

# DRAFT LATM PLAN BELVEDERE PRECINCT

LOCAL AREA TRAFFIC MANAGEMENT STUDY

**SALT<sup>3</sup>**

## DRAFT LATM PLAN BELVEDERE PRECINCT

Client: **Frankston City Council**

Report Reference: 21480T

File Path: Y:\2021\21480T - Frankston LATM\08 Reports\Draft LATM\21480TREP03D01 - Draft LATM plan.docx

Monday, May 09, 2022

### Document Control

Version:	Prepared By:	Position:	Date:	Reviewed By:	Position:	Date:
D01	Claudia Goodliffe	Traffic Engineer	29 Apr 2022	Jarrold Wicks	Associate Director	29 Apr 2022
D02	Claudia Goodliffe	Traffic Engineer	6 May 2022	Jarrold Wicks	Associate Director	9 May 2022

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# CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>2</b>
1.1	STUDY AREA .....	2
1.2	EXISTING LATM MEASURES .....	2
<b>2</b>	<b>SCOPE OF WORKS.....</b>	<b>4</b>
2.1	OVERVIEW .....	4
2.2	COMPLIMENTARY PROJECTS .....	4
<b>3</b>	<b>OVERVIEW OF POTENTIAL LATM TREATMENTS .....</b>	<b>5</b>
3.1	CENTRE BLISTER (OR SIMILAR) .....	5
3.2	MODIFIED T-INTERSECTION .....	6
3.3	SPEED HUMP .....	7
3.4	WOMBAT CROSSING .....	8
3.5	RAISED TREATMENT .....	9
3.6	LEFT-IN / LEFT-OUT .....	11
3.7	SHARROWS .....	12
3.8	FULL ROAD CLOSURE .....	13
3.9	SURFACE TREATMENTS .....	14
3.10	OTHER TREATMENT OPTIONS .....	14
<b>4</b>	<b>PROPOSED LATM MEASURES AND RECOMMENDATIONS .....</b>	<b>15</b>
4.1	KEY ISSUES .....	15
4.2	ENGINEERING INVESTIGATIONS .....	15
4.3	OBJECTIVES .....	15
4.4	PLAN OF PROPOSED LATM TREATMENTS .....	15
4.5	DISCUSSION OF PROPOSED LATM TREATMENTS .....	17
4.5.1	Austin Road .....	17
4.5.2	Belvedere Road .....	17
4.5.3	Brunel Road .....	18
4.5.4	Centenary Street .....	19
4.5.5	East Road .....	19
4.5.6	Frankston Dandenong Service Road .....	20
4.5.7	Henry Crescent .....	21
4.5.8	Maple Street .....	21
4.5.9	Ti-Tree Crescent .....	21
4.5.10	Wicklow Street .....	22
<b>APPENDIX 1</b>	<b>PROPOSED DRAFT LATM PLAN WITH EXISTING LATM TREATMENTS OVERLAID .....</b>	<b>23</b>

## LIST OF FIGURES

Figure 1	Study area shown on Nearmap aerial photography.....	2
Figure 2	Existing LATM measures implemented within the study area.....	3
Figure 3	Example of centre blister island (from Nearmap aerial photography).....	5
Figure 4	Example of a modified T-intersection (from Nearmap aerial photography).....	6
Figure 5	Example of a speed hump (from Nearmap aerial photography).....	7
Figure 6	Example of a wombat crossing (from Google Maps Streetview).....	8
Figure 7	Example of a raised treatment at an intersection (from Google Maps Streetview).....	9
Figure 8	Example of a raised treatment at a roundabout (from Google Maps Streetview).....	9
Figure 9	Example of a raised treatment at a pedestrian crossing point, with vehicle priority (Source: NearMap).10	
Figure 10	Example of a left-in / left-out treatment (from Nearmap aerial photography).....	11
Figure 11	Example of a sharrow treatment (from Nearmap).....	12
Figure 12	Example of a full road closure (from Google Maps Streetview).....	13
Figure 13	Example of a surface treatment (from Nearmap).....	14
Figure 14	Draft proposed LATM plan.....	16
Figure 15	Austin Road speed hump to be converted to wombat crossing (NearMap aerial imagery).....	17
Figure 16	Belvedere Road school crossing to be converted to raised crossing (NearMap aerial imagery).....	18
Figure 17	Brunel Road bike and parking lane example (Google Maps Streetview).....	19
Figure 18	Approximate locations for 'No parking' to be implemented (NearMap aerial imagery).....	20
Figure 19	View of Frankston Dandenong Service Road and Mountainview Crescent (NearMap aerial imagery).....	20
Figure 20	Speed hump on Ti-Tree Crescent to be converted to raised crossing.....	22
Figure 21	Wicklow Street school crossing to be converted to raised crossing (NearMap aerial imagery).....	22



# 1 INTRODUCTION

SALT has been engaged by Frankston City Council to undertake a Local Area Traffic Management (LATM) study for the Belvedere Precinct. The study will aim to identify and address traffic and road issues within the precinct.

The following report provides a draft LATM plan to address the concerns raised during the first stage of the LATM plan, also conducted by SALT, which consisted of an existing condition assessment of the study area (21480TREP01F01 – Existing Conditions Report). This assessment collated relevant background information, traffic data community consultation surveys and an on-site investigation, and should be read in conjunction with the Draft LATM plan outlined within this report.

## 1.1 STUDY AREA

The study area is the Belvedere precinct located in Seaford, bound by Maple Street to the north, Peninsular Link and Frankston-Dandenong Road to the east, Seaford Road to the south, and Brunel Road to the west.

The extent of the study area is generally shown in **Figure 1**.



Figure 1 Study area shown on Nearmap aerial photography

## 1.2 EXISTING LATM MEASURES

The existing traffic management devices implemented in the local area by Council are shown in **Figure 2**.

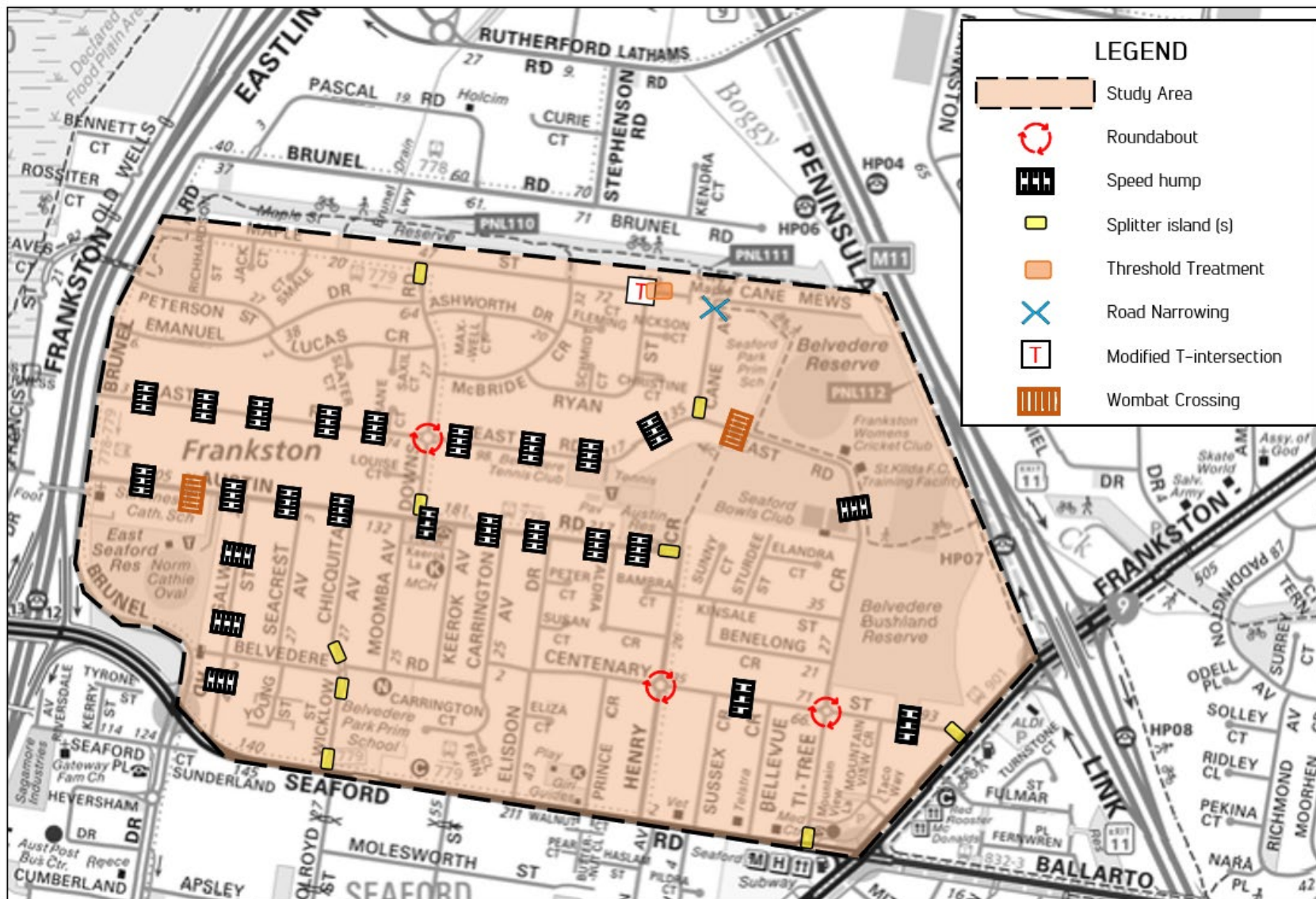


Figure 2 Existing LATM measures implemented within the study area

## 2 SCOPE OF WORKS

### 2.1 OVERVIEW

The Local Area Traffic Management (LATM) measures proposed in the following sections are informed by SALT's understanding of the study area as set out within the existing conditions assessment (21480TREP02F01 – Existing Conditions Report) and the principles of the Austroads Guide to Local Area Traffic Management.

It is imperative to understand that the scope of an LATM plan cannot directly impose measures on arterial roads managed by Department of Transport (VicRoads), as any works associated with maintenance or improvements to these roads cannot be undertaken by Council. However, an LATM plan does consider these roads at all stages and endeavours to accommodate the needs of the local community wherever possible. In any case, there are no arterial roads within this LATM study area.

Similarly, although car parking issues can be highlighted by an LATM study, directly fixing parking supply issues is not the main intent of an LATM study. However, parking access can be addressed and where possible, car parking provision improvements can sometimes be made indirectly.

### 2.2 COMPLIMENTARY PROJECTS

SALT is aware of the following planned/approved projects in the Belvedere Precinct that may have an effect on the outcomes of this Draft LATM plan:

- Belvedere Reserve Upgrade



### 3 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 throughout the study area.

The following sections comprise descriptions of several LATM treatments that are considered appropriate for the context of the Belvedere Precinct. The sections will also provide the respective advantages and disadvantages of each treatment.

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

#### 3.1 CENTRE BLISTER (OR SIMILAR)

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.

Figure 3 provides an example of a centre blister LATM treatment.



Figure 3 Example of centre blister island (from Nearmap aerial photography)

#### Advantages:

- 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:

- 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.



## 3.2 MODIFIED T-INTERSECTION

Modified T-intersections are used to effect a change in the vehicle travel path, thereby slowing traffic via deflection of traffic movements and/or reassignment of priority.

Figure 4 provides an example of a modified T-intersection.



Figure 4 Example of a modified T-intersection (from Nearmap aerial photography)

### Advantages:

- 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 installed in a series; and
- Can accommodate buses and heavy vehicles.

### Disadvantages:

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



### 3.3 SPEED HUMP

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. This can extend to 6 metres to accommodate buses more comfortably.

Figure 5 provides an example of a speed hump.



Figure 5 Example of a speed hump (from Nearmap aerial photography)

#### Advantages:

- 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:

- Traffic noise may increase just before and just 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.

### 3.4 WOMBAT CROSSING

Wombat crossings are generally in the form of a flat-top speed hump with a pedestrian crossing on the raised flat surface, giving priority to pedestrians. The minimum length including ramps is 6m and the desirable height of the platform is 100mm.

Figure 6 provides an example of a wombat crossing treatment.



Figure 6 Example of a wombat crossing (from Google Maps Streetview)

#### Advantages:

- Significantly reduce vehicle speeds in the vicinity of the device;
- Can significantly reduce road crashes;
- Relatively inexpensive to install and maintain;
- Discourage through traffic;
- Reduce vehicle-pedestrian conflicts; and
- Provide designated crossing place for pedestrians.

#### Disadvantages:

- Traffic noise may increase just before and just 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.





### 3.5 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 6m but typically more). Raised sections of roadway can be located at mid-block locations, or they can cover an intersection between two roadways.

Figures 7 – 9 provide examples of various raised treatments.

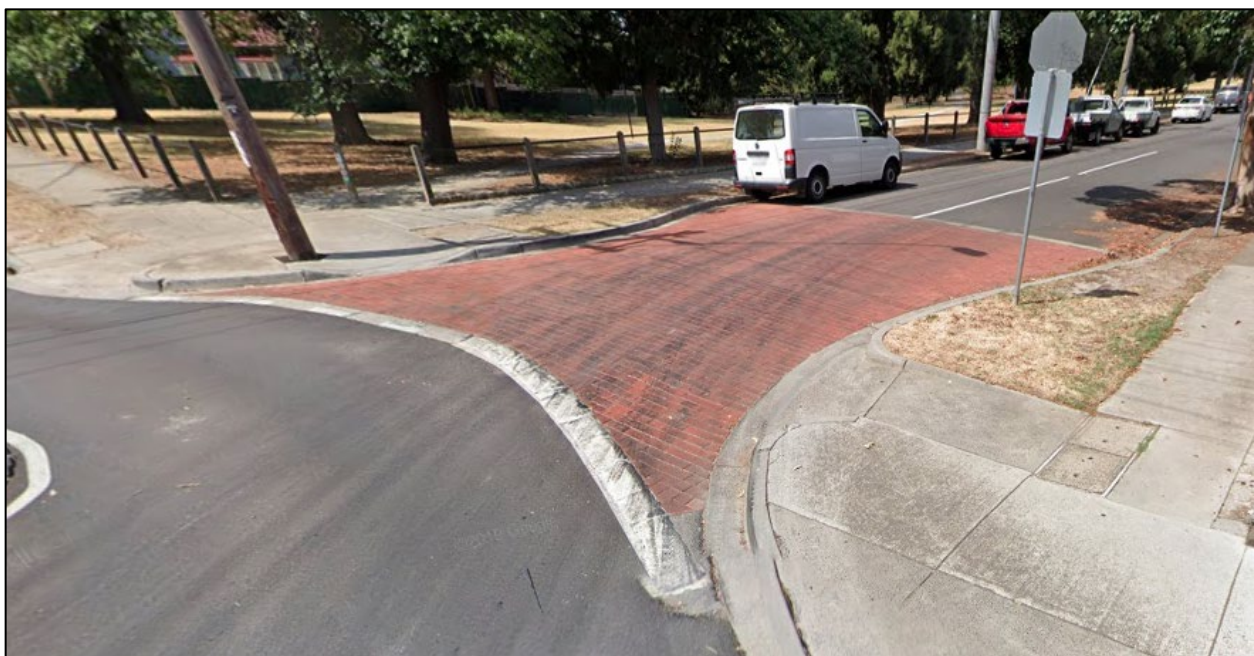


Figure 7 Example of a raised treatment at an intersection (from Google Maps Streetview)



Figure 8 Example of a raised treatment at a roundabout (from Google Maps Streetview)



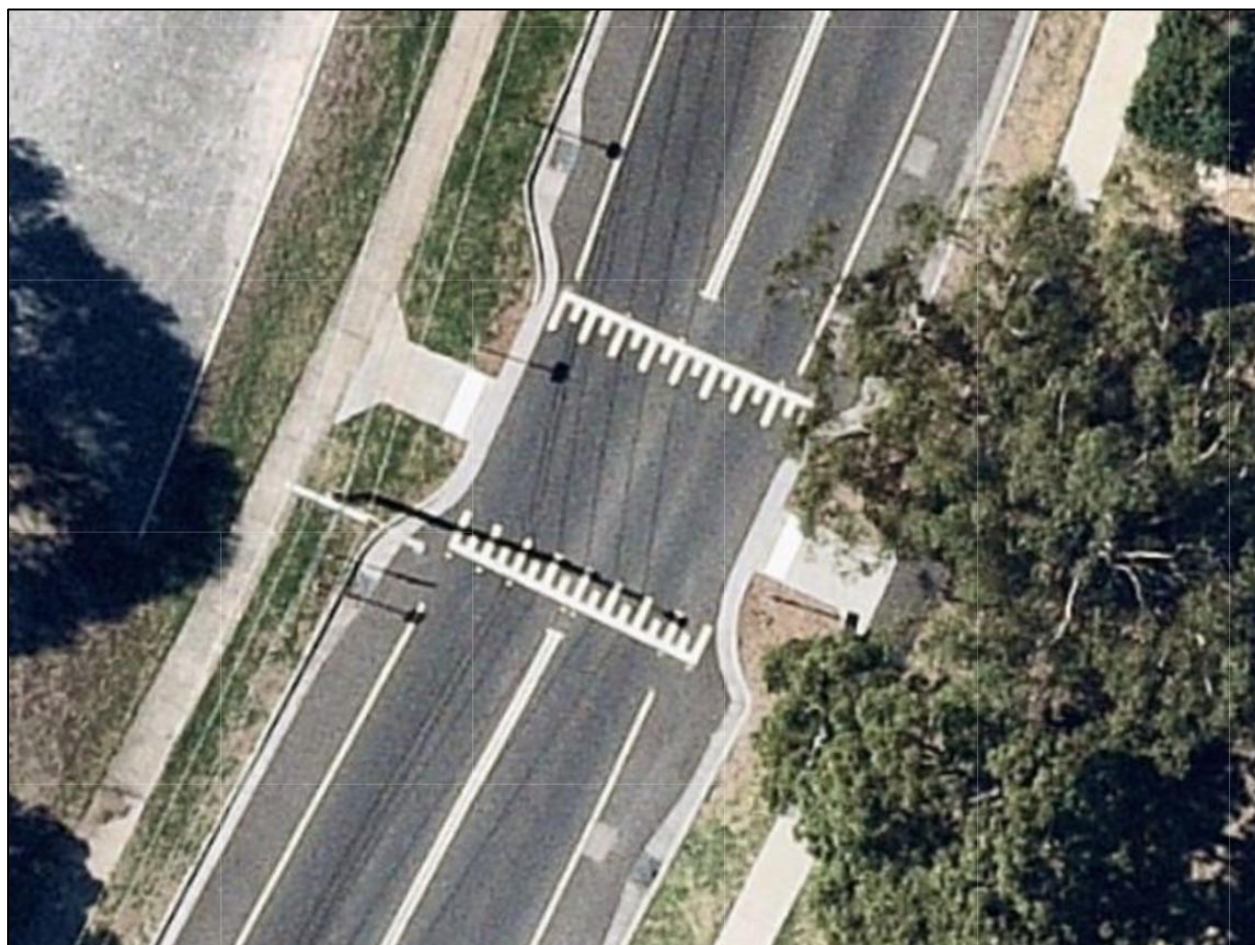


Figure 9 Example of a raised treatment at a pedestrian crossing point, with vehicle priority (Source: NearMap)

#### Advantages:

- Significantly reduce vehicle speeds in the vicinity of the device;
- May discourage through traffic;
- Can be used as 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:

- Traffic noise may increase just before and just 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;
- May adversely affect access for buses, commercial vehicles and emergency vehicles; and
- Require care that ramp markings are not confused with intersection control markings when located at an intersection.

### 3.6 LEFT-IN / LEFT-OUT

A left-in / left-out treatment is typically represented by a raised island at an intersection, which aims to obstruct right-turn and through movements to and from the intersection, street or driveway.

Figure 10 provides an example of a left-in / left-out treatment.

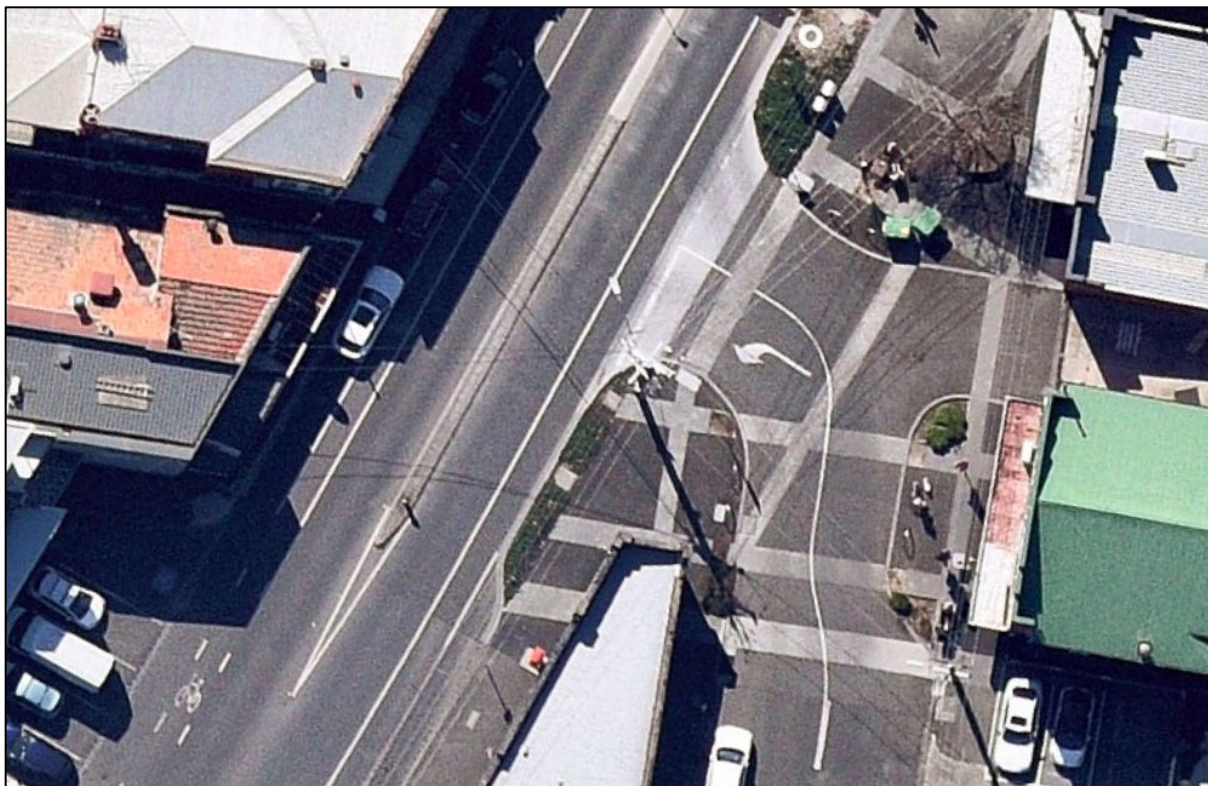


Figure 10 Example of a left-in / left-out treatment (from Nearmap aerial photography)

#### Advantages:

- Reduce traffic volume;
- Reduce the number of conflict points;
- Provide a refuge for pedestrians and cyclists;
- Reinforce the need for drivers crossing the dividing line to give way; and
- Provide greater landscaping opportunities.

#### Disadvantages:

- Restrict access to local streets and/or driveways;
- May create a squeeze point for cyclists;
- Divert traffic to other local streets without the same restriction; and
- Drivers may not comply if an appropriate designed median island is not incorporated.



### 3.7 SHARROWS

Sharrows are pavement markings consisting of a bicycle symbol and two chevron markings. The intention of sharrows is to position cyclists into the centre of the traffic lane and to encourage them to mix with through traffic, to avoid conflict with cars and other vehicles at narrow sections of road or squeeze points, such as small roundabouts.

Figure 11 provides an example of a sharrow treatment.



Figure 11 Example of a sharrow treatment (from Nearmap)

#### Advantages:

- Encourage cyclists to ride in a safe road position;
- Inexpensive to implement and maintain; and
- Reinforce awareness of cyclists in local street networks.

#### Disadvantages:

- No regulations or road rules supporting the use of sharrows in Victoria;
- May be confusing for drivers and cyclists; and
- Limited research into the effectiveness of sharrows.

### 3.8 FULL ROAD CLOSURE

A full road closure is the closure of a street to traffic. It serves as a means of eliminating through traffic from a street or simplifying an intersection layout to reduce the possible number of conflict points and the consequent crash risk.

Figure 12 provides an example of a full road closure.



Figure 12 Example of a full road closure (from Google Maps Streetview)

#### Advantages:

- Reduce traffic volume;
- Remove / reduce the number of conflict points when employed at an intersection;
- Increase pedestrian safety;
- Remove non-local traffic;
- Can accommodate pedestrian, cyclist and/or bus access; and
- Provide landscaping opportunities.

#### Disadvantages:

- May restrict or reduce accessibility for local residents;
- May divert traffic to other adjacent local streets without closures, resulting in increased traffic volumes in those streets;
- May restrict access for emergency services;
- May increase travel times for some road users; and
- May reduce the availability of on-street parking.

### 3.9 SURFACE TREATMENTS

Surface treatments or threshold treatments (when used at an intersection or a driveway) are coloured and/or textured road surface treatments that contrast with the adjacent roadway. Surface treatments aim to alert drivers that they are entering a driving environment that is different from the one they have just left, through the use of visual and/or tactile clues.

Figure 13 provides an example of a surface treatment.



Figure 13 Example of a surface treatment (from Nearmap)

#### Advantages:

- 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:

- Increased maintenance requirements;
- Texturing may create stability problems for cyclists, motorcyclists and pedestrians;
- Turning traffic from and into the low speed local areas may be more likely to affect traffic flow on the connecting roads;
- Vehicle priority may be unclear to pedestrians in some circumstances; and
- Effectiveness is limited unless complemented by other devices in the street.

### 3.10 OTHER TREATMENT OPTIONS

Other treatment options that could be implemented are straight-forward. The following treatments improve safety of both pedestrians, cyclists and drivers and/or define priority on sections of the roadway. Such treatments include:

- Speed limit reductions;
- Changes to parking restrictions;
- Signage and linemarking changes to improve clarity of communication.



## 4 PROPOSED LATM MEASURES AND RECOMMENDATIONS

A number of proposed LATM measures have been recommended by SALT to address the main traffic issues identified from the traffic data, site observations and community consultation data.

### 4.1 KEY ISSUES

Issues have been identified through: community consultation via a questionnaire survey; community meetings; Engage Frankston!, site observations; and analysis of the existing conditions via tube count surveys and existing traffic data provided by Council. The following key issues were identified to guide the formulation of appropriate recommendations:

- **Speeding and hooning behaviour:** particularly along Centenary Street, Maple Street, Ti-Tree Crescent and Wicklow Street;
- **Parking issues:** on-street parking causing access issues for through vehicles;
- **Pedestrian safety/facilities:** Lack of pedestrian crossings throughout the study area;
- **Bicycle safety/facilities:** insufficient bike lanes and crossings throughout the study area;
- **Intersection safety:** particularly at the intersection of the Frankston-Dandenong Road service road and Mountain View Crescent.

### 4.2 ENGINEERING INVESTIGATIONS

Investigations were made into community concerns to confirm issues identified.

For issues such as speeding and hooning behaviour, parking, pedestrian safety/facilities and bicycle safety/facilities, inspection of street environments and/or analysis of tube count survey data was sufficient to confirm the presence of existing issues. **Section 4.5** discusses the proposed treatments for these issues.

### 4.3 OBJECTIVES

The objectives of the proposed plan are as follows:

- Speed calming on local streets that have environments that are conducive to high speeds;
- Increase and improve pedestrian and cycling facilities to improve levels of accessibility for active road users;
- Address issues regarding parking and access issues;
- Maximise the benefits of available funding, with priority given to locations with higher demand and higher level of community concerns; and
- Maintain adequate levels of accessibility for local residents, public transport, businesses and emergency services.

### 4.4 PLAN OF PROPOSED LATM TREATMENTS

The proposed LATM measures consider a range of traffic management treatments intended to address the key concerns outlined above. The draft proposed LATM plan is shown in **Figure 14**.

A plan of the draft proposed LATM treatments, overlaid with the existing LATM treatments, can be viewed in **APPENDIX 1**.

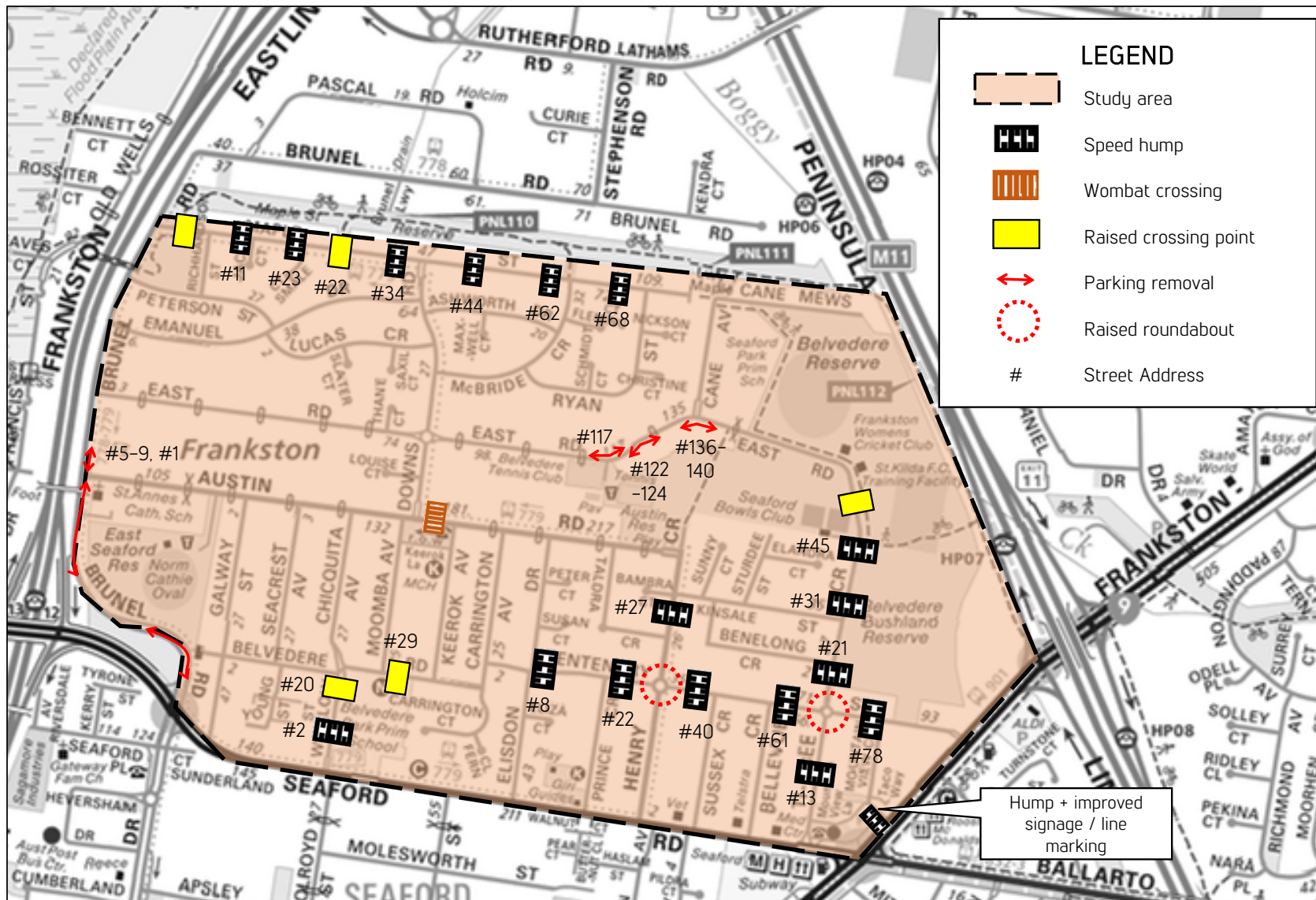


Figure 14 Draft proposed LATM plan

## 4.5 DISCUSSION OF PROPOSED LATM TREATMENTS

The following sections provide a summary of all the individual treatments included in the initial traffic management plan:

### 4.5.1 AUSTIN ROAD

It is acknowledged that Austin Road is already provided with numerous LATM treatments, with eight (8) speed humps, a raised school crossing located near St Anne's Primary School, and a splitter island at its intersection with Henry Crescent.

Multiple community concerns were raised about pedestrian facilities near the shops on Austin Road. This is an existing speed hump located at the shops which is currently often mistaken for a pedestrian crossing, causing confusion to drivers and pedestrians. Anecdotally, a large number of pedestrians including school children cross Austin Road in the vicinity of the shops.

It is proposed to convert the speed hump as seen in **Figure 15** to a wombat crossing to give priority to pedestrians at this location. This involves the addition of zebra line marking to the top of the speed hump (including new asphalt or concrete surface) and 'Walking Legs' signs either side.

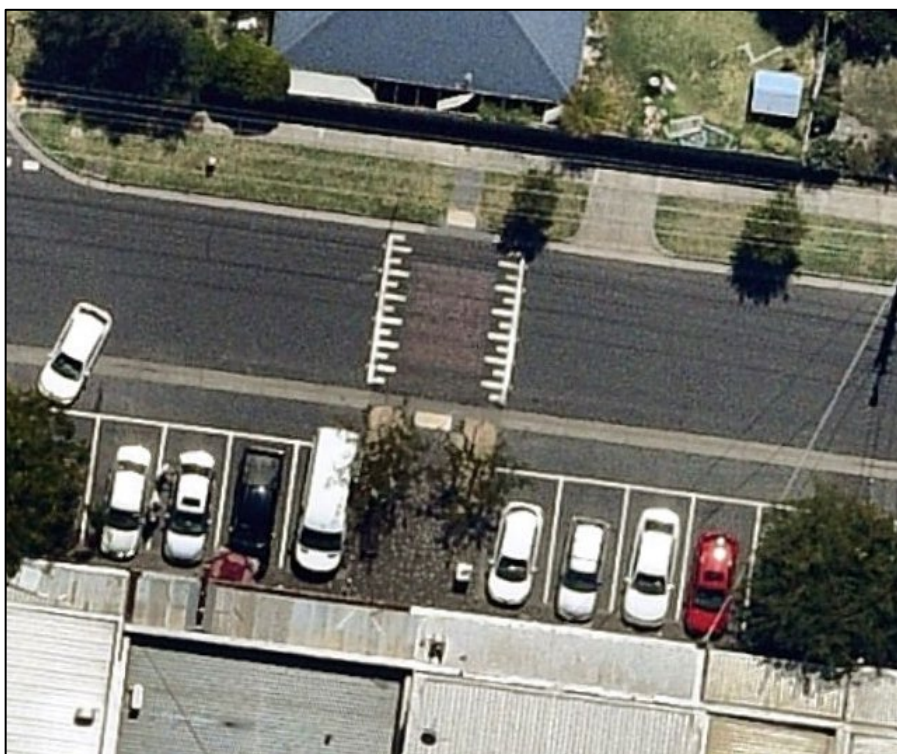


Figure 15 Austin Road speed hump to be converted to wombat crossing (NearMap aerial imagery)

### 4.5.2 BELVEDERE ROAD

Belvedere Road is currently provided with a school crossing at the frontage of Belvedere Park Primary School, as seen in **Figure 16**. Speeding was raised as a concern by some community members; thus, it is proposed to raise the school crossing. This will help to slow vehicles and improve safety to pedestrians which is especially important in such close proximity to the primary school.



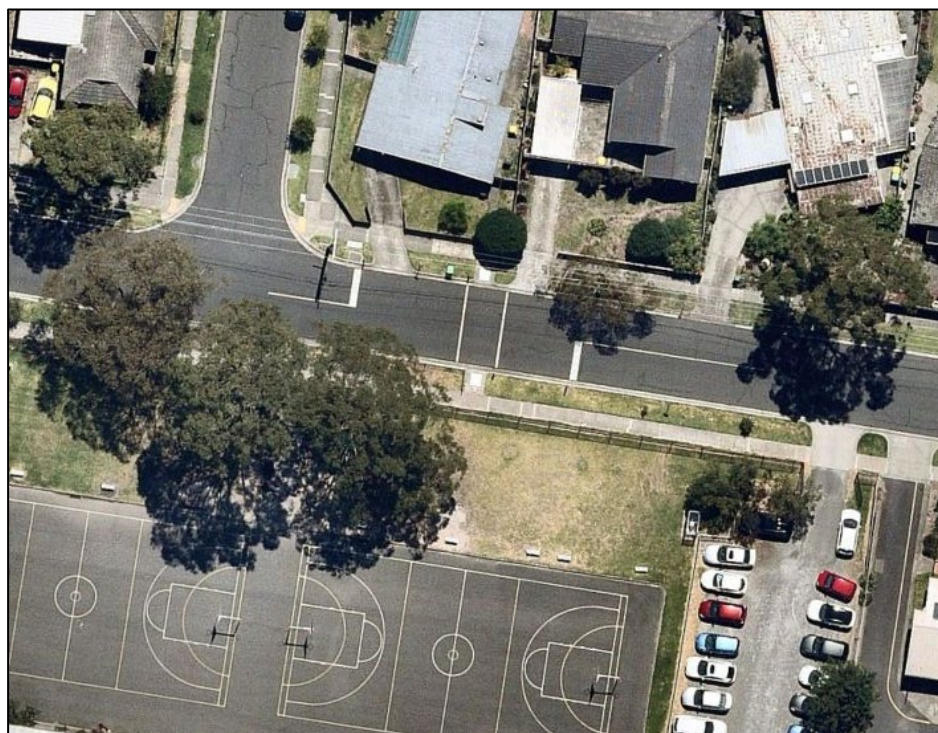


Figure 16 Belvedere Road school crossing to be converted to raised crossing (NearMap aerial imagery)

#### 4.5.3 BRUNEL ROAD

Multiple community concerns were raised about cycling facilities and safety along Brunel Road. Upon inspection of the road alignment, it is confirmed that the on-road bike lane is shared with the parking lane in sections of the road, as seen in **Figure 17**, causing bikes to swerve into the traffic lane to avoid parked cars. It is also noted that the parking lane is relatively narrow, so vehicles may encroach into the bike lane.

It is proposed to impose changes to the parking on Brunel Road to improve the conditions for cyclists. Firstly, parking on the eastern side is to be removed in the indicated locations, such that the parking/cycling lane can be used for cyclists only.

Furthermore, parking on the western side is proposed to be removed along the length of Brunel Road, to provide a full size 1.5m wide bicycle lane on both sides of the road and a buffer zone between the bike lane and parked cars on the eastern side. This aims to reduce the risk of vehicle 'dooring'.

These changes would be subject to a parking occupancy survey to occur during the peak period of the East Seaford Reserve to understand the reliance on parking along Brunel Road and if removing it would impose parking issues in other streets in the vicinity.



Figure 17 Brunel Road bike and parking lane example (Google Maps Streetview)

#### 4.5.4 CENTENARY STREET

It is acknowledged that Centenary Street is currently provided with some LATM treatments including two roundabouts, two speed humps toward the east and a splitter island at the intersection with Frankston Dandenong Road.

Multiple community concerns were raised regarding speeding in Centenary Street. These concerns were validated by the tube count surveys showing an 85<sup>th</sup> percentile speed of 50.4km/hr, and historical survey data with 85<sup>th</sup> percentile speeds up to 55.9km/hr where the speed limit is 50km/hr.

It is proposed to add five (5) more speed humps to Centenary Street to be located outside Number 8, Number 22, Number 40, Number 61, and Number 78. These are to comply with the AustRoads speed hump spacing recommendations between 80–120m apart. Speed humps have been selected as they will address the main issue along Centenary Street, which is speeding and irresponsible driving. Speed humps are appropriate for roads which are generally flat and have environments that are conducive to high speeds. The locations of the LATM treatments are shown in **Figure 14**.

Further comments were received regarding difficulty and safety issues for pedestrians crossing at the roundabouts. To address this, the two roundabouts at Centenary Street / Henry Crescent and Centenary Street / Ti-Tree Crescent are to be converted to raised roundabouts. Community concerns were raised in regard to difficulty for pedestrians to cross at roundabout and it is acknowledged that these two roundabouts provide connection to key destinations within the precinct including Belvedere Reserve and Austin Road. Providing a raised treatment will improve safety for pedestrians.

#### 4.5.5 EAST ROAD

It is acknowledged that East Road is currently provided with numerous LATM treatments with a series of speed humps provided along its length and a roundabout at Downs Road.

Multiple community comments were received in relation to parking on East Road, particularly during sports events at Belvedere Reserve. With vehicles parking on both sides of the street, accessibility and sight distances issues are imposed for through traffic.

Upon investigation of the alignment of East Road, it is confirmed that through traffic would have difficulty observing oncoming traffic around the bends when vehicles are parked on street. It is proposed to remove parking from the inside of the bends in East Road between Belvedere Park Tennis Club and Belvedere Reserve. This involves the removal of approximately 20 on-street car parking spaces to improve safety and accessibility for through traffic.

The approximate locations at which 'No Stopping' is to be imposed are shown in **Figure 18**. This includes between properties 122 to 126, properties 136 to 140, and along the inside curve outside property 117.





Figure 18 Approximate locations for 'No Stopping' to be implemented (NearMap aerial imagery)

#### 4.5.6 FRANKSTON DANDENONG SERVICE ROAD

Frankston Dandenong Service Road provides access to car parking at the shops near the intersection of Seaford Road. The exit to Mountain View Crescent is situation adjacent to the left turn lane from Frankston Dandenong Road, as seen in **Figure 19**. Multiple community concerns were raised regarding vehicles exiting the shops parking dangerously and difficulty in viewing oncoming traffic from Frankston Dandenong Road.

It is proposed to add a speed hump on the Frankston Dandenong Road service road on approach to Mountainview Crescent and improve the signage and line marking.



Figure 19 View of Frankston Dandenong Service Road and Mountainview Crescent (NearMap aerial imagery)



#### 4.5.7 HENRY CRESCENT

Henry Crescent, especially between Austin Road and Centenary Street is prone to high volume and high speeds given the connection it provides throughout the study area and its long and straight alignment. Multiple community comments were received in regard to speeding in Henry Crescent, particularly north of Centenary Street.

As discussed previously, it is proposed to raise the roundabout at Henry Crescent / Centenary Street, which will slow vehicles.

In addition, a single speed hump is proposed to the north of the roundabout, located outside Number 27 to slow vehicles along this stretch of road. This will address the issue of speeding and is appropriate for roads which are generally flat and have environments that are conducive to high speeds.

The location of the LATM treatment is shown in **Figure 14**.

#### 4.5.8 MAPLE STREET

Multiple community comments were received regarding speeding in Maple Street. This is in part owing to the road environment being conducive to high speeds, with a wide and straight alignment. Traffic speed data on Maple Street has confirmed that speeding is an issue, with a tube count survey revealing an 85<sup>th</sup> percentile speed of 51.9km/h.

Further community concerns were raised about cyclist safety and the lack of connection for the Peninsula Link Trail at the western end of Maple Street.

It is proposed to add six speed humps along the length of Maple Street, spaced at approximately 120m. These are to be located outside the front of Number 6, Number 12, Number 30, Number 44, Number 62, and Number 72. These will address the issue of speeding and are appropriate for roads which are generally flat and have environments that are conducive to high speeds.

In addition, two raised pedestrian crossing points are proposed on Maple Street, one to connect the Peninsula Link Trail and one to provide pedestrian connection to the Maple Reserve entrance outside Number 20. These have the effect of slowing traffic and improving cyclist and pedestrian amenity, addressing the issues raised for Maple Street.

The locations of the LATM treatments are shown in **Figure 14**.

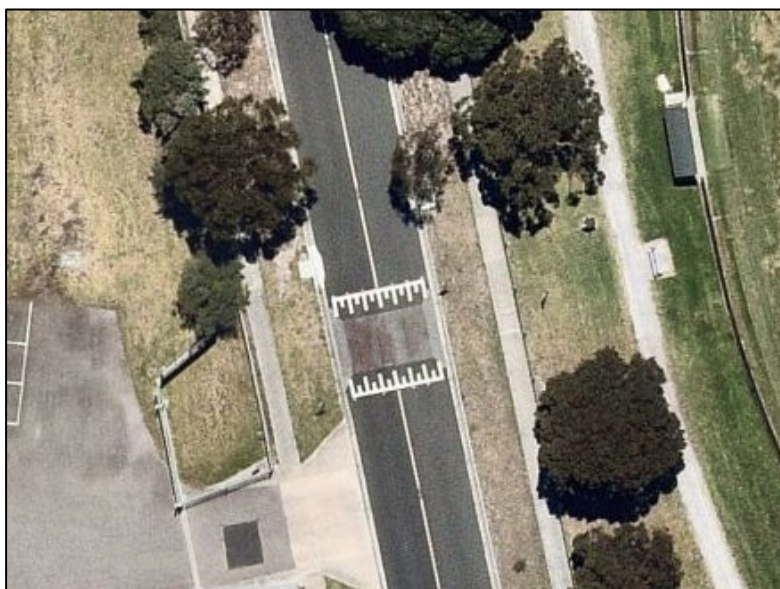
#### 4.5.9 TI-TREE CRESCENT

Ti-Tree Crescent was identified to have issues with speeding, likely owing to its long, straight alignment making it conducive to high speeds. This was confirmed by tube count surveys which showed an 85<sup>th</sup> percentile speed of 55.1km/hr on Ti-Tree Crescent, greater than the speed limit of 50km/hr.

It is proposed to add four (4) speed humps along the length of Ti-Tree Crescent to reduce vehicle speeds. These are to be located outside Number 13, Number 21, Number 31, and Number 45. Furthermore, it is proposed to raise the roundabout intersection of Centenary Street / Ti-Tree Crescent as was discussed previously.

In addition, comments were received in regard to a lack of pedestrian access to Belvedere Reserve. It is proposed to convert the existing speed hump as seen in **Figure 20** to a raised crossing just south of the bend to Belvedere Reserve, to provide a connection for pedestrians, especially those approaching from the south, and to further reduce vehicle speeds.

The locations of the LATM treatments are shown in **Figure 14**.



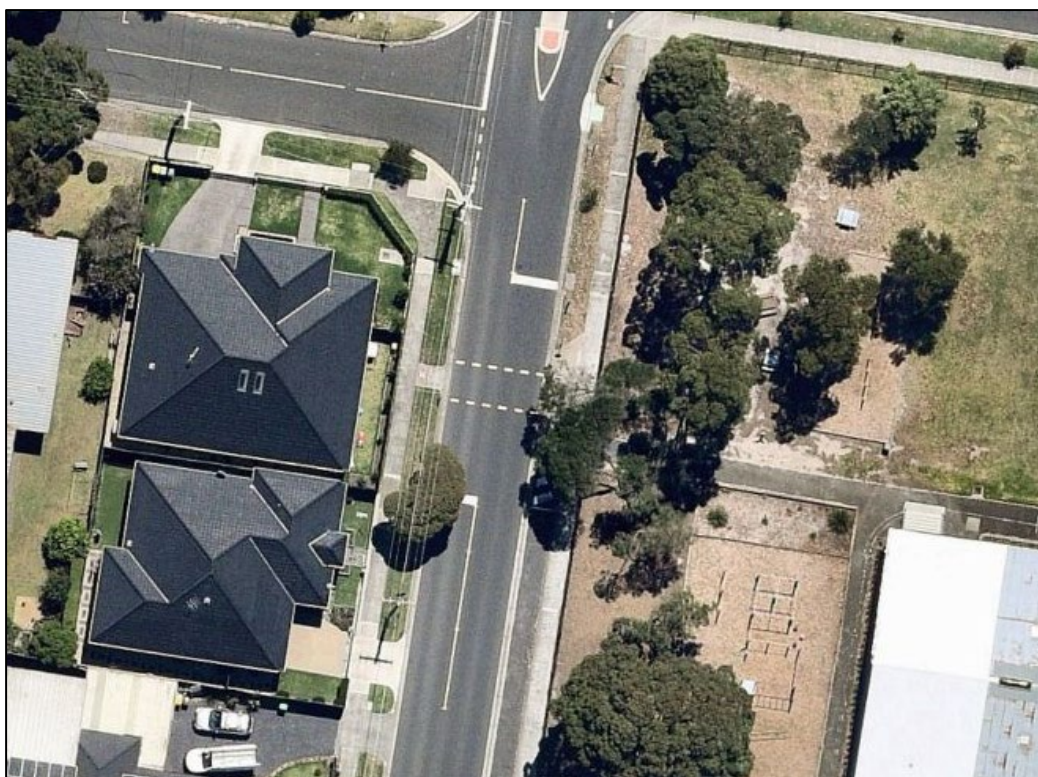
**Figure 20** Speed hump on Ti-Tree Crescent to be converted to raised crossing

#### 4.5.10 WICKLOW STREET

Community concerns were received regarding speeding on Wicklow Street and its close proximity to Belvedere Park Primary School. The results from the tube count survey revealed an 85<sup>th</sup> percentile speed of 48km/hr during the school times when the speed limit is 40km/hr, confirming speeding to be an issue.

It is proposed to convert the school crossing to a raised crossing to reduce vehicle speeds and improve safety to pedestrians. An additional speed hump is proposed to the south, outside the front of Number 2, to further reduce vehicle speeds along the length of Wicklow Street.

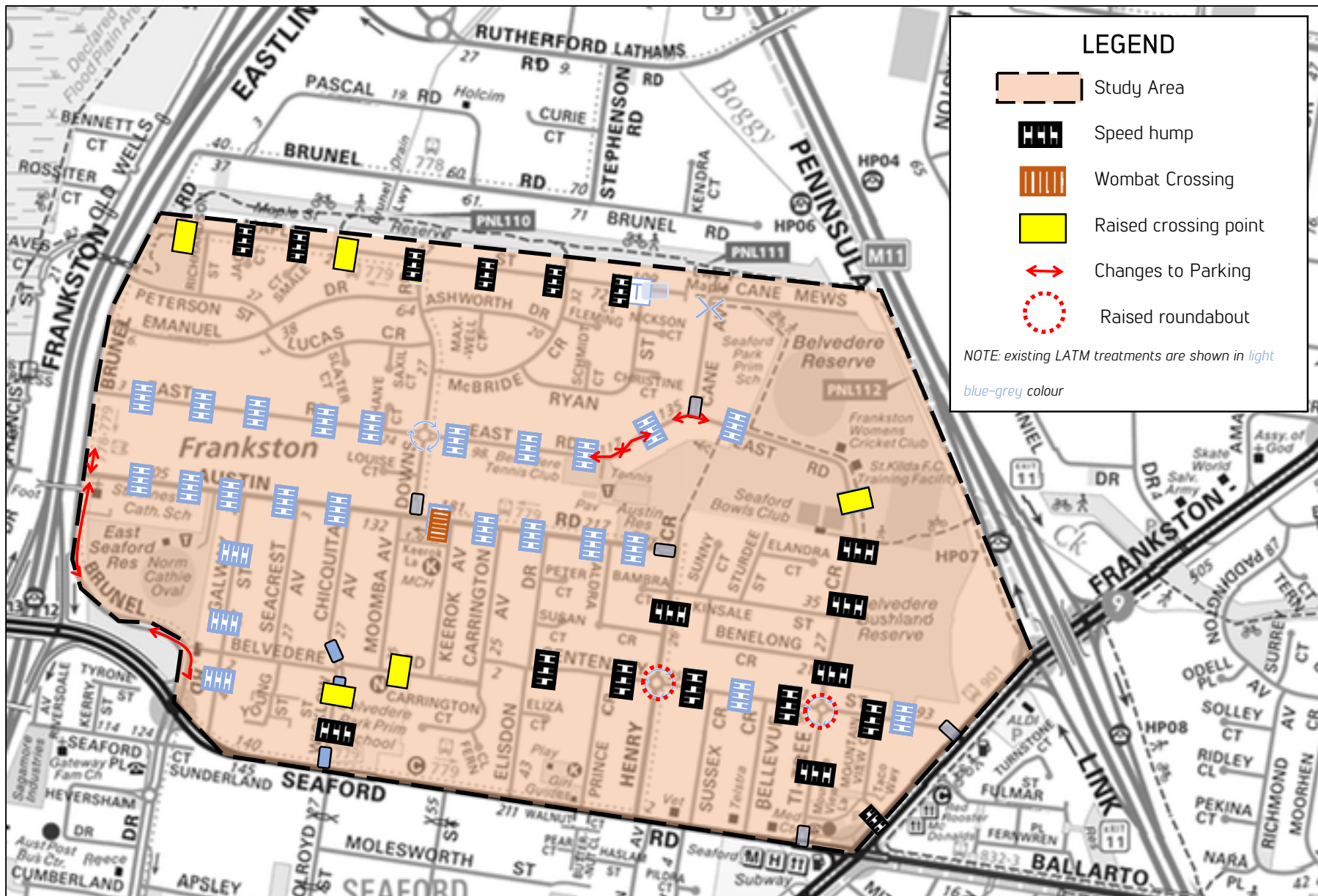
The locations of the LATM are shown in **Figure 14**.



**Figure 21** Wicklow Street school crossing to be converted to raised crossing (NearMap aerial imagery)

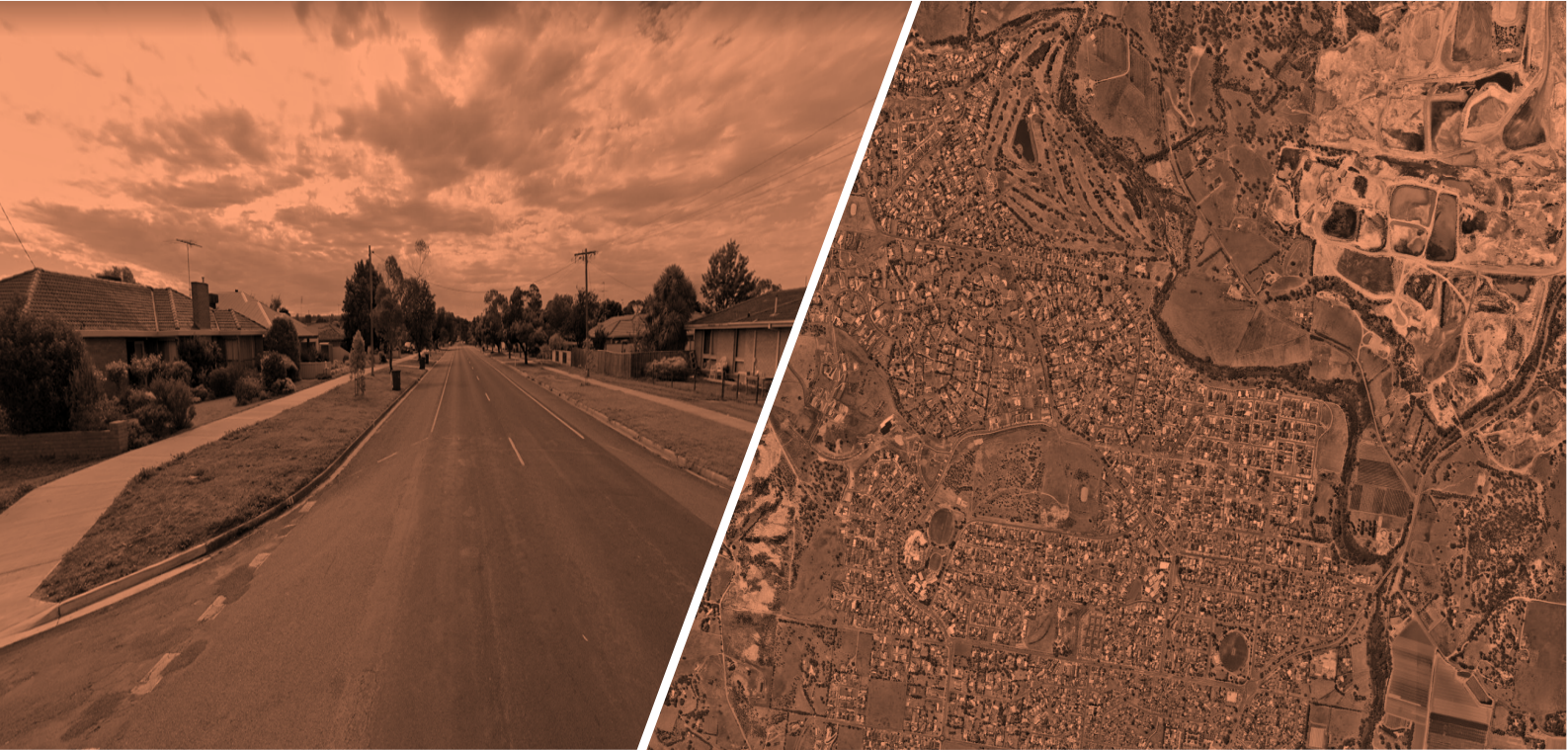
# APPENDIX 1 PROPOSED DRAFT LATM PLAN WITH EXISTING LATM TREATMENTS OVERLAID





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