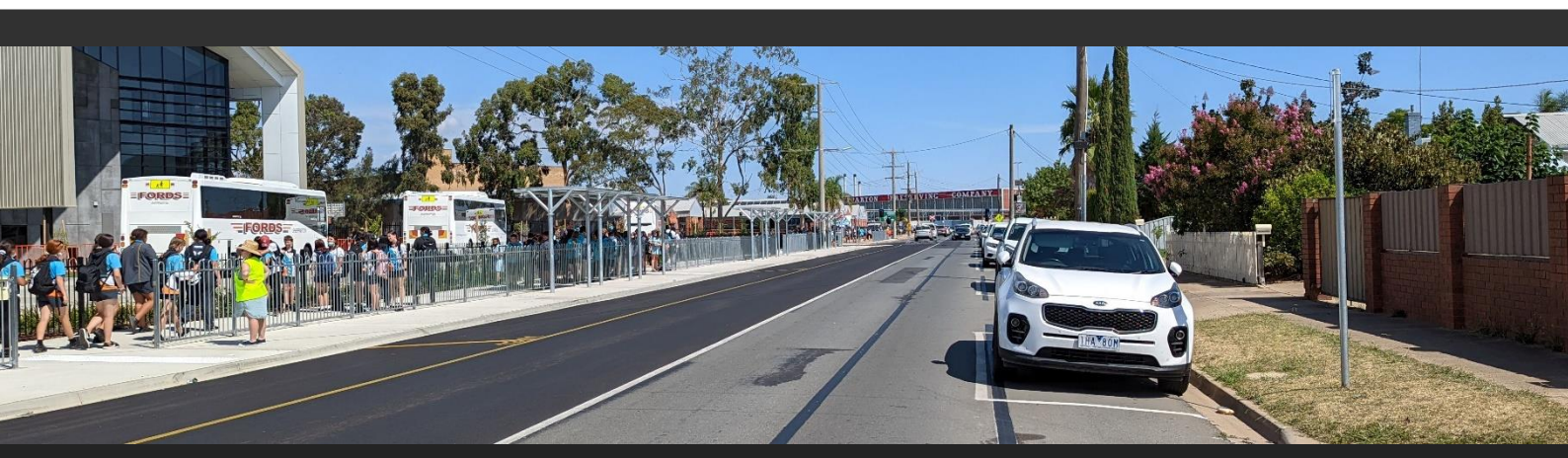


# *Shepparton Inner North*

## Local Area Traffic Management Plan



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6 February 2023

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# 1 INTRODUCTION

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onemilegrid were previously engaged by Greater Shepparton City Council to prepare a Local Area Traffic Management (LATM) study of the Greater Shepparton Secondary College (GSSC), which opened in 2022, and caters for approximately 2,600 students relocated from other secondary schools within the Shepparton area. This work identified a number of measures intended to alleviate potential traffic and parking impacts arising from the school's operation.

Following the opening of the site to students at the commencement of the 2022 school year, Council has engaged onemilegrid to follow up this original work with a review of traffic, parking and pedestrian management around GSSC once opened, including identification of any issues not resolved as part of the original study, or unintended consequences of the proposed measures. The scope for this study has also been expanded to include additional local streets generally west of the site to capture potential improvements to traffic management.

The following report outlines the study process, summarises existing traffic, parking and movement issues, and makes recommendations for mitigation of the problems identified.

## 2 GREATER SHEPPARTON SECONDARY COLLEGE

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### 2.1 General

The Greater Shepparton Secondary College (GSSC) commenced operating in 2022, consolidating four existing secondary schools within Shepparton on the one site at Hawdon Street. It currently caters for approximately 2,600 students and 214 staff, with potential to increase up to 3,000 students in the future as enrolments in Shepparton continue.

The use is afforded an off-street car park accommodating 214 car parking spaces within the north-eastern corner, available for staff use only. No parent/guardian parking is provided on-site and must be accommodated off-site.

Long-term plans are in place for a potential overflow parking area within Ford Reserve, immediately opposite the college site. We have been advised that use of the reserve for car parking is subject to a third-party approval (external to Council), so may not proceed.

Some bus facilities are provided on-site, with eight bays provided within a sawtooth arrangement at the southern part of the site. All public buses will be accommodated on-street.

### 2.2 LATM Study

As mentioned, onemilegrid were previously engaged by Council to undertake a Local Area Traffic Management study prior to opening of GSSC with a view to identifying and mitigating most potential parking and traffic issues arising from the school's operations.

Key recommendations from this report included:

- Line marking of on-street parking spaces;
- Implementation of No Stopping restrictions on narrower local streets during pick-up/drop-off periods;
- Acknowledgement of a need to accommodate parent pick-up/drop-off parking on streets surrounding the site;
- Inclusion of additional accessible parking spaces on Feshti Street adjacent to the Hawdon Street intersection;
- Establish a signalised pedestrian crossing on Hawdon Street towards the southern boundary of the site;
- Implementation of pick-up/drop-off period turn bans at the following locations:
  - ✦ Hawdon Street / Glenlyon Avenue (east) – left-in/left-out;
  - ✦ Hawdon Street / Glenlyon Avenue (west) – left-in/left-out;
  - ✦ Hawdon Street / Rea Street – left-out/right-out/left in;
  - ✦ Hawdon Street / Thames Street – left-in/left-out;
- Implementation of 40km/h speed limits to cover the entire frontage of the college site.

We understand that all recommendations were implemented, with the exception of the right-out ban from Thames Street into Hawdon Street.

In addition, in response to observations of all-day parking occurring in close proximity to the college, in March 2022 Council implemented 15-minute parking restrictions during pick-up/drop-off periods at select locations around the site. These were not implemented at the time of initial traffic and parking surveys or site observations undertaken in February 2022.

## 3 LOCAL AREA TRAFFIC MANAGEMENT

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### 3.1 Overview

Local Area Traffic Management (LATM) is defined within Austroads' *Guide to Traffic Management Part 8: Local Street Management (2020)* as the planning and management of road usage in a defined area. A LATM is concerned with increasing the safety of drivers, pedestrians, and cyclists. This can be achieved by mitigating traffic speed, volume, parking and adjusting road and intersection design.

LATM involves the use of physical devices, streetscaping treatments, signage, and other measures to influence vehicle operation and driver behaviour, in order to create safer and more pleasant streets in local areas. This may be employed prior to construction, or as a means to address flaws in the design of local roads that encourages or permits undesirable driver behaviour.

The need for a LATM usually arises from the following:

- An intent to reduce traffic-related problems;
- Orderly traffic planning and management;
- A need to modify 'transport' behaviour;
- A desire to improve the community space;
- A desire to improve environmental, economic, and social outcomes; or
- Traffic interventions associated with new development or the implementation of pedestrian and bicycle plans and other local policies (e.g., RTA 2002).

In developing an effective LATM, consideration should be given to the dual, and often conflicting, functions of local streets; movement (access and service), and amenity (social functions associated with the use and enjoyment of the streetscape and the land abutting the street).

In the context of this project, the objectives of this study are to:

- Ensure suitable provision of parent/guardian parking in convenient locations;
- Protect residential areas from the impact of pick-up/drop-off activity or overflow of long-term parking;
- Discourage traffic from utilising lower-order roads;
- Maintain two-lanes of traffic flow during peak periods;
- Encourage and maintain safe traffic speeds through the precinct;
- Minimise impacts to through movements along Hawdon Street; and
- Provide for suitable pedestrian control and protection.

## 3.2 Methodology

This LATM study has been undertaken in accordance with the Austroads *Guide to Traffic Management Part 8: Local Street Management* (2020). This guide outlines a six-stage checklist of tasks that should be undertaken in any LATM study.

A summary of the relevant stages is provided below:

1. Preparing for an LATM study;
2. Defining the study scope and objectives;
3. Developing plans;
  - a) Define and collect required data;
  - b) Identify problems;
  - c) Identify potential solutions;
  - d) Define and confirm objectives;
4. Scheme design;
  - a) Clarify suitable strategies;
  - b) Develop outline schemes and supporting arterial improvements;
  - c) Consult on draft plans;
  - d) Assess and refine alternatives;
  - e) Select, present to Council for adoption;
5. Implementation; and
6. Monitoring and review.

## 3.3 Warrants

When considering the implementation of LATM measures, the following quantitative criteria are typically reviewed:

- Traffic speed – usually in terms of 85<sup>th</sup> percentile;
- Traffic volume – both in terms of vehicles per day and highest hourly volume;
- Crashes – over the most recent period that gives useable data (say, two to five years), taking separate account of fatalities, serious injuries, and other crashes; it may be appropriate to include minor and (if able to be estimated through local reports, debris surveys etc.) unreported crashes; and
- Presence of activity generators and/or sensitive land uses – specifically in terms of likely pedestrian and bicycle generation and requirements for people with disabilities.

In addition to the above, the use of LATM may also be influenced by more subjective matters such as:

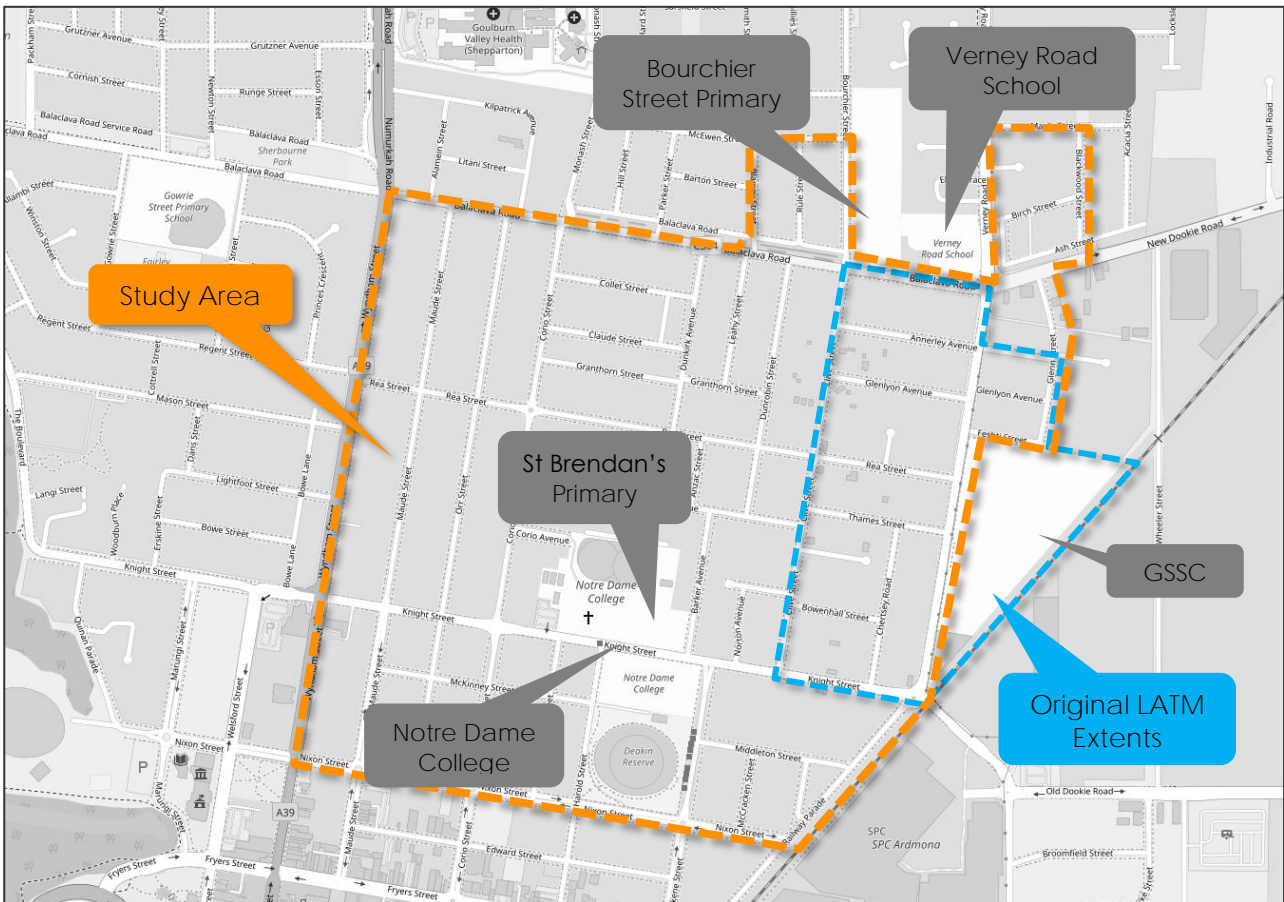
- Local perception of the seriousness of the problem;
- How long the problem has been present before Council has identified an issue;
- The judgement of the staff involved about need and likely effectiveness of countermeasures; and
- The likely costs and the funds available.



4.1 Study Area

The study area forms a significant proportion of the inner north of Shepparton, extending generally from Wyndham Street through to Hawdon Street, and from Nixon Street to Balaclava Road as shown in Figure 1 below.

Figure 1 Site Location



The study area includes notable land uses such as:

- Greater Shepparton Secondary College;
- Notre Dame Primary College;
- St Brendan's Primary School;
- Verney Road School; and
- Burchier Street Primary School.

Land use in the study area is mixed, with largely residential uses to the west and north, and commercial and industrial uses to the east and north-east.

## 4.2 Road Hierarchy

The study area comprises largely local Access Streets (Level 1) or Access Streets (Level 2), with respective carriageway widths of between 7.5 and 11.3 metres. These roads have a primary function of providing access to properties and other local streets.

Clause 56 of the Planning Scheme provides indicative traffic capacities for each of these road types. An Access Street (Level 1) is nominated with a capacity for between 1,000 and 2,000 vehicles per day, whilst an Access Street (Level 2) is nominated with a capacity for between 2,000 and 3,000 vehicles per day.

In addition to the above, the study area includes a number of Collector and Sub-Collector roads that provide both local access and connecting functions, and Arterial roads along the northern and western boundaries. Capacities for these roads have been derived from the Planning Scheme and Austroads Guide to Traffic Management Part 3.

A summary of the cross-section and operating characteristic of each road within the study area is presented in Table 1 below.

Table 1 Road Network Characteristics

Road Name	Between	Classification	Alignment	Cross-Section	Carriageway	Indicative Capacity	Footpath Provision	Bicycle Facilities	Car Parking	Speed Limit
Hawdon St	Knight St & Glenlyon Ave	Collector	N-S	Two-way / Two-lane	13.5 m	12,000	Yes	None	Marked kerbside	60km/h (40km/h school times)
Hawdon St	Glenlyon Ave & Balaclava Rd	Collector	N-S	Two-way / Four-lane	13.5 m	12,000	Yes	Shared path east side	No Stopping 7:30AM-6:30PM Monday-Friday	60km/h (40km/h school times)
Annerley Ave	Clive St & Hawdon St	Access L2	E-W	Two-way unmarked	10 metres	3,000	Yes	None	Kerbside on carriageway	50km/h
Annerley Ave	Hawdon St & Glenn St	Access L1	E-W	Two-way unmarked	8 metres	2,000	Yes	None	Kerbside on carriageway	50km/h
Glenlyon Ave	Clive St & Hawdon St	Access L1	E-W	Two-way unmarked	9.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Glenlyon Ave	Hawdon St & Glenn St	Access L1	E-W	Two-way unmarked	8 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Feshti St	Hawdon St & Glenn St	Access L2	E-W	Two-way unmarked	11.3 m	3,000	Yes	None	Kerbside on carriageway (including accessible)	40km/h
Rea St	Hawdon St & Clive St	Sub Collector	E-W	Two-way / Two-lane	11.3 m	3,000	Yes	None	Kerbside on carriageway	50km/h
Thames St	Hawdon St & Clive St	Access L1	E-W	Two-way unmarked	7.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Chertsey Rd	Knight St & Thames St	Access L1	N-S	Two-way unmarked	7.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Glenn St	Feshti St & Balaclava Rd	Access L2	N-S	Two-way unmarked	11.3 m	3,000	Yes	None	Kerbside on carriageway	50km/h
Norris Court	Rea St & N/A	Access L1	N-S	Two-way unmarked	7.5 m	2,000	No	None	Kerbside on carriageway	50km/h
Clive St	Balaclava Rd & Rea St	Access L2	N-S	Two-way unmarked	10.7 m	3,000	Yes	None	Kerbside on carriageway	50km/h
Clive St	Rea St & Knight St	Access L1	N-S	Two-way unmarked	10.7 m	3,000	Yes	None	Kerbside on carriageway	50km/h
McCormack Ave	Clive St & N/A	Access L1	E-W	Two-way unmarked	8.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Bowenhall St	Clive St & Chertsey Rd	Access L1	E-W	Two-way unmarked	7.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Coomboona St	Clive St & N/A	Access L2	E-W	Two-way unmarked	10 m	3,000	Yes	None	Kerbside on carriageway	50km/h
Norton Ave	Coomboona St & Knight St	Access L1	E-W	Two-way unmarked	8 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Knight St	Hawdon St & Skenes St	Collector	E-W	Two-way / Two-lane	13.5 m	12,000	Yes	On-road bike lane both sides of road	Marked kerbside	60km/h
Knight St	Skenes St & Corio St	Collector	E-W	Two-way / Two-lane	13.5 m	12,000	Yes	On-road bike lane both sides of road	Marked kerbside	60km/h (40km/h school times)
Knight St	Corio St & Wyndham St	Collector	E-W	Two-way / Two-lane	13.5 m	12,000	Yes	On-road bike lane both sides of road	Marked kerbside	60km/h
Dunrobin St	Balaclava Rd & Rea St	Access L1	N-S	Two-way unmarked	9.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Dunrobin St	Rea St & Sutherland Ave	Access L1	N-S	Two-way unmarked	9.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Barker Ave	Sutherland Ave & Knight St	Access L1	N-S	Two-way unmarked	9.5 m	2,000	Yes	None	Marked kerbside (W) Kerbside carriageway (E)	50km/h
Leahy St	Balaclava Rd & Granthorn St	Access L1	N-S	Two-way unmarked	10.5m	3,000	Yes	None	Kerbside on carriageway	50km/h
Granthorn St	Dunkirk Ave & Dunrobin St	Access L1	E-W	Two-way unmarked	9.5 m	2,000	Yes	None	Kerbside on carriageway	50km/h
Dunkirk Ave	Balaclava Rd & Collet St / Claude St & Rea St	Access L1	N-S	Two-way unmarked	10.5 m	3,000	Yes	None	Kerbside on carriageway	50km/h
Dunkirk Ave	Collet St & Claude St	Access L2	N-S	Two-way unmarked	15 m	3,000	Yes	None	45-degree marked kerbside (W) Kerbside on carriageway (E)	50km/h
Rea St	Rea St & Corio St	Sub Collector	E-W	Two-way / Two-lane	11.3	3,000	Yes	None	Kerbside on carriageway	50km/h
Anzac St	Rea St & Sutherland St	Access L2	N-S	Two-way unmarked	11.3	3,000	Yes	None	Kerbside on carriageway	50km/h
Sutherland Ave	Clive St & Corio St	Access L2	E-W	Two-way unmarked	10.5	3,000	Yes	None	Kerbside on carriageway	50km/h
Breage Court	Sutherland Ave & Breage Ct	Access Place	N-S	Two-way unmarked*	6m	1,000	No	None	N/A	40km/h
Corio St	Balaclava St & Corio St	Sub Collector	N-S	Two-way unmarked	11.3m	3,000	Yes	None	Kerbside on carriageway	50km/h

Road Name	Between	Classification	Alignment	Cross-Section	Carriageway	Indicative Capacity	Footpath Provision	Bicycle Facilities	Car Parking	Speed Limit
Corio St	Corio St & Knight St	Sub Collector	N-S	Two-way unmarked	10.5m	3,000	Yes	None	Kerbside on carriageway	50km/h
Corio Ave	Corio St & N/A	Sub Collector	E-W	Two-way marked median w/ vegetation	16m	3,000	Yes	None	Kerbside on carriageway	50km/h
Collet St	Corio St & Dunkirk Ave	Access L1	E-W	Two-way unmarked	9.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Cummins Ln	Collet St & Claude St	Access Lane	N-S	Two-way unmarked	5.5m	300	Yes	None	N/A	50km/h
Claude St	Corio St & Dunkirk Ave	Access L1	E-W	Two-way unmarked	9.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Granthorn St	Corio St & Dunkirk Ave	Access L1	E-W	Two-way unmarked	9.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Orr St	Balaclava Rd & Rea St	Access L1	N-S	Two-way unmarked	9.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Maude St	Balaclava Rd & Rea St	Access L2	N-S	Two-way unmarked	10.5m	3,000	Yes	None	Kerbside on carriageway	50km/h
Rea St	Wyndham St & Hawdon St	Sub Collector	E-W	Two-way / Two-lane	11.3	3,000	Yes	None	Kerbside on carriageway	50km/h
Orr St	Balaclava Rd & Knight St	Access L1	N-S	Two-way unmarked	9.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Maude St	Balaclava Rd & Knight St	Access L2	N-S	Two-way unmarked	10.5m	3,000	Yes	None	Kerbside on carriageway	50km/h
Balaclava Rd	Wyndham St & Alamein St	Arterial	E-W	Two-way / Two-lane w/ right turn lane	12.5m	18,000	Yes	On-road bike lane on north side	No Stopping	60km/h
Balaclava Rd	Alamein St & Kilpatrick Ave	Arterial	E-W	Two-way / Two-lane	12.5	18,000	Yes	On-road bike lane on both sides	Separated marked kerbside	60km/h
Balaclava Rd	Kilpatrick Ave & Parker St	Arterial	E-W	Two-way/ Two-lane w/ marked median and right turn	12.5	18,000	Yes	On-road bike lane on both sides	No Stopping	60km/h
Balaclava Rd	Parker St & Clive St	Arterial	E-W	Two-way / Two-lane	12.5	18,000	Yes	On-road bike lane on both sides	Separated marked kerbside	60km/h
Balaclava Rd	Clive St & Hawdon St	Arterial	E-W	Two-way / Four-lane w/ right turn lane	16.5m	18,000	Yes	None	No Stopping	60km/h (40km/h school times)
Blamey St	Balaclava Rd & McEwen St	Access L1	N-S	Two-way unmarked	7.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Rule St	McEwen St & Balaclava Rd	Access L1	N-S	Two-way unmarked	7.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Bourchier St	McEwan St & Balaclava Rd	Access L2	N-S	Two-way / Two-lane	11m	3,000	Yes	None	Marked kerbside	40km/h
Verney Rd	Balaclava Rd & Birch St	Collector	N-S	Two-way / Four-lane w/ medians	16.5m	12,000	Yes	On-road bike lane on east side, shared path west side	No Stopping	60km/h (40km/h school times)
Verney Rd	Birch St & Maple St	Collector	N-S	Two-way / Two-lane w/ medians	16m	3,000	Yes	On-road bike lane both sides, shared path west side	No Stopping	60km/h (40km/h school times)
Clark Court	Verney Rd	Access L1	E-W	Two-way unmarked	7.5m	2,000	Yes	None	Kerbside on carriageway	50km/h
Birch St	Verney Rd & Blackwood St	Access L1	E-W	Two-way unmarked	7m	2,000	Yes	None	Kerbside carriageway	50km/h
Conifer St	Birch St & Ash St	Access L2	N-S	Two-way / Two-lane	18m	3,000	Yes	None	Marked kerbside and median	N/A
Redwood Ln	Birch St & Ash St	Access L1	N-S	Two-way / One-lane	5m	2,000	Yes	None	N/A	N/A
Ash St	Conifer St & Blackwood St	Access L1	E-W	Two-way unmarked	6.5m	2,000	Yes	None	Kerbside carriageway & off-street	50km/h
Blackwood St	Maple St & Ash St	Access L1	N-S	Two-way unmarked	7.5m	2,000	Yes	None	Kerbside carriageway	50km/h
New Dookie Rd	Hawdon St & Glen St	Arterial	E-W	Two-way / Four-lane	17.5m	18,000	Yes	None	No Stopping	60km/h
Wyndham St	Balaclava Rd & Nixon St	Arterial	N-S	Two-way / Four-lane w/ median	17.5m	>20,000	Yes	None	Separated marked kerbside	60km/h
Maude St	Knight St & Nixon St	Access L2	N-S	Two-way-Two lane	18m	3,000	Yes	None	Marked kerbside and median	50km/h
Orr St	Knight St & Nixon St	Access L2	N-S	Two-lane unmarked	10.5m	3,000	Yes	None	Marked kerbside	50km/h

Road Name	Between	Classification	Alignment	Cross-Section	Carriageway	Indicative Capacity	Footpath Provision	Bicycle Facilities	Car Parking	Speed Limit
Corio St	Knight St & Nixon St	Sub Collector	N-S	Two-way / Two-lane	17m	3,000	Yes	On-road bike lane both sides	Marked kerbside	50km/h
Oram St	Knight St & Nixon St	Access L2	N-S	Two-way unmarked	10.5m	3,000	Yes	None	Marked kerbside	50km/h
Harold St	Knight St & Nixon St	Access L1	N-S	Two-way unmarked	7.5m	2,000	Yes	None	No Stopping (E) & Kerbside on carriageway (W)	50km/h
Skenes St	Knight St & Nixon St	Access L2	N-S	Two-way unmarked	19m	3,000	Yes	None	Kerbside on one side carriageway	40km/h
McKinney St	Maude St & Orr St	Access L2	E-W	Two-way unmarked	12m	3,000	Yes	None	Marked kerbside	50km/h
McKinney St	Orr St & Harold St	Access L2	E-W	Two-way unmarked	12m	3,000	Yes	None	Kerbside carriageway	50km/h
Middleton St	Skenes St & Railway Pde	Access L2	E-W	Two-way unmarked	10.5m	3,000	Yes	None	Kerbside carriageway	50km/h
McCracken St	Middleton St & Nixon St	Access L1	N-S	Two-way unmarked	9m	2,000	Yes	None	Kerbside carriageway	50km/h
Nugent St	Middleton St & Railway Pde	Access L1	N-S	Two-way unmarked	9m	2,000	Yes	None	Kerbside carriageway	50km/h
Railway Parade	Hawdon St & Nixon St	Collector	N-S	Two-way / Two-lane	10m	3,000	Yes	On-road bike lane both sides	Separated kerbside carriageway (W)	60km/h
Nixon St	Wyndham St & Railway Pde	Collector	E-W	Two-way / Two-lane	29m	3,000	Yes	None	Marked kerbside & median	40km/h

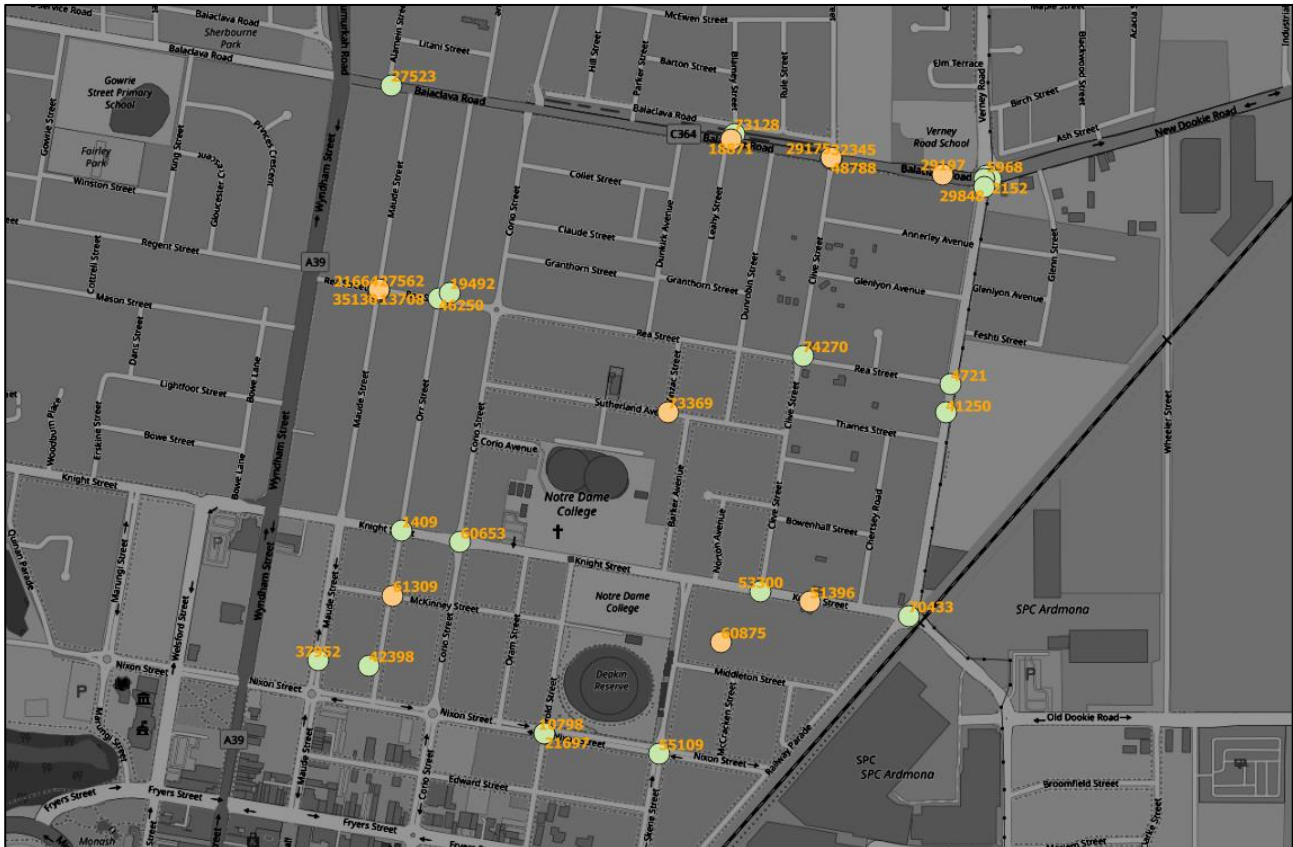
## 4.3 Crash History

Crash history information was obtained through the Department of Transport (VicRoads) CrashStats (the Victorian accident statistics and mapping program) for the latest available 5-year period (2015-2020) in the vicinity of the site.

It is noted that no crash data is yet available for the period in which GSSC has been operating. Additionally, the former Shepparton High School (on the GSSC site) was closed in December 2019.

The data is illustrated in Figure 2 and detailed in Table 2 overleaf.

Figure 2 Crash Locations



Multiple crashes have been recorded at the Balaclava Road / Clive Street intersection adjacent to the Bouchier Street Primary School, including two serious injuries.

While multiple crashes were observed at the Balaclava Road / Hawdon Street intersection, it is noted that recent conversion from a roundabout to signalised control will mean many of the crash types are no longer applicable.

The intersection of Rea Street / Maude Street has experienced a considerable number of crashes, with 4 of 5 as a result of the cross-intersection configuration, which is sign-controlled to provide east-west priority. Three of these crashes resulted in serious injury.

Similar cross-intersection crashes occurred at uncontrolled intersections of Rea Street with Clive Street and Orr Street.

Two cross-traffic crashes occurred at the Nixon Street / Harold Street intersection, which is sign-controlled to provide east-west priority.

Other crashes are generally isolated, and do not suggest any particular trend in crash history.

Table 2 Crash Statistics Data

Crash ID	Location	Date	Type	DCA Description	Geometry	Severity	Speed Zone	Bicyclist	Pedestrian
27523	Balaclava Road	18/05/2017	Struck Pedestrian	FAR SIDE. PED HIT BY VEHICLE FROM THE LEFT	T intersection	Other	60 km/hr	0	1
29197		24/07/2017	Collision with vehicle	REAR END(VEHICLES IN SAME LANE)	Not at intersection	Serious	40 km/hr	0	0
73128	Balaclava Road / Blamey Street	29/04/2019	Collision with vehicle	OTHER ADJACENT (INTERSECTIONS ONLY)	T intersection	Other	60 km/hr	0	0
18871		4/11/2016	Collision with vehicle	LEFT TURN SIDESWIPE	Multiple intersection	Serious	60 km/hr	0	0
29175	Balaclava Road / Clive Street / Bouchier Street	28/07/2017	Collision with vehicle	RIGHT THROUGH	Cross intersection	Serious	60 km/hr	0	0
34360		3/11/2017	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Serious	60 km/hr	0	0
48788		23/01/2019	Collision with vehicle	RIGHT REAR.	Cross intersection	Other	60 km/hr	0	0
2152	Balaclava Road / Hawdon Street	27/08/2015	Collision with vehicle	REAR END(VEHICLES IN SAME LANE)	Cross intersection	Other	50 km/hr	0	0
5968		13/12/2015	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	1	0
18167		6/10/2016	Collision with vehicle	OTHER ADJACENT (INTERSECTIONS ONLY)	Cross intersection	Fatal	60 km/hr	0	0
29848		20/08/2017	Collision with vehicle	LEFT REAR	Cross intersection	Other	50 km/hr	0	0
49066		2/05/2019	Collision with a fixed object	OFF END OF ROAD/T-INTERSECTION.	Cross intersection	Other	50 km/hr	0	0
13708	Rea Street / Maude Street	24/06/2016	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	0	0
15375		21/07/2016	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Serious	50 km/hr	0	0
21664		10/12/2016	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Serious	50 km/hr	1	0
27562		5/06/2017	Collision with vehicle	LEFT NEAR (INTERSECTIONS ONLY)	Cross intersection	Serious	60 km/hr	0	0
35130	Rea Street / Orr Street	6/12/2017	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	0	0
19492		27/10/2016	Collision with a fixed object	RIGHT OFF CARRIAGEWAY INTO OBJECT	Not at intersection	Other	50 km/hr	0	0
46250		10/01/2019	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	50 km/hr	0	0
74270	Rea Street / Clive Street	28/11/2019	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	50 km/hr	0	0
4721	Rea Street / Hawdon Street	10/11/2015	Collision with vehicle	RIGHT NEAR (INTERSECTIONS ONLY)	T intersection	Other	60 km/hr	0	0
41250	Hawdon Street	29/08/2018	Collision with a fixed object	RIGHT OFF CARRIAGEWAY INTO OBJECT	Not at intersection	Other	60 km/hr	0	0
73369	Sutherland Avenue / Anzac Street	17/06/2019	Struck Pedestrian	PED NEAR SIDE. PED HIT BY VEHICLE FROM THE RIGHT.	T intersection	Serious	50 km/hr	0	1
1409	Knight Street / Orr Street	10/08/2015	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	0	0
60653	Knight Street / Corio Street	19/11/2019	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	50 km/hr	0	0
53300	Knight Street / Clive Street	4/08/2019	Collision with vehicle	RIGHT NEAR (INTERSECTIONS ONLY)	T intersection	Other	60 km/hr	0	0
51396	Knight Street	11/05/2019	Collision with vehicle	VEHICLE COLLIDES WITH VEHICLE PARKED ON LEFT	Not at intersection	Serious	60 km/hr	1	0
70433	Knight Street / Hawdon Street	14/10/2017	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	0	0
61309	McKinney Street / Orr Street	30/01/2020	Collision with vehicle	VEHICLE OFF FOOTPATH STRIKES VEH ON CARRIAGEWAY	Cross intersection	Serious	50 km/hr	1	0
60875	Middleton Street	24/01/2020	Collision with a fixed object	OTHER ACCIDENTS-OFF STRAIGHT	Private property	Serious	N/A	0	0
37952	Maude Street	18/02/2018	Collision with vehicle	OTHER ON PATH	Not at intersection	Other	60 km/hr	0	0
42398	Orr Street	18/09/2018	Collision with a fixed object	OTHER ACCIDENTS-OFF STRAIGHT	Not at intersection	Other	N/A	0	0
10798	Nixon Street / Harold Street	6/04/2016	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	60 km/hr	0	0
21697		20/01/2017	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	50 km/hr	0	0
55109	Nixon Street / Skene Street	7/08/2019	Collision with vehicle	CROSS TRAFFIC(INTERSECTIONS ONLY)	Cross intersection	Other	50 km/hr	1	0

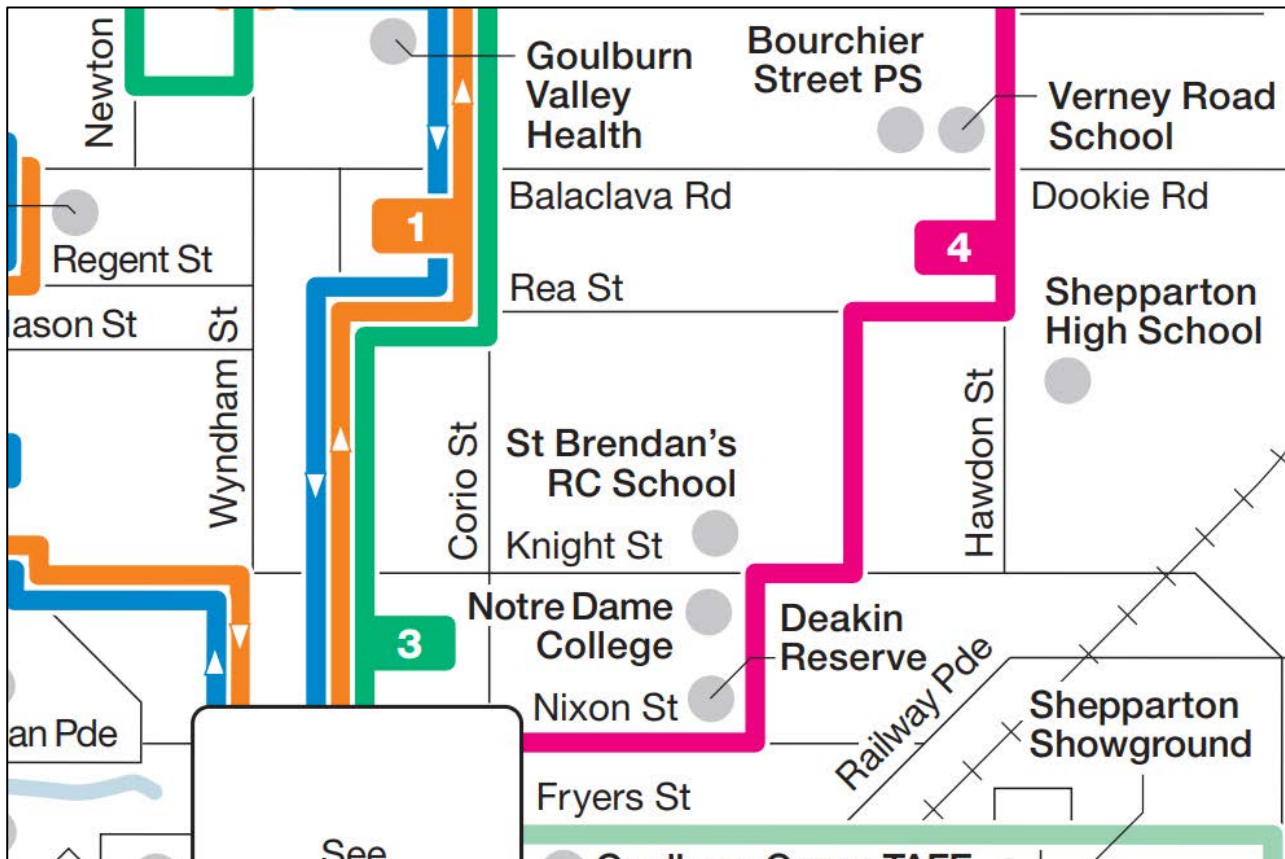
## 4.4 Sustainable Transport

### 4.4.1 Public Transport

A number of public bus services operate through the study area, including Routes 1, 2, 3, and 4 as shown in Figure 3 below.

These operate along Hawdon Street, Rea Street, Corio Street, Clive Street, Knight Street, Skene Street and Nixon Street. The need to cater for bus access will be a consideration as part of LATM recommendations.

Figure 3 Public Transport Map



### 4.4.2 School Town Special Buses

Students who live in Shepparton and Mooroopna can access the School Town Special buses to travel to and from their school campus, provided by the Department of Transport.

There are approximately 30 of these services providing access to the College.

### 4.4.3 School Bus Program

The School Bus Program is an extensive school bus network that provides travel to eligible government and non-government students living in rural and regional Victoria. Locally, the School Bus Program is used by students who live outside of Shepparton and Mooroopna and who travel into town for school. This service is generally free for students.

There are approximately 23 school bus program buses servicing the GSSC campus.



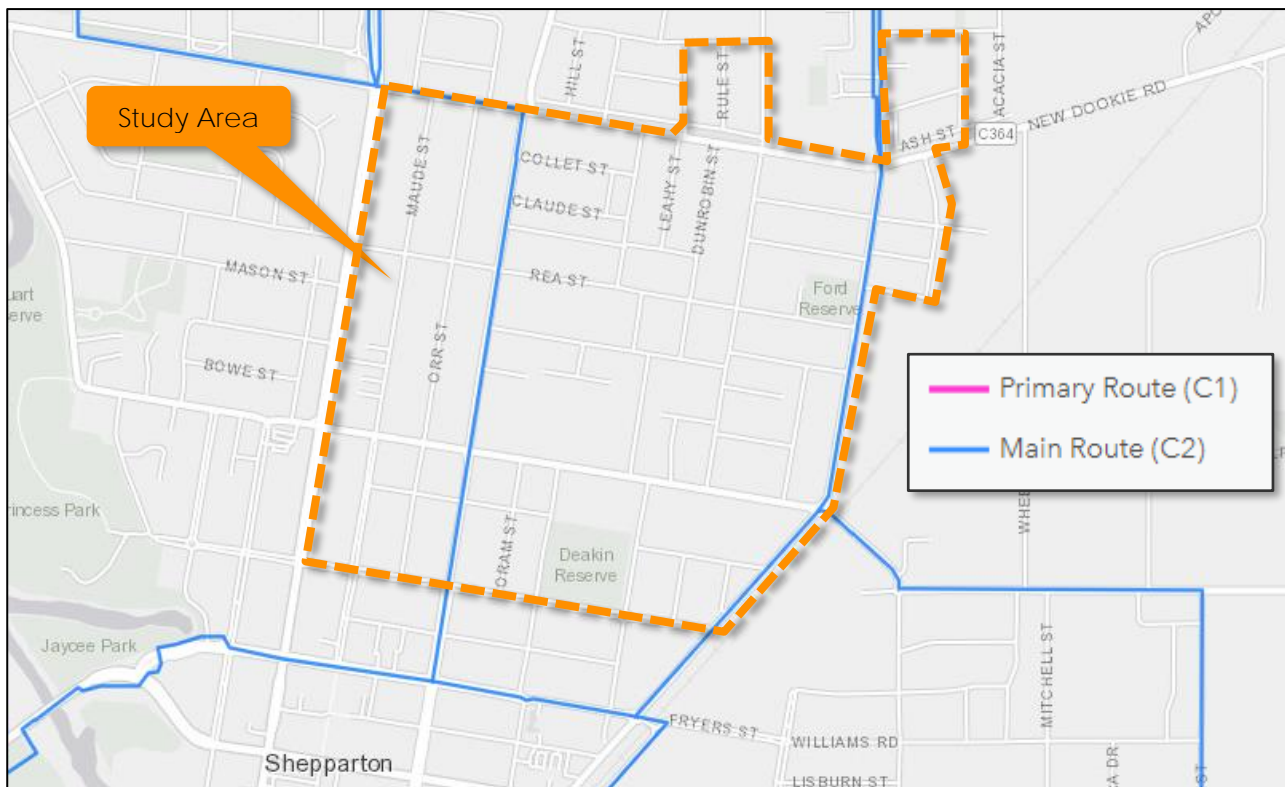
#### 4.4.4 Bicycle Facilities

Strategic Cycling Corridors (SCCs) are important routes for cycling for transport and link up important destinations including the Central City, National Employment and Innovations Clusters, Metropolitan Activity Centres and other destinations of metropolitan and regional significance.

SCCs are considered to be the arterials for bicycles, and have been designed to provide connected, low stress and safe routes, intended primarily for the use of cyclists for transport (rather than recreation).

The SCCs in the vicinity of the site are shown in Figure 4.

Figure 4 Strategic Cycling Corridors



Hawdon Street is identified as a Main Route, connecting with Main Routes along Railway Parade, Andrew Fairley Avenue / Old Dookie Road and continuing along Verney Road to the north.

Corio Street is also a Main Route, linking Fryers Street and Balaclava Road.

On-road cycling lanes are currently provided on Hawdon Street and Balaclava Road in addition to Knight Street, Railway Parade and Andrew Fairley Drive, providing good connectivity to the site via bicycle.

Planning is underway for improvements to cycling facilities on Corio Street as part of the Hume Region Safer Cycling Corridors project, being undertaken by Regional Roads Victoria. This includes use of painted and shared bicycle lanes, kerb outstands, and speed cushions as shown in Figure 5 below.

Additionally, planning is underway for improvements along the SSC route between the GSSC and Victoria Park Lake along Railway Parade.

Figure 5 Hume Region Safer Cycling Corridors Project Description



## 4.5 Existing Traffic Management

A number of LATM measures are currently employed across the study area including; roundabouts, splitter islands, and pedestrian crossings. Figure 6 below shows the location of each LATM within the study area and immediate surrounds.

In addition to those, there are additional give-way and stop signage / line marking in various locations throughout the study area.

Figure 6 Existing LATM Treatments



As shown above, LATM within the study area is generally restricted to use of splitter islands at t- and cross-intersections, roundabouts at select cross-intersections, and pedestrian crossings adjacent to the various schools. Notably, there are no speed control measures employed, other than via the roundabouts identified.

## 5 DATA COLLECTION

### 5.1 Traffic Volumes and Speeds

In order to establish existing traffic conditions in the vicinity of the site, onemilegrid commissioned a number of 24-hour, 7-day traffic surveys, from Monday 7<sup>th</sup> to Sunday 13<sup>th</sup> March 2022.

The surveys aimed to capture daily traffic data, speeds, vehicle classifications and any other relevant information on the local streets within the study area.

The locations for the traffic counts were determined having regard to site observations, key access routes, and areas likely to attract undesirable driver behaviour. The exact location of the tube counters is illustrated in Figure 7 below, with the surveyed weekday daily traffic volumes identified for each location.

Figure 7 Survey Locations & Daily Traffic Volumes



A summary of each traffic survey is provided in Table 3.

Table 3 Traffic Volume and Speed Surveys

Location	Segment	Direction	Daily Traffic Volume (vpd)	Peak Traffic Volume (vpd)		85 <sup>th</sup> Percentile Speed (km/h)
				AM Peak	PM Peak	
Hawdon Street	Knight St & Thames St	Northbound	6,042	488	588	55.0
		Southbound	4,929	446	411	55.4
		Combined	10,971	934	999	55.2
Hawdon Street	Glenlyon Ave & Feshti St	Northbound	5,564	387	564	56.8
		Southbound	4,752	472	384	58.3
		Combined	10,316	896	948	57.5
Balaclava Road	Hawdon St & Clive St	Westbound	3,869	397	476	59.5
		Eastbound	4,028	485	385	59.4
		Combined	7,897	882	851	59.4
Clive Street	Glenlyon Ave & Annerley Ave	Northbound	639	113	110	52.5
		Southbound	766	131	107	54.8
		Combined	1,405	243	218	53.8
Clive Street	Coomboona St & McCormack Ave	Northbound	1,104	150	201	54.1
		Southbound	1,174	203	169	56.4
		Combined	2,278	354	370	55.0
Knight Street	Clive St & Norton Ave	Westbound	3,091	346	351	57.1
		Eastbound	2,836	271	264	59.0
		Combined	5,927	616	615	58.0
Chertsey Road	Bowenhall St & Thames St	Northbound	159	19	33	41.2
		Southbound	308	62	62	41.1
		Combined	467	81	95	41.2
Thames Street	Hawdon St & Chertsey Rd	Westbound	444	99	78	37.1
		Eastbound	238	48	51	35.9
		Combined	682	147	130	36.4
Rea Street	Norris Ct & Clive St	Westbound	652	111	101	54.7
		Eastbound	611	111	72	55.7
		Combined	1,263	222	173	55.1
Rea Street	Dunrobin St & Anzac St	Westbound	765	115	125	54.7
		Eastbound	912	150	108	54.9
		Combined	1,677	265	233	54.7
Orr Street	Balaclava Rd & Rea St	Northbound	227	22	26	51.1
		Southbound	217	35	29	50.1
		Combined	444	57	55	50.6
Maude Street	Knight St & Rea Street	Northbound	618	44	51	49.6
		Southbound	639	58	37	60.5
		Combined	987	102	88	53.7
Corio Street	Knight St & Corio Ave	Northbound	2,147	169	227	53.7
		Southbound	2,529	313	306	51.7
		Combined	4,676	472	533	52.5

A comparison with data collection over previous years suggests the following notable observations:

- Traffic volumes on Hawdon Street remain effectively identical to pre-GSSC data captured in April 2021;
- Volumes on Chertsey Road have increased from 235 vehicles per day (vpd) in 2012 to 467 vpd in 2022;
- Volumes on Clive Street have increased from 1,350 vpd in 2018 to 2,278 vpd in 2022;
- Volumes on Rea Street remain comparable between 2016 and 2022 volumes; and
- Volumes on Thames Street have increased from 283 vpd in 202 to 682 vpd in 2022.

A comparison of the respective sets of data is provided in Table 4 below.

Table 4 Traffic Volume and Speed Surveys Comparison

Location	Segment	Date	Direction	Daily Traffic Volume (vpd)		
				Previous	2022	% Change
Hawdon Street	Thames St & Knight St	20/4/21	Southbound	5,264	6,042	+15%
			Northbound	5,827	4,929	-15%
			Combined	11,091	10,971	-1%
Chertsey Road	Thames St & Bowenhall St	17/4/12	Southbound	114	159	+39%
			Northbound	121	308	+155%
			Combined	235	467	+99%
Clive Street	Coomboona St & McCormack Ave	11/9/18	Southbound	823	1,104	+34%
			Northbound	527	1,174	+123%
			Combined	1,350	2,278	+69%
Rea Street	Clive St & Norris Ct	24/5/16	Westbound	522	652	+25%
			Eastbound	751	611	-19%
			Combined	1,273	1,263	-1%
Thames Street	Chertsey Rd & Hawdon St	17/4/12	Westbound	162	444	+174%
			Eastbound	121	238	+97%
			Combined	283	682	+141%

## 5.2 Car Parking

In addition to traffic surveys, onemilegrid also commissioned car parking occupancy surveys of on-street and off-street parking areas in the vicinity of GSSC.

The surveys were undertaken over the areas identified within Figure 8, on Monday 7<sup>th</sup> March 2022 (Week 6 of Term 1) from 7:30AM-9:30AM, 12:00PM, and 2:30PM-4:00PM.

The weather during the survey was fine, with a maximum temperature of 30.6 degrees.

Figure 8 Car Parking Survey Locations



Following the parking surveys, and initial feedback from the community, Council implemented modified parking restrictions on Friday 25<sup>th</sup> March 2022 for 63 car parking spaces on Feshti, Hawdon and Rea Streets, to allow for the drop-off and pick-up of students during school times in close proximity to the GSSC. These spaces are 15-minute parking between 8.00AM-9:30AM and 2.30PM-4.00PM on school days.

A series of additional parking surveys were undertaken on Wednesday 27<sup>th</sup> July 2022 during the same times to establish the impacts of changes to these changes to parking restrictions. The weather during this survey was overcast, with a maximum temperature of 15.1 degrees and 0.2mm rainfall throughout the day.

## 6 ISSUES IDENTIFICATION

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### 6.1 Community Feedback

To assist with identifying issues relating to pedestrian, traffic or parking movements within the study area that were not evident during site inspections or data collection, Council has provided an extensive list of community feedback generated during the “pre-draft” phase that occurred in January-April 2022, seeking feedback on the GSSC LATM.

Additional consultation was undertaken on the draft Inner North LATM (this study) between September-October 2022.

While all feedback is not incorporated into this report for brevity, this feedback has assisted with our review and ultimate recommendations.

### 6.2 Council Officer Recommendations

In addition to community feedback, additional recommendations for LATM interventions were provided by Council officers, including feedback obtained from community submissions and officer experience in the local area.

### 6.3 Site Observations

To provide first-hand understanding of traffic and parking issues within the study area, onemilegrid undertook a series of comprehensive site inspections on Friday 25<sup>th</sup> February 2022. The observations included multiple team members posted across key locations within the study area, during both AM and PM pick-up/drop-off and road network peak periods. The weather during the site observations was sunny and warm.

A summary of observations from site is provided in Figure 9 and Table 5 below.



Figure 9 Site Observations



Table 5 Site Observations

No.	Location	Observation
AM Peak (Drop-Off)		
1.	New Dookie Road / Balaclava Road / Verney Road / Hawdon Street	Northwest corner zebra crossing – drivers focussed on oncoming traffic and not stopping for pedestrians.
2.		Wide shared paths to the north of intersection, poor cycling infrastructure to the south .
3.		Two lanes from intersection merge to one. Drivers still using road as two lanes -driving over bike lane .
4.	Balaclava Road (40km/h*)	Drivers undertaking U-turns to access kerbside parking.
5.		Long delays for vehicles turning onto Balaclava Road.
6.	Bourchier Street (40km/h*)	Queuing vehicles turning onto Balaclava Road – affecting pedestrian crossing on Bourchier.
7.	Clive Street / Knight Street	Significant turn right volumes to/from Clive Street generate congestion.
8.	Knight Street (60km/h)	Student drop-offs were observed: <ul style="list-style-type: none"> <li>➤ Between pedestrian crossing and Knight Street roundabout (while traffic was at a standstill); and</li> <li>➤ Parents dropping kids off within “No Stopping” zone adjacent to pedestrian crossing.</li> </ul>
9.	Chertsey Road / Knight Street	Queues on approach to Knight Street roundabout can block visibility for drivers exiting Chertsey Road to the east.
10.		Vehicle queues from the pedestrian crossing occasionally extend back to the Knight Street roundabout.
11.	Hawdon Street (40km/h*)	Student drop offs observed at crossovers and No Stopping areas.
12.		Late students were observed being dropped-off in bus bays .
13.		Pedestrian fencing at the pedestrian crossing partially inhibits sightlines to drivers exiting Rea Street and southbound vehicles on Hawdon Street.
14.		There is sufficient space for left and right-turning vehicles to queue at the Rea Street intersection. Right-turning vehicles block sightlines for left-turn vehicle, leading to potentially dangerous manoeuvres.
15.	Hawdon Street / Rea Street	Upstream pedestrian crossing provides ample right-turn opportunities such that queues did not develop.
16.		Many drivers ignore restrictions on right-in movements into Rea Street.
17.		A near miss was observed with a pedestrian moving south to north and driver turning right into Rea Street.
18.		Drivers turning (illegally) right in to Rea Street can generate queues for southbound drivers on Hawdon Street.
19.	Hawdon Street / Feshti Street	Vehicles turning right-in can impact traffic flow northbound on Hawdon Street. The adjacent bus bay is generally empty though, which allows other drivers to clear the turning vehicle.

No.	Location	Observation
20.		Lots of pedestrians cross north of fencing at the intersection during periods of queued traffic.
21.		A near miss occurred with right-out movement cutting off southbound driver. This is likely attributable to long delays for right-out movements.
22.	Thames Street (50km/h)	Students were observed at the Hawdon Street intersection rather than dedicated locations, facilitated by gaps in fencing near bus bays.
23.		Many drop-offs occurred within the No Stopping area adjacent to the Hawdon Street intersection.
24.	Rea Street (50km/h)	Many drop-offs occurred within the No Stopping area adjacent to the Hawdon Street intersection.
PM Peak (Pick-Up)		
25.	Bourchier Street (40km/h)	Cars waiting on the road for kerbside parking, or picking up students holding up traffic.
26.	Balaclava Road (40km/h*)	Car parking observed on wide nature strip.
27.	New Dookie Road / Balaclava Road / Verney Road / Hawdon Street	Parents park at northeast corner of intersection, with students from GSSC observed walking up from the south.
28.	Chertsey Road / Knight Street	Limited sight distance for motorists exiting Chertsey Rad due to parked cars on either side of southern approach.
29.	Hawdon Street / Knight Street	A significant number of students from GSSC were picked up along Andrew Fairley Ave (and at SPC), with considerable pedestrian demand for crossing of the eastern leg.
30.	Clive Street / Knight Street	Significant queues for drivers exiting Clive Street, with a number of near misses observed turning right-out.
31.	Hawdon Street (40km/h*)	Queuing north of roundabout on Hawdon Street occurred due to student/pedestrian crossing, vehicles maneuvering in/out of car wash and buses trying to exit from student pick-up zone.
32.		Students queue for buses along the length of the school frontage, completely blocking the shared path.
33.		Right-turn movement into car wash can block northbound movements on Hawdon Street.
34.	Rea Street /Hawdon Street	Left-turn into Rea Street can be undertaken at high speed.
35.	Thames / Hawdon Street	Many drivers ignore right-in ban into Thames Street.
General		
36.	Balaclava Road (40km/h*)	No pedestrian crossing facilities are provided between Bourchier Street and Wyndham Street.
37.	Harold Street (50km/h)	Footpath on east side stops halfway along the street.

No.	Location	Observation
38.	Corio Street / Balaclava Road	Pedestrians crossing Corio Street are diverted south around the corner and may be less visible to southbound drivers approaching from the east.

\* During school time

## 6.4 Speed

Traditionally, traffic design philosophy has been to match the desired speed limit of a road to the 85<sup>th</sup> percentile observed speed of vehicles utilising the roadway, acknowledging that a level of traffic will always exceed the speed limit, and it may be impractical to curb that behaviour.

In this regard, in order to determine where excessive speeds commonly occur, traffic volume data collected as part of this study has been reviewed with particular emphasis given to 85<sup>th</sup> percentile vehicle speeds.

A summary of the traffic survey data is provided below.

- Balaclava Road 59.5 km/h (outside of school periods)
- Balaclava Road 49.9 km/h (during pick-up/drop-off)
- Knight Street 58.0 km/h
- Hawdon Street (North) 57.5 km/h (outside of school periods)
- Hawdon Street (North) 52.8 km/h (during pick-up/drop-off)
- Hawdon Street (South) 54.7 km/h (outside of school periods)
- Hawdon Street (South) 49.7 km/h (during pick-up/drop-off)
- Clive Street (South) 55.0 km/h
- Rea Street (East) 55.1 km/h
- Rea Street (West) 54.7 km/h
- Clive Street (North) 53.8 km/h
- Maude Street 53.7 km/h
- Corio Street 52.5 km/h
- Orr Street 50.6 km/h
- Chertsey Road 41.2 km/h
- Thames Street 36.4 km/h

Traffic speeds along many streets are in excess of speed limits, including both sections of Clive Street, both sections of Rea Street, Maude Street, Corio Street, and Orr Street. Outside of school pick-up/drop-off periods, speeds on Balaclava Road and Hawdon Street are within posted speed limits, however during pick-up/drop-off periods where a 40km/h limit applies, speeds are well in excess of the preferred thresholds.

This data suggests that speed control measures are warranted in many locations throughout the study area.

Historical data provided by Council suggests that 85<sup>th</sup> percentile speeds along Feshti Street, Glenlyon Avenue, and Glenn Street are below 50km/h.

While traffic data was not gathered on all streets, it is expected that street with similar characteristics will exhibit comparable speed behaviour.

## 6.5 Traffic Volumes

Table 6 below provides a summary of each surveyed road against its nominal capacity, as discussed within Section 4.2 and detailed within Table 1.

Table 6 Traffic Volumes & Capacity

Street	Location	Daily Traffic Volumes (Weekday Average)	Indicative Capacity	% of Capacity
Hawdon Street	Knight St & Thames St	10,971	12,000	91%
Hawdon Street	Glenlyon Ave & Feshti St	10,316	12,000	86%
Balaclava Road	Hawdon St & Clive St	7,897	18,000	44%
Clive Street	Glenlyon Ave & Annerley Ave	1,405	3,000	47%
Clive Street	Coomboona St & McCormack Ave	2,278	3,000	76%
Knight Street	Clive St & Norton Ave	5,927	12,000	49%
Chertsey Road	Bowenhall St & Thames St	467	2,000	23%
Thames Street	Hawdon St & Chertsey Rd	682	2,000	34%
Rea Street	Norris Ct & Clive St	1,263	3,000	42%
Rea Street	Dunrobin St & Anzac St	1,677	3,000	56%
Orr Street	Balaclava Rd & Rea St	444	2,000	22%
Maude Street	Knight St & Rea Street	987	3,000	33%
Corio Street	Knight St & Corio Ave	4,676	3,000	156%

The above data suggests all roads are operating within their respective capacities, with the exception of Corio Street, which carries volumes in excess of those expected for a road of that function and cross-section. The above data is illustrated in Figure 10.

Figure 10 Daily Traffic Volume Capacity



## 6.6 Car Parking

### 6.6.1 Survey 1 - 7<sup>th</sup> March 2022

#### 6.6.1.1 On-Street

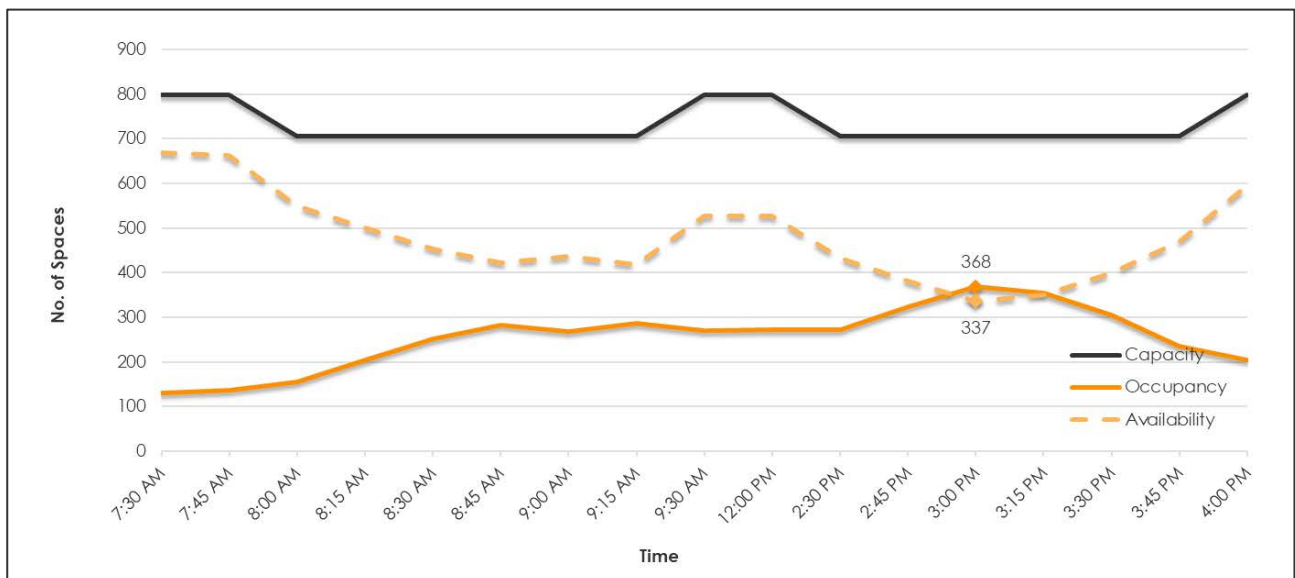
The surveys identified a supply of between 705 and 799 parking spaces on-street within the study area, with the variation attributable to changing parking restrictions (including timed No Stopping restrictions) throughout the survey period.

During the morning (drop-off) period, occupancy peaked at 9:15AM when 287 of the 705 available spaces were occupied, representing 41% of all spaces throughout the survey area.

During the afternoon period, peak occupancy occurred at 3:00PM when 368 of 705 spaces were occupied, representing 52% of all spaces throughout the survey area.

A view of the on-street parking occupancy profile is provided in Figure 11 below.

Figure 11 Parking Occupancy Profile – On-Street (7<sup>th</sup> March 2022)



Notable observations from the data include:

- Unrestricted car parking along Hawdon Street was fully occupied by 8:30AM and remained fully occupied until 3:15PM;
- Unrestricted car parking along Feshti Street was fully occupied by 9:00AM and remained fully occupied until 3:15PM;
- Long-term car parking was observed along Glenn Street, with the southern section at capacity from 9:00AM;
- Car parking along Ash Street (adjacent to Verney Road) was well utilised across the survey period, suggesting long-term demands;
- Only modest demands for parking were observed along Glenlyon Avenue and Annerley Avenue west of Hawdon Street;
- Unrestricted parking along the northern side of Rea Street close to Hawdon Street was fully utilised by long-term parkers;
- Unrestricted parking along Thames Street was fully occupied for the entirety of the survey period. This may be partly attributable to residents avoiding No Stopping restrictions that apply on the opposite kerb during pick-up/drop-off periods; and
- Parking demands across the remainder of the network were generally quite low.

### 6.6.1.2 Off-Street

As mentioned, the college has an off-street car park for staff use, accommodating a total of 214 spaces, including eight accessible spaces.

Peak occupancy occurred at 9:15 AM when 155 spaces were occupied, leaving no fewer than 59 spaces available for use. Occupancy at 12:00PM was 153 spaces. Occupancy at 2:30PM was 148 spaces, with demands steadily reducing to a minimum of 89 occupied spaces at the end of the survey. It is noted that this differs to observations on-site which suggested an occupancy of approximately 90% during school hours.

At the commencement of the survey (7:30AM), the on-site staff car park was almost empty, suggesting that there are not likely to be significant demands for school parking at this time, and that these commencing surveys are likely reflective of baseline demands for car parking in the vicinity.

A view of the on-street parking occupancy profile is provided in Figure 12 below.

Figure 12 Parking Occupancy Profile – On-Site (7th March 2022)

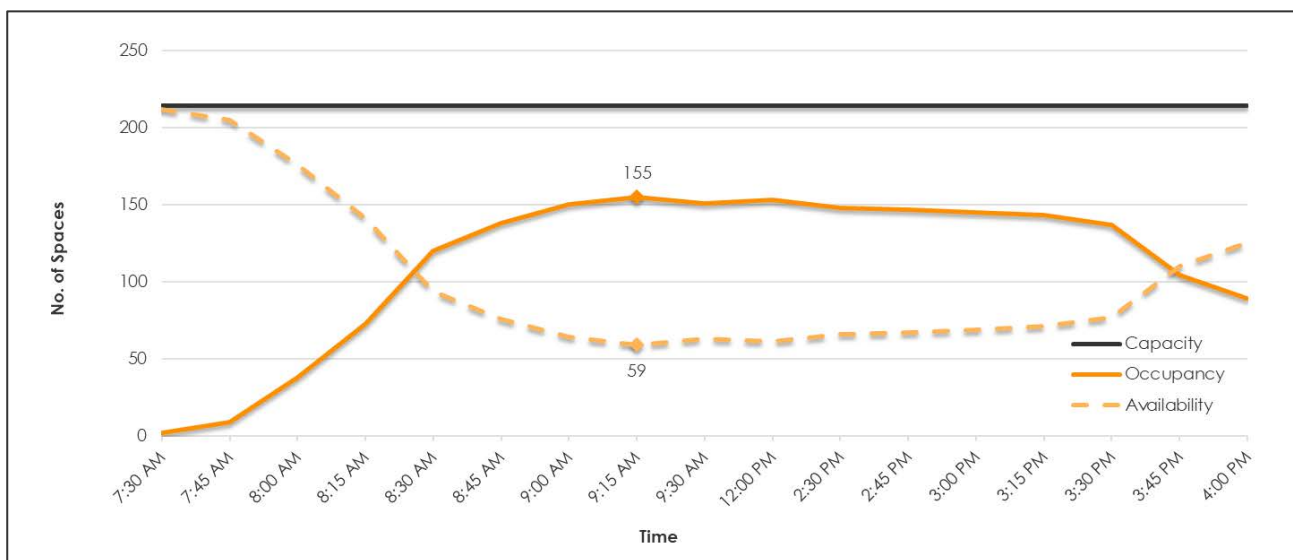


Figure 13, Figure 14, and Figure 15 below provide car parking demand 'heat-maps' for the drop-off, mid-day, and pick-up periods, indicating the relative occupancy of each street segment within the study area.

Notable observations include:

- AM peak – High-value car parking in close proximity to the school is well-utilised, but does not extend for a great distance beyond the school, with streets 100-200m distant experiencing fairly low occupancy;
- Midday – A considerable amount of long-stay parking is observed along Hawdon Street, Feshti Street, Rea Street and Glenn Street. No Stopping restrictions employed to prevent parking during pick-up/drop-off ensure that this occupancy within these areas remains low, and protects the supply of parking for residents and visitors.
- PM Peak – Long-term parking on Feshti and Glenn Streets limits opportunities for pick-ups approaching from the north (due to right-turn bans further south), requiring more parents to utilise Glenlyon and Annerley Avenues. Occupancy within Annerley Avenue, Glenlyon Avenue, Clive Street all remain low.



Figure 13 Parking Occupancy – 9:15AM (7th March 2022)



Figure 14 Parking Occupancy – 12:00PM (7th March 2022)



Figure 15 Parking Occupancy – 3:00PM (7th March 2022)



## 6.6.2 Survey 2 - 27<sup>th</sup> July 2022

As noted above, a second series of parking surveys were undertaken to better understand the impacts of new short-term parking restrictions implemented in late March.

### 6.6.2.1 On-Street

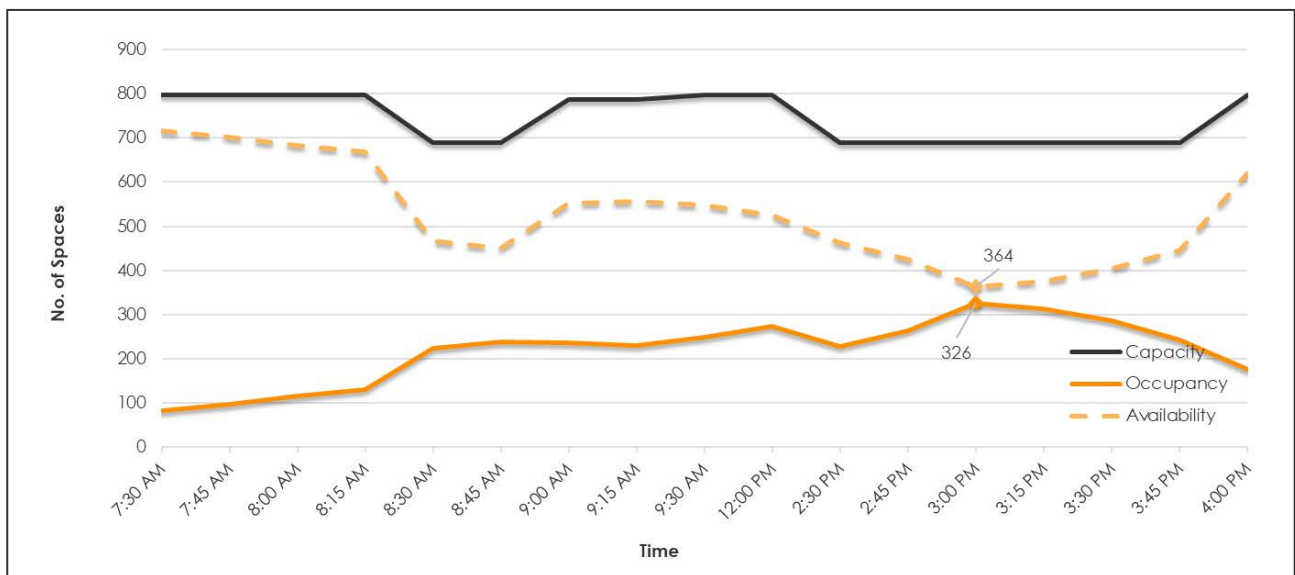
The surveys identified a supply of between 690 and 798 parking spaces, with the variation attributable to changing parking restrictions (including timed No Stopping restrictions) throughout the survey period.

During the morning (drop-off) period, occupancy peaked at 9:30AM when 273 of the 798 available spaces were occupied, representing 31% of all spaces throughout the survey area.

During the afternoon period, peak occupancy occurred at 3:00PM when 326 of 690 spaces were occupied, representing 47% of all spaces throughout the survey area.

A view of the on-street parking occupancy profile is provided in Figure 11 below.

Figure 16 Parking Occupancy Profile – On-Street (27<sup>th</sup> July 2022)



Notable observations from the data include:

- Unrestricted car parking along Hawdon Street was fully occupied by 9:30AM and remained fully occupied until 3:15PM;
- Short-term parking along Hawdon Street was only fully occupied once at 3:00PM;
- Long-term parking occurred within unrestricted spaces along Glenlyon Avenue;
- Car parking along Ash Street (adjacent to Verney Road) was well utilised across the survey period, suggesting long-term demands;
- Only modest demands for parking were observed along Glenlyon Avenue and Annerley Avenue west of Hawdon Street;
- Unrestricted parking along Rea Street was not fully occupied;
- Unrestricted parking along Chertsey Road was highly utilised; and
- Parking demands across the remainder of the network were generally quite low.

### 6.6.2.2 Off-Street

As mentioned, the college has an off-street car park for staff use, accommodating a total of 214 spaces, including eight accessible spaces.

Demands within this car park increased steadily up to 8:30 AM, after which they remained steady until 3:00 PM.

Peak occupancy occurred at 12:00 PM when 204 spaces were occupied, leaving only 10 vacant spaces available for use. Occupancy at 12:00PM was 153 spaces.

We understand that GSSC staff have been instructed to utilise on-site parking in preference to local streets, which is evident in the change to parking patterns from the March survey.

A view of the on-street parking occupancy profile is provided in Figure 12 below.

Figure 17 Parking Occupancy Profile – On-Site (27<sup>th</sup> July 2022)

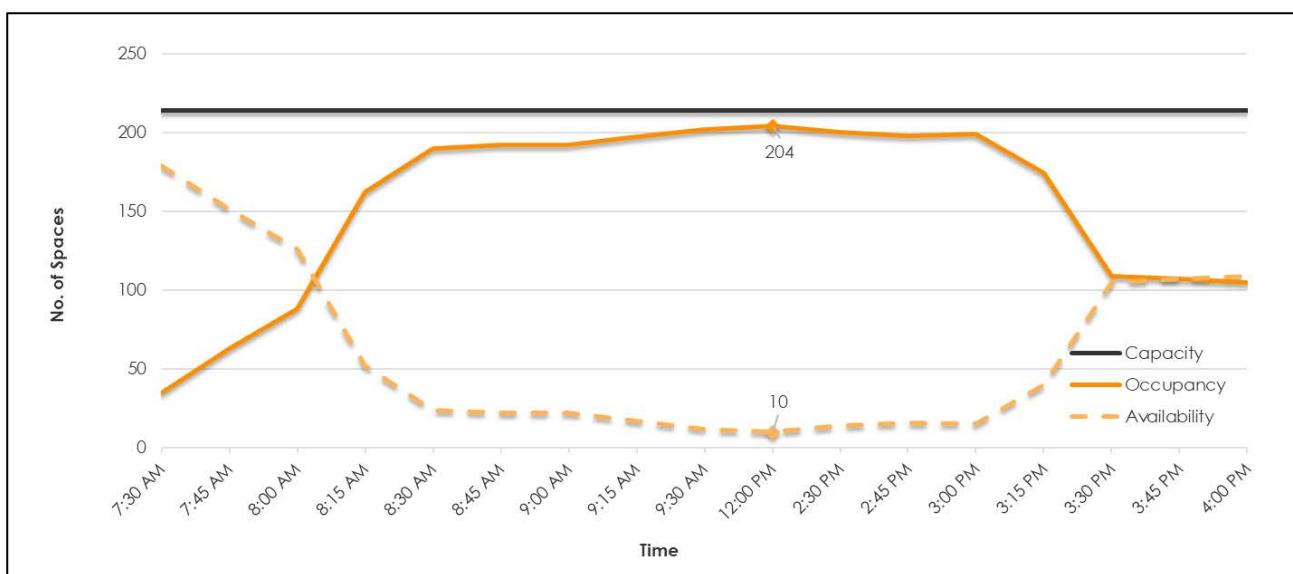


Figure 18, Figure 19, and Figure 20 below provide car parking demand 'heat-maps' for the drop-off, mid-day, and pick-up periods, indicating the relative occupancy of each street segment within the study area.

Notable observations include:

- AM peak – Drop-off parking demands are relatively evenly distributed across the areas surrounding the college, but do not extend as far as Clive Street. Glenlyon Avenue and Annerley Avenue west of Hawdon Street do not appear to accommodate any drop-off parking demands.
- Midday – A considerable amount of long-stay parking is observed along one side of each of Thames Street, Chertsey Road, Glenn Street and Glenlyon Avenue. No Stopping restrictions in place during pick-up/drop-off periods on the opposite side of each street (except for Glenn Street) protect the supply of parking for residents and visitors.
- PM Peak – Occupancy in the vicinity of the college is generally high, however there is considerable capacity in Glenlyon Avenue and Annerley Avenue west of Hawdon Street.

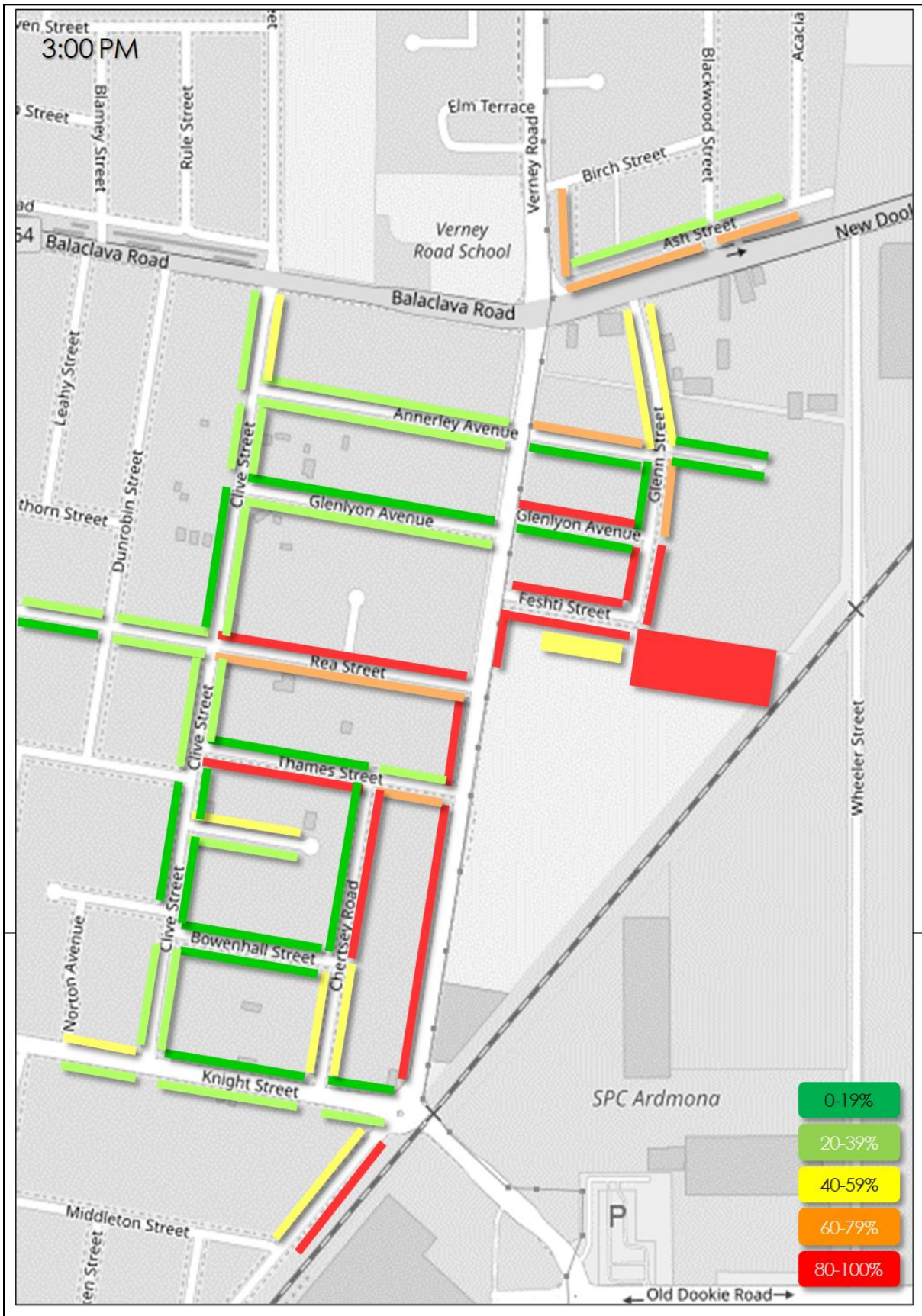
Figure 18 Parking Occupancy – 9:15AM (27th July 2022)



Figure 19 Parking Occupancy – 12:00 PM (27th July 2022)



Figure 20 Parking Occupancy – 3:00 PM (27th July 2022)





## 6.7 Road Network Design

Clause 56.06 of the Greater Shepparton Planning Scheme outlines the various objectives and design requirements that should be adhered to in the design of new residential subdivisions. While not strictly applicable to the study area, it does provide a guide for preferred road network design.

With regard to the neighbourhood street network, the clause states that the design of streets and roads should “provide street blocks that are generally between 120 and 240 metres in length to...control traffic speed”. It is generally accepted that where traffic management measures are installed, the effective length between them should not exceed the distances above.

The Infrastructure Design Manual, a reference document for engineering standards adopted by Council, includes a similar recommendation, acknowledging “*Speed reduction can be helped by creating a visual environment conducive to lower speeds. This can be achieved by segmenting streets into relatively short lengths (less than 300m) using appropriate devices, streetscapes, or street alignment to create short sight lines.*”

A review of the study area layout indicates that the vast majority of streets are designed in accordance with the above, however a number of streets within the study area provide lengths equal to or in excess of 200 metres without any traffic controls. The relevant streets are listed below:

- |                   |                 |                     |
|-------------------|-----------------|---------------------|
| ➤ Maude Street    | ➤ Barker Avenue | ➤ Granthorn Street  |
| ➤ Orr Street      | ➤ Chertsey Road | ➤ Annerley Avenue   |
| ➤ Corio Street    | ➤ Oram Street   | ➤ Glenlyon Avenue   |
| ➤ Dunkirk Avenue  | ➤ Harold Street | ➤ Rea Street        |
| ➤ Dunrobin Street | ➤ Skene Street  | ➤ Sutherland Avenue |
| ➤ Clive Street    | ➤ Collet Street | ➤ Thames Street     |
| ➤ Glenn Street    | ➤ Claude Street | ➤ Middleton Street  |

Notably, a large proportion of the above streets were also identified in Section 6.4 above as having higher vehicle speeds.

A longer street length does not necessarily warrant traffic management works, however, should be considered in conjunction with other factors.

## 6.8 Rat-Running

A typical ‘rule of thumb’ for urban residential streets is for peak hour / 24hour volume ratios to be around 10-12%. If ratios are in excess of 14%, it suggests that the street may be being used as a rat-run by significant volumes of non-local traffic during peak periods (Ogden KW & Taylor SY *Traffic Engineering and Management, Department of Civil Engineering, Monash University and Institute of Traffic Studies 1999*).

A review of peak hour traffic volumes for those streets surveyed indicates that peak hour ratios are generally within the acceptable bounds, with the exception of Clive Street (16-17%), Chertsey Road (17-20%), Thames Street (19-22%), Rea Street (14-16%), and Orr Street (12-13%).

It is noted that the relatively high proportion of peak-hour flows along each of these roads is partly a result of turn restrictions imposed as part of the original GSSC LATM, effectively requiring one-way traffic flow through the surrounding road network. While undesirable, the absolute volumes of traffic remain relatively low.

## 7 LATM PLAN

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### 7.1 Warrants

In determining which areas, streets and intersections warranted implementation of LATM treatments, a two-step criterion was typically applied:

1. Sufficient engineering justification was available to quantify a traffic problem (e.g., 85<sup>th</sup> percentile speed, daily traffic volumes, crashes etc.); and
2. Sufficient information was available from site observations, or officer and community feedback about the problem.

In some cases, where traffic volume data had not been sourced, or where an identified issue had not met both criteria, additional consideration was also given to the need and likely effectiveness of any countermeasures proposed.

### 7.2 Areas for Further Investigation

Due to budget and time constraints, not all streets were able to be surveyed as part of the project. As such, it is recommended that Council collect additional data to verify the need for speed control on McKinney Street, Oram Street, Sutherland Avenue, Dunkirk Avenue, and Skene Street.

While no specific issues were observed during site inspections or from data collection, anecdotal evidence suggests interventions may be warranted at the Wyndham Street / Rea Street and Balaclava Road / Monash Street intersections. Further work should be undertaken at these two sites, potentially including turning movement surveys and SIDRA analysis to evaluate current operation.

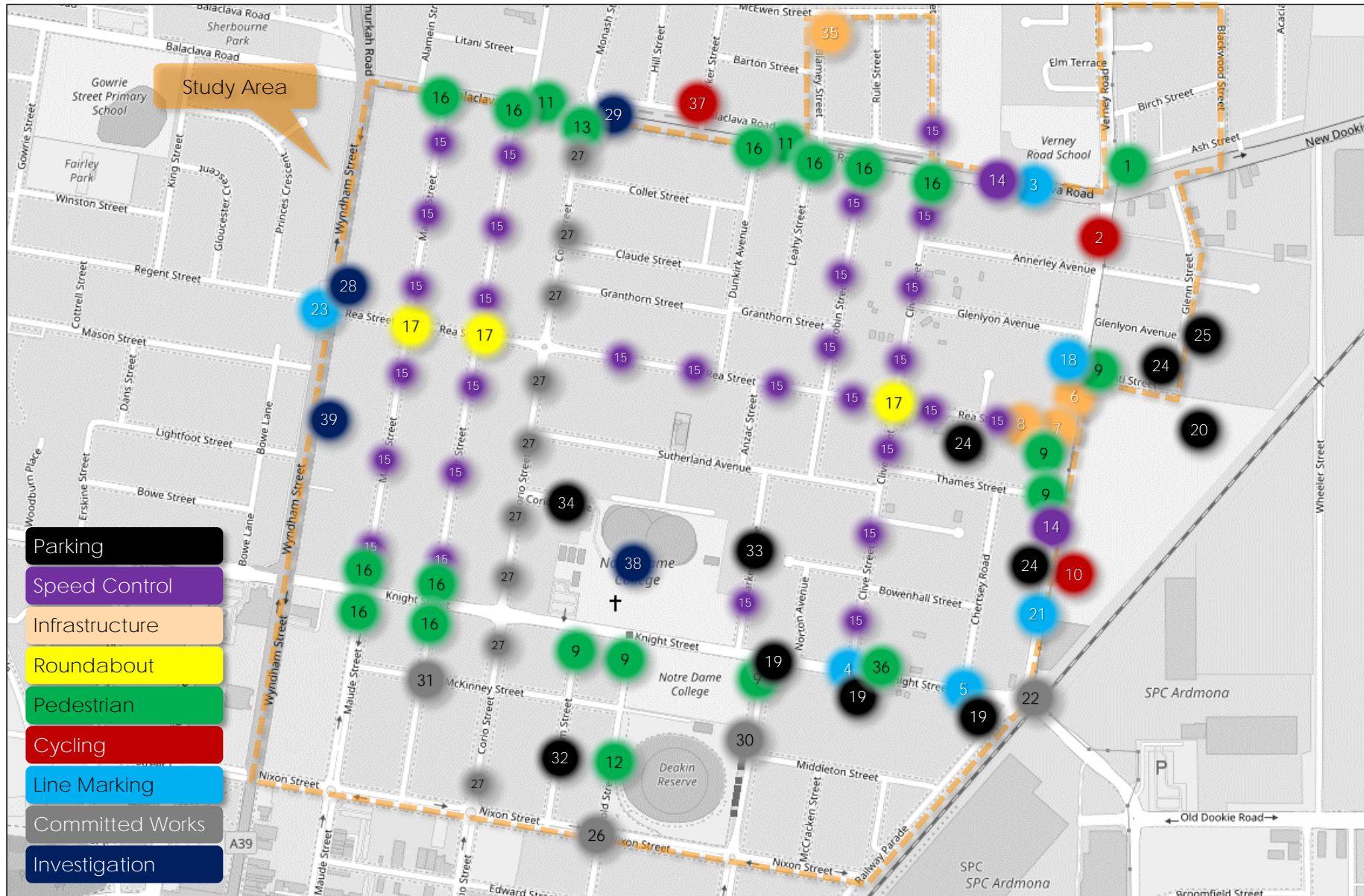
### 7.3 LATM Plan Proposal

The objectives of the proposed traffic management plan include:

- Reduce the incidence and potential for vehicle and pedestrian crashes in the area;
- Improve the safety of local streets by reducing traffic speeds;
- Discourage through traffic from using local streets;
- Develop proposals that address traffic concerns raised by the community, while maintaining adequate levels of accessibility for local residents, local businesses and emergency services; and
- Maximise the safety benefits of available funding (with priority given to reported crash locations and those streets with the greatest level of community concerns).

In consideration of these, the following LATM plan has been prepared

Figure 21 LATM Recommendations



**Table 7 LATM Measures**

No.	Treatment	Discussion
1.	Pedestrian Crossing	Implement raised pedestrian crossing on north-east slip lane to improve driver compliance and reduce vehicle speeds. Implement "dragons teeth" or zig-zag markings as an interim measure and undertake speed monitoring.
2.	Cycling	Provide improved connectivity for cyclists at the northern end of Hawdon Street between Verney Road and Feshti Street. This may include a shared path along the eastern verge.
3.	Line Marking	Modify and improve line marking on approach to pedestrian crossing to clearly identify the westbound merge.
4.	Line Marking	Implement Keep Clear line marking on Knight Street to assist with ingress and sight distance from Clive Street.
5.	Line Marking	Implement Keep Clear line marking on Knight Street to assist with ingress and sight distance from Chertsey Road.
6.	Infrastructure	Modify pedestrian fencing at the northern Hawdon Street pedestrian crossing to ensure sightlines are not impacted at Rea Street.
7.	Infrastructure	Modify intersection geometry to inhibit concurrent left and right-turn exit from Rea Street to Hawdon Street. Introduce measures to tighten geometry for left-turn in and reduce vehicle speeds. Ensure accessibility for buses is not impacted.
8.	Infrastructure	Provide additional right-turn ban signage on south-west corner of Rea Street/Hawdon Street, including exemption for buses.
9.	Pedestrian Crossing	Install wombat crossings or similar treatments across side roads (Rea Street, Thames Street, Feshti Street, Harold Street, Oram Street, Skene Street) to emphasise driver obligations to give-way, improve pedestrian amenity, and encourage walking trips. Consider splitter islands and/or speed cushions as an interim solution.
10.	Cycling	Investigate modifications to Hawdon Street shared path to improve functionality during end of school period.
11.	Pedestrian Crossing	Liaise with Department of Transport (DoT) to provide additional accessible opportunities for pedestrian crossings across Balaclava Road between Wyndham Street and Bouchier Street.
12.	Pedestrian	Provide continuous footpath along the eastern verge of Harold Street.
13.	Pedestrian Crossing	Modify pedestrian crossing at northern end of Corio Street to improve sight distances between pedestrians and motorists. Ensure accessibility for buses is not impacted.
14.	Speed Control	Liaise with Victoria Police to assist with speed enforcement during school pick-up/drop-off periods.
15.	Speed Control	Introduce speed control devices (road humps, flat top road humps, or speed cushions) at between 80-120 metre spacing to assist with reducing vehicle speeds. Speed controls should be co-located with existing street lighting where possible.
16.	Pedestrian Crossing	Introduce kerb outstands and splitter islands at intersections of access streets with Knight Street and Balaclava Road to reduce pedestrian crossing distances and slow vehicle speeds.

No.	Treatment	Discussion
17.	Roundabout	Introduce compact roundabouts at Rea Street intersections to assist with traffic calming and mitigate history of cross-traffic crash behavior. Incorporate raised pedestrian priority crossings if possible. Alternatively, introduce speed controls on all four approaches to necessitate slower speeds and reduce likelihood and severity of crashes.
18.	Line Marking	Implement Keep Clear line marking on Hawdon Street to assist with ingress and sight distance from Feshti Street.
19.	Parking	Introduce peak-period No Stopping restrictions on Knight Street at intersections with Skene Street, Clive Street and Chertsey Road to allow vehicles to overtake turning drivers.
20.	Parking	Liaise with school operator to ensure on-site car parking is being utilised in preference to on-street.
21.	Line Marking	Re-sheet asphalt and refresh line marking along Hawdon Street to ensure road markings are clear in all conditions.
22.	Committed Works	Upgrade of the Railway Parade / Hawdon Street / Knight Street roundabout to assist with safety and delays, and improvements to pedestrian crossing movements.
23.	Line Marking	Liaise with DoT to refresh line marking at the Wyndham Street / Rea Street intersection.
24.	Parking	Retain short-term restrictions on Hawdon Street, Rea Street and Feshti Streets to ensure availability of pick-up/drop-off parking within the vicinity of the college.
25.	Parking	Modify parking restrictions on the eastern side of Glenn Street south of Annerley Avenue to 3P restrictions (or other suitable time) to minimise long-term parkers utilising all available spaces during school hours.
26.	Committed Works	Construct a roundabout at the Nixon Street / Harold Street intersection.
27.	Committed Works	Traffic calming and cyclist infrastructure improvements associated with the Strategic Cycling Corridor project.
28.	Investigation	Undertake further investigative work at the Wyndham Street / Rea Street intersection.
29.	Investigation	Undertake further investigative work at the Balaclava Road / Monash Street intersection.
30.	Committed Works	Construction of centre median and Zebra crossing on Skene Street.
31.	Committed Works	Install splitter island at intersection of McKinney Street / Orr Street.
32.	Parking	Line mark car parking spaces on Oram Street between Nixon Street and McKinney Street.
33.	Parking	Line mark car parking spaces adjacent to Notre Dame College & St Brendan's Primary on Barker Avenue.
34.	Parking	Line mark car parking spaces adjacent to Notre Dame College & St Brendan's Primary on Corio Avenue.
35.	Infrastructure	Install splitter island at intersection of Blamey Street / McEwen Street.
36.	Pedestrian Crossing	Provide improvements to pedestrian access across Clive Street at the Knight Street intersection.
37.	Cycling	Provide improved east-west connectivity for cyclists and pedestrians along Balaclava Road.

No.	Treatment	Discussion
38.	Investigation	Investigate further parking restrictions adjacent to Notre Dame College & St Brendan's Primary during drop/off & pick-up times.
39.	Investigation	Investigate parking restrictions along Wyndham Street.

Concept designs for each recommended treatment are attached within Appendix B.

It is noted that these concept designs are indicative and that the exact location and design of measures will be subject to further investigation, detailed design, and Council/third party approval.

## 8 IMPLEMENTATION & PRIORITISATION

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To establish the priority of each proposed measure, they were assessed against their ability to achieve the desired road safety objectives as well as the cost of the measure and its alignment with state and local policy.

The assessment is presented below in Table 8, with each project rated out of five points against how well the project assists in improving each of the assessment criteria, with the highest value representing the most valuable rating.

Costs for each treatment are indicative only, and actual construction costs may vary, however they should be used as a guide for funding allocation in the Council's capital works program.

Installation of each treatment will likely need to be staged over one or more financial years as Council funding becomes available. Staging of works needs careful consideration to minimise the interim impact of treatments on untreated streets.

Committed and investigative works have been excluded from this analysis.

Table 8 Project Ranking & Priority

Project		Cost (30%)				Road Safety (50%)	Policy (20%)	Score	Priority
No.	Description	Unit Cost	No.	Total Cost	Score				
1.	Implement raised pedestrian crossing on north-east slip lane to improve driver compliance and reduce vehicle speeds	\$15,000	1	\$15,000	3	4	5	3.9	2
2.	Provide improved connectivity for cyclists at the northern end of Hawdon Street between Verney Road and Feshti Street.	\$127,500	1	\$127,500	1	4	5	3.3	8
3.	Modify and improve line marking on approach to pedestrian crossing to clearly identify the westbound merge	\$5,000	1	\$5,000	3	3	3	3.0	13
4.	Implement Keep Clear line marking on Knight Street to assist with ingress and sight distance from Clive Street	\$2,000	1	\$2,000	4	2	2	2.6	16
5.	Implement Keep Clear line marking on Knight Street to assist with ingress and sight distance from Chertsey Road	\$2,000	1	\$2,000	4	2	2	2.6	16
6.	Modify pedestrian fencing at the northern Hawdon Street pedestrian crossing to ensure sightlines are not impacted at Rea Street	\$4,000	1	\$4,000	4	4	2	3.6	4
7.	Modify intersection geometry to inhibit concurrent left and right-turn exit from Rea Street to Hawdon Street.	\$20,000	1	\$20,000	2	1	2	1.5	27
8.	Provide additional right-turn ban signage on south-west corner of Rea Street/Hawdon Street, including exemption for buses	\$400	1	\$400	5	2	2	2.9	15
9.	Install wombat crossings or similar treatments across side roads	\$100,000	6	\$600,000	1	3	5	2.8	10
10.	Investigate modifications to Hawdon Street shared path to improve functionality during end of school period.								
11.	Liaise with (DoT) to provide additional accessible opportunities for pedestrian crossings across Balaclava Road					4	5	4.3	1
12.	Provide continuous footpath along the eastern verge of Harold Street	\$30,600	1	\$30,600	2	3	5	3.1	10
13.	Modify pedestrian crossing at northern end of Corio Street to improve sight distances between pedestrians and motorists.	\$14,000	1	\$14,000	3	3	5	3.4	5
14.	Liaise with Victoria Police to assist with speed enforcement during school pick-up/drop-off periods					4	3	3.7	3
15.	Introduce speed control devices (road humps, flat top road humps, or speed cushions)	\$10,000	29	\$290,000	1	3	3	2.4	20
16.	Introduce kerb outstands and splitter islands at intersections of access streets with Knight Street and Balaclava Road	\$15,000	10	\$150,000	1	2	2	1.7	23
17.	Introduce compact roundabouts at Rea Street intersections	\$200,000	3	\$600,000	1	5	3	3.4	5
18.	Implement Keep Clear line marking on Hawdon Street to assist with ingress and sight distance from Feshti Street	\$2,000	1	\$2,000	4	2	2	2.6	16
19.	Introduce peak-period No Stopping restrictions on Knight Street	\$1,000	3	\$3,000	4	2	2	2.6	16
20.	Liaise with school operator to ensure on-site car parking is being utilised in preference to on-street					1	1	1.0	29
21.	Re-sheet asphalt and refresh line marking along Hawdon Street to ensure road markings are clear in all conditions	\$115,520	1	\$115,520	1	3	2	2.2	22
23.	Liaise with DoT to refresh line marking at the Wyndham Street / Rea Street intersection	\$2,000	1	\$2,000	4	3	2	3.1	10
24.	Retain short-term restrictions on Hawdon Street, Rea Street and Feshti Streets					1	2	1.3	28
25.	Modify parking restrictions on the eastern side of Glenn Street south of Annerley Avenue to 3P restrictions (or other suitable time)	\$1,000	1	\$1,000	5	1	2	2.4	21
28.	Undertake further investigative work at the Wyndham Street / Rea Street intersection.								
29.	Undertake further investigative work at the Balaclava Road / Monash Street intersection.								
32.	Line mark car parking spaces on Oram Street between Nixon Street and McKinney Street	\$10,000	1	\$10,000	3	1	2	1.8	24
33.	Line mark car parking spaces adjacent to Notre Dame College & St Brendan's Primary on Barker Avenue	\$14,000	1	\$14,000	3	1	2	1.8	24
34.	Line mark car parking spaces adjacent to Notre Dame College & St Brendan's Primary on Corio Avenue	\$7,000	1	\$7,000	3	1	2	1.8	24
35.	Install splitter island at intersection of Blamey Street / McEwen Street	\$5,000	1	\$5,000	3	3	3	3.0	13
36.	Provide improvements to pedestrian access across Clive Street at the Knight Street intersection	\$15,000	1	\$15,000	3	3	5	3.4	5
37.	Provide improved east-west connectivity for cyclists and pedestrians along Balaclava Road	\$300,000	1	\$300,000	1	4	5	3.3	8



## 9 MONITORING

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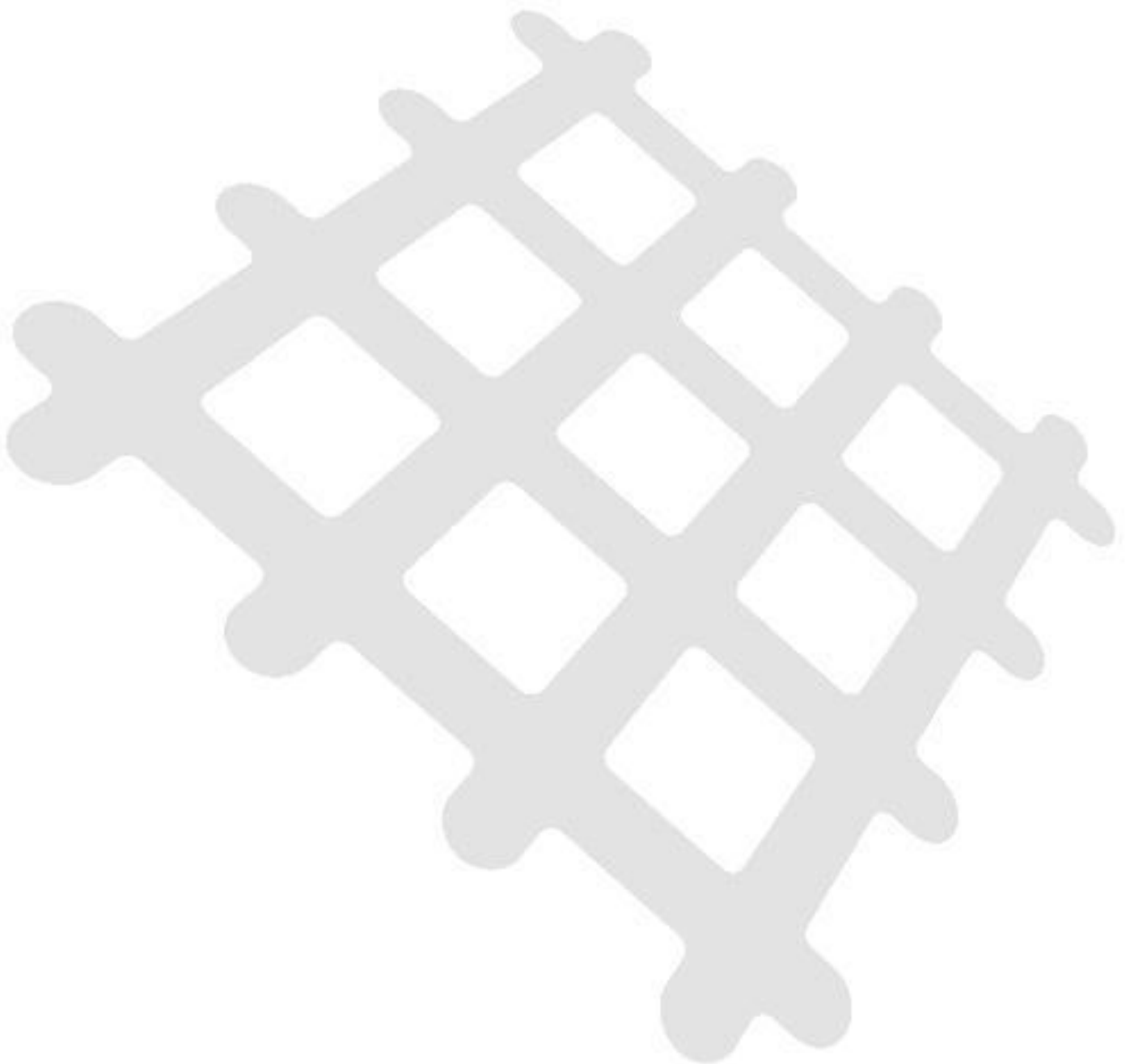
An important, and often overlooked, facet of any LATM plan is the ongoing monitoring and evaluation of the LATM scheme.

The purposes and value of monitoring and evaluation include (*Main Roads WA 1990, p. 128*):

- To assess the scheme as a whole and the individual treatments against the adopted objectives – the primary technical measure of success;
- To identify any undesirable impacts that might indicate modifications that could be made;
- In stage implementation, to assess the impacts of each stage so that subsequent stages can be modified if necessary;
- To provide objective information on impacts and effects for the community; and
- To provide information on the performance of the scheme and individual devices which may be useful in later projects or shared with other councils.

Once the above traffic, parking and pedestrian management measures have been implemented, it is recommended that Council review the LATM plan to establish the effectiveness of the proposed treatments, and identify any locations in which unwanted side-effects have occurred as a result.

*Appendix A Car Parking Occupancy  
Data*

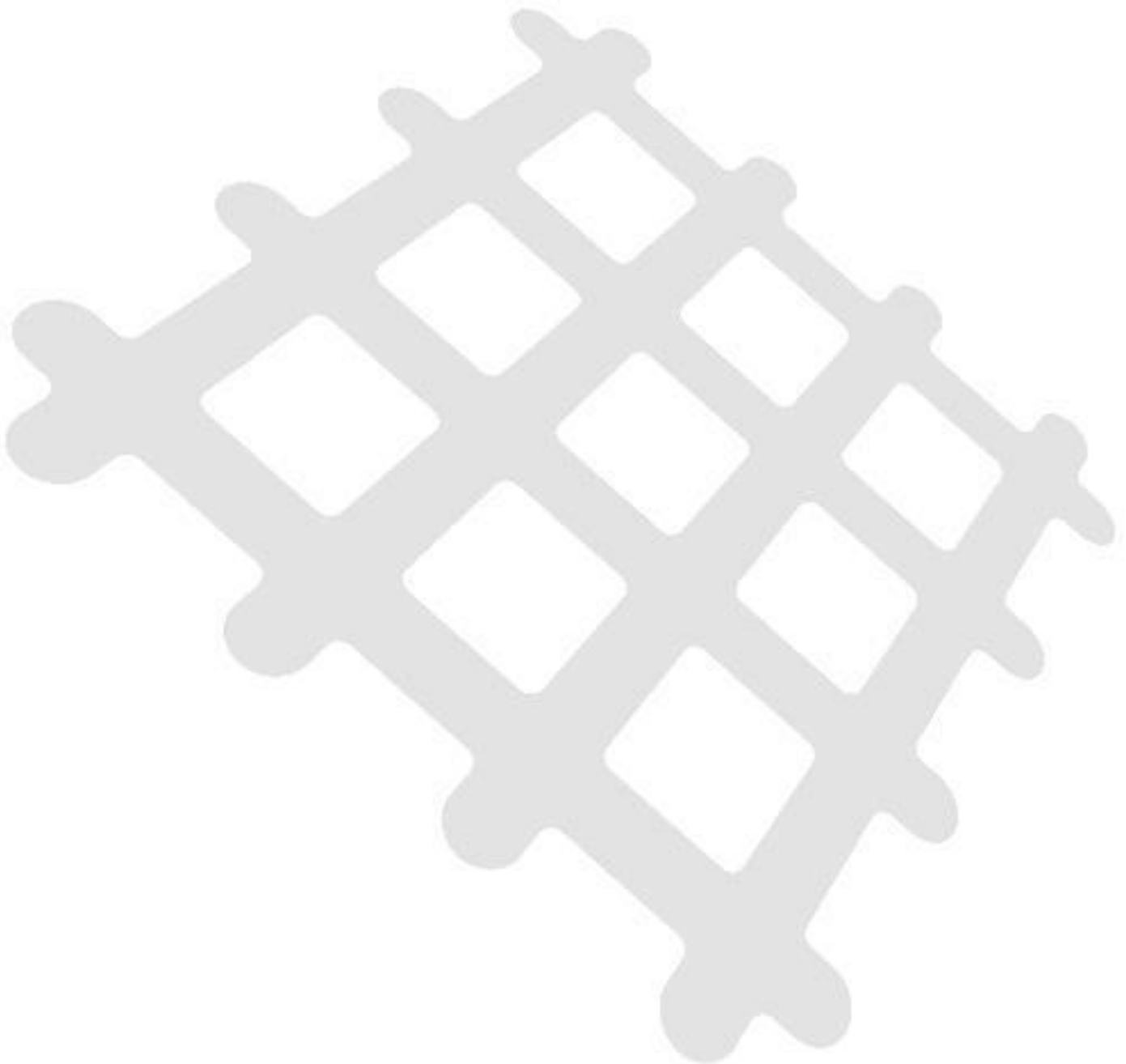


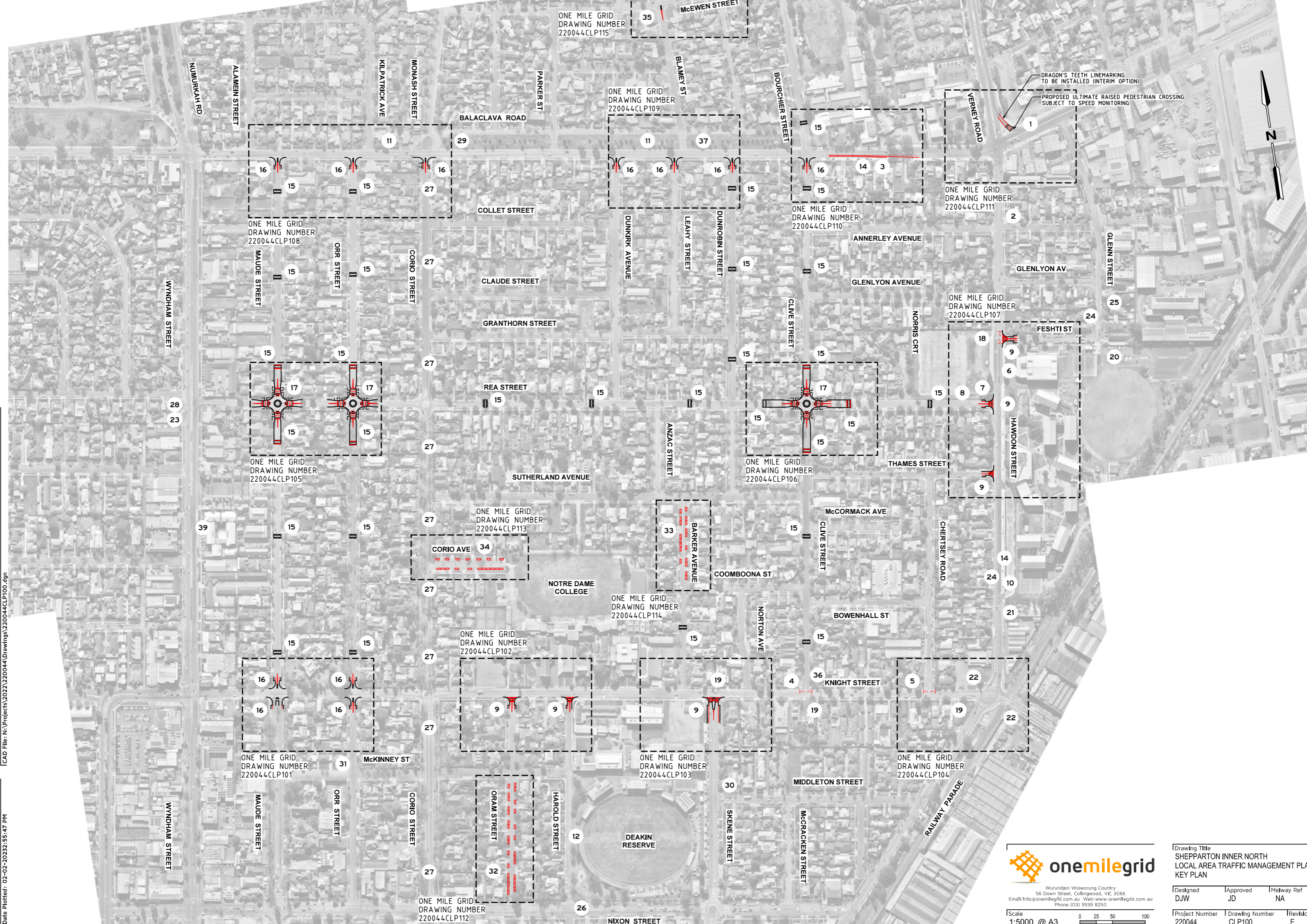
Parking Data - 7<sup>th</sup> March 2022

Street	Section	Side	Restriction 1		Supply	Parking Occupancy														Avg	Max						
			Type	Times		7:30 AM	7:45 AM	8:00 AM	8:15 AM	8:30 AM	8:45 AM	9:00 AM	9:15 AM	9:30 AM	12:00 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM			3:30 PM	3:45 PM	4:00 PM			
Railway Pde	Middleton St to Knight St	E	No Standing		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawdon St	Knight St to Thames St	W	Unrestricted		13	3	3	3	3	4	4	3	2	2	3	3	4	4	4	3	3	3	3.2	4			
		E	Bus Zone		10	0	1	2	4	3	3	0	2	0	0	0	2	3	5	3	0	0	1.6	5			
		W	Unrestricted		2	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1.6	2			
	Thames St to Rea St	E	Bus Zone		17	3	5	9	15	17	17	17	17	17	17	17	17	17	17	16	13	10	14.2	17			
		W	P		7	3	3	4	5	7	7	7	7	7	7	6	7	7	7	7	6	5	6.7	7			
	Rea St to Feshti St	E	1/4P	8am-9:30am; 2:30pm-4pm School Day	4	0	0	1	2	2	3	2	3	2	1	0	3	4	4	2	0	0	1.7	4			
		W	Bus Zone		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		E	No Standing	7:30am-6:30pm Mon-Fri	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Feshti St to Glenlyon Ave	E	Bus Zone		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		W	No Standing	7:30am-6:30pm Mon-Fri	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		W	No Standing	8am-9:30am; 2:30pm-4pm School Day	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		E	Bus Zone		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Feshti St	Hawdon St to Glenn St	S	P Disabled		2	0	0	0	0	0	0	1	1	1	0	1	2	2	1	1	0	0	0.6	2			
		N	P		12	2	2	3	6	10	11	12	12	12	11	12	12	12	11	9	7	9	9.2	12			
		N	P		9	0	1	2	5	8	9	9	9	9	9	9	9	9	9	8	7	5	6.9	9			
		S	Private Parking Disabled	206	2	9	36	70	116	133	145	150	146	149	144	143	142	140	133	100	86	108.5	150				
Glenn St	Feshti St to Glenlyon Ave	E	P		8	2	2	3	5	6	7	8	8	8	7	8	8	8	7	3	3	5.9	8				
		W	P		5	1	1	2	4	5	5	5	5	4	5	5	5	5	4	3	2	3.9	5				
		E	P		5	2	2	3	4	4	4	4	5	5	5	5	5	5	5	4	3	4	4.1	5			
		W	P		5	1	1	2	3	3	4	5	5	5	5	5	5	5	5	5	4	4	4	5			
	Annerley Ave to New Dookie Rd	E	Unrestricted		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		W	No Standing	7am-5pm Mon-Fri	4	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0.5	1			
		E	Unrestricted		12	4	4	4	4	4	4	4	4	3	4	5	5	4	4	4	3	3	3.9	5			
Conifer St	Birch St to Ash St	W	P		8	0	0	2	4	8	8	8	8	8	8	8	8	8	8	8	8	6.5	8				
		E	Unrestricted		3	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1.6	2			
		Middle	1/2P	9am-5:30pm Mon-Fri; 9am-12Noon Sat	14	0	0	1	3	6	8	5	10	8	12	7	9	12	10	10	7	5	6.6	12			
Ash St	Conifer St to Blackwood St	S	1/2P	9am-5:30pm Mon-Fri; 9am-12Noon Sat	3	0	0	0	1	2	0	1	0	1	0	0	1	2	2	1	0	0	0.6	2			
		S	1/2P		3	1	1	0	2	2	1	1	2	0	3	0	1	2	2	2	1	1	1.3	3			
		N	Unrestricted		55	6	10	16	25	32	34	36	37	34	38	35	39	37	35	33	31	26	29.6	39			
Hawdon St	New Dookie Rd to Annerley Ave	N	Unrestricted		13	1	1	1	1	1	1	1	1	1	2	0	1	3	2	1	0	1.1	3				
		S	Unrestricted		10	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1.7	2			
		N	Unrestricted		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Annerley Ave to Glenlyon Ave	W	No Standing	7:30am-6:30pm Mon-Fri	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		E	No Standing	7:30am-6:30pm Mon-Fri	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		W	No Standing	7:30am-6:30pm Mon-Fri	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Annerley Ave	Hawdon St to Glenn St	S	No Standing	8am-9:30am; 2:30pm-4pm School Day	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		N	P		12	3	3	2	2	1	0	0	0	1	1	0	0	0	0	0	0	0.8	3				
		S	P		11	5	5	4	5	6	7	8	8	8	6	7	8	10	9	6	5	6	6.9	10			
	Glenn St to End	S	P		7	1	1	1	1	1	2	2	3	3	2	2	3	3	3	2	2	2.1	3				
		N	P		10	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4.2	5			
		S	No Standing	8am-9:30am; 2:30pm-4pm School Day	11	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0.2	2			
Annerley Ave	Hawdon St to Clive St	N	P		13	6	5	4	5	7	7	8	9	10	7	10	11	12	12	10	7	6	8				
		S	P		22	5	5	4	5	6	8	7	9	8	5	6	8	11	10	8	5	5	6.8	11			
		S	P		25	5	5	5	5	4	4	4	4	4	3	3	5	8	10	7	5	5	5.1	10			
Clive St	Balaclava Rd to Annerley Ave	W	Unrestricted		10	1	1	2	4	9	9	4	3	2	2	2	5	10	9	7	3	2	4.4				
		E	Unrestricted		7	2	3	5	7	7	5	5	4	3	4	6	7	7	6	5	3	4	4.8	7			
		W	Unrestricted		11	1	1	1	1	1	1	1	1	1	3	5	5	5	5	4	4	3	2.5	5			
	Glenlyon Ave to Rea St	E	Unrestricted		9	0	0	0	0	0	0	0	0	0	1	2	3	5	5	4	1	1	1.3				
		W	Unrestricted		12	1	1	1	1	1	1	1	1	1	1	2	3	4	3	1	1	1	1.5	4			
		E	Unrestricted		14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.2	1			
Glenlyon Ave	Clive St to Hawdon St	S	P		19	4	4	4	5	7	6	5	5	4	4	6	7	8	5	3	4	5.1	8				
		N	No Standing	8am-9:30am; 2:30pm-4pm School Day	24	2	2	2	1	0	0	1	1	1	2	1	1	1	1	1	1	1	1.1	2			
		S	P		10	3	3	4	5	6	7	8	10	9	9	8	9	10	10	9	6	5	7.1	10			
Rea St	Hawdon St to Norris Ct	S	P		8	4	4	5	5	6	7	7	8	7	4	8	8	8	8	7	6	6.5	8				
		N	P		6	0	0	1	1	3	4	2	2	4	5	6	5	6	4	1	0	0	2.6	6			
		E	Bus Zone		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		P		4	0	0	0	0	0	0	0	0	0	0	0	1	2	3	2	1	0	0	0.5	3			
		S	P		4	0	0	0	0	1	1	2	2	1	1	2	3	4	4	2	0	0	1.4	4			
		E	Bus Zone		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		P		4	0	0	1	1	1	1	1	1	1	1	1	2	2	3	3	1	0	0	1.1	3			
		N	Unrestricted		10	0	0	0	0	0	0	0	0	0	0	1	1	2	4	2	1	0	0.6	4			
		S	Unrestricted		9	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0.2	2			
		N	Unrestricted		9	1	1	1	1	1	1	2	3	3	2	2	3	4	4	3	3	2	2	2.2	4		
		S	Unrestricted		10	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	3	4	3.5		
		Clive St	Rea St to Thames St	N	Unrestricted		5	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0.3	1		
S	Unrestricted				5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
W	Unrestricted				10	0	0	0	0	0	0	0	1	1	0	1	0	1	2	1	0	0	0.4	2			
	Thames St to Sutherland Ave	E	Unrestricted		10	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	0	0.6	1				
		W	Unrestricted		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		E	Unrestricted		3	2	2	2	2	2	2	1	1	2	2	1	1	1	1	1	1	1	1.5	2			
	Sutherland Ave to McCormack Ave	W	Unrestricted		3	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0.2	1				
		E	Unrestricted		2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1.5	2			
		W	Unrestricted																								



## *Appendix B LATM Concept Designs*





CAD File: N:\Projects\2022\220044\Drawings\220044CLP100.dgn

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Scale  
1:5000 @ A3

Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN KEY PLAN		
Designed DJW	Approved JD	Metway Ref NA
Project Number 220044	Drawing Number CLP100	Revision E



PROPOSED LINE MARKING

PROPOSED SPLITTER ISLAND

PROPOSED KERB OUTSTAND

KNIGHT STREET

PROPOSED CENTRAL ISLAND

PROPOSED KERB OUTSTAND

MAUDE STREET

ORR STREET

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Project Number 220044	Drawing Number CLP101	Revision E



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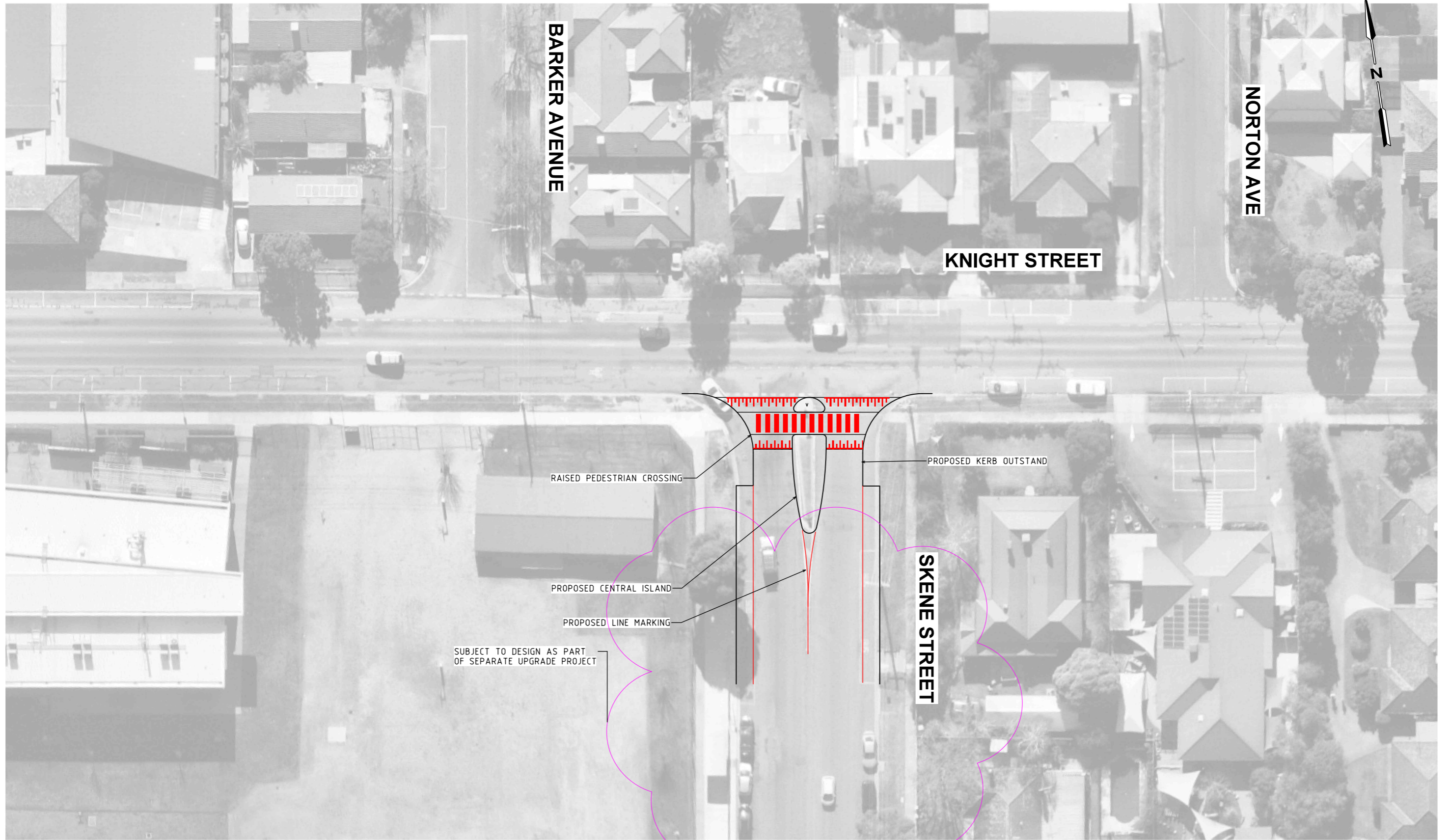


Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN KNIGHT STREET		
Designed DJW	Approved JD	Metway Ref NA
Project Number 220044	Drawing Number CLP102	Revision E

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BARKER AVENUE

NORTON AVE

KNIGHT STREET

SKENE STREET

RAISED PEDESTRIAN CROSSING

PROPOSED KERB OUTSTAND

PROPOSED CENTRAL ISLAND

PROPOSED LINE MARKING

SUBJECT TO DESIGN AS PART OF SEPARATE UPGRADE PROJECT

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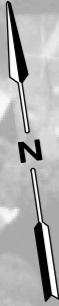
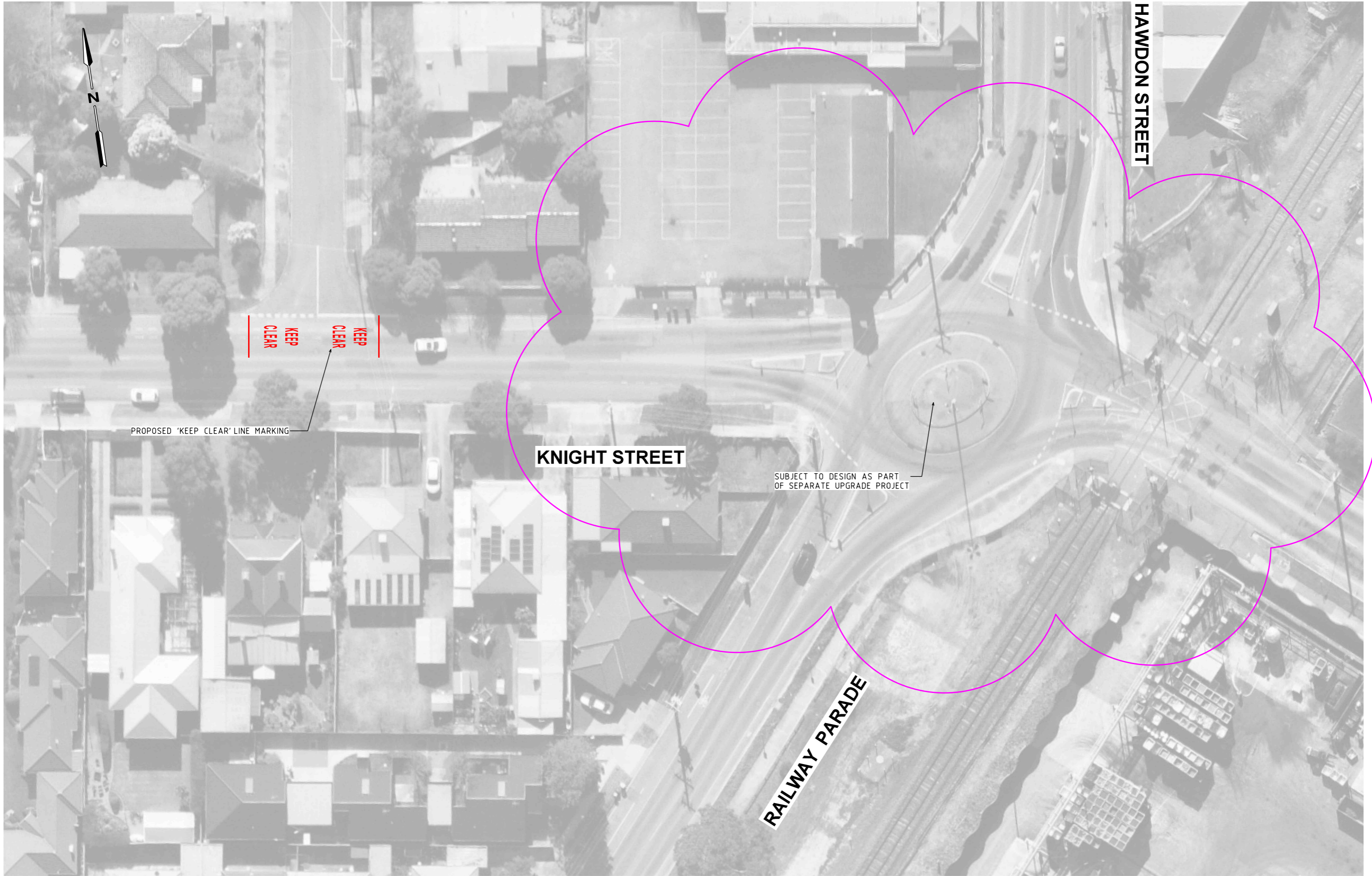


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Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN KNIGHT STREET		
Designed DJW	Approved JD	Metway Ref NA
Project Number 220044	Drawing Number CLP103	Revision E



KEEP CLEAR  
KEEP CLEAR  
KEEP CLEAR

PROPOSED 'KEEP CLEAR' LINE MARKING

KNIGHT STREET

RAILWAY PARADE

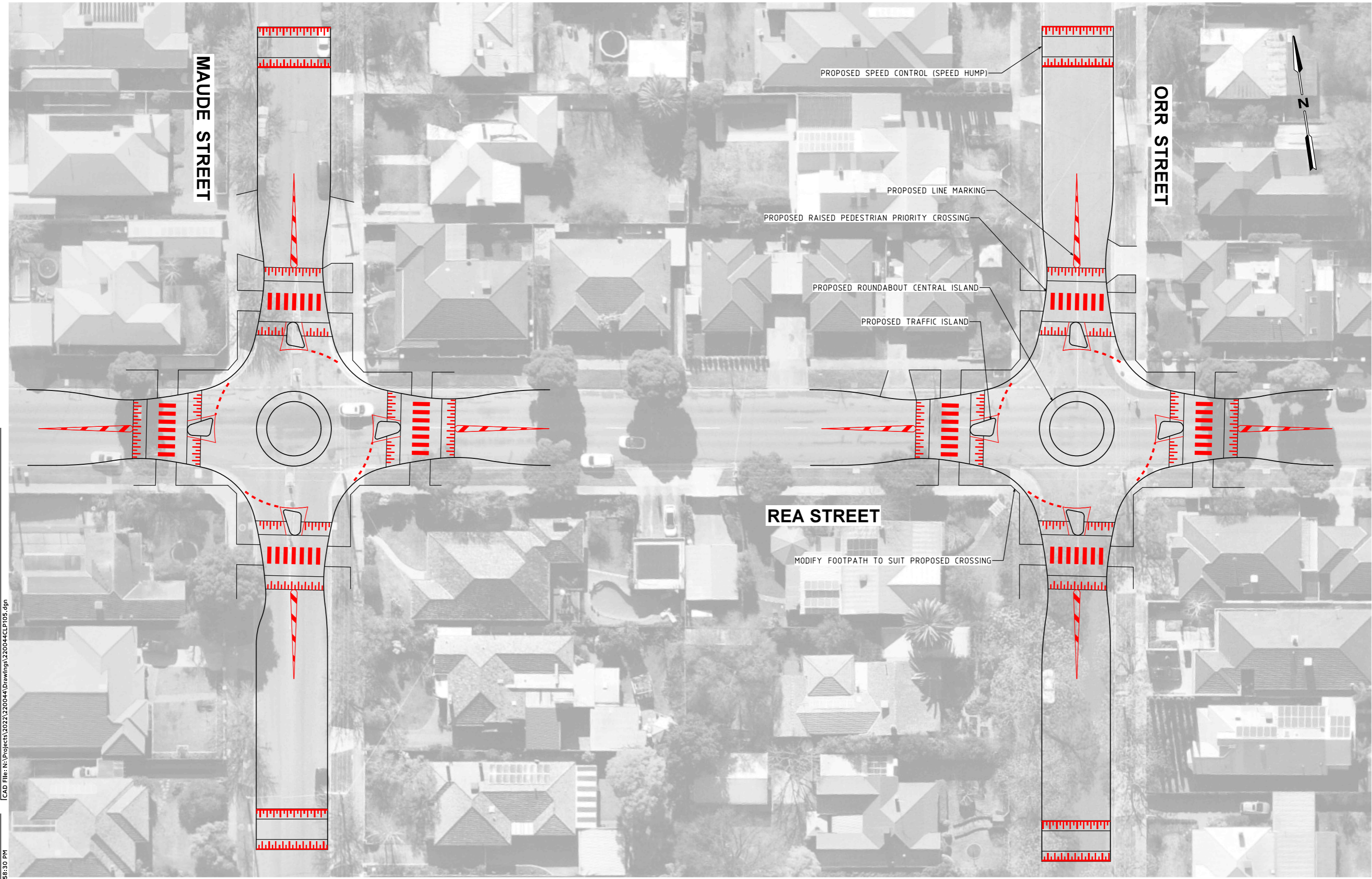
HADDON STREET

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Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN KNIGHT STREET		
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Project Number 220044	Drawing Number CLP104	Revision E



CAD File: N:\Projects\2022\220044\Drawings\220044CLP105.dgn

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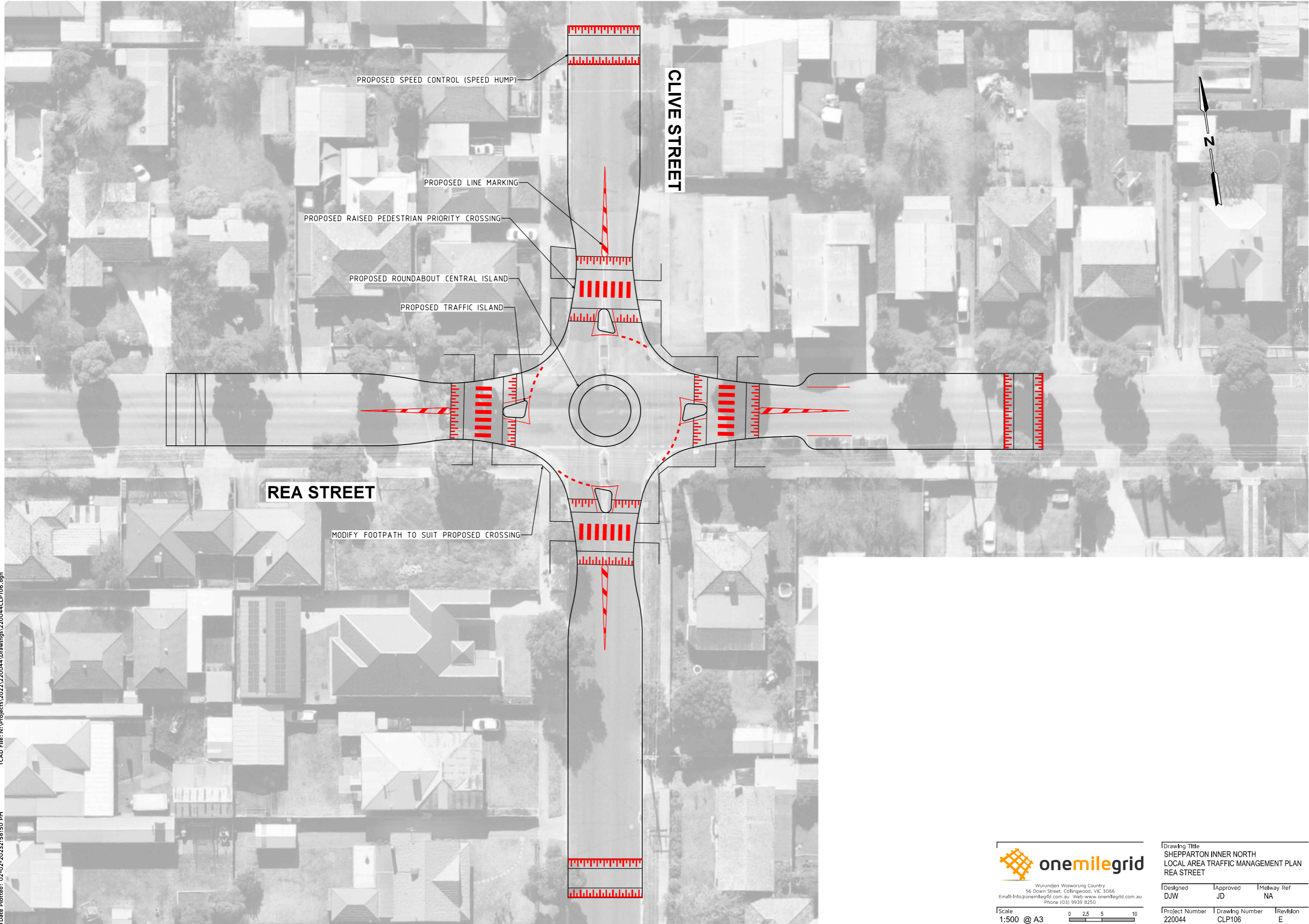
Drawing Title  
 SHEPPARTON INNER NORTH  
 LOCAL AREA TRAFFIC MANAGEMENT PLAN  
 REA STREET

Designed DJW	Approved JD	Metway Ref NA
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Project Number 220044	Drawing Number CLP105	Revision E
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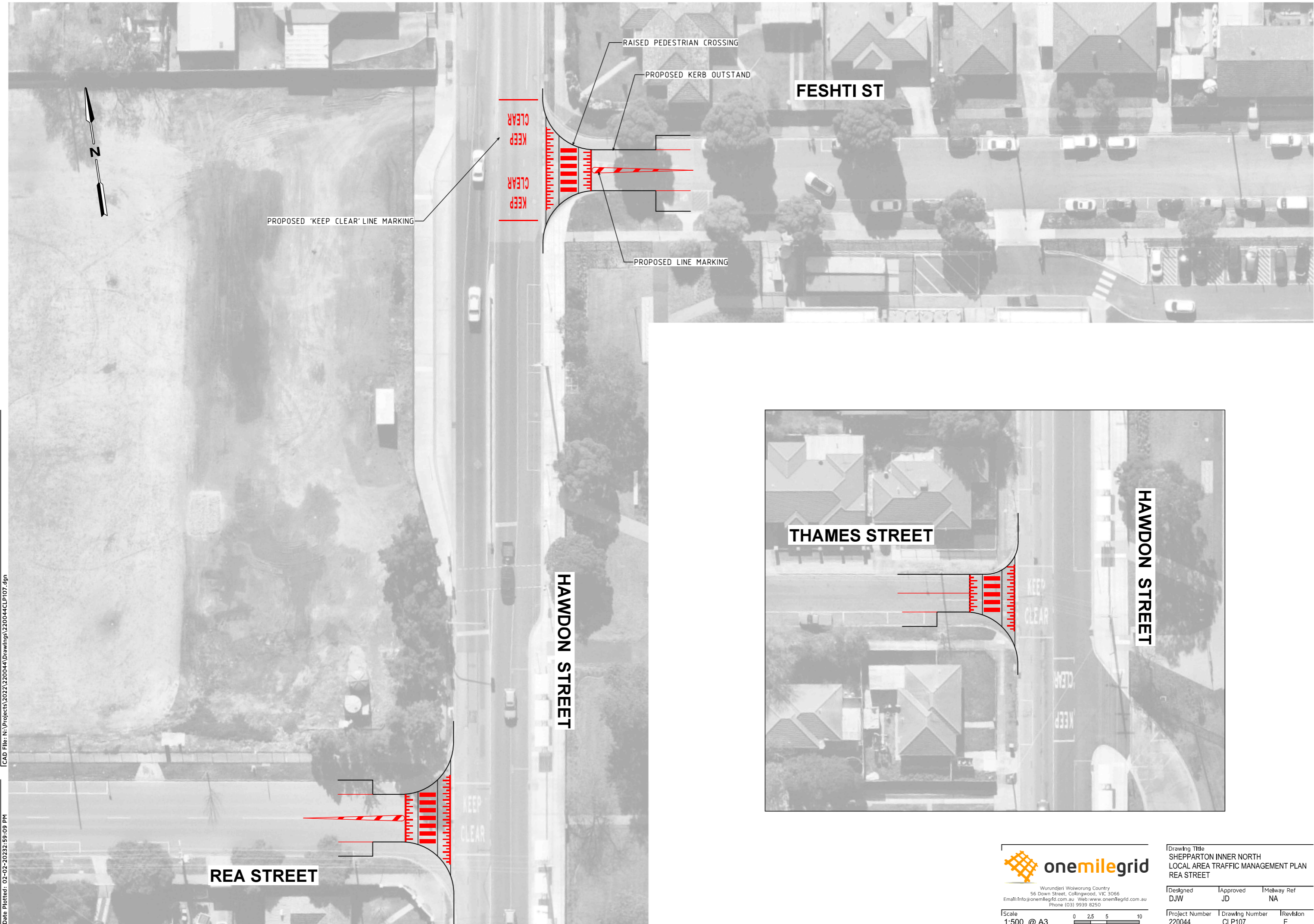
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Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN REA STREET		
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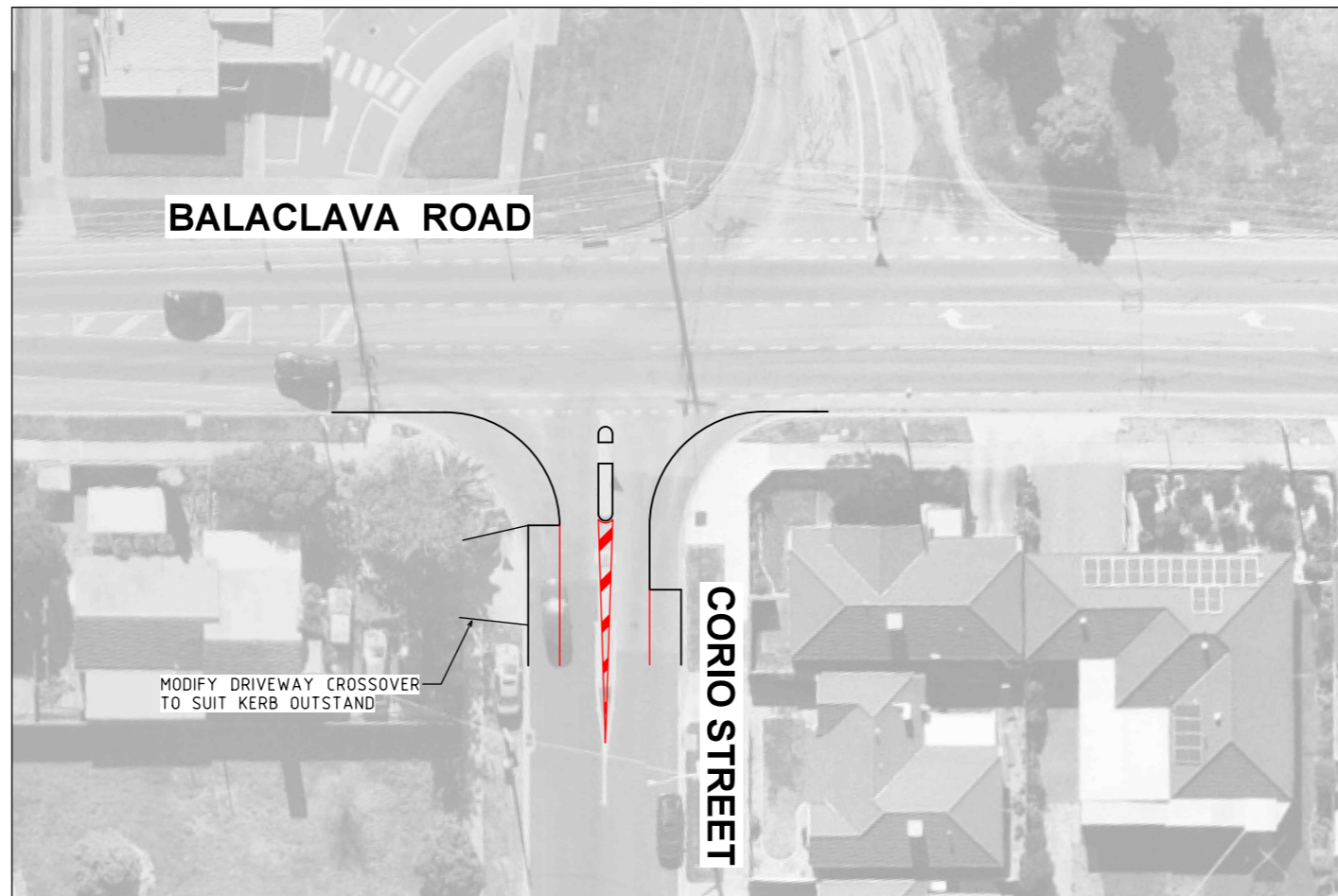


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Project Number 220044	Drawing Number CLP107	Revision E



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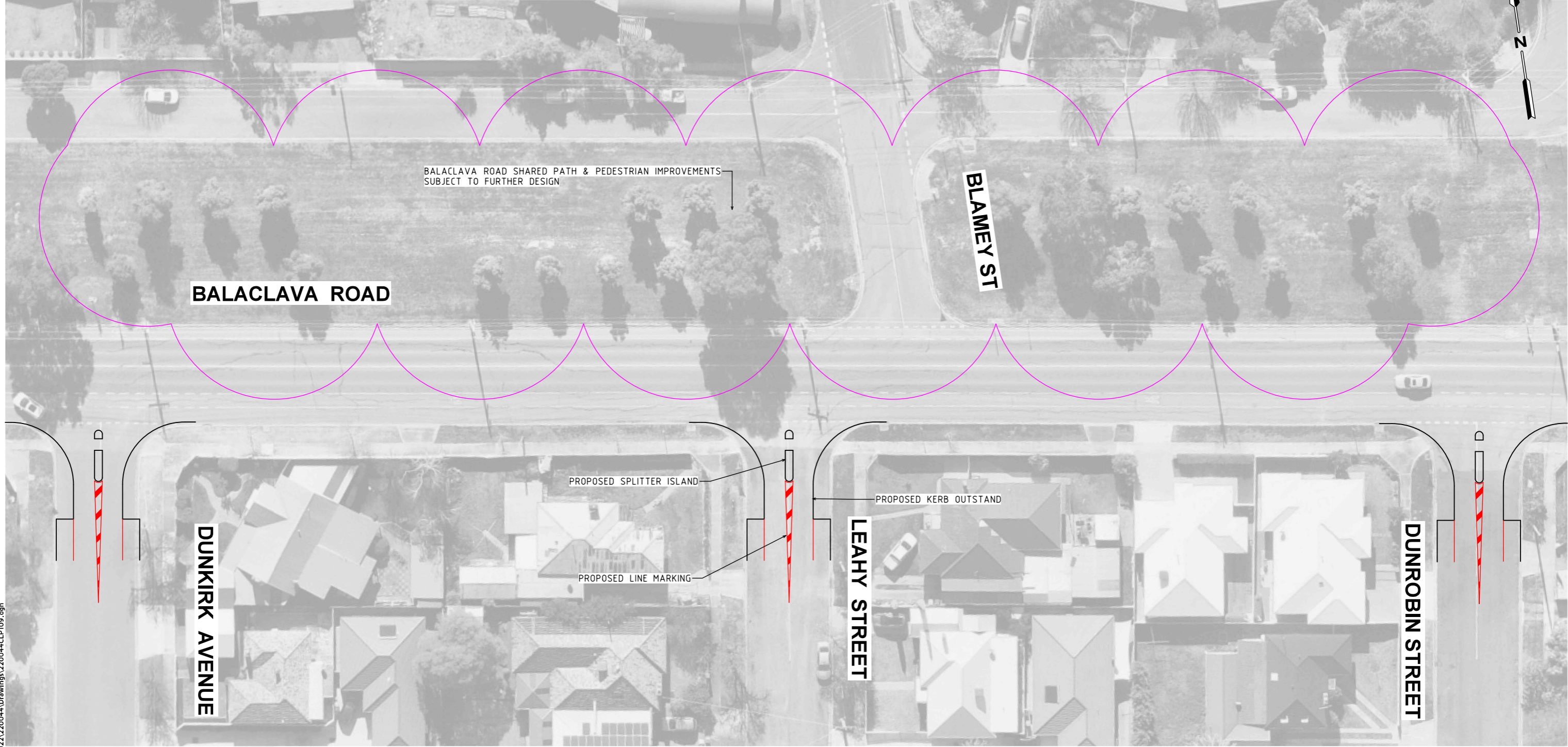
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Project Number 220044	Drawing Number CLP109	Revision E



**BOURCHIER STREET**

**BALACLAVA ROAD**

**CLIVE STREET**

30m SINGLE WESTBOUND TRAFFIC LANE

100m WESTBOUND MERGE TAPER

- PROPOSED SPLITTER ISLAND
- PROPOSED KERB OUTSTAND
- PROPOSED LINE MARKING

PROPOSED BIKE LANE LINE MARKING MODIFIED TO SUIT PROPOSED MERGE TAPER

PROPOSED CONTINUITY LINE MARKING TO DELINEATE MERGE TAPER

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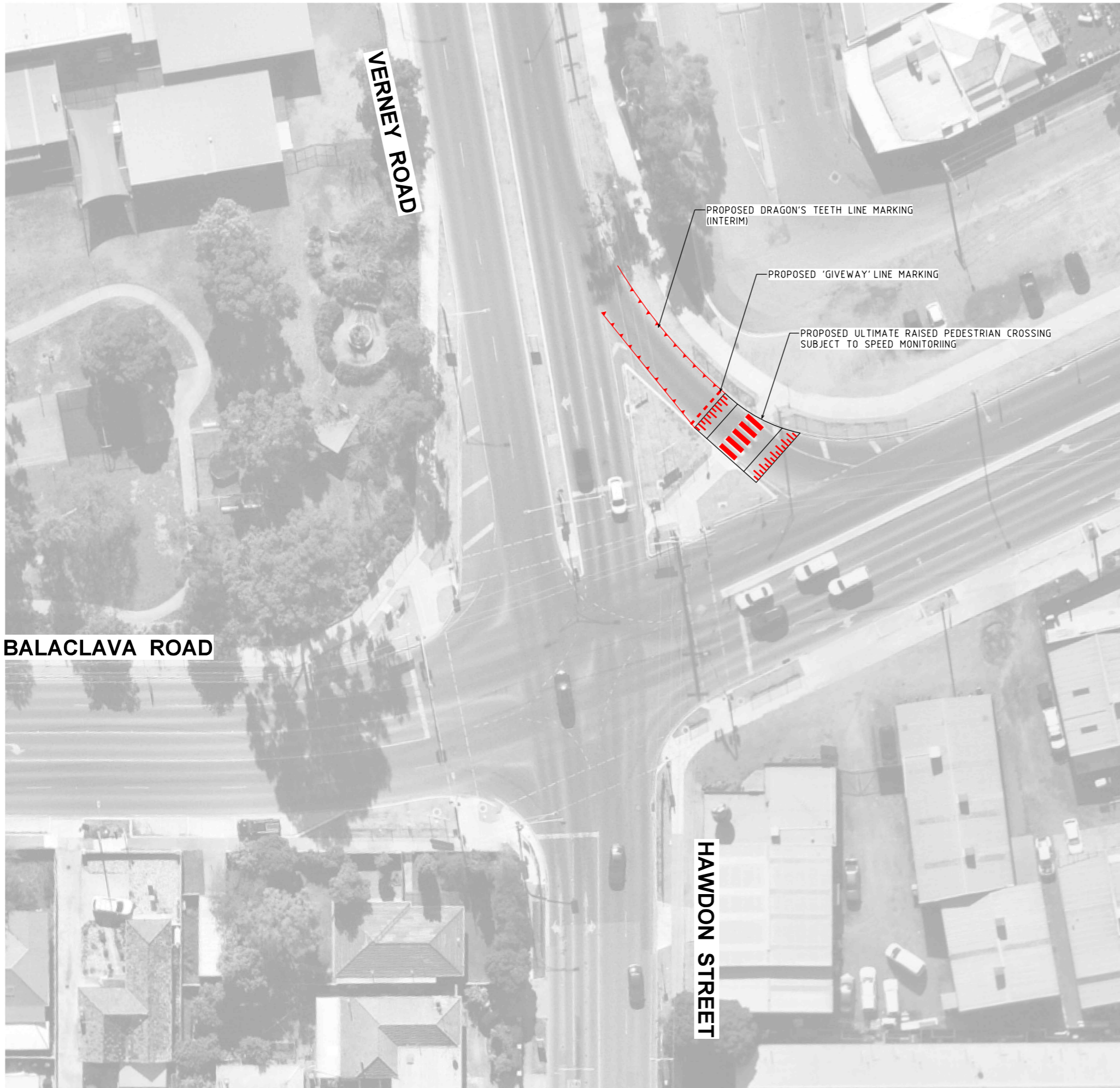
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Project Number 220044	Drawing Number CLP110	Revision E

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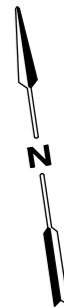


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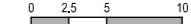
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Aerial Photography  
Aerial photography provided by Nearmap



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Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au  
Phone (03) 9939 8250

Scale  
1:500 @ A3



**Drawing Title**  
SHEPPARTON INNER NORTH  
LOCAL AREA TRAFFIC MANAGEMENT PLAN  
ORAM STREET

<b>Designed</b> DJW	<b>Approved</b> JD	<b>Melway Ref</b> NA
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<b>Project Number</b> 220044	<b>Drawing Number</b> CLP112	<b>Revision</b> E
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CAD File: N:\Project\2022\220044\Drawings\220044-CLP113.dgn

Date Plotted: 02-03-2023 01:20 PM

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We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land.  
We pay our respects to leaders and elders past, present and emerging for they hold the memories,  
the traditions, the culture, and the hopes of all Wurundjeri Peoples.

Aerial Photography  
Aerial photography provided by Nearmap

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Scale  
1:500 @ A3

Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN CORIO AVENUE		
Designed DJW	Approved JD	Melway Ref NA
Project Number 220044	Drawing Number CLP113	Revision E



CAD File: N:\Project\2022\220044\Drawings\220044-CLP114.dgn

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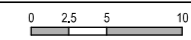
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Scale  
1:500 @ A3



Drawing Title  
SHEPPARTON INNER NORTH  
LOCAL AREA TRAFFIC MANAGEMENT PLAN  
BARKER AVENUE

Designed DJW	Approved JD	Metway Ref NA
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Project Number 220044	Drawing Number CLP114	Revision E
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CAD File: N:\Projects\2022\220044\Drawings\220044CLP115.dgn

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Scale  
1:500 @ A3



Drawing Title SHEPPARTON INNER NORTH LOCAL AREA TRAFFIC MANAGEMENT PLAN BLAMEY STREET / McEWEN STREET		
Designed DJW	Approved JD	Metway Ref NA
Project Number 220044	Drawing Number CLP115	Revision E