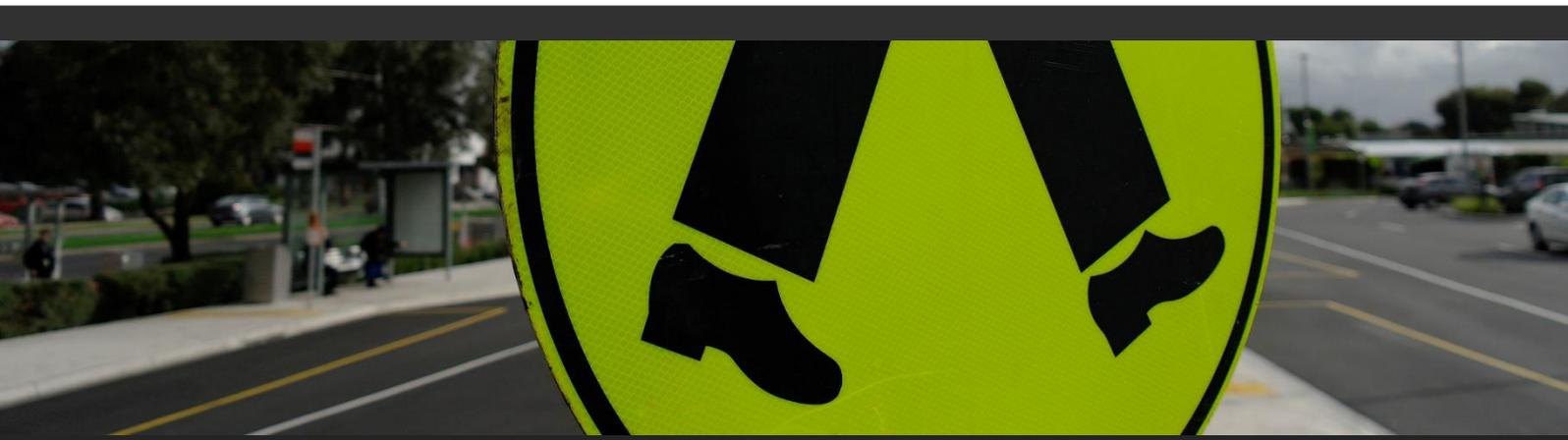


Greater Shepparton Secondary College

Local Area Traffic Management Study



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1 INTRODUCTION

onemilegrid have been engaged by Greater Shepparton City Council to prepare a Local Area Traffic Management (LATM) study of the Greater Shepparton Secondary College (GSSC), which will open in 2022, and cater for approximately 2,600 relocated students, and ultimately for up to 3,000 secondary school children.

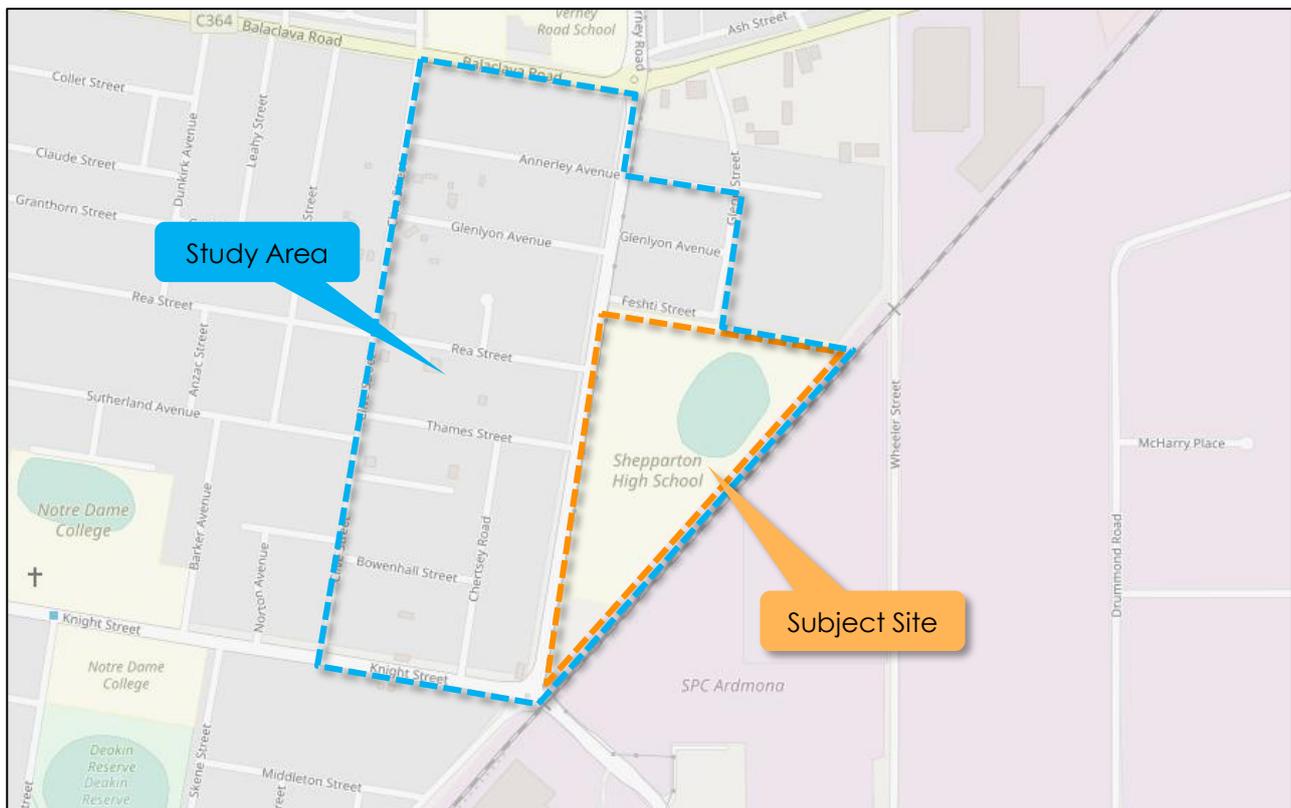
The following report outlines the study process, summarises existing traffic issues and makes recommendations for mitigation of the problems identified.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is located on the eastern side of Hawdon Street, to the south of Feshti Street as shown in Figure 1 below.

Figure 1 Site Location



The site has a frontage of approximately 400 metres to Hawdon Street and 150 metres to Feshti Street, an abuttal to the railway line of 460 metres, and a total site area of approximately 77,000 m².

The site formerly accommodated the Shepparton High School, which was closed in December 2019.

Land use in the vicinity of the site is mixed, with largely residential uses to the west and north, and commercial and industrial uses to the east and north-east. Ford Reserve is located to the immediate west, north of Rea Street and is understood to have been historically utilised by the school.

An aerial view of the subject site is provided in Figure 2 below.

Figure 2 Site Context (28th February 2021)



Copyright Nearmap

2.2 Road Network

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	Footpath Provision	Bicycle Facilities	Car Parking	Speed Limit
Hawdon Street	Knight St & Glenlyon Ave	Collector Street	N-S	Two-way / Two-lane	13.5 m	Yes	On-road bike lane both sides of road	Marked kerbside	60km/h (40km/h school times)
Hawdon Street	Glenlyon Ave & Balaclava Road	Collector Street	N-S	Two-way / Four-lane	13.5 m	Yes	None	No Stopping 7:30AM-6:30PM Monday-Friday	60km/h (40km/h school times)
Annerley Avenue	Clive St & Hawdon St	Access Street	E-W	Two-way unmarked	10 metres	Yes	None	Kerbside on carriageway	50km/h
Annerley Avenue	Hawdon St & Glenn St	Access Street	E-W	Two-way unmarked	8 metres	Yes	None	Kerbside on carriageway	50km/h
Glenlyon Ave	Clive St & Hawdon St	Access Street	E-W	Two-way unmarked	9.5 m	Yes	None	Kerbside on carriageway	50km/h
Glenlyon Ave	Hawdon St & Glenn St	Access Street	E-W	Two-way unmarked	8 m	Yes	None	Kerbside on carriageway	50km/h
Feshi Street	Hawdon St & Glenn St	Access Street	E-W	Two-way unmarked	11.3 m	Yes	None	Kerbside on carriageway	40km/h
Rea Street	Hawdon St & Clive St	Sub Collector Street	E-W	Two-way / Two-lane	11.3 m	Yes	None	Kerbside on carriageway	50km/h
Thames Street	Hawdon St & Clive St	Access Street	E-W	Two-way unmarked	7.5 m	Yes	None	Kerbside on carriageway	50km/h
Chertsey Road	Knight St & Thames St	Access Street	N-S	Two-way unmarked	7.5 m	Yes	None	Kerbside on carriageway	50km/h
Glenn Street	Feshi St & Balaclava Rd	Access Street	N-S	Two-way unmarked	11.3 m	Yes	None	Kerbside on carriageway	50km/h

2.3 Traffic Volumes

onemilegrid has been provided traffic volume data by Council to assist with understanding existing traffic conditions in the site's vicinity. A summary of the data is provided below.

It is reiterated that the former High School was in operation on the site until December 2019, catering for 600-700 students.

Table 2 Traffic Volume and Speed Surveys

Location	Segment	Date	Direction	Daily Traffic Volume (vpd)	Peak Traffic Volume (vpd)		85 th Percentile Speed (km/h)
					AM Peak	PM Peak	
Hawdon Street	Thames St & Knight St	20/4/21	Southbound	5,264	575	561	52.9
			Northbound	5,827	439	562	54.7
			Combined	11,091	1,014	1,123	54.0
Hawdon Street	Glenlyon St & Annerley St	8/7/20	Southbound	3,389	263	330	59.0
			Northbound	3,798	280	410	56.2
			Combined	7,187	543	740	58.0
Hawdon Street	Thames St & Knight St	24/5/16	Southbound	4,265	432	372	58.0
			Northbound	5,932	497	631	59.0
			Combined	10,197	929	1,003	58.7
Annerley Avenue	Clive St & Hawdon St	18/9/18	Westbound	129	19	22	51.8
			Eastbound	112	17	18	49.0
			Combined	241	36	36	49.3
Chertsey Road	Thames St & Bowenhall St	17/4/12	Southbound	114	24	22	45.0
			Northbound	121	11	21	42.8
			Combined	235	35	43	43.9
Clive Street	Bowenhall St & Knight St	11/9/18	Southbound	823	162	115	54.7
			Northbound	527	68	92	52.6
			Combined	1,350	230	207	54.0
Feshfi Street	Hawdon St & Glenn St	29/5/18	Westbound	190	33	39	37.8
			Eastbound	192	50	48	37.4
			Combined	382	83	87	37.4
Glenlyon Avenue	Clive St & Hawdon St	29/5/18	Westbound	60	6	17	46.8
			Eastbound	94	18	22	50.0
			Combined	154	24	39	47.9
Glenn Street	New Dookie Rd & Annerley Ave	6/12/16	Southbound	234	40	36	46.1
			Northbound	262	32	46	45.7
			Combined	496	72	82	46.1
Rea Street	Clive St & Norris Ct	24/5/16	Westbound	522	74	78	53.6
			Eastbound	751	99	68	56.5
			Combined	1,273	173	146	55.4
Thames Street	Chertsey Rd & Hawdon St	17/4/12	Westbound	162	29	11	40.0
			Eastbound	121	17	19	37.8
			Combined	283	46	41	39.2

The above data suggests Hawdon Street currently carries up to 11,000 vehicles per day, with approximately 10% of daily flows occurring during the commuter peak periods. The reduction of traffic volumes from the 2021 to 2020 surveys will have been attributable to COVID-19 containment measures, and potentially influenced by construction works at the Balaclava Road / Hawdon Street intersection.

Traffic speeds along Hawdon Street are within acceptable bounds, with 85th percentile speeds just below the posted speed limit of 60km/h. During school pick-up/drop-off periods, a 40km/h speed limit applies, however 85th percentile speeds were approaching 50km/h suggesting poor compliance with speed limits.

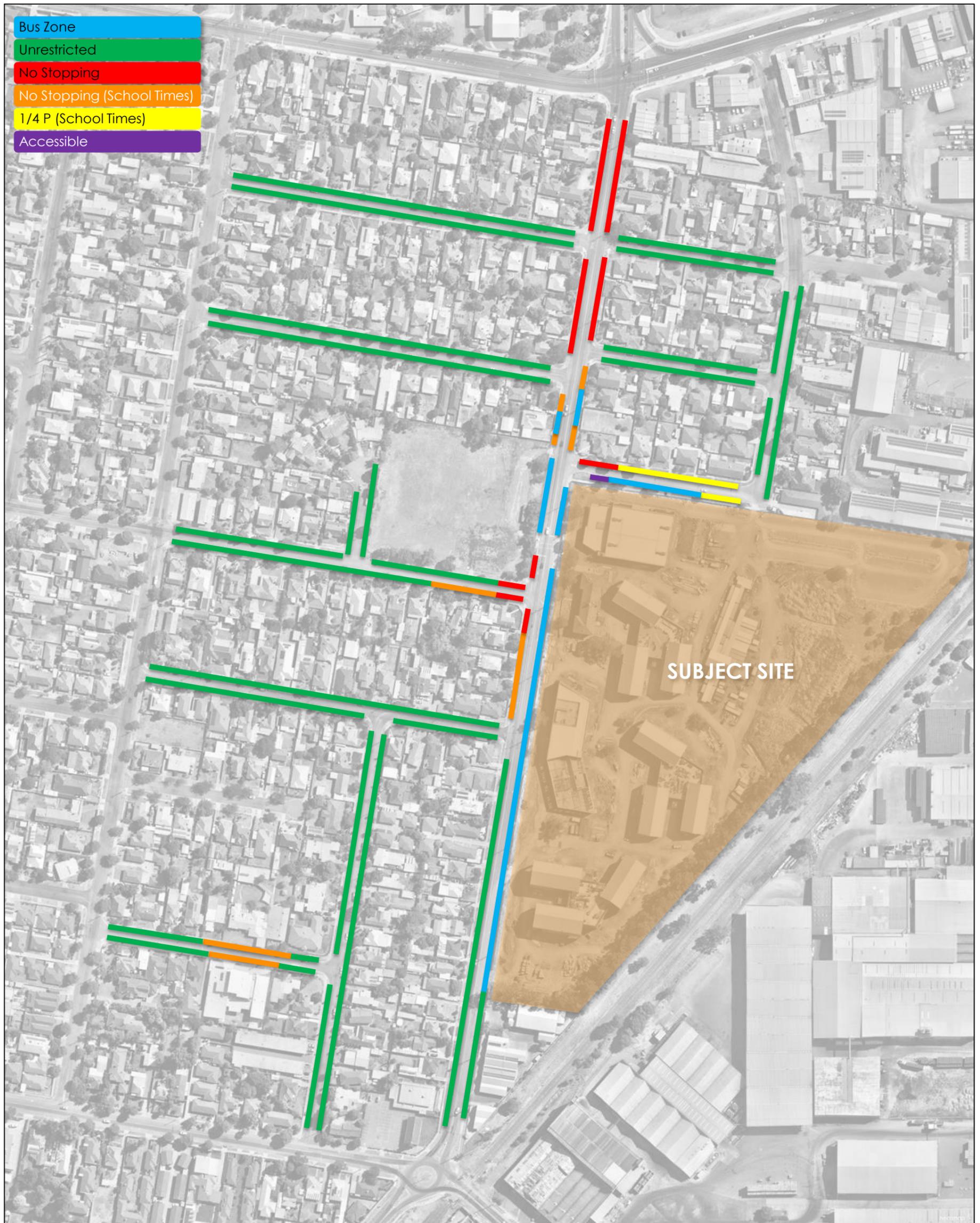
The remainder of traffic volumes within the study area are comfortably within environmental capacities, estimated to be approximately 3,000 vehicles per day for Rea Street, Feshti Street, Glenn Street and Clive Street, and 1,000 to 2,000 vehicles per day for the remainder of the local streets.

2.4 Car Parking

The majority of car parking around the college site is currently unrestricted, with the exception of some Bus Zones, accessible parking spaces, and No Stopping areas.

A summary of the existing parking restrictions is provided in Figure 3 below.

Figure 3 Existing Parking Restrictions



2.5 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 in the vicinity of the site.

Three crashes were recorded along Hawdon Street, shown in Figure 4 and summarised in Table 3.

Figure 4 Crash Locations

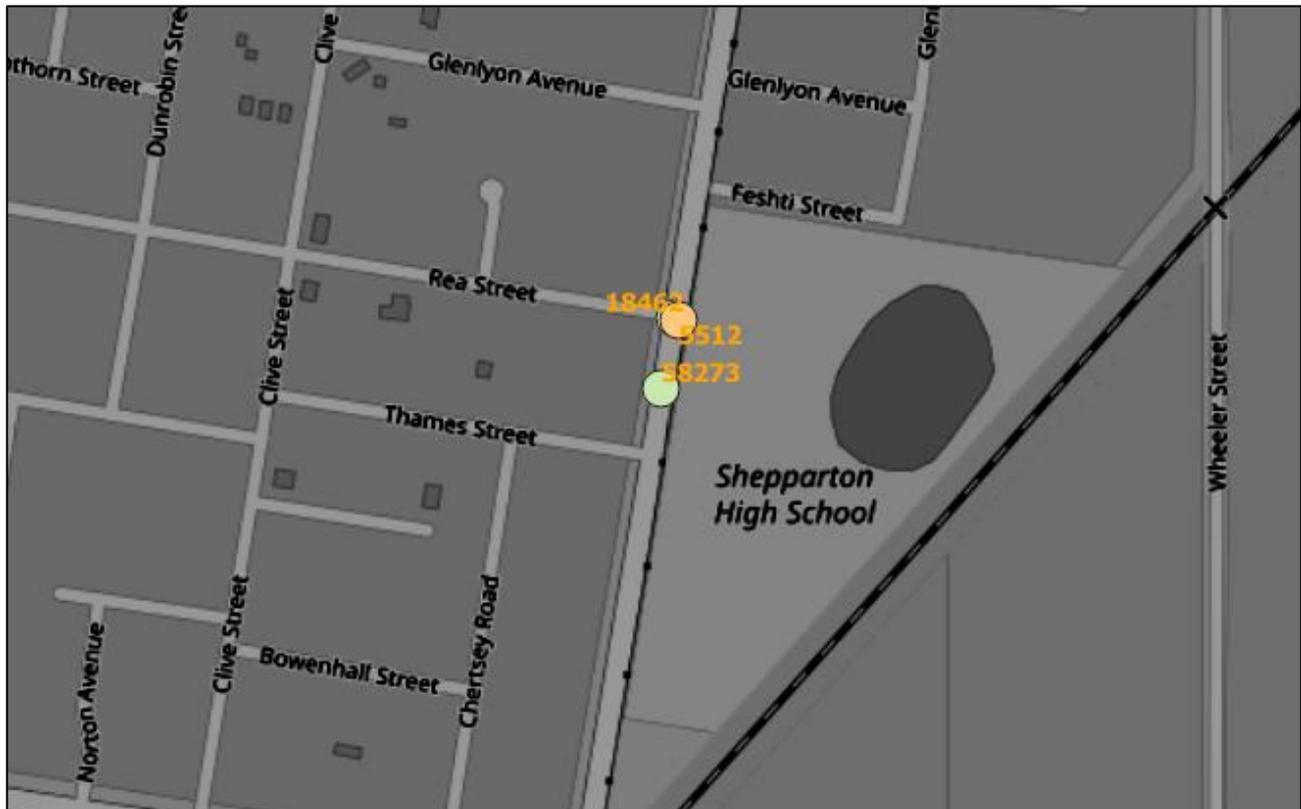


Table 3 Crash Data

ID	Location	Severity	DCA Code	Cyclists	Pedestrians	Year
5512	Hawdon St /	Serious Injury	Collision with a vehicle – Right Far	0	0	2014
18462	Rea St	Other Injury	Collision with a vehicle – Right Near	0	0	2015
58273	Hawdon St	Other Injury	Right off carriageway into object	0	0	2018

The above data does not suggest any critical road safety concerns, though the presence of two crashes at the Rea Street / Hawdon Street intersection warrants consideration for any future interventions at this location.

2.6 Sustainable Transport

2.6.1 Public Transport

Only one bus service operated by PTV operates in the vicinity of the site, being the Route 4 bus operating along Hawdon Street and Rea Street. This services links central Shepparton with the North Side Estate on Ford Road, operating at typically 1-hour headways.

Stops for this route are located on Hawdon Street, north of Feshti Street, and on Rea Street near Clive Street.

2.6.2 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 will be approximately 30 of these services providing access to the College.

2.6.3 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 will be up to 23 school buses servicing the GSSC campus once opened.

2.6.4 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 5.

Figure 5 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.

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.

3 BACKGROUND INFORMATION

3.1 Shepparton Inner East Link Road

The proposed Shepparton CBD Inner East Link Road (Interim Name) is a series of higher-order Council collector roads between Wyndham Street and Verney Road in Shepparton. When complete, the Shepparton CBD Inner East Link Road will:

- Provide a safe and efficient alternative route to Wyndham Street for vehicles travelling from the south and to the north-east of Shepparton to and through the CBD;
- Connect destinations in and around the link-road, as an alternative to using local residential and industrial roads; and
- Provide a route for cyclists and pedestrians accessing the college or travelling along the Strategic Cycling Corridor.

A considerable body of work for the Link Road was undertaken by GTA Consultants on behalf of Council, with modelling, analysis and stakeholder consultation undertaken to evaluate the future operating conditions of the Link Road having regard to ongoing growth and development within Shepparton, including consideration of GSSC.

Key outcomes relating to GSSC are summarised below:

- By 2022, the GSSC will have the biggest influence on travel patterns on the Inner East Link Road, and will change the distribution of traffic around some of the key intersections in the area;
- It was initially suggested that the Hawdon Street / Knight Street / Railway Parade / Andrew Fairley Avenue intersection was required to be signalised; and
- Further investigations considered retention of the existing roundabout, with the addition of pedestrian crossings on each leg. It is understood that this is the option being progressed.

3.2 GSSC Previous Investigations

GTA Consultants have also undertaken a number of previous studies and investigations to evaluate the potential impacts of the GSSC development.

A summary of important outcomes from this work is provided below:

- As of 2018, intersections surrounding the site operated with Level of Service of A or B, indicating good or very good performance;
- Anticipated mode share proportions were established as follows:
 - + 25% Walk/cycle
 - + 35% by bus
 - + 40% drive
- Pedestrian access to the site would be improved by upgrading a number of key intersections in the site's vicinity, including the Hawdon Street / Knight Street / Railway Parade / Andrew Fairley Avenue intersection and Balaclava Road / Hawdon Street (recently completed).

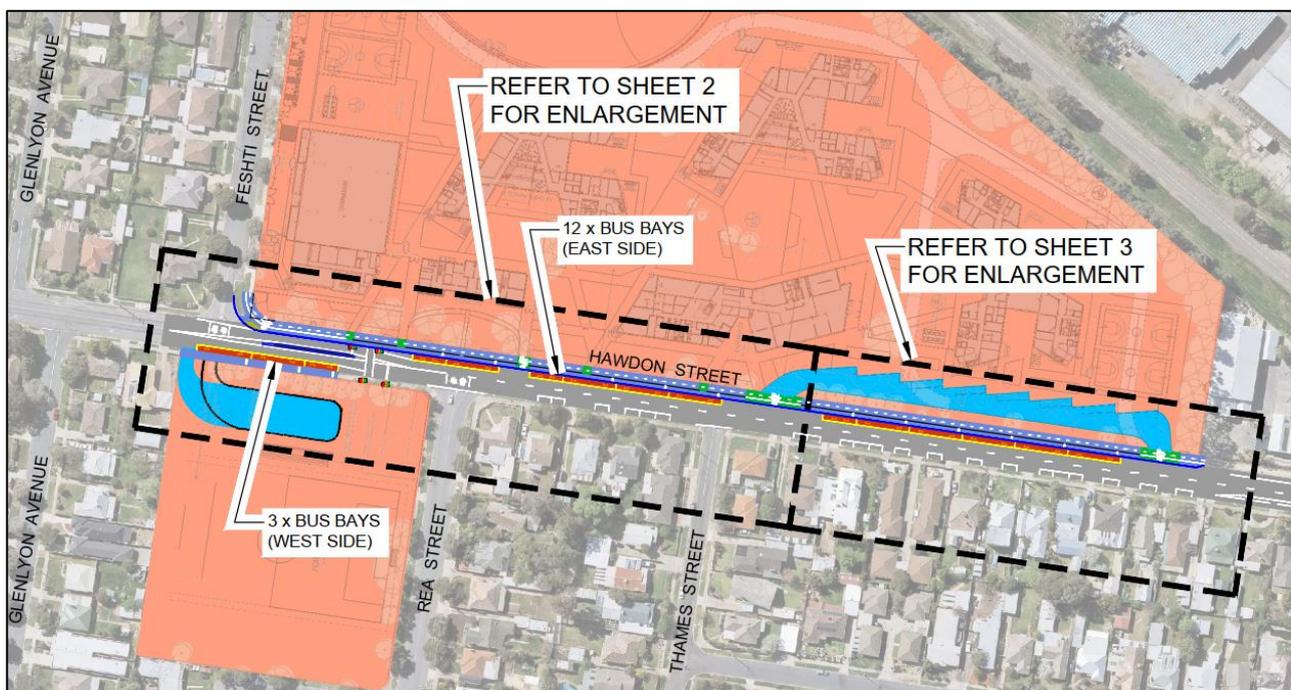
3.3 Hawdon Street Functional Design

A parallel project is being undertaken by Council to prepare functional designs for Hawdon Street along the site frontage, incorporating bus zones, car parking, traffic management and pedestrian facilities. A copy of the functional design is provided in Appendix A, with an extract within Figure 6 below.

Broadly, this project considers:

- Removal of existing on-road cycle lanes;
- Installation of a two-way off-road cycle path along the college frontage;
- Retention of car parking along the western kerb;
- Removal of car parking along the eastern kerb;
- Retention of the existing signalised pedestrian crossing;
- Installation of on-road bus parking along the western college frontage; and
- Installation of on-road bus parking along the Ford Reserve frontage.

Figure 6 Hawdon Street Reconfiguration Functional Plan*



* Note: Parking on Ford Reserve may not be possible

4 GREATER SHEPPARTON SECONDARY COLLEGE

Construction is currently underway for the Greater Shepparton Secondary College, which will consolidate four existing secondary schools within Shepparton on the one site.

GSCC is set to open in 2022, and will initially cater for approximately 2,600 students and 214 staff, with potential to increase up to 3,000 students in the future.

Designs published by the Victorian School Building Authority (VSBA) identify the provision of approximately 214 car parking spaces on-site within the north-eastern corner, which will be for staff use only. It is expected that this car park will cater for all parking requirements for staff at the college, and that no on-street parking for teachers and staff will result.

No parent/guardian parking is provided on-site and must be accommodated off-site.

A sports field and an overflow parking area are **potentially** planned 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).

Some bus facilities will be 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, as detailed within Section 3.3.

5 LOCAL AREA TRAFFIC MANAGEMENT OVERVIEW

Local Area Traffic Management (LATM) is defined within Austroads' *Guide to Traffic Management Part 8: Local Area Traffic Management* (2008) 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.

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;
- Protect residential areas from the impact of pick-up/drop-off activity;
- Discourage traffic from utilising lower-order roads;
- Maintain two-lanes of traffic flow during peak periods;
- Minimise impacts to through movements along Hawdon Street; and
- Provide for suitable pedestrian control and protection.

The following sections detail our methodology and recommendations to try and achieve these project objectives.

6 CAR PARKING

6.1 Car Parking Demand Assessment

6.1.1 Staff

As outlined above, the college is intended to cater for the consolidation of four other schools, including approximately 214 equivalent full-time staff on opening day.

With 214 car spaces provided, it is expected that all staff parking demands will be accommodated on-site without external impact even as staffing levels increase, noting that approximately 20% of staff are expected to walk, cycle, carpool or take public transport to the site.

6.1.2 Parents/Guardians

As part of previous investigations for GSSC, GTA provided an estimate of likely share for walking/cycling, car, and bus trips to and from the college, as follows:

- Walk/cycle: 25%
- Bus: 35%
- Car: 40%

Applying this modal split to the 2,600 students to be relocated to GSSC on opening day, gives an anticipated 1,040 students arriving/departing by car each day. Assuming an average occupancy of 1.4 students per vehicle (accounting for siblings and car-pooling), this equates to a projected 743 vehicles transporting students to and from the site.

Studies undertaken by **onemilegrid** at similar education facilities suggest a peak parking demand for 9.8% of these vehicles during the AM (drop-off) peak, and demand for parking for 33.8% of these vehicles during the more critical PM (pick-up) peak. This equates to anticipated peak demands for 73 spaces during the AM peak, and 251 spaces during the PM peak.

The lower demands during the morning is reflective of shorter duration of stay, with students departing vehicles in a matter of seconds once a vehicle is parked. This contributes to higher turnover, and relatively lower demands for parking. During the afternoon peak, more parent/guardians will arrive before the end of the school day, or have to wait longer until students arrive, resulting in longer duration of stay, and higher total demands for car parking.

6.1.3 Students

At the commencement of the school year, student parking demands are anticipated to be very low, with very few school-aged children having driving licenses.

We can expect that demand for student parking will increase throughout the year as more Year 12 students obtain drivers licenses, though demands are expected to remain relatively low.

6.2 Car Parking Review

In order to confirm the capacity for the surrounding road network to accommodate this level of parent/guardian parking demands, we have undertaken a review of car parking provisions around the college site having regard to statutory No Stopping restrictions, future Bus Zones and crossover locations. This review is provided in Figure 8 below.

This assessment has regard to the anticipated access routes to the college as identified in previous GTA studies, which suggests that approximately 75% of trips to GSSC will be from the south via Hawdon Street, and the remainder from the north via Hawdon Street. It also has regard to the relative proximity of each parking area to the college entrance, noting that parents and students will preferentially park as close as possible to the site.

Additionally, the below includes recommendations for the implementation of No Stopping restrictions applicable during school pick-up/drop-off periods that will mitigate traffic congestion arising from pick-up/drop-off activity occurring on both sides of narrow streets. These restrictions will also effectively encourage one-way traffic flow through the precinct, with drivers largely approaching from Hawdon Street, exiting to the side-streets uninterrupted and continuing away from Hawdon Street via the local road network after picking up or dropping off as depicted in Figure 7

Figure 7 One-Way Traffic Flow



Coupled with restrictions on right-turn movements at key side-streets (discussed within Section 9.1), this will greatly assist with minimising the impacts of turning movements to and from Hawdon Street.

Our review suggests that there are approximately 193 parking spaces (including 60 within Ford Reserve) on the western side of Hawdon Street that will cater primarily for pick-up/drop-off activity originating from the south, and approximately 94 spaces to the east of Hawdon Street that will cater for pick-up/drop-off activity originating from the north. This provision of 287 spaces will be sufficient to cater for the peak anticipated demands, though it is noted that effectively all parking (Figure 8) may be occupied.

It is emphasised that this assumes the provision of approximately 60 parking spaces within Ford Reserve, which (as advised above) is not confirmed and subject to approval from a third party. Without this parking, there will be a shortfall of parking, and the impact of pick-up/drop-off will occur further afield.

Excluding any car parking within Ford Reserve, and extending slightly the areas of parking to include Annerley Avenue and all of Chertsey Road, we identify a supply of 248 spaces west of Hawdon Street, and a further 94 spaces to the east. This provides a total supply of 342 spaces which will be more than sufficient for peak pick-up demands.

This analysis does not quantify existing on-street parking demands, however a site inspection and review of historical aerial photos suggests that on-street demands not attributable to the college are typically very low.

It is noted that quantifying parking provisions has given regard to Council standards for parking space dimensions, that require 6 metres length for end spaces, and 6.7 metre length for middle spaces.

A number of accessible parking spaces are to be provided within the college site, mid-way along the Feshti Street frontage. To supplement this parking, we have recommended the inclusion of additional accessible parking spaces on Feshti Street, adjacent to the Hawdon Street intersection.

Details of the locations of this parking and the associated restrictions are provided in Figure 8 and Figure 9.

Detailed plans showing parking restrictions, and the line marking of individual spaces are provided in Appendix B. These plans include options with and without car parking within Ford Reserve.

Figure 8 Parking Plan - Including Ford Reserve

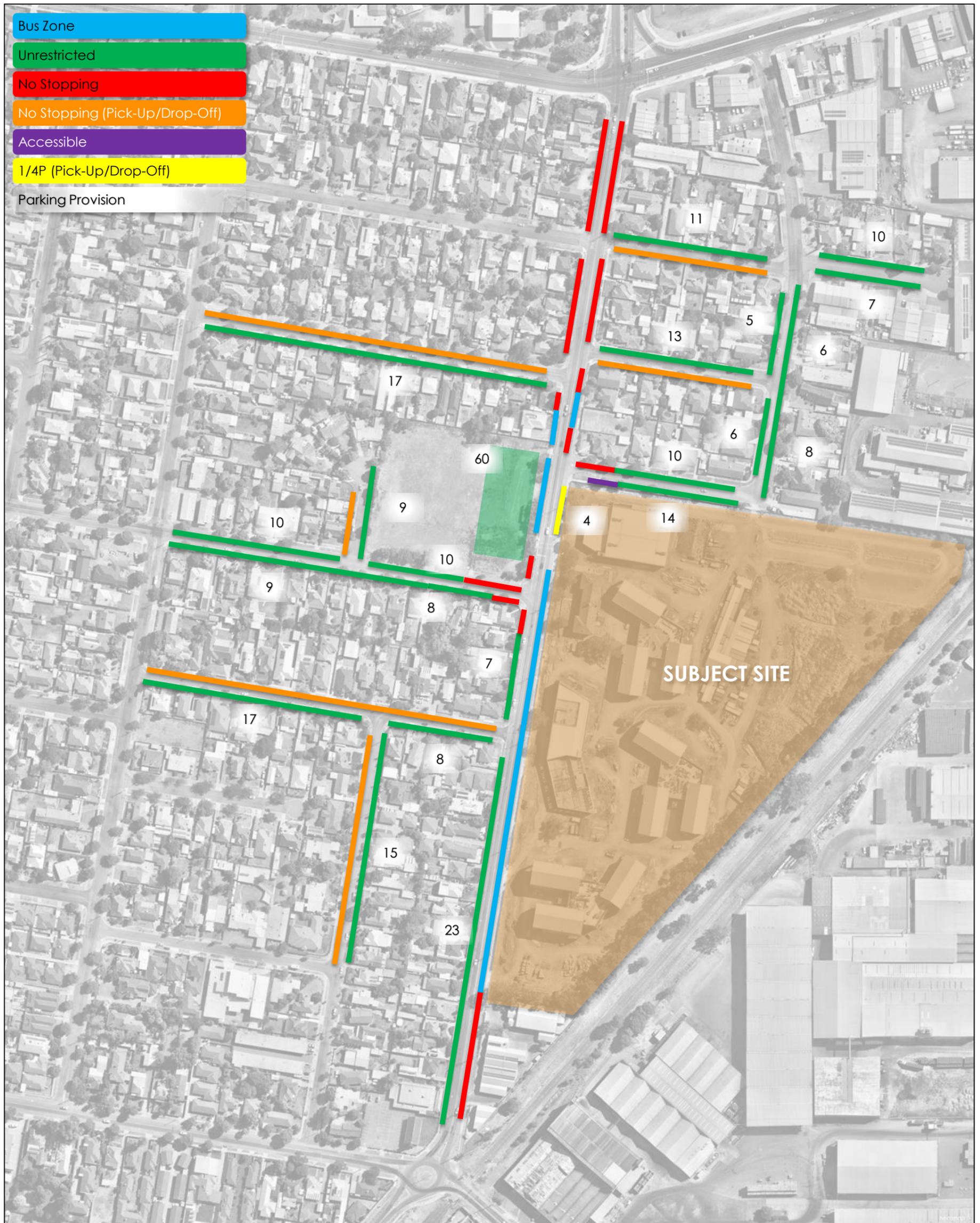
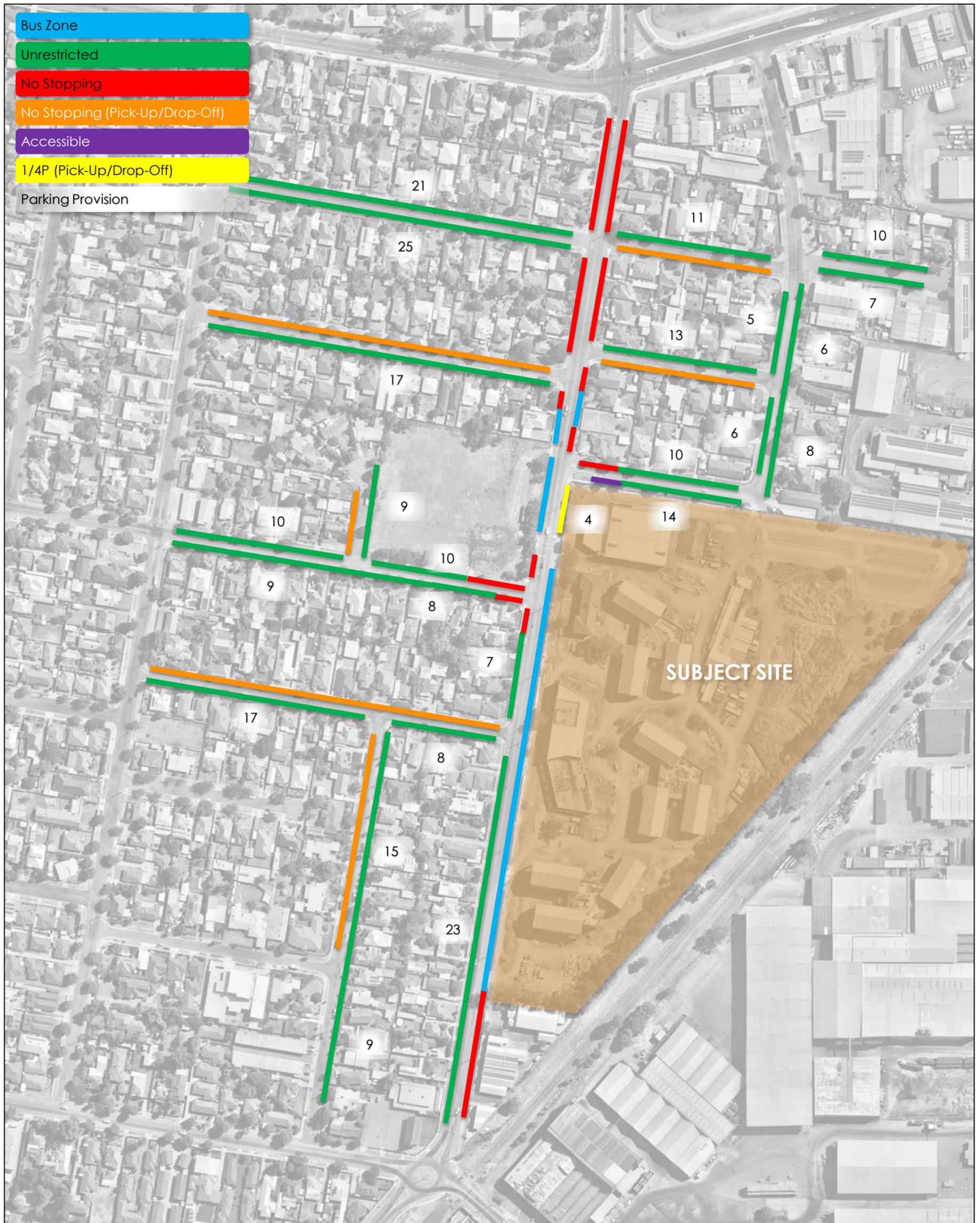


Figure 9 Parking Plan – Excluding Ford Reserve



7 PEDESTRIANS

7.1 Pedestrian Volumes

Regardless of what mode of transport a student uses to get to college, the final part of their journey will involve walking. As such, it can be determined that 2,600 students will arrive at the college each morning and 2,600 students will depart each afternoon.

As previously outlined, the model split anticipated for students to the college are follows:

- 40% car = 1,040 students
- 35% PT = 910 students
- 25% walk/cycle = 650 students

It is anticipated that all students that are either dropped-off / picked-up on the east side of Hawdon Street or catch a bus that has a stop located within the college site or on the east side of Hawdon Street will not be required to cross Hawdon Street in order to access the college.

A large portion of drop-off / pick-up parking is proposed to occur in local streets west of Hawdon Street as well as (potentially) in a newly formalised car park at Ford Reserve, all of which will require students to cross Hawdon Street in order to access the college. In addition, 2 of the 22 total bus stops are located on the west side of Hawdon Street and will therefore also be required to cross Hawdon Street to access the college.

Based on the information above, the following breakdown of students are expected to be required to cross Hawdon Street in order to access the college.

Arriving by Car

- Total of 1,040 students arrive by car;
- 74% of drop-off / pick-up spaces on the west side of Hawdon Street; equating to
- 770 students crossing Hawdon Street each morning and afternoon.

Arriving by Bus

- Total of 910 students arrive by bus;
- 9% of bus stops are on the west side of Hawdon Street; equating to
- 82 students crossing Hawdon Street each morning and afternoon.

Arriving by Walking/Cycling

Based on the GTA report and the location of the surrounding residential catchment and land uses, it is anticipated that 90% of students that walk or ride to college will need to cross Hawdon Street.

This equates to 585 students crossing Hawdon Street each morning and afternoon.

Total

Based on the above, a total of 1,437 students are expected to cross Hawdon Street each morning and afternoon.

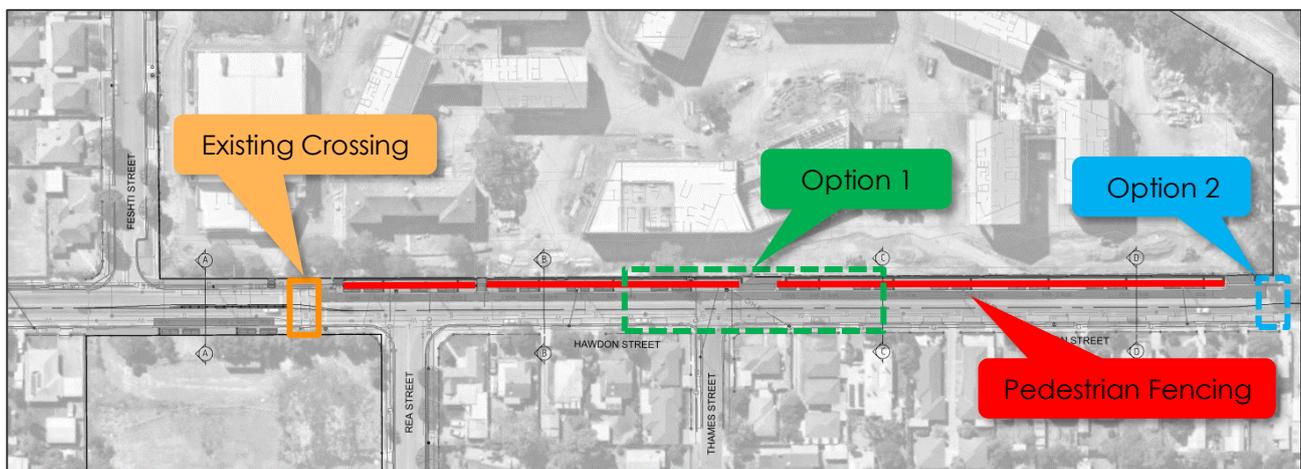
7.2 Pedestrian Crossings

Currently the only pedestrian crossing facility to the college from the west is a signalised pedestrian crossing along Hawdon Street, located approximately 30 metres north of Rea Street, which will provide direct access to the front door of the college.

As previously outlined, in the order of 1,437 students are expected to cross Hawdon Street each morning and afternoon. Based on the level of pedestrian activity and the spread of directions in which the pedestrian may approach the site from, it is considered beneficial to provide an additional crossing point along Hawdon Street.

Based on the design of Hawdon Street, in particular the 11 bus stops and associated fencing along the college's frontage to Hawdon Street, there are constraints with providing an additional pedestrian crossing along the frontage of the college. A view of two potential options for an additional pedestrian crossing location is shown in Figure 10 and the benefits and drawbacks associated with these options are provided below.

Figure 10 Hawdon Street Pedestrian Crossing Options



Option 1 involves creating a new pedestrian crossing within close proximity to the intersection between Thames Street and Hawdon Street. The crossing would require a reduction in the length of a bus bay on the east side of Hawdon Street and the potential loss of 1 or 2 parking spaces on the west side of Hawdon Street, and would feed pedestrians into the fenced footpath to access the college.

The major benefit of Option 1 is that it is positioned to directly capture students that are dropped-off / picked-up and walk / cycle from south of Rea Street. The location could provide a crossing point for 35% of students that are dropped-off / picked-up from the west side of Hawdon Street as well as up to 50% of students that walk or cycle to college. However, this option involves making physical changes to the bus bays on the east side of Hawdon Street which may not be possible. It could also cause sight distance issues with pedestrians attempting to cross Hawdon Street from behind buses and there may be pedestrian storage issues at peak periods as a result of the pedestrian fencing between the bus bays and the shared path along the college's frontage.

Option 2 involves creating a new pedestrian crossing at the southern end of the subject site, clear of the bus bays and associated fencing. This would also likely result in the loss of 1 or 2 on-street parking spaces on the west side of Hawdon Street but would feed pedestrians directly into the existing footpath network, clear of the fenced off pedestrian path adjacent to the bus bays.

The benefit of Option 2 is that it does not impact upon the design of the bus bays on the eastern side of Hawdon Street and is clear from visual or physical obstructions, allowing for a more comfortable crossing point. However, the location of the crossing is such that it is unlikely to be utilised as much as Option 1 as it is not conveniently located in regard to the majority of the on-street drop-off / pick-up parking locations. In addition, the crossing is located 120 metres north of the Hawdon Street / Knight Street roundabout and may cause some delays and queues that could affect the operation of the roundabout in the morning and afternoon peak hours if not managed correctly.

Options for the type of crossing were assessed using the Austroads Pedestrian Crossing Facility Selection Tool, a web-based tool developed by Austroads (the peak organisation of Australasian road transport and traffic agencies). This tool is intended to assist practitioners in selecting an appropriate pedestrian crossing facility for a certain location.

The tool utilises inputs such as road geometry, vehicle speeds and volumes, pedestrian volumes and ultimately provides a benefit/cost ratio (BCR) for a range of treatment options. However, based on the information at hand and the high-level nature of the assessment, the tool determined that for both locations a variety of crossing facilities were considered suitable, and provided no clear preference.

As such, it is considered appropriate to take a site-specific approach when considering the different crossing locations and the type of crossing that is most appropriate. Based on the above, it is recommended that a children's crossing (supervised by a traffic controller during typical school drop-off and pick-up times) or signalised crossing be installed near the south boundary of the college. This location removes any potential safety issues that are likely to arise from interaction of students and buses in the same space, and allows for a crossing supervisor (under either crossing type) to manage the flow traffic and pedestrians to assist in alleviating any potential queueing issues to the south of the crossing point.

A view of the pedestrian paths surrounding the college is provided in Figure 11 below and assumes that a new crossing is provided near the southern boundary of the college (Option 2).

Figure 11 Pedestrian Plan



8 PUBLIC TRANSPORT

All buses travelling to and from GSSC will do so via Hawdon Street, with no circulation through (or associated impact) to local streets.

The exception to this will be the existing Route 4 public transport service that runs along Rea Street and the northern portion of Hawdon Street.

Provision for bus parking has been incorporated into the college design and functional design for Hawdon Street, as outlined within Section 3.3.

9 TRAFFIC

9.1 Turn Bans

As outlined within Section 6.1.2, it is expected that approximately 742 vehicles will visit GSSC on pick-up/drop-off duties, representing the addition of nearly 1,500 additional vehicle movements to the precinct. Some of these trips will be diverted or linked trips from existing journeys through the area, and so will not necessarily represent additional trips, however it is clear that traffic will considerably increase as a result of the college's construction.

With the bulk of pick-up/drop-off occurring within side-streets off Hawdon Street, there would likely be a considerable volume of right-turn movements across Hawdon Street (from Hawdon Street to the side roads, and vice versa) that may contribute to delays to through traffic or untenable congestion and delays at intersections. As such, we have recommended for the restriction of right-turns during school periods at all locations likely to be utilised for pick-up/drop-off parking. It is envisioned that these will be signed, and restricted only during school pick-up/drop-off periods.

The exceptions to this are at the Feshti Street / Hawdon Street intersection, where a significant proportion of movements will be attributed to staff who must access the site via Feshti Street, and at Rea Street where gaps provided by the signalised crossing will facilitate right-out movements.

Further, it is noted that the existing Ford Reserve access is located in close proximity to Feshti Street, effectively creating a cross-intersection. Should car parking be permitted on this site in the future, to mitigate any potential traffic issues at this location, it is recommended that the Ford Reserve ingress be relocated to Rea Street, and egress retained on Hawdon Street, but restricted to left-out movements only.

Figure 12 below details the proposed traffic management initiatives, with detailed sign locations identified within Appendix B.

9.2 Speed Limit

The existing 40km/h / 60km/h variable speed limit is considered appropriate to remain into the future.

It is recommended that the 40km/h limits are extended further south to cover the entire street frontage of the college site.

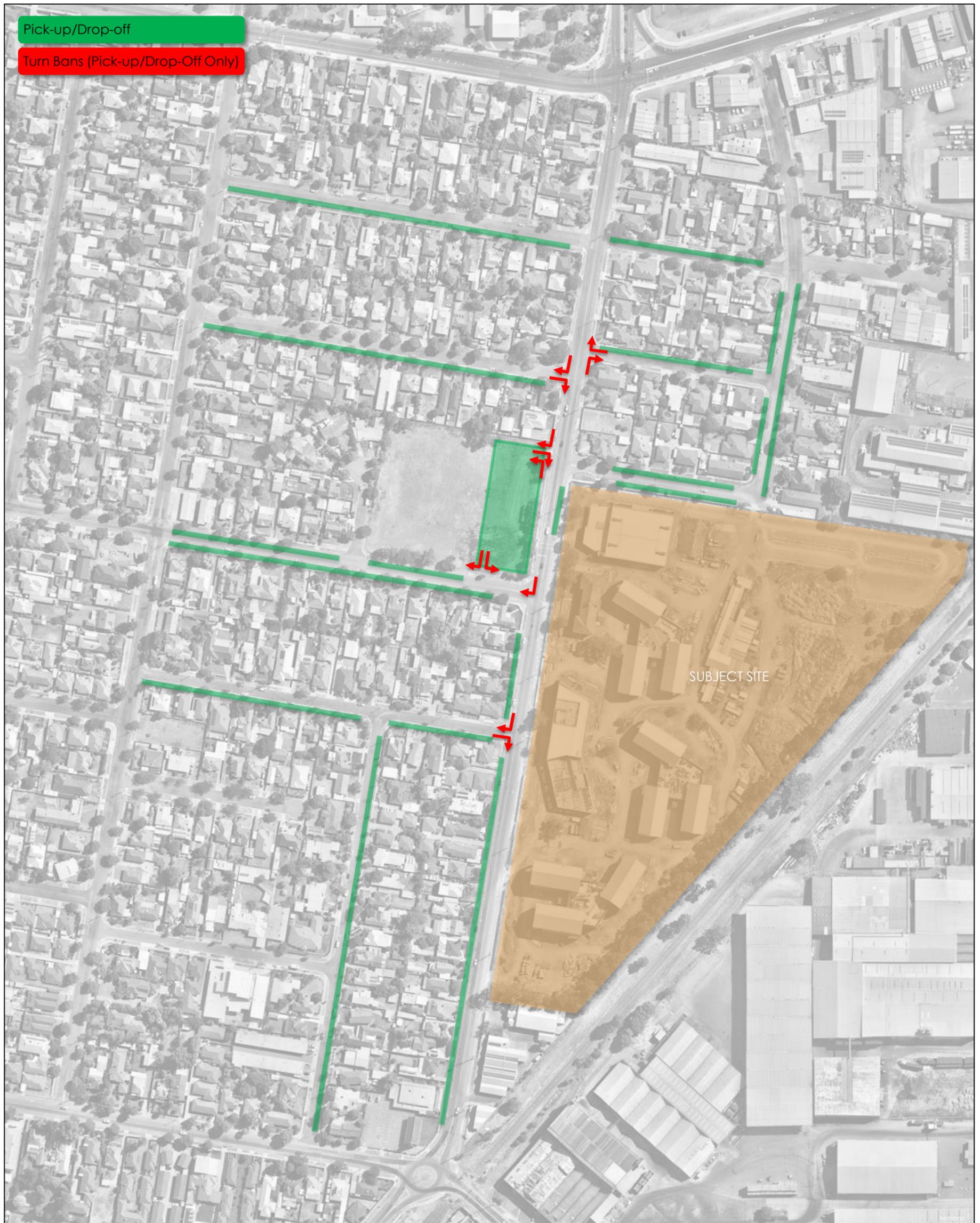
9.3 Traffic Volumes

Naturally, the introduction of pick-up/drop-off activity on local streets surrounding GSSC will result in increase in traffic volumes during peak periods. The greatest impacts are likely to be to Rea Street and Feshti Street/Glenn Street, where the highest concentration of parent/guardian parking is expected.

Rea Street is expected to accommodate approximately 25% of pick-up/drop-off parking needs, and Feshti Street/Glenn Street around 20%, equating to an estimated increase of 740 movements on Rea Street and 600 movements on Feshti Street/Glenn Street each day.

Traffic volume data provided by Council (during which the Shepparton High School was operating) suggests that there is ample capacity to accommodate this projected increase.

Figure 12 Traffic Management Plan



10 COST ESTIMATES

Table 4 provides a summary of high-level cost estimates for each element of the LATM plan. It is noted that this excludes any civil works associated with the Hawdon Street Functional Design.

Table 4 Cost Estimates

Scenario	Item	Unit Cost	No.	Total Cost
Including Ford Reserve	Parking Signs	\$250	77	\$19,250
	Turn Signs	\$500	11	\$5,500
	Line Marking (Car Space)	\$300	224	\$67,200
	Line Marking (Keep Clear)	\$800	2	\$1,600
Excluding Ford Reserve	Parking Signs	\$250	92	\$23,000
	Turn Signs	\$500	11	\$5,500
	Line Marking (Car Space)	\$300	279	\$83,700
	Line Marking (Keep Clear)	\$800	1	\$800
Pedestrian Crossing	Signalised	\$400,000	1	\$400,000
	Unsignalised	\$180,000	1	\$180,000

11 MONITORING

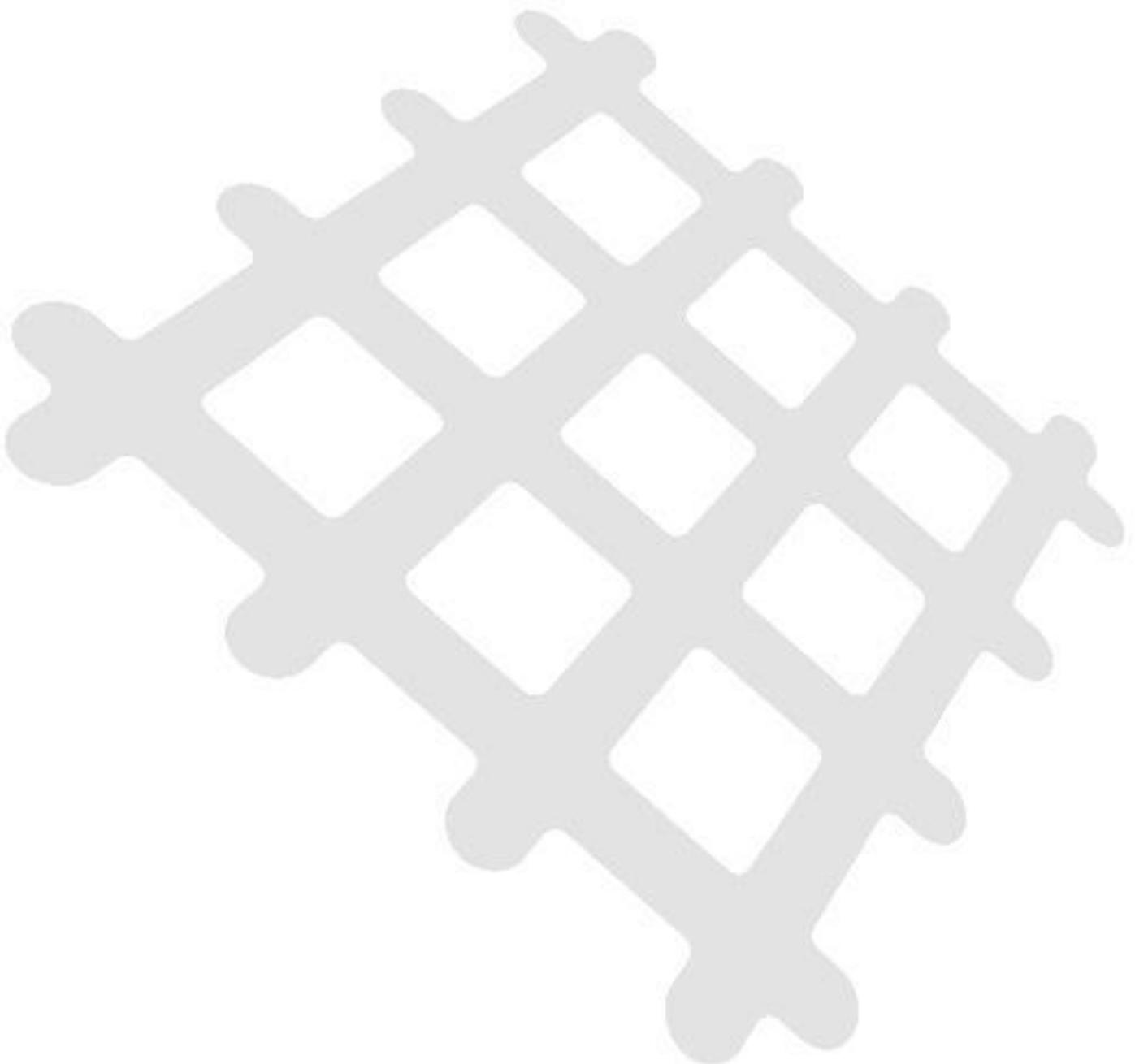
An important, and often overlooked, facet of any LATM plan is the ongoing monitoring and evaluation of the LATM scheme.

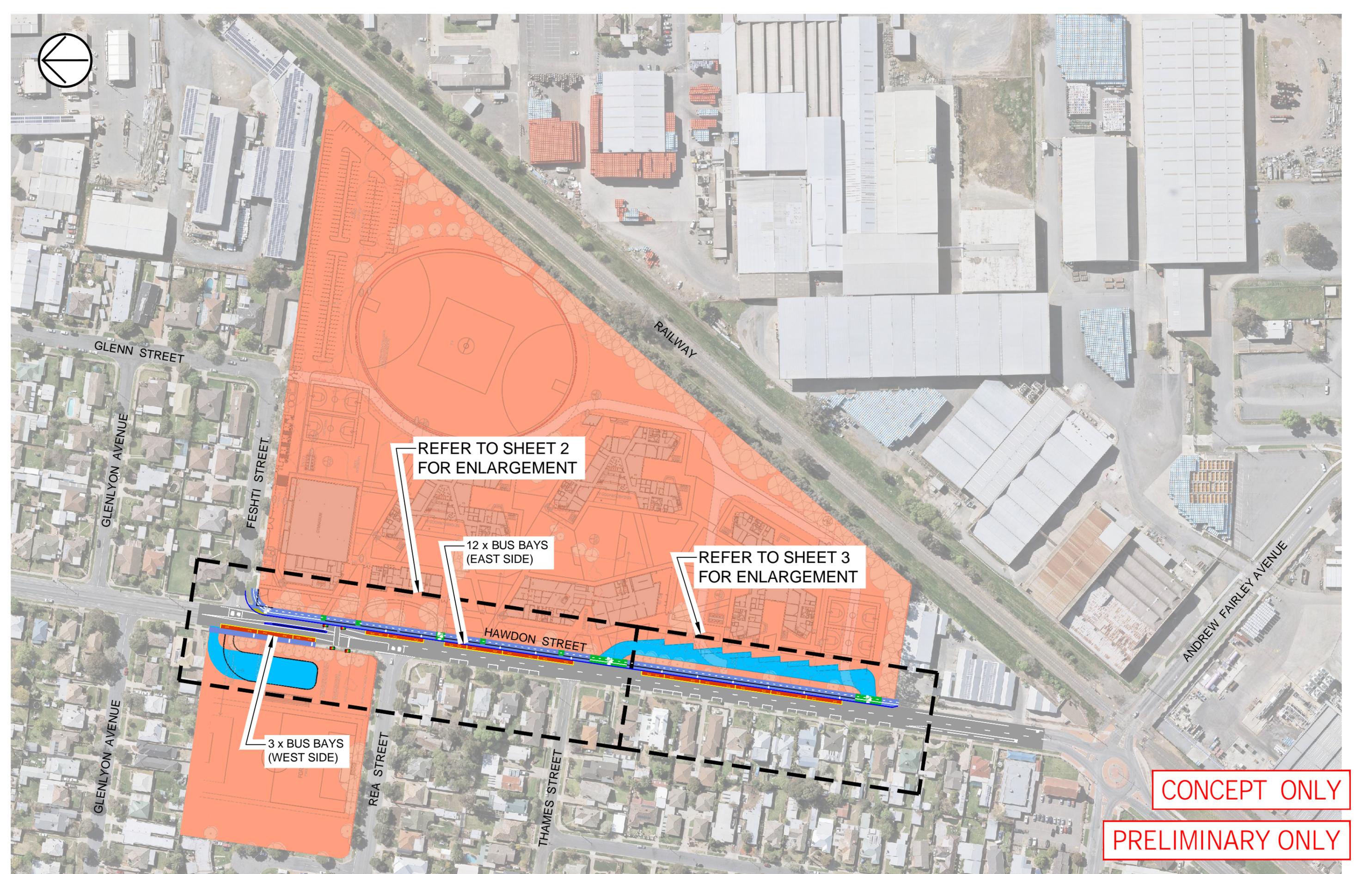
The purposes and value of monitoring and evaluation include (*Main Roads WA 1990, p. 128*):

- 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, and the college is in operation, 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 Hawdon Street Functional Plan





REFER TO SHEET 2
FOR ENLARGEMENT

12 x BUS BAYS
(EAST SIDE)

REFER TO SHEET 3
FOR ENLARGEMENT

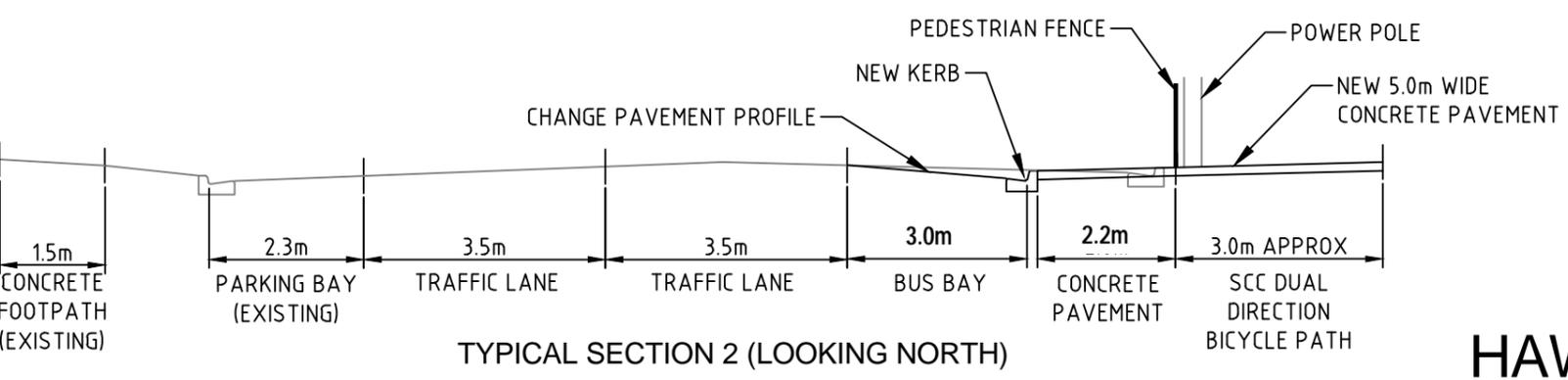
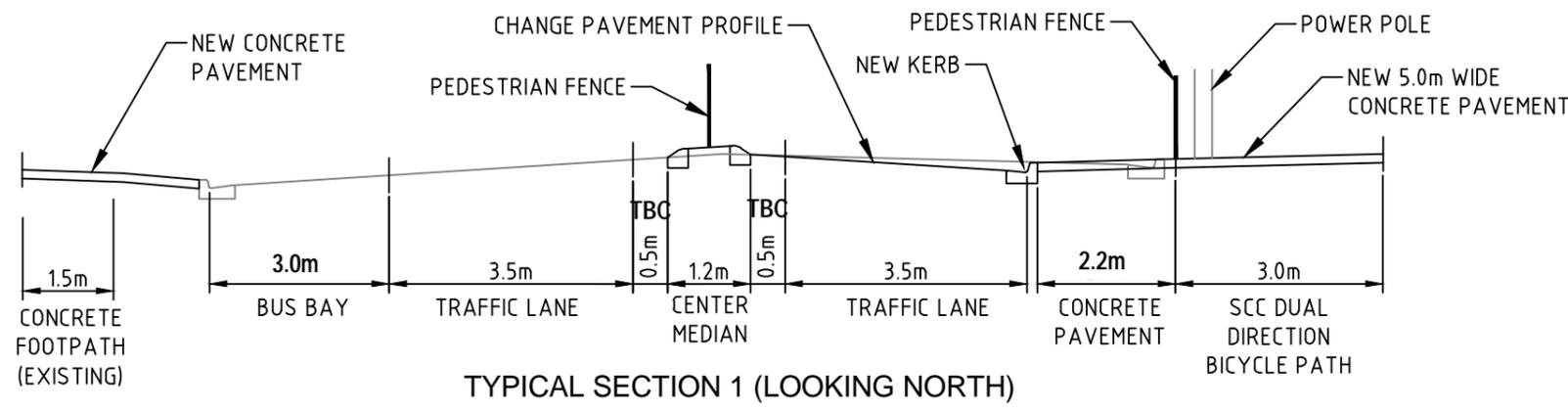
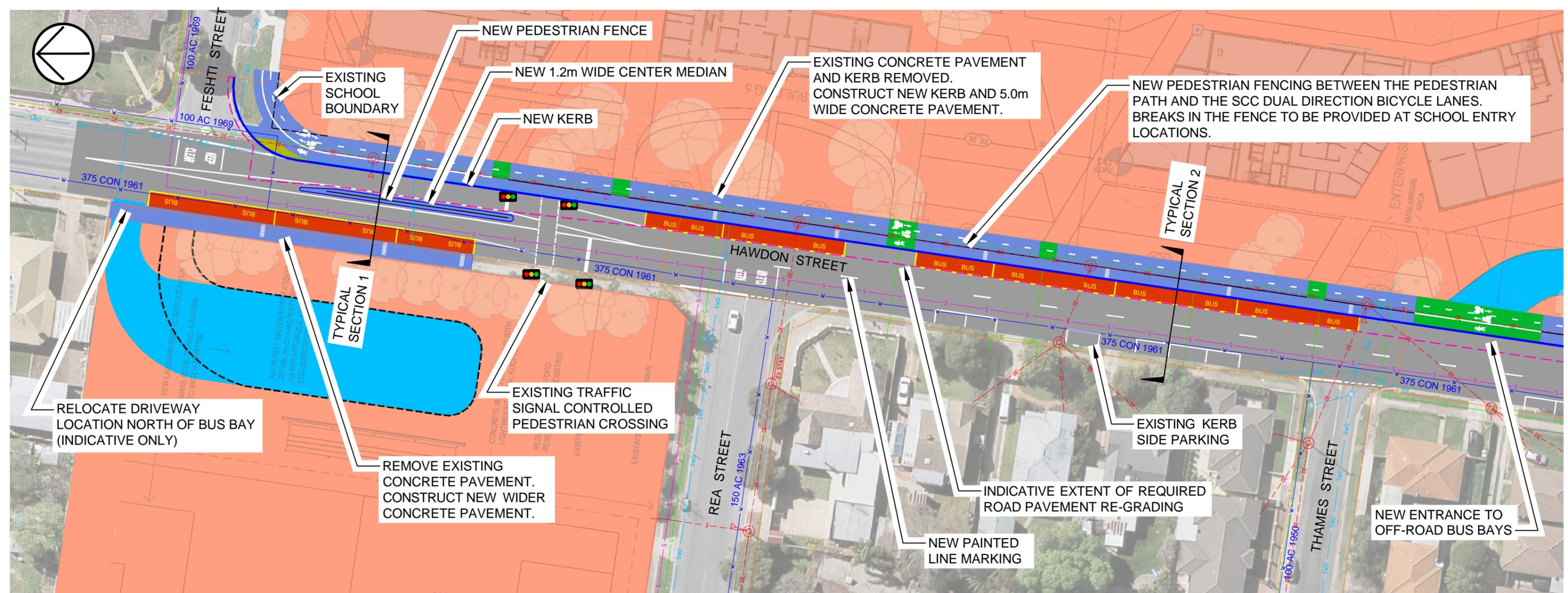
3 x BUS BAYS
(WEST SIDE)

CONCEPT ONLY

PRELIMINARY ONLY

NOT TO SCALE

HAWDON STREET ON ROAD SCHOOL BUS BAYS CONCEPT PLAN - SHEET 1 OF 3



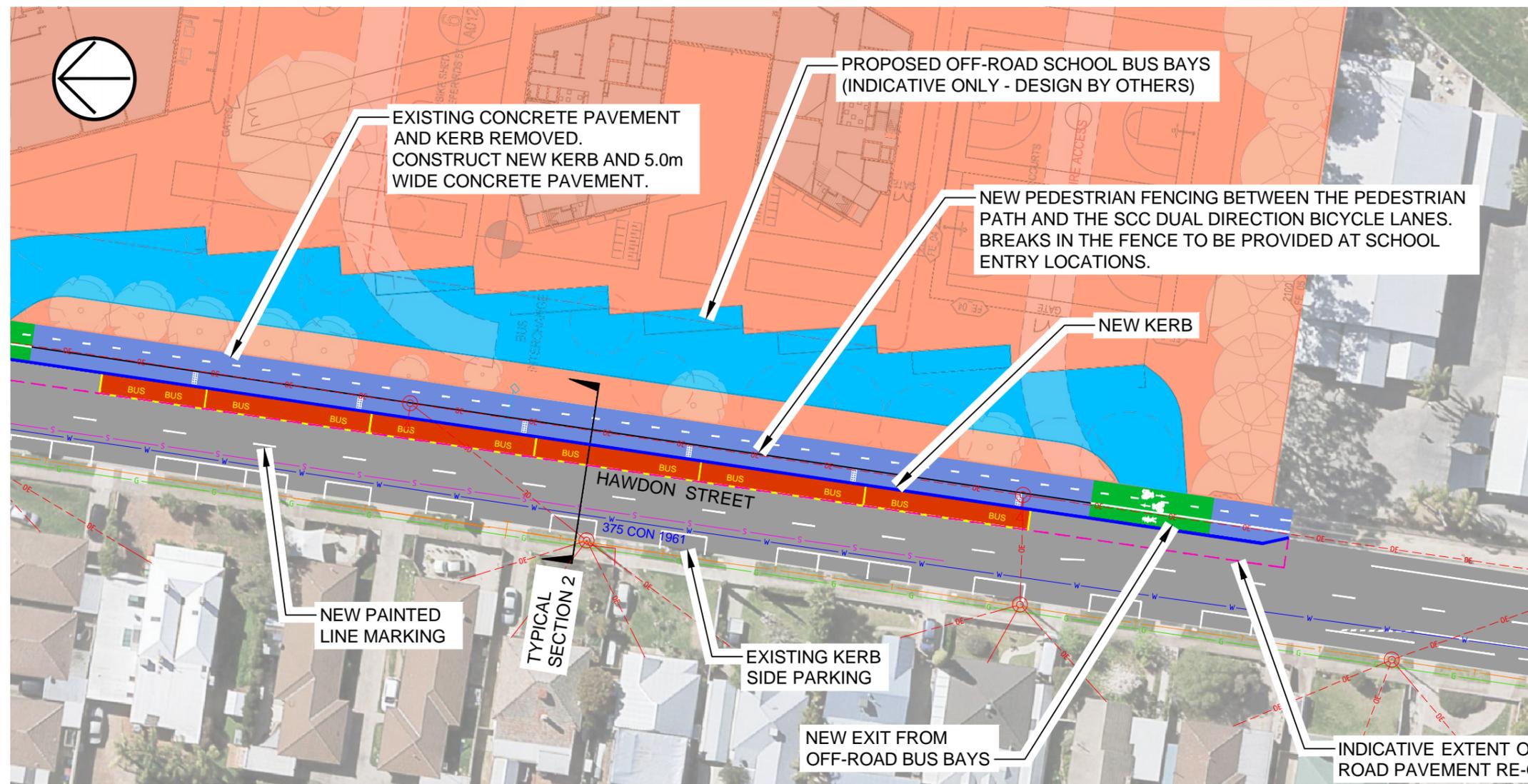
NOTE
 THE SERVICES INFORMATION CONTAINED WITHIN THIS PLAN HAS BEEN DERIVED FROM A DESKTOP STUDY ONLY. SERVICES SHOWN ON THIS PLAN ARE INDICATIVE ONLY, DERIVED FROM A DIAL BEFORE YOU DIG INQUIRY UNDERTAKEN AND HAVE NOT BEEN VERIFIED ON SITE.
 AERIAL PHOTOGRAPHY USED IN THIS PLAN WAS TAKEN IN 2019
 THIS CONCEPT PLAN HAS BEEN PREPARED AS INDICATIVE INFORMATION ONLY, TO ASSIST WITH PREPARATION OF TENDER SUBMISSIONS.

CONCEPT ONLY

PRELIMINARY ONLY

NOT TO SCALE

**HAWDON STREET ON ROAD SCHOOL BUS BAYS
 CONCEPT PLAN - SHEET 2 OF 3**



NOTE

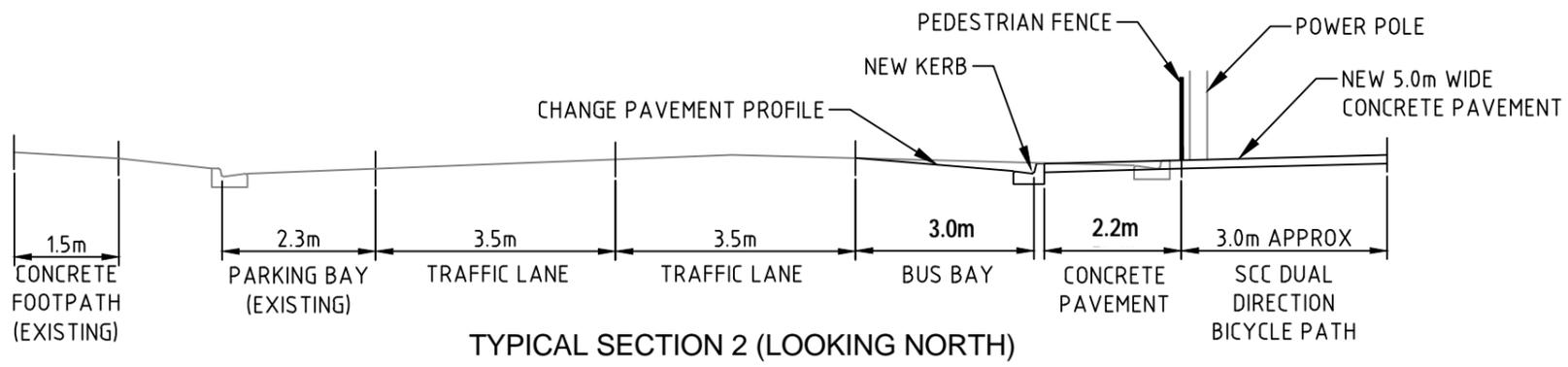
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AERIAL PHOTOGRAPHY USED IN THIS PLAN WAS TAKEN IN 2019

THIS CONCEPT PLAN HAS BEEN PREPARED AS INDICATIVE INFORMATION ONLY, TO ASSIST WITH PREPARATION OF TENDER SUBMISSIONS.

CONCEPT ONLY

PRELIMINARY ONLY

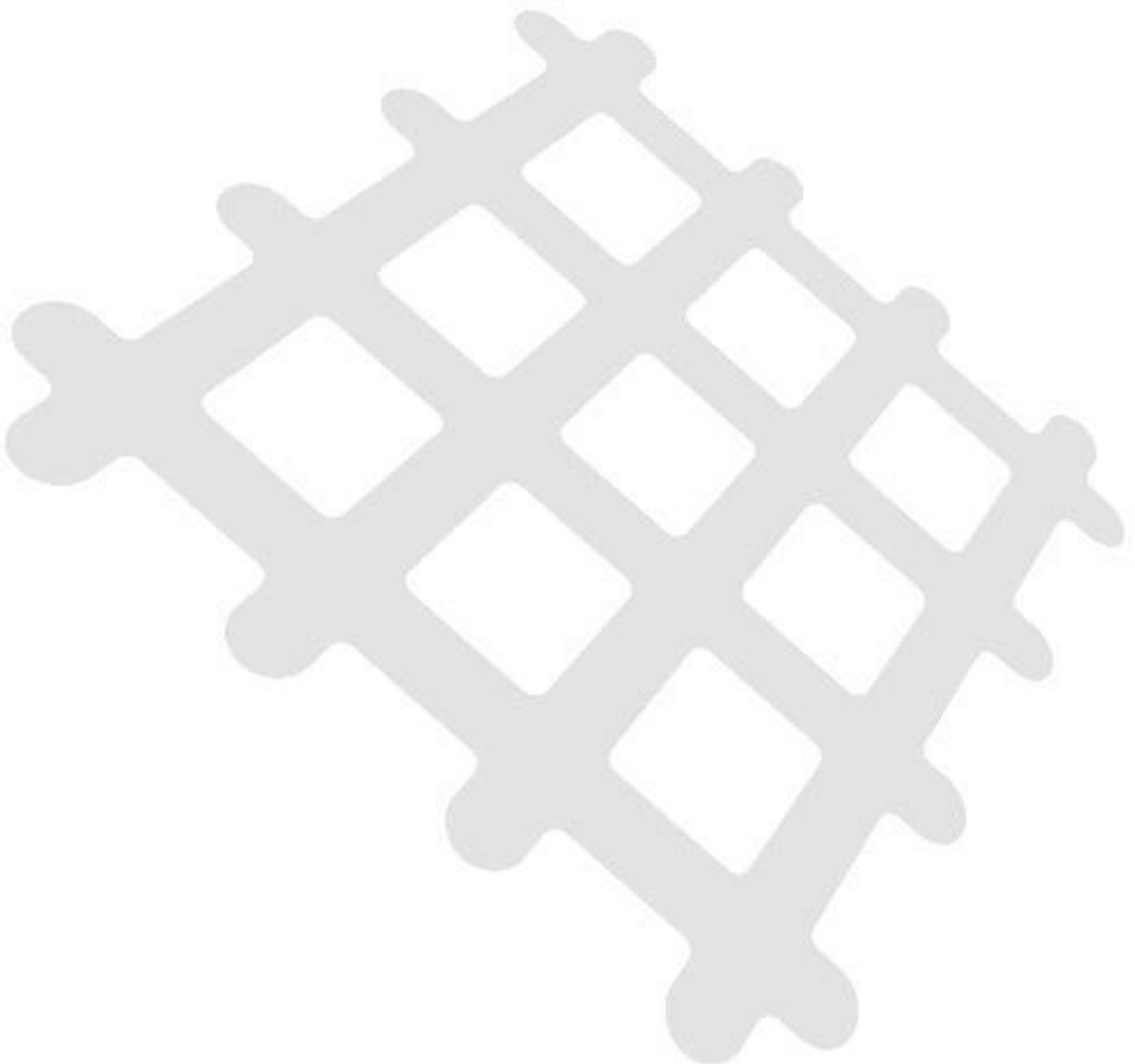


TYPICAL SECTION 2 (LOOKING NORTH)

NOT TO SCALE

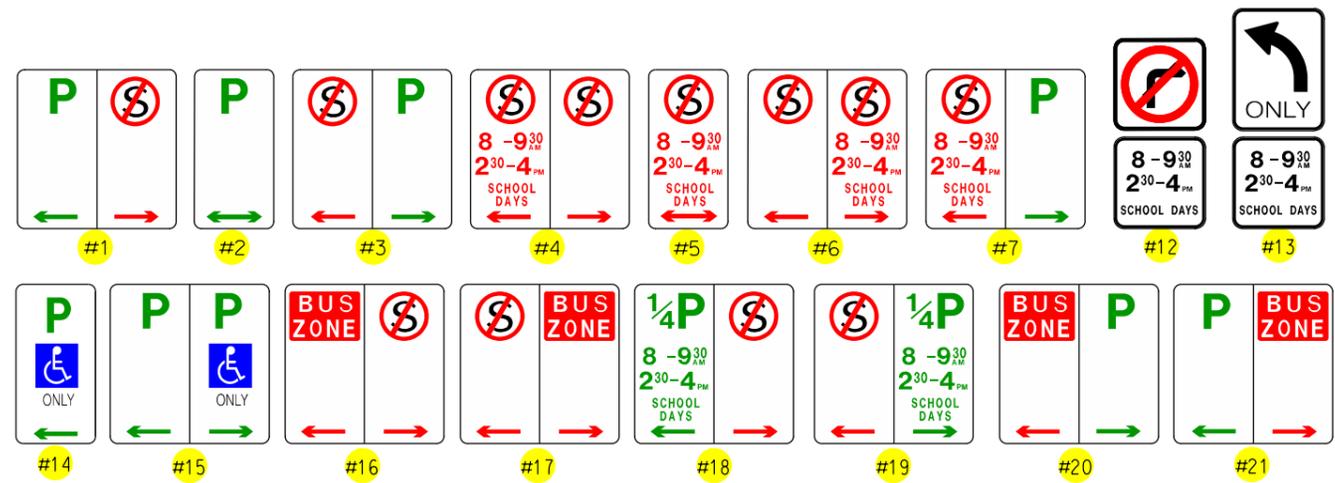
HAWDON STREET ON ROAD SCHOOL BUS BAYS CONCEPT PLAN - SHEET 3 OF 3

Appendix B Detailed Signage and Line Marking Plans



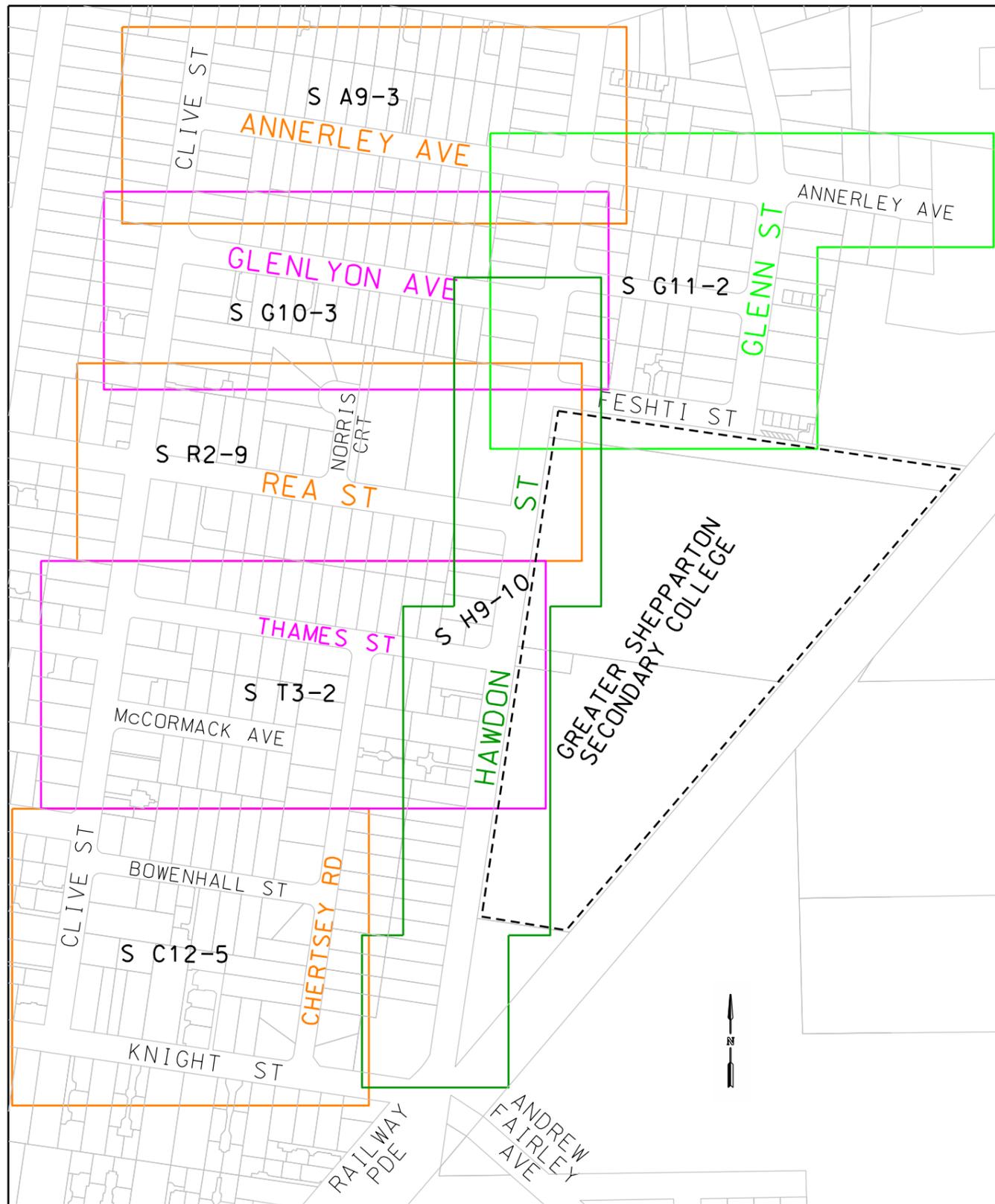
SIGNS REQUIRED :

AREA	PLAN No	SIGNS REQUIRED																				
		#1	#2	#3	#4	#5	#6	#7	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21				
ANNERLEY AVE	S A9-3	3	5	3																		
GLENLYON AVE	S G10-3	1		1	3	1																
REA ST	S R2-9	4	1	3			1	1									2	2				
THAMES ST	S T3-2	2	2	3	2	5	1															
CHERTSEY RD	S C12-5	6	2	4	1		1	1														
GLENN ST	S G11-2	8	3	9	2	2	2				1	1										
HAWDON ST	S H9-10	3	2	3					8	2				3	3	1	1					
TOTAL	116 SIGNS	27	15	26	6	10	6	2	8	2	1	1	3	3	1	1	2	2				



LINEMARKING REQUIRED :

AREA	PLAN No	PARKING SPACES TO BE PAINTED. BAYS TO BE 2.1m TO FACE OF KERB.
ANNERLEY AVE	S A9-3	46
GLENLYON AVE	S G10-3	17
REA ST	S R2-9	46
THAMES ST	S T3-2	35
CHERTSEY RD	S C12-5	13
GLENN ST	S G11-2	87 (+ 2 ACCESSIBLE BAYS)
HAWDON ST	S H9-10	34
TOTAL		278 (+ 2 ACCESSIBLE BAYS) (+ 132 UNPAINTED)



LEGEND

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	AS CONSTRUCTED	CONTRACT DATE :	DATE :

PROJECT
HAWDON ST AREA PARKING CHANGES
RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE

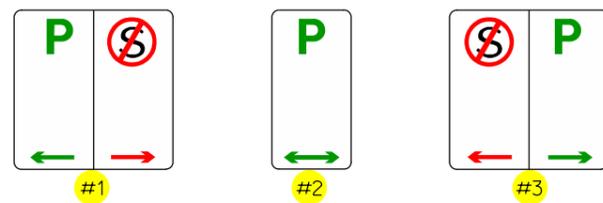
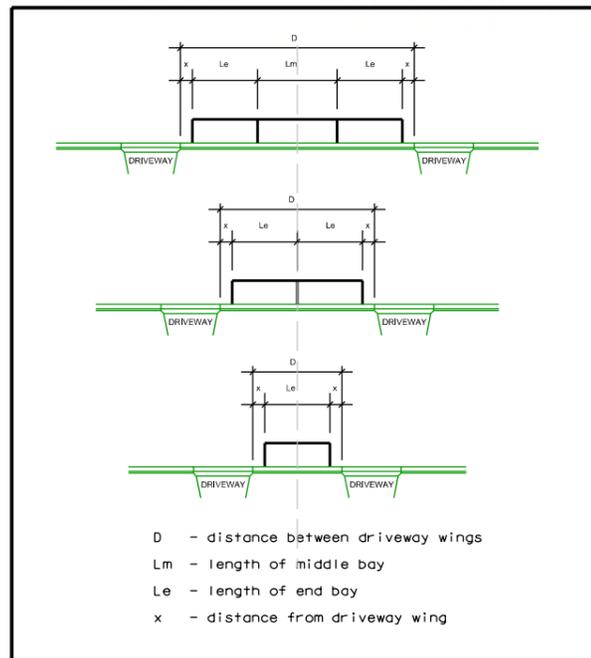
PROJECT
HAWDON ST AREA
PARKING CHANGES

RELATED TO GREATER
SHEPPARTON SECONDARY COLLEGE

Drawing No
S H9 - 10

SHEET 1 OF 2 SHEETS

CAD AND PLOT: GSSC/LAW/J



SIGNS REQUIRED :
 #1 x3 #2 x5 #3 x3
 TOTAL 11 SIGNS

ANNERLEY AVE IS WIDE ENOUGH FOR MARKED BAYS ON BOTH SIDES AND TWO TRAFFIC LANES. THERE IS NO NEED FOR PARKING RESTRICTIONS.

46 BAYS SHOWN.
 PARKING BAYS TO BE 2.1m TO FACE OF KERB.

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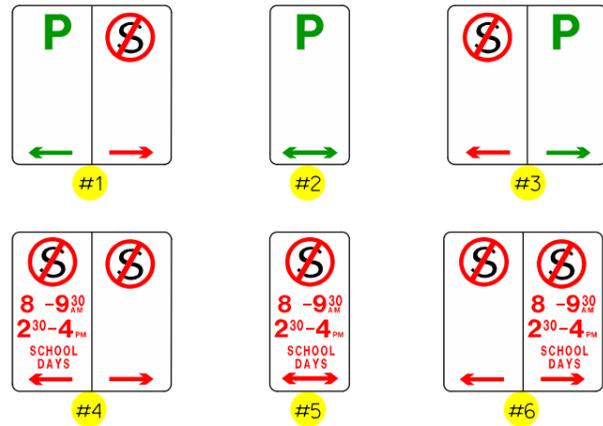
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	AS CONSTRUCTED	CONTRACT DATE :	PROJECT'S BENEFIT GREATER SHEPPARTON CITY COUNCIL	RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE

Drawing No
 S A9 - 3
 SHEET X OF X SHEETS
 CAD AND PLOT: GSSC/LAT/M



SIGNS REQUIRED :
 #1 x1 #3 x1
 #4 x1 #5 x3 #6 x1
 TOTAL 7 SIGNS

GLENLYON AVE IS NOT WIDE ENOUGH FOR MARKED BAYS ON BOTH SIDES AND TWO TRAFFIC LANES.

23 BAYS (SHOWN ORANGE) ARE NOT TO BE PAINTED.

17 BAYS SHOWN PAINTED. PARKING BAYS 2.1m TO FACE OF KERB.

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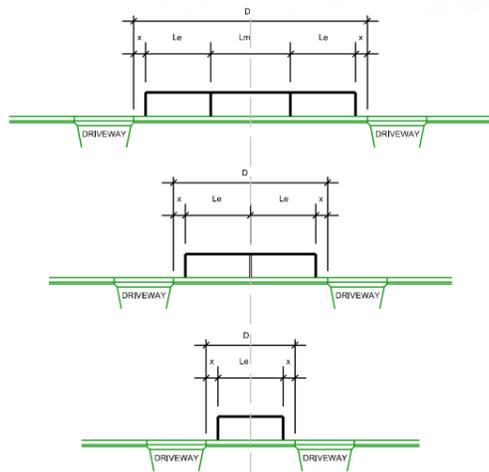
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	FOR CONSTRUCTION	CONTRACT DATE :	APPROVED :
	AS CONSTRUCTED		DATE :

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NOT TO SCALE		
DETAILS		

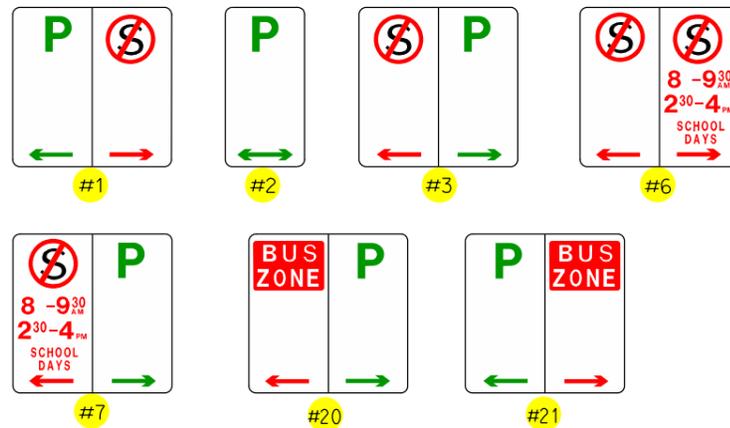
PROJECT
GLENLYON AVE PARKING CHANGES
RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE

ENGINEERING DESIGN SERVICES GREATER SHEPPARTON CITY COUNCIL
CAD AND ANI: GSSC-LATW

SHEET X OF X SHEETS	DRAWING No
3	S G10 - 3



D - distance between driveway wings
 Lm - length of middle bay
 Le - length of end bay
 x - distance from driveway wing



SIGNS REQUIRED :
 #1 x4 #2 x1 #3 x3
 #6 x1 #7 x1
 #20 x2 #21 x2
 TOTAL 14 SIGNS

NORRIS CRT IS NOT WIDE ENOUGH FOR MARKED BAYS ON BOTH SIDES AND TWO TRAFFIC LANES.

6 BAYS (SHOWN ORANGE) ARE NOT TO BE PAINTED.

46 BAYS SHOWN PAINTED. PARKING BAYS TO BE 2.1m TO FACE OF KERB.

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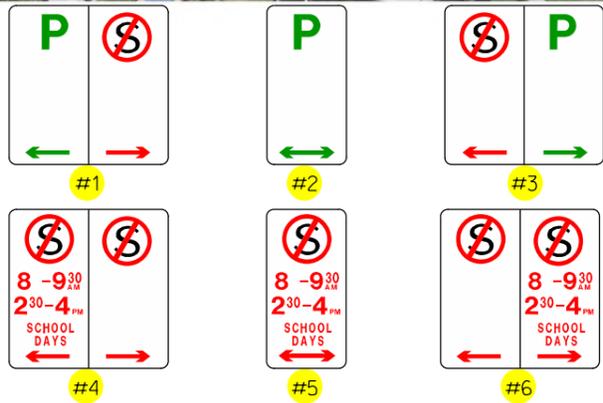
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	AS CONSTRUCTED	CONTRACT DATE :	DATE :

SCALE:	PLAN	DETAILS
0	10	20m
NOT TO SCALE		
DETAILS		

PROJECT	TITLE
REA ST, NORRIS CRT PARKING CHANGES	RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE

CAD AND AN.	SSSCLATW.F

Drawing No
 S R2 - 9
 SHEET X OF X SHEETS



SIGNS REQUIRED :
 #1 x2 #2 x2 #3 x3
 #4 x2 #5 x5 #6 x1
 TOTAL 15 SIGNS

THAMES ST AND CHERTSEY RD
 ARE NOT WIDE ENOUGH
 FOR MARKED BAYS ON BOTH SIDES
 AND TWO TRAFFIC LANES.

38 BAYS (SHOWN ORANGE)
 ARE NOT TO BE PAINTED.

35 BAYS SHOWN PAINTED.
 PARKING BAYS TO BE 2.1m TO FACE OF KERB.

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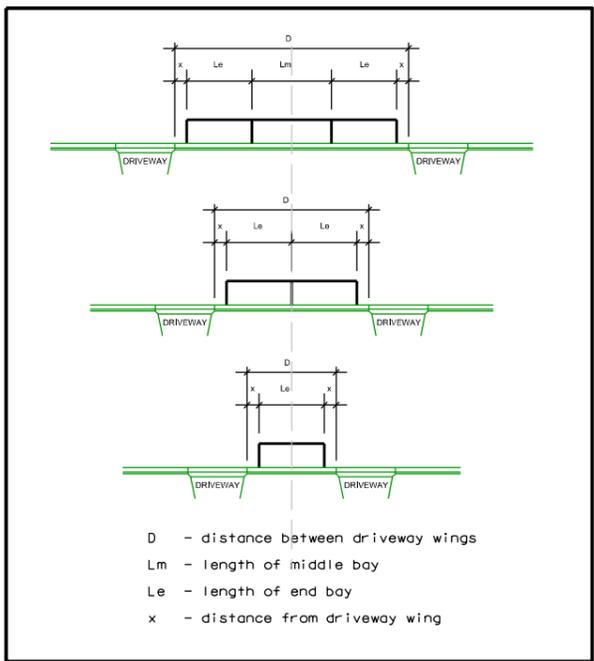


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	FOR INFORMATION	Date :	DATE : <i>BLJ/0208 Sep 2020</i>	
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	FOR CONSTRUCTION		DATE :	TITLE
	AS CONSTRUCTED		PROJECT'S BENEFIT GREATER SHEPPARTON CITY COUNCIL	

DRAWING No
S T3 - 2
 SHEET 1 OF 1 SHEETS
 CAD AND PLOT: **GSSC/LAT/M**



- | | |
|-----|-----|
| | |
| #1 | #2 |
| | |
| #3 | #4 |
| | |
| #5 | #6 |
| | |
| #14 | #15 |
- SIGNS REQUIRED :
- | | | |
|--------------|-----------|--------------|
| #1 x8 | #2 x3 | #3 x9 |
| #4 x2 | #5 x2 | #6 x2 |
| #14 x1 | #15 x1 | |
| TOTAL | 28 | SIGNS |



ANNERLEY AVE AND GLENLYON AVE (BETWEEN HAWDON ST AND GLENN ST) ARE NOT WIDE ENOUGH FOR MARKED BAYS ON BOTH SIDES AND TWO TRAFFIC LANES.

22 BAYS (SHOWN ORANGE) ARE NOT TO BE PAINTED.

87 BAYS SHOWN PAINTED. PARKING BAYS TO BE 2.1m TO FACE OF KERB.

2 ACCESSIBLE BAYS IN FESHTI ST.

LEGEND
 ACCESSIBLE BAY DETAILS AS PER VICROADS SUPPLEMENT TO AS1742.11

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CITY OF GREATER SHEPPARTON

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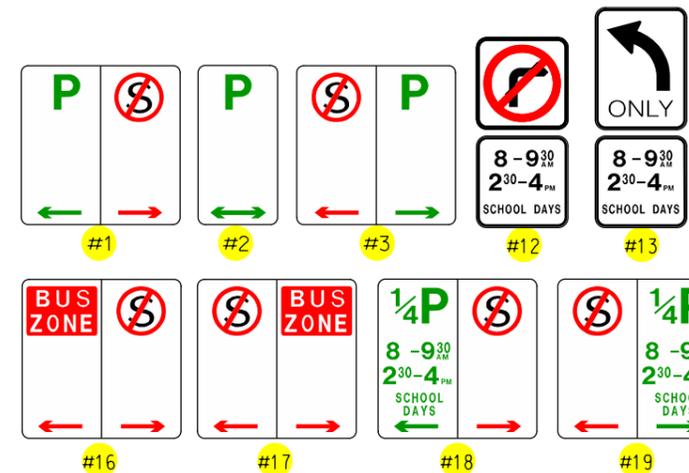
PROJECT **GLENN ST / FESHTI ST AREA PARKING CHANGES**

RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE

CDM AND AS: GSSC-LATW

SHEET X OF X SHEETS

DRAWING NO: S G11 - 2



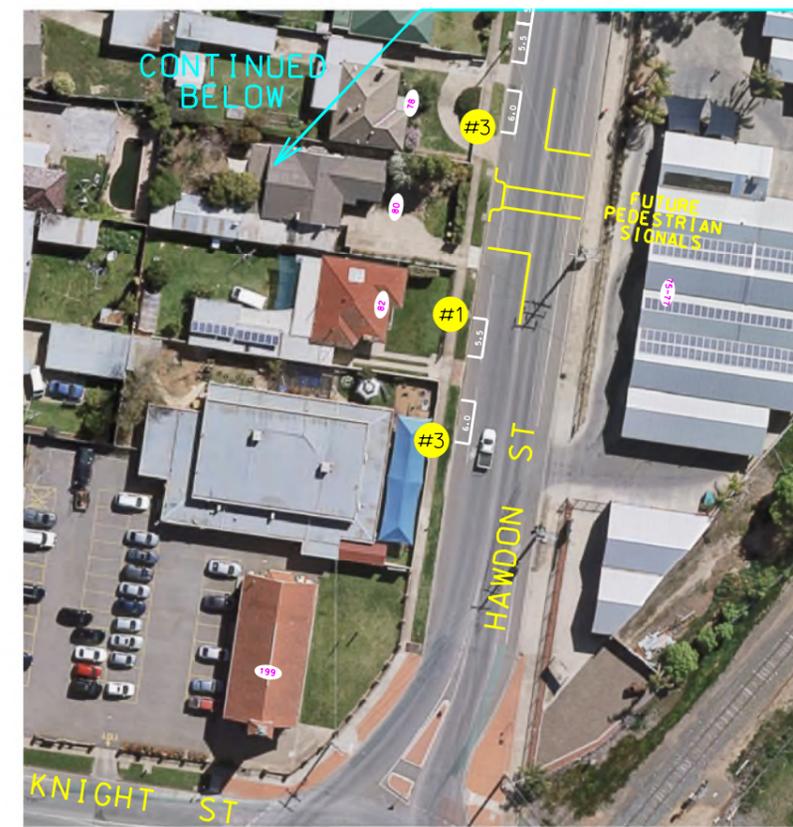
SIGNS REQUIRED :

- #1 x3
- #2 x2
- #3 x3
- #12 x8
- #13 x2
- #16 x3
- #17 x3
- #18 x1
- #19 x1

TOTAL 26 SIGNS

HAWDON ST IS WIDE ENOUGH FOR MARKED BAYS ON BOTH SIDES AND TWO TRAFFIC LANES.

34 BAYS SHOWN.
PARKING BAYS TO BE 2.1m TO FACE OF KERB.



LEGEND

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SHEPPARTON 3630
PH: 1035831 9800
FAX: 1035831 1867

LOCKED BAG 1000
SHEPPARTON
VICTORIA 3632

CITY OF GREATER SHEPPARTON



REFERENCE DRAWINGS	DOCUMENT PURPOSE	COUNCIL	DESIGN	PROJECT
	ADVANCE COPY	APPROVED :	DESIGN : <i>BLJ/ash</i>	<p>HAWDON ST PARKING CHANGES</p>
	FOR INFORMATION	Date :	DATE : <i>BLJ/ash Sep 2021</i>	
SHEET SIZE: A3	AUTHORITY APPROVAL		CHECKED :	<p>RELATED TO GREATER SHEPPARTON SECONDARY COLLEGE</p>
SCALE: PLAN 1:10	FOR TENDER ONLY		APPROVED :	
NOT TO SCALE DETAILS	FOR CONSTRUCTION	CONTRACT No :	DATE :	TITLE
	AS CONSTRUCTED	CONTRACT DATE:	PROJECTS REMAIN GREATER SHEPPARTON CITY COUNCIL	

Drawing No: **S H9 - 10**
SHEET 2 OF 2 SHEETS
CAD AND ANS: **GSSC-LATW**