



NORTHCOTE LOCAL AREA TRAFFIC MANAGEMENT STUDY

16 OCTOBER 2019

NORTHCOTE LATM STUDY

CLIENT: Darebin City Council

OBT JOB NUMBER: 20007



Suite 2.03, 789 Toorak Road
Hawthorn East, Victoria 3123

T: 61 3 9804 3610
W: obrientraffic.com
ABN 55 007 006 037

STUDY TEAM

Jemima Macaulay
Matt Harridge

CONTENTS

1	INTRODUCTION	1
2	STUDY AREA	1
3	EXISTING CONDITIONS	2
4	PREVIOUS TRAFFIC STUDIES	6
5	CONSULTATION	7
6	POTENTIAL TREATMENTS	8
7	REVISED LATM SCHEME	14
	APPENDIX A	16
	APPENDIX B	20

1 INTRODUCTION

O'Brien Traffic has been engaged by Darebin City Council to undertake a Local Area Traffic Management study of the area bound by High Street, Separation Street, Station Street and Clarke Street in Northcote.

In the course of preparing this report:

- The subject area has been inspected;
- Traffic volume and speed data has been reviewed and analysed;
- Crash data has been analysed;
- Community issues and suggestions have been considered;
- Potential treatments have been considered; and
- A Local Area Traffic Management Strategy has been developed.

2 STUDY AREA

The study area is bound by High Street, Separation Street, Station Street and Clarke Street in Northcote, as shown in **Figure 1**.

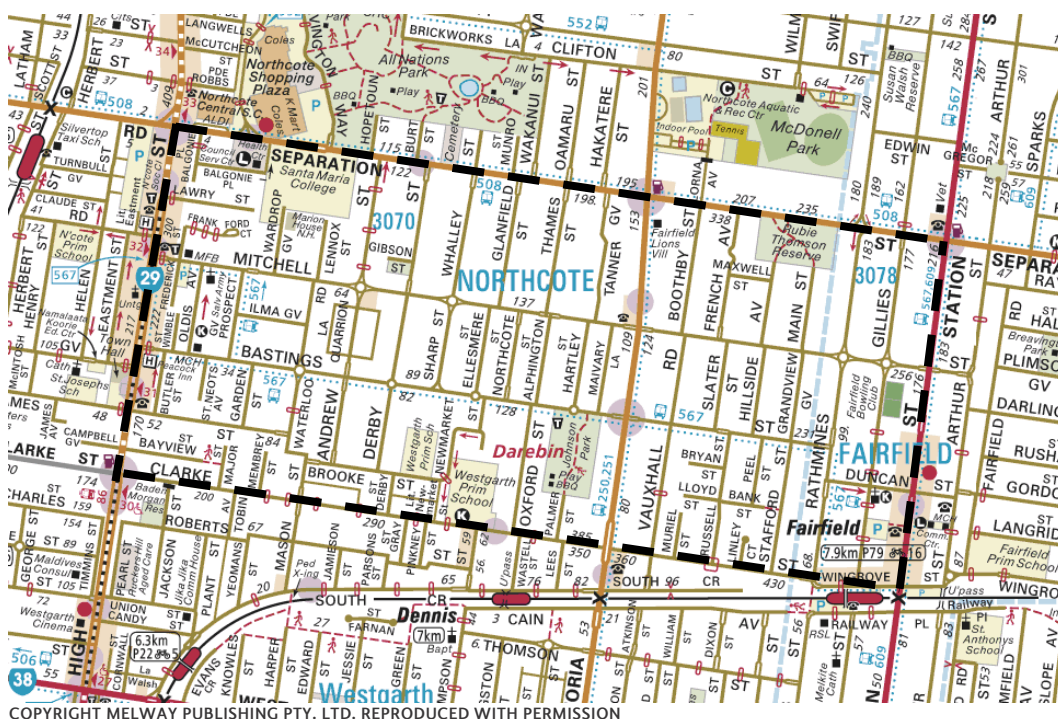


FIGURE 1: STUDY AREA

The study area is predominantly residential. Two schools are located within the study area - Santa Maria College near the northern boundary and Westgarth Primary School near the southern boundary. Fairfield Bowling Club is located near the north-eastern corner of the study area. Two reserves, Rubie Thomson Reserve and Johnson Park are also located within the study area. Numerous commercial/retail premises front Station Street, forming part of the Fairfield strip shopping centre.

3 EXISTING CONDITIONS

3.1 STREET NETWORK

The area comprises a local street network bounded by arterial and major Council roads to the east, west and north (i.e. High Street, Station Street, and Separation Street). The local street network is bisected by Victoria Road which runs in a north-south orientation through the study area.

3.1.1 Arterial roads

Station Street is a Secondary Arterial Road under the management of VicRoads. Through the Fairfield strip shopping centre, it provides one traffic lane in each direction with parallel parking on the eastern side and angle parking on the western side. Closer to Michell Street, two traffic lanes and a parallel parking lane are provided in each direction. Station Street has a posted speed limit of 60 km/h.

Council typically do not undertake work on VicRoads' roads, however can advocate to VicRoads for work to be undertaken.

3.1.2 Major Council Roads

High Street, Victoria Road and Separation Street are Major Council Roads.

High Street provides one traffic lane in each direction with kerbside parking provided in marked parallel spaces, a painted median island, and centre of the road tram tracks. High Street has a posted speed limit of 40km/h between 8am and midnight, and 60km/h at other times.

Victoria Road provides one traffic lane, a bicycle lane and a parking lane in each direction. Traffic signals are provided at its intersections with Separation Street and Bastings Street. Pedestrian operated signals are located just north of Mitchell Street.

Separation Street provides one traffic lane in each direction. Traffic signals are provided at its intersections with High Street, Victoria Road and Station Street. Pedestrian operated signals are located west of Derby Street, and have recently been installed west of Oamaru Street. Separation Street has a 40 km/h speed limit between High Street and Hopetoun Street, with the default limit of 50 km/h applying elsewhere.

3.1.3 Local streets

All other streets within the study area are local streets. Mitchell Street, Bastings Street and Clarke Street provide east-west links through the study area and are described below.

Mitchell Street provides one traffic lane, a bicycle lane and a parking lane in each direction. Roundabouts are provided at four intersections between High Street and Station Street.

Bastings Street provides one traffic lane in each direction with kerbside parking typically permitted. Roundabouts are provided at four intersections between High Street and Rathmines Street. Traffic signals are provided at its intersection with Victoria Road. A school crossing is located east of Newmarket Street. Roundabouts are provided at four intersections between High Street and Victoria Road.

Clarke Street provides one traffic lane in each direction with kerbside parking typically permitted. Speed humps and bicycle pavement markings are provided along Clarke Street. Traffic signals are provided at the Clarke Street/High Street intersection. At Victoria Road, a central median restricts turning movements to/from Clarke Street to left in/left out.

3.2 BICYCLE AND PEDESTRIAN NETWORKS

Bicycle routes are shown in **Figure 2**. On-road bike lanes are provided on Mitchell Street, between High Street and Victoria Road, and on Victoria Road. Clarke Street-Wingrove Street, Bastings Street-Duncan Street, Derby Street-Brooke Street and Thames Street-Alphington Street-Oxford Street are informal bike routes.

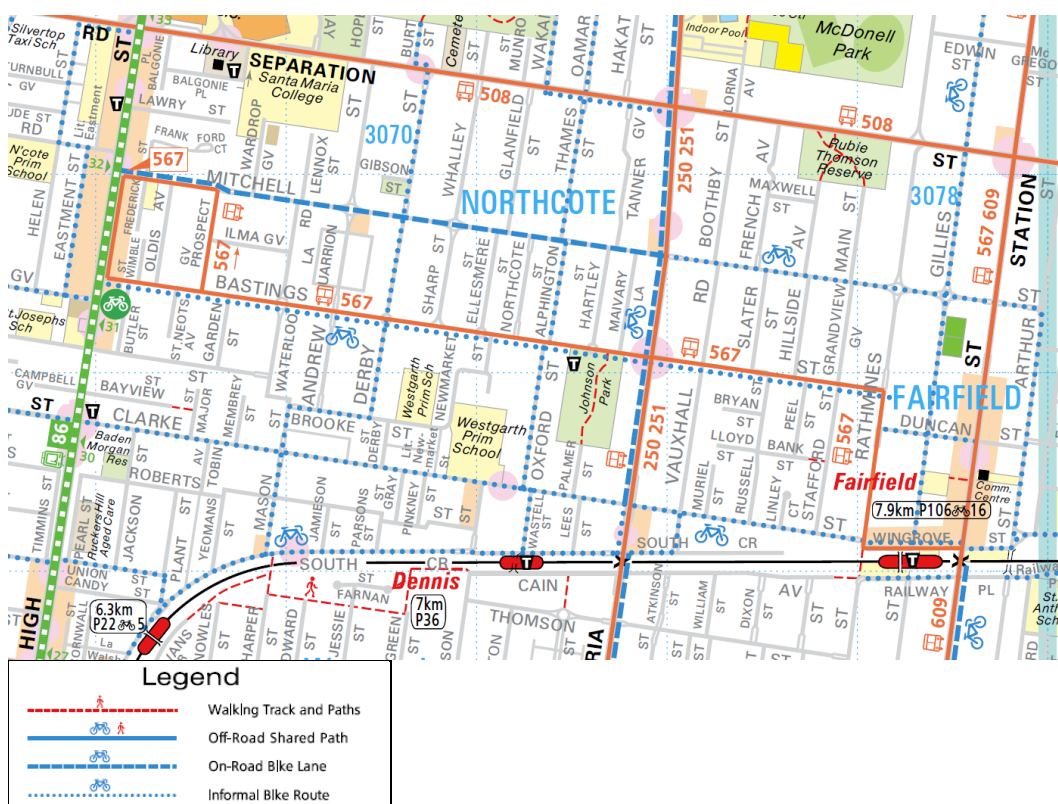


FIGURE 2: EXCERPT FROM DAREBIN TRAVEL SMART MAP

High Street, Station Street and Victoria Road form part of the Principal Pedestrian Network and Principal Bicycle Network.

3.3 PUBLIC TRANSPORT

Bus routes operate within the study area on Separation Street, Victoria Road, Bastings Street, part of Rathmines Street, Prospect Grove and part of Mitchell Street (also shown in **Figure 2**).

Fairfield Railway Station is located immediately south of the study area, on the southern side of Wingrove Street.

3.4 TRAFFIC VOLUMES AND SPEED DATA

Traffic volume and speed data was provided by Council and is presented diagrammatically in **Figure 3**. Note that the data is provided for local streets within the Study Area only.

3.4.1 Traffic volumes

With the exception of the arterial and major Council roads, Mitchell Street, Bastings Street and Rathmines Street have the highest traffic volumes in the study area as follows:

- Mitchell Street – approximately 2,500 vpd west of Victoria Road and 2,000vpd east of Victoria Road;
- Bastings Street – approximately 2,600 vpd west of Victoria Road and 1,900vpd east of Victoria Road;
- Rathmines Street – approximately 1,500 vpd.

Other streets have traffic volumes less than 1,000 vpd.

3.4.2 Vehicle speeds

The vehicle speed data indicates the 85th percentile speeds¹ were typically 45 km/h or lower, with the exception of:

- Mitchell Street (53 and 56 km/h east and west of Victoria Road respectively);
- Bastings Street (50 and 46 km/h east and west of Victoria Road respectively);
- Rathmines Street (50 km/h);
- Gillies Street, north of Mitchell Street (47 km/h); and
- Vauxhall Road (47 km/h).

3.5 CASUALTY CRASH HISTORY

VicRoads casualty crash data for the 5.5-year period from October 2013 to March 2019 was reviewed. The crash data is presented diagrammatically in **Figure 4**.

Analysis of the crash data shows the following:

- 21 casualty crashes occurred in the study area (excluding crashes on Station Street, Separation Street and High Street), of which 9 were serious injury crashes and 12 were other injury crashes;
- 7 crashes involved cyclists, including 4 serious injury crashes;
- 5 crashes involved pedestrians, including 2 serious injury crashes.

1. The speed at which 85% of all vehicles travel under.

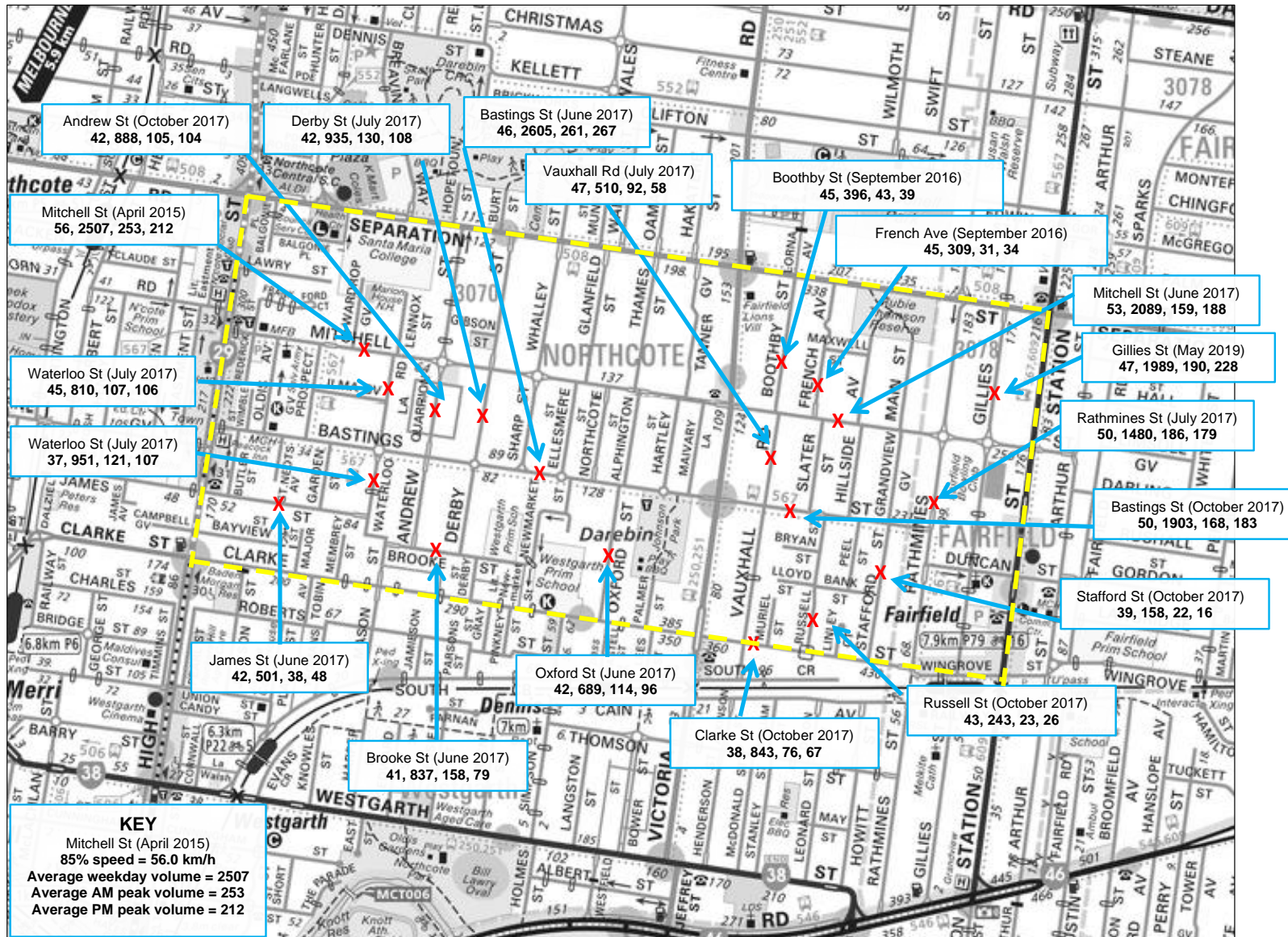


FIGURE 3: TRAFFIC VOLUME AND SPEED DATA

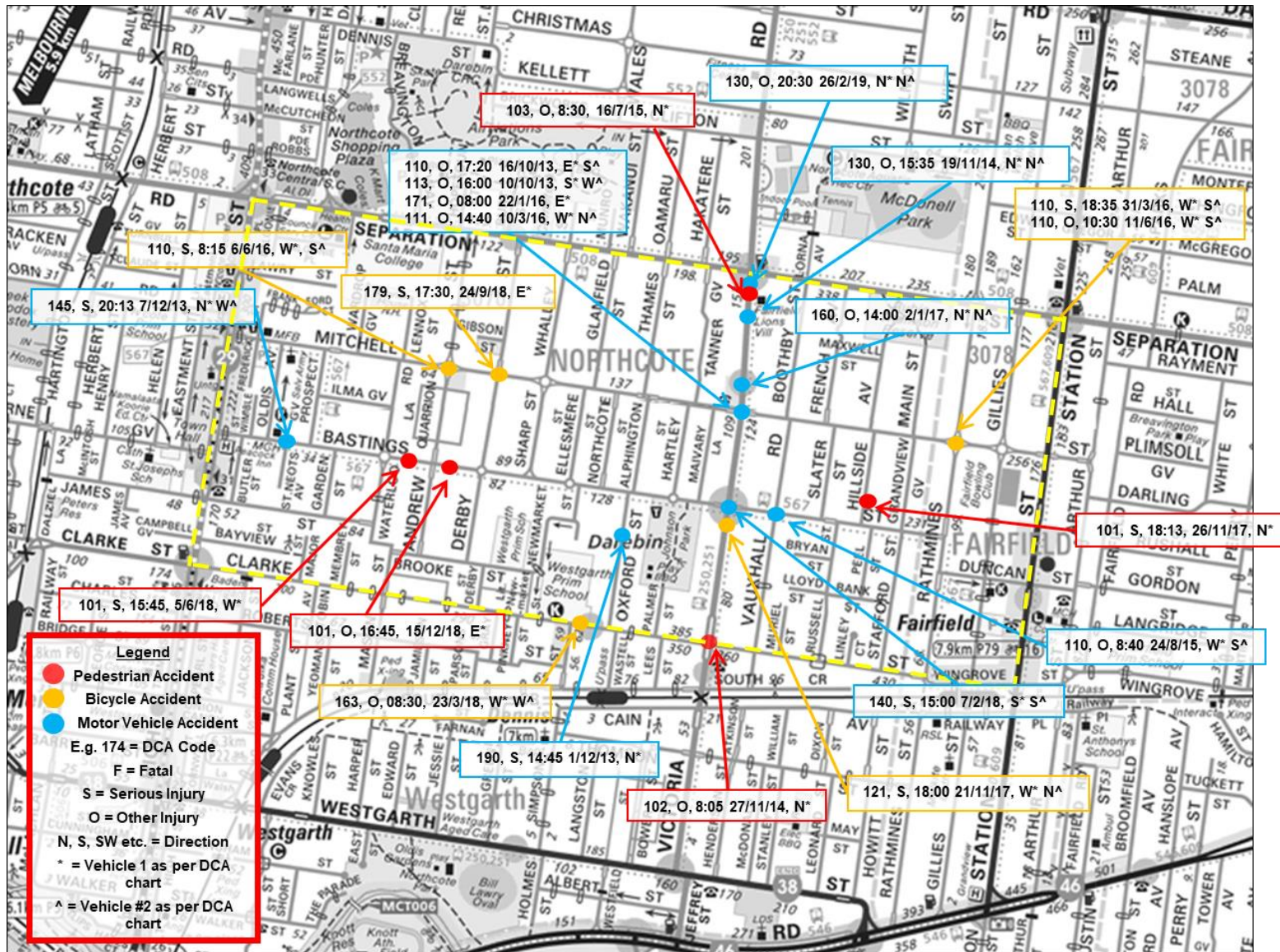


FIGURE 4: CASUALTY CRASH DATA – OCTOBER 2013 TO MARCH 2019

3.5.1 Crash locations

The majority of crashes occurred along Victoria Road, Mitchell Street and Bastings Street.

The Mitchell Street/Victoria Road intersection had 4 crashes, of which 3 were cross intersection type crashes. It is noted that this intersection will be the subject of a Blackspot funding application.

Two crashes also occurred at the Mitchell Street/Rathmines Street intersection, both involving cyclists.

3.5.2 Bicycle crashes

The 6 bicycle crashes that occurred within the study area are described below:

- Two cross-intersection type crashes at the roundabout at Mitchell Street and Rathmines Street (of which one was a serious injury crash);
- One cross-intersection type crash at the roundabout at Mitchell Street and Andrew Street;
- An 'off path' bicycle crash on Mitchell Street at Derby Street;
- A bicycle struck the door of a parked car on Clarke Street near Westgarth Primary School; and
- A bicycle struck a right turning vehicle on Victoria Road, south of Bastings Street.

3.5.3 Pedestrian crashes

The 5 pedestrian crashes that occurred within the study area are described below:

- A pedestrian crossing Victoria Road at Clarke Street was struck on the far side by a northbound vehicle;
- Two pedestrian crashes occurred on Bastings Street when the pedestrian emerged from beside a parked car;
- A pedestrian emerged from beside a parked car in Hillside Street and was struck by a vehicle; and
- A pedestrian playing/lying/working/standing on the carriageway of Victoria Road, south of Separation Street, was struck by a vehicle.

3.6 EXISTING LATM TREATMENTS

3.6.1 Roundabouts

Several roundabouts are provided in the study area, specifically:

- On Mitchell Street – at Andrew Street, Sharp Street, Rathmines Street and Gillies Street; and
- On Bastings Street – at Waterloo Road, Derby Street, Ellesmere Street and Hartley Street.

3.6.2 Speed humps

Speed humps are provided on Clarke Street/Wingrove Street between High Street and Station Street. Other speed hump locations are:

- Waterloo Road, between James Street and Bastings Street
- Frank Ford Court;
- Andrew Street, north of Mitchell Street; and
- Newmarket Street, at Brooke Street (at a raised zebra crossing).

3.6.3 One-way treatments

The following streets are restricted to one-way traffic flow:

- Butler Street (northbound);
- Oldis Avenue (northbound);
- Newmarket Street (southbound); and
- Duncan Street between Rathmines Street and Gillies Street (eastbound).

In addition, traffic movements are restricted to one-way at the following intersections:

- Rathmines Street at Separation Street - left in only; and
- Andrews Street at Separation Street – left/right out only, i.e. no entry movements.

Traffic movements into Derby Street and Whalley Street from Separation Street are restricted by the existing No Right Turn restriction between 4-6pm Monday to Friday.

3.6.4 Threshold treatments

Bastings Street, Mitchell Street and Lawry Street have raised threshold treatments at High Street, with the High Street footpath continuing across the side street at-grade.

There is also raised threshold treatment on Gillies Street at Wingrove Street.

3.6.5 Pedestrian crossings

Pedestrian operated signals are provided on:

- High Street, north of James Street, north of Mitchell Street and north of Lawry Street;
- Station Street, within the Fairfield Shopping strip;
- Victoria Road, north of Mitchell Street;
- Clarke Street, near Westgarth Primary School; and
- Separation Street, west of Derby Street;

Other pedestrian crossings are provided as follows:

- Bastings Street, east of Newmarket Street – school crossing; and
- Newmarket Street, north of Brook Street – raised zebra crossing.

Mid-block pedestrian crossing points with refuge islands are provided on:

- Bastings Street, between Russell Street and Slater Street; and
- Mitchell Street, east of Prospect Grove.

3.6.6 Traffic signals

Traffic signals are provided at the following intersections:

- High Street/Clarke Street;
- Bastings Street/ Victoria Road;
- Victoria Road/Separation Street;
- High Street/Separation Street;
- Separation Street/Northcote Sopping Plaza access; and
- Separation Street/Station Street.

3.6.7 Other LATM treatments

A slow point is provided on French Avenue between Separation Street and Maxwell Street.

A bluestone 'rumble strip' is provided on Vauxhall Street approximately mid-way between Bastings Street and Clarke Street.

Other LATM treatments include splitter islands are numerous intersections.

3.7 SUMMARY OF EXISTING CONDITIONS

With the exception of Victoria Road, much of the vehicular traffic through the study area uses Mitchell Street and Bastings Street, and to a lesser degree, Gillies Street and Rathmines Street. Each of these streets also experience vehicle speeds higher than desirable for local streets.

While traffic volumes are lower on Oxford Street and Vauxhall Street, it is apparent that these streets are being used as 'rat-runs' in peak periods.

Other streets in the study area typically have low traffic volumes and vehicle speeds.

The intersection of Mitchell Street and Victoria Road has been identified as a high-crash location. Numerous pedestrian and bicycle crashes have also occurred in the study area, in particular bicycle crashes at roundabouts along Mitchell Street.

4 PREVIOUS TRAFFIC STUDIES

4.1 WESTGARTH PRIMARY SCHOOL TRAVEL SURVEY AND AUDIT REPORT

The Westgarth Primary School Travel Survey and Audit Report was prepared by Urbantrans in 2012. The report included several recommendations to improve safety for pedestrians and cyclists along three priority travel to school routes.

The recommendations included provision of the following:

- Raised zebra crossing on Clarke Street near western gate to school – this is unlikely to be supported given the proximity of the pedestrian operated signals further east on Clarke Street;
- Kerb extensions on Clarke Street adjacent to the western school gate;
- Refuge island on Derby Street (north) at Brooke Street – installed in 2014; and
- Refuge island on Derby Street (south) at Brooke Street – the width of Derby Street (south) does not facilitate provision of a refuge island of suitable width.

4.2 WALKSPOT SURVEY 2017

The WalkSpot project undertaken by Victoria Walks and CrowdSpot in 2017, allowed participants to record their safe or unsafe walking spots across Melbourne on an interactive map. Over 1,650 people participated in the survey.

Mitchell Street at Derby Street was identified as the 10th worst location in the metropolitan area for its lack of pedestrian crossing facilities on the popular walk to school route.

4.3 STREETS FOR PEOPLE

Victoria Road has been identified as a future 'Streets for People' Corridor. The Streets for People corridors prioritise sustainable transport modes through safe, functional and inviting streets (<http://www.darebin.vic.gov.au/streetsforpeople>). The delivery of the Victoria Road 'Streets for People' corridor will be subject to future Council funding.

5 CONSULTATION

5.1 STAGE ONE CONSULTATION – IDENTIFICATION OF ISSUES

A Community Engagement Workshop was held on 21st February 2018 at the Northcote Town Hall. The Workshop sought to obtain the views and concerns of local residents and identify 'problem' locations.

Participants were invited to write down their concerns and suggestions on post-it notes and stick them onto A1 size maps located around the room. O'Brien Traffic and Council staff were available to answer questions and contribute to discussions.

Issues identified from the Workshop related mostly to:

- Mitchell Street – traffic volumes and speed;
- Bastings Street – traffic volumes and speed;
- Mitchell Street/Victoria Road intersection – safety;
- Clarke Street – school traffic and no through movements at Victoria Road intersection;

Issues relating to rat-running and speeding were identified in numerous streets including Oxford Street, Vauxhall Street, Brook Street, Gillies Street, Alphington Street, Rathmines Street, James Street and Thames Street.

A summary of the community's issues and suggestions are provided in **Appendix A**.

Following on from the Community Engagement Workshop, a Reference Group was established. The Reference Group met on the 2nd May 2018 to consider potential treatment options to form the basis of a draft LATM scheme.

5.2 STAGE TWO CONSULTATION – DRAFT LATM SCHEME

A draft LATM scheme was presented to the community via Council's Have Your Say website and further comments were sought during the period September to November 2018.

A second Community Engagement Workshop was also held for residents who reside north of Mitchell Street. (These residents were not included in the first workshop as the initial study area did not include the area between Mitchell Street and Separation Street).

The draft scheme presented to the community and a summary of the community's responses are provided in **Appendix B**.

Many of the issues identified through the on-line consultation and workshop were similar to those identified by the Stage One consultation.

In relation to the draft scheme presented to the community, numerous concerns were raised with the proposed median treatment on Bastings Street restricting traffic movements to left in-left out at Vauxhall Road. Some concerns were also noted in relation to the proposed turn bans at James Street and Oxford Street and the left in-left out treatment on Mitchell Street at Alphington Street/Thames Street.

Council has also consulted directly with affected residents adjacent to some of the proposed treatments to understand their views in relation to car parking and access.

6 POTENTIAL TREATMENTS

6.1 TRAFFIC CALMING TREATMENTS

6.1.1 Mitchell Street

Mitchell Street is a key east-west local street through the study area. While there is no community appetite to restrict traffic movements along Mitchell Street, there is a desire to 'calm' traffic behaviour.

Provision of raised intersection treatments along the route was considered. This would be an appropriate treatment at Waterloo Road/Lennox Street, however elsewhere along Mitchell Street, raised intersections cannot be delivered due to drainage issues. Other appropriate speed reduction treatments, such as raised platforms, could be considered between Victoria Road and Rathmines Road.

An example of a raised intersection treatment is shown in **Figure 5**.



FIGURE 5: EXAMPLE OF RAISED INTERSECTION TREATMENT

Additional/improved pedestrian crossing points are also proposed at three locations including refuge islands (see Section 6.3), and these would add to the 'friction' along the route.

6.1.2 Bastings Street

West of Victoria Road, vehicle speeds are well controlled by the existing roundabouts. However, it would be desirable to provide some treatments east of Victoria Road.

Raised intersection treatments could be provided at Vauxhall Street and Stafford Street/Grandview Grove to provide some speed control at these cross intersections. As Bastings Street is a bus route, this would have to be designed with bus-friendly ramps.

In addition, improvements could be made to the existing pedestrian refuge island west of Russell Street, to better facilitate pedestrian crossing movements and provide increased 'friction' to traffic movements. Specifically, improvements could include extending the kerb outstand on the southern side, improving linemarking at the island, and linemarking the parking spaces on the northern side (see Section 6.2).

6.1.3 Thames Street - Alphington Street – Oxford Street

Thames Street - Alphington Street - Oxford Street has been identified as a rat-run. To prevent through traffic movements across Mitchell Street, a median island could be provided to restrict traffic movements to left in/out at Thames and Alphington Streets.

To discourage southbound traffic re-routing to a parallel street, a right turn ban could be provided from Oxford Street to Clarke Street in the morning peak period. It is recommended that the turn ban end at 8:30am to allow school traffic to continue to access Westgarth Street via Oxford Street and Clarke Street.

6.1.4 Boothby Street - Vauxhall Street

Vauxhall Street has also been identified as a rat-run. To prevent through traffic movements across Bastings Street, a median island was initially considered for Bastings Street to restrict traffic movements to left in/left out to/from Vauxhall Street north and south. However numerous concerns were raised in relation to this proposal

during the second consultation period. The main concern was the impact this would have on residents' access to/from their street.

An alternative proposal is for a right turn ban on Vauxhall Street at Clarke Street during the AM peak period (i.e. when the majority of rat-running occurs).

As discussed in Section 6.1.2, a raised intersection treatment is also proposed at the Bastings Street/Vauxhall Street intersection which may also discourage rat-running.

6.1.5 Gillies Street

Gillies Street has been identified as a rat-run. To reduce through traffic, a left-in only treatment is proposed at Separation Street, similar to the left-in only treatment at Rathmines Street. Provision should be made for cyclists to continue all traffic movements at the intersection.

6.1.6 James Street

During the Community Engagement Workshop in February 2018, the increasing use of James Street as a rat-run was raised. The issue was considered to be exacerbated by the gradient of the street (which encourages higher vehicle speeds) and sun glare in the afternoon (which makes eastbound vehicles harder to see).

To address the community concerns, a PM peak hour right turn ban from High Street into James Street could be implemented, which would eliminate the rat-run movement and significantly reduce eastbound traffic during the evening peak period.

During the second consultation, there were some concerns that implementing a right turn ban at James Street would re-route traffic to Bastings Street. Based on the traffic count data, the proposed right turn ban would result in up to 30 additional eastbound vehicles in Bastings Street (at the western end) in the PM peak hour (i.e. on average one additional vehicle every 2 minutes). The additional traffic would likely be unnoticeable.

6.1.7 Raised Threshold Treatments

In addition to the above treatments, raised threshold treatments could be provided on some streets where they intersect with Mitchell Street and Bastings Street. Raised thresholds are a traffic calming treatment for vehicles entering the side street and also provide benefits for pedestrians (see Section 6.3.5). In particular, raised threshold treatments are proposed on through streets where there are no other existing/proposed intersection treatments as follows:

- At Mitchell Street northern side – on Glanfield Street, Tanner Grove and Boothby Street;
- At Mitchell Street southern side – on Ellesmore Street, Hartley Street, Vauxhall Road, Slater Street, and Hillside Avenue;
- At Bastings Street northern side – on Prospect Street, Sharp Street (to replace the redundant traffic island), Alphington Street, Slater Street and Hillside Street; and
- At Bastings Street southern side – on Oxford Street.

Mitchell Street and Bastings Street have been identified as secondary pedestrian routes within Darebin's Principal Pedestrian Network (PPN). The PPN was fundamental to the development of Council's Walking Strategy 2018-2028. The purpose of the PPN is to identify a connected network of street and paths that support walking trips into and around key destinations within Darebin. This can then be used to help prioritise a variety of infrastructure measure to improve walking conditions, but also the broader public realm.

Provision of raised threshold treatments would be subject to drainage requirements.

An example of a raised threshold treatment is provided in **Figure 6**.



FIGURE 6: EXAMPLE OF A RAISED THRESHOLD TREATMENT

6.2 INTERSECTION SAFETY TREATMENTS

6.2.1 Victoria Road/Mitchell Street intersection

The Victoria Road/Mitchell Street intersection has a poor safety record as noted in Section 3.3.1. During the community consultation, there were also concerns raised about the proximity of the pedestrian operated signals on Victoria Road, approximately 10m north of the intersection, in particular, cars turning out of Mitchell Street not seeing/stopping for the red signal.

These issues could be addressed by removing the pedestrian operated signals and providing traffic signals at the intersection. This would improve safety for vehicular traffic and facilitate pedestrian movements at the intersection.

However, provision of traffic signals at the intersection would likely encourage more traffic to use Mitchell Street. Therefore, it is recommended that if intersection signals are provided, additional traffic management treatments be provided in Mitchell Street, such as those described above (in Section 6.1.1).

6.2.2 Mitchell Street roundabouts

The crash data analysis identified a bicycle crash issue at the roundabouts along Mitchell Street. To address this, bicycle sharrows could be provided at roundabouts. This is discussed further in Section 6.4.

6.2.3 Waterloo Street bend

Improvements could be made to the bend in Waterloo Street between James Street and Brooke Street. This would include provision of physical median islands and linemarking. Note the median islands would need to be fully mountable to accommodate larger vehicles.

No Stopping restrictions currently exist around each bend with parking permitted between the bends. Parked cars are often parked in this section, reducing traffic flow to one lane, which some motorists may find 'uncomfortable' or inconvenient. Consideration could be given to extending the No Stopping to apply between the bends, however given the traffic volume (up to 120 vph) and low speed environment, this is not essential.

6.3 PEDESTRIAN TREATMENTS

6.3.1 Mitchell St

East of Prospect Grove

Cars often park on the northern side of Mitchell Street opposite the pedestrian refuge island east of Prospect Grove, thereby blocking the kerb ramp for pedestrians. The existing pedestrian refuge could be widened to improve pedestrian safety and reduce traffic lane widths.

The pedestrian crossing point could be improved by the provision of kerb outstands on each side of Mitchell Street. This would prevent cars parking on the northern side in front of the kerb ramp, and would reduce the overall crossing width for pedestrians.

West of Derby Street

The 2017 WalkSpot survey identified the need for a pedestrian crossing point on Mitchell Street near Derby Street to assist students walking to/from school.

Provision of a new pedestrian refuge island is recommended. The preferred location is west of Derby Street, although this would be determined during the design phase.

West of Hillside Avenue

Desirable, a new pedestrian refuge island would be provided on Mitchell Street near Hillside Avenue, to assist pedestrians crossing in this vicinity, which is also on route to Rubie Thompson Reserve. A potential location is on the western side of the Hillside Avenue at the existing kerb outstands. The southern kerb outstand would be extended to the west and the path realigned, although this would be subject to design.

6.3.2 Bastings St

West of Russell Street

The existing pedestrian crossing point on Bastings Street, west of Russell Street, could be improved by extending the kerb outstand on the southern side and providing linemarking and hatching on the northern side to ensure cars do not park across the pedestrian crossing point.

6.3.3 Rathmines Street

On Rathmines Street, north of Bastings Street, the pedestrian refuge island could be widened to improve pedestrian safety and reduce traffic lane widths. In addition, a pedestrian refuge island could be provided on the southern leg of the intersection.

6.3.4 Wingrove Street

Desirably a pedestrian crossing would be provided on Wingrove Street, adjacent to Fairfield Station to facilitate pedestrian crossing movements. This could be provided as a raised crossing utilising the existing speed hump near the Station.

6.3.5 Raised threshold treatments

Provision of raised threshold treatments, as discussed in Section 6.1.7, provide benefit to pedestrians as well as being a traffic calming treatment for vehicles entering the side street. A raised threshold slows vehicle speeds at the intersection and improves conspicuity of pedestrians crossing the street.

6.4 BICYCLE TREATMENTS

Numerous bicycle crashes have occurred at roundabouts along Mitchell Street. Provision of sharrows at roundabouts, where the bicycle lanes terminate, would increase motorists' awareness of cyclists and improve cyclist safety. Similarly, sharrows could be provided at the roundabouts along Bastings Street.

An example of sharrows at a roundabout is shown in **Figure 7**.

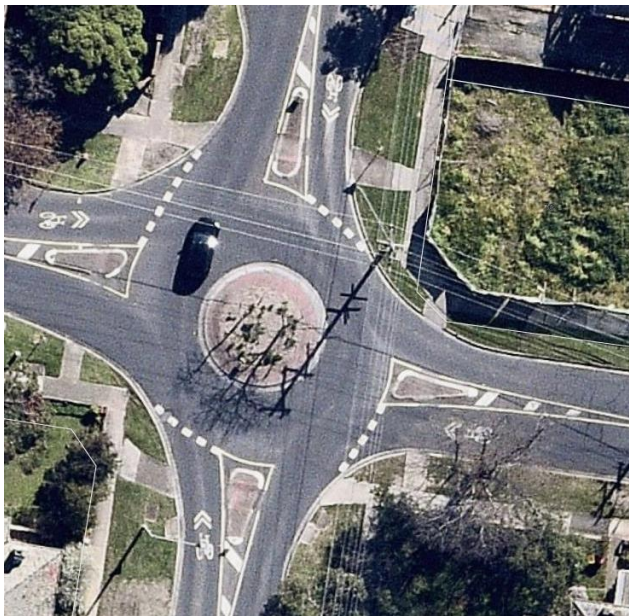


FIGURE 7: EXAMPLE OF SHARROWS AT A ROUNDABOUT

7 REVISED LATM SCHEME

A revised LATM Scheme, based on the treatments discussed above, is shown diagrammatically in **Figure 8**.

The revised LATM Scheme has been informed by the data analysis and input/feedback from the community. It comprises a range of traffic management, pedestrian and bicycle treatments to reduce traffic impact, improve road safety and encourage walking and cycling.

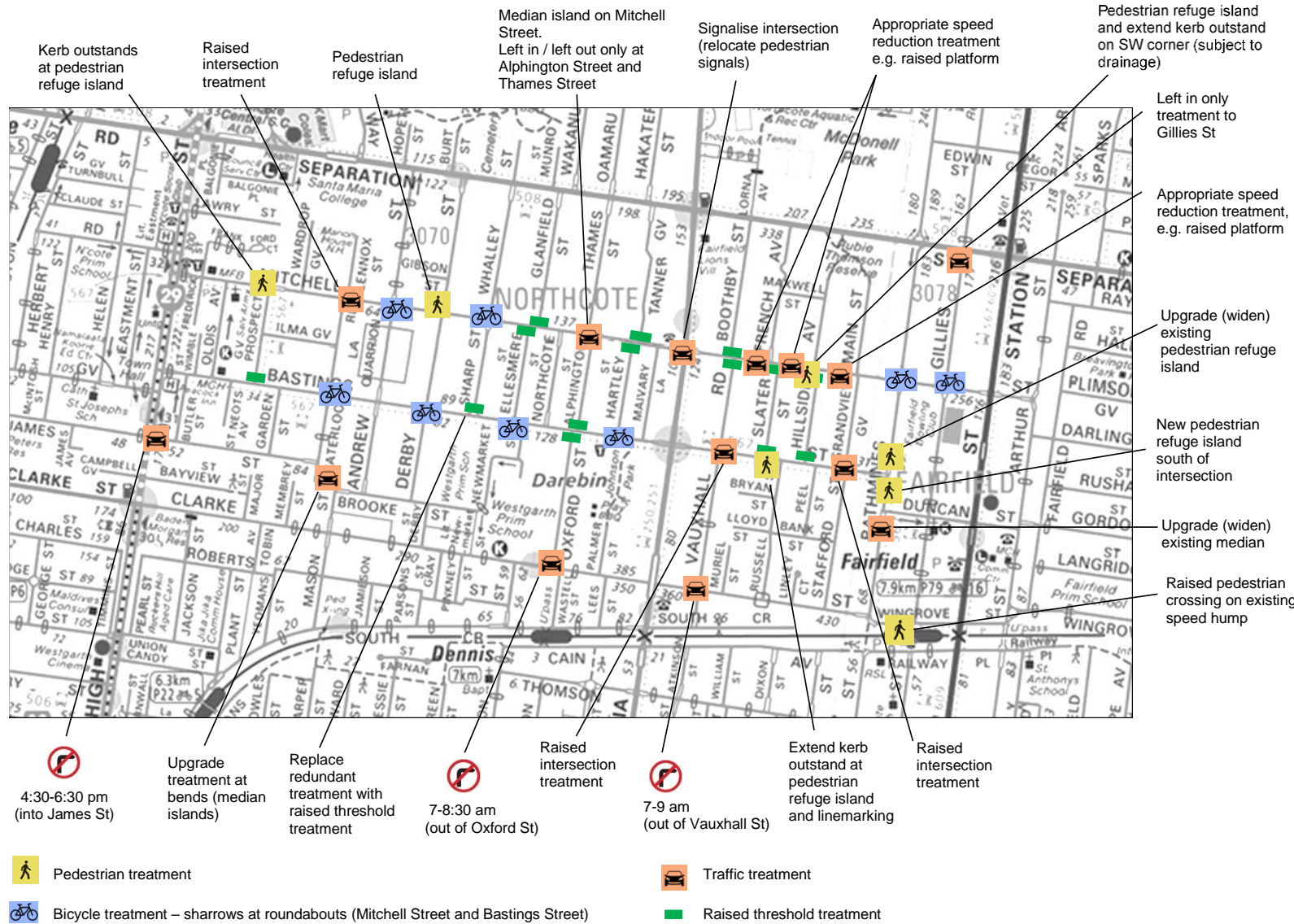


FIGURE 8: LOCAL AREA TRAFFIC MANAGEMENT SCHEME

APPENDIX A

COMMUNITY ENGAGEMENT WORKSHOP – FEBRUARY 2018 SUMMARY OF ISSUES AND SUGGESTIONS

LOCATION	ISSUE (NUMBER OF TIMES)	SUGGESTION
Dennis Train Station	Train commuters parking on local roads (2) Lack of bike parking (2)	Restrict all-day parking Provide more parking for bicycles (2) Find catchments of public and active modes, service accordingly
Mitchell St	Vehicles speeding and rat-running (4) Poor visibility near Red Door Café (3) Narrow sections of road caused by truck deliveries (3) Pedestrian crossing (2) Crashes at Station St intersection Bike lane (2) Traffic lights at Victoria Rd intersection (3) Pedestrians jaywalking near High St intersection (3) Provide more parking spaces for residents Poor sight distance near Derby St intersection Cars turning left out of Mitchell St to Victoria St often don't see red signal at pedestrian crossing	Reduce speed limit to 40 km/h (4) Sign speed limits on road surfaces Reduce road width No speed humps, often painful for people with a disability (5) Use speed humps to reduce rat-running Implement speeding cameras (2) Implement chicanes to reduce rat-running Restrict parking near roundabouts as it obstructs visibility Redesign pedestrian crossing at High Street intersection for better safety Reposition traffic lights near High St intersection Allow closure to the fire brigade at Station St intersection Provide more roundabouts Provide safe pedestrian crossings near schools
Bastings St	Bicycle accidents at Oxford St and Alphington St intersections Poor visibility at Vauxhall St intersection Speeding since it looks like a main road Vehicles speeding at traffic lights to cross Victoria Rd Too many roundabouts Risk of accidents at Waterloo Rd intersection Heavy vehicles funnelled due to closure at Clarke St intersection Difficult to turn right into High St, vehicles diverted to Separation St	Provide safe pedestrian crossing near Johnson Park Timed parking during weekends at Johnson Park Prohibit right turn from High St
Victoria Rd	Clarke St intersection (4) Delays caused by level crossing (3) Congestion during peak hour	Remove central median to allow local residents to access Victoria Rd from Clarke St (2) Blockage is main reason of rat-running (2) Relocate pedestrian operated signals to Mitchell

	<p>Bus Service (2)</p> <p>Rat-running occurring on all north-south alternatives</p> <p>Congestion at Separation St intersection caused by cars entering and exiting childcare centre</p> <p>Cars jumping red lights at Westgarth St intersection</p>	<p>Street (i.e. intersection signals) (3)</p> <p>Changes at High St (including speed reduced to 40 km/h) lead to congestion at Victoria Road (2)</p> <p>Extend the time that bus services operate along Victoria Rd (i.e. earlier and later)</p> <p>Restrict cars entering and exiting childcare centre, no crossing the solid white line (2)</p> <p>Provide signals at South Cres intersection</p>
Oxford St	<p>Train commuters parking</p> <p>Speeding</p> <p>Only option to travel to Dennis train station</p> <p>Rat-running</p> <p>Narrow road due to cars parking near school (2)</p>	<p>Restrict all-day parking</p> <p>Reduce speed limits to 40 km/h close to kindergarten and primary schools (4)</p> <p>Make street one-way to reduce risk of accidents near the school (2)</p> <p>Prohibit left turn from Bastings St to reduce rat-running during the morning</p>
High St	<p>Pedestrian crossing at Townhall</p> <p>Difficult to park</p>	<p>Relocate the pedestrian crossing at the Townhall to Westbourne St</p> <p>Install mirrors near dog legs at Mason St and Brooke St.</p>
Waterloo Rd	<p>New developments increasing parking and congestion (2)</p> <p>Narrow road</p>	<p>Improve access to pedestrians near construction sites</p>
Clarke St	<p>High car volume during school drop-offs and pick-ups</p> <p>Access to Victoria Road (2)</p> <p>Dangerous intersection for both pedestrians and cars at Masons St</p>	<p>Allow access to Victoria Road (2)</p>
Duncan St	<p>Cyclist and cars going the wrong way</p> <p>Risks of accidents near kindergarten</p>	
Separation St	<p>Right turns</p>	<p>Provide right-turning arrows at traffic lights</p>
South Cres	<p>Risk for cyclists (2)</p>	<p>Provide safer cycling lanes (2)</p>
Station St	<p>Difficult to turn into from side roads (2)</p> <p>Speeding (2)</p> <p>Parking issues at Mitchell St intersection</p>	<p>More traffic lights needed (3)</p> <p>Provide a cycling lane</p>
Gilles St	<p>Rat-running (2)</p>	<p>Narrow streets to reduce rat-running (3)</p> <p>Speed humps are ineffective</p>
Fairfield Rd	<p>Future planning</p>	<p>Could play a role in planning future connections</p>

		between Heidelberg and Darebin Roads
Alphington St	Risk of accidents involving bicycles or schoolchildren Rat-running	Make it a one-way street One-way exits at northern and southern ends, exempt for cyclists
Rathmines St	Speeding Lack of car parking for residents	
James St	Cannot see incoming traffic nor pedestrians at sunset due to poor visibility (3) Narrow street Rat-running caused by delays of tram stopping at the Townhall	Make it a one-way street to address visibility Restrict all-day parking
Vauxhall Rd	Speeding and rat-running during peak hours	
Oldis Av	Speeding	Use speed humps
Derby St	Dangerous crossing	Provide safe pedestrian crossing at Thames St and Omaru St intersections
Brooke St	Congested and narrow street between Andrew St and Derby St No 'slow down' signs near school Rat-running and speeding	
Mason St	Parking	Prohibit parking near dog leg section
Prospect Gve	Risk of collision with buses	Address issue of buses coming from Bastings St., since cars coming the opposite way, often need to reverse
Gilles St	Speeding and rat-running (2)	Reduce road width to decrease rat-runs, speed humps are ineffective
Thames St	Cycling route Rat-running	Provide a cycling route between Separation St and Clark St.
General	Cyclists riding on footpaths (3) Poor accessibility for pedestrians near construction sites	Signage for cyclists not to ride on footpaths (3) Apply trial measures and consult with residents before making permanent changes No speed humps (5)

TABLE A1: SUMMARY OF ISSUES AND SUGGESTIONS FROM THE COMMUNITY ENGAGEMENT WORKSHOP (FEBRUARY 2018) (INCLUDING WRITTEN SUBMISSIONS)

***HAVE YOUR SAY ONLINE CONSULTATION - SEPTEMBER TO NOVEMBER 2018
DRAFT LATM SCHEME AND SUMMARY OF RESPONSES***

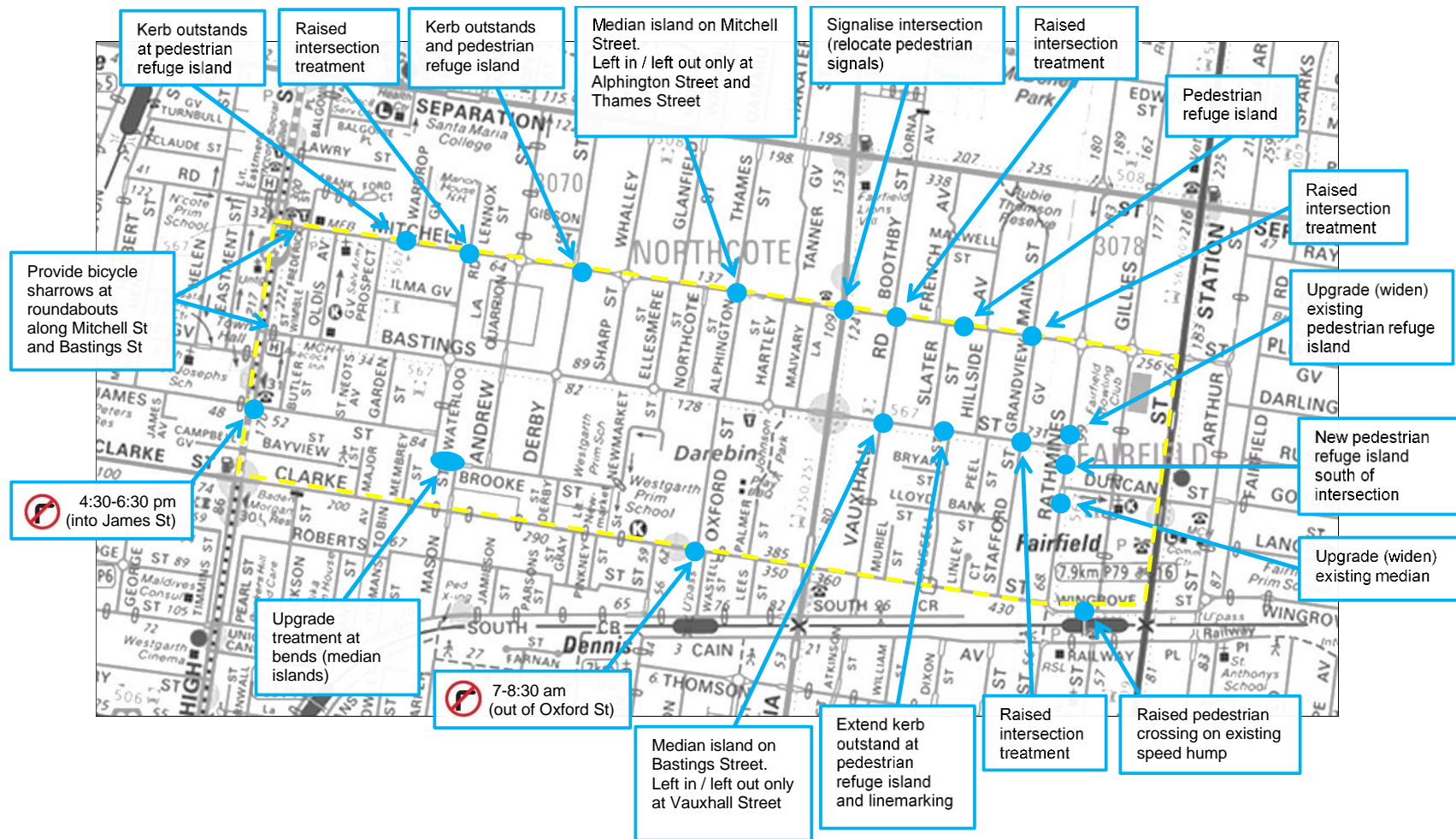


FIGURE B1: DRAFT LATM SCHEME PRESENTED FOR CONSULTATION SEPTEMBER – NOVEMBER 2018

LOCATION	ISSUE	SUGGESTION
General	Railway stations need more parking, side streets will still have "Rat Runners", not enough greenery in general area, no signs warning people school is nearby, reducing the number of roundabouts will make it easier for people to speed, roundabouts need to be more clearly sign posted, speed limit too high on local streets, needs more bicycle lanes, don't support turn bans	Raised planter boxes, replace English grass with wild/native grasses, more rosemary plantings, larger parking for cars to use the train, add signs to advise motorists they are near a school, reduce speed limit to 40 k/h, bike lanes on all streets
Alphington St	Speed of traffic too fast making street dangerous and hard to reverse onto	Reduce speed limit
Alphington St - Thames St	Don't support proposal for No Right Turn	Scrap proposal for No Right Turn, provide speed humps
Andrew St	During peak times traffic is very chaotic	Provide speed humps
Basting St	People not giving way at roundabout due to travelling at speed, plan may make Basting St the new 'rat run', more traffic due to developments, crossing will become harder as traffic increases	Slow all traffic, provide bike lanes, more greenery in front of old meat works, add crossing for school children, provide speed humps, ban right turn from High St into Basting St, provide new pedestrian crossing near Alphington St/Oxford St
Basting/High St		Install traffic lights
Boothby St	Not included in plan, rat runners and speeding cars	Reduce speed limit
Brooke St	Narrow, speed limit too high, speeding, rat running, congestion,	Reduce speed limit
Brooke St	Cars speeding avoiding the 40km/h limit on High St	Reduce speed limit to 40 km/h
Brooke St/Mason St	Dangerous when turning into Brooke street as traffic coming from Waterloo St cannot be seen	
Clarke St	Vehicle speeds, too narrow to accommodate cars, some cars double park near train station, traffic jams caused by boom gates, traffic increasing rapidly, no pedestrian crossing	Designated as local traffic only, parking permits and time limits, reduce speed limit, speed humps
Clarke St	Hard for residents to find parking, congestion increasing, cars parking both sides	Resident parking permits, parking one side only during peak times, reduce parking on eastern section
Clarke St/Victoria St	Median strip stopping northbound cars turning into Clarke street causes cars to U-turn in people's driveways	Remove median and replace with normal intersection
Derby St	Very narrow, dangerous crossing, rat running, speeding	Make one way, parking on one side, traffic calming measures
Fairfield Station	Pedestrians crossing near Station Street, more bicycle hoops to encourage people to ride	Provide pedestrian lights

LOCATION	ISSUE	SUGGESTION
Gillies St	Cars speeding, roundabout makes it hard for pedestrians to cross, rat running	Traffic calming measures, replace roundabout with intersection including pedestrian crossings
Glanfield St	Too narrow	
High St	Poor traffic management, speeding cars, no right turn proposal into James St	Slow all traffic, scrap No Right Turn proposal at James St
James St	Cars travel at speed with limited visibility, banning right turns into James Street during afternoon peak will increase traffic in Bastings St, don't support No Right Turn, opposed to parking on one side only as it will create a spill over into neighbouring streets	Reduce speeds
Mitchell St	Cars parking illegally on Mitchell St at Station street (on corner), traffic increasing, trucks using it as a through road creating noise, numerous crashes at the roundabout, people speeding through roundabout, cars speeding, may lose parking due to raised road sections, needs better pedestrian crossing	Marked clearly with No parking signs/markings, improve roundabout at the eastern end to better protect cyclists, bike lane at roundabout (Copenhagen), ban trucks, provide speed humps, zebra crossing (safe place for kids to cross), provide chicane provide pedestrian island
Mitchell St/Station St	One car leaving Mitchell St can hold up traffic as they wait, cars parking illegally	Provide two separate lanes for traffic exiting Mitchell St to facilitate cars turning and going straight at Victoria St and Station St, roundabout/traffic lights at Mitchell St/Station St, reduce speed limit to 40km/h
Mitchell St/Victoria St	Move pedestrian crossing as it is hard to watch the crossing and the traffic as you pull out, provide traffic lights, too many traffic lights, traffic lights will encourage more cars to use Mitchell St	Provide traffic lights, move pedestrian crossing, install a roundabout
Mitchell Street	Vehicle speeds, cars speeding between the Rathmines St and Victoria St, footpath needs to be better maintained	Provide speed humps, reduce speed limit to 40 km/h , install roundabout at Vauxhall St
Mitchell/Derby	Needs a roundabout, dangerous intersection	Install roundabout
Newmarket St cul-de-sac	Cul-de-sac is a bottleneck	
Oldis Ave/Mitchell St	Strip between Oldis Ave and Mitchell St carpark used to be blocked off, now cars park on the strip and drive over the footpath to get to the carpark	Block pathway and plant out to prevent/stop cars parking and driving over
Oxford St	Too narrow, residents paying annual fee for parking, disagree with turn ban	
Oxford St/ Clarke St	No Right Turn will disrupt residents, No Right Turn will re-route traffic to other streets	Make Oxford St 'No Entry' from Mitchell St during certain times
Palmer St	Oxford St one hour parking restrictions will cause parking spill-over into Palmer St	Change Palmer St to 2 Hour parking

LOCATION	ISSUE	SUGGESTION
Prospect Grove	Street is just wide enough for a bus to travel down, no crossing for children, speeding cars, no parking for residents	Parking permits, parking limits for non-residents, move bus route, provide pedestrian crossing
Rathmines St	Speed of traffic making road dangerous and hard to reverse onto, parking limited due to train commuters, low visibility, cars ignoring signs	Speed restrictions, pedestrian crossing options, speed humps, designated area for train commuters to park, reduce nature strips and widen road, use convex mirrors
Separation Street	Poor movement of traffic	Improvements to traffic signalling, prohibit large vehicles (excluding buses)
Sharp St	South end island needs renewal to stay effective	
Sharp St/Basting St	The traffic island makes turning right into Sharp St very difficult	Remove the traffic island
South Crescent	Bike riders of all ages use street	Shared footpath/bike path
Station St	Cars doing dangerous U turns, poor traffic management	Raised median strip
Station St/Duncan St	Pedestrian crossing not in ideal location	Move pedestrian crossing,
Station St/Victoria Rd	Bottlenecks caused by level crossing	
Tanner Gve	Narrow street	
Vauxhall Rd	Don't support proposed left in/left out only, proposed median may encourage cars to U-turn on Basting St, proposed median will re-route cars to other streets, entering Vauxhall Rd via South Crescent problematic due to train lines, vehicle speeds, allow bikes to continue straight on Vauxhall St at Bastings St	Scrap proposal for left in/left out only, add speed humps, improve cycling safety
Victoria Road	Intense congestion, pedestrian movement causing many near misses at intersection, busy due to multi story apartments, speeding cars	Flashing 'watch for pedestrian' signs, longer light cycle for Basting St at peak hour, reduce speed to 40 near Clarke St
Waterloo Rd	Risk of accident at intersection	Stop signs, speed humps
Waterloo St/ Basting St	No footpath crossing at the Waterloo St/Basting St roundabout	Provide footpath and crossing
Wingrove Ave		Allow cars to turn left in and out at Station St

TABLE B1: SUMMARY OF ISSUES AND SUGGESTIONS FROM THE *HAVE YOUR SAY* ONLINE CONSULTATION (SEPTEMBER TO NOVEMBER 2018)