



Barker College Operational Traffic and Access Management Plan

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Barker College

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The Transport Planning Partnership

Barker College

Operational Traffic and Access Management Plan

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APPENDICES

A. TRAFFIC MANAGEMENT PLAN

1 Introduction

1.1 Background

The Barker College State Significant Development Application (SSDA) has been approved by the Department of Planning, Housing and Infrastructure (DPHI).

This plan was prepared to satisfy the requirements of the consent conditions for SSD-31822612, dated 20 December 2023 which requested the preparation of an Operational Traffic and Access Management Plan (OTMP).

This OTMP addresses the pick up/ drop off (PUDO) management measures applied by the School.

1.2 Conditions of Consent

In the Conditions of Consent for the SSDA, condition E12 and E13 has been stipulated which requires the update of this OTMP prior to the issue of an Occupation Certificate (OC).

TTPP has summarised the consent conditions in Table 1.1, and referenced the relevant sections of this report which it relates to, and/or the status of the item.

Table 1.1: Summary of Consent Conditions

Consent Condition	Status or Report Ref.
<p>E12. The Applicant must prepare, an Operational Transport and Access Management Plan (OTAMP) for the PUDO area (following the physical mitigation works in this area) forming part of the Stage 1, an OTAMP must:</p> <p>(a) be prepared by a suitably qualified person, in consultation with Council and TfNSW;</p> <p>(b) be submitted to and approval obtained from the Planning Secretary;</p>	<p>The PUDO changes are complete and consequently does not require an OC.</p> <p>This being the case this OTAMP is the relevant plan as it relates to existing or proposed PUDO arrangements.</p>
<p>E13. The OTAMP required by Schedule 3 condition E12 must:</p> <p>(a) be consistent with Appendix A and B of the Traffic and Access Impact Assessment - Operational Traffic and Access Management Plan prepared by TTPP dated 10 October 2023;</p> <p>(b) include:</p>	<p>Appendix A of this report.</p> <p>Note: The OTMP issued 10 October 2023, does not include an Appendix B.</p> <p>The OTMP is Appendix B of the Response to Submissions report dated 10 October 2023, which this condition is referring to.</p>
<p>(i) detailed pedestrian analysis including the identification of safe route options – to identify the need for management measures such as staggered school start and finish times to ensure students and staff are able to access and leave the site in a safe and efficient manner during school start and finish;</p>	<p>Section 2.3 and Section 3.2</p>
<p>(ii) include details confirming the staggered start and finish times of the school as identified in the Barker College – Traffic Response to Submissions prepared by TTPP dated 10 October 2023;</p>	<p>Section 3.2</p>

(iii) the location of all car parking spaces on the school campuses and their allocation (i.e. staff, visitor, accessible, emergency, etc.);	Section 2.4, Section 2.7
(iv) the location and operational management procedures of the pick-up and drop-off parking located within the school, including staff management/traffic controller arrangements;	Section 2.1, Section 3.5
(v) delivery and services vehicle and bus access and management arrangements;	Existing delivery arrangements are unchanged. Section 2.5, Section 2.6
(vi) management of approved access arrangements;	Section 3
(vii) potential traffic impacts on surrounding road networks and mitigation measures to minimise impacts, including measures to mitigate queuing impacts associated with vehicles accessing pick-up and drop-off;	Section 3, Section 4
(viii) car parking arrangements and management associated with the proposed use of school facilities by community members; and	Section 2.4
(ix) a monitoring and review program.	Section 5

2 Site Details

2.1 PUDO Location

The two driveways located off College Crescent provide access for School drop-off and pick-up activities, with:

- entry via Aquatic Gate, and
- exit via Centenary Gate.

The inbound gate at the Centenary access point is closed during drop-off and pick-up, thus enabling one-way circulation through the site.

Three Kiss and Ride zones are provided on-site including:

1. an indented bay on Robert Bland Drive for Years 7-12 (Senior School Kiss and Ride)
2. at Chapel Drive after the boom gate and adjacent to the staircase for years 3-6 (Middle School Kiss and Ride)
3. in front of the pedestrian entrance at Kurrajong Prep car park for years Pre-K to 2 (Junior School Kiss and Ride).

A site layout of the TMP strategy is attached in Appendix A.

2.2 Kiss and Ride Capacity

The capacity of each Kiss and Ride zone is reflective of the volume of traffic generated by each year group.

The Senior School (7-12) Kiss and Ride has capacity for one vehicle pick up/ drop off student at a time.

The Middle School (3-6) Kiss and Ride has capacity for two vehicles to undertake PUDO activities at a time.

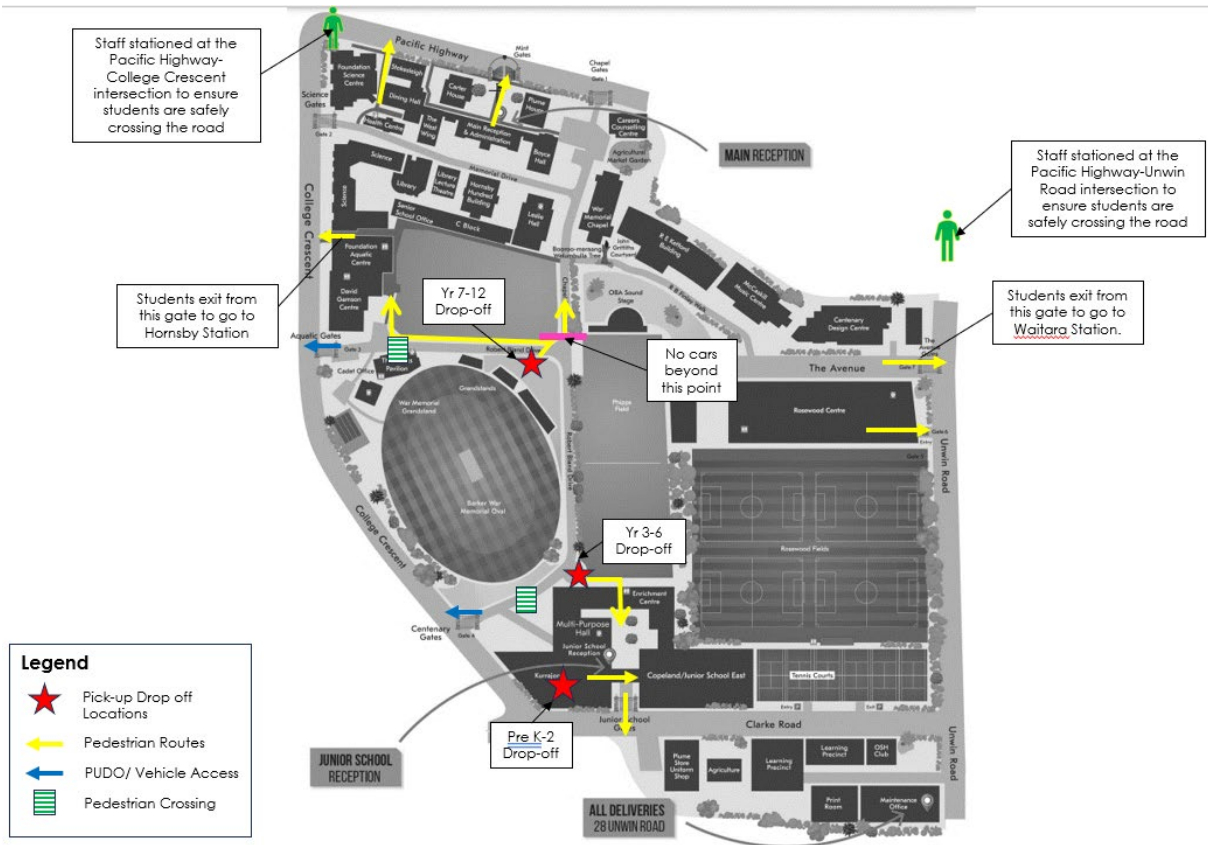
The Junior School (Pre K-2) Kiss and Ride has capacity for three to four vehicles to undertake PUDO activities at a time, subject to the number of personnel on-site available to escort students to their cars.

2.3 Pedestrian Access and Connectivity

The site is generally closed to vehicle traffic outside of PUDO periods, to ensure the security and safety of students on-site. During PUDO periods, vehicle access is restricted to one-way circulation through Chapel Drive, as shown in the TMP in Appendix A.

Pedestrian access points are located directly adjacent to the PUDO zones, to prevent the need for students and PUDO vehicle traffic from overlapping during these PUDO periods. The pedestrian routes from the PUDO zones are shown in Figure 2.1.

Figure 2.1: Key Pedestrian Access Points



Outside of the PUDO vehicle route through the site, the roads have restricted access to traffic making them primarily pedestrian routes. This has been implemented by the closure of any vehicle gates that do not provide access to the PUDO zones, and the placement of signage as shown in Figure 2.2.

Students catching public transport are directed to the pedestrian entrances located on College Crescent, Pacific Highway and Unwin Road. Students are instructed to use the entrance on College Crescent and Pacific Highway if they are catching a bus or going to Hornsby Station and Unwin Road if they are going to Waitara Station.

Figure 2.2: Signage north of Senior PUDO Zone



2.4 Car Parking Arrangements

The school provides 438 car spaces on site with an additional 49 spaces available outside of PUDO AM and PM peak times for staff and visitor parking, secured by access control.

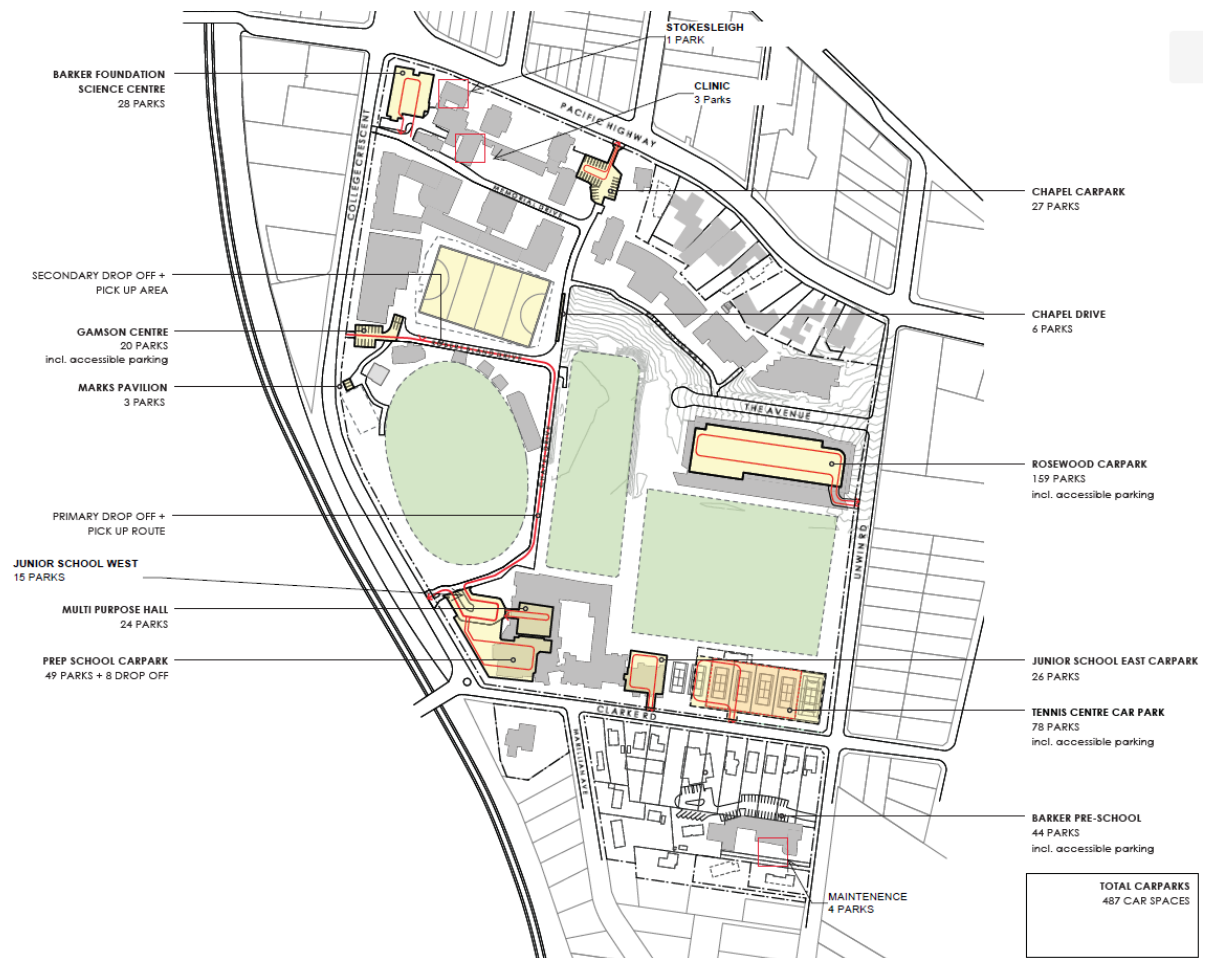
Visitor parking is available at:

- Chapel Car Park
- Junior School Car Park
- Kurrajong Prep Car Park

Outside of school operational hours, the Rosewood centre, Kurrajong Prep and tennis centre carparks would be accessible for visitors from various community groups.

The on-site car parks are shown in Figure 2.3.

Figure 2.3: On-site Carparks

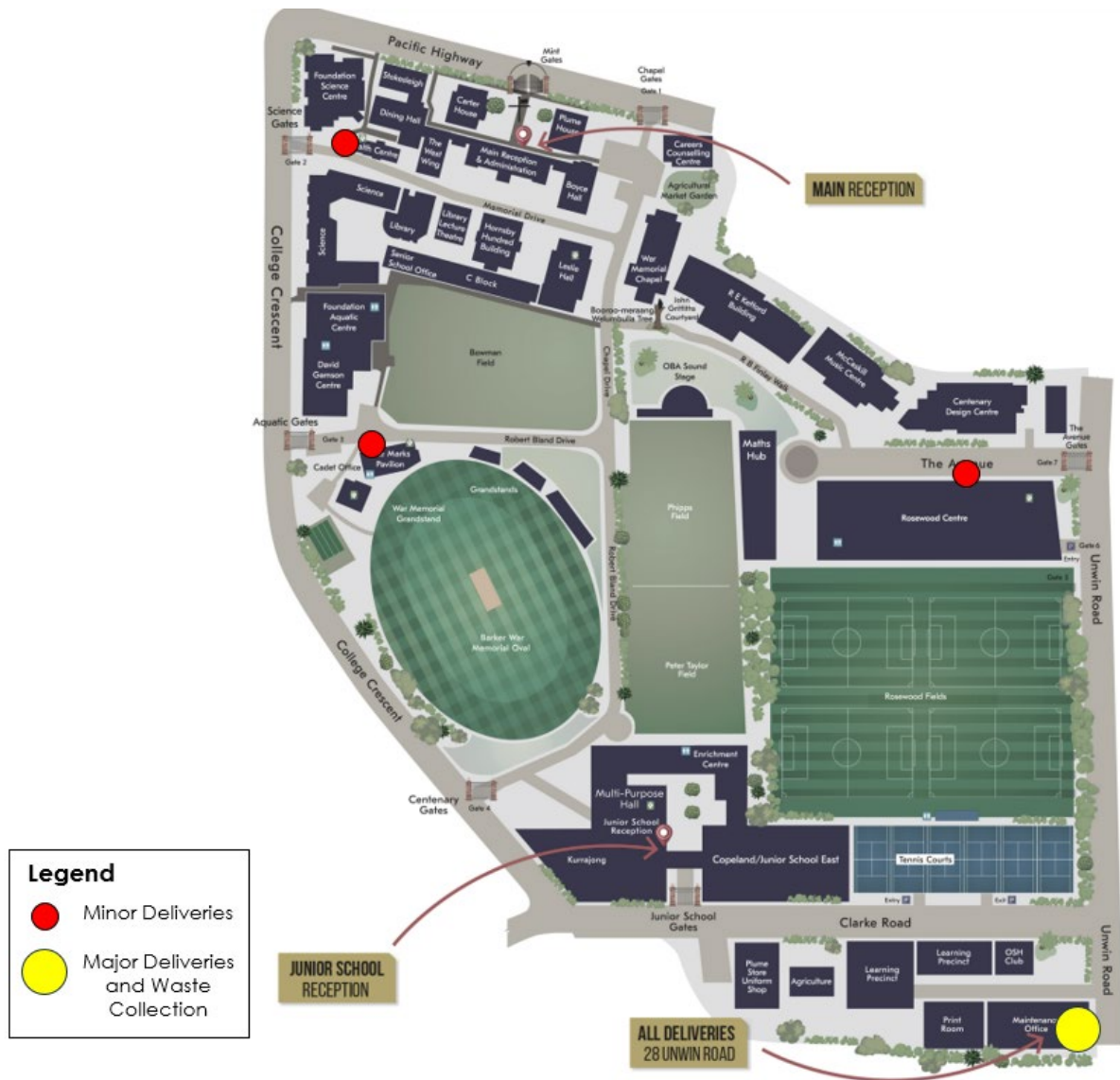


2.5 Delivery and Waste Collection

The existing delivery and waste collection arrangements are consistent with the current arrangement. The bulk of the deliveries will be made at 28 Unwin Road (marked in yellow) and other minor deliveries also take place in the locations marked in red as shown in Figure 2.4.

Waste will be collected at 28 Unwin Road by the Waste Contractor. Barker's maintenance teams collect waste from various points throughout the College and moves it to 28 Unwin Rd.

Figure 2.4: Delivery and Waste Collection



2.6 Bus Access Arrangements

School buses only pick up and drop off students/ teachers on street, that is at Pacific Highway, College Crescent and Clarke Road. They do not enter the site at any time.

2.7 Emergency Access

The emergency access will be retained as per existing provisions. That is, all existing vehicle access points may be used by emergency vehicles if required.

3 PUDO Traffic Management Measures

Several traffic management measures have been implemented on-site during mid-2020, to ensure the efficiency of on-site operations. The key measures are summarised as follows.

- gates opened early to enable traffic to enter the site immediately and minimise the traffic and parking impact on-street
- student arrival/ departure times are staggered by age group
- traffic is diverted into two lanes by age group
- wayfinding signage and traffic cones are installed to direct traffic as required
- traffic controllers/ personnel are placed in addition to signage, to direct traffic through the site, including at each drop off point assisting student pick up/ drop off activities
- for Middle School and Junior School, guardians are required to put up their name on the windscreen of the car to enable staff to get the student ready for pick up, to prevent the need for guardians to get out of their car and minimise delays.

The above measures are further detailed in the following.

No further changes are proposed for the PUDO areas, as part of the SSDA (SSD-31822612) approval.

3.1 Gate Opening Times

In the morning, the bulk of the drop off traffic arrives between 7.45am and 8.15am, however, some arrive earlier. The School gates at College Crescent are opened at 7am in the morning, to prevent early arrivals from queuing within the public road.

In the afternoon, traffic to the site is more evenly spread out with many students staying back for after School sport and activities. As such, the College Crescent gates which open at 2.25pm will stay open till 6pm. After 6pm, parents are expected to park on-street.

3.2 Staggered Arrival Times

Barker College has staggered starting and finishing time which spreads the peak times over a longer period. The School times are as follows:

- Pre-K to Year 2 – 8:25am-2:45pm
- Year 3 to 6 – 8:25am-3:00pm
- Year 7 to 12 – 8:20am-3:20pm

In addition to the above finishing times, each age group is further staggered, with siblings dropped off and picked up together. Younger children are picked up and dropped off with their siblings in Year 7-12 within the Senior School Kiss and Ride. Year 3-6 with siblings in Pre-K -2 are dropped off and picked up at the Kurrajong Prep car park (i.e. Junior School Kiss and Ride).

The above arrangement ensures that Pre-School to Year 2 students, which generate the most traffic are managed early and before the older students are let out and that parents/guardians do not need to linger to collect multiple students from different year groups.

3.3 Coordination of Student and Guardian Arrivals

To prevent the need for parents and guardians to park or get out of their car, the afternoon pick up period is to be coordinated with the following procedure at the Junior and Middle School Kiss and Rides:

- parents and guardians are to display signs of their child's name on the front windscreen of their car
- parents are to go directly to their allocated pick up location and at their allocated time
- at each pick up point, a staff member is to announce the name in advance of arrival using a microphone
- students waiting inside or behind pedestrian barriers are to be escorted by a staff member to their respective cars.

3.4 Wayfinding Signage

Several points of wayfinding signage is placed throughout the School in addition to traffic cones to direct traffic. The following temporary signage is installed during PUDO periods:

- AM Peak: Upon entry from College Crescent, which directs Year 3-6 traffic to the left lane and PreK-2 and Year 7-12 traffic to the right lane as shown in Figure 1.
- PM Peak: Upon entry from College Crescent, which says "Junior Music Pick-up use left lane" as shown in Figure 2.
- 'No Vehicle Access' signage at the end of entry road to prevent vehicles from turning left on to Chapel Drive and direct traffic to turn right.
- Flags at each PUDO location stating "Kiss and Drop"
- After the Years 3-6 PUDO area, there is signage directing traffic to the PreK-2 drop-off/pick-up entry, and the exit as shown in Figure 3.

Figure 3.1: AM Signage Near Entrance



Figure 3.2: PM Signage Near Entrance



Figure 3.3: Signage Near Exit



- In addition, to the above temporary signage, the following permanent signage and traffic management measures are provided on-site:
- 10km/h shared zone and speed zone signage at various points throughout the roadway through the School
- “Entry Only”, “One way” and “No Entry” or “No Exit” signs, throughout the site, including Robert Bland Drive, Chapel Drive and Pre-K car park to direct traffic.

- A “Pick up set down area” sign is posted within the Kurrajong Prep car park along with red pavement parking, in front of the building entrance for PUDO activities outside of peak hours.
- Digital speed radars located at the end of Robert Bland Drive (after the Senior School Kiss and Ride area) and at the boom gate prior to the Middle School Kiss and Ride area, which displays the speed in which an oncoming vehicle is travelling.
- Low profile speed hump on entry into Chapel Drive.

3.5 Traffic Controllers and Site Personnel

Traffic controllers/ security staff are used to manage the traffic flow through the site. The locations of the traffic controllers are shown in Appendix A.

Upon entry, a traffic controller assists with directing traffic through to the appropriate lanes and to manage students crossing at the zebra crossing (shown in Figure 3.1).

At the Senior School Kiss and Ride, there is one traffic controller managing PUDO activities.

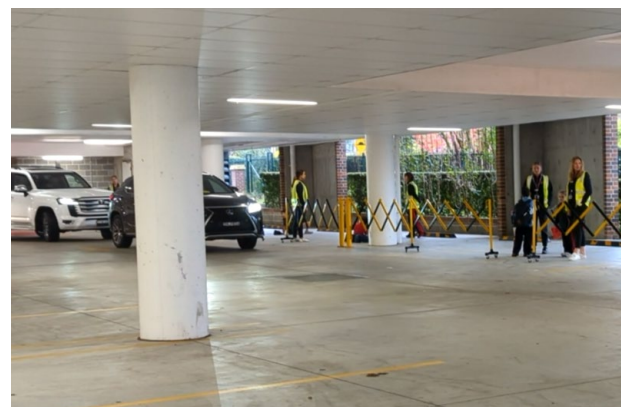
At the Middle School Kiss and Ride, there are two traffic controllers in the morning and evening. During the evening pick up period, there are additional site personnel to assist with guiding students to the right vehicles.

Similarly, at the Junior School Kiss and Ride, there are three to six site personnels assisting with PUDO operations, including directing drivers and escorting students between the building and their respective cars.

Figure 3.4: Year 3-6 Drop-Off/Pick-Up



Figure 3.5: PreK-2 Drop-off/Pick-Up



3.6 Existing Public Transport Trip Management

There are two railway stations near the site; Waitara Station which is located approximately 450m east of the site and Hornsby station is around 800m away. Both stations provide frequent services.

To distribute pedestrian movements and minimise patronage to either station, students are allocated to a train station based on their age group.

Additional staff are positioned at the College Crescent and Unwin Street intersections at Pacific Highway, and these staff are responsible for directing students to the correct station and ensuring students are crossing the signalised crossings safely.

4 Traffic Impact of TMP Operation

4.1 Site Observations

Site observations of the morning and afternoon pick up/ drop off (PUDO) activities were undertaken at Barker College on Thursday, 8 June 2023. The observations indicated that the school has undertaken several changes to its PUDO operations based on the recommendations made in the SSDA traffic report and as noted in the above TMP. The changes include:

- School gates are opened earlier (at 7am) to enable parents who arrive early, to queue on-site rather than on-street, which has reduced the traffic and parking impact on the public road.
- Increased separation of school finishing times, to further stagger parent and guardian arrivals.
- Improved efficiency of the Kiss and Ride zones, by implementing a system of placing the student names on windscreens to enable staff to pre-organise students for pick up in the afternoon.
- Removal of the pinch point at the boom gate, where two lanes were required to merge into one. This was achieved by removing the boom gate receiver post, which then allowed a continuous flow of two traffic lanes through the site (as shown in Figure 4.1) and a reduction in the number of merge/ conflict points.

Figure 4.1: Boom Gate



- Improved circulation of traffic by enforcing two routes of traffic through the site and reducing the number of merge points.

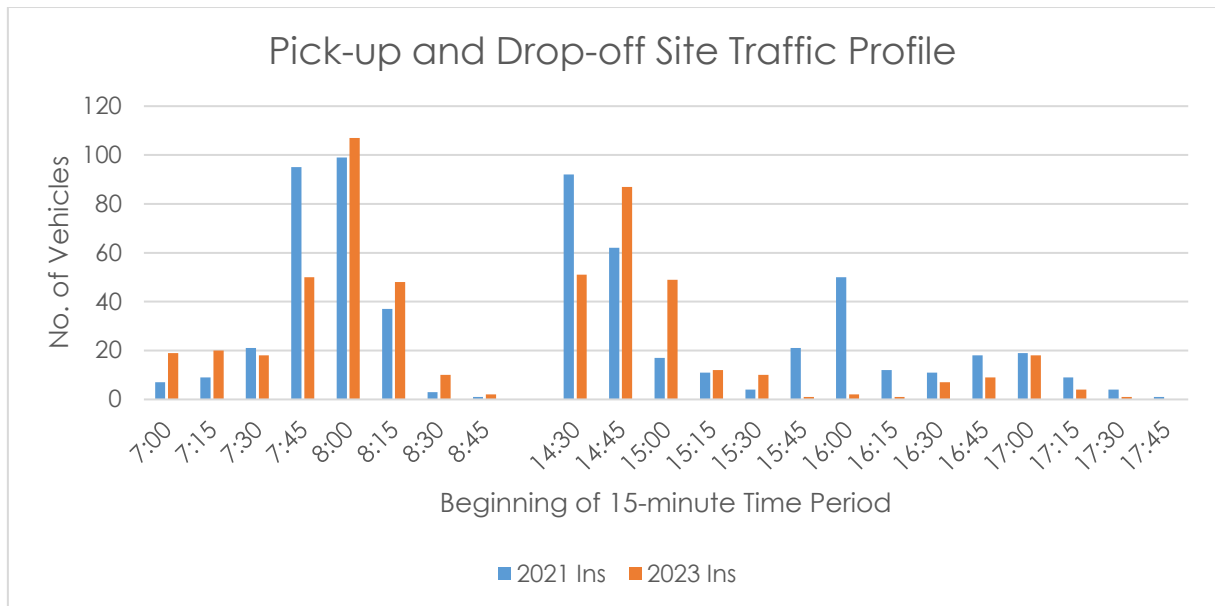
- The arrangement enables Year 3-6 to travel directly to the Middle School Kiss and Ride via the left lane and for Years 7-12 and Pre K -2 traffic to pass-by the Year 3-6 queue via the right lane. Pre K-2 are instructed via signage to shift over to the left lane after the Middle School Kiss and Ride and enter the queue to the Junior School Kiss and Ride.
- After the Middle School Kiss and Ride, the Year 3-6 traffic continue on to meet the Pre K-2 queue further downstream.

The impact of the above traffic management measures are beneficial with the following observations made during TTPP's site observations:

- In the morning, the bulk of students arrived between 7.45am and 8.15am. After this traffic generation and queueing dropped significantly.
- In the afternoon, pick up has been staggered. As a result, the pick-up period is longer however, queues were also observed to be shorter than in the AM peak.
- Queueing on-site was significantly shorter than that which was observed in 2021, with the left lane queue (year 3-6) reaching up to 133m and the right lane queue (Year Pre K – 2 and 7-12) reaching up to 40m from the Year 3-6 Kiss and Ride, in the AM peak period. Both queues were moving queues with notable gaps between vehicles. However, on average, the queues were shorter with the right lane not typically containing a queue behind the Year 3-6 Kiss and Ride area. Comparatively, in 2021 queues were observed to be longer than 133m for both lanes of traffic.
- Most vehicles were travelling through the Kiss and Ride areas quickly, with students being dropped and picked up within 15-20 seconds of arrival. At one point, there was a vehicle that was delayed at the Year 3-6 Kiss and Ride in the PM peak period, however, there was sufficient space to enable cars to stop behind this car and pick up their child and then pass by the delayed vehicle, with the assistance of the traffic controller on-site. The PUDO was observed to operate efficiently notwithstanding the delayed vehicle.
- The dwell time of vehicles on-site was dependent on how long vehicles undertook to exit the site at College Crescent rather than at the Kiss and Ride areas where traffic was continuously moving.
- Many students were picked up well after the peak PUDO period, due to afterschool activities e.g around 5-6pm. Parents and guardians picked up students from various locations during this period including on-street, Rosewood and Tennis Centre car parks or within the on-site Kiss and Ride facilities.

The student population in 2023 is understood to be consistent with year 2021. Traffic generation has been compared and is presented in Figure 4.2.

Figure 4.2: Inbound Traffic Generation – 15-minute Profile



The data indicates that:

- the total traffic generation over the peak periods is generally consistent between the two comparison years with
 - 272 vehicles entering over a two hour morning peak and 269 vehicles entering over a two hour afternoon peak in Year 2021, and
 - 274 vehicles entering over a two hour morning peak and 213 vehicles entering over a two hour afternoon peak in Year 2023.
- Based on Figure 4.2, the traffic generation in 2023 is better distributed with people arriving on-site earlier and the afternoon peak notably spread out over the hour.
- At 8am, the traffic generation in 2023 is notably higher for the 15-minute period. However, the queues on-site are noticeably shorter in 2023 than in 2021. A comparison of the queues is shown in Figure 4.3, Figure 4.4 and Figure 4.5.
- In addition to the queues being shorter in length, the queues appeared to move faster than previously in 2021.

Figure 4.3: 2021 Traffic Queues



Figure 4.4: 2023 Right Lane Queue

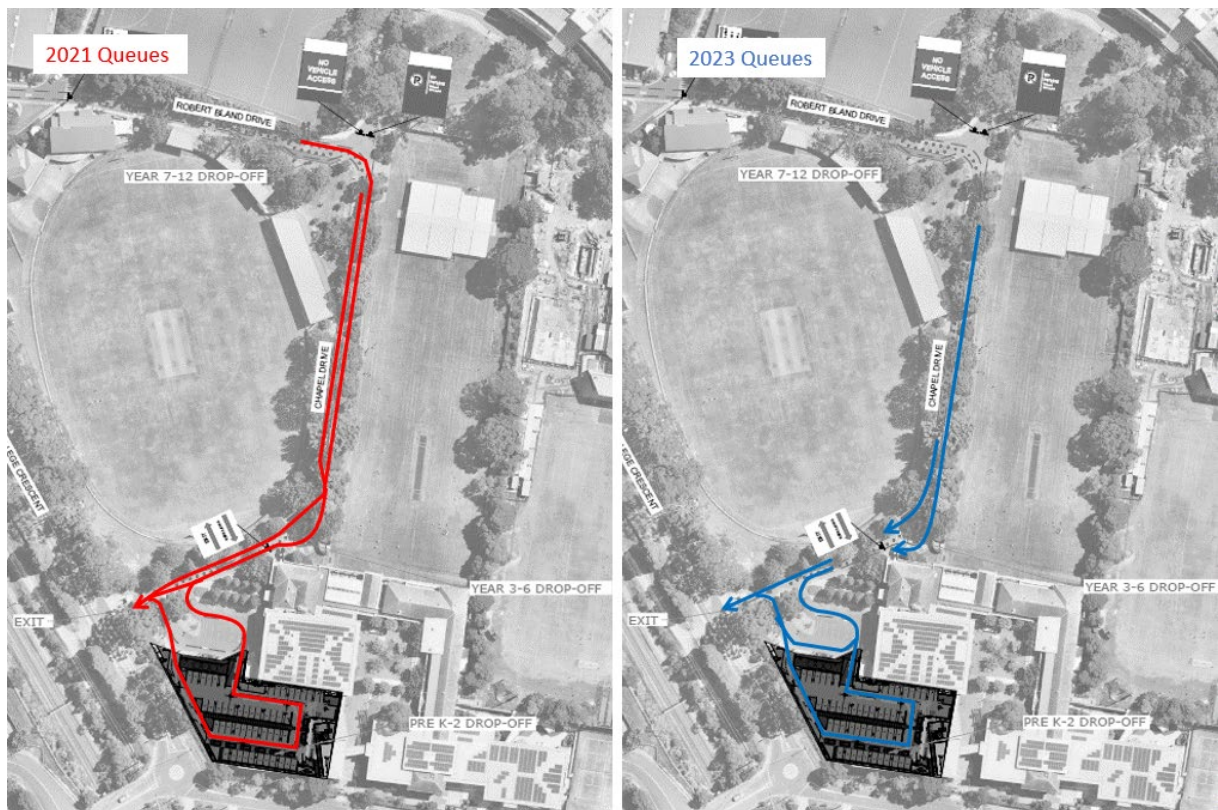


Figure 4.5: 2023 Left Lane Queue



A comparison of the maximum queue lengths observed is shown in Figure 4.6.

Figure 4.6: Comparison of AM Peak Maximum Queue Lengths



4.2 Impact of Increase in Student Population

Based on the SDA traffic report, the proposed increase in student population would result in an increase of up to 63 two-way vehicle movements per hour, including 34 vehicles entering and 29 vehicles exiting in an hour.

About 40% of the traffic relates to Year 7-12 and staff which are observed to generate minimal queuing. The other 60% of traffic (20 vehicles) may generate an additional 10 vehicles over a 15 minute period. An additional 10 vehicles equates to a queue of around 30m per lane.

The road between the Year 3-6 Kiss and Ride and the entrance is approximately 310m long. Given that the peak queue observed was 130m long, there is substantial capacity on-site to accommodate an additional 30m of queueing.

On the above basis, no further improvements or management strategies are required to accommodate the increase in student and staff numbers.

If further mitigation is required, this OTMP is to be updated as required.

5 Monitoring and Management

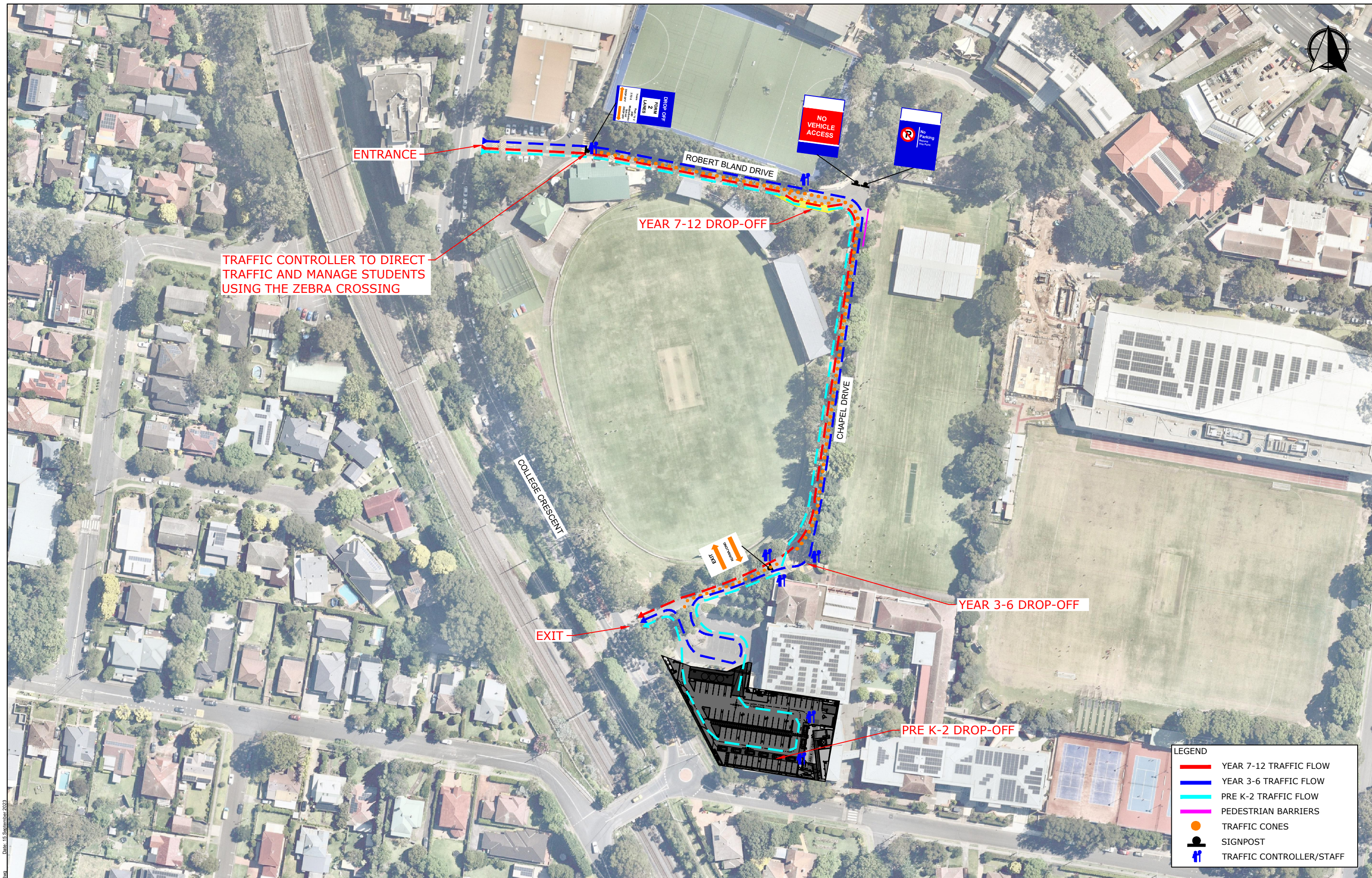
This OTMP is to be regularly monitored and updated to ensure that it reflects any changing conditions of the College which addresses Conditions A25 and A27.

It is suggested that the update of this plan be included as part of the monitoring and management procedure of the Green Travel Plan (GTP) to be implemented on-site.

The responsibility of updating the OTMP will therefore, fall under the appointed Travel Plan Co-ordinator (TPC), who will be responsible for developing, implementing and monitoring the GTP.

Appendix A

Traffic Management Plan



LEGEND	
—	YEAR 7-12 TRAFFIC FLOW
—	YEAR 3-6 TRAFFIC FLOW
—	PRE K-2 TRAFFIC FLOW
—	PEDESTRIAN BARRIERS
●	TRAFFIC CONES
	SIGNPOST
	TRAFFIC CONTROLLER/STAFF

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	OF	KH	15/09/23



PROJECT	BARKER COLLEGE, HORNSBY		
TITLE	TRAFFIC MANAGEMENT PLAN - AM PEAK		

DWG No.	20443CAD003	
	FIGURE 1	
DATE STAMP	15 SEPTEMBER 2023	
PROJECT No.	SCALE	REV.
20443	NTS	A

File name: 20443CAD003-20443-TMP.dwg Date: 15 September 2023



LEGEND	
—	YEAR 7-12 TRAFFIC FLOW
—	YEAR 3-6 TRAFFIC FLOW
—	PRE K-2 TRAFFIC FLOW
—	PEDESTRIAN BARRIERS
●	TRAFFIC CONES
	SIGNPOST
	TRAFFIC CONTROLLER/STAFF
	STAFF WITH MICROPHONE

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	OF	KH	15/09/23



PROJECT	BARKER COLLEGE, HORNSBY		
TITLE	TRAFFIC MANAGEMENT PLAN - PM PEAK		

DWG No.	20443CAD003	
	FIGURE 2	
DATE STAMP	15 SEPTEMBER 2023	
PROJECT No.	SCALE	REV.
20443	NTS	A

File name: 20443CAD003-2019.L5.TMP.dwg Date: 15 September 2023

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