorporates raised pavements at most side road locations to slow traffic as they enter/exit a side road.

Benefits of the anti-dooring lanes response with raised side road pavements include:

- Retains existing 'grand boulevard' of Victoria Street (no change to existing cross section).
- Improves delineation of the traffic, bicycle and parking lanes.
- Outstand islands improve east-west crossing conditions by sheltering area from on-street parking and providing path connectivity.
- Minimal changes to existing kerbs and pavements which limits impact on existing services.
- Minimal impact on Victoria Street residents.
- Satisfies route bus operators request for no introduction of slow points to existing bus routes.

Concept plans of the anti-dooring design response has been provided at Appendix A of this report.

9.2.2 Two-way off-road path

This design response has been developed to address a number of items raised by the community and improve safety outcomes for the key user groups. This design response incorporates side road priority treatments and where possible raised pavements at these locations.

Benefits of the two-way off-road path response with side road priority include:

- Retains existing 'grand boulevard' of Victoria Street (no change to existing cross section).
- The training/recreational cyclist retain the on-road option.

- Separation is provided to cyclists not confident riding adjacent to traffic.
- Priority given to path users at side roads along east side.
- Minimal changes to existing kerbs and pavements limits impact on existing services.
- Minimal impact on Victoria Street residents
- Satisfies public transport providers request for no introduction of slow points on existing bus routes.

Concept plans of the two-way off-road design response has been provided at Appendix B of this report.

9.3 Design Limitations

The design response has been prepared using field measures and aerial photography. Efforts have been made to ensure that site limitations have been identified. It is recommended that a 3D feature survey be undertaken to ensure all constraints and limitation have been identified and can be incorporated in the final design.

9.4 Preferred Design Response

A preferred design response has been developed following a review process undertaken by Council to ensure the most appropriate alignment with desired project outcomes, key stakeholder considerations and identified constraints. The preferred design response is the 'anti-dooring' lanes treatment, however does incorporate aspects from the two-way off-road path design response north of Collins Street.

Feedback from Council at the end of their review process has resulted in a number of refinements that support improved safety outcomes for vulnerable users along the Victoria Street corridor. The refinements that support improved safety outcomes include:

- Increased 'buffer' widths (0.8m provided adjacent to the parking lane and 0.5m provide adjacent to the traffic lane) to improve cyclist clearance to moving and parked vehicles.
- 'Sharrow' pavement markings at the northern and southern ends of the corridor to highlight the presence of on-road cyclists and encourage lane sharing.
- Reduced traffic lane widths (3.0m) to support the 50km/h environment by encourage lower travel speed.
- Longer green pavement treatments to further enhance the main bicycle conflict zones.
- Narrowing of side roads (at discrete locations) to reduce pedestrian crossing distance and reducing exposure.
- Improved east-west pedestrian crossing conditions at the staggered Laverton Street/Knight Street intersection the support pedestrian design lines while providing shelter and reducing crossing distance.
- Shared use path provision on the east side of Victoria Street from Collins Street to Kororoit Creek Road.
- Refuge islands to support cyclist transition from road to off-road, linking to the future Champion Road shared use path.
- Converting the angled parking to parallel to reduce potential conflicts with on road cyclist and vehicles exiting parking spaces.
- Modifying layout on the southern leg of the Kororoit Creek Road/Victoria Street intersection to reducing pedestrian/off-road cyclist crossing distance. (NB: site observations suggest the existing traffic island separating the left and right turn entry movements is largely overlooked by pedestrians as refuge option.)

9.5 Potential Staging of Works

A staged delivery approach could be adopted to reduce Council's financial commitment per financial year. It is suggested that the preferred design response be delivered in two stages. A proposed staging arrangement has been developed to minimise redundant works while delivering improved safety outcomes. The proposed staging is as follows with concept plans provided at Appendix D and Appendix E:

- **Stage 1** – Installation of 'anti-dooring' lanes and reconfiguration Victoria Street (Kororoit Creek Road to Collins Street)
- **Stage 2** – Construction of raised side road treatments and east-west path crossing points.

9.6 Bill of Quantities

To assist Council to plan the delivery of these improvement works a bill of quantities (BoQ) has been prepared for each of the proposed stages and provided at Appendix F and Appendix G.

Stage 1 has been estimated to cost approximately **\$550,000** with Stage 2 estimated to cost approximately **\$330,000**. In looking to minimise Council's commitment to this project per financial year Stages 1 and 2 could be split into sub-stages A and B and look as follows:

- **Stage 1A** – Reconfiguration Victoria Street (Kororoit Creek Rd to Collins Street) - **\$340,000** (approx.)
- **Stage 1B** – Installation of 'anti-dooring' lanes - **\$210,000** (approx.)
- **Stage 2A** – Construction of raised side road treatments and east-west path crossing points north - **\$175,000** (approx.)
- **Stage 2B** – Construction of raised side road treatments and east-west path crossing points south - **\$155,000** (approx.)

10 Conclusions

Victoria Street plays a vital role in the connectivity of the Williamstown area. The width of Victoria Street both provides opportunities and creates safety issues. A collaborative approach with Council has been undertaken to analysis key issues that are present in Victoria Street to vulnerable users and develop an appropriate design response.

Currently, pedestrians have to cross bicycle/parking lanes plus traffic lanes with little infrastructure to support them. Parking along Victoria Street lacks delineation and as such parking behaviour issues have emerged. Cyclists are affected by poor pavement condition, poor parking, pedestrian movements and traffic speed.

Two design responses were developed to address key issues raised by the community, improved safety outcomes for the key user group and align with key stakeholders' design considerations. A preferred design response was subsequently developed based on Council feedback to ensure the most appropriate alignment with desired project outcomes, key stakeholder considerations and identified constraints. The preferred design response aligns with Safe System Principles and would improve safety outcomes for vulnerable uses of the Victoria Street Corridor.

Potential treatments that could further support the project's alignment with Safe System principles and achieve Victoria's 'Towards Zero' vision, have been identified in Supporting Opportunities for consideration moving forward with the design.

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