Laverton Safety Study

Hobsons Bay City Council

V200754

Prepared for
Hobsons Bay City Council

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Cardno

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1 Introduction

Cardno has been engaged by Hobsons Bay City Council to undertake an issues analysis and design work to improve the safety of local roads in the northern area of Laverton.

A *Local Area Movement Plan* (LAMP) was undertaken in 2020 by Hobsons Bay City Council across the western portion of the municipality. One of the key actions from the LAMP was the need to address the safe path of travel for school children in Laverton and to reduce congestion and parking issues. This was further reinforced by the *Better Places Laverton* project that identified that the community wants to make Laverton cleaner, greener, improving parks and streets to make them more attractive, and making it a place that is easier and safer to walk or get around on a bike.

Hobsons Bay City Council has received funding through the TAC to undertake this analysis that identifies the issues and risks in this area. The purpose is to develop traffic treatments to ease congestion and improve safety and connectivity, with particular focus on the safety concerns surround the five (5) schools within the study area: Western Autistic School (Laverton Campus), St Martin de Porres Primary School, Jennings Street School, Western English Language School and Laverton P-12 College.

1.1 Scope of Works

1.1.1 Overview

The measures proposed in the following sections were informed by a previously completed *Local Area Management Plan* (LAMP) and background information relevant to the site. It is recommended that this report be read in conjunction with the LAMP.

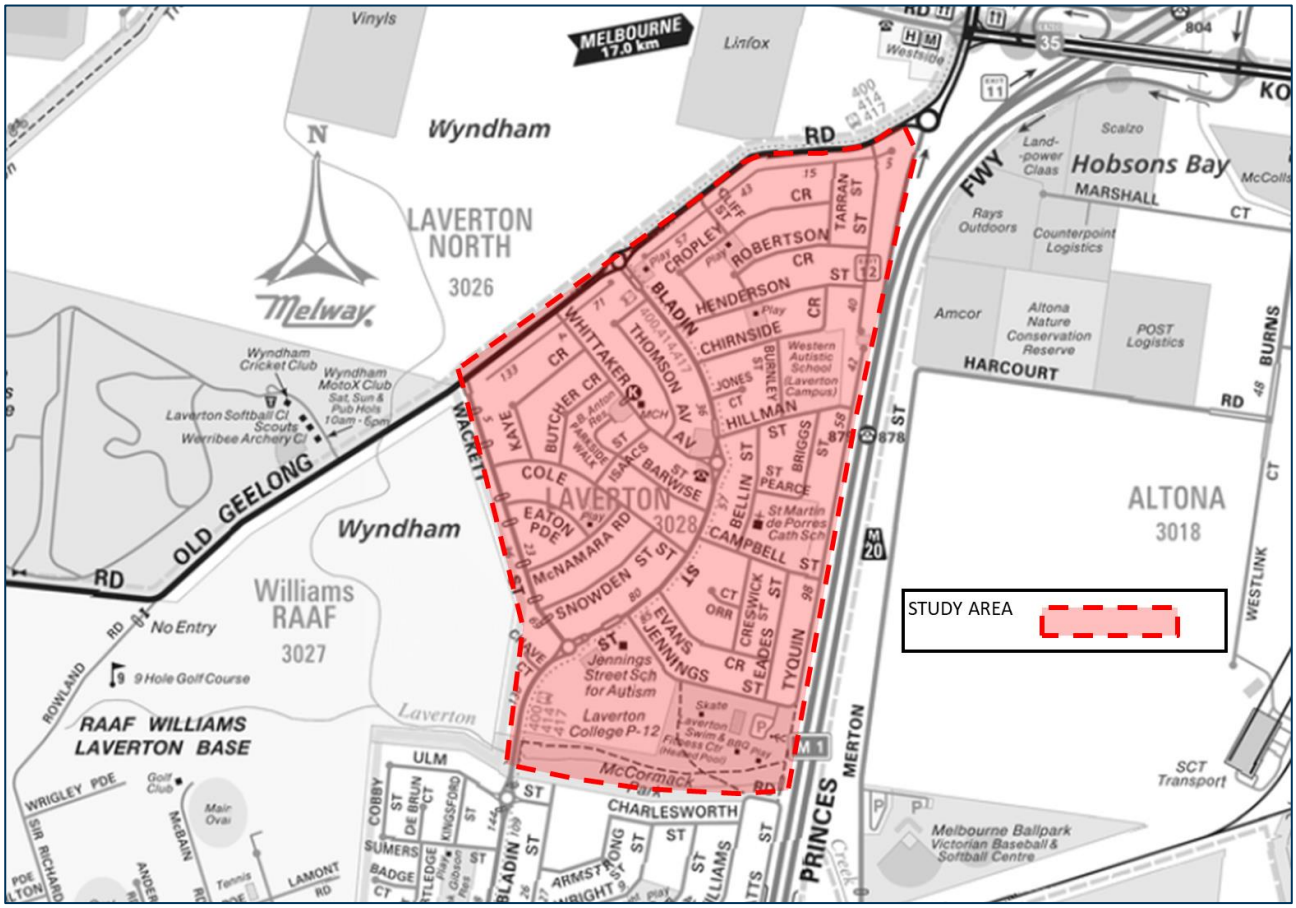
This study is within the area bound by Old Geelong Road, Princes Freeway, Laverton Creek, Bladin Street, and Wackett Street. The objectives of this study are to:

- Provide an analysis of the pedestrian and cyclist road safety issues and risk factors
- Adopt findings from the Western LAMP
- Ensure that transport issues are addressed in a manner that balances amenity, safety, and mobility for all transport modes,
- Improve the environment, economic, and social outcomes of the area;
- Consider the implications of proposed treatments on the availability of parking;
- Identifying future priority projects; and
- Ensure that transport issues are addressed in a manner that balances amenity, safety, and mobility for all transport modes;
- Improve the environment, economic, and social outcomes of the area;
- Consider the implications of proposed treatments on the availability of parking;
- Identifying future priority projects; and
- Ensure the local community are engaged and consulted in the identification of issues and the development of treatments to mitigate these issues.

1.2 Study Area

The study area is bound by Old Geelong Road to the north, Wackett Street to the west, Laverton Creek to the south and the Princes Freeway to the east. The extent of the study area is shown in Figure 1-1.

Figure 1-1 Laverton LATM Study Area Map



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2 Study Methodology

The key tasks carried out to determine the existing issues, concerns and opportunities within the study area are outlined below:

- A review of relevant background information;
- A review of the community engagement provided by Hobsons Bay City Council;
- On-site investigations and familiarisation of the area; and
- Data collection and collation including, but not limited to, volume, speed and crash data.

2.1 Background Information

The background documents and information relevant to this study are outlined below.

2.1.1 Local Area Movement Plan Final Strategy 2020

The aim of the *Local Area Movement Plan* (LAMP) strategy is to review issues and opportunities regarding access, connectivity and movement in Altona Meadows, Laverton and Seabrook. The subject site falls within "Area 1" in Laverton within the LAMP. The strategy uses quantitative and qualitative information to support the proposed strategies and actions to improve transport within the area.

The key actions relevant to the strategy include:

- Improve amenity and safety for all road users;
- Advocate for improvements to arterial roads;
- Develop on-going plan of streetscape works;
- Improve and extend the pedestrian network
- Improve pedestrian safety around local schools;
- Improve access for pedestrians on local roads;
- Provide new pedestrian crossing facilities;
- Expand the off-road and on-road cycling network;
- Improve cycling connections between routes and across creeks and watercourse;
- Advocate for increased cycling end-of-trip facilities;
- Advocate for improved local bus services; and
- Plan and install wayfinding signage across the study area.

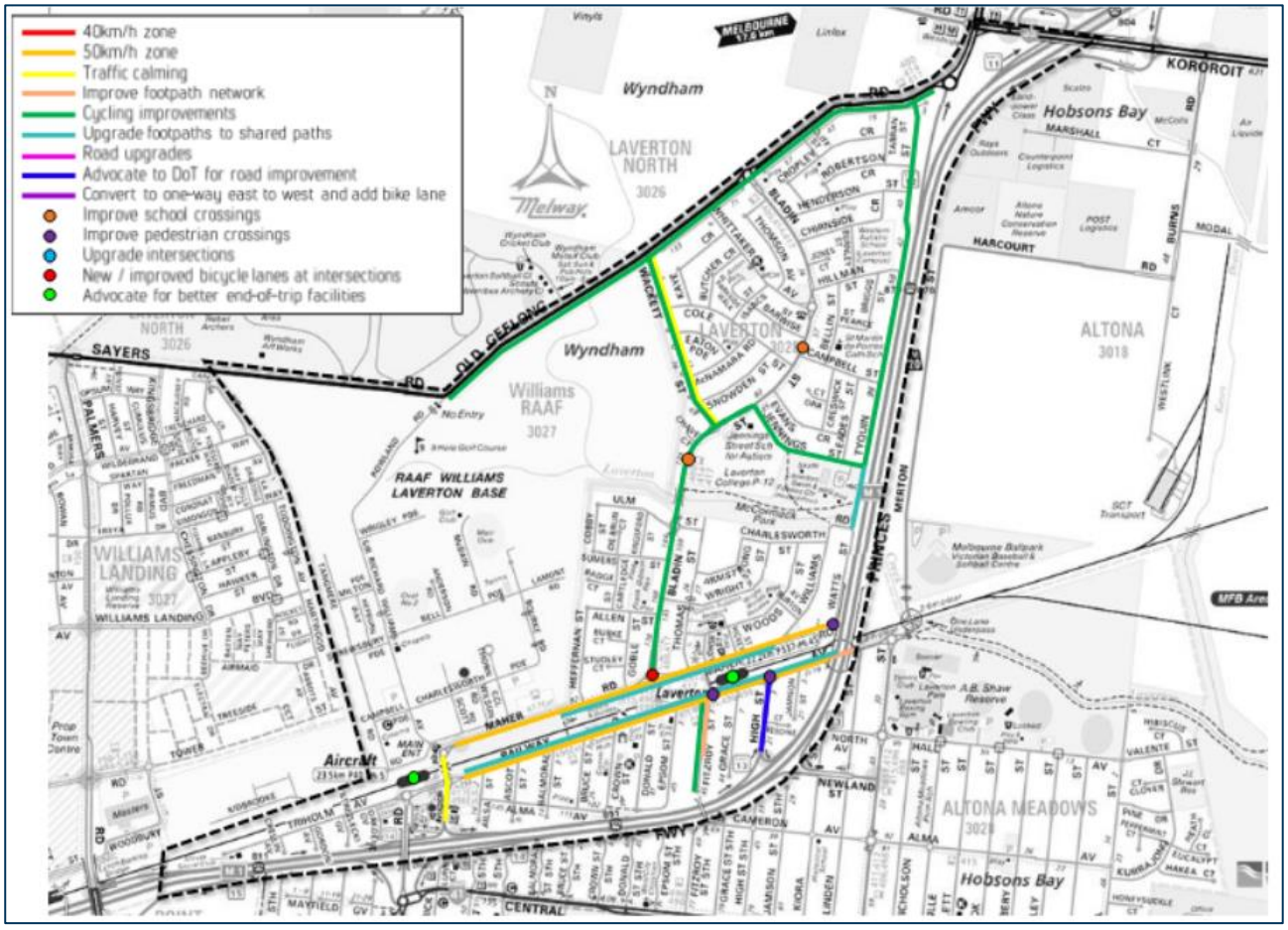
Specific actions related to the study area include:

- Consider traffic calming devices along Wackett Street;
- Improve pedestrian safety by implementing raised pavements at the following school crossings:
  - Bladin Street near Chave Court; and
  - Bladin Street near Campbell Street.
- Provide off-road shared path links on the south side of Old Geelong Road;
- Expand the on-road cycling network through local streets including:
  - Along Bladin Street, between Mayer Road and Jennings Street;
  - Along Wackett Street between Old Geelong Road and Bladin Street;
  - Along Jennings Street between Bladin Street and Tyquin Street; and
  - Along Tyquin Street between Jennings Street and Old Geelong Road.

- Support the provision of safe and comfortable waiting areas at bus stops, particularly those in proximity to schools, activity centres and community facilities;
- Maintain consistency across parking restriction signs including review of all existing signage;
- Continue to undertake frequent parking enforcement at random times of the day;
- Undertake a detailed audit of wayfinding within the study area to identify current signage and any opportunities;
- Plan for and install wayfinding signage across the study area that provides information to allow users to switch between mobility modes and navigate local street networks to and from key destinations; and
- Facilitate community participation in the process of change to study areas streetscapes and infrastructure.

The implementation plans are provided in Figure 2-1.

Figure 2-1 Area 1 Implementation Plan



Plan as per Figure 14 of the Local Area Movement Plan

2.1.2 Integrated Transport Plan (ITP) 2017

The purpose of the Integrated Transport Plan (ITP) is to define a long-term vision for the development of an integrated transport network within Hobsons Bay and the western metropolitan region, provide overarching principles to guide Council's transport planning, establish a platform for advocacy and collaboration and guide implementation by defining key actions.

As part of the ITP, Council's role is well defined to include the following:

- Conduct research and planning to determine project feasibility and discover new transport models;
- Deliver and maintain innovative and cost effective, sustainable transport services and infrastructure;
- Ensure relevant legislation and regulations are applied to maintain a safe, equitable and efficient transport system;
- Collaborate with communities and businesses to understand their needs, manage travel demands and encourage mode shift; and
- Work in partnerships to respond to important issues and improve connectivity, accessibility and efficient of Council's transport system.

Council conducted a consultation series in October 2015 to assist with guiding the integrated transport planning in Hobsons Bay. The sessions gained attendance of more than 100 people. Some of the issues/opportunities highlighted include:

- Public transport service levels;
- Road congestion;
- Cycling infrastructure gaps;
- Insufficient integration;
- Potential impacts of major transport projects;
- Improve sustainable transport services and infrastructure;
- Take advantage of new and upcoming technologies; and
- Reduce vehicle dependency through the development of local shopping precincts.

The abovementioned issues and opportunities are intended to be achieved by undertaking the following strategic directions:

- Deliver and advocate for safe, connected and accessible walking and cycling infrastructure;
- Deliver and support behaviour change to encourage a mode shift, promoting sustainable transport alternatives;
- Deliver and support urban design, land use planning and place making projects to create a more liveable area;
- Strategically encourage development in areas in close proximity to sustainable transport and ensure that the impact on transport networks is adequately identified, addressed and monitored;
- Prioritise an integrated approach to car parking by conducting regular monitoring of supply and demand, ensure responsible and sustainable provision, progressive and flexible permit and restriction systems, and consistent equitable enforcement; and
- Develop safe, connected and efficient routes for all road users. This includes cyclists and pedestrians, supported by related advocacy, planning and infrastructure projects.

2.1.3 Better Places Laverton – Place Guide 2020

Better Places Laverton – Place Guide (BPL) was conducted to provide a summary of the vision process, engage with the community to get their input and identify what projects and improvements need to occur in the future. The intention of the BPL is to set out the framework required to guide which future projects will be developed and delivered.

2.2 Community Consultation

The community and schools in the study area were consulted on the project and asked to identify the key road safety issues and challenges that they face.

The community consultation undertaken by Hobsons Bay City Council is discussed in further details below. The community will be consulted at key future project stages.

2.3 Site Investigation

Site inspections were carried out between 7am -9:30am and 2;30pm -4pm on Thursday 17th of June 2021, which reviewed all the roads within the study area. The site visit was undertaken to obtain an overall 'feel' for the local road network, and to identify where traffic issues/conflicts may occur.

A site inventory and photographic survey was carried out on each street during the site visit, to assist in formulating the traffic management opportunities and recommendations. The site visit observed the following:

- Environments which are conducive to high speeds;
- Streets that experience high traffic volumes;
- Illegal traffic movement / behaviour;
- Facilities for pedestrians and cyclists;
- The traffic composition (cars, commercial vehicles);
- Intersection configurations and safety; and
- Land use composition.

3 Existing Conditions

3.1 Land Use

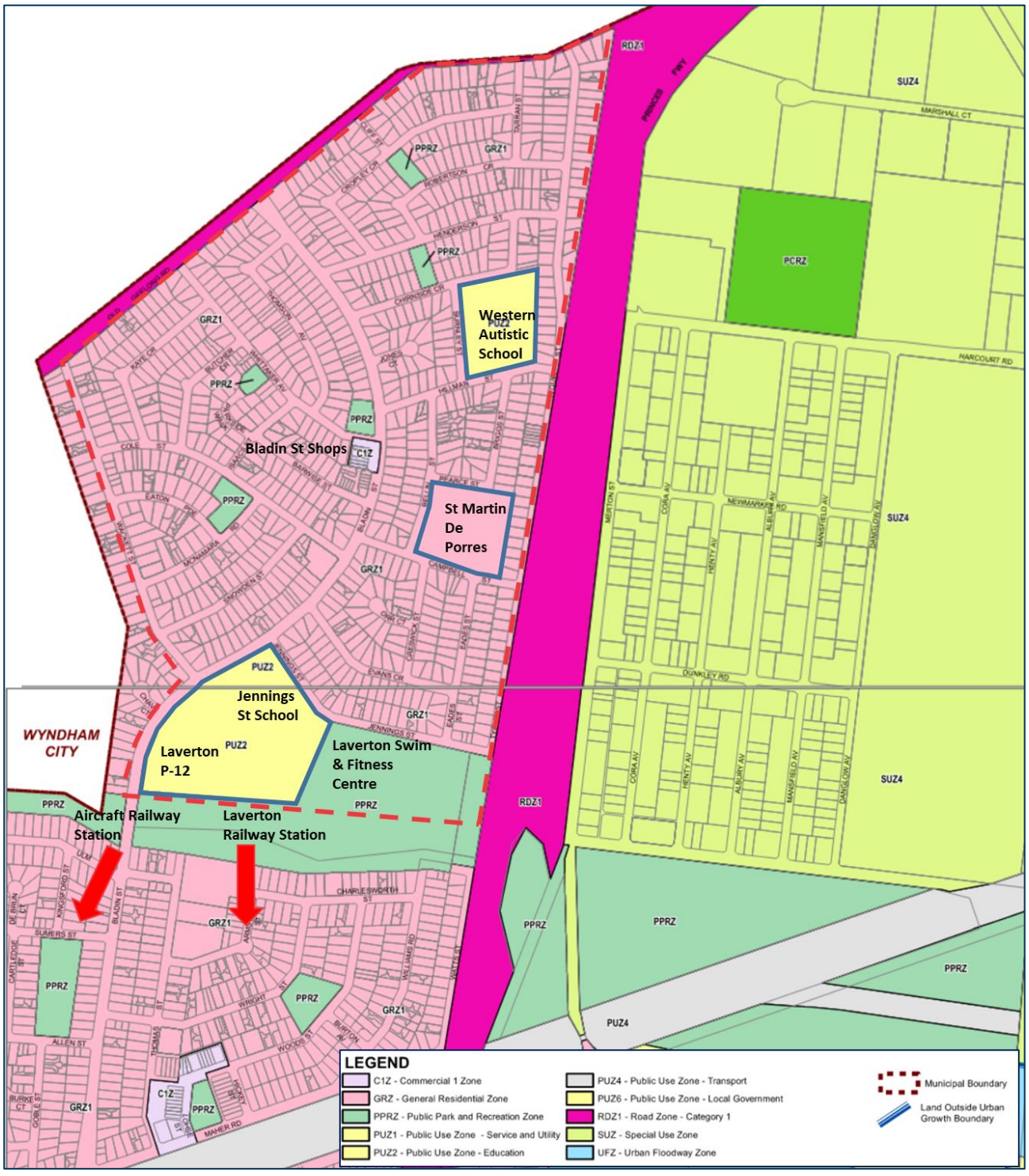
The study area is predominantly residential in nature, with five (5) schools located within the precinct. There are some public park and recreation zones as shown in the Planning Scheme Zone map in Figure 3-1. Significant land uses in the study area include:

- Western Autistic School;
- St Martin De Porres School;
- Jennings Street School;
- Western English Language School;
- Laverton P - 12 School;
- Laverton Swim & Fitness Centre; and
- Bladin Street Shops.

Significant land uses beyond the study area include:

- Aircraft Railway Station (south-west of study area);
- Laverton Railway Station (south of study area);

Figure 3-1 Planning Scheme Land Use Zones



3.2 Road Network Hierarchy

Old Geelong Road, which forms the northern boundary of the study area is a declared road zones (RDZ1) under the jurisdiction of Department of Transport (DoT, formerly known as VicRoads).

All other roads within the study area are under Council's jurisdiction, and are classified into a hierarchy which is outlined in Council's Road Management Plan (RMP). The road network hierarchy establishes a framework for the different types of roads within the municipal road network to be categorised and attain distinct order and characteristics in relation to each other. The hierarchy considers the road's specific function, types of users and user numbers.

Council's hierarchy classification is divided into five (5) road categories. Table 3-1 summarises the typical definitions for the five (5) road types outlined in Council's RMP.

Table 3-1 Road Hierarchy Definitions

Classification		Definition
Urban	Body Corp	Roads that are part of body corporate developments.
Urban	Link	Provides link between arterial roads and/or significant residential, industrial and commercial nodes.
Urban	Collector	Provides route between and through residential, industrial and commercial areas and convey traffic to link or arterial roads.
Urban	Access	Provides direct access to abutting residential, industrial and commercial properties with minimal to no through traffic.
Urban	VicRoads Main Roads	Roads that are the responsibility of VicRoads.

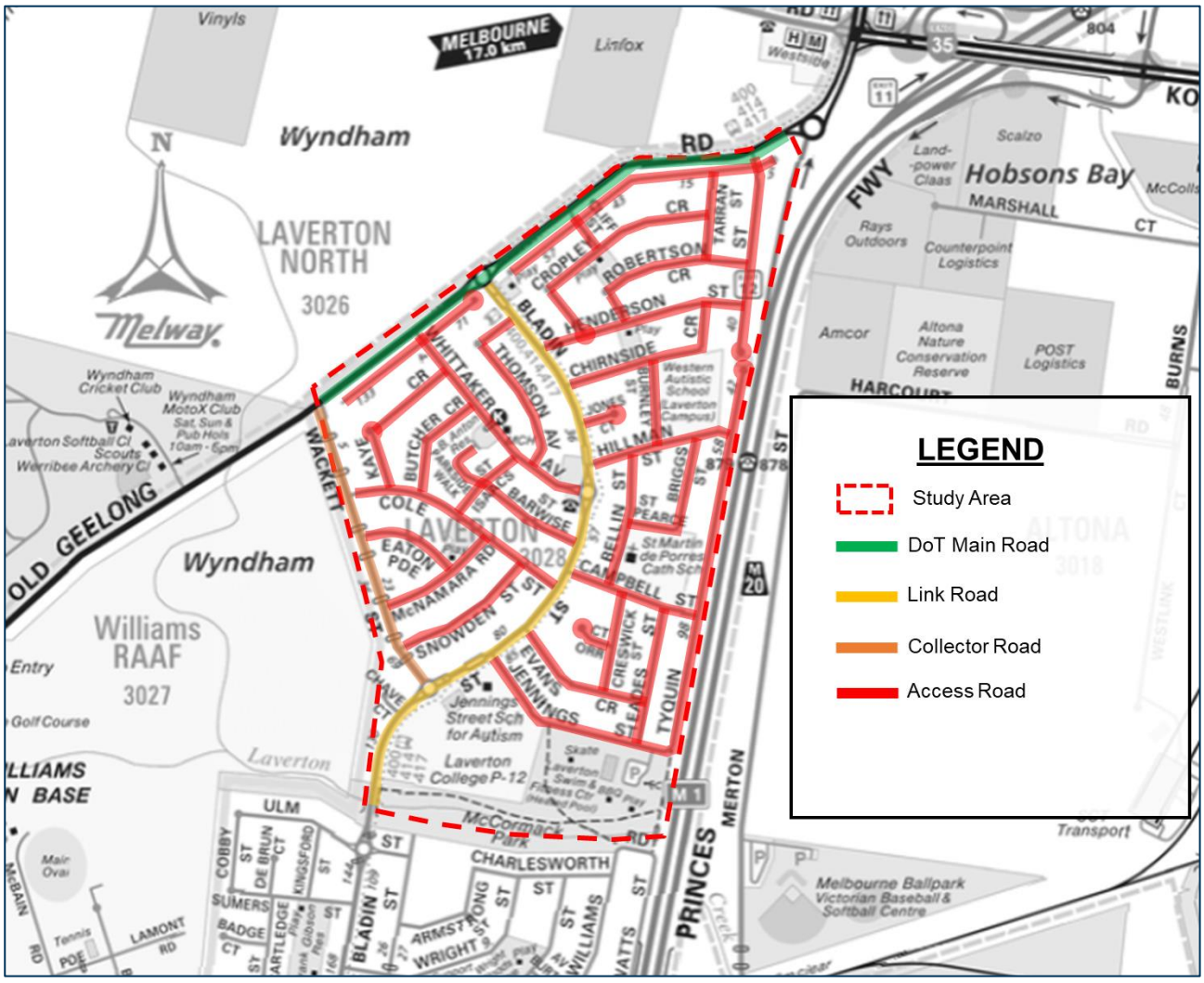
The study area comprises link roads, collector roads and access roads.

Traffic patterns in the local area are broadly characterised by the functions of the Old Geelong Road, forming the northern border of the study area.

The collector route Bladin Street caters for through traffic and acts as the primary connection to Old Geelong Road. Bladin Street serves as the main connection between the five (5) schools in the area.

Figure 3-2 shows the road hierarchy in relation to the road network within the area.

Figure 3-2 Laverton Study Area - Road Network Plan



3.3 Sustainable Transport

3.3.1 Public Bus Routes

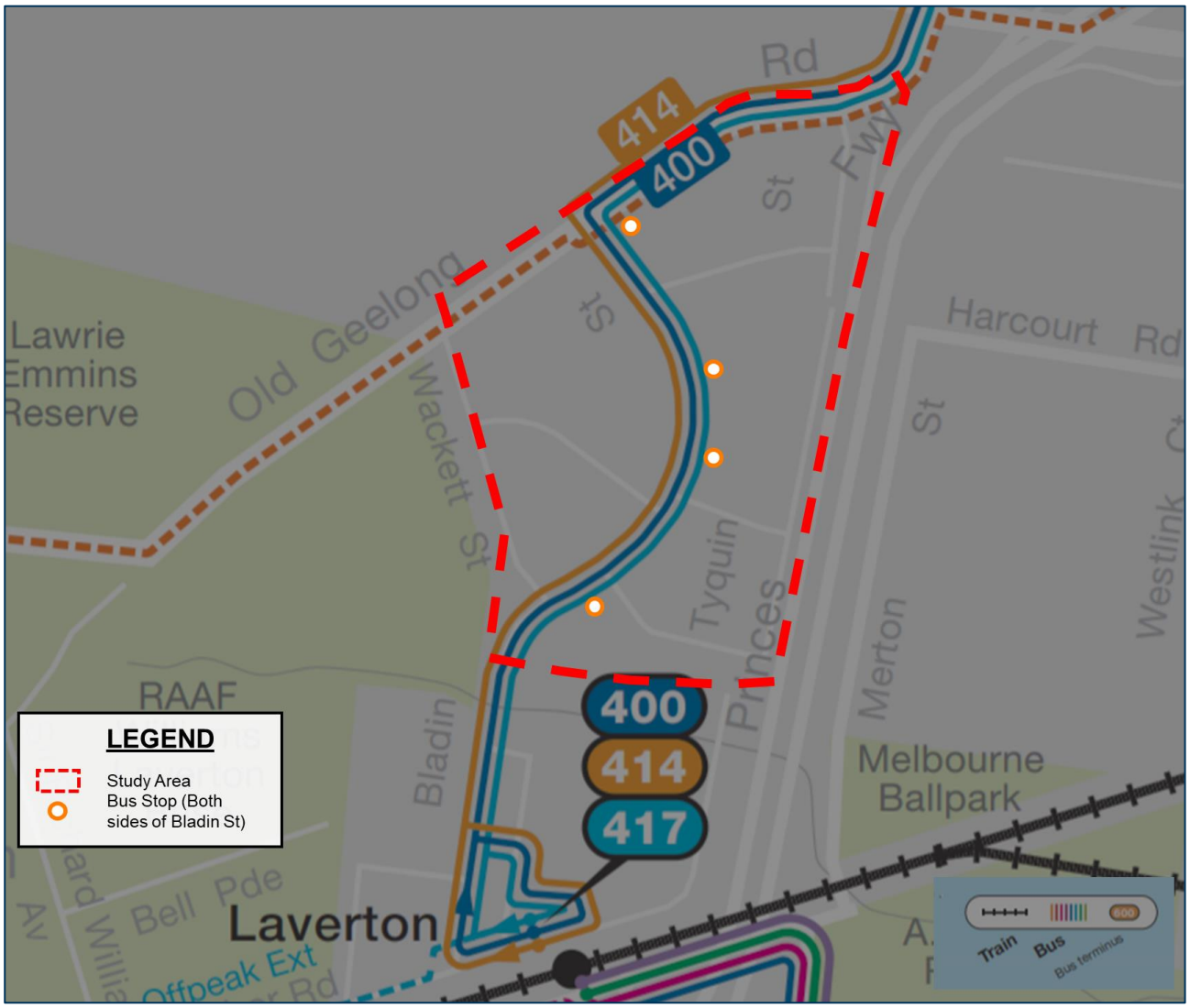
Three (3) public bus routes are provided within the study area:

- Route 400 (Laverton Station – Sunshine Station);
- Route 414 (Laverton Station - Footscray); and
- Route 417 (Laverton Station via Laverton North.

In addition, Laverton Station is located approximately 600m south of the study area, servicing the Werribee line

Figure 3-3 shows the location of bus stops and the route taken by the public bus through the study area.

Figure 3-3 Existing Public Transport (Bus) Stop Locations (Source: PTV)



3.3.2 Pedestrian & Bicycle Connections

Most streets provide a reasonable level of pedestrian amenity with footpaths on both sides of the roadway.

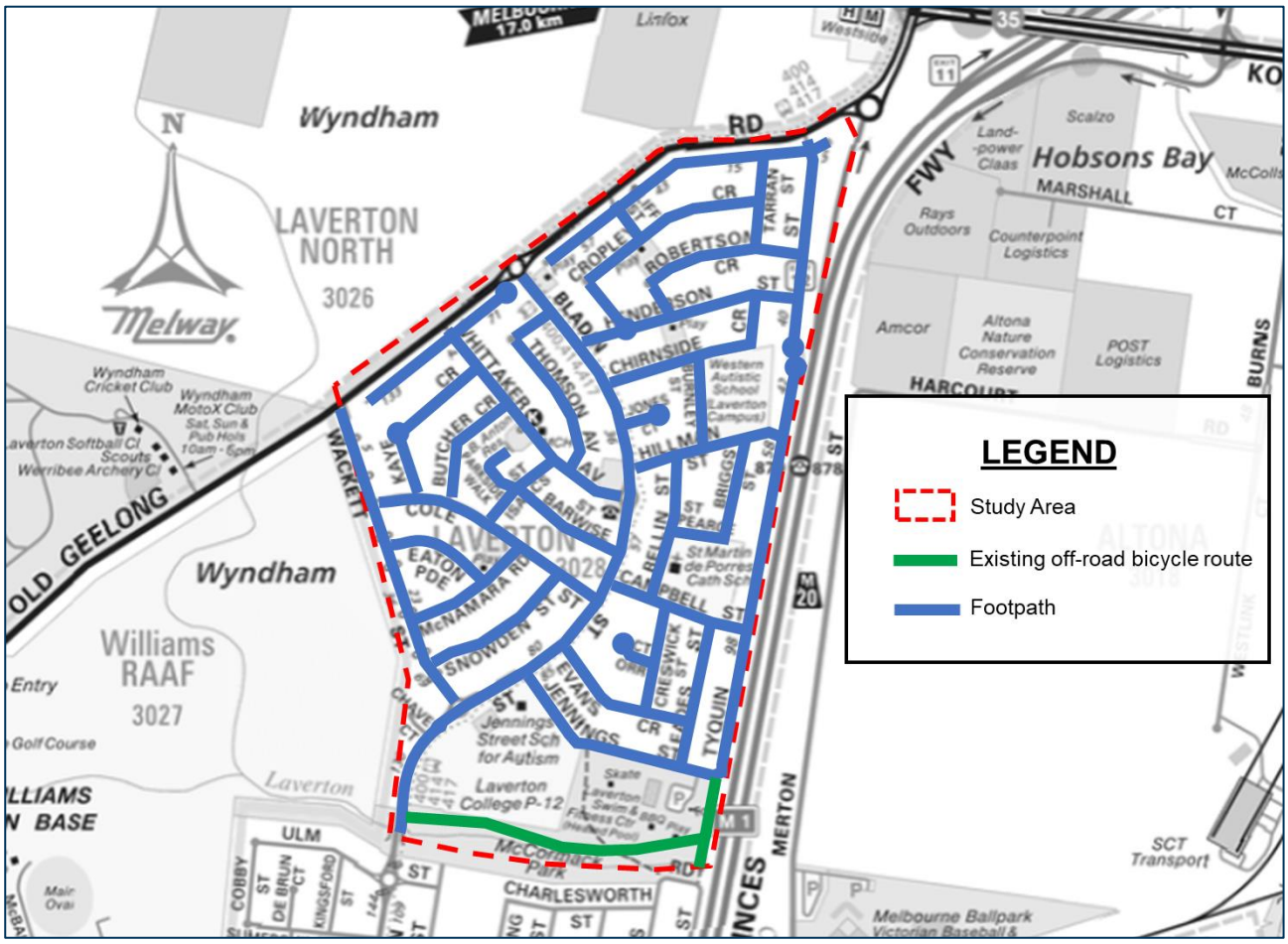
Some additional challenges highlighted for pedestrian accessibility within the study area include:

- Many areas require improvements, such as new footpaths and crossings, upgrades and accessibility measures (such as tactile ground surface indicators or pram ramps etc.).

On-road bicycle paths are not currently provided within the study area.

A summary of all existing footpaths and bicycle connections are shown in Figure 3-4.

Figure 3-4 Existing Footpaths & Bicycle Routes



3.4 Existing Traffic Management

Existing traffic management devices have previously been implemented in the local area by Council and have generally been installed at isolated sites or on a street-by-street basis.

The current traffic management within the area of interests has been captured to:

- Help to visualise the context within the study area and the interactions between the schools;
- Ensure that recommended treatments through this LATM support the objectives of this project and supplement other existing treatments; and
- Identify if any redundant treatments that need replacing or empowering through utilising other supplementary treatments.

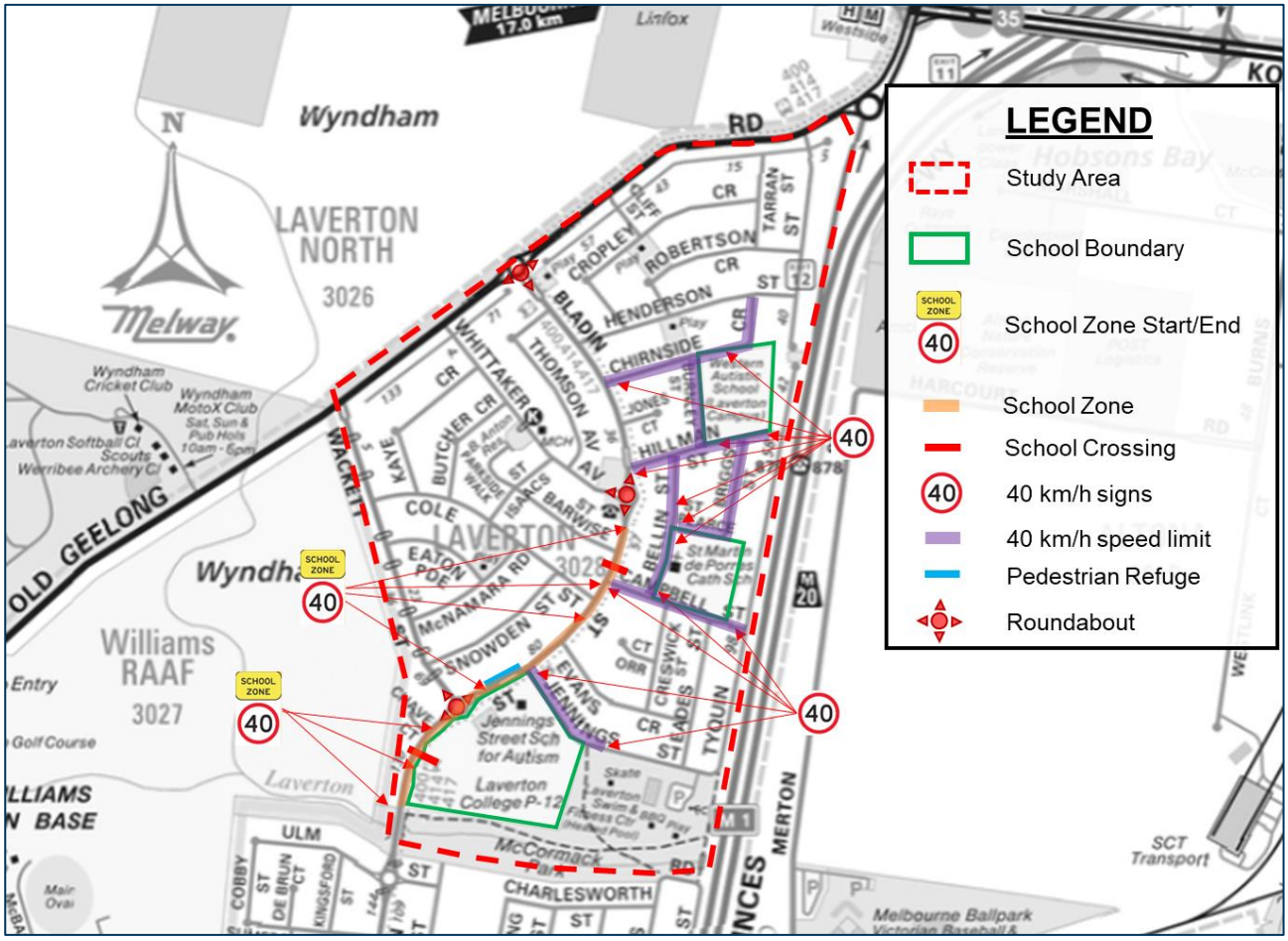
Key traffic management treatments in the area include:

- Roundabouts located at the following intersections:
  - Old Geelong Road and Bladin Street;
  - Bladin Street and Whittaker Avenue; and
  - Bladin Street and Wackett Street.
- School crossings located at the following locations:
  - Bladin Street (outside Laverton P-12 College); and
  - Bladin Street (north of Campbell Street).
- School zones located at the following locations:
  - Bladin Street (outside Laverton P-12 College).

- Permanent 40km/h located at the following
  - Jennings street (outside Jennings Street School);
  - Campbell Street (outside St Martin de Porres Primary School);
  - Pearce/Briggs Street (outside St Martin de Porres Primary School);
  - Bellin Street (outside St Martin de Porres Primary School);
  - Hillman Street (outside Western Autistic School);
  - Burnley Street (outside Western Autistic School); and
  - Chirnside Crescent (outside Western Autistic School).

The existing traffic management throughout the study area is shown in Figure 3-5.

Figure 3-5 Existing Traffic Management Measures



Further to the figure above, the existing parking restrictions surrounding the schools within the study area are shown from Figure 3-6 to Figure 3-8.

Figure 3-6 Existing Parking Restrictions – Western Autistic School

Figure 3-7 Existing Parking Restrictions – Laverton P-12, Jennings Street School and Western English Language School

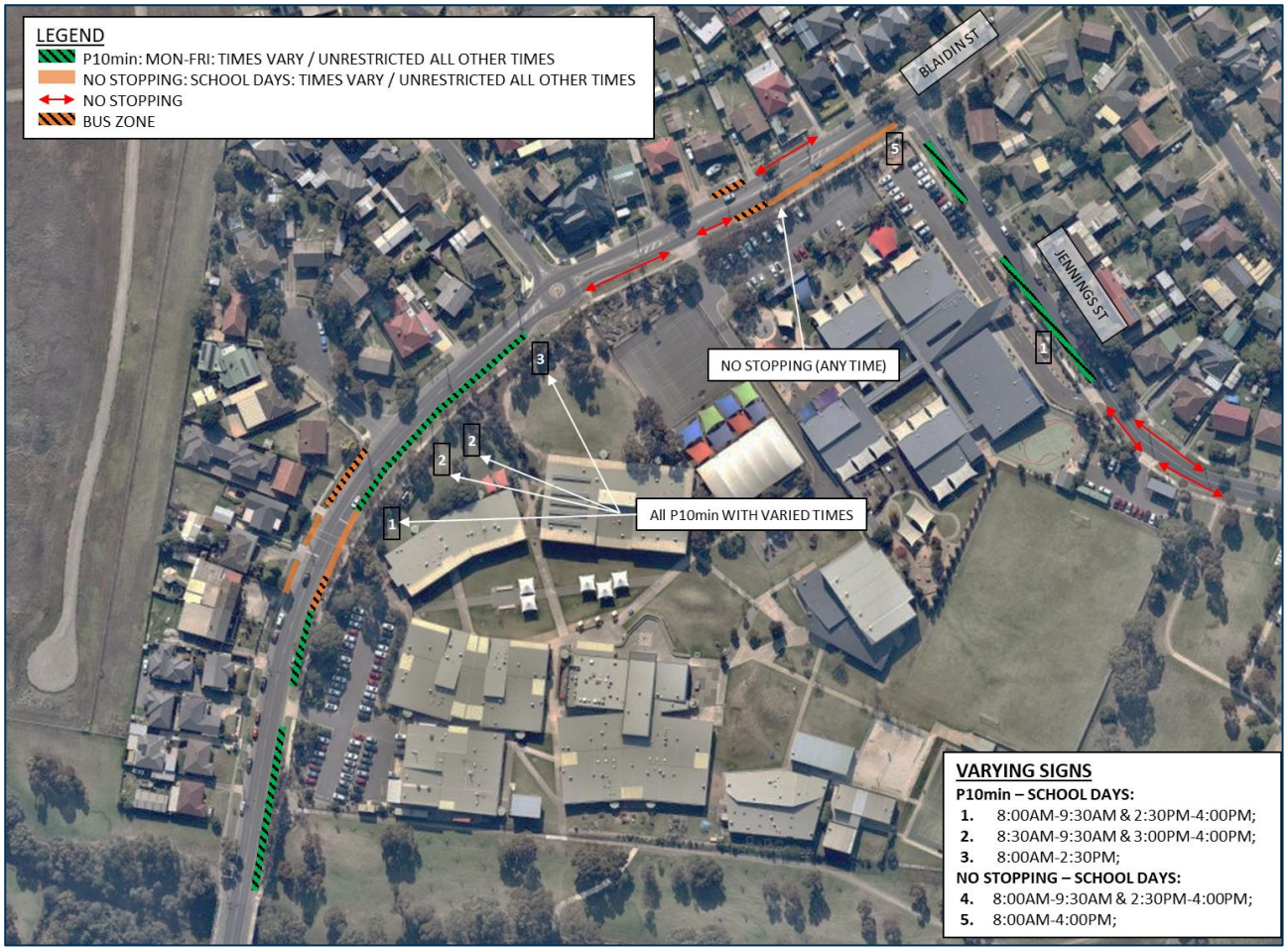


Figure 3-8 Existing Parking Restrictions – St Martin de Porres Primary School

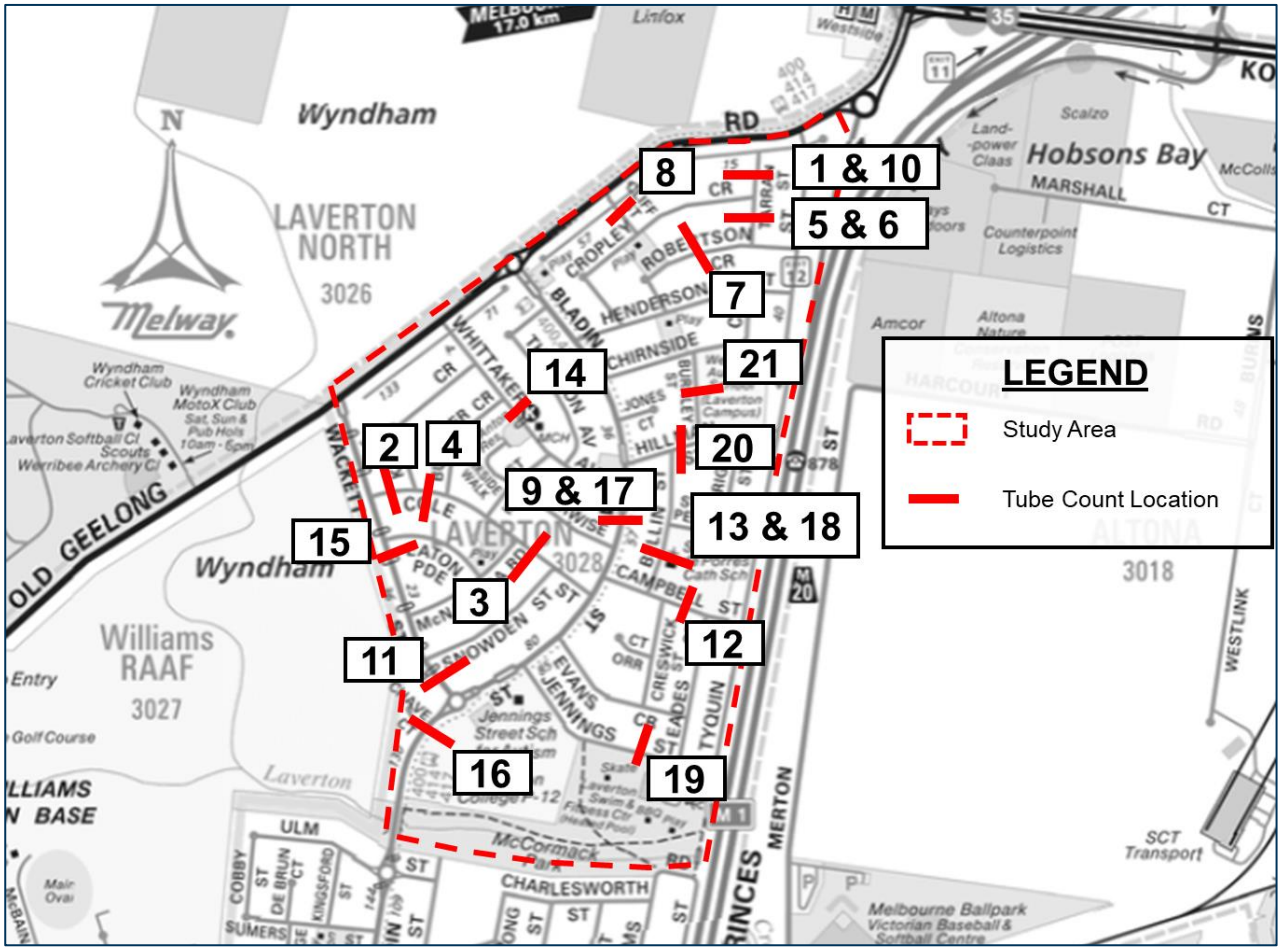
3.5 Existing Traffic Data

To gain an understanding of the existing traffic conditions within the study area, traffic surveys were conducted throughout the area.

An extensive survey collection exercise comprising 21 tube count locations was conducted over a one-week period. The data listed in Table 3-2, numbered 1-15 was provided by Council and was generally retrieved pre-COVID19, whereas 16-21 was retrieved following Melbourne's fourth lockdown between 15 June and 22 June, 2021.

The locations of the surveys are shown in Figure 3-9.

Figure 3-9 Automatic Traffic Count (ATC) Locations



The surveys captured speed, vehicle size and volume by direction, with hourly (15-minute interval) and daily summaries including peak hours identified and reported.

The tube count data was compiled to summarise the data received at each tube location. The key summary statistics were:

- Total weekday average volume;
- AM peak hour average volume;
- PM peak hour average volume;
- Average speed;
- 85th percentile speed; and
- Percentage of heavy vehicles.

All streets within the study area have a speed limit of 50km/h, with the exception of:

- Bladin Street, 60km/h; and

- Multiple streets near the four (4) schools, where permanent 40 km/h speed limits generally apply along their frontages.

Table 3-2 summarises the results.

Table 3-2 ATC Survey Summary

No.	Location	Start Date of Survey	Average Weekday Volume (VPD)			Heavy Vehicle %	Posted Speed (km/h)	85th Percentile Speed (km/h)
			WB/NB	EB/SB	Total			
1	5 Tarran Street	8/12/20	103	89	192	9.90%	50	39.0
2	5 Cole Street	20/11/19	185	372	558	5.40%	50	38.3
3	39 Cole Street	20/11/19	236	471	707	6.30%	50	52.3
4	16 Cole Street	20/11/19	146	307	453	6.71%	50	45.3
5	11 Tarran Street	26/10/18	77	28	105	5.37%	50	53.2
6	11 Tarran Street	2/12/18	41	56	97	9.25%	50	36.4
7	27 Robertson Crescent	26/10/18	100	90	190	6.77%	50	50.6
8	4 Cliff Street	15/3/18	130	122	252	6.50%	50	41.0
9	57 Bladin Street	9/3/21	2473	3119	5592	8.30%	60	53.3
10	6 Tarran Street	24/6/20	80	75	155	6.80%	50	35.6
11	66 Wackett Street	12/3/20	933	1075	2008	1.6%	50	37.3
12	18 Campbell Street	12/3/20	139	146	285	4.40%	40	43.3
13	24 Bellin Street	12/3/20	263	89	352	2.80%	40	36.5
14	23 Whittaker Avenue	19/3/19	196	178	374	2.00%	50	34.1
15	17 Wackett Street	16/3/19	1044	1400	2444	1.70%	50	40.4
16	112 Bladin Street	15/6/21	3369	3662	7031	5.90%	60	48.8
17	57 Bladin Street	15/6/21	2672	3029	5696	6.30%	60	52.3
18	16 Bellin Street	15/6/21	110	281	391	3.40%	40	38.2
19	21 Jennings Street	15/6/21	190	161	351	3.50%	40	42.4
20	9 Hillman Street	15/6/21	430	307	737	5.60%	40	42.5
21	6 Burnley Street	15/6/21	160	90	250	3.90%	40	37.0

Some of the key observations from the traffic data collected include:

- Locations showing speeds in the critical range (greater than 3km/h above the speed limit) are:
  - 11 Tarran Street: Speed Limit = 50km/h, 85th% Speed = 53.2Km/h;
- Locations showing a high percentage (greater than 5%) of heavy vehicles are:
  - Bladin Street;
  - Hillman Street;

- Tarran Street;
- Cole Street;
- Robertson Crescent; and
- Cliff Street.

Table 3-3 summarises the school peak hour results of the traffic counts conducted that were located within 40km/h zones. The locations where the surveys showed speeds were recorded about 40 km/h are shown **bolded**.

Table 3-3 ATC Survey Summary for School Hours

No.	Location	AM Peak		PM Peak	
		Volume	85th% Speed (km/h)	Volume	85th% Speed (km/h)
9	**57 Bladin Street**	482	**49.1**	575	**50.4**
12	**18 Campbell Street**	23	**43.4**	26	**44.2**
13	24 Bellin Street	93	34.7	55	36.7
16	**112 Bladin Street**	725	**42.1**	743	**44.9**
17	**57 Bladin Street**	533	**48.3**	638	**49.4**
18	16 Bellin Street	132	36.7	68	36.0
19	**21 Jennings Street**	43	**40.4**	42	**41.8**
20	**9 Hillman Street**	88	36.4	118	**40.5**
21	6 Burnley Street	44	33.8	37	32.7

The table above shows that there is general noncompliance to the 40 km/h speed limit that applies a school peak times on Bladin Street and Campbell Street.

3.6 Crash History

An assessment of the crash history for the study area was undertaken by analysing crash data for the past five (5) calendar years obtained from the VicRoads Road Crash Information database. The database contains all reported casualty crashes, which include the categories of ‘Fatal Injury’, ‘Serious Injury’ and ‘Other Injury’. Non-injury or property-damage only crashes are not included in this database.

The categories of crash severity are defined as follows:

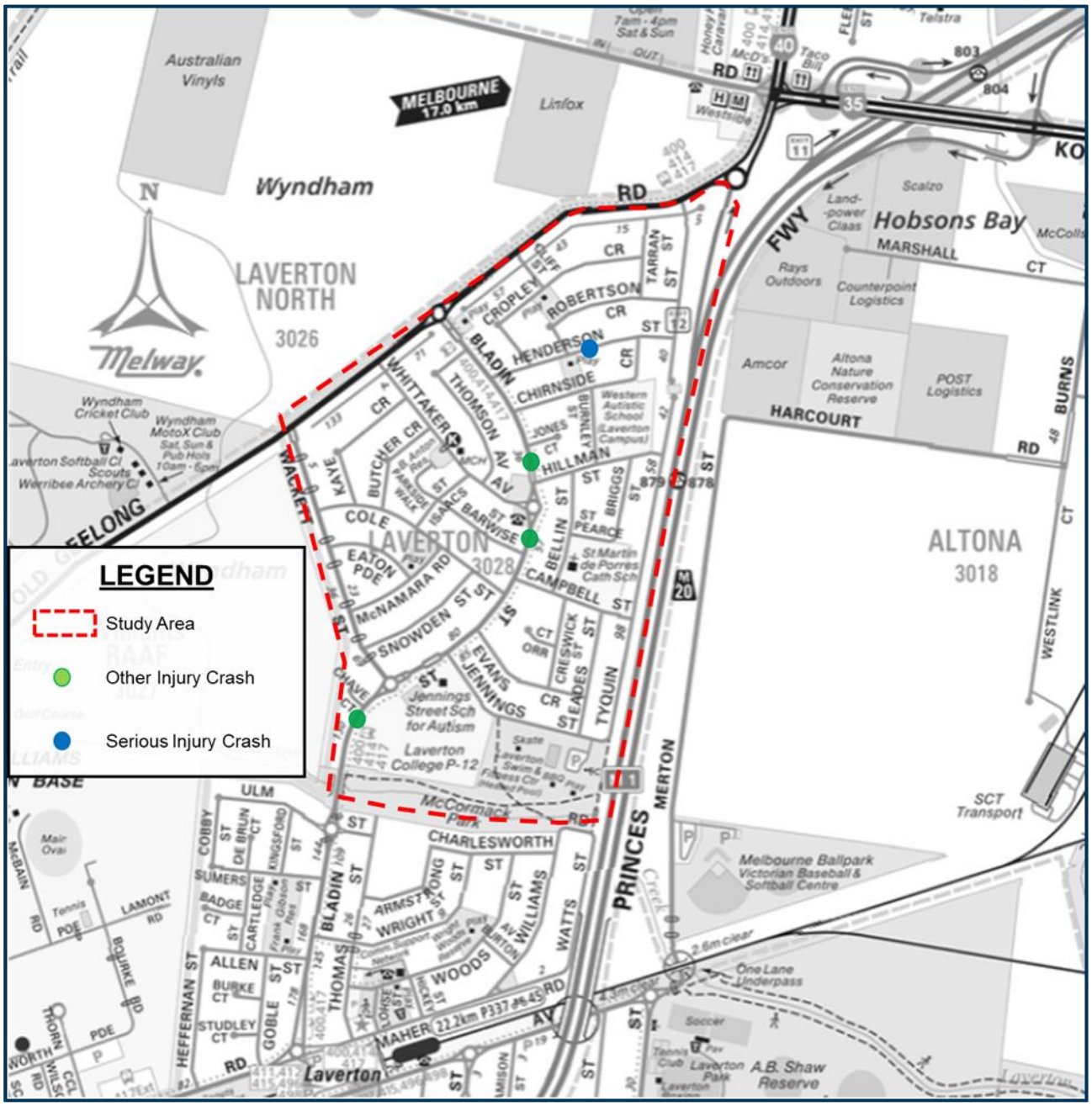
- **Fatal Injury** – one or more persons are killed in the crash, or die within 30 days from injuries sustained in the crash;
- **Serious Injury** – one or more persons are admitted to hospital as a result of injuries sustained in the crash; and
- **Other Injury** – one or more persons are given medical treatment for injuries sustained in the crash.

The crash data is used to identify potential 'accident hot spots' which may require particular attention in the development of an LATM. The accidents within the study area, which encompass the most recent five (5) year period, are summarised in Table 3-4 with their locations shown on a map in Figure 1-1.

Table 3-4 Crash Statistics Summary

Severity	Total No. of Crashes	Locations
Fatal	0	None
Serious Injury	1	Henderson Street (45m E of Robertson Crescent)
Other Injury	3	Bladin Street (33m N of Hillman Street) Bladin Street (25m SW of Chave Court) Bladin Street (50m N of Barwarise Street)

Figure 3-10 Crash Locations



The roads within the area have had four (4) recorded crashes during the five (5) year period ending 24 July 2019, where none of the crashes resulted in fatalities, one (1) resulted in serious injuries and three (3) resulted in other injuries.

Definitions for Classifying Accidents (DCA's) are used to describe crash types by indicating the initial movement of vehicles (and/or pedestrians) involved in a crash. The details of the crash history within the study area by DCA type are summarised in Table 3-5.

Table 3-5 Crash History by DCA Type in the Study Area

DCA By Crash Types	Fatal	Serious Injury	Other Injury	Total (%)
Pedestrian Related (100-109)	-	-	-	-
Vehicle from Adjacent Directions (110-119)	-	-	-	-
Vehicles from Opposing Directions (120-129)	-	-	-	-
Vehicles from Same Direction (130-139)	-	1	1	50
Manoeuvring Related (140-149)	-	-	-	-
Overtaking Related (150-159)	-	-	-	-
On Path Related (160-169)	-	-	1	25
Off Road Related on Straight (170-179)	-	-	-	-
Off Road Related on Curve (180-189)	-	-	1	25
Passenger and Miscellaneous Related (190-199)	-	-	-	-
Total	**-**	**1**	**3**	**100%**

As shown in Figure 1-1, there is no clear correlation or commonality in the crash types that have occurred over the last five (5) years. However, it is noted that the majority of the crashes that occurred in the precinct were along Bladin Street.

4 Key Issues Identified

4.1 Community Input

The following summarises the traffic issues identified through Council's community engagement in 2021.

4.1.1 OHS Risk Assessment

The Principal at Western Autistic School engaged Marsh Mclennan to undertake an OHS risk assessment to review the traffic management surrounding and within the school.

The key issues identified in the assessment include:

- The potential for students/pedestrians being struck by vehicles entering and exiting the drop off/pick up zone;
- The interaction between vehicles exiting the drop off/pick up zone and students, notably during the afternoon peak; and
- The potential conflict between pedestrians and vehicles when people use the internal pedestrian crossing.

Some of the key recommendations include:

- Suggest the bus company to consider alternative arrangements to hold busses at an off-site location to aid in reducing the congestion in the drop-off/pick-up zone;
- Engage Council to modify/provide bus parking spaces along Burnley Street (consider providing indented parking);
- Engage Council to implement additional parking restrictions on Chirnside Crescent to facilitate drop-off and pick-up of students; and
- Engage Council to consider restricting Burnley Street as a one-way road.

4.1.2 Hobsons Bay City Council Engagement Report

The community was asked to identify traffic and parking issues surrounding the schools between Bladin Street and the Princes Freeway in Laverton using an interactive map and an information gathering tool on the Council's online engagement portal between the 6 May 2021 and 4 June 2021.

In addition, a community drop-in session was held on Saturday 15 May 2021 at the Hendersen Street Park to talk to the local community about the issues they face due to the traffic and parking congestion within the precinct. Five residents attended this session and provided in depth information on the traffic issues they face within this precinct.

An email to the four schools in the area was also sent inviting them to meet with the project team to discuss traffic issues during school pick up and drop off times and talk about their current traffic management processes along with any future plans they have for the school. This invitation was accepted by three of the schools within the precinct and members of the project team meet with two of the schools (St Martin de Porres and the Western Autistic School) onsite to witness school pick up. Due to COVID-19 restrictions an online Teams Meeting was held with the Jennings Street School to talk about their issues. The project team will meet onsite with the Jennings Street School to witness school pick up once lockdown is lifted. Three of the schools submitted documents, emails and photos to support their comments from the meetings.

The project was also placed on social media 3 times reaching 5402 people with 63 people engaging with the site trough social media.

4.1.3 Who was involved

A flyer calling people to action on the project was letterbox dropped to 660 residents within the Laverton School Precinct.

The online engagement process received 318 views from 187 users, meaning that most people returned to the page more than once. The online engagement process received 10 contributions from five contributors and has three people following the project.

The majority of people visiting the online engagement portal 60% came through social media posts. 32% directly to the project page from flyers call to action. 3.7% accessed the site through a search engine.

The five people who attended the community Drop-in session on Saturday 15 May 2021, were impacted residents whose properties directly interface with the schools within the precinct.

Some of the key items can be summarised in respect to the specific schools are presented below.

Western Autistic School

Some of the key issues/notes at Western Autistic School include:

- Due to the growth of the school, there has been a reduction of on-site car parking provisions;
- As a result, staff are parking in the surrounding streets;
- The majority of students travel to and from the school by bus and the remaining students are typically picked up and dropped off by vehicles. It is noted that parents/guardians are required to enter the school grounds to collect their children;
- The 13 school buses that service Western Autistic School also travel to the Jennings Street School;
- There is no set time for bus arrivals;
- There are significant access issues for busses entering/exiting the school and at intersections where cars are parked; and
- There is not enough room for all busses to be on-site at a given time.

St Martin de Porres Catholic Primary School

Some of the key issues/notes at St Martin de Porres Catholic Primary School include:

- The school is not zoned and the majority of students come from Williams Landing;
- The majority of students travel to school by car;
- There are two students who travel to school by bike;
- The finish times are staggered at 3.15pm for preps/grade one and 3.20pm the remainder are dismissed;
- Traffic congestion is cleared by 3.40pm;
- The school has an internal kiss and go zone within the school frontage;
- Parents who enter the school are encouraged to park in Pearce Street or the church car park;
- Parents typically line up for the kiss and go zone in the afternoon at 2.30pm. A queue can extend back beyond Pearce Street;
- There is a public bus that stops in the bus zone on Bellin Street however it is understood no students use this bus;
- There is an existing no stopping zone on the west side of Bellin Street however the school would like to see it extended to Pearce Street to improve sight lines and to deter students from crossing in front of moving vehicles;
- There has been a notable increase in parking on Campbell Street during school pick up; and
- There is on-street parking in the northern section of Bellin Street which is not attributed with the school and likely to be residents or overflow parking from Western Autistic School.

Jennings Street School

Some of the key issues/notes at Jennings Street School include:

- The 120 students are going to increase as five (5) additional classrooms will be operating over the next two (2) to three (3) years;
- The new classrooms will be located in the existing staff car parks which is expected to influence staff to park on-street in the surrounding area;

- Current staff car parking is maintained within the school property;
- The school shares 13 busses with the Western Autistic School;
- The school has capacity for up to 10 busses to queue internally however if the portico was to be extended there would be capacity for 13 busses;
- The majority of students catch the bus to/from school, 10-15% travel by car with their parent/guardian and two (2) travel independently;
- The driveway precinct becomes very busy in the pm peak;
- The school pickup begins at 2.40pm and parents/guardians arrive from 2.30pm;
- The bell times are staggered between Jennings Street School and Laverton P-12; and
- There are issues at the intersection of Bladin Street and Jennings Street where students from the P-12 school cross.

Residents

Some of the key items/notes raised by local residents include:

- There needs to be indented parking on Burnley Street adjacent the Western Autistic School;
- Burnley street should be made one way;
- The intersection at Tyquin Street and Old Geelong Road operates with approximately five (5) minute delays during the AM/PM peaks;
- Concerns for emergency vehicle access to Hillman Street, Bellin Street and Burnley Street due to teachers parking their cars on these streets;
- The Laverton P-12 college should increase their car park capacity;
- Only allow car parking during school pickup/drop-off to keep roads clear;
- Consider marking Tyquin Street a continuous road to facilitate bus access to the schools and ease traffic congestion;
- Congestion occurs along Bladin Street and Wackett Street whereby some vehicles stop on the nature strip at the round about;
- Recommend line marking car parking spaces on both sides of Bladin Street to improve efficiency;
- Busses have trouble accessing the local streets due to parking on both sides of the road; and
- Cars park on both sides of Chirnside Crescent during school hours.

Next Steps

The next steps outlined in the engagement report include:

- Maintain an open dialogue with the schools including seeking a response from Laverton P-12; and
- Council intends to work with the Jennings Street School to support the potential rebuild of the portico.

4.2 Engineering Investigations

The culmination of traffic issues raised by the local community, reviews of existing traffic and accident data, as well as a site visit to the study area has identified a number of priority issues to be considered in the development of this report. These include:

- Traffic speeds and irresponsible driving, particularly:
  - Bladin Street;
  - Campbell Street; and
  - Tarran Street.

- Congestion on the following streets;
  - Chirnside Crescent;
  - Burnley Street;
  - Hillman Street;
  - Bellin Street;
  - Wackett Street and Bladin Street; and
  - Jennings Street.
- Pedestrian and bicycle facilities in the following streets:
  - Bladin Street;
  - Burnley Street;
  - Hillman Street;
  - Pearce Street; and
  - Campbell Street.
- On-street parking in the following streets;
  - Chirnside Crescent;
  - Burnley Street;
  - Hillman Street;
  - Briggs Street;
  - Bellin Street;
  - Campbell Street;
  - Bladin Street; and
  - Jennings Street.

4.2.1 Traffic Speeds & Irresponsible Driving

Traffic speeds and irresponsible driving was a concern throughout this study area compared to other issues.

4.2.1.1 Bladin Street

The speed data collected, showed that 85th percentile speeds were up to 10.4km/h greater than the school hour speed limit.

Crash data shows that three (3) reported other injury crashes occurred along Bladin Street in the past five (5) years, however it is unknown whether they were speed related.

4.2.1.2 Campbell Street

The speed data collected, showed that 85th percentile speeds were 3.3 km/h greater than the 40 km/h posted speed limit. During the afternoon peak, the 85th percentile speeds were 4.2 km/h greater than the posted speed limit.

4.2.1.3 Tarran Street

The speed data collected, showed that 85th percentile speeds were 3.2 km/h greater than the 40 km/h posted speed limit.

4.2.2 Congestion

4.2.2.1 Chirnside Crescent, Burnley Street and Hillman Street – Near Western Autistic School

An issue observed during the investigations was congestion in Burnley Street during the AM and PM peak periods. On-site investigations indicated that congestion only occurs during the peak times of school drop-off and pick-up, whereby the congestion was particular worse during the pick-up.

On-site observations attribute the source of congestion to:

- Narrow road width allowing only one direction of travel due to parked vehicles;
- Cars exiting the school service road and turning right with on-road linemarking indicating right only; and
- Vehicles double parking to allow student access to vehicles which further increased congestion to to road blocking.

4.2.2.2 Bellin Street – Adjacent to St Martin de Porres School

A prominent issue raised by the community is congestion along Bellin Street near St Martin de Porres Primary School. On-site investigations indicated that congestion only occurs during the peak times of school drop-off and pick-up, whereby the congestion was particular worse during the pick-up.

On-site observations attribute the source of congestion to:

- Queues extending beyond the School's pick-up and drop-off area and into Bellin Street, extending north beyond Pearce Street;
- Cars illegally double parking or waiting to park along Bellin Street; and
- General number of vehicles dropping off and picking up students.

Several of these issues are shown below from Figure 4-1 to Figure 4-3.

Figure 4-1 Facing north - Cars queued on Bellin Street to access the internal pick-up/drop-off area

Figure 4-2 Facing south - Cars queued on Bellin Street to access the internal pick-up/drop-off area

Figure 4-3 Congestion on Bladin Street, extending beyond Jennings Street

4.2.3 Pedestrian & Bicycle Facilities

Issues with the provision and quality of both pedestrian and bicycle facilities within the study area were raised at a number of locations. The following outlines the more significant issues identified by both the background information documents and the site visit.

4.2.3.1 Bladin Street

The engagement report provided by Council mentions that through the LAMP and Better Places Laverton, Bladin Street is an informal bicycle route which is not clearly marked and has no separation from parked cars. The site visit confirmed that there is currently no formal bicycle lane provision on Bladin Street, nor is there protection from parked cars.

Figure 4-4 Bladin Street, looking north near Hillman Street

4.2.3.2 Poor footpath/pram crossings and connections

Observations during the site visit found that some of the footpath connections were in poor condition or non-existent. Some examples of this includes, but not limited to:

- The south side of Pearce Street, adjacent to St Martin de Porres Primary School, was in very poor condition. The condition of the path poses as a safety concern for pedestrians;
- Poor pram crossing connection at the intersection of Bladin Street and Whittaker Avenue;
- A pram crossing leading into a vehicle crossing on Bladin Street, just north of Whittaker Avenue; and
- Cracked footpath with overgrown grass on Hillman Street, east of Bladin Street.

Figure 4-5 Unsafe footpath on Pearce Street

Figure 4-6 Poor footpath connection at the intersection of Bladin Street and Whittaker Avenue

4.2.4 On-Street Parking

Parking is seen to be the major cause of congestion surrounding the schools within the study area. The on-street car parking issue was raised during consultation with the schools and residents. The congestion was be exacerbated due to motorists not moving forward in the drop off area, affecting the efficiency of the indented drop-off/pick-up area on Bladin Street near Laverton P-12 College. There is also some illegal and informal parking activity that contributes to the congestion.

Illegal and informal parking included parking on nature strips, parking in undesignated bays, parking in 'No Stopping' areas, and general manoeuvring that blocks traffic. Some examples of the abovementioned car parking issues are shown from Figure 4-7 to Figure 4-9.

Figure 4-7 Inefficient use of drop-off/puck-up parking spaces on Bladin Street

Figure 4-8 Illegal stopping on Bladin Street causing traffic congestion

Figure 4-9 Saturated parking on Burnley Street adjacent Western Autistic School

5 Overview of Potential LATM Treatments

In order to guide decisions concerning implementation of certain measures, it is important to have a thorough understanding of the potential treatments available to address issues such as those raised by the local Laverton community and stakeholders, throughout the study area.

Appendix A provides descriptions of several LATM treatments that are considered appropriate for the urban context of Laverton, and provides the respective advantages and disadvantages of each treatment. These treatments are provided in accordance with *Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management.*

It is noted that these treatments may be considered individually or in combination with one other, and that on long stretches of road it is best to implement a number of treatments to maintain a consistent profile throughout the corridor.

6 Proposed Measures and Recommendations

A number of proposed measures were prepared to address the issues identified from the traffic and community consultation data, in consultation with Council officers.

6.1 Objectives

The objectives of the proposed plans are as follows:

- Reduce congestion and improve traffic flow along Bladin Street, and surrounding schools in the study area.
- Provide efficient drop-off and pick-up areas for Western Autistic School, St Martin De Porres Primary School, Jennings Street School, Western Language School and Laverton P-12 to reduce vehicle queueing;
- Improve pedestrian connections to existing footpath infrastructure;
- Increase overall safety and reduce the potential for conflicts with cyclists, vehicles and pedestrians along formalised key routes, crossings and footpaths; and
- Reduce speeds along Bladin Street

6.2 Proposed Treatments Maps

The proposed LATM measures consider a range of traffic management treatments intended to address the key concerns outlined in Section 4. The proposed LATM is shown in Figure 6-1 to Figure 6-3.

Figure 6-1 Proposed LATM Map – St Martin de Porres Primary School

Figure 6-2 Proposed LATM Map – Western Autistic School

Figure 6-3 Proposed LATM Map – Laverton P-12 College, Jennings Street School and Western Language School

6.3 Proposed LATM Treatments

The proposed LATM measures shown in section 1.1 will be presented to the community as part of future community consultation by Hobsons Bay City Council.

6.4 Proposed Parking Changes

In addition to the proposed treatments in Section 6.3, another set of solutions that aim to facilitate improved traffic flow and improved parking is to enforce school hour parking restrictions in particular locations within the study area.

The proposed parking restrictions shown in the figures below are around the schools with particular interest to schools' car park and car park accesses. In addition, restrictions have been proposed in and around some of the more local, residential streets to provide safer vehicle movements.

The parking restrictions that are to be proposed within the study area include the following:

- 'No Stopping';
- 'No Stopping (8-9:30 am; 2:30-4 pm SCHOOL DAYS)';
- 'No Parking*, Drop off and Pickup zone (8-9:30am; 2:30-4pm SCHOOL DAYS)'; and
- '2P (8-9:30am; 2:30-4pm SCHOOL DAYS)'.

**NOTE: 'No Parking' permits a driver to stop their vehicle within a no parking zone for two minutes as long as the driver remains within three (3) metres of their vehicle, hence to facilitate a drop off and pickup zone.*

Figure 6-4 to Figure 6-6 detail the proposed parking changes within the study area.

Figure 6-4 Bellin Street – Proposed Parking Changes

Figure 6-5 Western Autistic School – Proposed Parking Changes on Surrounding Streets

Figure 6-6 Bladin Street – Proposed Parking Changes

Hobsons Bay City Council

APPENDIX A

POTENTIAL LATM TREATMENTS

Speed Humps

A speed hump is a speed reduction device in the form of a raised curved profile extending across the roadway. Speed humps are typically 70mm to 120mm high, with a total length of three to four metres. The figure below presents an example of a typical speed hump treatment.

Speed Hump (City of Darebin)

Advantages of Speed Humps

- Significantly reduce vehicle speeds in the vicinity of the device;
- Can significantly reduce road crashes;
- Relatively inexpensive to install and maintain;
- Discourage through traffic;
- Regulate speeds over the entire length of a street when used in a series; and
- Can be designed to limit discomfort to cyclists.

Disadvantages of Speed Humps

- Traffic noise may increase just before and after the device due to braking, acceleration and the vertical displacement of vehicles;
- Can divert traffic to nearby streets without LATM measures;
- Can be uncomfortable for vehicle passengers and cyclists; and
- May adversely affect access for buses, commercial vehicles and emergency vehicles.

Speed Cushions

A speed cushion is another form of a speed hump that occupies only part of the roadway. It is designed to be more sympathetic to cyclists, buses, and commercial vehicles that a standard full-width speed hump. The figure below provides an example of a typical speed cushion.

Speed Cushion (City of Whittlesea)

Advantages of Speed Cushions

- A reported 27% reduction in 85th percentile vehicle speeds in the vicinity of the device;
- When used in a series, they regulate speeds over the entire length of the street;
- They are relatively low cost to install and maintain;
- They discourage through traffic;
- They do not restrict or discomfort cyclists; and
- They can be designed so that they do not inconvenience buses, commercial vehicles etc.

Disadvantages of Speed Cushions

- The traffic noise level may increase just before and after the device due to braking, acceleration and the vertical displacement of vehicles and their goods;
- They are less effective is slowing vehicles with a wide track;
- They are less effective in slowing motorcyclists;
- On-street parking can prevent cyclists from using kerbside gaps; and
- Drivers can reduce their effect by traversing the cushions with only two wheels.

Flat-top Speed Humps

A flat-top speed hump or raised table is a raised surface approximately 75-100mm high and typically with a 2m to 6m long platform ramped up from the normal level of the street. The raised section (or platform) is flat instead of being curved as is the case with a (round profile) road hump. The figure below provides an example of a flat-top speed hump.

Flat-top Speed Hump (City of Manningham)

Advantages of Flat-top Speed Humps

- A significant reduction in vehicle speeds in the vicinity of the device and road crashes;
- They are relatively low cost to install and maintain;
- They may discourage through traffic;
- When used in a series, they regulate speeds over the entire length of the street; and
- They can be designed to limit discomfort to cyclists.

Disadvantages of Flat-top Speed Humps

- The traffic noise level may increase just before and after the device due to braking, acceleration and the vertical displacement of vehicles and their goods;
- They may divert traffic to nearby streets without LATM measures;
- They are uncomfortable for vehicle passengers and cyclists; and
- They may adversely affect access for buses, commercial vehicles and emergency vehicles.

Wombat Crossings

Wombat crossings are generally of the form of flat-top speed humps with a pedestrian crossing on the raised flat surface and in some jurisdictions flashing amber lights. Although similar to a flat-top speed hump, wombat crossings give priority to pedestrians while flat-top road humps do not. The figure below provides an example of a wombat crossing.

Wombat Crossing (City of Yarra)

Advantages of Wombat Crossings

- A significant reduction in vehicle speeds and crashes;
- A relatively low cost to install and maintain;
- A possible reduction in traffic volumes due to slower speeds and longer travel times;
- They may discourage through traffic;
- They reduce vehicle-pedestrian conflicts; and
- They provide a designated crossing place for pedestrians.

Disadvantages of Wombat Crossings

- The traffic noise level may increase just before and after the device due to braking, acceleration and the vertical displacement of vehicles and their goods;
- They may divert traffic to nearby streets without LATM measures;
- They are uncomfortable for vehicle passengers and cyclists;
- They may adversely affect access for buses, commercial vehicles and emergency vehicles; and
- They require more attention to the road drainage.

Raised Treatment

A raised treatment is a raised section of roadway approximately 90mm to 100mm high, ramped up from the normal level of the street with a platform extending over more than a standard car length (at least 6 m but typically more). Raised sections of the roadway can be located at mid-block locations, or they can cover an intersection between two roadways. The figure below presents an example of a raised intersection treatment.

Raised Intersection (City of Whittlesea)

Advantages of a Raised Treatment

- Significantly reduce vehicle speeds in the vicinity of the device;
- May discourage through traffic;
- Can be used as a form of threshold treatment;
- Can highlight the presence of an intersection; and
- Can regulate speeds over the entire length of the street when used in a series.

Disadvantages of a Raised Intersection

- Traffic noise may increase just before and after the device due to braking, acceleration and the vertical displacement of vehicles;
- Can divert traffic to nearby streets without LATM measures;
- Can be uncomfortable for vehicle passengers and cyclists; and
- May adversely affect access for buses, commercial vehicles and emergency vehicles.
- Require care that ramp markings are not confused with intersection control markings when located at an intersection.

Lane Narrowings/Kerb Extension/Outstands

Lane narrowings involve the narrowing of the trafficable carriageway to reduce speeds, improve delineation and to minimise pedestrian crossing distances (and therefore exposure to conflict). It is generally done by extending the kerbs inwards or via other forms of kerb modifications, but it can also be achieved through the introduction of on-street parking. The figure below provides an example of lane narrowing.

Lane Narrowing (City of Banyule)

Advantages of Lane Narrowings

- A shorter crossing distance for pedestrians;
- They may improve the visibility of pedestrians and vehicles;
- A reduction in vehicles speeds, particularly on curvilinear alignments;
- Relatively low cost;
- To delineate and protect parking spaces;
- Providing an opportunity for landscaping;
- They have relatively little effect on emergency vehicles; and
- Significantly less disruptive to local traffic than some other forms of LATM devices that are more severe in their design.

Disadvantages of Lane Narrowings

- They may reduce the amount of available kerbside parking;
- Bicycle lanes may be challenging to accommodate;
- Drivers may mistake an empty kerbside parking lane for a traffic lane;
- They may introduce squeeze points and increase the conflict between motor vehicles and cyclists;
- They are less effective than many other horizontal displacement devices in reducing speeds;
- Parking manoeuvres may be complicated on heavily trafficked streets; and
- They may increase congestion.

Slow Points

A slow point is a series of kerb extensions on alternating or opposite sides of a roadway, which narrow and/or angle the roadway. Slow points are intended to reduce vehicle speeds. Slow points can be either one or two lanes wide and can be angled. In a two-lane slow point, a median island is generally very effective in separating opposing traffic. This will also provide a greater visual restriction, and it can be used as a pedestrian refuge if designed appropriately. The figure below provides an example of a slow point.

Slow Point (City of Boroondara)

Advantages of Slow Points

- A reduction in vehicle speeds in the vicinity of the device and when used in a series, speeds are reduced over the length of the street;
- A significant reduction in road crashes;
- They may provide pedestrians with a shorter distance to cross the street;
- They discourage through traffic;
- They impose minimal inconvenience on local residents; and
- They can provide landscaping opportunities.

Disadvantages of Slow Points

- They may restrict emergency vehicles and buses;
- Possible increase in traffic noise;
- They will require the removal of on-street parking;
- With one-lane devices, confrontations between opposing drivers may occur when arriving simultaneously, and it may be unclear who should give way;
- They can be hazardous for cyclists if they are not catered for in the design; and
- Landscaping needs to be maintained so that visibility is not compromised.

Centre Blister Islands

A centre blister is a concrete island positioned at the centreline (median) of a street with a wide oval plan shape that narrows the lanes, diverts the angle of traffic flow into and out of the device, and can be used to provide pedestrians with a refuge. The figure below provides an example of a centre blister island.

Centre Blister Island (City of Greater Geelong)

Advantages of Centre Blisters

- Reduce vehicle speeds;
- Prevent drivers from overtaking others;
- Provide a refuge for pedestrians and cyclists crossing the street;
- Flexibility in design allows buses and commercial traffic to be accommodated; and
- Visually enhance the street through landscaping and reduce the ‘gun barrel’ effect on long straight roads.

Disadvantages of Centre Blisters

- Prohibit or limit access and movement from driveways;
- Reduce on-street parking adjacent to the islands;
- Can create a squeeze point for cyclists if not appropriately catered for in the design;
- May require kerb and footpath realignment in narrow streets;
- Ineffective at reducing through traffic; and
- Relatively expensive to install and maintain.

Median Treatments

A median island treatment is a raised or flush island positioned at the intersection or the centreline of a street that narrows lanes and can provide pedestrians with a refuge. They can be an effective form of road narrowing and at intersections can provide drivers with a clear indication they are entering a local street. Median treatments should be clearly visible to approaching drivers, illuminated by adequate street lighting and enhanced by the use of signs, pavement markings and other delineation. The figure below provides an example of a median treatment.

Median Treatment (Surf Coast Shire)

Advantages of Median Treatments

- Provision of a refuge for pedestrians and cyclists crossing the street;
- Separation of vehicles in opposing traffic lanes, thereby reducing the probability of head-on collisions;
- Prevention of drivers from overtaking others;
- Flexibility in design allows buses and commercial traffic to be accommodated;
- They may visually enhance the street through landscaping;
- They can be relatively low cost to install;
- They can improve intersection definition;
- They may discourage through traffic by reducing intersection capacity;
- Enforcement of no right turns, when placed across an intersection on the through road;
- Reduction of vehicle speeds when used at mid-block locations, and reduction of entry speeds at intersections;
- Accommodation of centrally displayed traffic control devices; and
- Flush treatments do not generally restrict vehicle movements, particularly right-turning vehicle movements from driveways.

Disadvantages of Median Treatments

- They may require significant amounts of parking to be removed;
- They may create a squeeze point for cyclists if not appropriately catered for in the design;
- They have limited speed and traffic reduction benefits; and
- If raised treatments are used, they may prohibit or limit access and movement from driveways and maybe restrictive for emergency and service vehicles.

Roundabouts

A roundabout (or mini-roundabout) is a form of channelisation that incorporates a circular central island. Roundabouts can either be single-lane or multi-lane depending on the class of roads on which they are to be constructed, and the traffic demands passing through the intersection. A roundabout is an effective form of intersection control that can be installed on both four-leg and three-leg intersections. Roundabouts reduce the relative speeds of conflicting vehicles by providing impedance to all vehicles entering the roundabout. A form of roundabout that is mountable or traversable is often called a 'humpabout'. The figure below provides an example of a roundabout.

Roundabout (City of Brimbank)

Advantages of Roundabouts

- Reduction of vehicle conflict points and road crashes at intersections;
- Reduction of vehicle speeds on the approach to, and through the intersection;
- Control of traffic movement and provision of orderly and largely uninterrupted flow of traffic;
- An increase in the visibility of the intersection;
- Clarification of the priority of traffic movements; and
- Enhancement in the appearance of the street when landscaped.

Disadvantages of Roundabouts

- They restrict larger service and emergency vehicles and buses unless the roundabout is mountable;
- They are relatively expensive especially if land needs to be acquired;
- Traffic noise may possibly increase due to braking and acceleration;
- They reduce the visibility of on-street parking; and
- They can be difficult for cyclists and pedestrians to negotiate.

Modified T-Intersection

Modified T-Intersections are used to affect a change in the vehicle travel path, thereby slowing traffic via deflection of traffic movements and/or reassignment of priority. The figure below shows an example of a modified T-intersection treatment.

Modified T-Intersection (City of Banyule)

Advantages of Modified T-Intersections

- Control traffic movements and improve traffic flow;
- Reduce vehicle speeds at the treatment point;
- Facilitate safe pedestrian crossing;
- Remove/reduce the number of vehicle conflict points;
- Can lower vehicle speeds along the length of the street when installing in a series; and
- Can accommodate buses and heavy vehicles.

Disadvantages of Modified T-Intersections

- Relatively expensive devices;
- Can create squeeze points for cyclists if not appropriately catered for in the design; and
- Reduce the availability of on-street parking opportunities.

Threshold Treatments

Raised threshold treatments or entry treatments are raised platforms on the minor leg of an intersection. Raised threshold treatments aim to alert drivers that they are entering a driving environment that is different from the one they have just left by the use of visual and/or tactile clues. They may incorporate either raised or flush median treatments. When installed at intersections, they may extend to cover the entire intersection. The figure below provides an example of a threshold treatment.

Raised Threshold Treatment (City of Moonee Valley)

Advantages of Threshold Treatments

- Reduce approach speeds to an intersection;
- Highlight the presence of an intersection;
- Provide separation between residential areas from areas of non-residential use; and
- Alert the driver that they are entering into a local area.

Disadvantages of Threshold Treatments

- Increase maintenance requirements;
- Turning traffic from and into the low-speed local area may be more likely to affect traffic flow on the connecting arterial roads;
- Vehicle priority may be unclear to pedestrians in some circumstances; and
- Effectiveness is limited unless complemented by other devices in the street.

Tactile Surface Treatments

Tactile surface treatments are low bumps, buttons, bars, grooves or strips closely spaced across or immediately adjacent to streets or paths that draw attention to a feature or hazard, and can have a vibratory and audible effect when travelled over. They can be constructed across traffic lanes or parallel to traffic lanes normally in the form of edge lines. The figure below provides an example of a tactile surface treatment.

Tactile Surface Treatment (City of Banyule)

Advantages of Tactile Surface Treatments

- They are relatively low cost to install;
- They can be useful where sight distance to signs is limited; and
- They are effective in alerting drivers, cyclists and pedestrians to hazards.

Disadvantages of Tactile Surface Treatments

- They cause a change in the intensity of traffic noise;
- Stability problems may occur for motorcyclists and cyclists if placed on small radii curves due to differential skid resistance;
- The buttons and bars may damage and involve high maintenance;
- They are not as effective in reducing speeds as some other devices such as speed humps; and
- They may impact on channel drainage.

Other Treatment Options

Other treatment options available that can be utilised are more or less self-explanatory, all of the below treatments improve the safety of both pedestrians, cyclists and drivers and/or define priority on sections of the roadway. These treatments are:

- Peak hour parking restrictions;
- Speed limit signs, indication devices and line-marking;
- Prohibited traffic movement signs;
- One-way street signs;
- Give-way signs;
- Stop signs;
- Shared zones;
- School zones;
- Bicycle facilities; and
- Bus facilities.

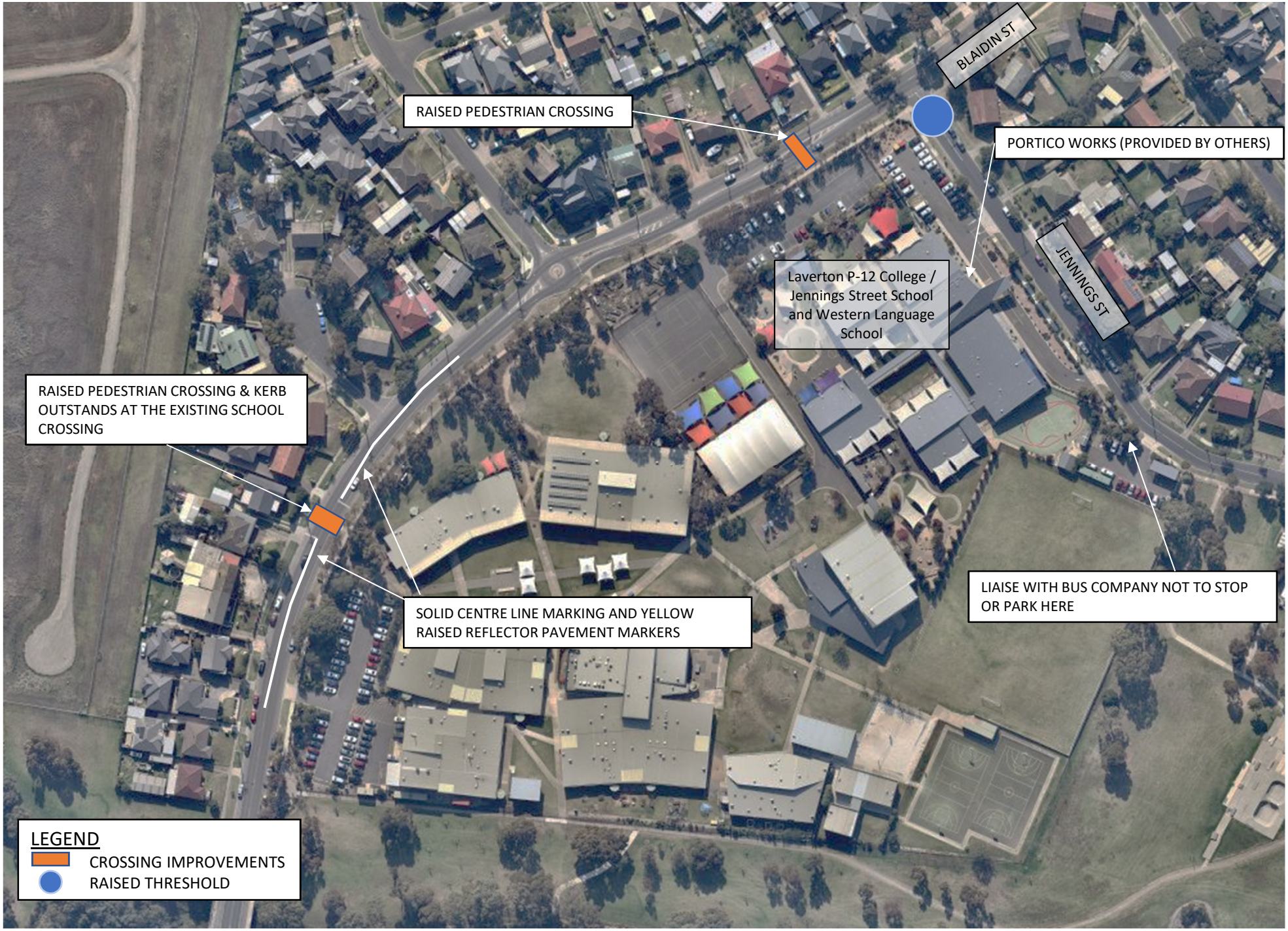
Hobsons Bay City Council

APPENDIX B

LATM MEASURES


HILLMAN ST
BELLIN ST
BRIGGS ST
PEARCE ST
BLADIN ST
St Martin de Porres Primary School
CAMPBELL ST
INSTALL RAISED PLATFORM/SPEED CUSHIONS/KERB OUTSTANDS AT THE EXISTING SCHOOL CROSSING
LEGEND
RAISED THRESHOLD
NO RIGHT TURN
NO ENTRY (8.00AM – 9.30AM and 2.30PM – 4.00PM
CROSSING IMPROVEMENT WORKS
SCHOOL CROSSING IMPROVEMENT WORKS
FOOTPATH IMPROVEMENT WORKS


LEGEND
LEFT ONLY
NO ENTRY VIA BURNLEY ST 8AM – 9AM & 3PM – 4PM
FOOTPATH IMPROVEMENT WORKS
CROSSING IMPROVEMENT WORKS
RAISED THRESHOLD
CHIRNSIDE CR
BURNLEY ST
Western
Autistic School
BLADIN ST
HILLMAN ST
BELLIN ST
BRIGGS ST


BLAIDIN ST
RAISED PEDESTRIAN CROSSING
PORTICO WORKS (PROVIDED BY OTHERS)
JENNINGS ST
Laverton P-12 College / Jennings Street School and Western Language School
RAISED PEDESTRIAN CROSSING & KERB OUTSTANDS AT THE EXISTING SCHOOL CROSSING
SOLID CENTRE LINE MARKING AND YELLOW RAISED REFLECTOR PAVEMENT MARKERS
LIAISE WITH BUS COMPANY NOT TO STOP OR PARK HERE
LEGEND
CROSSING IMPROVEMENTS
RAISED THRESHOLD