

asongroup



## **Minarah College, Catherine Field Campus**

Transport and Accessibility Impact Assessment

268 & 278 Catherine Fields Road, Catherine Field

9/05/2025

Ref: P1769

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# 1 Introduction

## 1.1 Overview

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Ason Group have been commissioned by Minarah College to prepare a Transport and Accessibility Impact Assessment (TAIA) in support of the State Significant Development Application (SSDA) of the proposed Minarah College – Catherine Field Campus, located at 268 & 278 Catherine Fields Road, Catherine Field.

This TAIA outlines assessments of multi-modal transport travel patterns and demands associated with school development. These have accordingly been undertaken within this TAIA and the Preliminary School Transport Plan (PSTP) which is included in **Appendix A**.

## 1.2 The School

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The application seeks consent for the construction of a co-educational establishment (Minarah College) accommodating 980 students. The school will comprise of an Early Learning Centre (ELC) for 60 students, a School for Specific Purpose (SSP) for 30 students, a primary school accommodating 505 students and a high school for 385 students. The new school will be constructed in four stages, growing in line with growth in the local population. Specifically, consent is sought for:

- Demolition of the existing dwellings and ancillary structures on-site;
- Bulk earthworks across the site;
- The construction of the following:
  - One-storey early learning centre.
  - Two-storey administration building, with attached outside school hours care (OSHC), and wellbeing room.
  - Two-storey primary school building comprising of primary school classrooms,
  - School for Specific Purpose classrooms,
  - Primary school hall;
  - Two-storey high school building comprising high school classrooms;
  - Two-storey high school hall;
  - Shared one-storey canteen adjoining the high school building; and
  - Shared library located on the second storey above the ELC and Food and Textiles building below.
- Site access from Catherine Fields Road at two points;
- Works within Catherine Fields Road during Stage 3 to allow for a right-turn bay from Catherine Fields Road and bus bays on the eastern side of Catherine Fields Road;
- Removal of trees and replacement planting and landscaping;
- Associated site landscaping and public domain improvements; and
- On-site car park for 95 parking spaces.

The development is to be constructed in four stages. The school will be operating at full capacity from Stage 3. A breakdown of the student and staff numbers across each stage is as follows:

- Stage 1: 2026, 318 students (18 ELC, 290 School, 10, SSP), 15 FTE staff
- Stage 2: 2031, 652 students (42 ELC, 600 School, 10 SSP), 33 FTE Staff
- Stage 3, 2035, 980 students (60 ELC, 890 School, 30 SSP), 51 FTE Staff

- Stage 4, 2037, 980 students (60 ELC, 890 School, 30 SPP), 51 FTE Staff

The total student population at Stage 3 will be 980 students, the staff population will total 45 FTE and 6 SSP staff.

The development is envisioned over a 11-year period, during which school infrastructure development and student enrolment capacity would increase over 4 distinct stages. For reference, the site plan of the ultimate Campus is provided in **Figure 1** below. Development staging plans are provided in further detail in **Section 5**.



Figure 1: Site Plan

## 1.3 Key References

The TAIA makes reference to a series of key strategic, design and planning documents in the assessment of traffic and transport-related elements of the project. These documents include:

- Camden Council Development Control Plan (2019)
- Camden Council Local Environment Plan (2010)
- Transport for NSW, NSW Movement and Place Framework (March 2020)
- NSW Government, Practitioner's Guide to Movement and Place (March 2020)
- NSW Planning Guidelines for Walking and Cycling (December 2004)
- NSW Government, Department of Planning, Industry and Environment - Cumulative Impact Assessment Guidelines for State Significant Projects (November 2021)

This TAIA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, Guide to Traffic Generating Developments, v2.02, 2002 (RMS Guide)
- Roads and Maritime Services, Trip Generation Surveys Schools Analysis Report (Prepared by GTA for RMS, Issue A dated 25/08/2014);
- Australian Standard 2890.1:2004 Parking Facilities – Off-Street Car Parking (AS 2890.1: 2004)
- Australian Standard 2890.2:2018 Parking Facilities – Off-Street Commercial Vehicle Facilities (AS 2890.2:2018)
- Australian Standard 2890.3:2015 Parking Facilities – Bicycle Parking (AS 2890.3:2015)
- Australian Standard 2890.5:2018 Parking Facilities – On-Street Parking (AS 2890.5:2018)
- Australian Standard 2890.6:2022 Parking Facilities – Off-Street Parking for People with Disabilities (AS 2890.6:2022)
- Transport for NSW, Supplement to Australian Standard AS 1742.10-2009, Manual of Uniform Traffic Control Devices – Part 10: Pedestrian Control and Protection Version 3.1 March 2021
- EIS Guidelines – Road and Related Facilities (Department of Urban Affairs and Planning (DUAP), 1996)
- Cycling Aspects of Austroads Guides 2017
- Guide to Traffic Management Part 12: Integrated Transport Assessments for Development (Austroads, 2020)

## 1.4 SEARs

A formal SEARs for the SSDA were received by the project team on the 29<sup>th</sup> of October 2021 relating to the previous submission. Accordingly, a summary of the requirements relating to Traffic, Transport & Accessibility is highlighted in the below table.

**TABLE 1: TRAFFIC, TRANSPORT AND ACCESSIBILITY SEARS**

No.	SEARS Requirement	Ason Group Response
1	Provide a transport and accessibility impact assessment, which includes:	Noted
1-a	an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle, or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.	Analysis of existing conditions is covered in Sections 3, 4, 5, and 6 of this report.
1-b	details of the proposed development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.	Details of the Proposal are covered in Section 7 of this report.
1-c	analysis of the impacts of the proposed development (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), potential queuing in drop-off/pick-up zones and bus bays during peak periods, identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict), and any cumulative impact from surrounding approved developments.	Traffic assessment for the Proposal and details of the involved methodology is covered in Section 8 of this report.
1-d	measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms (including	Traffic mitigation measures are covered in <b>Section 8</b> of this report.

	proposed arrangements with local councils or government agencies) of delivery of any infrastructure improvements in accordance with relevant standards.	
1-e	measures to promote sustainable travel choices for employees, students and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high-quality end-of-trip facilities, and implementing a Green Travel Plan.	Reference should be made to the preliminary School Transport Plan (PSTP) in <b>Appendix A</b> .
1-f	a preliminary operational traffic and access management plan for the development, including drop-off/pick-up zones, bus bays and their operations.	
2	Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.	Reference should be made to the preliminary Construction Traffic Management Plan (CTMP) covered in Section 9 of this report.

## 1.5 Detailed Stakeholder Engagement

Over the course of the development of this TA, Ason Group consulted with key stakeholders, the engagements are outlined below.

**TABLE 2: PRE-APPROVAL CONSULTATION RECORD 01**

<b>Identified Party to Consult:</b>	TfNSW
<b>Consultation type:</b>	Teleconference (Teams)
<b>When is consultation required?</b>	Prior to application for SSDA
<b>Why</b>	TfNSW is the state road authority – they are in charge of coordinating activities on the local and state road networks.
<b>When was consultation scheduled/held</b>	28 <sup>th</sup> October 2021
<b>When was consultation held</b>	28 <sup>th</sup> October 2021
<b>Identify persons and positions who were involved</b>	<p><b>TfNSW</b> - Zhaleh Najari Alamouti (Senior Land Use Assessment Coordinator), Zeliha Cansiz, Louise Moran, Robert Rutledge, Sophie Grieve</p> <p><b>Minarah College</b> – Jay Halai (Principal)</p> <p><b>Midson Group</b> – Toby James (Project Manager)</p>

	<b>Ason Group</b> – Dora Choi (Principal Lead), Wendy Zheng (Senior Traffic Design Engineer)
<b>Provide the details of the consultation</b>	Preliminary discussion to raise concerns regarding the background growth factor and share project progress
<b>What specific matters were discussed?</b>	<ul style="list-style-type: none"> <li>• Presentation of proposed Minarah College secondary campus at Catherine Field</li> <li>• Ason presented data collected for the modelling of proposed Minarah College Catherine Field Campus and posed questions on the background growth and development of the area based on STFM data collected</li> <li>• TfNSW confirmed that Catherine Field will not be rezoned near future, and it is not part of a growth precinct</li> <li>• There are no further upgrades planned for either Bringelly Road nor Camden Valley Way</li> <li>• Assume that no collector roads in the network are being upgraded for future in our traffic impact assessment</li> <li>• TfNSW has answered that we can assume a minimum 3% growth in background traffic – to be reviewed internally by TfNSW</li> <li>• TfNSW does want to see cycling infrastructure and shared paths as part of the work but neither Council nor TfNSW has any plans for cycling or pedestrian infrastructure upgrades in the area and Catherine Field Road is not part of the bicycle network for Camden</li> <li>• TfNSW expressed enthusiasm for shuttle buses to and from train stations and this proposal was compared to the shuttle bus system at nearby Broughton Anglican College</li> <li>• The speed zone on Catherine Field Road transitions from 60km/hr from the intersection of Camden Valley Way to 80km/hr in front of the proposed school site. TfNSW has indicated that the project can apply to the Road Network Safety Officer for an extension of the 60km/hr speed zone</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• TfNSW informed the project team that the growth factors presented in the 2036 STFM model for the road network surrounding the Site does not need to be adhered to</li> <li>• No future road upgrades, or pedestrian/cycle path extensions need to be accounted for by the project team</li> <li>• The project team sent through follow up questions to TfNSW: <ul style="list-style-type: none"> <li>- Background growth to be applied including the growth rate on Camden Valley Way and Catherine Field Road?</li> <li>- How can the changing road network be accommodated?</li> <li>- Standard practice to adopt a specific percentage of growth?</li> </ul> </li> </ul>
<b>What matters are unresolved?</b>	n/a

Any remaining points of disagreement?	n/a
How will the project team address matters not resolved?	n/a

**TABLE 3: PRE-APPROVAL CONSULTATION RECORD 02**

Identified Party to Consult:	Camden Council
Consultation type:	Teleconference (Teams)
When is consultation required?	Prior to application for SSDA
Why	Council is the local road authority.
When was consultation scheduled/held	9 <sup>th</sup> December 2021
When was consultation held	9 <sup>th</sup> December 2021
Identify persons and positions who were involved	<p><b>Camden Council</b> – Matthew Rawson (Planner), Tom Allen (Team Leader Traffic and Road Safety), Roy El Kazzi (Traffic Engineer), Fiona Stalgis (Waterways)</p> <p><b>Minarah College</b> – Jay Halai (Principal), Imam Ali (Director)</p> <p><b>Midson Group</b> – Toby James (Project Manager)</p> <p><b>Urbis</b> – Naomi Ryan (Planner)</p> <p><b>TZG</b> – Peter Tonkin (Director), Julian Dolk (Architect)</p> <p><b>Martens</b> – Terry Harvey (Project Manager / Senior Engineer)</p> <p><b>Ason Group</b> – Dora Choi (Principal Lead), Wendy Zheng (Senior Traffic Design Engineer)</p>
Provide the details of the consultation	Pre-DA submission discussion to brief Council on the project and to clarify project team issues

<b>What specific matters were discussed?</b>	<p>The project team presented to Council regarding the project at its current stage. Traffic presented the following issues to Council for clarification:</p> <ul style="list-style-type: none"> <li>• Confirmation of the growth rate for traffic modelling</li> <li>• Number of bicycle parking required on site given that there is no existing or proposed cycling connection to the School</li> <li>• Extent and dimension of footpath required on site frontage given that there is no existing or proposed footpath connection to the School</li> <li>• Timing of the implementation of the channelised right turn at the School entry</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• Council has confirmed that the provision of bicycle parking on site does not have to comply with the staging and may be conditioned later once the cycle path connection is planned</li> <li>• Footpath provision extent and dimensions are limited to the School frontage</li> <li>• The growth rate to be modelled</li> </ul>
<b>What matters are unresolved?</b>	<ul style="list-style-type: none"> <li>• Council has expressed their preference for delivery of the channelised right turn entry in Stage 01, but modelling shows it is not necessary until Stage 04 which is dependent on the growth rate</li> </ul>
<b>Any remaining points of disagreement?</b>	n/a
<b>How will the project team address matters not resolved?</b>	n/a

**TABLE 4: PRE-APPROVAL CONSULTATION RECORD 03**

<b>Identified Party to Consult:</b>	Camden Council
<b>Consultation type:</b>	Pre-DA letter
<b>When is consultation required?</b>	Prior to application for SSDA
<b>Why</b>	Council is the local road authority.
<b>When was consultation scheduled/held</b>	Pre-DA letter dated 21 <sup>st</sup> December 2021
<b>When was consultation held</b>	9 <sup>th</sup> December 2021 (see details in Record 02)

<b>Identify persons and positions who were involved</b>	See details in Record 02
<b>Provide the details of the consultation</b>	See details in Record 02
<b>What specific matters were discussed?</b>	<ul style="list-style-type: none"> <li>• A Traffic Impact Assessment undertaken by a suitably qualified practitioner must be submitted detailing, but not limited to, the following:           <ul style="list-style-type: none"> <li>• Traffic generation and impact;</li> <li>• Queuing at kiss and ride –measures to prevent queuing from extending onto Catherine Fields Drive;</li> <li>• Compliance of the design with relevant design guides and standards;</li> <li>• Pedestrian safety; and</li> <li>• The capacity for the narrow rural road (Catherine Fields Road) to handle the traffic volumes associated with the development and likely maintenance burden.</li> </ul> </li> <li>• Car parking rates shall comply with DCP requirements for off-street parking. Although the number of proposed parking spaces is provided in the documents, the detail required for their calculation is not (i.e., number of year 12 students, number of staff, etc).</li> <li>• The proposal states 36 Kiss and ride spaces internally. Additional detail of the Kiss and ride area would be required, and it must be designed in a manner that ensures queuing does not extend onto Catherine Field Drive (impacting on traffic flow). The school proposes 1500 students, and it is envisaged that the majority of students would travel by private vehicle or bus. The efficacy of the proposed provision shall be justified by assessment of similar sites.</li> <li>• Plans depicting dimensions (aisle width, indent width, length), signage and line marking must be submitted with any future application.</li> <li>• Parking/ loading areas shall be designed to comply with relevant Australian Standards.</li> <li>• Relevant swept paths to be depicted include (but are not limited to) the following:           <ul style="list-style-type: none"> <li>– Vehicles entering and exiting driveways and parking aisles simultaneously; and</li> <li>– Largest design vehicle entering, manoeuvring with the site and egress the site.</li> <li>– A bus shelter must be provided as part of the proposed development. All indented bus bays must be designed in accordance with the relevant standards and design guides.</li> </ul> </li> <li>• Answers to specific queries:           <ul style="list-style-type: none"> <li>• What growth rate should be applied in our traffic model? Note that TfNSW has directed us to use the standard growth rate which is 2.5%. 2.5% would be satisfactory at this stage considering the area is not yet rezoned.</li> <li>• Do we need to provide any bicycle parking within the school as it is currently not accessible via bicycles? Although bicycle accessibility is not yet achieved it may be difficult to enforce</li> </ul> </li> </ul>

	<p>provision after the school is approved and operational. We may condition that prior to completion of the final stage that all parking must be provided. However, a small amount should still be provided at Stage 1 to accommodate any teachers or students that may live local and choose to cycle to the school.</p> <ul style="list-style-type: none"> <li>• Footpath connecting the indented bus bay on Catherine Field Road to the school has been designed for 1.8m in width in accordance with Austroads Guide to Road Design Part 3, does it need to be widened? 3m is to be provided to accommodate students waiting to board etc. This is what we strive for around all schools.</li> <li>• Our initial modelling shows that the CHR on Catherine Field Road does not need to be provided before Stage 4. Does Council have any comment on the timing? Right turn bay shall be provided at stage 1.</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• A queuing analysis of the kiss and ride area has been undertaken to demonstrate that the design can accommodate all traffic required without queuing onto Catherine Fields Road</li> <li>• SIDRA network modelling has been undertaken to demonstrate that development traffic can be accommodated by the surrounding road network</li> </ul>
<b>What matters are unresolved?</b>	<ul style="list-style-type: none"> <li>• Council requires the provision of a bus shelter. However, a bus shelter should be provided by Council as part of the Council's Road &amp; Transport Infrastructure Asset Management Plan if required</li> <li>• Council has expressed their preference for a 3m wide footpath adjacent to the bus bays. However, the proposed 1.8m footpath is in accordance with Austroads requirements and the School has proposed a covered waiting area for students adjacent to the pedestrian access.</li> <li>• Council has expressed their preference for delivery of the channelised right turn entry in Stage 01, but modelling shows it is not necessary until Stage 04 which is dependent on the growth rate</li> </ul>
<b>Any remaining points of disagreement?</b>	n/a
<b>How will the project team address matters not resolved?</b>	n/a

## 1.6 Response to Submissions

This section details Ason Group's comments on the transport, traffic and parking related matters within the response to submissions (RtS) with respect to SSDA documentation as shown in the following:

- Department of Planning, Housing and Infrastructure (DPHI):
  - **Table 5** (dated 03 May 2023), and subsequent comment **Table 6**
  - **Table 10** (dated 18 November 2024), and subsequent comment **11**
- Camden Council (Council) – **Table 7** (dated 06 April 2023)
- Transport for New South Wales (TfNSW):
  - **Table 8** (dated 04 April 2023)
  - **Table 9** (dated 01 Oct 2024)

Detailed responses are as follows:

<b>TABLE 5: RTS - DPHI – DATED 03 MAY 2023</b>		
No.	Response to Submissions	Ason Group Response
1	It is considered that the characteristics of the road better identify as an urban road with capacity for up to 900 vehicles per hour. Accordingly, traffic volumes generated by the proposal would likely comprise a significant proportion of total vehicle movements on Catherine Fields Road, including up to 37% in Stage 1 and 76% in Stage 5. The carrying capacity of the road is anticipated to be exceeded by Stage 4.	The Proposal now seeks an ultimate scenario of the School to 980 students, In accordance with the SIDRA intersection modelling undertaken in <b>Section 6</b> and the peer review completed by DPHI (formerly DPE), the capacity of Catherine Fields Road will not be exceeded with amended student intake.
2.	<p>In consideration of the above, the Department is of the view that Catherine Fields Road cannot support the volume of traffic proposed by the completed development. The proposal necessitates the requirement for more extensive road upgrades to be carried out, beyond those currently proposed as part of the application.</p> <p>Another key concern raised by the Department and Council is the absence of any established pedestrian footpaths or safe crossing points along Catherine Fields Road needed to support the proposed school development.</p>	<p>Refer to Response 1 above regarding traffic volumes generated by the proposed school.</p> <p>The development of active transport networks would be overseen by Council as part of the master planning for increased residential development in Catherine Fields.</p> <p>In contrast to a public school which serves a local catchment, the proposed school draws on a wider geographical catchment that will rely on private transport and chartered buses.</p> <p>Notwithstanding, the School will construct footpaths along the frontage of the site which contributes to the development of the active transport network for Catherine Field.</p>
3.	The Department's traffic consultant has also advised that the environmental capacity of Catherine Fields Road would be exceeded in Stage 3. The environmental capacity takes into consideration amenity and safety considerations of the surrounding residences rather than just the physical carrying capacity of a roadway.	It is noted that the base case volumes for the 2035 year exceed the environmental capacity threshold of 500 vehicles per hour for a "Collector" Road indicating the road corridor should be classed "Sub-Arterial". That is, the increase in traffic volumes as a result of development of the Catherine Field precinct would change the

		<p>typology of Catherine Fields Road to a movement corridor, whereby Environmental Capacity thresholds do not apply.</p> <p>The evolving role of Catherine Fields Road is acknowledged in the South West Growth Area Structure Plan, where it is identified as a <i>'potential key road subject to investigation'</i>.</p> <p>Accordingly, the Stage 3 traffic volumes are considered to have acceptable amenity impacts based on the future context of Catherine Fields Road.</p>
4.	<p>The Department notes that there is no commitment from the Applicant to undertake road upgrades or provide adequate footpaths beyond the site frontage. While it is acknowledged that the application is exempt from contributions under the Camden Contributions Plan 2011, this does not preclude the Applicant from proposing a works-in-kind agreement or offering to enter into a voluntary planning agreement with Council to provide a contribution towards infrastructure that would be needed to support the proposed development.</p>	<p>The increase in delay resulting from the Proposal is moderate, especially in the context of the intersection reaching full saturation. As such, any future intersection upgrades would primarily intended to resolve existing capacity constraints.</p> <p>Any works that would form part of a planning agreement would reasonably need to demonstrate a benefit of the proposed measure to users of the school, which may be dependent on precinct wide networks being developed.</p>
5.	<p>The staged development would be dependent upon the site and locality being subject to significant servicing and infrastructure upgrades by Council at a time that is currently unknown. However, the TAIA submitted as part of the application has not undertaken modelling of any background traffic growth should the precinct be rezoned. Further, no assessment has been submitted demonstrating that the operation of future stages can be operated safely in terms of access.</p>	<p>It is noted no precinct rezoning has been confirmed by Council for this locality within Catherine Field, as such, the growth rate of 2.5% has been adopted as an appropriate and conservative measure.</p>

Further to the above, an additional comment was received from DPHI, reproduced below.

**TABLE 6: RESPONSE TO SUBMISSIONS – DPHI**

No.	Response to Submissions	Ason Group Response
1.	<p>The Department notes the LoS of the Catherine Fields Road/Camden Valley Way intersection at full operation would be LoS F with or without the development. Intersection performance (queue length, average wait time) for scenarios 'with the development' and 'without the development' in 2035 must be included to enable an assessment of</p>	<p>With reference to Section 6.3.2, the intersection of Catherine Fields Road/Camden Valley Way continues to operate with an LoS F. Noting the intersection already operates beyond capacity in the Base Case (with a degree of saturation exceeding 1.0) the reported performance could be expected to be sensitive to minimal change.</p>

	traffic impacts of the development on this intersection.	
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**TABLE 7: RESPONSE TO SUBMISSIONS – CAMDEN COUNCIL - DATED 06 APRIL 2023**

No.	Response to Submissions	Ason Group Response
2.1	Traffic calming measures are required along parking aisles that extend beyond 100m.	Noted. The installation traffic calming measures such as speed humps every 100m as per AS2890.1:2004 can be conditioned.
2.2	The road works, i.e. channelised right turn and median island, must be installed as part of Stage 1.	With reference to the SIDRA modelling undertaken for all three stages presented in Section 6.3, the school accesses will perform satisfactorily with minimal delays in all three stages. Nevertheless, the proponent seeks to implement a channelised right turn bay and median as part of Stage 3 works.
2.3	It is observed that at most schools many parents arrive prior to the school dismissal time and it is envisaged that the 30 space kiss and drop spaces may be occupied early and queuing may extend beyond the site boundary. The kiss and drop area must be signposted and line marked accordingly. It is also to be managed to ensure vehicles flow through and use it for its intended purpose to reduce the chance of queuing along Catherine Fields Road.	Noted, Management of the kiss and ride spaces is addressed in the Preliminary School Transport Plan included as Appendix A, where further refinement will be undertaken in consultation with the school, prior to issue of the Occupation Certificate.
2.4	The Traffic Report states that the intersections will continue to operate at the same level of service. The Camden Valley Way / Catherine Fields intersection shows it operating at level of service (LoS) F at Stage 2. Without development the signal operates at LoS F, however the development adds 16.9 seconds delay in the AM peak and 19.7 seconds delay in the PM peak. Naturally, as the school population increases so too will the delay, noting the study assumes right turn movements from the site will not be restricted until the latter stages. Application of the right turn restrictions (at Stage 5) adds 4.5 seconds in AM peak (totalling 275.1 second delay) and 17 seconds in the PM peak (totalling 294.3 seconds). The overall delay is just under 5 minutes.	Noting the intersection is already saturated, the increased delay resulting from the Proposal are modest. As such, intersection upgrades would primarily intended to resolve existing capacity constraints.
2.5	At Stage 5, the school exit operates at LoS F. This may result in queuing internally, extending impact on vehicles entering the site and potentially impacting on flow along Catherine Fields Road	This submission seeks to amend the student capacity to 980 over 3 stages, with Stage 4 having the same capacity as Stage 3. With reference to Section no queueing is expected along Catherine Fields Road as per the SIDRA modelling for Stage 3 in <b>Section 6.3</b> .

<b>3.</b>	Swept paths need to be overlaid against architectural plans to ensure that barriers, obstructions and fences have suitable clearances in accordance with AS2890.	Please see swept path analysis in <b>Appendix F.</b>
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**TABLE 8: RTS – TFNSW – DATED 04 APRIL 2023**

No.	Response to Submissions	Ason Group Response
1.	TfNSW provides the following comments to the Department to assist with the determination of the application:	-
1.a	It is stated within the Transport and Accessibility Impact Assessment that: “The speed zone on Catherine Field Road transitions from 60km/hr from the intersection of Camden Valley Way to 80km/hr in front of the proposed school site. TfNSW has indicated that the project can apply to the Road Network Safety Officer for an extension of the 60km/hr speed zone.” TfNSW advises that the speed reduction from 80km/h to 60km/h has been completed.	Noted.
1.b	TfNSW raises concerns with regards to the lack of pedestrian facilities provided. DPE and Council should be satisfied that suitable pedestrian paths/facilities are provided within the vehicle accessible areas to corral pedestrians to appropriate crossing locations.	<p>Pedestrian facilities by way of footpaths within all vehicle accessible areas and a pedestrian crossing within the kiss and drop location are proposed.</p> <p>Regarding pedestrian footpaths within the broader area, this is an ongoing issue to be resolved by Council as part of the master planning of the urbanisation of Catherine Fields. In the case of the proposed development, the School will draw on a wide geographical catchment that will heavily rely on private transport.</p>

**TABLE 9: RTS - TFNSW – DATED 01 OCTOBER 2024**

No.	Response to Submissions	Ason Group Response
1	40km/hr ‘School Zones’ are to be installed in Townson Road in accordance with the following conditions.	Noted.
2.	Council should ensure that any parking, drop-off / pick-up zones, and bus zones incorporated are in accordance with TfNSW standards and requirements.	Noted.

3.	<p>the Applicant must obtain written authorisation from TfNSW to install the 'School Zone' signs and associated pavement markings and/or remove/relocate any existing Speed Limit signs.</p>	Noted.
4.	<p>To obtain authorisation, the Applicant must submit the following for review and approval by TfNSW, at least eight (8) weeks prior to student occupation of the site:</p> <ul style="list-style-type: none"> <li>- A copy of development consent</li> <li>- The proposed school commencement/opening date</li> <li>- Two (2) sets of detailed design plans showing the following: <ul style="list-style-type: none"> <li>- School property boundaries</li> <li>- All adjacent road carriageways to the school property</li> <li>- All proposed school access points to the public road network and any conditions imposed/proposed on their use</li> <li>- All existing and proposed pedestrian crossing facilities on the adjacent road network</li> <li>- All existing and proposed traffic control devices and pavement markings on the adjacent road network (including School Zone signs and pavement markings).</li> <li>- All existing and proposed street furniture and street trees.</li> </ul> </li> </ul>	Noted.
5.	<p>'School Zone' signs and pavement marking patches must be installed in accordance with TfNSW approval/authorisation, guidelines, and specifications.</p>	Noted.
	<p>All 'School Zone' signs and pavement markings must be installed prior to student occupation of the site.</p>	Noted.

	The Applicant must maintain records of all dates in relation to installing, altering, removing traffic control devices related to speed.	Noted.

**TABLE 10: RTS - DPHI – DATED 18 NOVEMBER 2024**

No.	Response to Submissions	Ason Group Response
1	Please clarify how the intended staggering of the proposed private chartered bus service as part of Stage 3 development will occur outside of peak drop-off pick-up (DOPU) times, despite being proposed to operate during the school's morning and afternoon peak hours.	<p>This report has been amended to clarify the proposed operation of the private chartered bus service. Boarding and alighting activities for the private chartered bus will take place exclusively from the external Bus Zone located on Catherine Fields Road (refer to Section 5.3.5). As outlined, the private chartered bus service will operate independently of the internal drop-off and pick-up (DOPU) area, which has a dedicated facility accessed via the internal circulation road.</p> <p>Consequently, while the private chartered bus service will run during the school's morning and afternoon peak periods, its operations will not overlap or conflict with internal DOPU movements. This separation effectively staggers bus operations from internal traffic, preventing congestion and mitigating potential impacts on traffic flow and safety during peak times.</p>
2.	In addition, noting the chartered bus will occupy 12.5m of the eastern half of the DOPU area, provide further evidence to demonstrate the shared DOPU area can adequately accommodate the expected traffic during these peak hours.	<p>Refer to the above response and Section 5.3.5.</p> <p>Buses will not occupy the DOPU area.</p>
3.	Considering the new school population and the change in DOPU areas at each operational stage, existing and new students, staff and parents are unlikely to be more familiar or proficient with the DOPU operation. Provide further justification for the reduction in service time during Stages 2, 3 and 4.	<p>While it is acknowledged that each operational stage will introduce new staff, students, and parents unfamiliar with the DOPU arrangements, it should also be recognised that an existing cohort of staff and parents from earlier stages will remain. This established group will naturally demonstrate familiarity with the operational requirements, effectively setting a clear example and providing informal guidance for newcomers. Consequently, their continued presence and experience will facilitate improved efficiencies over time, supporting</p>

		<p>a progressive reduction in service times through Stages 2, 3, and 4. Moreover, it is anticipated that as operations mature, organisational routines will become increasingly streamlined, further contributing to shorter service times and smoother overall operations.</p>
4.	<p>Address the potential additional queuing and congestion within the DOPU circulation areas and around the site exit due to cars accessing the staff parking area located at the southern part of the site.</p>	<p>It is typical that the vast majority of staff arrive before the AM peak period and depart after the PM peak period, ensuring their movements occur outside the busiest times for student drop-off and pick-up. While a small number of staff may arrive or leave during peak periods, these movements are negligible in the context of overall site traffic and will not contribute to queuing or congestion within the DOPU area. As such, no operational constraints are expected due to staff parking access.</p> <p>An Operational Traffic Management Plan (OTMP) can be conditioned and will provide additional operational guidance on managing these interactions.</p>
5.	<p>Outline the proposed management measures to minimise the collision risks within the three sports courts, which also serve as access routes for waste vehicles, located east of the northern car parking area.</p>	<p>Refer to Section 5.3.6, which details servicing vehicle operations. The loading area has been designed in accordance with AS 2890.2:2018. Deliveries and waste collection will be strictly scheduled outside school peak periods to minimise interactions with students. The school's administration and management staff will manage these operations, ensuring that drivers are familiar with the details outlined in the Plan and the Code of Conduct (refer to the School Transport Plan).</p> <p>It is noted that potential collision risks between servicing vehicles and users of the sports courts will become relevant only from Stage 3 onwards, as the sports courts are scheduled for construction during that stage. Prior to the completion of these sports courts, further targeted operational management measures can be developed and implemented to address any collision risks proactively. Furthermore, the area will be physically separated from general school areas by fencing, providing an additional layer of safety through effective management of pedestrian and vehicle interactions.</p> <p>An Operational Traffic Management Plan (OTMP) can also be conditioned to ensure that comprehensive collision risk mitigation strategies are in place before Stage 3 is completed.</p>
6.	<p>Provide a swept path analysis to demonstrate that the waste vehicle loading area has sufficient space for safe on-site manoeuvring</p>	<p>Refer to AG04 of Appendix F, confirming waste vehicles will perform a three-point turn within the designated area to enable forward entry and exit.</p>

for vehicles to enter and egress the site in a forward direction.	
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Further to the above, an additional comment was received from DPHI, reproduced below.

**TABLE 11: RTS – DPHI – SUPPLEMENTARY MARCH 2025**

No.	Response to Submissions	Ason Group Response
1.	<p>The department have requested that the further information is provided on the type and intensity of the use of the sports field outside of school hours and that the traffic, WMA and Acoustic reports are reflective of the uses.</p>	<p>The sports field will be available for use from 8:20 AM to 9:00 PM Monday to Friday, and from 9:00 AM to 9:00 PM on weekends. While these hours allow for broad access, use of the field outside of standard school hours will primarily be by Minarah College sports teams, typically twice per week between 5:00 PM and 9:00 PM for around 40 weeks per year. As these sessions involve school students already on-site, they will reduce traffic during the PM peak period, as students will leave later rather than all at once at dismissal.</p> <p>The field may also be available for external hire on an infrequent basis, but only when not in use by Minarah College sports teams. Any external use will be occasional and secondary to school activities, primarily for small-scale training rather than competitive matches. The field may also occasionally be used for a weekend event by an external club or for school-run events such as the annual school fete.</p> <p>Given that all after-hours use occurs outside of standard school peak periods, traffic impacts will be minimal, and existing parking provisions will accommodate demand.</p> <p>An Operational Traffic Management Plan (OTMP) can be conditioned to provide further operational guidance as required.</p>

*Date indicated date received by Ason Group.*

## 2 Strategic Context

### 2.1 Camden Local Strategic Planning Statement

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The Camden Local Strategic Planning Statement aligns with key outcomes of the *Western City District Plan*<sup>1</sup>, a 20-year growth management plan envisioned by the Greater Sydney Commission which sets priorities and actions for achieving strategic direction for the areas including Camden, Wollondilly, Campbelltown, Liverpool, Fairfield, Penrith and the Blue Mountains. As a key part of the District Plan, key outcomes relating to the Camden LGA include:

- Promoting north-south and east-west transport connections and matching population growth with infrastructure; and
- Setting a housing supply target for Camden of 11,800 new dwellings over the next 0-5 years.

The plan highlights Camden as the largest growing Metropolitan Sydney Council area by housing growth, indicating substantial residential and urban developments to accompany population growth for the region. To this effect, the LSPS supports the provision of infrastructure to provide and cater to this growth.

### 2.2 Community Profile

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#### 2.2.1 Population

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As the proposal relates to the future delivery of an educational precinct, strategic demographic assessment has been undertaken based on the informed decisions census profiles<sup>2</sup> of the Camden LGA and subsequent sub-areas, it should be considered that the data includes wider extents outside of the Catherine Field area, where interpretation should account for a minor variance to available statistical information.

#### 2.2.2 Historical Growth Patterns

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Between 2007 and 2022, the Camden Council LGA has consistently demonstrated substantial growth in comparison to growth rate averages across the Greater Sydney region, historically peaking at 10.0% in 2017 as observed in **Figure 2**. This has been characterized by rapid expansion associated with land releases, urban development and infrastructure upgrades in the region.

This high growth rate has specifically been driven by the Leppington-Rossmore-Catherine Field sub-area, which has exhibited substantial historical growth in comparison with Greater Sydney as demonstrated in **Figure 3**. Between 2012 and 2020, the resident population of the sub-area almost tripled in size, peaking in 2017 with an estimated percentage change from the previous year of 27.2%.

This level of growth is anticipated to continue into the future, as referred to in Section 2.2.3.

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<sup>1</sup> [Western City District Plan](#), Greater Sydney Commission

<sup>2</sup> [Leppington – Rossmore – Catherine Field Profile Area](#), Informed Decision (.id)

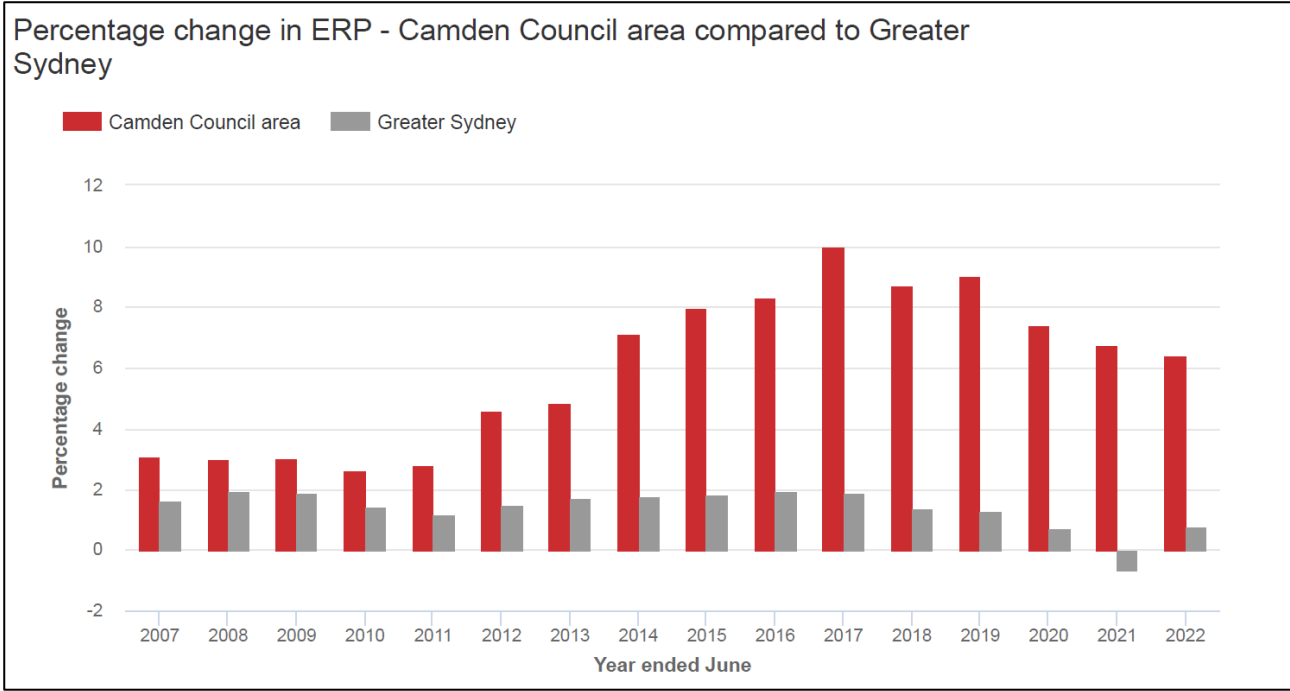


Figure 2: Estimated Resident Population (ERP) & Growth – Camden Council LGA

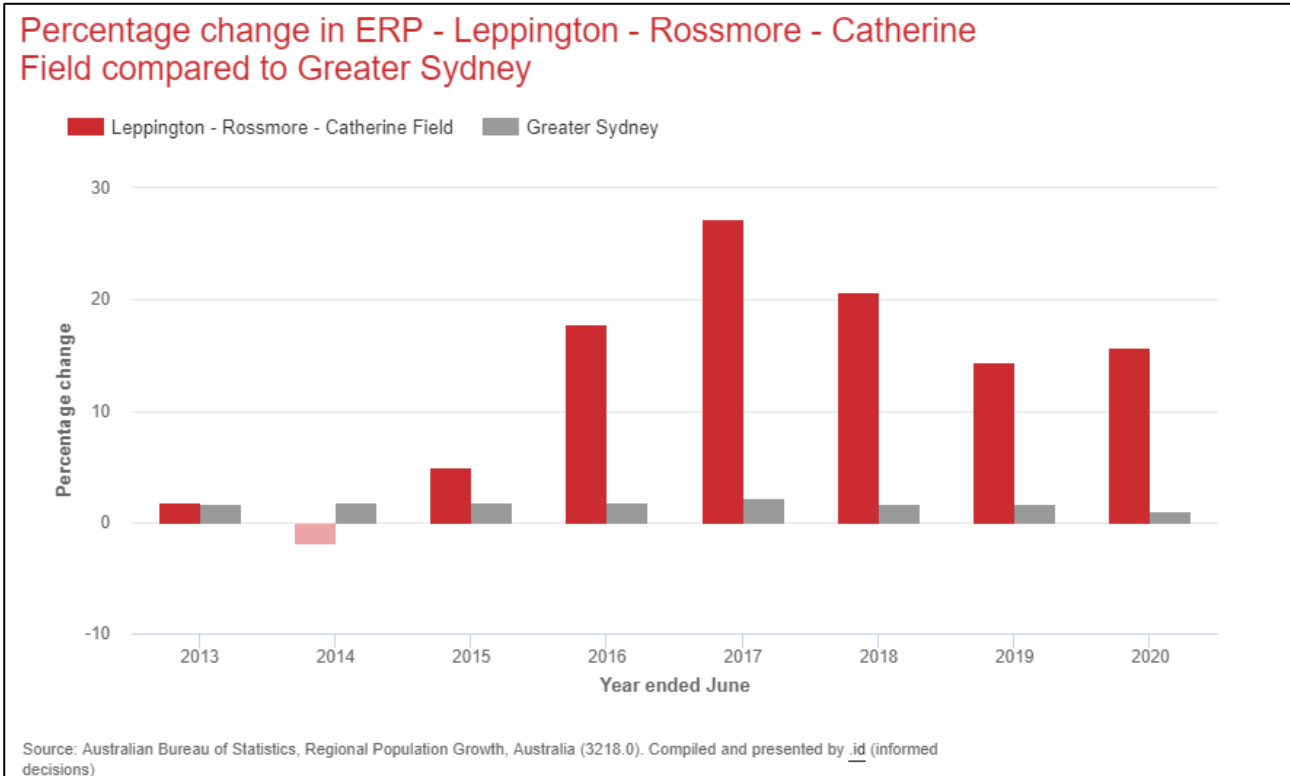


Figure 3: ERP & Growth – Leppington-Rossmore-Catherine Field

2.2.3 Future Growth Projections

Historically high growth for both the Camden LGA and Leppington-Rossmore-Catherine Field sub-area is anticipated to continue forward, in line with proposed residential development and goals outlined as part of

the Western City District Plan and Council LSPS, as existing rural and greenfield areas transition to residential land uses. The maps below capture anticipated future dwelling developments as part of the Camden Council and demonstrate projected growth.

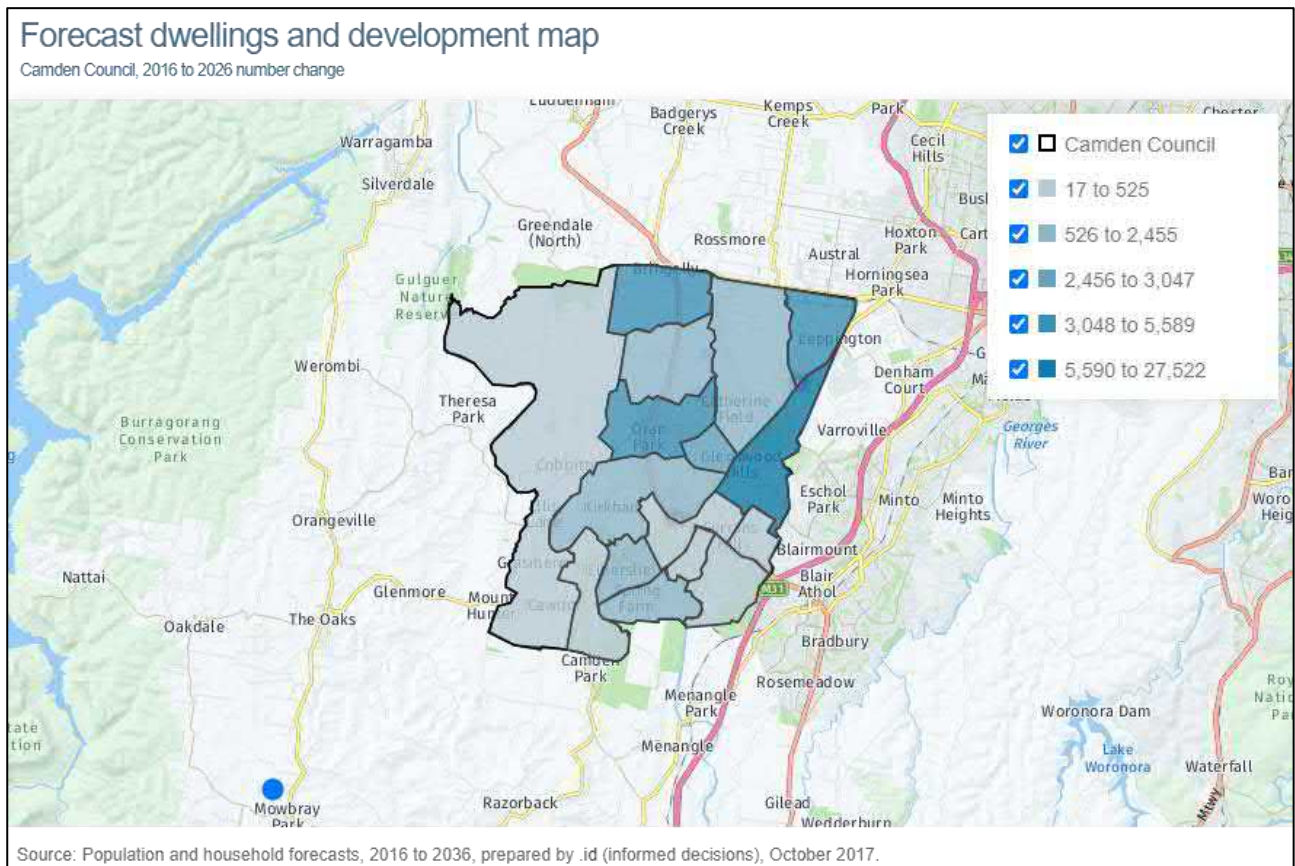


Figure 4: Forecast Dwellings for Camden LGA between 2016 and 2026

The figure above demonstrates substantial growth in the Turner Road Precinct & central Hills sub-area, south of the proposed school site. Residential dwellings are anticipated to grow over the 10-year period to approximately 5,748 dwellings. Additionally, further growth is observed in the Oran Par, Leppington and Bringelly areas. At present, this has been observed in the form of ongoing residential developments and has been supported by on-road upgrades associated with Camden Valley Way.

## Forecast dwellings and development map

Camden Council, 2026 to 2036 number change

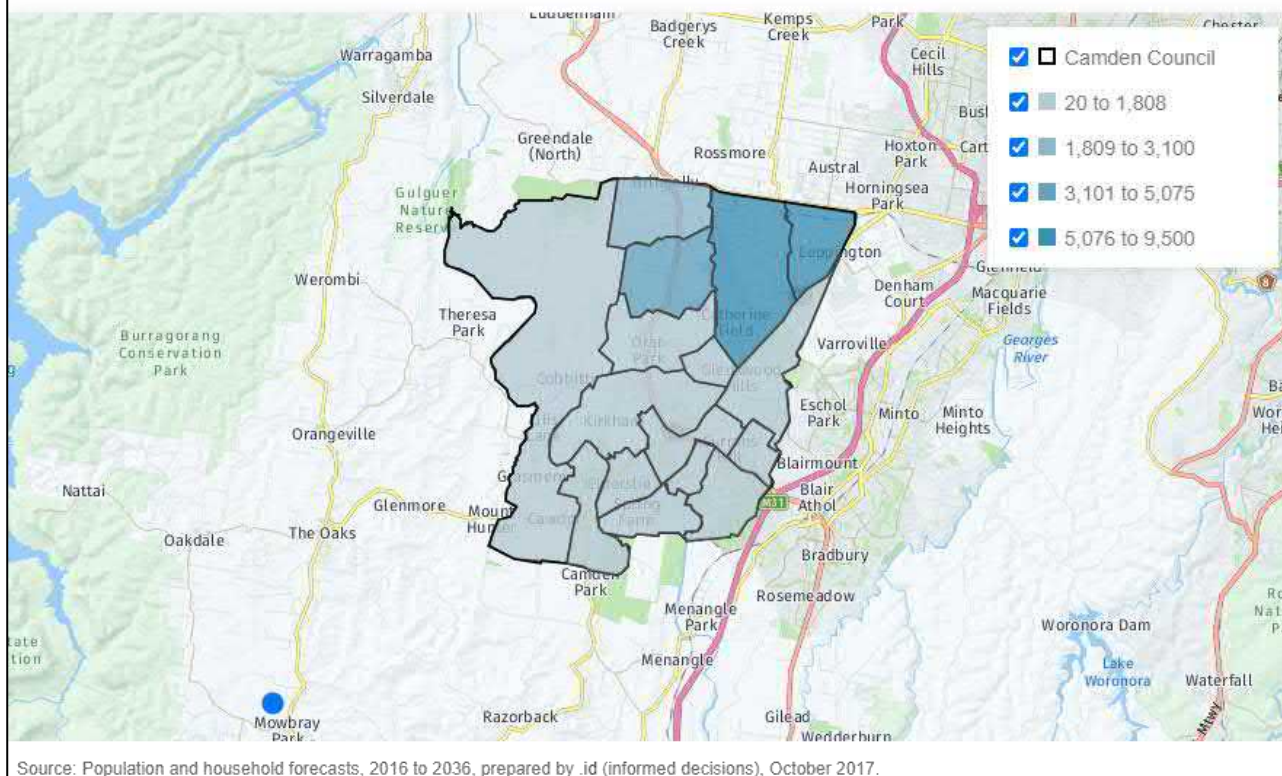


Figure 5: Forecast Dwellings for Camden LGA between 2026 and 2036

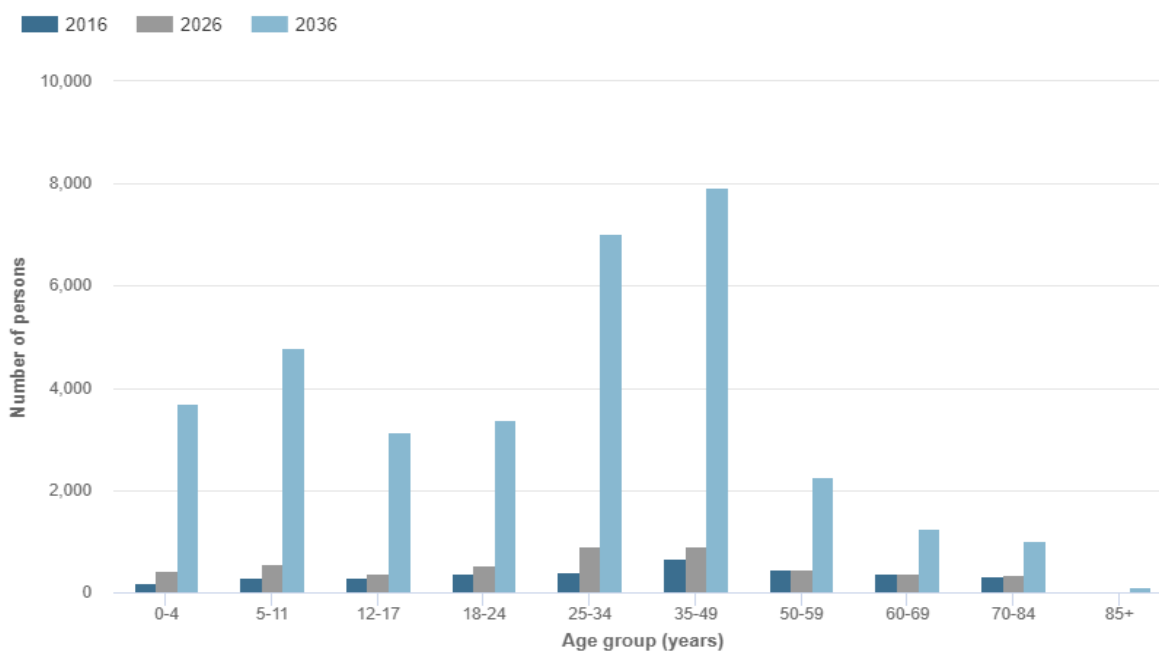
Between 2026 and 2036, the Catherine Field North Precinct exhibits the most substantial growth of the Camden LGA, indicating an increase of approximately 9,500 dwellings, followed by the Maryland and Leppington precincts.

With regard to specific persons growth associated with the Catherine Field North precinct, service age projections demonstrate that the majority of the population migrating to the area consists of *Parents and Homebuilders (35 to 49)* and younger as demonstrated in **Figure 6**.

Pre-school, primary and secondary education service age groups are anticipated to make up approximately 33.7% of persons by 2036, indicating that there will be high demand for education infrastructure and school-related transport serviceability in future years.

## Forecast age structure - Service age groups

Catherine Field North Precinct - Total persons



Source: Population and household forecasts, 2016 to 2036, prepared by .id (informed decisions), October 2017.

Figure 6: Catherine Field North Precinct – Service Age Groups

## 2.3 Travel Behaviour

Travel behaviour has been assessed with reference to the Household Travel Survey (HTS), undertaken by TfNSW. The table below provides a breakdown of modal dependency exhibited by the Camden LGA during the 2019/20 collection. Year.

**TABLE 12: EXISTING MODE SHARE**

Travel Mode Share	% of total trips
Vehicle Driver	54.8%
Vehicle Passenger	31.2%
Train	1.4%
Bus	0.4%
Walk Only	7.6%
Walk Linked	4.3%
Other	0.3%

Source: TfNSW, Household Travel Survey (HTS), 2019/20 Collection Year

<https://www.transport.nsw.gov.au/data-and-research/passenger-travel/surveys/household-travel-survey-hts>

The above table demonstrates a predominant modal dependency on private vehicle usage (86%), with a lower dependency on public transport modes accounting for approximately 1.8%. A sizeable proportion of trips are accounted for by walking, at 7.6%.

Walk-linked trips are defined as multi-segment trips that involve an ancillary travel mode. Typically, this constitutes a form of public transport (i.e., train, bus, or ferry) and to a lesser extent, private vehicles.

Accordingly, while the above captures an existing and historical dependence on private vehicle usage, future development associated with public transport in the form of new bus services and train routes would effectively facilitate a modal shift towards public travel modes if accompanied by adequate connectivity.

## 2.4 Road Safety Education Program

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The Road Safety Education Program is a long-term integrated education initiative funded by the Centre for Road Safety in government and non-government schools. The aim of the program is to increase road safety knowledge, understanding and skills.

Road safety education specialists in the government and independent school sectors provide professional learning and advice to teachers and schools about teaching road safety and how to address road safety issues through the curriculum.

The teaching and learning focus are on pedestrian, passenger and wheel safety, as well as on future drivers. The Centre for Road Safety leads the development of quality teaching and learning resources for teachers to use in schools.

The education sectors provide professional learning to teachers to equip them with the knowledge and skills to teach quality road safety education. Teachers are also shown how to use the resources in the classroom to create effective teaching and learning programs.

## 2.5 Safety Around Schools Program

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TfNSW continues to have a strong focus on improving the visibility of school zones to increase driver awareness and compliance. Schools aim to address road safety issues around their school to create a safer environment for the whole school community by:

- Teaching students about the local road safety conditions contribute significantly to improving their own safety.
- Reminding parents and carers about safe road user behaviours outside the school also contributes significantly to the safety of our students.
- Working with agencies to improve local safety issues in the school zone through planning, enforcement, engineering, or environmental changes.

It is noted that the speed zone on Catherine Field Road transitions from 60km/hr from the intersection of Camden Valley Way to 80km/hr in front of the proposed School. Based on the consultations with TfNSW, the School can apply to the Road Network Safety Officer for an extension of the 60km/hr speed zone to provide a safer road environment for all users close to the School.

This program also aims to reduce the number and severity of child casualties in 40 km/h school zones. The installation of school zone flashing lights to alert drivers that they are entering a 40 km/h school zone and to adjust their speed accordingly will be reviewed by TfNSW.

## 2.6 Movement and Place Framework

The Movement and Place is a cross-government framework for planning and managing roads and streets across NSW. The framework delivers on NSW policy and strategy directions to create successful streets and roads by balancing the movement of people and goods with the amenity and quality of places.

The below provides a brief summary of how Movement and Place are relevant for school development.

### 2.6.1 Place Analysis

The place analysis makes reference to the importance of the location in its physical form, the activity and generates and how its meaning is characterised by the community.

With reference to the movement impacts on place, the framework recognises the need to provide safe, direct, and comfortable walking and cycling routes as the backbone of active travel, including to schools and linking local activities to local recreation, giving priority to car-free arrival points and providing minimal parking. Of relevance to the Proposal, built environment indicators for Primary Schools extracted from the Practitioner’s Guide to Movement and Place are presented in **Figure 7**.

USER OUTCOME	INDICATOR	MEASURE	DESIRED OUTCOME	DATA SOURCE
 <b>Amenity and Uses</b>				
Convenient facilities	Primary schools	Walkable access to primary schools	Positive indicates increase in catchment	GIS network analysis

Figure 7: Built Environment Indicators

The locations/alignments of footpaths, pedestrian crossings, site accesses (for vehicles, pedestrians and cyclists) and traffic calming measures, have been determined based on the place analysis.

### 2.6.2 Movement Analysis

The concept of movement as characterized by the Framework describes the demand to, from and through the activity centres, and describes the series of modal networks interlinking them. With reference to the school’s location, it is interlinked by the road network, which is of adequate width to provide bus services, as well as pedestrian footpaths and dedicated cycling routes.

Movement analysis for the School has been completed for buses, private vehicles, walking and cycling in their current and future configurations to understand the expected patterns and number of patrons/people for each travel mode. Details of the traffic movement analysis are provided in **Sections 4 and 6**.

# 3 Existing Conditions

## 3.1 Site & Location

The Site is located at 268-278 Catherine Fields Road, Catherine Field, Dharawal Country, NSW and is legally described as Lot 11 in DP 833983 and Lot 12 in DP 833784. The site is located within Camden local government area (LGA) and has a site area of approximately 4.50ha

The Site is in a typical large lot rural residential subdivision area. The Site has a gentle fall from the east to west with a minor ridgeline along the east to west axis. Diagonal falls lead to the southwest and north west areas of the site. The northern and eastern boundaries of the Site are characterised by remnant regenerating bushland, whilst majority of the site is former pastureland with sparsely scattered trees.

Both lots contain rural residential dwellings with ancillary farm structures including numerous sheds, farm buildings and water tanks. Lot 11 contains two prominent dams.

The land area and surrounding context are demonstrated in **Figure 8** below.



Figure 8: Site Location

## 3.2 Road Network

### 3.2.1 Road Hierarchy

The key roads in the proximity of the site are summarised in **Figure 9** with reference to the site plan and road hierarchy in **Table 13**.

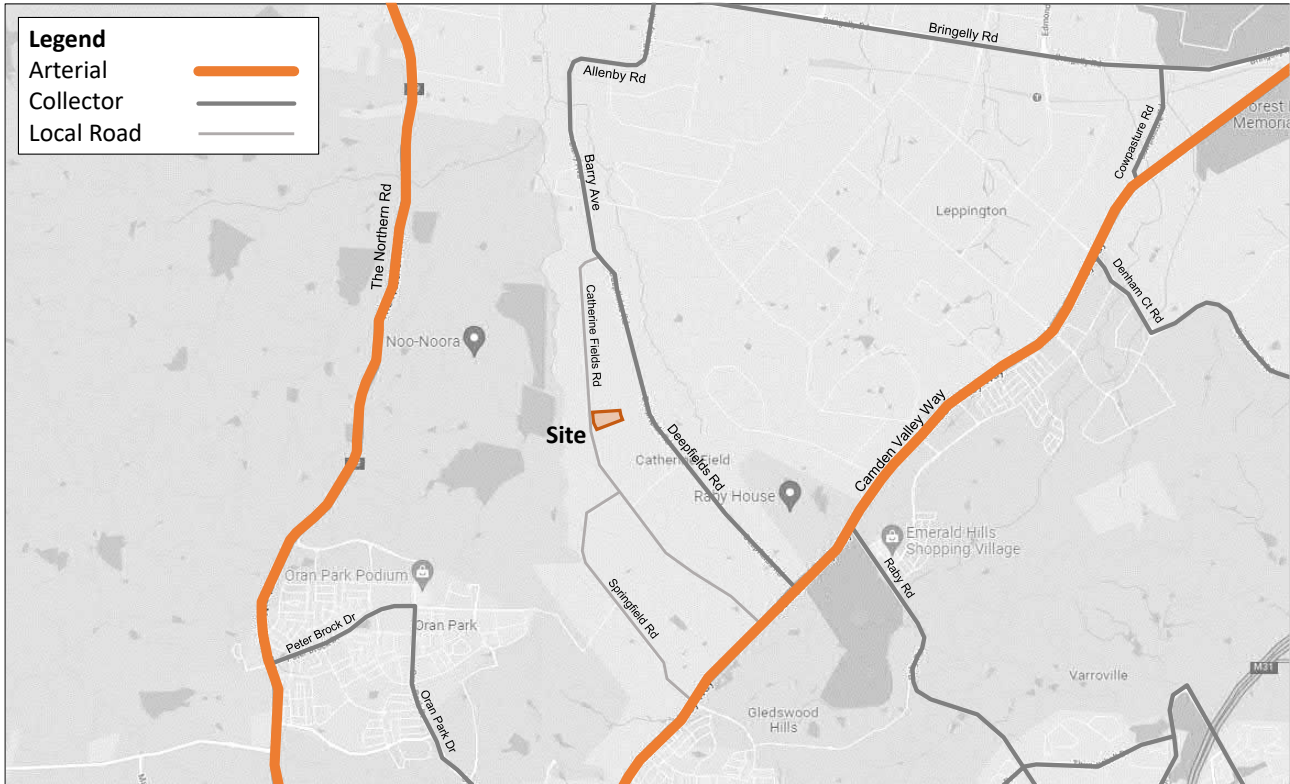


Figure 9: Site Context and Road Hierarchy

**TABLE 13: ROAD NETWORK**

Road Name	Road Classification	Typical Traffic (during peak periods) <sup>1</sup>	Speed Limit <sup>2</sup>
Camden Valley Way	Arterial	~ 3,000 veh	80 km/h
Bringelly Road	Collector	~ 600 veh	80 km/h
Deepfields Road	Collector	~ 300 veh	60 km/h – 80 km/h
Catherine Fields Road	Local	~ 300 veh	60 km/h – 80 km/h

Notes) 1. Typical traffic was adopted from historical peak hour surveys.

2. Signposted speed limit.

A review of the TfNSW NSW Road Network Classifications map shown in Figure 10 indicates that Catherine Fields Road is not a state road/regional road. As such, Catherine Fields Road falls under the jurisdictions of Council.

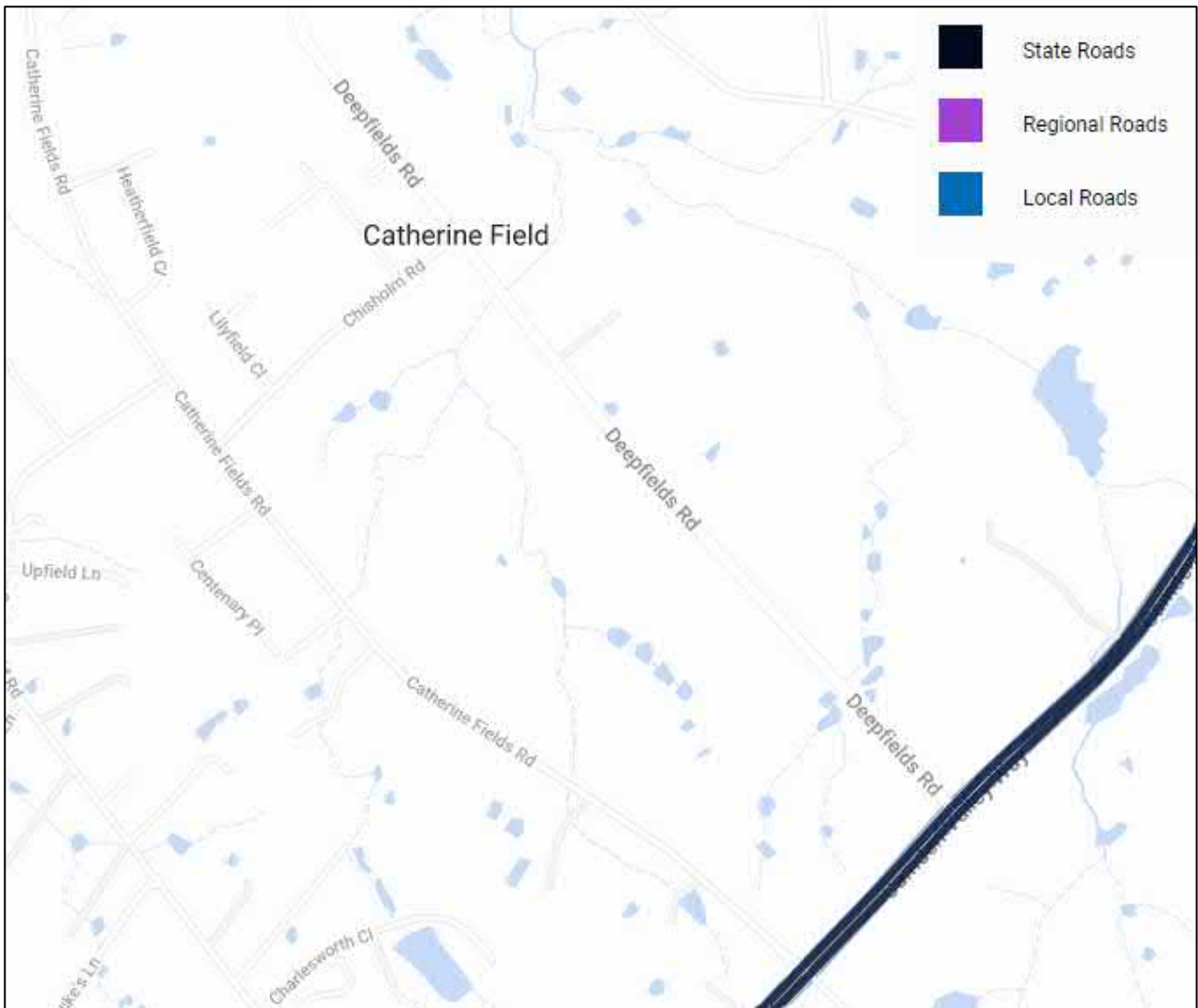


Figure 10: Road Jurisdictions

### 3.2.2 Surveyed Traffic Volumes

At the time of the previous submission, the greater metropolitan area underwent a pandemic event, which in turn has impacted the level of background traffic in the road network. This has a potential impact on the integrity and consistency of any traffic surveys undertaken during this period. Accordingly, existing baseline traffic volumes adopted for the traffic assessment have been derived from a variety of sources, including TfNSW SCATS detector counts, as well as historical surveys sourced prior to 2020. Reference should be made to the assumptions and considerations made in Section 8.1.1.

To address the comments from the RtS, Ason Group has completed additional traffic surveys on Tuesday, 25<sup>th</sup> October 2022 at the intersection of:

- Catherine Fields Road/ Chisholm Road
- Catherine Fields Road/ Deepfields Road

The traffic count data has been assessed to define natural traffic peak periods that coincide with typical school bell times in the AM and PM Peaks. Accordingly, background peaks formed during the following hours and thus form the basis of the assessment:

- AM School Peak: 7:30 am to 8:30 am
- PM School Peak: 3:00 pm to 4:00 pm

The figures below capture background movements for the traffic network in the proximity of the Site.

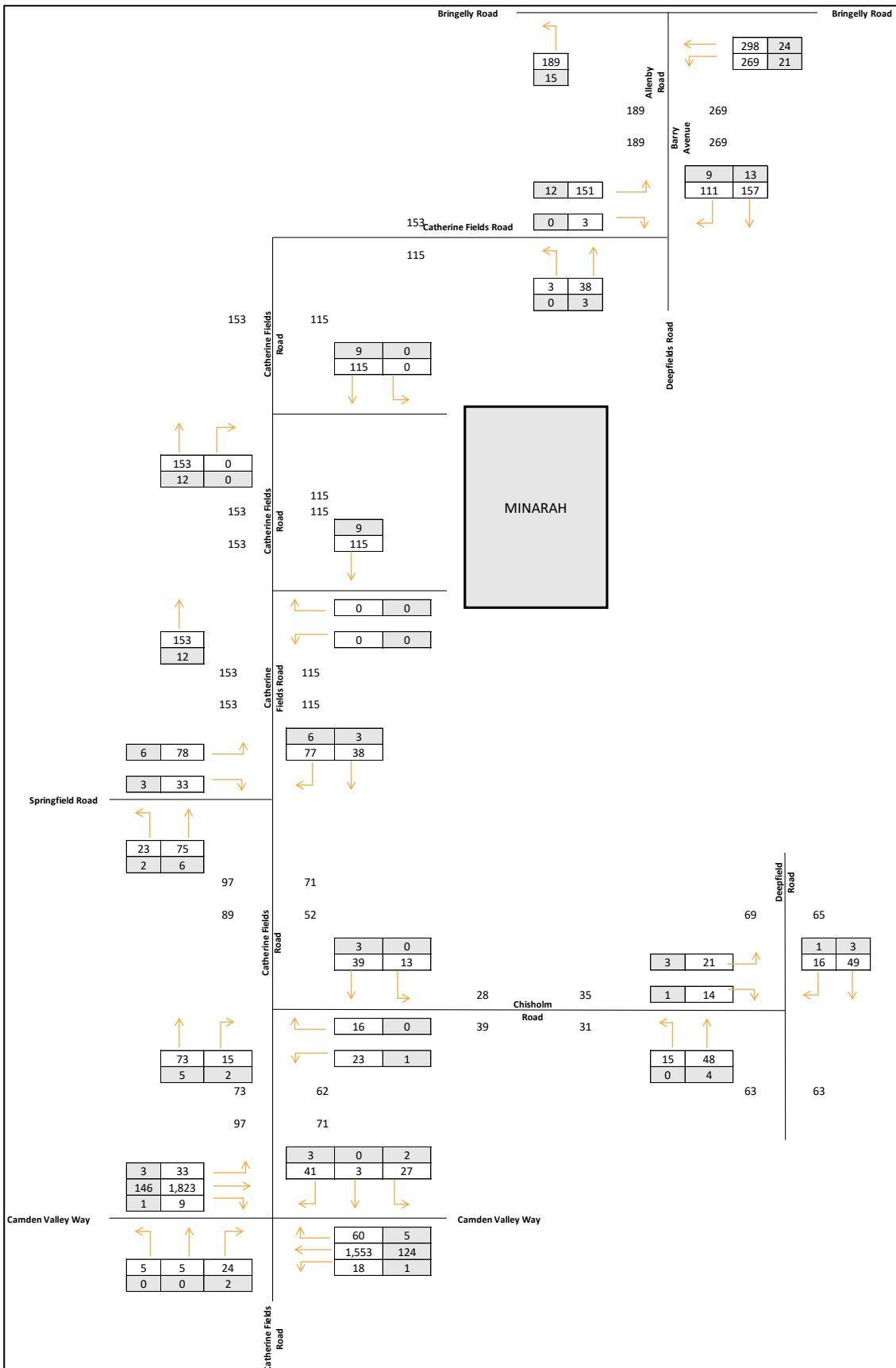


Figure 11: Existing AM Peak Traffic Volumes

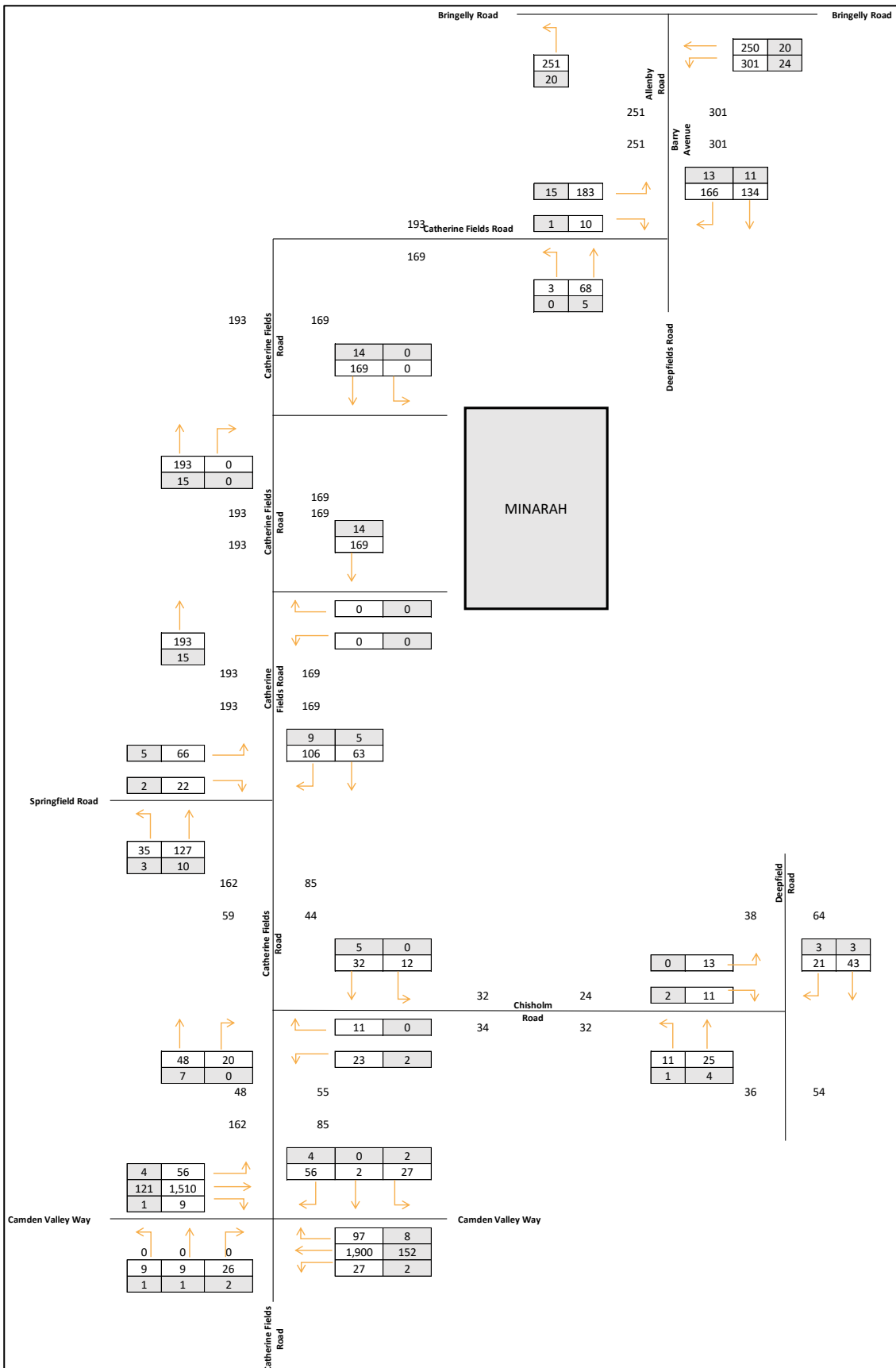


Figure 12: Existing PM Peak Traffic Volumes

### 3.2.3 Baseline SIDRA Performance Testing

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA Intersection 9 modelling software was used to assess the proposed peak-hour operating performance of intersections on the surrounding road network at key intersections within proximity of the site. In accordance with RMS (now Transport for NSW) *Guide to Traffic Generating Developments V2.2 (2002)* (RMS Guide), the Levels of Service (LOS) relevant to local roads are used to evaluate the operational performance of intersections. According to the RMS guidelines, roads operating at LOS D or better are generally considered to have acceptable flow conditions because they are below capacity. Roads operating at LOS E or worse are generally considered to have unacceptable flow conditions because they are at or above capacity.

In this regard, the operating performance of the key intersections has been analysed using the SIDRA Intersection 9 software. SIDRA modelling outputs a range of performance measures, in particular:

- **Level of Service (LOS)** – The LOS is a qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyse roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measures like vehicle speed, density, and congestion.
- **Average Vehicle Delay (AVD)** – The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- **Degree of Saturation (DOS)** – The DOS of an intersection (typically under traffic signal control) or a link measures the demand relative to the total capacity. A DoS value of 100% means that demand and capacity are equal and no further traffic is able to progress through the junction.

The SIDRA recommended criteria for the assessment of intersections as references by the RMS Guide are outlined in **Table 14**.

TABLE 14: LEVEL OF SERVICE			
Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment

### 3.2.4 SIDRA Layout

**Figure 12** captures the layout geometry of the existing intersection configurations as interpreted in the SIDRA modelling software.

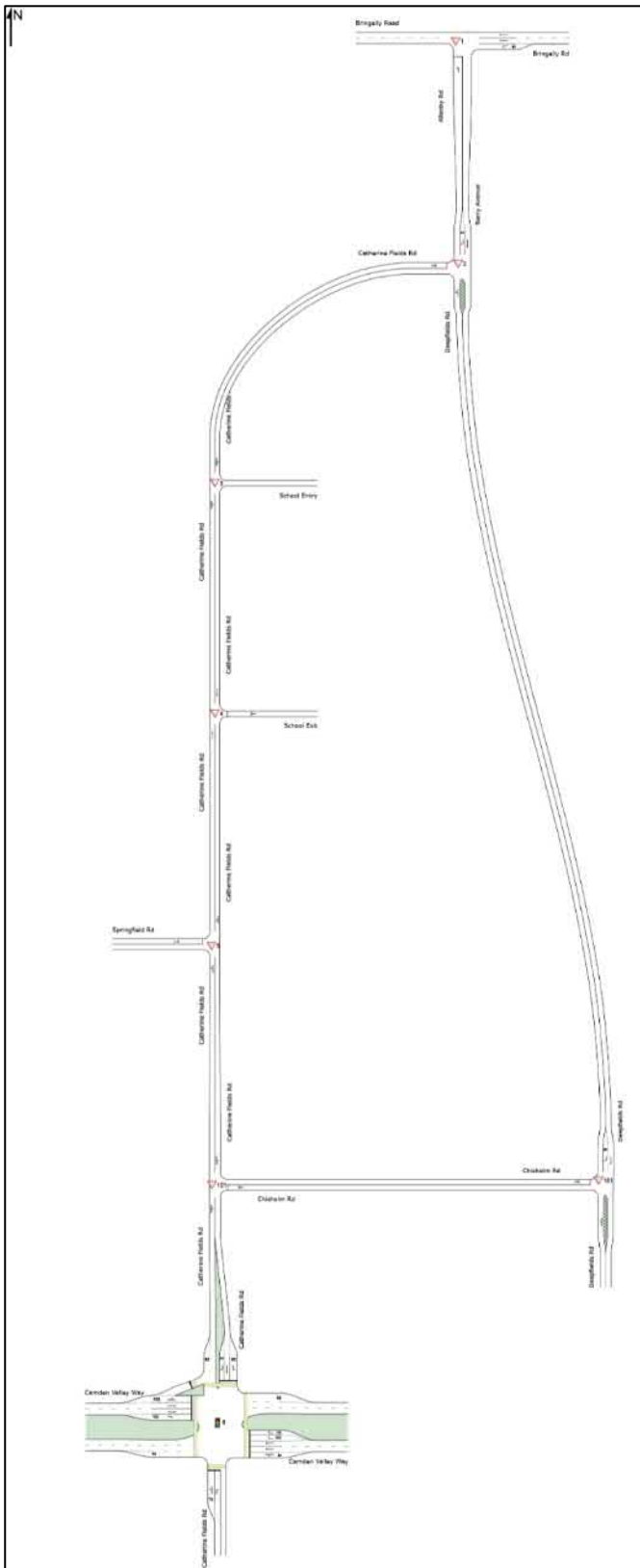


Figure 13: Existing intersection layout as modelled in SIDRA Intersection 9

### 3.2.5 Existing Intersection Performance

The Site is located in an area where it is expected that no pedestrian movements would be typical. As such, the existing baseline SIDRA model does not incorporate pedestrian movements. The results of the baseline SIDRA Intersection assessment are provided below in **Section 6.3.2**.

### 3.2.6 Road Safety

A review of the TfNSW *Centre for Road Safety* database has been undertaken to establish the crash history within the immediate vicinity of the Site. The results are based on crashes over a five-year period between 2018 and 2022. Locations of recorded crashes are shown in **Figure 14** and details summarised in **Table 15**.

A review of the crashes indicates that the majority of crashes have occurred at the Camden Valley Way / Catherine with several other crash occurrences at the Catherine Fields / Deepfields Road intersection.

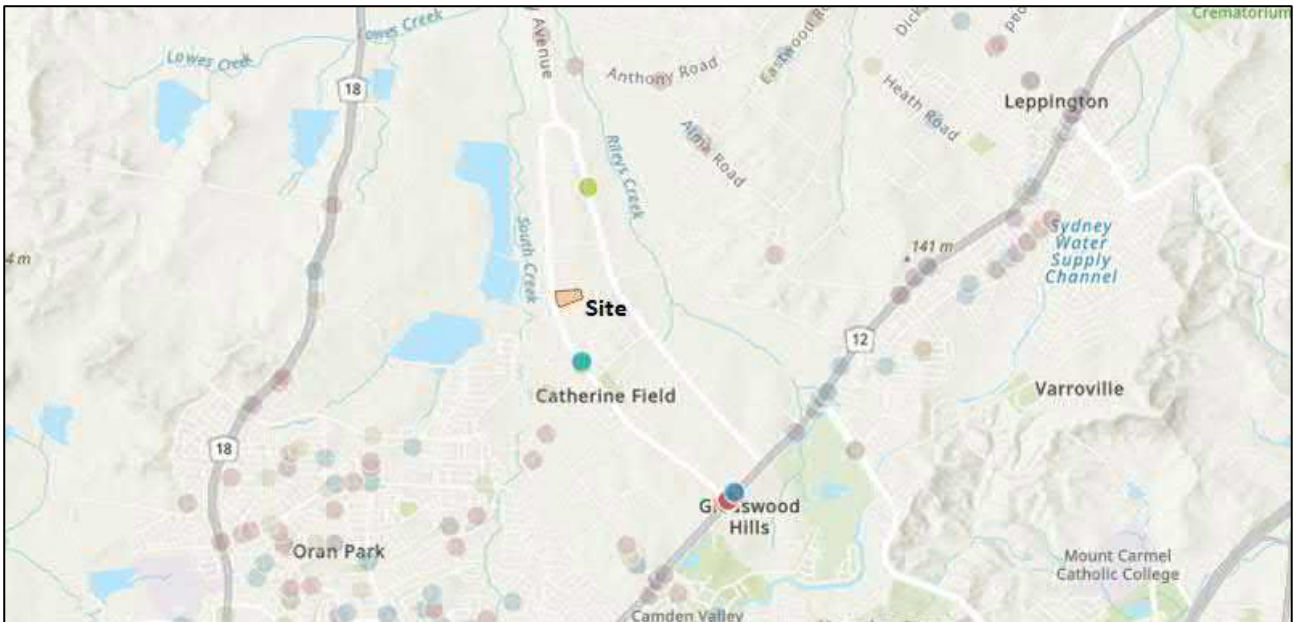


Figure 14: Crash Locations

#### TABLE 15: CRASH DATA

Year	Lighting	Description	Degree of Crash	Location
2022	Daylight	Rear End	Non-casualty (towaway)	Camden Valley Way near Catherine Fields Rd
	Daylight	Other same direction	Moderate Injury	Camden Valley Way near Catherine Fields Rd
	Daylight	Rear end	Serious Injury	Camden Valley Way / Catherine Fields Rd
	Daylight	Right near	Serious Injury	Catherine Fields Rd / Springfield Rd
2021	Daylight	Near End	Non-casualty (towaway)	Camden Valley Way / Catherine Fields Rd

2020	Daylight	Rear End	Minor/Other Injury	Catherine Fields Rd / Springfield Rd
	Daylight	Right Far	Serious Injury	Camden Valley Way / Catherine Fields Rd
2019	Daylight	Right through	Moderate Injury	Camden Valley Way / Catherine Fields Rd
2018	Darkness	U-turn	Moderate Injury	Catherine Fields Rd / Springfield Rd
	Daylight	Overtake turning	Serious Injury	Deepfields Rd

\* The vehicle ran off the road on a bend or turning a corner and hitting another object (either on the left or right side)

## 3.3 Public Transport

### 3.3.1 Train Connectivity

With regard to accessibility to the existing and proposed rail network, the proposed school location is not situated within walking distance of a train station.

Serviceability details are provided in **Table 16**, with reference to **Figure 15** below.

**TABLE 16: TRAIN SERVICES**

Line	Connection	Name	Frequency
T2	Leppington Stn.	Parramatta or Leppington to City	~ 4 services per hour
T5		Richmond to Leppington	~ 2 services per hour
T8	Minto Stn.	Macarthur to City via Airport or Sydenham	~ 4 services per hour
		City to Macarthur via Airport or Sydenham	~ 2 services per hour
T5		Leppington to Richmond	~ 2 services per hour

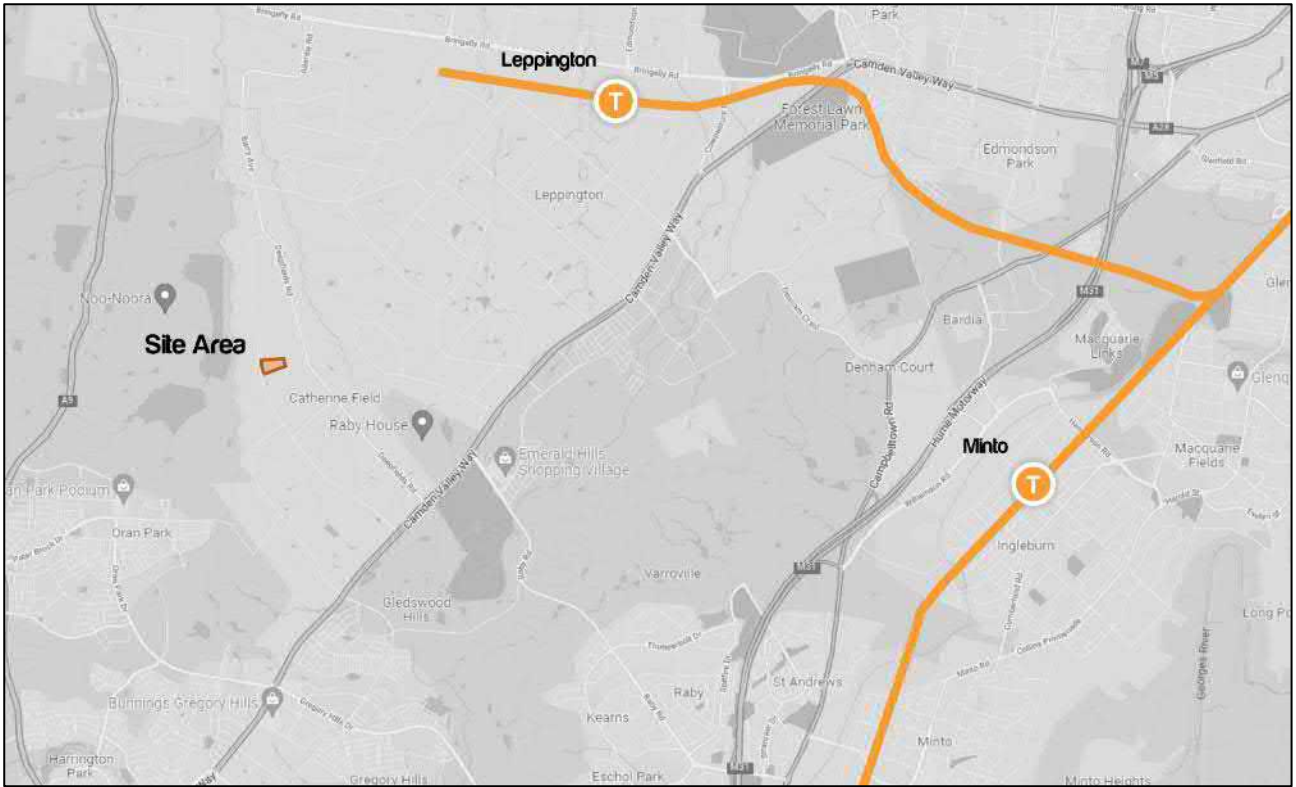


Figure 15: Train Stations

### 3.3.2 Public Bus Connectivity

With reference to existing public bus service connectivity for the area, a single bus stop location exists south of the Site along Catherine Fields Road and provides serviceability to two routes, summarised in **Table 17**.

TABLE 17: BUS SERVICES			
Route	Description	Provider	Frequency
850	Narellan Town Centre to Minto	Interline Bus Services	~ 2 per hour during the day
857	Narellan to Liverpool	Interline Bus Services	~1 every 2-3 hours during the day.

Both routes listed above access Catherine Fields Road via Camden Valley Way, and typically loop via the adjacent Springfield Road as demonstrated in **Figure 15** rather than travelling the full extent of Catherine Fields Road northwards.



Figure 16: Catherine Fields Bus Routing

### 3.3.3 Future Opportunities for Services

Having regard to the above, it is demonstrated that part of Catherine Fields Road is adequately dimensioned to provide bus serviceability. As part of the school development, potential school bus routes should be explored in consideration of servicing the future student population.

Notwithstanding, there is a potential opportunity for ancillary serviceability (via shuttle or chartered services) from Leppington Station 5km to the northeast or Minto Station approximately 8km to the south-east.

Subject to the bus ridership demand, it is recommended that private chartered buses for exclusive school use provide services to and from Leppington Station and Minto Station every 30-minute during the School's AM and PM peak hours. The recommended chartered bus routes to/from these train stations are shown below.

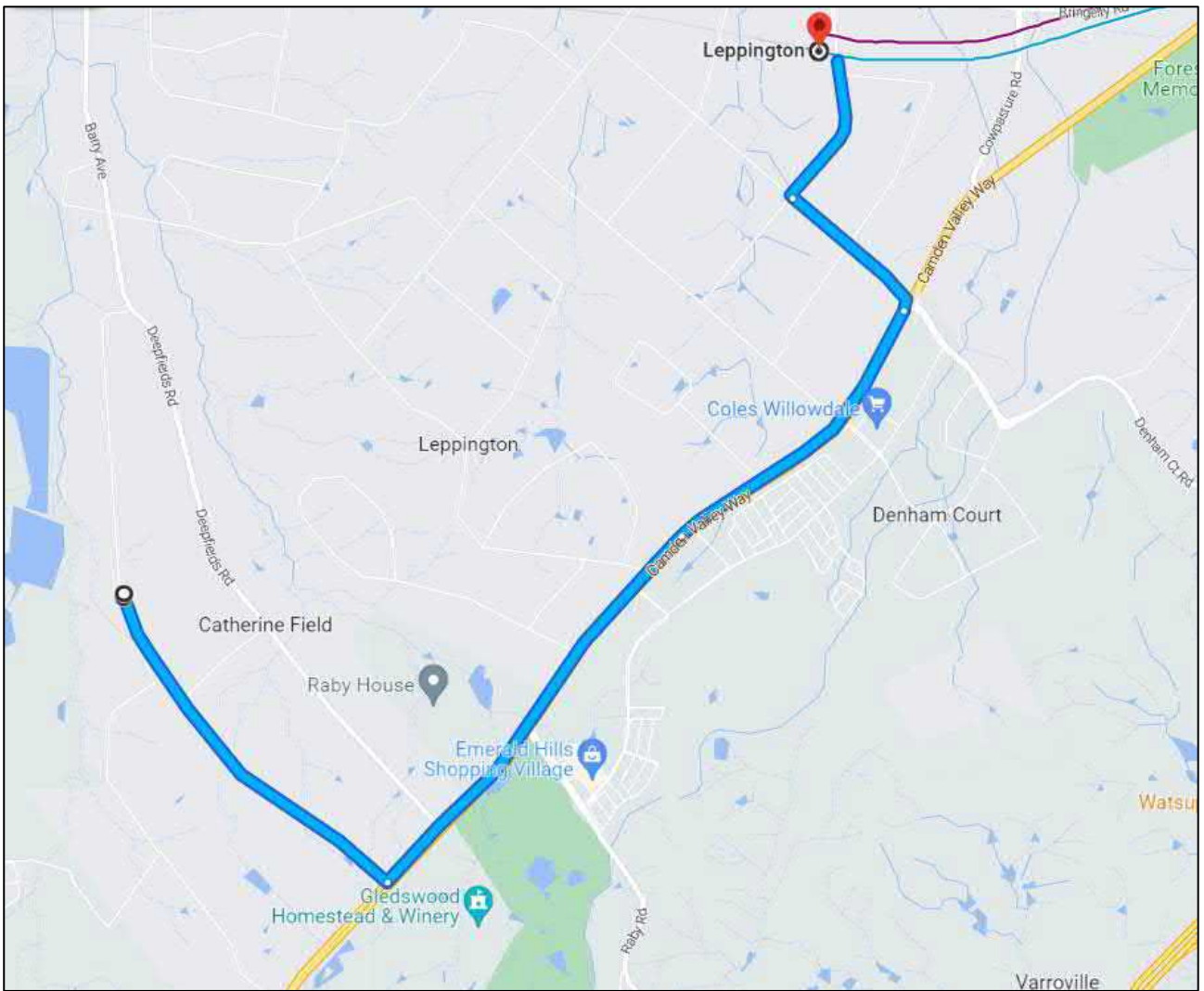


Figure 17: School – Leppington Train Station Bus Routing

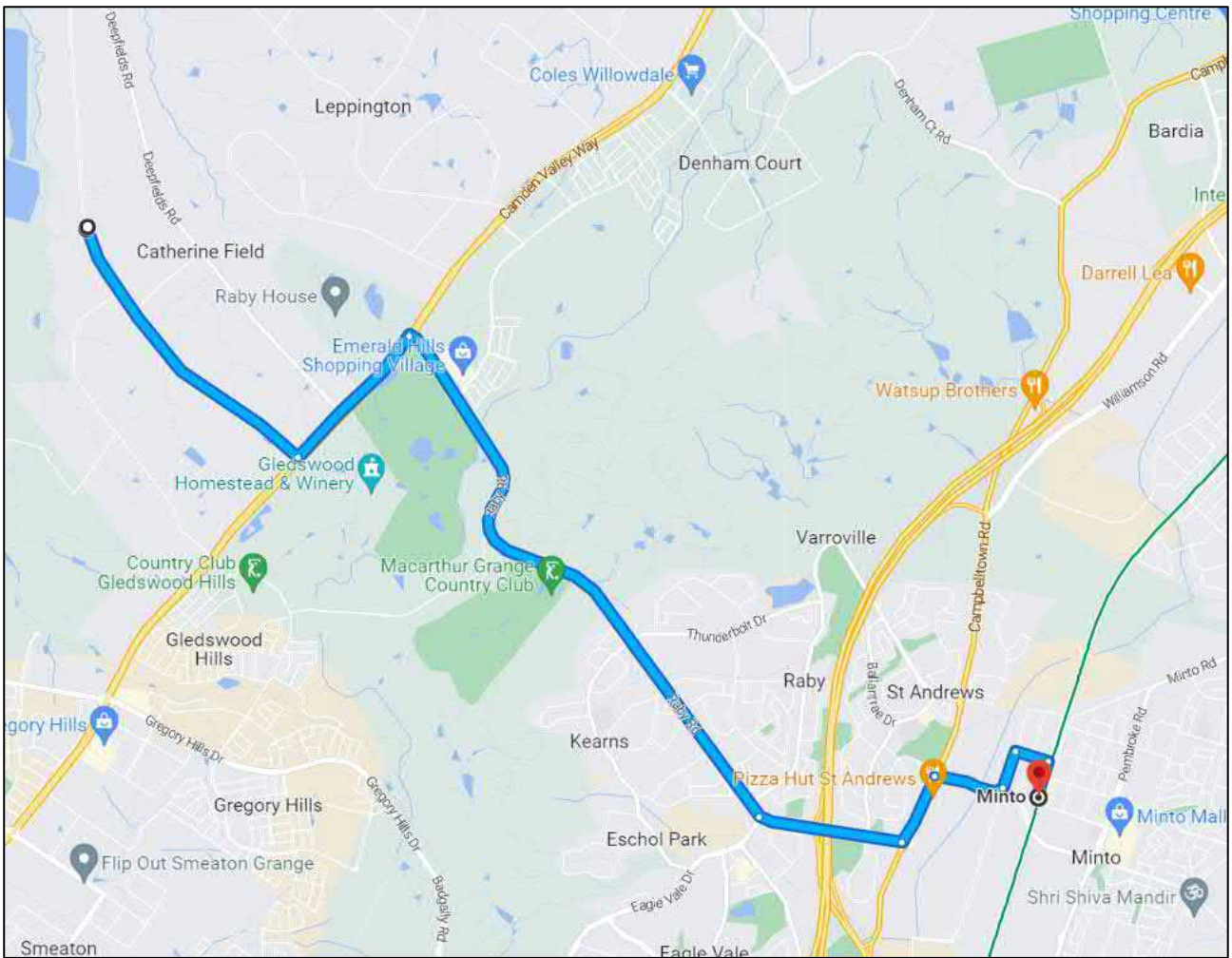


Figure 18: School – Minto Train Station Bus Routing

## 3.4 Active Transport

### 3.4.1 Pedestrian Network

Currently, there are no provisions for footpaths along the Catherine Fields Road frontage in the northern or southern directions. As part of the Council’s Pedestrian Access and Mobility Plan (2014), there is no anticipated footpath works planned for the Catherine Field area.

In the longer term, it is anticipated that future provisions relating to the residential development potential of the Catherine Field North Precinct will facilitate the growth and expansion of the footpath network and provide adequate connectivity through the locality.

### 3.4.2 Cycling Network

At present, there is limited cycling connectivity through the Catherine Field area, having regard for provisions immediate to the Site along Catherine Field Road, nor are there any plans for future provisions for cycling.

# 4 Preliminary School Travel Characteristics

## 4.1 Catchment Analysis

A preliminary catchment analysis has been undertaken by Lawrence Consulting.

The catchment analysis has nominated a 10km radius around the school and captures the following suburbs:

- Cobbitty – Leppington
- Camden – Ellis Lane
- Elderslie – Harrington Park
- Mount Annan – Currans Hill
- Claymore – Eagle Vale – Raby
- Ingleburn – Denham Court
- Austral – Greendale
- Hoxton Park – Carnes Hill – Horningsea Park
- West Hoxton – Middleton Grange, and
- Prestons – Edmondson Park.

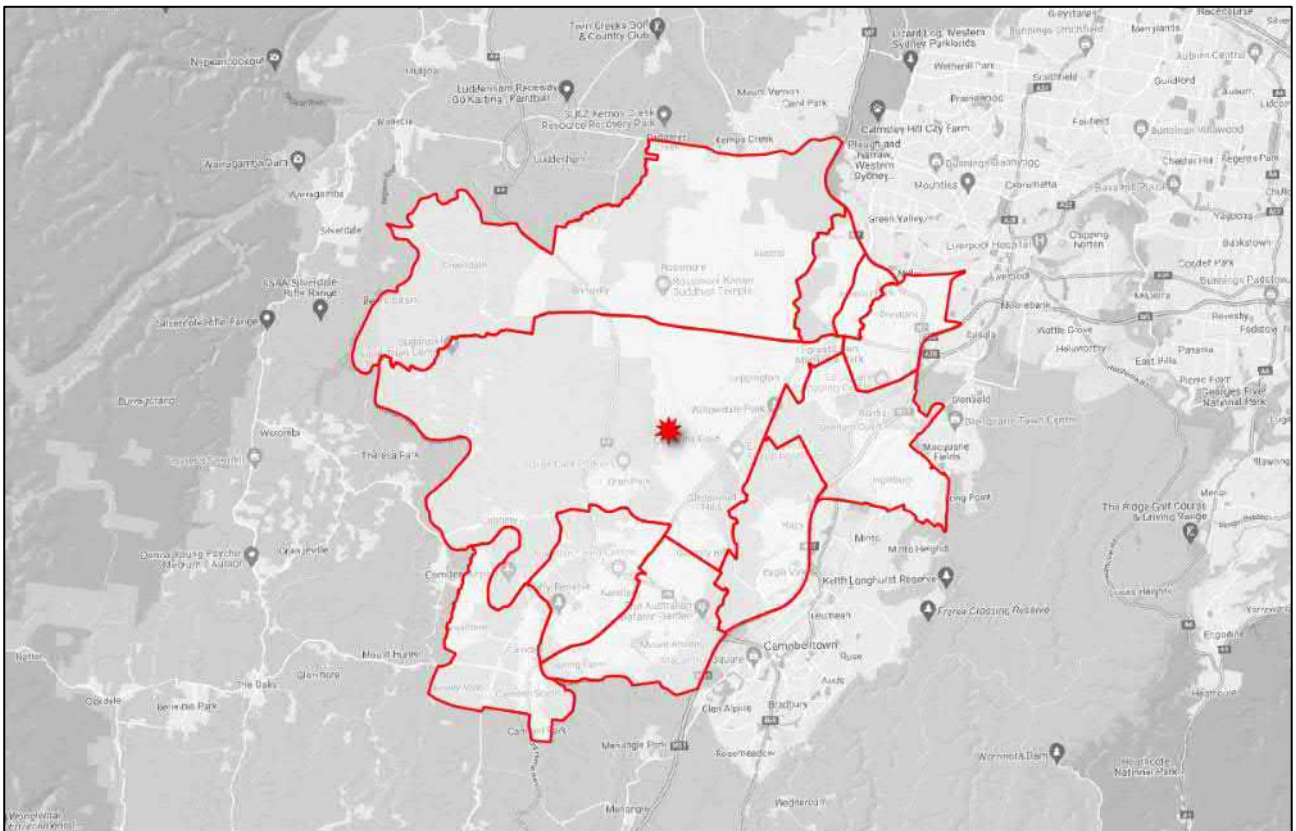


Figure 19: Catchment Map

It is considered that at this stage, the nominated catchment is indicatively provided until further consultation is undertaken with the Department of Education to define specific catchment bounds. Noting that the GVC is observed to have a similarly large catchment area, the above can be denoted as acceptable.

## 4.2 Public Transport Catchment

In line with guidelines outlined by the NSW Government and TfNSW, the School Student Transport Scheme (SSTS) provides catchment guidelines to provide eligibility for school public transport.

For grades K-2, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- Aged 4 years 6 months, or older.
- No minimum walking distance criteria apply to these students.

For grades 3–6, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- The straight-line distance from their home address to school is more than 1.6 km.
- The walking distance from home to school is 2.3 km or further.

For grades 7–12, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- The straight-line distance from their home address to school is more than 2 km.
- The walking distance from home to school is 2.9 km or further.

As defined below, **Figure 20** below demonstrates the catchment exclusion zones for Grades 7-12 with reference to the proposed schools' location. The exclusion zones above demonstrate that both the 2km radius and 2.9km distance capture the more immediate Catherine Field area, indicating suitability for the school in terms of public transport eligibility.

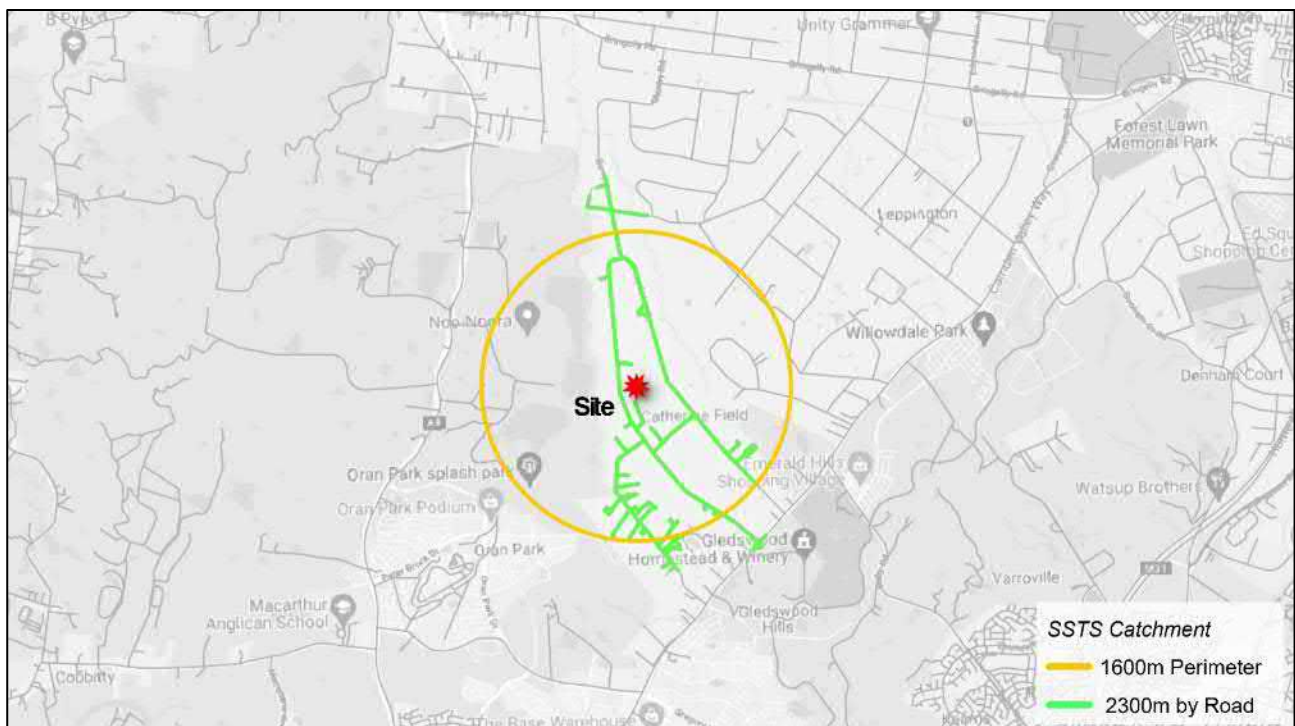


Figure 20: SSTS Exclusion Zones

The exclusion zones above demonstrate that both the 2km radius and 2.9km distance capture the more immediate Catherine Field area.

## 4.3 Active Transport Catchment

### 4.3.1 Pedestrian Catchment

SINSW have characterised the walking catchment of a school within 5, 10 and 15-minute walking distance increments (approximately 400m increments) of the school, representing desirability for the catchment area. **Figure 21** demonstrates the maximum catchment extents (1,200m) relative to the Site.

Given the nature of surrounding developments, the catchment perimeter demonstrates limited catchment effectivity as a result of the low-density / large-lot nature of the surrounding residential area. In addition, the catchment lacks any meaningful pedestrian pathway provision to facilitate walking catchment, and no existing safe crossing opportunities to facilitate movements east-west across Catherine Field Road.

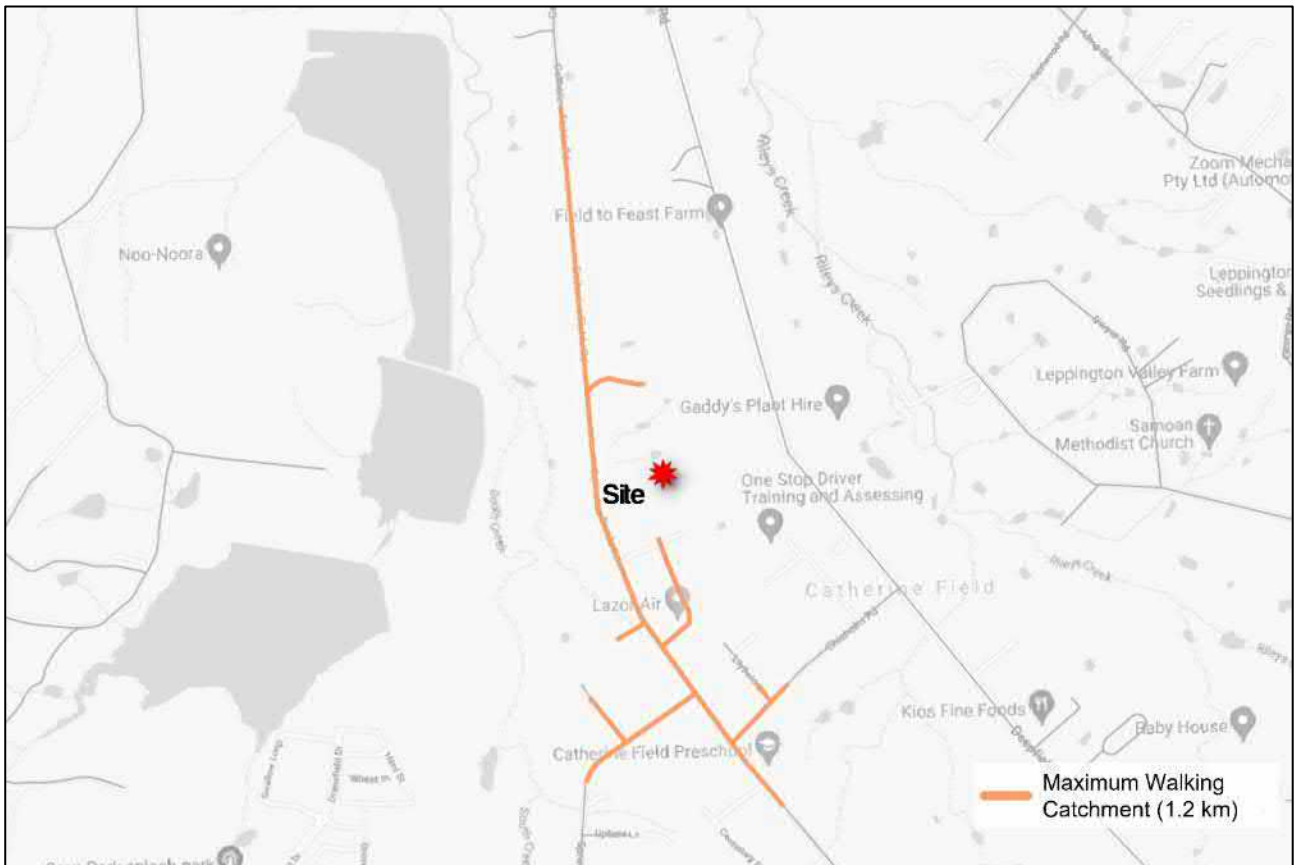


Figure 21: Pedestrian Catchment Zone

### 4.3.2 Cycling Catchment

In addition to the pedestrian catchment guidelines described by SINSW, the catchment areas for cycling are defined in a similar format based on 5-minute increments (approximately 1.2km increments). **Figure 22** illustrates the maximum extent of the cycling catchment zone (3.6km).

While the catchment map exhibits further-reaching extents, particularly towards the north and south, it should be noted that certain elements of cycling infrastructure – specifically relating to on-road cycling lanes, or lack thereof – may not be applicable, particularly for younger students as safe provisioning.



Figure 22: Cycling Catchment Zones

## 4.4 Travel Mode Surveys

As Minarah College will be a new school, there is no existing school or staff cohort. Comparison is instead drawn to the Green Valley Campus, which is run by the organisation.

Surveys of GVC staff and students were conducted to provide an understanding of travel characteristics, including:

- Travel mode for both the arrival and departure trips;
- Vehicle occupancy;
- Out of Hours School Care;
- Car Pooling, and
- Interest in different green travel strategies and initiatives.

Out of 1,100 students, there were 386 responses, representing a 35% response rate. Out of 90 staff, there were 31 responses, representing a 34% response rate. Generally, a response rate of 20% or higher is considered an acceptable representation of the cohort, hence the resulting travel mode surveys are considered an accurate depiction of the travel patterns of GVC. It is envisioned as part of the maintenance of

the future School Transport Plan as a live document, similar travel mode surveys are conducted for Minarah College to inform the travel patterns of the school.

#### 4.4.1 Students

##### Student Arrival/ Departure Time

In an operating capacity, the school period and bell times occur between 08:55 and 15:20 during weekdays, with student arrival typically occurring between 7:30 am and 8:30 am, peaking in the 8:00 am-8:15 am window. Student departure typically occurs between 3:00 pm and 4:00 pm, peaking in the 3:15 pm-3:30 pm window. The exact school hours are to be confirmed for Minarah, however, are expected to be similar to GVC at this stage. Figure 23 and Figure 24 present the typical student arrival/ departure times for GVC.

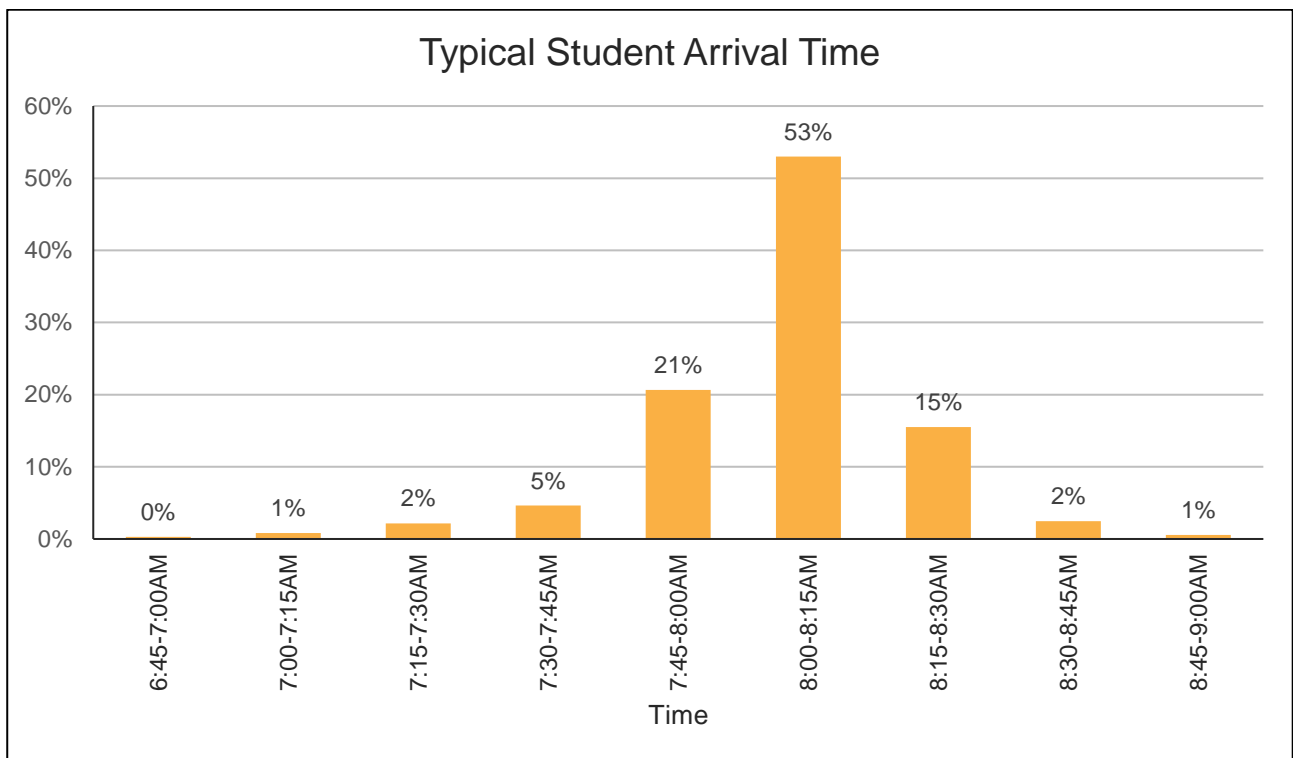


Figure 23: Typical Student Arrival Time (GVC)

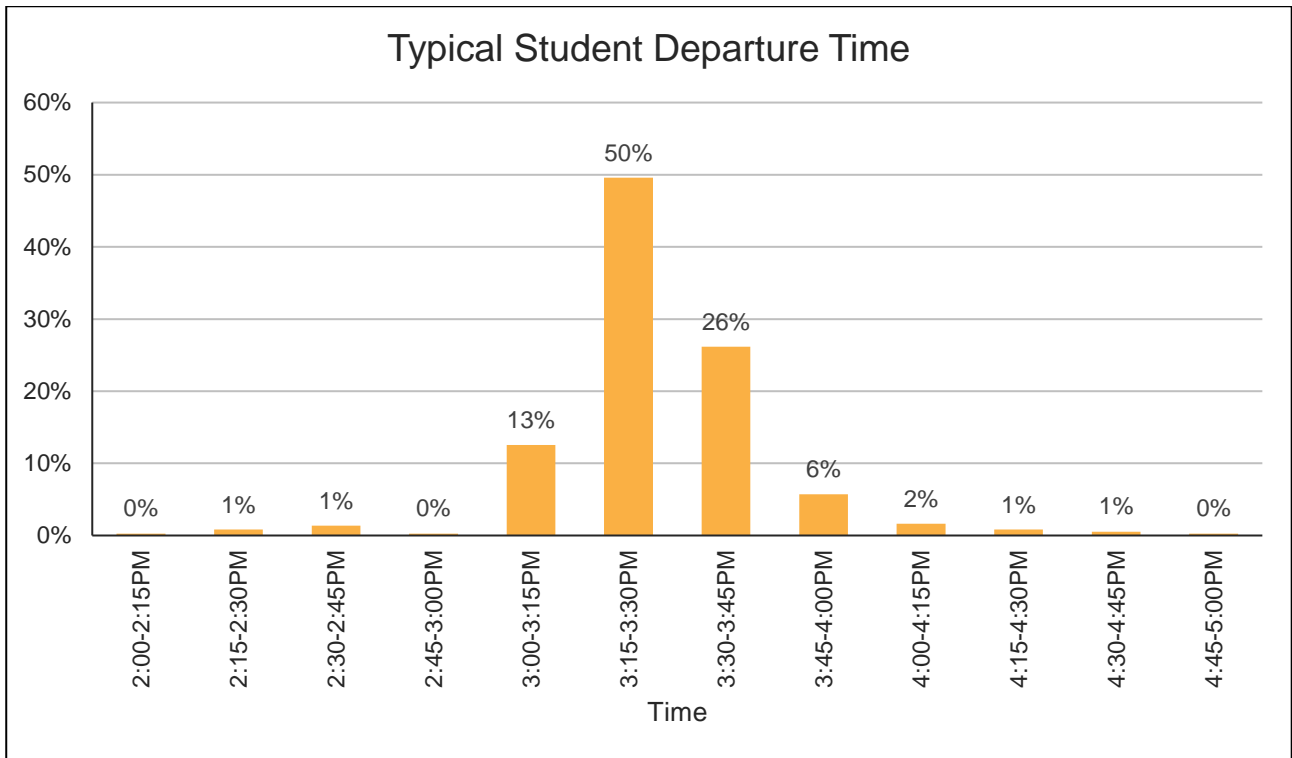


Figure 24: Typical Student Departure Time (GVC)

### Student Travel Mode Share

As part of the undertaken student surveys, an appreciation for modal travel has been obtained to provide indicators for travel behaviour and interactions with the School. Accordingly, Figure 25 demonstrates the modal breakdown of student trips to GVC.

As seen in the graph, GVC demonstrates a high dependency on private vehicle travel with car mode share representing almost 90% of the modal split. Small numbers of the GVC student cohort catch the bus (around 4%) and walk (around 6-7%). The “other” trips represent survey responses where the mode share was not able to be determined due to a lack of clarity in the response.

It is anticipated that the nature of the GVC is expected to be similar to the proposed Minarah Campus, due to the nature of the surrounding area and school catchment.

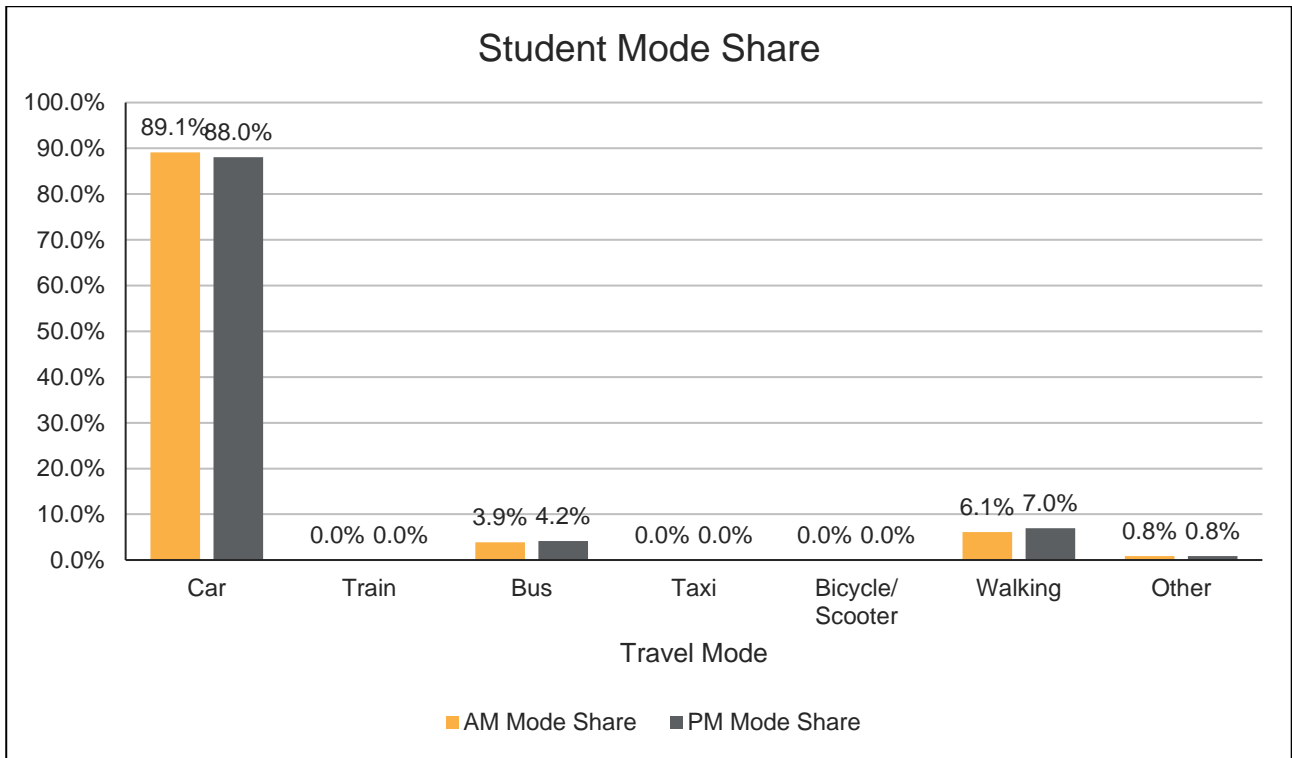


Figure 25: Student Mode Share (GVC)

### Car Pooling

The GVC surveys found a moderate level of carpooling. 75% of students that travelled via car did not have another student in the vehicle, however, some students travelled with large numbers of other GVC students as indicated in Figure 26. Based on the survey data, an average occupancy rate of 1.61 students per car was determined.

As the student population of Minarah is expected to present similar family structure characteristics, this occupancy rate is also adopted for the traffic assessment.

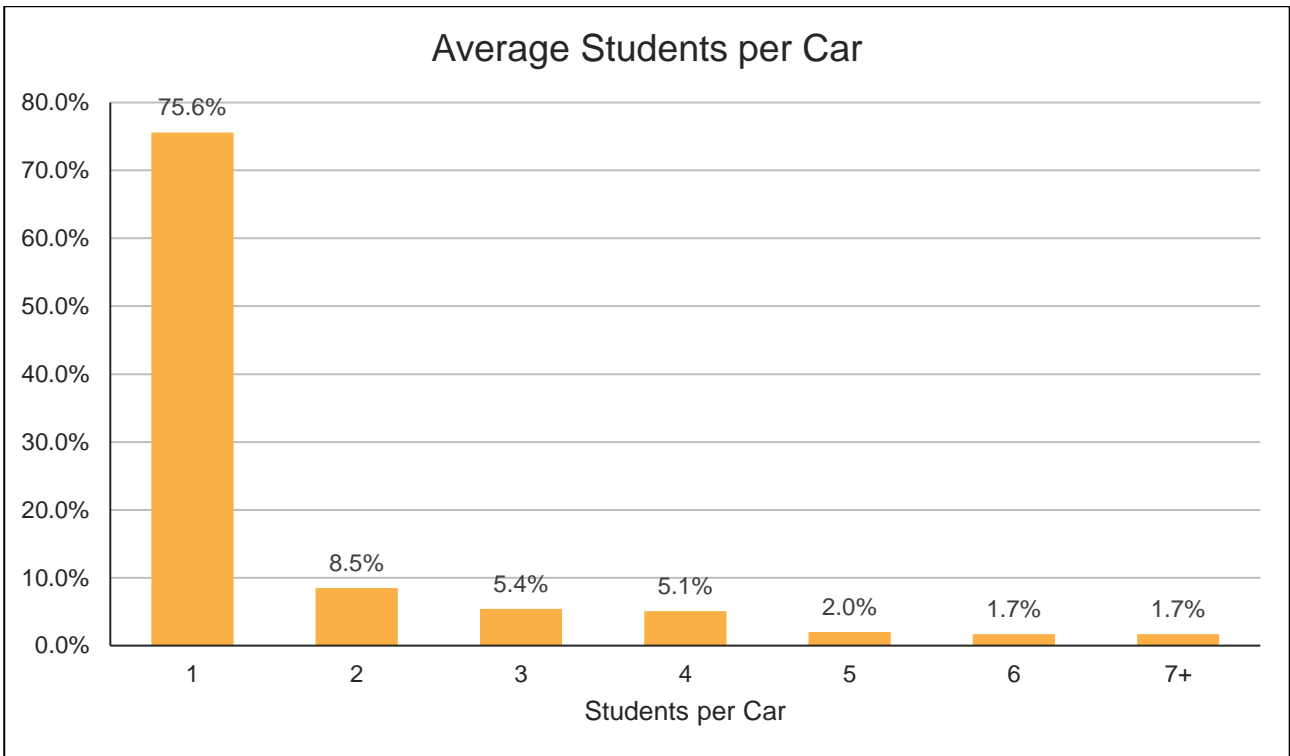


Figure 26: Average Students per Car (GVC)

#### 4.4.2 Staff

##### Staff Arrival/ Departure Time

As outlined in Section 4.4.1, the student peak periods based on the travel mode surveys were 7:30 am-8:30 am and 3:00 pm-4:00 pm. Based on the surveys, the staff peak periods are noted to be slightly earlier than the morning student peak and substantially later than the evening student peak, as illustrated in Figure 27 and Figure 28. Around 70% of staff arrivals coincide with the morning peak and around 27% of staff departures coincide with the evening peak. This is typical in our experience with school developments due to marking and other administrative tasks that occur after students depart. It is expected that similar patterns will hold for Minarah.

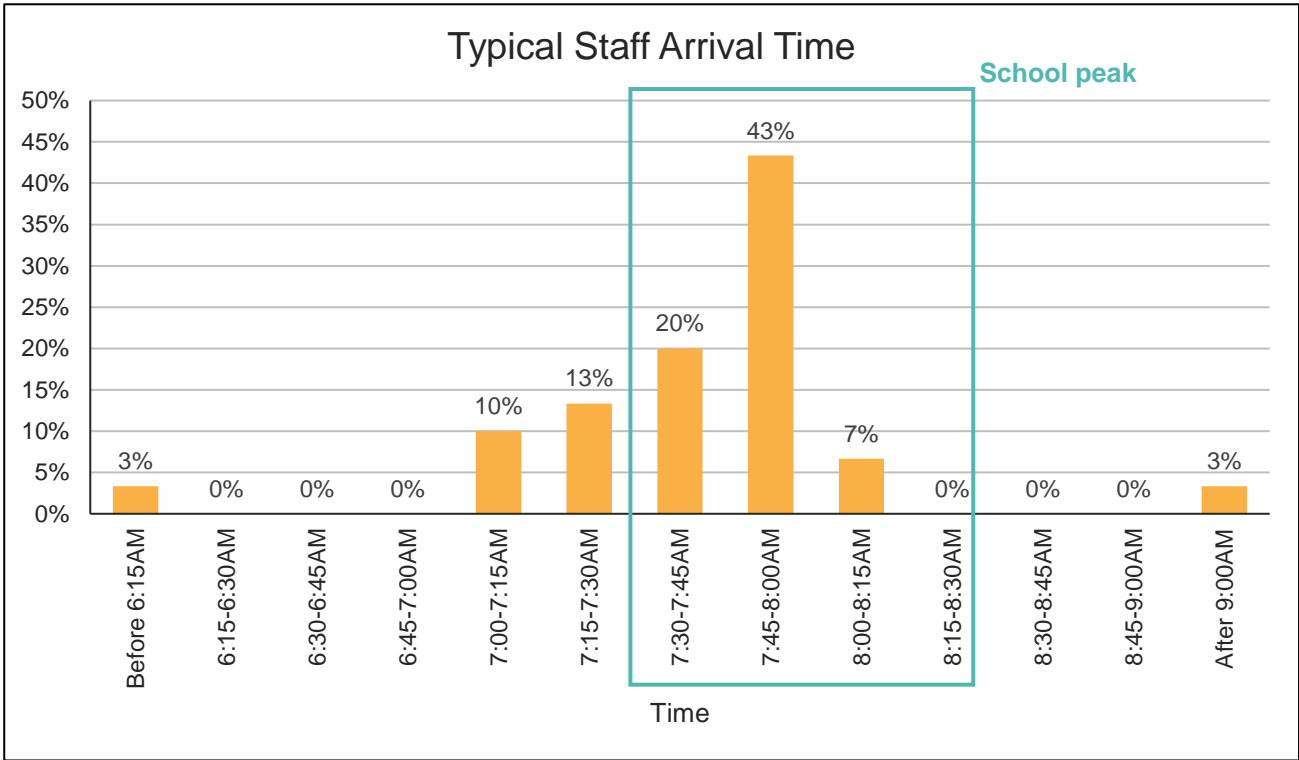


Figure 27: Typical Staff Arrival Time (GVC)

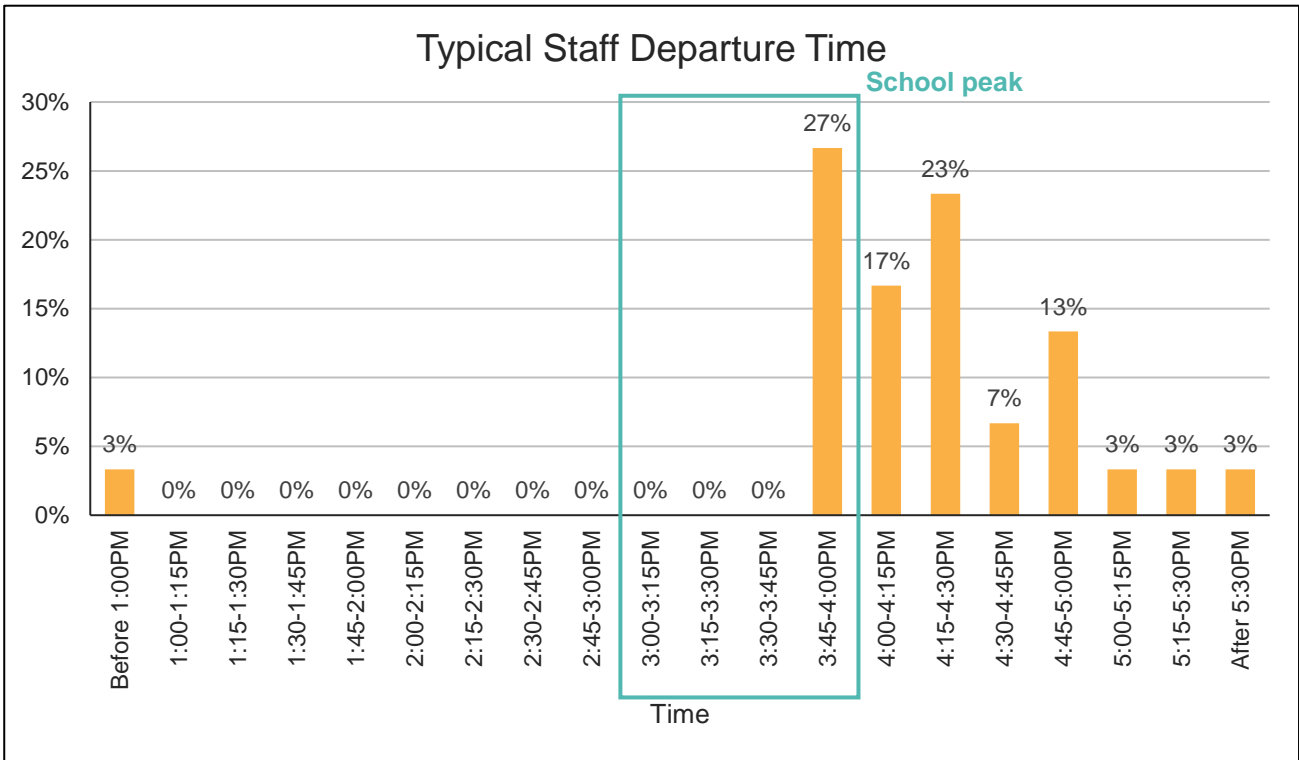


Figure 28: Typical Staff Departure Time (GVC)

## Staff Travel Mode Share

The staff surveys found that almost all staff drive. Of the 30 responses, 29 travel to and from school via car, representing a 97% mode share. One respondent travelled to and from school on walking. For the purposes of the Minarah assessment, it is assumed all staff will drive to school.

## Students Traveling with Staff

Based on the GVC surveys, it was found that a third of the surveyed staff had children (GVC students) that travelled with them to/ from school (see **Figure 29**). As a result, these students effectively do not generate any additional trips as their travel to school would be captured within the staff trips. Each staff member had an average of 0.67 students that also travelled with them to/ from school.

As the student/ staff population of Minarah is expected to present similar family structure characteristics, this consideration is also adopted for the traffic assessment.

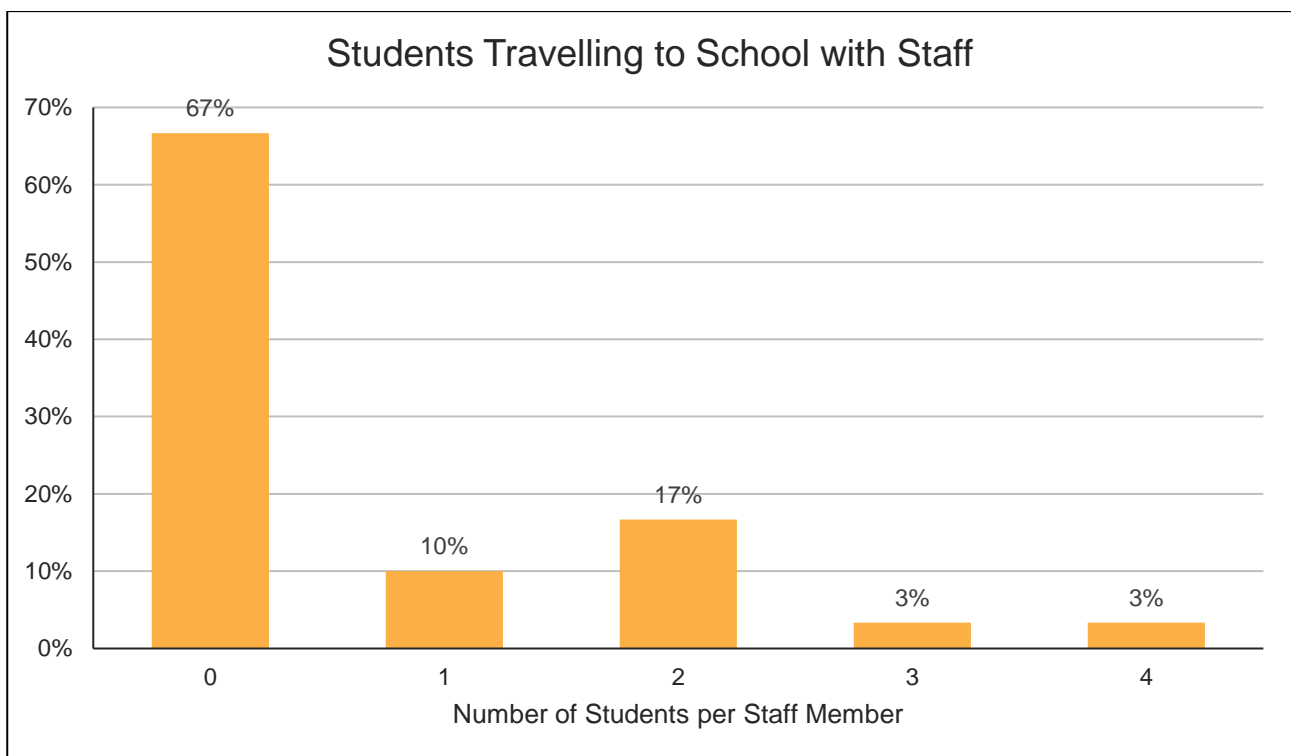


Figure 29; Students Travelling to School with Staff

## Staff Attendance

From the GVC surveys, it was found that not all staff attend the school full-time. Some staff worked part-time (around 7%) and one surveyed staff member only attended the school once a fortnight. A review of the data found that each staff member, on average, attends the school 4.7 days per week, or 94% of an equivalent full-time attendance. This rate is also adopted for the Minarah staff traffic generation.

# 5 The Proposal

## 5.1 Ultimate Yield

The College Campus will be developed progressively with the following ultimate yields:

- A total gross floor area of 11,992 m<sup>2</sup>,
- An ultimate student capacity of 980 students between K-12 (and the Early Learning Centre) and will also include dedicated classrooms for preschool and specialist support students. It is noted the development seeks to reach student capacity by Stage 3 (2035), with Stage 4 (2040) solely pertaining to the construction of a school hall.
- A dual-lane 30-vehicle Kiss & Ride capacity,
- 95 Car Parking spaces, and
- Ancillary structures include an Early Learning Centre (ELC), basketball court, football field and play areas.

## 5.2 Development Staging

Development of the campus has been nominally divided into four stages, with the first three stages anticipating to increase in student capacity as additional buildings come online. Development staging is summarised below in terms of student capacity, where it emphasised that full capacity is reached by 2035 – which therefore has been adopted as the year of assessment of the school operating under its complete development potential.

**TABLE 18: STAGED STUDENT AND STAFF NUMBERS**

	Stage 1 2026	Stage 2 2031	Stage 3 2035	Stage 4 2037
ELC (pre-school)	18	42	60	60
Schools for Specific Purposes (SSPs)	10	10	30	30
Primary (K-6)	290	440	505	505
Secondary (7-12)	0	160	385	385
<b>Total Student Capacity</b>	<b>318</b>	<b>652</b>	<b>980</b>	<b>980</b>
<b>Projected Full-Time Equivalent Staff</b>	<b>15</b>	<b>33</b>	<b>51</b>	<b>51</b>



Figure 30: Stage 1 Site Plan

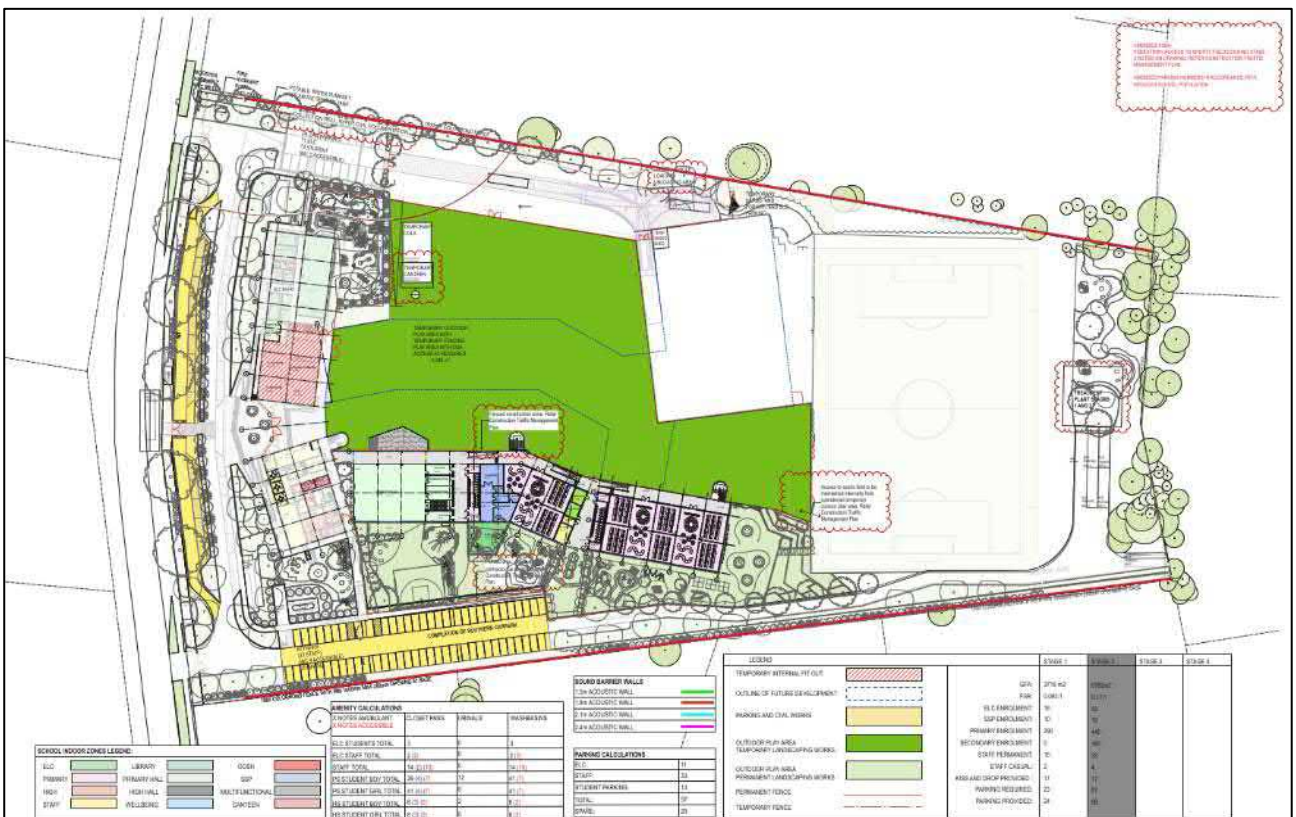


Figure 31: Stage 2 Site Plan



## 5.2.1 ELC Operations

---

The Early Learning Centre is proposed at the north-west of the Site towards the Catherine Field frontage. Enrolment for ELC is anticipated to start on the commencement of Stage 1 (2026), with full capacity of the centre expected during Stage 3 (2035).

## 5.2.2 SSP Operations

---

Two areas of the constructed buildings are proposed for SSP classrooms to provide facilities for Primary School-aged and high-school-aged special needs children:

- The high school SSP classrooms are located to the north of the performing arts and tactile arts building; and
- The primary school SSP classrooms are located on the western side of the Kindergarten building.

Intake for SSP operations is expected to commence in Stage 2 (2031) before full capacity enrolment opens in Stage 3 (2035).

## 5.3 Vehicle Access

---

Vehicular access to the School is discussed below. It should be noted that all parking arrangements are for the completion of Stage 3 of the School.

### 5.3.1 Staff Car Park

---

The staff car park is located on the northern and southern sides of the School's compound with the following parking provisions:

- Northern Carpark: 33 spaces (7 accessible space)
- Southern Carpark: 62 spaces (4 accessible spaces)

**Total: 95 spaces (11 accessible spaces)**

Access to the staff parking areas will occur via the northern crossover on Catherine Field Road. Staff accessing the southern car park will proceed through the Kiss & Ride area, as demonstrated in **Figure 34** below.

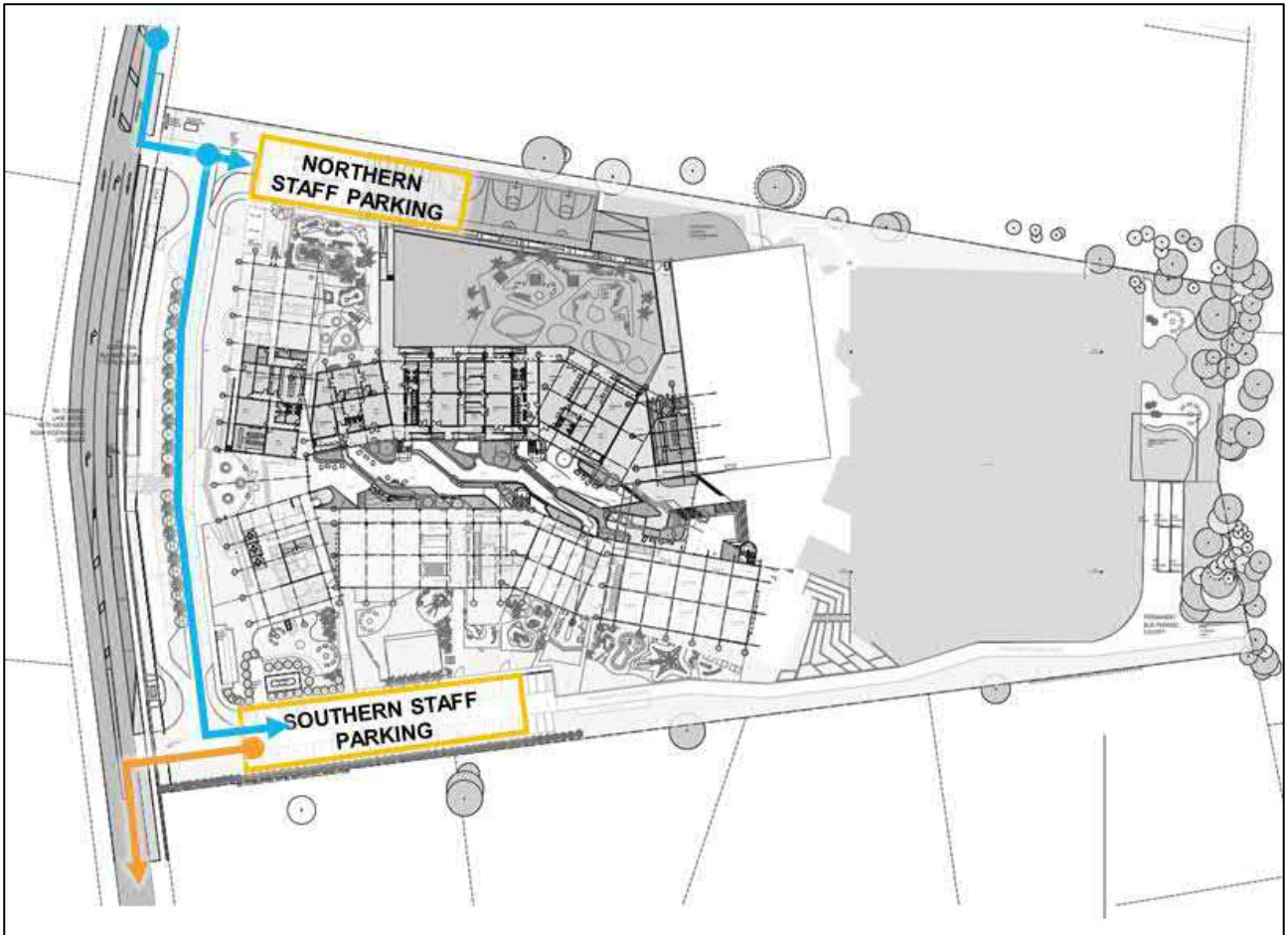


Figure 34: Staff Car Park Location

### 5.3.2 Student & ELC Car Park

Student and ELC parking are proposed with the following parking provision:

- Student: 23 spaces (for primary and secondary students per Camden Council DCP), with the following allocation:
  - 18 spaces in the northern car park
  - 5 spaces in the southern car park
- ELC: 15 spaces in the northern car park (per Camden Council DCP)

Access and egress to the area are demonstrated in **Figure 33**.



Figure 35: Student & ELC Car Park Location

### 5.3.3 Kiss & Ride

A total of 30 spaces are provided for Kiss & Ride access, divided between two lanes. These spaces are accessed via the northern crossover and exit via the southern crossover as demonstrated in **Figure 34**.



Figure 36: Kiss & Ride Location

### 5.3.4 Public Bus

To facilitate the safety of students, it is proposed to provide indented bus bays on the eastern side of Catherine Fields Road along the frontage to the School, as detailed in **Figure 37**. The bus bays will be sign-posted as a bus zone and will be utilised for public buses during the School's morning and afternoon peak operating periods. After these hours, the bays will have no restrictions and can be utilised as regular on-street parking. Signage and line-marking plans associated with the bus zone will be submitted to Council's Local Traffic Committee for approval prior to the issue of a Construction Certificate.

A 1.8m wide footpath will be provided adjacent to the indented bus bays with a direct pedestrian crossing to/from the main front gate. Up to four permeable waiting area hardstands (minimum of 3.0m wide) will be provided along the School's western frontage. The 1.8m wide footpath with the additional 3.0m wide waiting areas are expected to accommodate the projected pedestrian volumes. The proposed width is in accordance with the Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling – (Table 5.1 Width requirements for pedestrian paths) for pedestrian paths with high volumes where a minimum width of 1.8 m is required to allow two wheelchairs to comfortably pass each other.

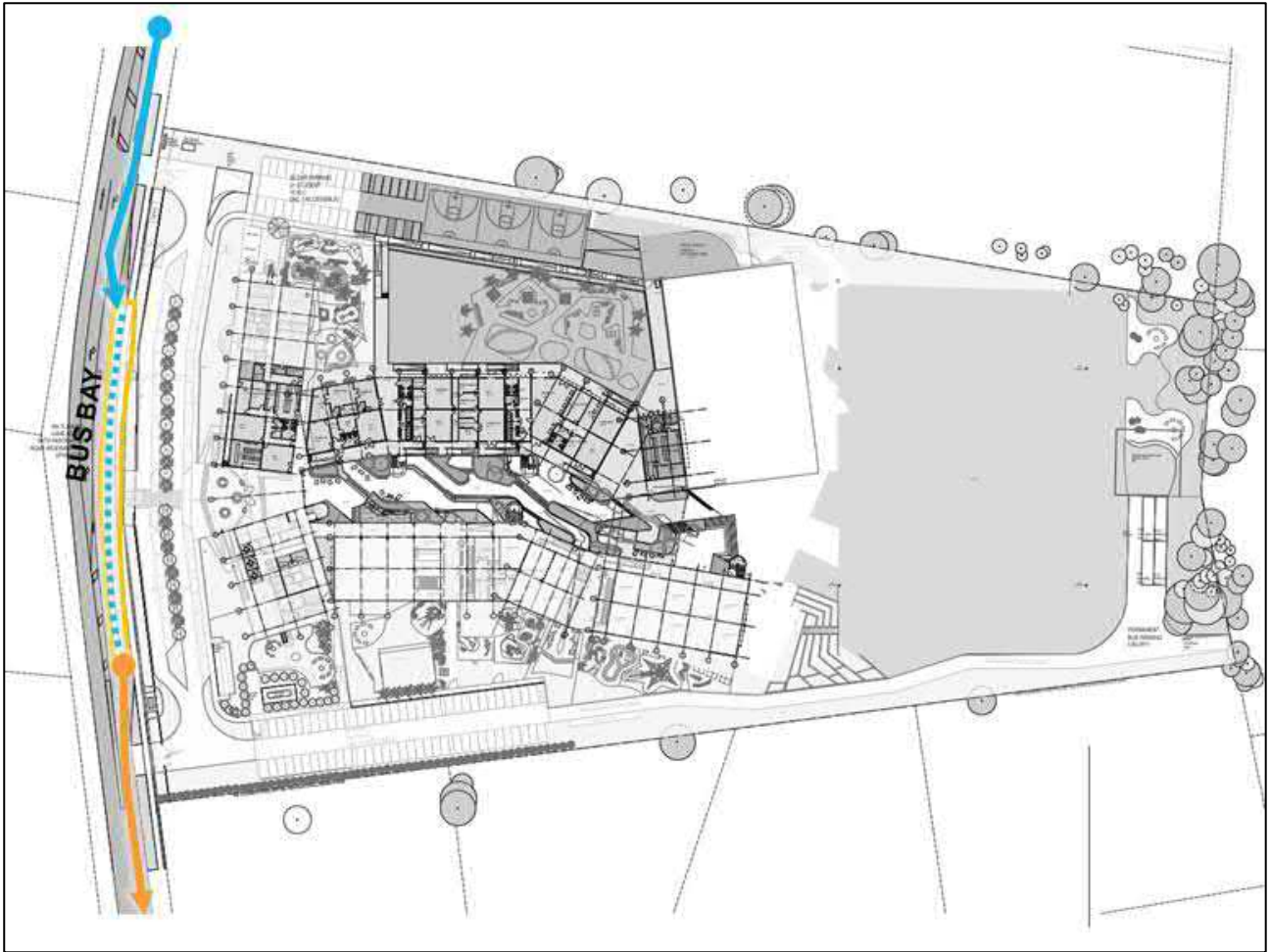


Figure 37: Bus Stop Location

### 5.3.5 Private Chartered Bus

The School has proposed to arrange for one private chartered bus exclusively for school use, operated directly by the School. The bus will be accredited appropriately under the Passenger Transport Act 2014 to meet the definition of a "public bus" in line with NSW Road Rules 2024, Rule 183. This accreditation will enable the bus to lawfully utilise external bus bays located on Catherine Fields Road for efficient student pick-up and drop-off, maintaining clear separation from internal school traffic movements.

After dropping off students, the private chartered bus will continue south along Catherine Fields Road, where suitable turnaround opportunities exist within the housing estates just beyond Camden Valley Way, before returning north toward the school for parking (**Figure 38**).

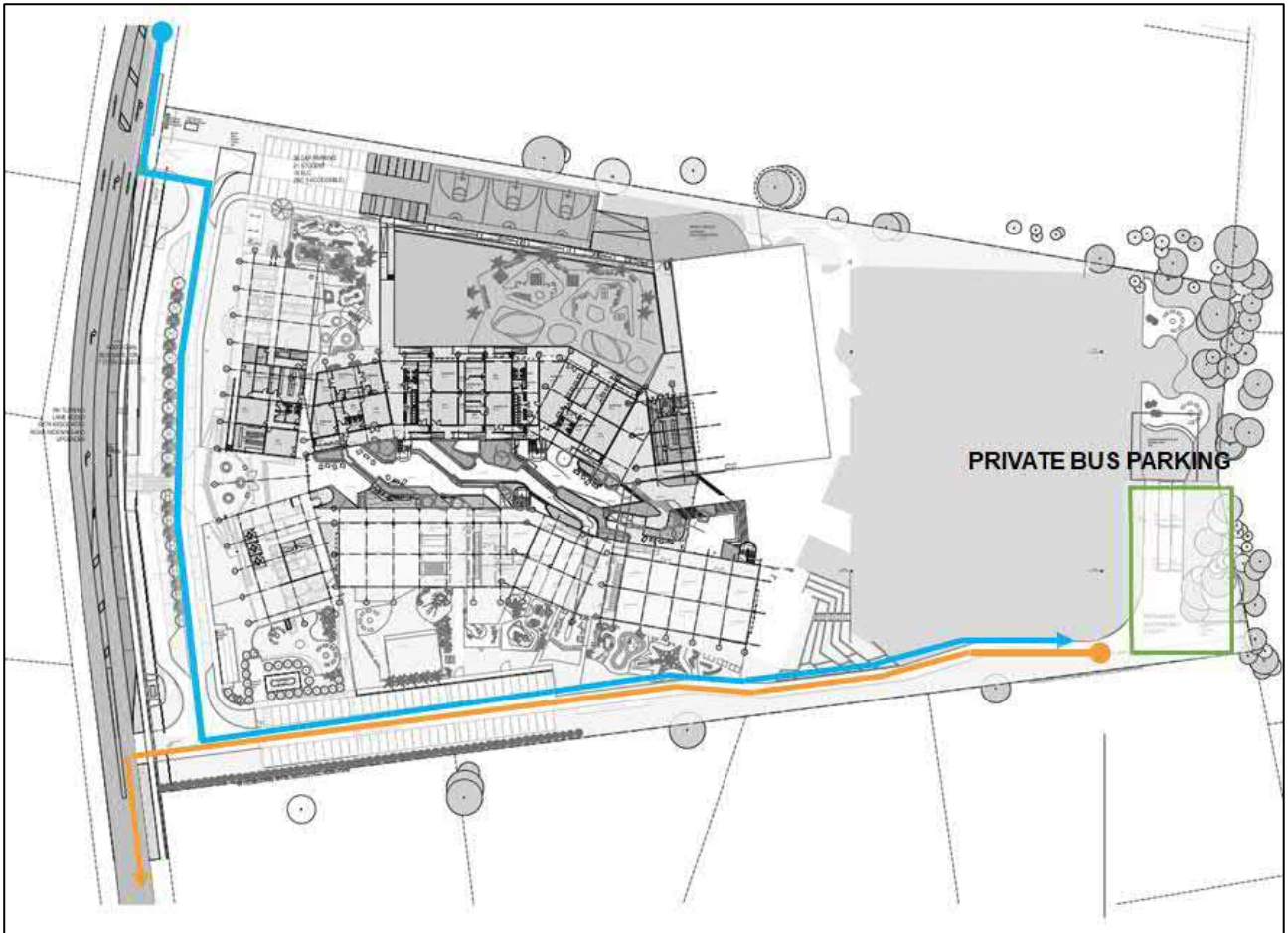


Figure 38: Private Chartered Bus Access

### 5.3.6 Servicing Vehicles

All major deliveries and waste collection will occur in the designated loading area north of the hall through the northern carpark, as shown in **Figure 37**.

To minimise conflicts with student activity, the following measures will be implemented:

- The loading area has been designed in accordance with AS 2890.2:2018 and can accommodate up to one 12.5m heavy rigid vehicle (HRV).
- The truck will enter and exit the School in a forward direction via a 3-point turn.
- Delivery times will be strictly managed, whereby regular services are subject to strict timelines to ensure the minimum movements possible, and these occur outside of the school's peak periods.
- Deliveries will be managed by the School's administration and management staff and will ensure that drivers are familiar with the details of the Plan, as well as the Code of Conduct (refer to the School Transport Plan).



Figure 39: Servicing Location

# 6 Traffic Assessment

## 6.1 Trip Generation

### 6.1.1 Trip Rates

The proposed School presents its unique characteristics in comparison to other educational facilities across the state based on the following key characteristics:

- Typically, the Green Valley Campus has demonstrated a substantially larger student catchment area, as the school readily provides for Islamic families.
- High private vehicle ridership has been observed, with a substantially lesser reliance (close to zero) on public transport options for the Green Valley Campus.
- The school intends to provide for both primary, secondary and special education students, whereas typical surveyed schools have predominantly provided for a single education level.

Based on the above, an assessment of travel survey results from the Green Valley Campus (GVC) has been undertaken to determine an appropriate trip rate to form the basis of the assessment for the Catherine Field Campus. The trip rate accounts for the number of students in OOSH, as shown in **Table 19**.

TABLE 19: OUT OF SCHOOL HOURS CARE TRAFFIC GENERATION					
Stage	1	2	3	4	Note
Year	2026	2031	2035	2037	
A: Students	318	652	980	980	
B: OOSH	12	25	37	37	pro-rated based on 60 at capacity

The assessment yields a rate of 0.496 vehicles per student during AM and PM School Peak. This equates to a rate of 0.992 vehicle trips (two-way) per student during the AM and PM School Peak.

When compared with the results of the GTA Report analysis, the GVC trip rate is demonstrated to be largely consistent with the average of the AM and PM peak rates established in the GTA report and is considered appropriate to use for traffic generation assessment. It should also be noted that the surveyed GVC travel data did not capture the reduction effect of students in OOSH care as the GVC currently does not provide OOSH care service.

### 6.1.2 Student Traffic Generation

Application of the GVC trip rate to the development stages of the proposal is provided in the following table and considers the impacts of the staged enrolment process over the 12-year period.

**TABLE 20: STAGED STUDENT TRIP GENERATION**

Development Stage	Year	Total Student Capacity <sup>1</sup>	AM School Peak Vehicles (One-Way)	PM School Peak Vehicles (One-Way)	AM School Peak Vehicle Trips (two-way)	PM School Peak Vehicle Trips (two-way)
Stage 1	2026	318	157	157	314	314
Stage 2	2031	652	320	320	640	640
Stage 3	2035	980	482	482	964	964
Stage 4	2037	980	482	482	964	964

Note 1: Total Student Capacity = Public School Students + High School Students + ELC students – OOSH students

### 6.1.3 Staff Traffic Generation

The traffic generation associated with the staff is shown in **Table 21**.

**TABLE 21: STAGED STAFF TRIP GENERATION**

	Stage 1	Stage 2	Stage 3	Stage 4
Year	2026	2031	2035	2037
Staff	15	33	51	51
Staff vehicles AM	11	24	36	36
Staff vehicles PM	4	9	14	14

### 6.1.4 Net Traffic Generation

Based on the above table, the net traffic generation associated with the School is shown in **Table 22**.

**TABLE 22: NET TRIP GENERATION**

	Stage 1	Stage 2	Stage 3	Stage 4
<b>AM Peak</b>				
Student (Inbound & Outbound)	314	640	964	964
Staff (Inbound)	11	24	36	36
<b>Total AM Peak</b>	<b>325</b>	<b>664</b>	<b>1,000</b>	<b>1,000</b>
<b>PM Peak</b>				
Student (Inbound & Outbound)	314	640	964	964
Staff (Outbound)	4	9	14	14
<b>Total PM Peak</b>	<b>318</b>	<b>649</b>	<b>978</b>	<b>978</b>

## 6.1.5 Queuing Analysis

With consideration for the trip generation detailed in Table 20, a queuing analysis has been undertaken to assess the operation for the kiss-and-ride area and determine the 95<sup>th</sup> percentile queue which is influenced by the following key factors:

- Managed kiss-and-ride bays.
- Service time.
- Vehicle trips.

It is noted that while a total of 30 kiss-and-ride bays are provided across 4 separate areas, all will be managed by a member of staff thereby allowing students to enter/exit the vehicle. This management will also influence the service time which is the amount of time it takes for students to enter/exit the vehicle. These two factors determine the number of vehicles that can be serviced per hour, and therefore consideration of the total number of trips is necessary to determine the potential queues that form behind the managed bays.

This analysis will assist in the development of a suitable on-site traffic management plan to ensure the smooth operation of the kiss-and-ride area, as well as inform when School Buses are necessary to reduce private vehicle trips. The stage-by-stage analysis is detailed below.

**TABLE 23: STAGED QUEUING ANALYSIS**

Queuing Factor	Stage 1	Stage 2	Stage 3	Stage 4
Managed Bays (vehicle bays)	8	12	14	14
Service Time (min/veh)	2	1.5	1.5	1.5
Vehicle Trips (veh/hr)	157	320	482	482
95 <sup>th</sup> %ile Queue (excluding managed bays)	3 vehicles	2 vehicles	15 vehicles	15 vehicles
Total Vehicles in System	11 vehicles	14 vehicles	29 vehicles	29 vehicles

The detailed analysis is provided in **Appendix B**.

**Table 23** indicates that the School is able to accommodate future demand for the kiss-and-ride area within the 30 dedicated bays provided that additional bays are utilised for entering/exiting vehicles and that the service time steadily improves over time. It is expected that the service time will improve as the students, staff, and parents become more familiar with the operation of the kiss-and-ride area. Similarly, the number of managed bays will increase as staff becomes more familiar with the responsibilities necessary to manage the kiss-and-ride bays.

It is noted it is common practice for K-12 Schools to operate staggered school times to maximise students' use of transport facilities. The staggering of school times especially between the Primary School and the High School is also necessary to reflect the difference in contact hours required in the curriculum.

The queuing analysis completed is in accordance with Austroads Guide to Traffic Management Part 2 – Traffic theory, where an assessment based on a 1-hour traffic volume being an established practice.

The queuing assessment has conservatively assumed that:

- all the vehicle trips associated with students will arrive and depart within the same 60-minute period.
- 88-89% of the students will rely on private vehicles noting that the moderate and reach mode share targets for private vehicle utilisation is 82% and 64% respectively.

The Technical Memorandum (Traffic and Pedestrian Study Version C, 04 March 2016) prepared by Cardno (link) indicated the following staggered finish times for GVIC:

- Stagger Period One (1): This staggering period will commence at 3:05 PM, which will allow only primary school students to be released to the Student Waiting Area.
- Stagger Period Two (2): This staggering period will commence at 3:20 PM, which will allow only secondary school students to be released to the Student Waiting Area.

It is apparent that the staggering operation reduces vehicle congestion and queuing of vehicles as shown in the GVIC traffic surveys in relation to student’s arrival and departure profiles in **Section 4.4.1**.

Operational management items are included within the PSTP.

## 6.1.6 Bus Trips

The School has committed to arrange for a private chartered school bus as part of this development and it is recommended that the bus service is implemented as part of Stage 3. The provision of buses for school student travel purposes will reduce vehicle trips, thereby reducing the queue length. It is recommended that a single bus be provided in Stage 3. With a typical bus capacity of 60 persons, however, it is anticipated that the bus will have a typical capacity of 85%. The following table provides a breakdown of the trips following the provision of bus services.

**TABLE 24: BUS TRIPS**

Queuing Factor	Stage 1	Stage 2	Stage 3	Stage 4
Private Vehicle Trips (veh/hr)	157	320	482	482
# of Buses	0	0	1	1
Total Capacity	-	-	60	60
Anticipated Capacity (85%)	-	-	51	51
Vehicle Trips	157	320	431	431

With consideration of the above trip reduction, the queuing analysis has been reassessed below.

**TABLE 25: STAGED QUEUING ANALYSIS INCLUDING BUS TRIPS**

Queuing Factor	Stage 1	Stage 2	Stage 3	Stage 4
Managed Bays (vehicle bays)	8	12	14	14

<b>Service Time (veh/min)</b>	2	1.5	1.5	1.5
<b>Vehicle Trips (veh/hr)</b>	157	320	431	431
<b>95<sup>th</sup>ile Queue (excluding managed bays)</b>	<b>3 vehicles</b>	<b>2 vehicles</b>	<b>6 vehicles</b>	<b>6 vehicles</b>
<b>Total Vehicles in System</b>	<b>11 vehicles</b>	<b>14 vehicles</b>	<b>20 vehicles</b>	<b>20 vehicles</b>

The provision of the school bus improves the operation of the kiss-and-ride area and ensures that all queuing would occur on-site.

## 6.2 Trip Assignment

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### 6.2.1 Student Trip Distribution

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The trip distribution assessment is based on several sources, including:

- Assessment of population growth projections for the area; and
- The existing GVC catchment area.

Based on the population and demographic assessment undertaken in section 2.2 it is evident that the Camden LGA and broader extents of the south-western area will undergo substantial growth as a result of urban developments associated with the Aerotropolis as well as other state-significant developments in the vicinity. In similar regard, longer-term projections – particularly to do with the state of the future road network – are envisioned to transform the Catherine Field area as residential density increases.

In turn, this has implications for the broader scope of trip distribution analysis until such a time that the envisioned growth areas and road network can be confirmed in consultation with Council, NSW Government and TfNSW. Notwithstanding, the assumed trip distribution has been made on sound assumptions for future growth and is provided below for the immediate road network associated with the proposal.

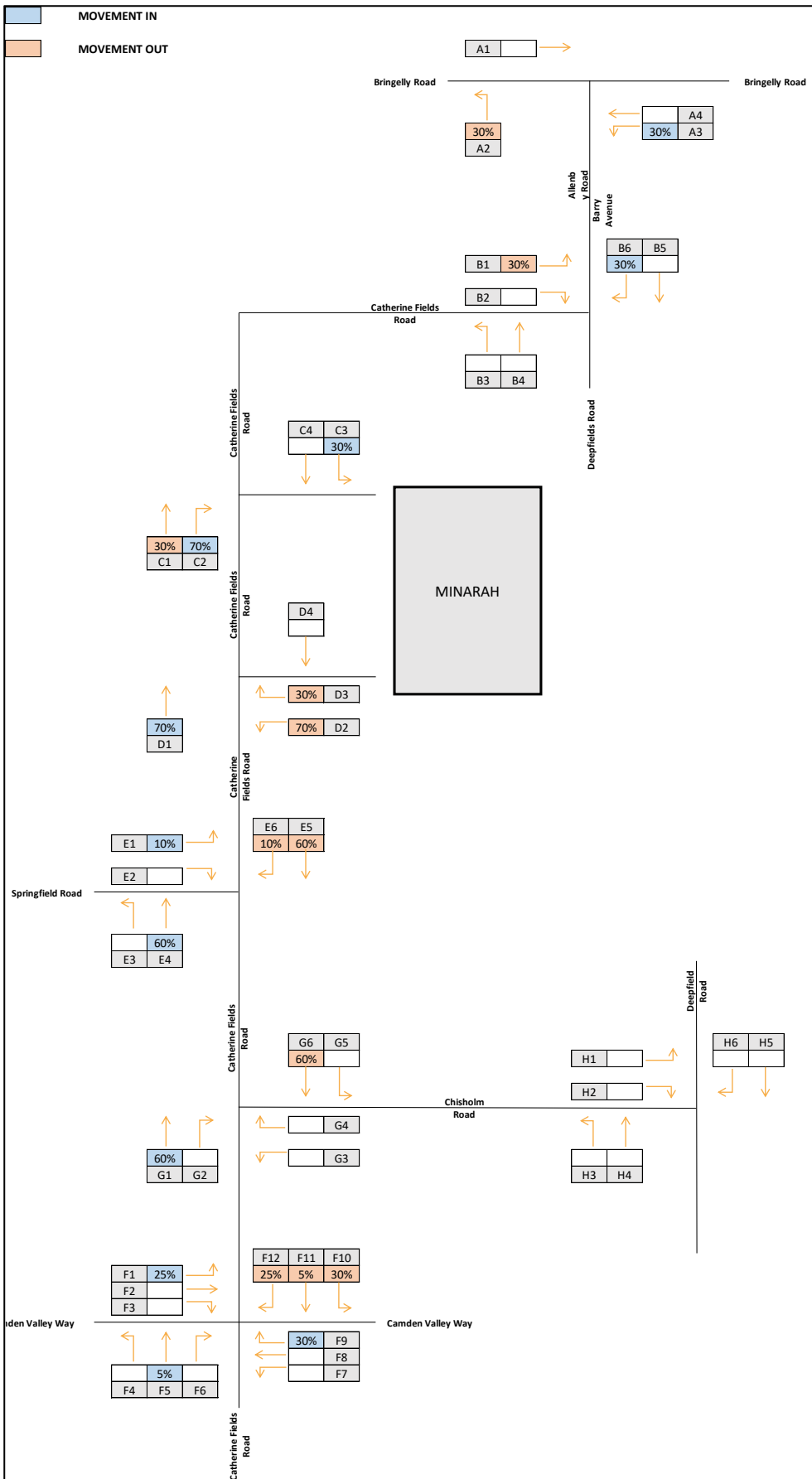


Figure 40: Student Traffic Distribution

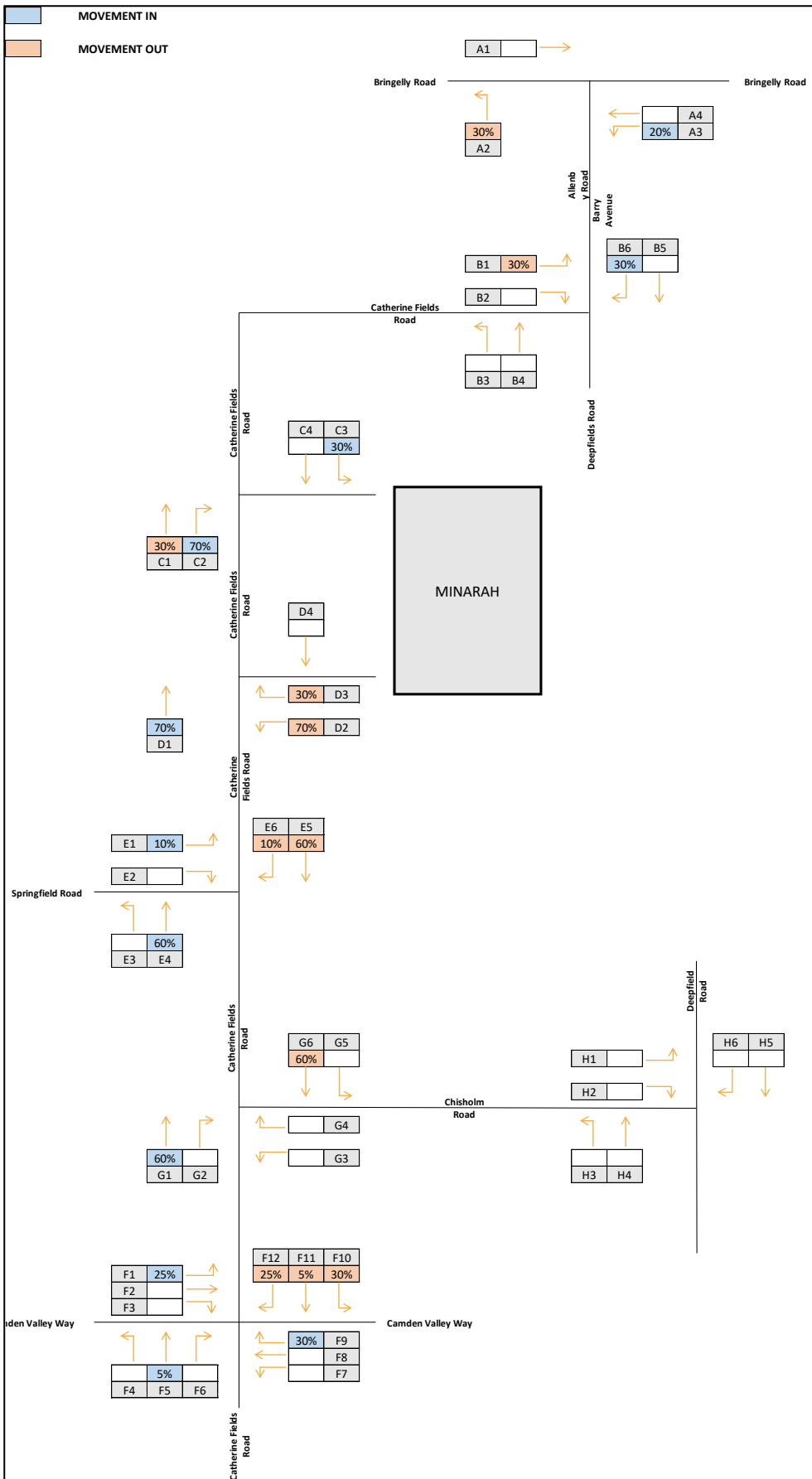


Figure 41: Staff Traffic Distribution

## 6.3 Intersection Performance

### 6.3.1 Scenarios

The modelling scenarios undertaken are provided in the following table with the intersection turning volumes for each scenario detailed in **Appendix C**. It is noted Stage 4 traffic is expected to remain consistent with Stage 3.

**TABLE 26: MODELLING SCENARIOS**

Scenario	Year	Name	Description
1	2021	2021 & 2022 Base	2021 SCATS volumes at Camden Valley Way/ Catherine Fields intersection extrapolated to intersections further north based on the 2018 intersection survey turning proportions
2	2026	2026 <sup>1</sup> Base	2021 & 2022 Base scaled up based on a 2.5% p.a. growth rate
3	2026	2026 Base + Stage 1	2026 Base with 320 student school development
4	2031	2031 Base + Stage 2	2031 Base with 650 student school development
5	2035	2035 Base + Stage 3	2035 Base with 980 student school development

Note: 1 - Nominated Base Year traffic volumes are projected based on the application of an annual growth rate of 2.5% p.a. on the 2021 & 2022 Base volumes

A growth rate of 2.5% has been adopted to simulate an increase in background traffic, as recommended by TfNSW noting the surrounding area has not been rezoned. Consultation is identified within Table 4.

### 6.3.2 Modelling Results

**TABLE 27: SCENARIO 1: 2021 & 2022 BASE MODEL RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	7.7	0.146	LOS A
		PM Peak	7.6	0.189	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	9.2	0.109	LOS A
		PM Peak	10	0.145	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	6.3	0.089	LOS A
		PM Peak	6.5	0.112	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	6.9	0.002	LOS A
		PM Peak	7.4	0.002	LOS A
Catherine Fields Road/ Springfield Road	Priority	AM Peak	7.7	0.09	LOS A
		PM Peak	8.2	0.076	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	24.5	0.882	LOS B
		PM Peak	24	0.828	LOS B
	Priority	AM Peak	5.9	0.03	LOS A

Catherine Fields Road/ Chisholm Road		PM Peak	5.8	0.026	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.2	0.03	LOS A
		PM Peak	6.2	0.02	LOS A

The Year 2021 detailed SIDRA results are presented in **Appendix D**.

**TABLE 28: SCENARIO 2: 2026 BASE MODEL RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	7.8	0.163	LOS A
		PM Peak	7.7	0.211	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	9.6	0.12	LOS A
		PM Peak	10.4	0.162	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	6.3	0.098	LOS A
		PM Peak	6.6	0.123	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	7	0.002	LOS A
		PM Peak	7.6	0.002	LOS A
Catherine Fields Road/ Springfield Road	Priority	AM Peak	7.8	0.1	LOS A
		PM Peak	8.4	0.085	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	41.9	0.975	LOS C
		PM Peak	31.5	0.912	LOS C
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	6	0.033	LOS A
		PM Peak	5.9	0.028	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.3	0.033	LOS A
		PM Peak	6.3	0.022	LOS A

**TABLE 29: SCENARIO 3: 2026 MODEL + STAGE 1 RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	7.8	0.201	LOS A
		PM Peak	7.7	0.249	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	9.8	0.152	LOS A
		PM Peak	11.3	0.197	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	4.6	0.206	LOS A
		PM Peak	4.9	0.231	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	6	0.138	LOS A
		PM Peak	6.7	0.153	LOS A
	Priority	AM Peak	9.1	0.13	LOS A

Catherine Fields Road/ Springfield Road		PM Peak	10	0.112	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	45.5	1	LOS D
		PM Peak	35	1.064	LOS C
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	6.9	0.038	LOS A
		PM Peak	6.7	0.032	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.3	0.033	LOS A
		PM Peak	6.3	0.022	LOS A

**TABLE 30: SCENARIO 4: 2031 MODEL + STAGE 2 RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	8.0	0.267	LOS A
		PM Peak	7.9	0.322	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	11.2	0.201	LOS A
		PM Peak	13.4	0.259	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	5.1	0.345	LOS A
		PM Peak	5.7	0.374	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	10.8	0.36	LOS A
		PM Peak	9.3	0.353	LOS A
Catherine Fields Road/ Springfield Road	Priority	AM Peak	11.4	0.192	LOS A
		PM Peak	12.9	0.169	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	108	1.541	LOS F
		PM Peak	103.5	1.575	LOS F
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	8.3	0.053	LOS A
		PM Peak	8.1	0.043	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.4	0.037	LOS A
		PM Peak	6.4	0.025	LOS A

As is evident from Table 30, the signalised intersection of Camden Valley Way and Catherine Fields Road will operate at Level of Service (LoS) F.

To determine the impact of the Stage 2 traffic on the road network, an analysis using SIDRA intersection modelling of the 2031 growth has been undertaken and is detailed in the following table.

**TABLE 31: 2031 BASELINE RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	7.9	0.190	LOS A
		PM Peak	7.8	0.244	LOS A
	Priority	AM Peak	10.2	0.136	LOS A

Barry Avenue/ Deepfields Road/ Catherine Fields Road		PM Peak	11.3	0.186	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	6.4	0.112	LOS A
		PM Peak	6.7	0.14	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	7.2	0.002	LOS A
		PM Peak	7.9	0.002	LOS A
Catherine Fields Road/ Springfield Road	Priority	AM Peak	8	0.117	LOS A
		PM Peak	8.8	0.099	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	91.1	1.108	LOS F
		PM Peak	83.8	1.037	LOS F
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	6.1	0.038	LOS A
		PM Peak	5.9	0.032	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.4	0.037	LOS A
		PM Peak	6.4	0.025	LOS A

In comparison to **Table 30**, all intersections would continue to operate with the same LoS. It is apparent that the projected growth traffic would exceed the capacity of the signalised intersection of Camden Valley Way and Catherine Fields Road, with or without the Proposal. Following consultation with TfNSW, it is understood that there is little capacity for additional improvements for signalised intersections along Camden Valley Way.

Notwithstanding the above, the SIDRA modelling presents a conservative assessment based on the following reasons:

- a 2.5% growth rate has been applied up to the Year 2035, noting that the traffic growth rates generally reduce over the years.
- the higher uptake of public transport usage with the implementation of the South West Growth Sector Bus Servicing Strategy. The Strategy proposes a long-term bus network for the Catherine Field Precinct which comprise a mixture of regional routes and district routes to maximise the speed and efficiency of high-frequency peak-hour services as well as a number of local bus routes to ensure maximum coverage throughout the precincts, facilitating public transport access and travel choice. The closest proposed routes would be Route R1 – Liverpool to Campbelltown and D4 – Oran Park to Ingleburn.

**TABLE 32 SCENARIO 5: 2035 MODEL + STAGE 3 RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	8.1	0.326	LOS A
		PM Peak	8.0	0.385	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	15.4	0.251	LOS B
		PM Peak	15.6	0.315	LOS B
Catherine Fields Road/ School Entry	Priority	AM Peak	6.4	0.491	LOS A
		PM Peak	7.3	0.526	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	12	0.523	LOS A
		PM Peak	14.8	0.603	LOS B

Catherine Fields Road/ Springfield Road	Priority	AM Peak	14.9	0.272	LOS B
		PM Peak	17.5	0.244	LOS B
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	164.3	2.048	LOS F
		PM Peak	175.3	2.059	LOS F
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	10.3	0.07	LOS A
		PM Peak	9.9	0.058	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.5	0.042	LOS A
		PM Peak	6.5	0.028	LOS A

To determine the impact of the Stage 3 traffic on the road network, an analysis using SIDRA intersection modelling of the 2035 growth has been undertaken and is detailed in the following table.

**TABLE 33 SCENARIO 5: 2035 MODEL BASELINE RESULTS**

Intersection	Control Type	Period	Average Delay (sec)	Degree of Saturation	Level of Service
Bringelly Road/ Allenby Road	Priority	AM Peak	8.0	0.208	LOS A
		PM Peak	7.9	0.267	LOS A
Barry Avenue/ Deepfields Road/ Catherine Fields Road	Priority	AM Peak	10.6	0.149	LOS A
		PM Peak	11.9	0.204	LOS A
Catherine Fields Road/ School Entry	Priority	AM Peak	6.5	0.120	LOS A
		PM Peak	6.8	0.151	LOS A
Catherine Fields Road/ School Exit	Priority	AM Peak	7.4	0.002	LOS A
		PM Peak	8.1	0.002	LOS A
Catherine Fields Road/ Springfield Road	Priority	AM Peak	8.1	0.127	LOS A
		PM Peak	9.0	0.109	LOS A
Camden Valley Way/ Catherine Fields Road	Signalised	AM Peak	130.4	1.196	LOS F
		PM Peak	139.1	1.120	LOS F
Catherine Fields Road/ Chisholm Road	Priority	AM Peak	6.1	0.041	LOS A
		PM Peak	6.0	0.035	LOS A
Catherine Fields Road/ Deepfields Road	Priority	AM Peak	6.5	0.042	LOS A
		PM Peak	6.5	0.028	LOS A

The Future Year 2026, 2031 and 2035 detailed SIDRA results are presented in **Appendix E** noting that:

- The intersection of Camden Valley Way/ Catherine Fields Road will continue to operate at LoS F with and without the School in Years 2031, and 2035.
- Noting Camden Valley Way/ Catherine Fields Road already operates beyond capacity in the Base Case (with a degree of saturation exceeding 1.0) the reported performance could be expected to be sensitive to minimal change.

# 7 Parking Assessment

## 7.1 Car Parking Assessment

The Camden Council DCP, within Section 2.18.2 – Off Street Car parking rates/requirements for specific non-residential uses specifies minimum car parking rates for a range of uses. With respect to Educational establishments, in particular Schools, Table 2-5 provides the following parking rates:

- 1 car parking space per full-time equivalent (FTE) staff member, plus
- 1 car parking space per 100 students, plus
- 1 car parking space per 5 students in Year 12 where appropriate.
- 1 car parking space per 4 children for ELC
- Adequate space is also required for delivery vehicles, a drop-off / pick-up area and buses as appropriate.

With consideration for the staging of the School as detailed in **Table 18**, **Table 34** details the minimum parking requirements for each stage, with a detailed breakdown provided in **Table 35-Table 37**.

**TABLE 34: PARKING REQUIREMENTS – ALL STAGES**

	Stage 1	Stage 2	Stage 3 & 4
ELC (pre-school)	5	11	15
Staff	15	33	51
All Students (K-12)	3	6	10
Year 12	0	5	10
<b>Total</b>	23 spaces	55 spaces	86 spaces
Accessible (Inclusive)	3	3	3

**TABLE 35: PARKING REQUIREMENTS – STAGE 1**

Parking	Headcount / Spaces	Parking Rate	Parking Requirement
School Full-Time Staff Members	15	1 space per FTE staff member	15
All Students (K-12)	300	1 space per 100 students	3
Year 12 Students	0	1 space per 5 Year 12 students	0
ELC	18	1 space per 4 children	5
<b>Total</b>			23 parking spaces
Accessible	23	1 space per 100 spaces	3 (one for K-12 students, early learning and staff each)

**TABLE 36: PARKING REQUIREMENTS – STAGE 2**

Parking	Headcount / Spaces	Parking Rate	Parking Requirement
School Full-Time Staff Members	33	1 space per FTE staff member	33
All Students (K-12)	610	1 space per 100 students	6
Year 12 Students	25	1 space per 5 Year 12 students	5
ELC	42	1 space per 4 children	11
<b>Total</b>			55 parking spaces
Accessible	55	1 space per 100 spaces	3 (one for K-12 students, early learning and staff each)

**TABLE 37: PARKING REQUIREMENTS – STAGE 3 AND STAGE 4**

Parking	Headcount / Spaces	Parking Rate	Parking Requirement
School Full-Time Staff Members	51	1 space per FTE staff member	51
All Students (K-12)	980	1 space per 100 students	10
Year 12 Students	50	1 space per 5 Year 12 students	10
ELC	60	1 space per 4 children	15
<b>Total</b>			86 parking spaces
Accessible	86	1 space per 100 spaces	3 (one for K-12 students, early learning and staff each)

The School proposes a total of 95 on-site car parking spaces which accommodates 51 spaces for staff members, 15 spaces for ELC, and 23 spaces for students thus fulfilling the DCP requirement for car parking provision.

### 7.1.1 Accessible Car Parking

Camden Council's DCP requires accessible parking to be provided in accordance with the Building Code of Australia. As such, schools are categorised as building classification 9b, thereby requiring 1 accessible space per 100 parking spaces. Application of this rate to the requirement of 20 spaces for K-12 students, 15 spaces for early learning and 51 spaces for staff results in a requirement of 1 space for each category. The School proposes a total of 11 accessible spaces, a surplus of 8 spaces.

### 7.1.2 Service Vehicle and Bus Parking

Camden Council's DCP requires adequate space to be provided for delivery vehicles, a drop-off / pick-up area and buses. As such, the School proposes that all deliveries will occur within the designated loading area on the northern side of the School with deliveries restricted to outside of school peak hours.

### 7.1.3 Car Parking Summary

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The overall provision of car parking for the site meets the minimum car parking requirements under Camden Council's DCP.

## 7.2 Bicycle Parking

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### 7.2.1 Camden Council DCP

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The Camden Council DCP does not provide a specific rate for bicycle parking for educational establishments (schools), instead referring to a merit assessment, making reference to the Planning Guidelines for Walking and Cycling 2004 (PGFW&C). The PGFW&C provides the following bicycle parking rates for primary and secondary schools:

- Long-Term Spaces – 3% to 5% of staff members
- Short-Term Spaces – 5% to 10% of staff members

Application of the above rates to the overall staffing numbers (51) results in a bicycle parking requirement of between three long-term spaces and six short-term spaces.

### 7.2.2 Austroads

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Reference is made to the Austroads *Guide to Traffic Management Part 11: Parking Management Techniques* (2020) to establish bicycle parking requirements. In this regard, Clause 2.3, Table 2 6 provides the following rate for School Land Uses:

- 1 per 5 pupils over Year 4

According to the data for the School provided by the Client, student numbers over year 4 at full development is approximately 675. Application of the above rate would result in a requirement of 169 bicycle spaces.

### 7.2.3 Bicycle Parking Summary

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Based on the bicycle parking requirements above and actively encouraging cycling as a primary mode of transport for students and staff travelling to and from the school, it is considered that the Austroads bicycle parking rates would provide the most appropriate bicycle parking requirements. In this regard, in accordance with the Austroads guidelines, the development is required to provide a minimum of 169 bicycle parking spaces.

However, as no cycleway connections exist to / from the School and none are planned to be built by TfNSW or Council, no one can safely cycle to / from the school. Council has requested a provision of some bicycle parking be provided as part of this masterplan. As such, 30 bicycle spaces in the form of Class-B secured 24 double racks in accordance with AS2890.3, have been proposed, in the location shown in **Figure 46**. The bicycle parking is located at the site with convenient access via Catherine Fields Road, safe, secured and under cover.

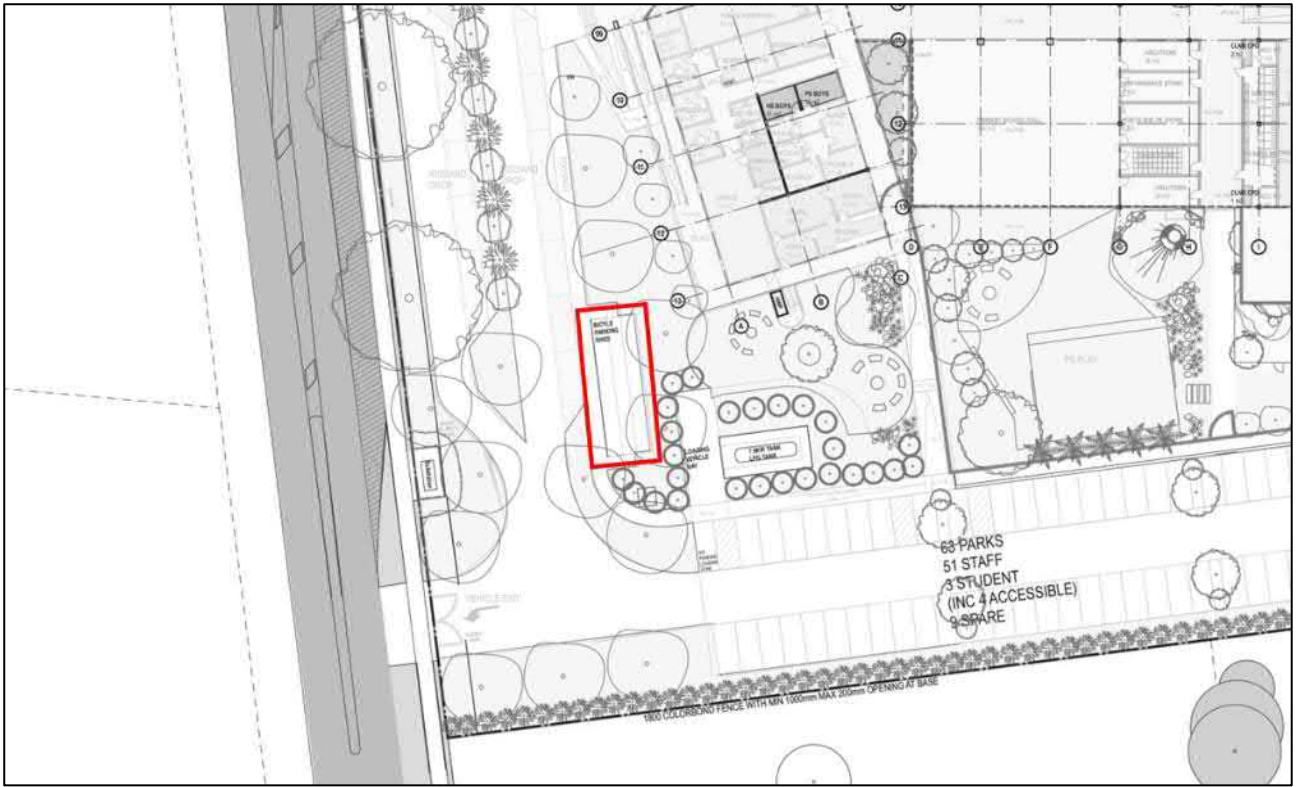


Figure 42: Proposed Bicycle Parking Location

# 8 Design

## 8.1 Design Standard

The site access, car park and loading arrangements for the preliminary site plan will be designed to comply with the following relevant Australian Standards:

- Australian Standard 2890.1:2004 Parking Facilities – Off Street Car Parking (AS 2890.1: 2004)
- Australian Standard 2890.2:2018 Parking Facilities – Off-Street Commercial Vehicle Facilities (AS 2890.2:2018)
- Australian Standard 2890.3:2015 Parking Facilities – Bicycle Parking (AS 2890.3:2015)
- Australian Standard 2890.5:2020 Parking Facilities – On-Street Parking (AS 2890.5:2020)
- Australian Standard 2890.6:2022 Parking Facilities – Off-Street Parking for People with Disabilities (AS 2890.6:2022)
- Camden Council Development Control Plan (2019)

Reference should be made to the design review and associated swept path assessments included in **Appendix F**.

## 8.2 Design Commentary

### 8.2.1 Access Design

The Proposal includes a separate vehicular entry and exit, and one pedestrian access shown in **Figure 43**.



Figure 43: Access Diagram

The vehicular entry is located in the northern corner and the vehicular exit is located on the southern corner of the Catherine Fields Road frontage.

It is noted the required sight distance at the egress driveway is achievable due to the indented bays along Catherine Fields Road north of the driveway.

The pedestrian access is located in the centre of the Catherine Fields Road frontage.

## 8.2.2 Internal Kiss and Ride

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The proposed kiss and ride area has been designed in excess of AS2890.5:2020 requirements with 2.5m wide and 6m long kiss and ride bays to allow for safe dropping off / picking up of students.

Access to the internal kiss and ride area is from the northern entry with one-way southbound only movement permitted and exiting to the southern exit.

Noting that the private chartered bus will enter the site and park within the school grounds, the internal circulation aisle has been designed with sufficient width to accommodate 12.5-metre bus access and manoeuvring.

## 8.2.3 Internal Car Park

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The plan issued by TZG Architects on 27 February 2025 is was reviewed and was found to be compliant with AS2890.1:2004, AS2890.2:2018 and AS2890.6:2022. Noting the following:

- The ELC car parking spaces have been designed to AS2890.1:2004 Class 3
- All other car parking spaces have been designed to AS2890.1:2004 Class 1
- The waste / delivery / loading area has been designed to accommodate up to 12.5m HRV access noting that access will be managed to occur outside of carpark / kiss and ride area usage times.
- The private chartered bus parking area has been designed to accommodate 12.5m long coaches with stacked parking to allow for RFS access and will be managed to allow for stacked parking.

For details, see the design review and associated swept path assessment in Appendix B.

# 9 Preliminary Construction Traffic Management Plan

This section provides a preliminary holistic construction traffic management plan for the construction activities. It should also be noted that the traffic management plan associated with the Stage 1 works would be different as compared to Stages 2 – 4 works given that the School will be operational in the latter stages.

As such, a detailed Construction Traffic Management Plan (CTMP) will be provided as part of the detailed construction management plan (which is expected to form a standard Condition of Consent) for each stage.

For the purposes of this TA report, the following general principles for managing construction traffic have been assumed and provide an understanding of the likely traffic impacts during the construction period. It should be noted that the construction details and programme for the development have not yet been finalised.

## 9.1 Overview

---

The proposed works forming part of this SSDA include the following:

- Demolition works to accommodate construction;
- Construction of new buildings to accommodate up to 980 students between K-12 in 4 stages (including dedicated classrooms for preschool and specialist support students);
- Construction of ancillary structures include an Early Learning Centre (ELC), basketball court, football field and play areas;
- Construction of pedestrian infrastructure, Kiss & Ride and staff, visitor and student parking facilities;
- Associated roadworks, earthworks, landscaping, stormwater works, service upgrades, etc.

This Preliminary Construction Traffic Management Plan (Preliminary CTMP) outlines principles that shall be adopted by the appointed contractors for the project and are subject to a detailed Construction Traffic Management Plan (CTMP) that forms part of a Construction Management Plan (CMP) to be prepared and commissioned by the incumbent contractor.

This report has been prepared by a consultant who holds a SafeWork NSW Work Health & Safety Traffic Control Work card, accredited for the 'Prepare a Work Zone Traffic Management Plan'. Details of the accredited consultant are provided below:

- James Laidler      Ticket No. TCT0031686

## 9.2 Overall Principles of Construction Traffic Management

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The principles of traffic management during construction activities for Stage 1 include:

- Minimising the impact on cyclist safety and movements
- Minimising the impact on public bus movements
- Minimising the impact on existing traffic on adjacent roads and intersections

- Maintaining access to/from adjacent properties
- Restricting construction heavy vehicle movements to designated routes to/from the site.
- Managing and controlling construction vehicle activity near the site
- Ensuring construction activity is carried out in accordance with the SSDA's approved hours of work.

When the School is operational, the principles of traffic management during construction activities for the remaining Stages 2 through 4 works include:

- Minimising the impact on pedestrian and cyclist safety and movements
- Maintaining appropriate public transport and school bus access
- Minimising the impact on existing traffic on adjacent roads and intersections
- Minimising the loss of on-street and off-street parking
- Maintaining access to/from the School and adjacent properties
- Restricting construction vehicle movements to designated routes to/from the site
- Managing and controlling construction vehicle activity near the site
- Ensuring construction activity is carried out in accordance with the SSDA's approved hours of work.
- Prohibiting construction heavy vehicle movements (including deliveries) to and from the Site during school drop-off and pick-up hour.

## 9.3 Proposed Work Hours

---

The construction work will vary depending on the phase of construction and associated activities. Construction works however will be undertaken during standard construction-working hours as follows:

- Monday to Friday: 7.00 am to 6:00 pm.
- Saturday: 8.00 am to 1.00 pm
- Sunday and Public holidays: No planned work.

It may (on occasions) be necessary to undertake night works to minimise disruption to traffic however any works undertaken outside of these times will only occur with prior approval from Council.

## 9.4 Staging and Duration of Works

---

The construction program would generally consist of the following construction phases with duration to be determined once a contractor has been appointed:

- Phase 1: Site Preparation,
- Phase 2: Demolition
- Phase 3: Bulk Excavation
- Phase 4: Main Works (Construction)

The four construction phases above are expected for each of the four stages proposed as part of the Proposal, outlined in Section 1.2, subject to confirmation once a contractor has been appointed.

It is noted that during all stages, all vehicle entry and exit movements are to be in a forward direction only, with spoil to be loaded within the site and under the careful supervision of an authorised traffic controller. Accordingly, supervision by an authorised traffic controller would also be required for the movements of vehicles that would cross the footpath during deliveries.

## 9.5 Traffic Control

---

**Figure 44 to Figure 49** identifies high level Traffic Guidance Scheme's (TGS) during each of the four stages of the Proposal. All work zones shall be separated from school operations with fencing as per the staging drawings created by TZG, dated 27 February 2025.

It is noted these TGS's are indicative in nature with the proposed signage, their respective locations and traffic control expected to change as further detailing of the construction programme is identified (and once a contractor has been appointed). Site-specific TGS's (which complies with AS1742 series and Traffic Control at Worksites Technical Manual version 6.1) shall be included in the detailed CTMP, as required. It is noted that certification of the TGS's by an appropriately accredited TfNSW traffic controller will be obtained prior to commencement of any works associated with the development.

### 9.5.1 Stage 1

---

It is reiterated that no School operation will take place during Stage 1 construction works. The anticipated Stage 1 construction works will be separated into three distinct stages, as follows:

- Stage 1A: Construction of vehicular driveways within the site boundary (Figure 44)
- Stage 1B: Construction of vehicular driveways external to the site boundary and on-street bus bays (Figure 45)
- Stage 1C: Construction of the remaining Stage 1 works (Figure 46)

It is noted that an onsite wastewater management system will also be installed from Stage 1 with the ability to accommodate the full operational capacity of the School. It is anticipated that the construction of this wastewater management system will be readily accommodated during Stage 1 construction, therefore, no additional construction traffic management plan for this work is required.

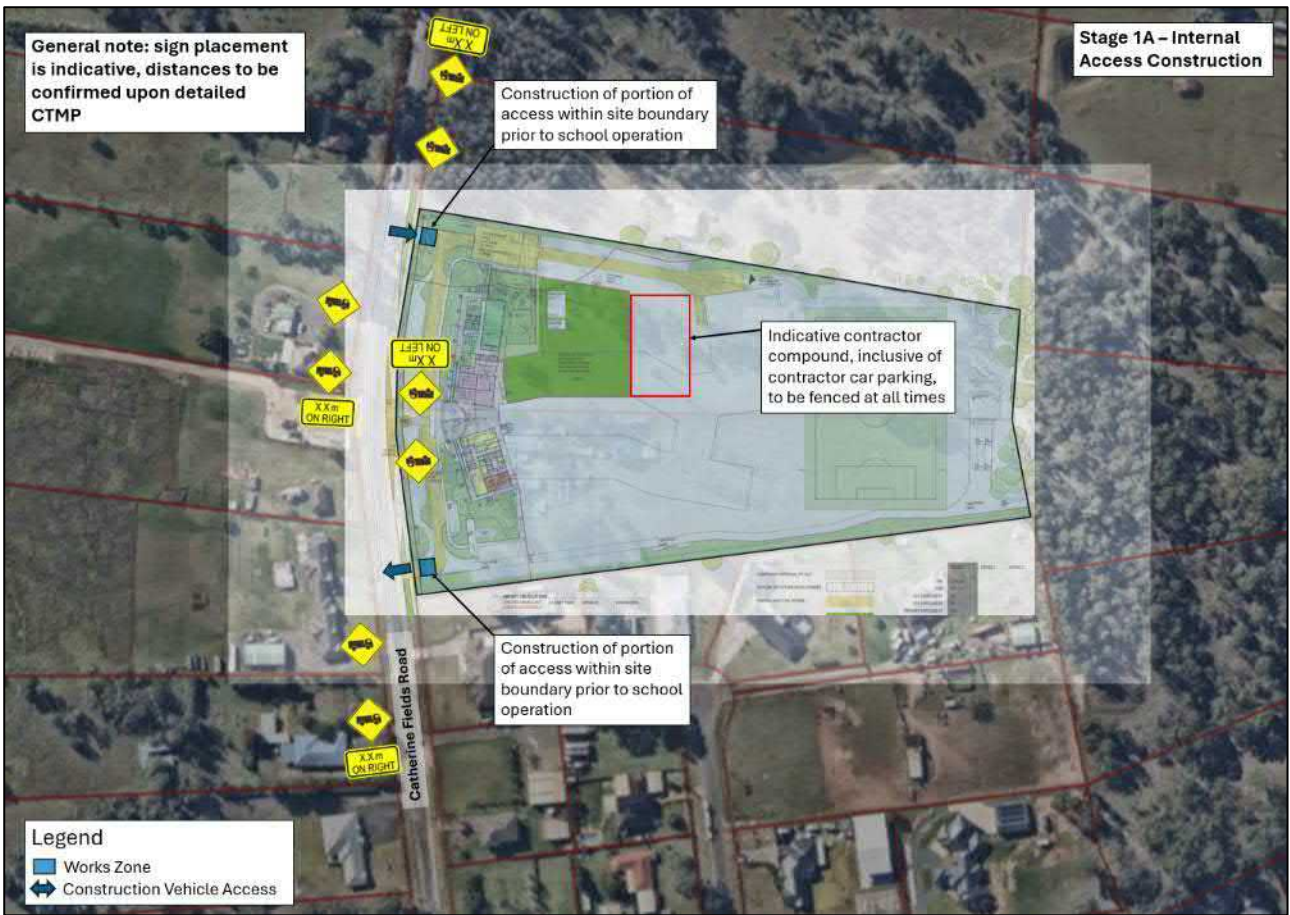


Figure 44: Stage 1A

With reference to the above, Stage 1A will involve the construction of the vehicular access within the Site. All construction works are expected to be completed within the site, as such, traffic controllers along the public road will not be required at this stage. It is noted the school will not be operational at this stage.

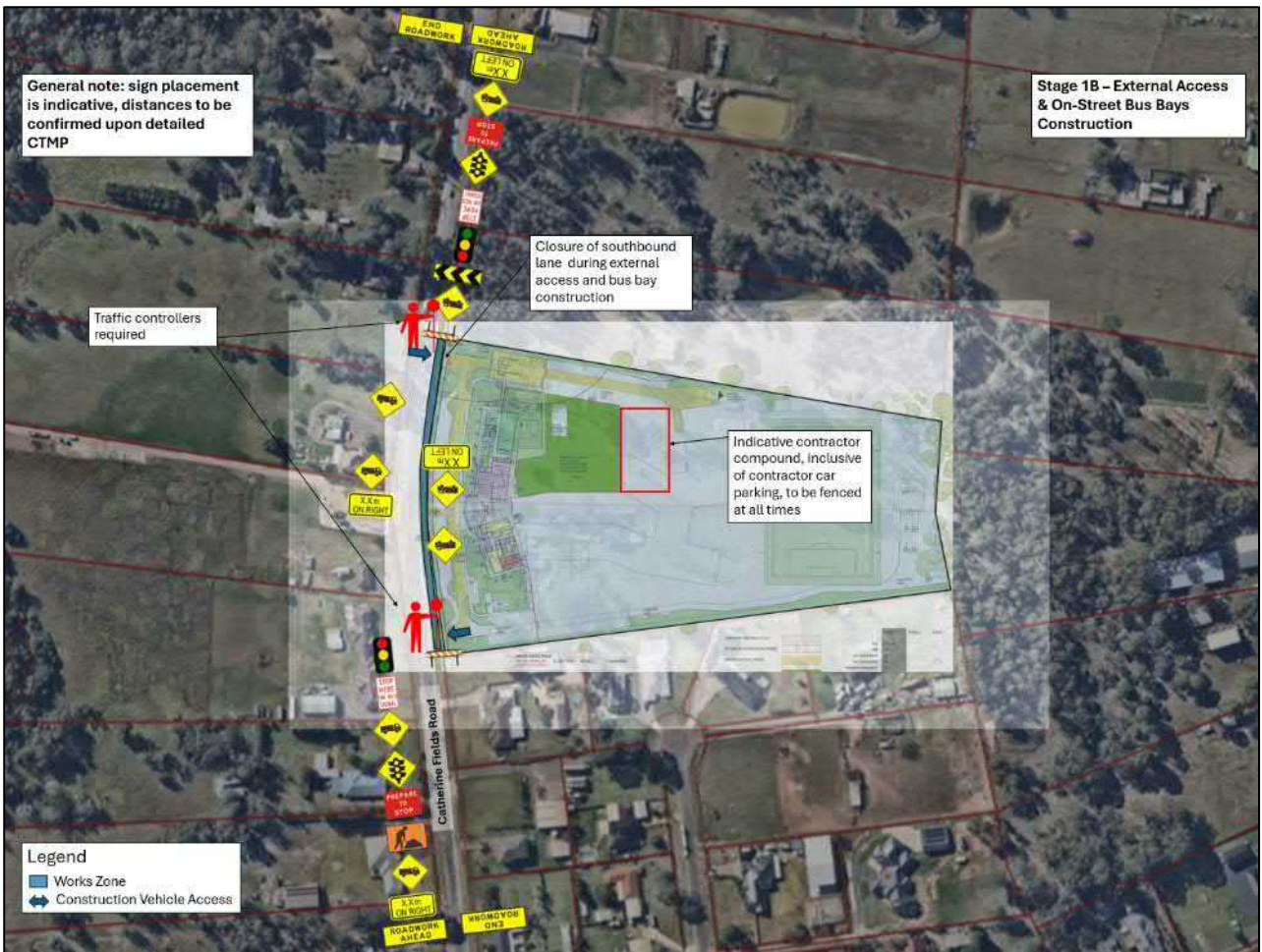


Figure 45: Stage 1B

Stage 1B will involve the construction of the external aspects of Stage 1, inclusive of the vehicle driveway crossovers and on-street bus bays. This will result in the closure of the southbound lane along Catherine Fields Road. Traffic controllers will be required at each end of the road closure to facilitate the coordination of traffic alongside the traffic signals. It is noted the school will not be operational at this stage.

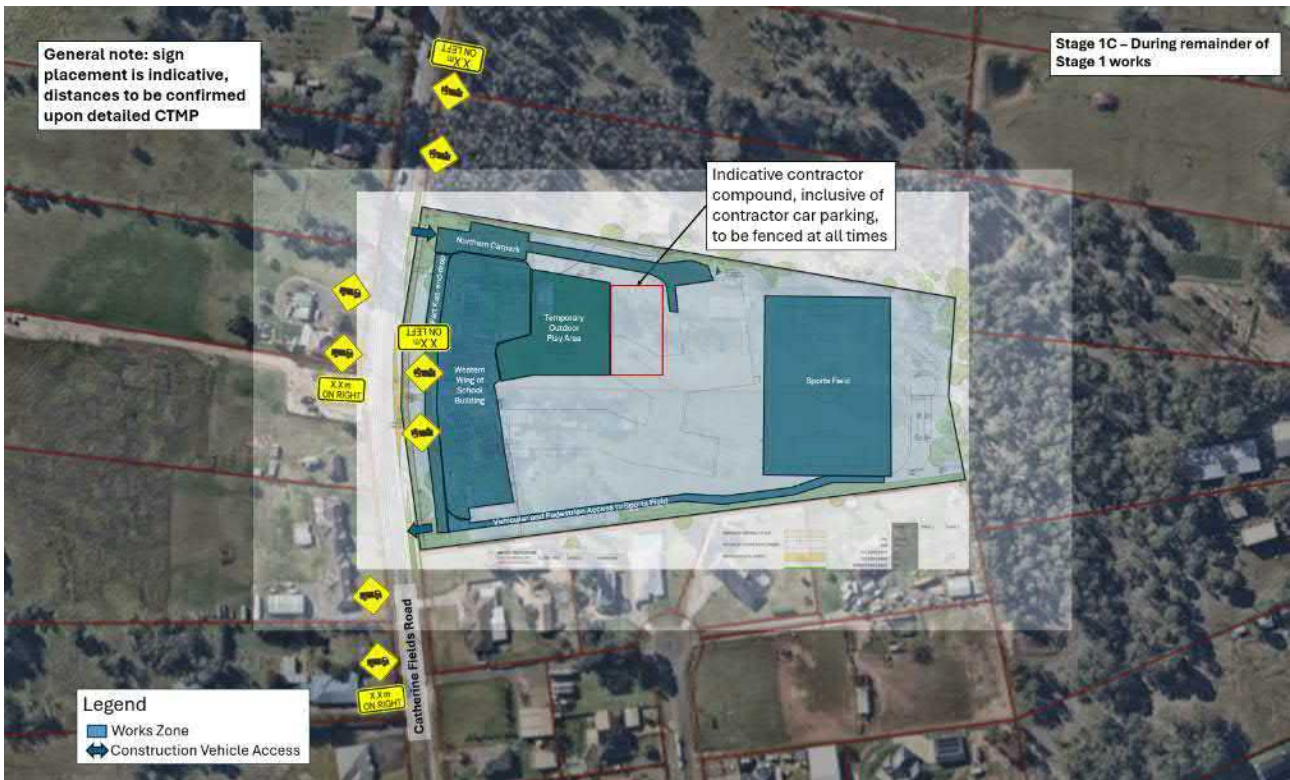


Figure 46: Stage 1C

Stage 1C will involve the remainder of the Stage 1 works, generally involving the construction of:

- The northern car park
- The kiss and drop circulation roadway alongside 10 bays
- 3,716 m<sup>2</sup> of GFA to the west of the Site and associated landscaping
- The sport field, which will be accessible via the access driveway along the southern boundary of the school.
- A temporary outdoor play area located to the east of the western wing.

All construction work is expected to be completed within the site boundary, as such, traffic controllers along the public road will not be required at this stage. It is noted the school will not be operational at this stage.

## 9.5.2 Stage 2

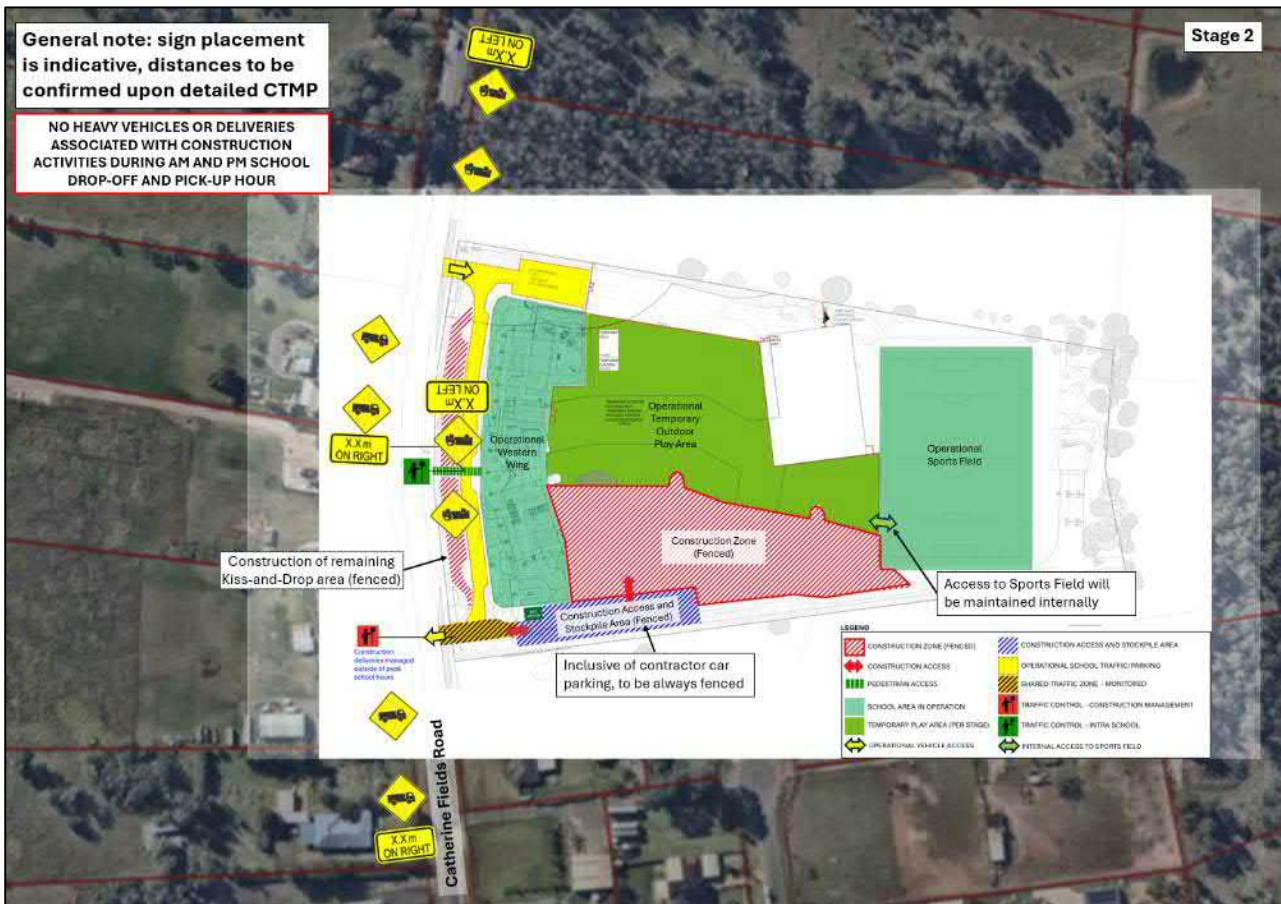


Figure 47: Stage 2

Stage 2 will generally involve the construction of:

- The southern car park
- The remainder of the kiss and drop bays
- 3,066 m<sup>2</sup> of GFA to the south east of the Site and associated landscaping

All construction work is expected to be completed within the site boundary, as such, traffic controllers along the public road will not be required at this stage.

Considering that construction will occur during school operations, supervision of the shared traffic zone at the site exit will be required during the movement of any construction vehicles. Traffic controllers will be engaged to provide supervision at the required location, as indicated in the TGS above. Priority will be given to non-construction vehicles moving through the shared traffic zone.

A construction fence and suitably classed Hoarding shall be provided along site boundaries/works area boundaries to provide safe pedestrian access. The fencing/hoardings will be maintained for the duration of the construction program associated with the stage of works being undertaken. Supervision of the School's main pedestrian access is required to ensure pedestrian safety during construction of the remaining kiss and drop area.

Finally, access to and from the operational sports field located to the east of the site will be provided via an internal access through the operational temporary outdoor play area during Stage 2 construction.

### 9.5.3 Stage 3

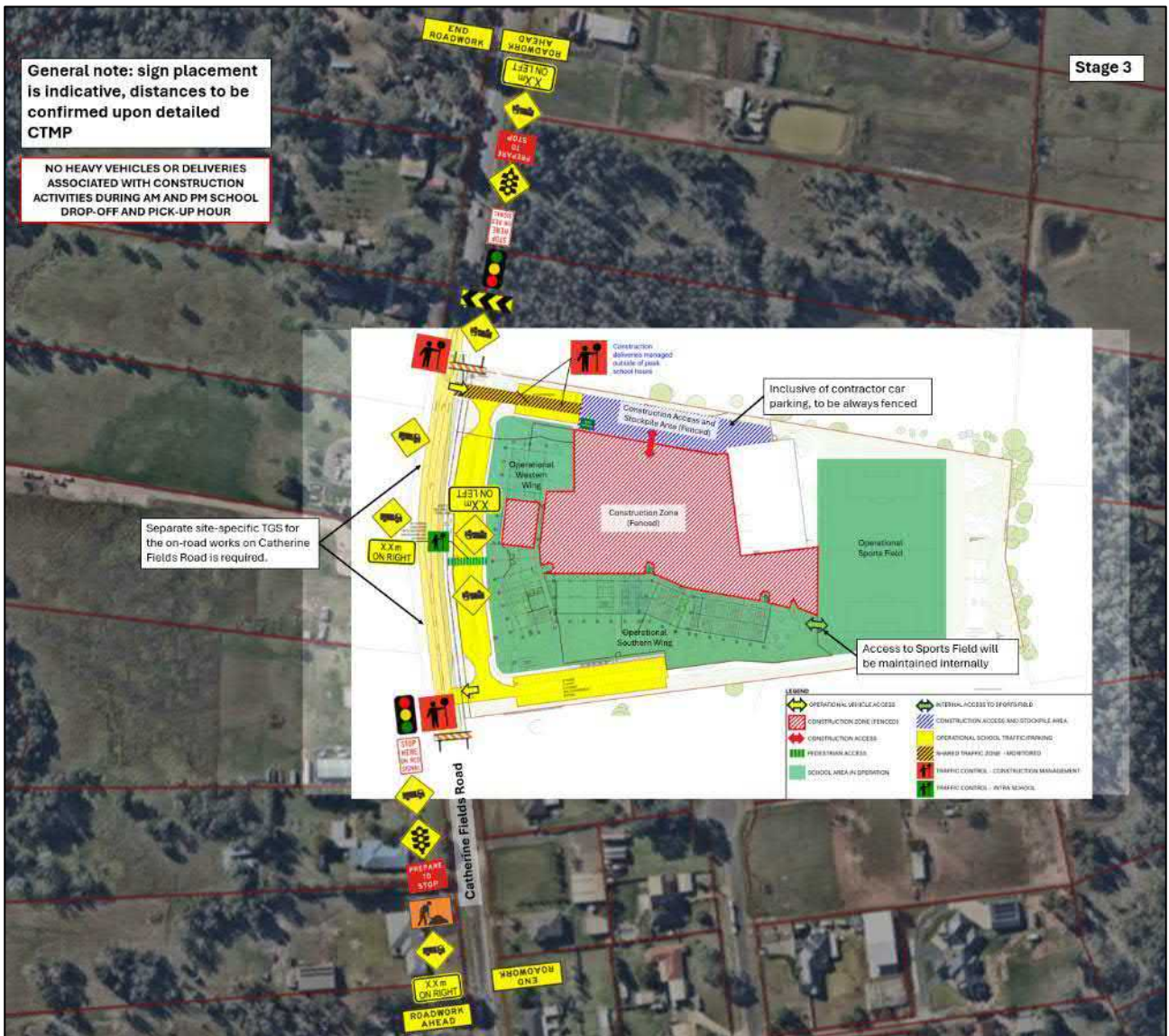


Figure 48: Stage 3

Stage 3 will generally involve the construction of:

- Right turning land and associated road widening along Catherine Fields Road
- Additional 5 bus bays along Catherine Fields Road
- Basketball courts to the north of the site
- 3,013 m<sup>2</sup> of GFA to the south east of the Site and associated landscaping

Stage 3 is generally expected to be completed in accordance with Figure 48. Considering that road works will need to be carried out on both lanes of Catherine Fields Road, this stage is planned to be executed in sections. Each section will involve partial road closures to ensure that through movements can continue to move along the road at all times. Separate site-specific TGS plans (which complies with AS1742 series and Traffic Control at Worksites Technical Manual version 6.1) for the on-road works shall be included in the detailed CTMP, as required.

Further, as Stage 3 works will occur during school operations, supervision of the northern carpark and shared traffic zone at the site entry will be required during the movement of any construction vehicles.

Supervision at the pedestrian crossing in the kiss and ride area is also provisioned to ensure pedestrian safety during road works along the School frontage. Traffic controllers will be engaged to provide supervision at the required location, as indicated in the TGS above.

Finally, access to and from the operational sports field located to the east of the site will be provided via internal connection within the operational school area during Stage 3 construction.

### 9.5.4 Stage 4

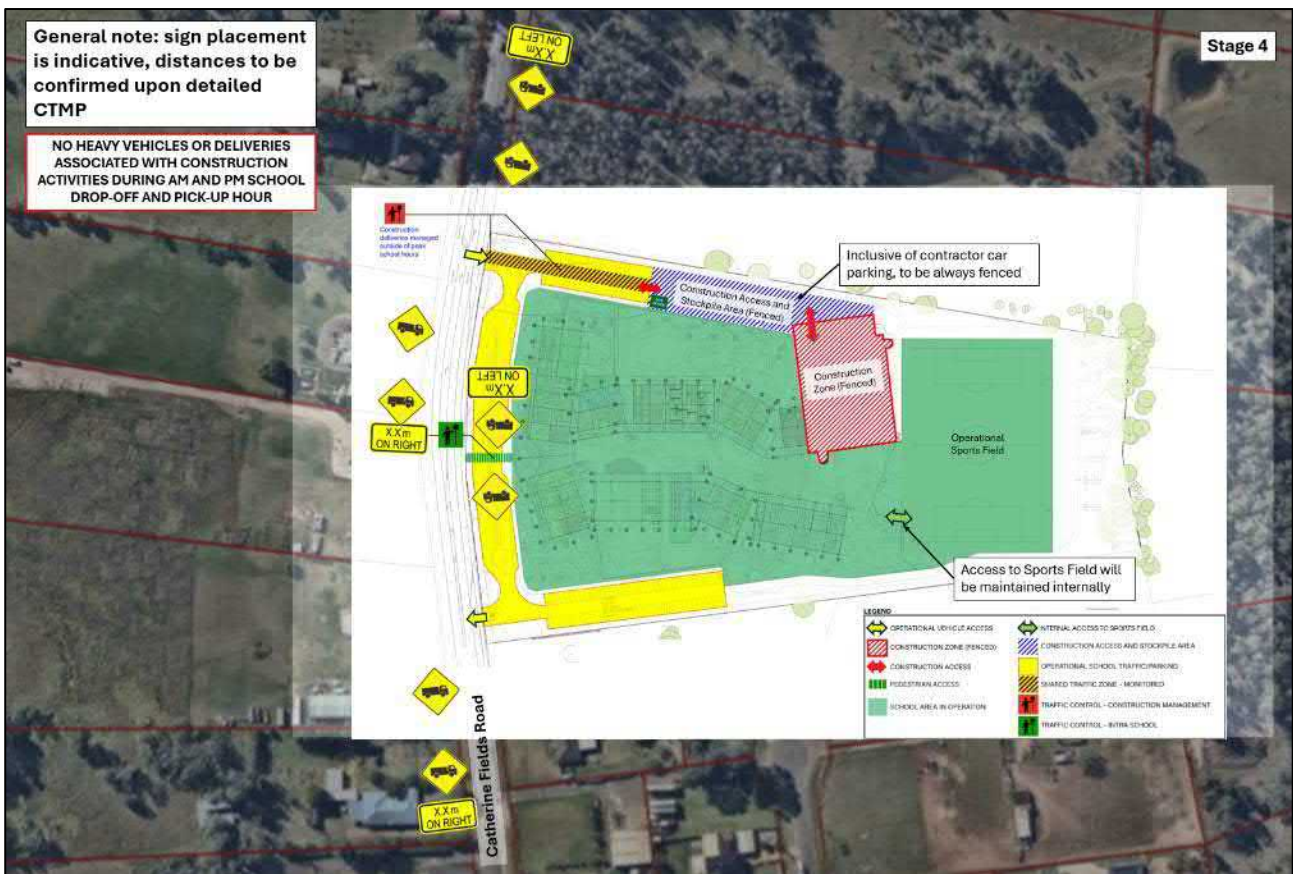


Figure 49: Stage 4

Stage 4 will entail the construction of the school hall, an additional 2,197m<sup>2</sup> in GFA. All construction work is expected to be completed within the site boundary, as such, traffic controllers along the public road will not be required at this stage.

Considering that construction will occur during school operations, supervision of the northern car park will be required during the movement of any construction vehicles.

Access to and from the operational sports field located to the east of the site will be accessible via internal access through the operational school area during Stage 4 construction works.

## 9.6 Authorised Traffic Controller

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There is a requirement for authorised traffic controllers to be present throughout the demolition, and construction phases of the project, their responsibilities include:

- Pedestrian and cyclist management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur.
- Supervision of all vehicle movements across pedestrian footpaths at all times, and
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project.
- Monitoring of traffic conditions whilst Traffic Guidance Schemes are implemented to ensure no conflict with existing Traffic Control Devices along the public roadway.
- Any road closures that may be necessary during roadworks proposed during Stage 3 of the proposal.

## 9.7 Worker Induction

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All workers and subcontractors engaged on-site would be required to complete a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurance.

## 9.8 Contractor Parking

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A small amount of on-site parking for key contractors and staff is expected to be provided throughout the construction works. The number and location of this temporary on-site car parking are expected to change throughout the various construction phases, depending on the surplus area available not required for truck loading and turning areas. Section 9.5 above identifies indicative contractor compound locations at each stage which will include contractor parking.

Should parking be not available for specific stages of work, it is the incumbent contractor's responsibility to prepare relevant plans and documentation to ensure contractor parking demand and associated management measures are documented, implemented, continually monitored and managed.

## 9.9 Public Transport Services

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As mentioned in Section 3.3.2, bus routes 850 and 857 travel along Catherine Fields Road. Construction works are not expected to impact existing public transport services during Stages 1,2 and 4 as the construction works are expected to be largely contained on-site. During Stage 3, the buses will be redirected around the Site. Bus operators will be notified and consulted as part of the detailed CTMP.

## 9.10 Pedestrian and Cyclist Management

---

Given that there are no existing footpaths along Catherine Fields Road, no pedestrians will be affected by the proposed Stage 1 construction activities.

During Stages 2 through 4 (when the School is operational), the proposed works consist of road works, potential civil works and intersection works that are likely to result in some footpath closures due to the nature of the works required.

The following principles provide guidance to the incumbent contractors to assist with the planning and staging of construction activities to minimise the impact on pedestrian movements and shall form part of the detailed CTPMP for Stages 2 through 4. Key considerations being:

- Pedestrian access to/from the School shall be maintained at all times.
- Pedestrian pathways adjacent to the works area shall be protected by hoarding. If the pedestrian pathway is adjacent to areas where deep excavation works are being undertaken, additional no-go areas shall be allowed within the works area to improve pedestrian safety.
- Temporary pedestrian pathways may be required as part of the pedestrian diversion strategy. Temporary pedestrian pathways shall be constructed to suitable standards in accordance with Council requirements. Temporary lighting may be required and subject to review by a lighting engineer to ensure compliance with relevant Australian Standards.
- Should pedestrian diversion be required, detailed TGS outlining the relevant pedestrian diversion signage, temporary kerb ramps (where required), and whether Authorised Traffic Controllers will be in place to support the temporary diversion shall be prepared and submitted to TfNSW / Council for approvals.
- Traffic controller(s) shall be present at the site accesses to manage pedestrian and vehicular traffic to ensure public safety while construction vehicles enter and exit the site. Pedestrians will not be directed to use the other footpath by use of signage alone. Also, traffic controls would need to be in accordance with AS1742.3 and RMS 'Traffic Control at Worksites' manual at all times.
- Should any unforeseen activities require the temporary closure of any existing pedestrian access, a TGS should be developed and implemented by the contractor to ensure a safe alternative for pedestrians traversing these routes in the vicinity of the site.

While there are no formal cycling routes along Catherine Fields Road, the cyclists will be warned of the presence of trucks entering and exiting the site via the provision of temporary truck signage along the road approaching the site access. Truck drivers/construction workers will be inducted to observe for and give way to cyclists on the road at all times.

## 9.11 Construction Traffic Volumes

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Construction traffic will generally incorporate:

- Vehicles up to the dimensions of a Truck + Dog Trailers and 20m long Articulated Vehicles for removal of spoil and transportation of material.
- Concrete mixer trucks up to 12m in length.
- Vehicles up to the dimension of a 20m long Articulated Vehicle for delivery of material such as steel / façade panels, and roof panels.

Any oversize vehicles using local roads to access the site would require additional Council and/or Transport for NSW approval.

The maximum number of trucks accessing the site is subject to the development of a detailed construction staging plan upon the appointment of the contractor.

In the absence of a detailed construction programme, it is assumed that the average volume of construction vehicle traffic to and from the site would be consistent with other similar SINSW projects. Sample data from other projects is provided in **Table 38** below.

<b>TABLE 38: CONSTRUCTION VEHICLE VOLUMES AT SIMILAR CONSTRUCTION SITE</b>			
<b>Reference Project<sup>3</sup></b>	<b>Student Population Growth (from project)</b>	<b>Peak Number of Trucks per Day</b>	<b>Typical Number of Trucks per Day</b>
<b>Pendle Hill High School</b>	+ 240 students	20	6 – 8
<b>John Palmer Public School</b>	+ 644 students	6	6
<b>Smalls Road Public School</b>	+ 1,000 students	30	2 – 8
<b>Melbonba Education Campus</b>	+ 3,000 students	60	15 – 20

It should be noted that this information is provided for reference only, and more accurate data will be provided by the appointed contractor prior to commencement of construction.

## 9.12 Potential Haulage Routes

It is proposed that construction vehicles enter and exit the at the construction access gate(s) (left-in and left-out only) via the routes shown in **Figure 50**.

During Stages 1 and 2 works, a turnaround facility can be provided within the site in the designated loading area north of the hall through the northern carpark while during Stages 3 through 4, the turnaround facility can be provided on-site in the vicinity of the proposed shuttle bays. Such provisions ensure all vehicles arrive and exit the Site in a forward direction.

A copy of the truck route maps shall be provided to all drivers prior to attending the Site.

The access and egress routes are to be utilised by all construction vehicles associated with the Site and represent the shortest route between the local and regional road network – hence minimising the impacts of the construction process. No trucks are to be queued on local roads. Mobile phones and two-way radios will be used to coordinate truck arrivals.

<sup>3</sup> <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-62028458%2120240320T011102.247%20GMT>



Figure 50: Construction Vehicle Haulage Routes

## 9.13 Construction Mitigation Measures

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Construction of the above development would generate a moderate increase in traffic on the surrounding road network. In this regard, mitigation measures should be undertaken to minimise the impacts of the construction activities of the development. These measures are detailed below:

- A construction fence and suitably classed hoarding shall be provided along site boundaries/works area boundaries to provide safe pedestrian access. The fencing/hoardings should be maintained for the duration of the construction program associated with the stage of works being undertaken.
- Traffic control would be required to manage and regulate traffic movements into and out of the site during construction, with pedestrian priority provided during peak hour periods and to maintain access to public transport facilities.
- Disruption to road users should be kept to a minimum by scheduling intensive delivery activities outside of road network peak hours.
- A contractor compound will be set up on site and will provide dedicated contractor car parking.
- Supervised traffic control will be required where two-way flow is restricted over any length of the roadway, depending on the number of truck movements required and would be managed outside of peak hour vehicle and pedestrian activity.

It is noteworthy that the school will be operational from Stage 2 while there is ongoing construction activity. In addition to the mitigation measures outlined above, the stagings plans and TGS figures (Figure 44 to Figure 49) adopt the following mitigation measures to minimise impacts on school operation:

- All construction heavy vehicle movements (including deliveries) will be prohibited during school drop-off and pick-up hour. During school hours, students will be securely accommodated within the operational school area including open space.
- A Code of Conduct will be prepared to ensure construction staff and contractors are aware of and agree to restrictions and protocols, which includes giving way to school related movements at all times.
- The Work Area for the construction of the Kiss and Drop area shall remain fenced at all times from all publicly accessible areas. This includes hoarding requirements as applicable. The boundaries of Work Areas shall maintain adequate sight lines to pedestrian crossings where relevant.
- A pedestrian route shall be maintained on the alignment of the permanent pedestrian crossing between the school entrance and frontage road footpath. The plans indicate supervision for crossings at the completed roadways within the site.

## 9.14 Vehicle Management Plan

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A detailed Vehicle Management Plan (VMP) can be provided and combined with or superimposed on the TCP as part of the detailed CTMP once a builder/contractor is engaged. At no stage shall un-planned queuing occur on the public road network. It is expected that a schedule for deliveries of materials and goods (including concrete) will be established prior to that day, with Traffic Controller maintaining radio contact with construction vehicles at all times. Construction truck drivers will be reminded that there should be no idling on and the use of Catherine Fields Road as truck marshalling area. With the above measures, it is not expected that this level of traffic movement would require queue storage layover.

# 10 Summary and Conclusions

## 10.1 Summary

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Ason Group has been commissioned by Minarah College to prepare a TA to accompany the SSDA to the NSW DPIE for the proposed Minarah College, Catherine Field Campus, to meet the educational needs of the area.

## 10.2 Key Findings

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Further to a detailed assessment of the proposed development of the Minarah College, Catherine Field Campus, we provide the following conclusions:

- The Development relates to the development of a co-educational school (servicing Kindergarten to Year 12) with a maximum capacity of 980 students inclusive of a 60-space early learning centre (ELC) over a 14-year period and 4 distinct stages.
- The site is located within the Camden Council area and is subject to that Council's controls.
- The proposed two main access gates along Catherine Fields Road will provide access to / from the on-site kiss and ride facility, loading area and car/bicycle parking facility. The northern driveway will be restricted to ingressing vehicles only while the southern driveway will be restricted to left-turning egressing vehicles.
- Formal SEARs have been issued by DPIE relating to the SSDA for the Site. The Transport Assessment, inclusive of the Preliminary Construction Plan and Preliminary School Transport Plan (refer to Appendix A) are documents intended to address the Requirements relating to traffic and transport elements of the proposed works.
- Due to the current Covid-19 restrictions, Ason Group has relied on 2021 SCATS volumes at the Camden Valley Way/ Catherine Fields intersection extrapolated to intersections further north based on the 2018 intersection survey turning proportions to establish the existing baseline performance of the surrounding road network. An assessment of the school peak periods (AM peak - 7:30 am-8:30 am and PM peak - 3:00 pm-4:00 pm) demonstrates that generally, traffic performance is satisfactory, demonstrating LoS B at worst for each assessed period.
- The Minarah College student surveys demonstrate that a high proportion of students travel to and from school via private vehicles (80-90%).
- The Minarah College staff surveys also demonstrate a very high dependency on private vehicle (as driver) usage of 97%.
- Adopted traffic generation rates have been determined based on the surveyed rates of GVC.

Based on these rates, the School would generate the following AM and PM trips during the school's peak hours:

- Stage 1: 157
- Stage 2: 320
- Stage 3: 482
- Stage 4: 482 (there is no increase in student numbers from Stage 3)
- As part of the traffic assessment, a conservative flat 2.5% growth rate per TfNSW advice has been adopted to forecast the Future Years 2026 2031 and 2035 base case background traffic.
- The network modelling demonstrates that the surrounding key intersections will continue to operate at Los D or better for the 2026 future year assessment, demonstrating that these intersections have sufficient capacity for the increase to Stage 1 development traffic of the locale.

- For the scenario for the Years 2031 and 2035, it is expected that the Camden Valley Way/ Catherine Fields intersection will operate at LoS F during peak hours with or without the proposed School.
- Therefore, it can be determined that the increase in traffic associated with the surrounding developments will cause extenuating impacts on the performance of the Camden Valley Way/ Catherine Fields intersection, with the approaching volumes exceeding the capacity at this intersection.
- It is noted that the assessments are conservative in nature due to the adopted flat annual growth rate of 2.5% and there is a potential reduction in traffic growth due to the implementation of the Southwest Growth Sector Bus Servicing Strategy.
- Furthermore, in accordance with DPHI's traffic consultant, Ason Group is supportive of Catherine Fields Road capacity to support the Proposal's development traffic through to Stage 4, the ultimate scenario.
- With left-out only from the School's egress driveway, this and all other intersections will have ample spare capacity to accommodate the additional future traffic generated by the proposed School without adversely impacting the surrounding road network and will continue to operate satisfactorily in the Future Year scenarios.
- Analysis of the capacity of the kiss and ride area with consideration of the expected School arrival and departure profile shows that it is capable of accommodating the trips generated without impacting the adjoining Catherine Fields Road.
- All-access, parking and servicing areas have been designed in general accordance with the relevant Australian Standards.

In summary, the Proposal is supportable on traffic planning grounds and is not anticipated to result in any adverse impacts on the surrounding road network.

# Appendix A. Preliminary School Transport Plan

asongroup



# **Minarah College, Catherine Field Campus**

## **Preliminary School Transport Plan**

268 & 278 Catherine Fields Road, Catherine Fields

09/05/2025

Ref: P1769

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07	09/05/2025	Final	S. Bandaranayake	S. Bandaranayake

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<b>Appendix C.</b>	<b>TfNSW Consultation Record</b>
<b>Appendix D.</b>	<b>Council Consultation Record</b>

# Glossary

Acronym	Description
AGRD	Austrroads Guide to Road Design
AGTM	Austrroads Guide to Traffic Management
CC	Construction Certificate
CCP	Camden Contributions Plan
Council	Camden Council
DCP	Development Control Plan
DoS	Degree of Saturation
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EP&A	Environmental Planning and Assessment
EPPDM	Education Precinct Public Domain Masterplan
FSR	Floor space ratio
GFA	Gross Floor Area
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MRV	Medium Rigid Vehicle (as defined by AS2890.2:2018)
NHVR	National Heavy Vehicle Regulator
OC	Occupation Certificate
OSHC	Out of School Hours Care
OTAMP	Operational Transport and Access Management Plan
RMS Guide	Transport for NSW (formerly Roads and Traffic Authority), Guide to Traffic Generating Developments, 2002
SEAR	Secretary's Environmental Assessment Requirements
SINSW	School Infrastructure New South Wales
SRV	Small Rigid Vehicle (as defined by AS2890.2:2018)
SSDA	State Significant Development Application
STP	School Transport Plan
TDT 2013/04a	TfNSW Technical Direction, Guide to Traffic Generating Developments – Updated traffic surveys, August 2013
TfNSW	Transport for New South Wales
TA	Transport Assessment
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

# 1 Introduction

## 1.1 Introduction

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This Preliminary School Transport Plan accompanies an Environmental Impact Statement (EIS) pursuant to Part 9 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD - 30759158).

The development is for a new school proposed at the Catherine Fields Site, which is planned as a new Campus to the Green Valley Campus. The Site is situated at 268 & 278 Catherine Field Rd, Catherine Field.

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), namely the school travel and operational transport and access management arrangement aspects relating to the School development. These items include site transport amenities, existing conditions of the site, provision of measures to improve and encourage sustainable travel modes, and the operational traffic and access management for the site, pedestrian entries, drop-off/ pick-up zones(s) and bus bay(s).

## 1.2 The School

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The application seeks consent for the construction of a co-educational establishment (Minarah College) accommodating 980 students. The school will comprise of an Early Learning Centre (ELC) for 60 students, a School for Specific Purpose (SSP) for 30 students, a primary school accommodating 505 students and a high school for 385 students. The new school will be constructed in four stages, growing in line with growth in the local population. Specifically, consent is sought for:

- Demolition of the existing dwellings and ancillary structures on-site;
- Bulk earthworks across the site;
- The construction of the following:
  - One-storey early learning centre.
  - Two-storey administration building, with attached outside school hours care (OSHC), and wellbeing room.
  - Two-storey primary school building comprising of primary school classrooms,
  - School for Specific Purpose classrooms,
  - Primary school hall;
  - Two-storey high school building comprising high school classrooms;
  - Two-storey high school hall;
  - Shared one-storey canteen adjoining the high school building; and
  - Shared library located on the second storey above the ELC and Food and Textiles building below.
- Site access from Catherine Fields Road at two points;
- Works within Catherine Fields Road to allow for a right-turn bay from Catherine Fields Road and bus bays on the eastern side of Catherine Fields Road;
- Removal of trees and replacement planting and landscaping;
- Associated site landscaping and public domain improvements; and
- On-site car park for 95 parking spaces.

The development is to be constructed in four stages. The school will be operating at full capacity from stage 3. A breakdown of the student and staff numbers across each stage is as follows:

- Stage 1: 2026, 318 students (18 ELC, 290 School, 10, SSP), 15 FTE staff
- Stage 2: 2031, 652 students (42 ELC, 600 School, 10 SSP), 33 FTE Staff
- Stage 3, 2035, 980 students (60 ELC, 890 School, 30 SSP), 51 FTE Staff
- Stage 4, 2037, 980 students (60 ELC, 890 School, 30 SPP), 51 FTE Staff

The total student population at Stage 3 will be 980 students, the staff population will total 45 FTE and 6 SSP staff.

The development is envisioned over a 11-year period, during which school infrastructure development and student enrolment capacity would increase over 4 distinct stages. For reference, the site plan of the ultimate Campus is provided in **Figure 1** below. Development staging plans are provided in further detail in the accompanying Transport Assessment (ref: P1769r04v6 SSDA PSTP Minarah College Catherine Field Campus).



Figure 1: Site Plan

## 1.3 Background

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Ason Group has been commissioned by Midson Group on behalf of Minarah College to prepare a Preliminary School Transport Plan (PSTP) to accompany a State Significant Development Application (SSDA) to the NSW Department of Planning and Environment (DPE) for the development of a new K-12 college in Catherine Fields, situated on Catherine Field Road.

The works subject to the proposal involve the construction of a K-12 college facility located at 268 & 278 Catherine Field Rd, Catherine Field (the Site). The site is situated within a rural residential neighbourhood.

On 29<sup>th</sup> October 2021, the Planning Secretary issued Secretary's Environmental Assessment Requirements (SEARs) for the SSD Application No. SSD-30759158. This report has been prepared to address the SEARs requirements, as outlined above in Section 1.1.

### 1.3.1 Site Amenities and Existing Conditions

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**Section 2** of this Plan details the location and transport related amenities of the proposed school, i.e., bicycle parking, school bus stop, car parking, pedestrian access locations, and drop-off / pick-up facilities. Analysis is also provided on the anticipated mode share of the school for students and staff when the school becomes operational. Details regarding the public transport within the area and pedestrian connectivity are also provided.

In addition, detailed catchment analysis has been undertaken for potential students in the region to be considered to assist with the planning of likely travel mode share and the planning of correlating transport services and infrastructure requirements to support future school operations.

### 1.3.2 Preliminary School Transport Plan

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**Section 3** of this Plan, describes the preliminary School Transport Plan (PSTP) and is intended to develop a package of site-specific measures to promote and maximise the use of sustainable travel modes, including walking, cycling, public transport, and carpooling. These strategies will assist in less reliance on the use of private vehicles for travel to and from the school, supporting sustainability initiatives for growth into the future, providing sustainable travel modes that support independent travel of children attending the school and potential health benefits associated with walking, scooter riding and cycling.

The PSTP sets out objectives and strategies to assist the School in achieving green travel goals to improve sustainability.

It also includes a review of the existing transport choices and sets targets so that the effective implementation of the Plan can be assessed. These targets are intended to be realistic but ambitious enough to initiate substantive behavioural change to achieve the desired outcomes, given existing and future multi-modal transport networks. This is expected to be coordinated with the School or its representatives. It shall be reviewed regularly to ensure it remains relevant and reflective of current conditions.

### 1.3.3 School Transport Operations and Access Management Plan

**Section 4** of this Plan, herein referred to as the School Transport Operations and Access Management Plan (OTAMP) is to provide guidance in relation to the traffic management arrangements for the site. The overall objective is to ensure the safe and efficient movement of vehicles, students, visitors, and staff. In particular, this Plan details the following:

- A pedestrian access plan;
- Kiss and Ride area management plan;
- Car parking plan;
- Servicing plan; and
- Details on the governance and administration of the plans.

## 1.4 Detailed Stakeholder Engagement

Over the course of the development of this Plan, Ason Group has consulted with key stakeholders including Transport for NSW (TfNSW) and Camden Council. This report provides details of consultation undertaken by the Project Team in its preparation of this STP.

**TABLE 1: PRE-APPROVAL CONSULTATION RECORD 01**

<b>Identified Party to Consult:</b>	TfNSW
<b>Consultation type:</b>	Teleconference (Teams)
<b>When is consultation required?</b>	Prior to application for SSD
<b>Why</b>	TfNSW is the state road authority – they are in charge of coordinating activities on the local and state road networks.
<b>When was consultation scheduled/held</b>	28 <sup>th</sup> October 2021
<b>When was consultation held</b>	28 <sup>th</sup> October 2021
<b>Identify persons and positions who were involved</b>	<b>TfNSW</b> - Zhaleh Najari Alamouti (Senior Land Use Assessment Coordinator), Zeliha Cansiz, Louise Moran, Robert Rutledge, Sophie Grieve  <b>Minarah College</b> – Jay Halai (Principal)  <b>Midson Group</b> – Toby James (Project Manager)  <b>Ason Group</b> – Dora Choi (Principal Lead), Wendy Zheng (Senior Traffic Design Engineer)

<b>Provide the details of the consultation</b>	Preliminary discussion to raise concerns regarding the background growth factor and share project progress
<b>What specific matters were discussed?</b>	<ul style="list-style-type: none"> <li>• Presentation of proposed Minarah College secondary campus at Catherine Field</li> <li>• Ason presented data collected for the modelling of the proposed Minarah College Catherine Field Campus and posed questions on the background growth and development of the area based on STFM data collected</li> <li>• TfNSW confirmed that Catherine Field will not be rezoned near future and it is not part of a growth precinct</li> <li>• There are no further upgrades planned for either Bringelly Road nor Camden Valley Way</li> <li>• Assume that no collector roads in the network are being upgraded for future in our traffic impact assessment</li> <li>• TfNSW has answered that we can assume a minimum 3% growth in background traffic – to be reviewed internally by TfNSW</li> <li>• TfNSW does want to see cycling infrastructure and shared paths as part of the work but neither Council nor TfNSW has any plans for cycling or pedestrian infrastructure upgrades in the area and Catherine Field Road is not part of the bicycle network for Camden</li> <li>• TfNSW expressed enthusiasm for shuttle buses to and from train stations and this proposal was compared to the shuttle bus system at nearby Broughton Anglican College</li> <li>• The speed zone on Catherine Field Road transitions from 60km/hr from the intersection of Camden Valley Way to 80km/hr in front of the proposed school site. TfNSW has indicated that the project can apply to the Road Network Safety Officer for an extension of the 60km/hr speed zone</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• TfNSW informed the project team that the growth factors presented in the 2036 STFM model for the road network surrounding the Site does not need to be adhered to</li> <li>• No future road upgrades or pedestrian/cycle path extensions need to be accounted for by the project team</li> <li>• The project team sent through follow up questions to TfNSW: <ul style="list-style-type: none"> <li>- Background growth to be applied including the growth rate on Camden Valley Way and Catherine Field Road?</li> <li>- How can the changing road network be accommodated?</li> </ul> </li> <li>• Standard practice to adopt a specific percentage of growth?</li> </ul>
<b>What matters are unresolved?</b>	n/a
<b>Any remaining points of disagreement?</b>	n/a

How will the project team address matters not resolved?	n/a
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**TABLE 2: PRE-APPROVAL CONSULTATION RECORD 02**

Identified Party to Consult:	Camden Council
Consultation type:	Teleconference (Teams)
When is consultation required?	Prior to application for SSDA
Why	Council is the local road authority.
When was consultation scheduled/held	9 <sup>th</sup> December 2021
When was consultation held	9 <sup>th</sup> December 2021
Identify persons and positions who were involved	<p><b>Camden Council</b> – Matthew Rawson (Planner), Tom Allen (Team Leader Traffic and Road Safety), Roy El Kazzi (Traffic Engineer), Fiona Stalgis (Waterways)</p> <p><b>Minarah College</b> – Jay Halai (Principal), Imam Ali (Director)</p> <p><b>Midson Group</b> – Toby James (Project Manager)</p> <p><b>Urbis</b> – Naomi Ryan (Planner)</p> <p><b>TZG</b> – Peter Tonkin (Director), Julian Dolk (Architect)</p> <p><b>Martens</b> – Terry Harvey (Project Manager / Senior Engineer)</p> <p><b>Ason Group</b> – Dora Choi (Principal Lead), Wendy Zheng (Senior Traffic Design Engineer)</p>
Provide the details of the consultation	Pre-DA submission discussion to brief Council on the project and to clarify project team issues
What specific matters were discussed?	<p>The project team presented to Council regarding the project at its current stage. Traffic presented the following issues to Council for clarification:</p> <ul style="list-style-type: none"> <li>Confirmation of the growth rate for traffic modelling</li> </ul>

	<ul style="list-style-type: none"> <li>• Number of bicycle parking required on site given that there is no existing or proposed cycling connection to the School</li> <li>• Extent and dimension of footpath required on site frontage given that there is no existing or proposed footpath connection to the School</li> <li>• Timing of the implementation of the channelised right turn at the School entry</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• Council has confirmed that the provision of bicycle parking on site does not have to be compliant with the staging and may be conditioned later once the cycle path connection is planned</li> <li>• Footpath provision extent and dimensions are limited to the School frontage</li> </ul>
<b>What matters are unresolved?</b>	<ul style="list-style-type: none"> <li>• Council has informed the project team that they will confirm the growth rate to be modelled</li> <li>• Council has expressed their preference for delivery of the channelised right turn entry in Stage 01, but modelling shows it is not necessary until Stage 04 which is dependent on the growth rate</li> </ul>
<b>Any remaining points of disagreement?</b>	n/a
<b>How will the project team address matters not resolved?</b>	n/a

**TABLE 3: PRE-APPROVAL CONSULTATION RECORD 03**

<b>Identified Party to Consult:</b>	Camden Council
<b>Consultation type:</b>	Pre-DA letter
<b>When is consultation required?</b>	Prior to application for SSDA
<b>Why</b>	Council is the local road authority.
<b>When was consultation scheduled/held</b>	Pre-DA letter dated 21 <sup>st</sup> December 2021
<b>When was consultation held</b>	9 <sup>th</sup> December 2021 (see details in Record 02)
<b>Identify persons and positions who were involved</b>	See details in Record 02

<p><b>Provide the details of the consultation</b></p>	<p>See details in Record 02</p>
<p><b>What specific matters were discussed?</b></p>	<ul style="list-style-type: none"> <li>• A Traffic Impact Assessment undertaken by a suitably qualified practitioner must be submitted detailing, but not limited to, the following: <ul style="list-style-type: none"> <li>• Traffic generation and impact;</li> <li>• Queuing at kiss and ride –measures to prevent queuing from extending onto Catherine Fields Drive;</li> <li>• Compliance of the design with relevant design guides and standards;</li> <li>• Pedestrian safety; and</li> <li>• The capacity for the narrow rural road (Catherine Fields Road) to handle the traffic volumes associated with the development and likely maintenance burden.</li> </ul> </li> <li>• Car parking rates shall comply with DCP requirements for off-street parking. Although the number of proposed parking spaces is provided in the documents, the detail required for their calculation is not (i.e., number of year 12 students, number of staff, etc).</li> <li>• The proposal states 36 Kiss and ride spaces internally. Additional detail of the Kiss and ride area would be required, and it must be designed in a manner that ensures queuing does not extend onto Catherine Field Drive (impacting on traffic flow). The school proposes 1500 students, and it is envisaged that the majority of students would travel by private vehicle or bus. The efficacy of the proposed provision shall be justified by assessment of similar sites.</li> <li>• Plans depicting dimensions (aisle width, indent width, length), signage and line marking must be submitted with any future application.</li> <li>• Parking/ loading areas shall be designed to comply with relevant Australian Standards.</li> <li>• Relevant swept paths to be depicted include (but are not limited to) the following: <ul style="list-style-type: none"> <li>– Vehicles entering and exiting driveways and parking aisles simultaneously; and</li> <li>– Largest design vehicle entering, manoeuvring with the site and egress the site.</li> <li>– A bus shelter must be provided as part of the proposed development. All indented bus bays must be designed in accordance with the relevant standards and design guides.</li> </ul> </li> <li>• Answers to specific queries:</li> <li>• What growth rate should be applied in our traffic model? Note that TfNSW has directed us to use the standard growth rate which is 2.5%. 2.5% would be satisfactory at this stage considering the area is not yet rezoned.</li> <li>• Do we need to provide any bicycle parking within the school as it is currently not accessible via bicycles? Although bicycle accessibility is not yet achieved it may be difficult to enforce provision after the school is approved and operational. We may condition that prior to completion of the final stage that all parking must be provided. However, a small amount should</li> </ul>

	<p>still be provided at Stage 1 to accommodate any teachers or students that may live local and choose to cycle to the school.</p> <ul style="list-style-type: none"> <li>• Footpath connecting the indented bus bay on Catherine Field Road to the school has been designed for 1.8m in width in accordance with Austroads Guide to Road Design Part 3, does it need to be widened? 3m is to be provided to accommodate students waiting to board etc. This is what we strive for around all schools.</li> <li>• Our initial modelling shows that the CHR on Catherine Field Road does not need to be provided before Stage 4. Does Council have any comment on the timing? Right turn bay shall be provided at stage 1.</li> </ul>
<b>What matters were resolved?</b>	<ul style="list-style-type: none"> <li>• A queuing analysis of the kiss and ride area has been undertaken to demonstrate that the design can accommodate all traffic required without queuing onto Catherine Fields Road</li> <li>• SIDRA network modelling has been undertaken to demonstrate that development traffic can be accommodated by the surrounding road network</li> </ul>
<b>What matters are unresolved?</b>	<ul style="list-style-type: none"> <li>• Council requires the provision of a bus shelter. However, a bus shelter should be provided by Council as part of the Council's Road &amp; Transport Infrastructure Asset Management Plan if required</li> <li>• Council has expressed their preference for a 3m wide footpath adjacent to the bus bays. However, the proposed 1.8m footpath is in accordance with Austroads requirements and the School has proposed a covered waiting area for students adjacent to the pedestrian access.</li> <li>• Council has expressed their preference for delivery of the channelised right turn entry in Stage 01, but modelling shows it is not necessary until Stage 04 which is dependent on the growth rate</li> </ul>
<b>Any remaining points of disagreement?</b>	<ul style="list-style-type: none"> <li>• n/a</li> </ul>
<b>How will the project team address matters not have resolved?</b>	n/a

## 1.5 Key References

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The TA makes reference to a series of key strategic, design and planning documents in the assessment of the traffic and transport-related elements of the project. These documents include:

- Camden Council Development Control Plan (2019)
- Camden Council Local Environment Plan (2010)
- Transport for NSW, NSW Movement and Place Framework (March 2020)
- NSW Government, Practitioner's Guide to Movement and Place (March 2020)
- NSW Planning Guidelines for Walking and Cycling (December 2004);

This TAIA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, Guide to Traffic Generating Developments, v2.02, 2002 (RMS Guide)
- Roads and Maritime Services, Trip Generation Surveys Schools Analysis Report (Prepared by GTA for RMS, Issue A dated 25/08/2014);
- Australian Standard 2890.1:2004 Parking Facilities – Off-Streetcar Parking (AS 2890.1: 2004)
- Australian Standard 2890.2:2018 Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2:2018)
- Australian Standard 2890.3:2015 Parking Facilities – Bicycle Parking (AS 2890.3:2015)
- Australian Standard 2890.5:2018 Parking Facilities – On-Street Parking (AS 2890.5:2018)
- Australian Standard 2890.6:2022 Parking Facilities – Off-Street Parking for People with Disabilities (AS 2890.6:2022)
- Transport for NSW, Supplement to Australian Standard AS 1742.10-2009, Manual of Uniform Traffic Control Devices – Part 10: Pedestrian Control and Protection Version 3.1 March 2021
- EIS Guidelines – Road and Related Facilities (Department of Urban Affairs and Planning (DUAP), 1996)
- Cycling Aspects of Austroads Guides
- Guide to Traffic Management Part 12: Integrated Transport Assessments for Development (Austroads, 2020)

# 2 Existing Conditions

## 2.1 Site Location

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The Site is located at 268 & 278 Catherine Fields Road, Catherine Field and consists of Lot 11 of DP833983 and Lot 12 of DP833984. The site is largely surrounded by rural and low-density land uses, characterized in the LEP as:

- RU4 Primary production Small Lots (to the north, east and west)
- R5 Large Lot Residential (to the south)

The following land-uses adjoins the site:

- to the north: a single residential dwelling house adjoins to the north
- to the south: 3 single residential dwelling houses and ancillary buildings, some of them with on-site business activities
- to the east: 2 single residential dwelling houses and ancillary buildings with business activities
- opposite of the site - to the west: 4 single residential dwelling houses and ancillary buildings, some of them with on-site business activities

Currently, the Site consists of two residential properties with a combined 4.55-hectare footprint.

The land area and surrounding context are demonstrated in **Figure 2** and **Figure 3** below.



Figure 2: Site Location

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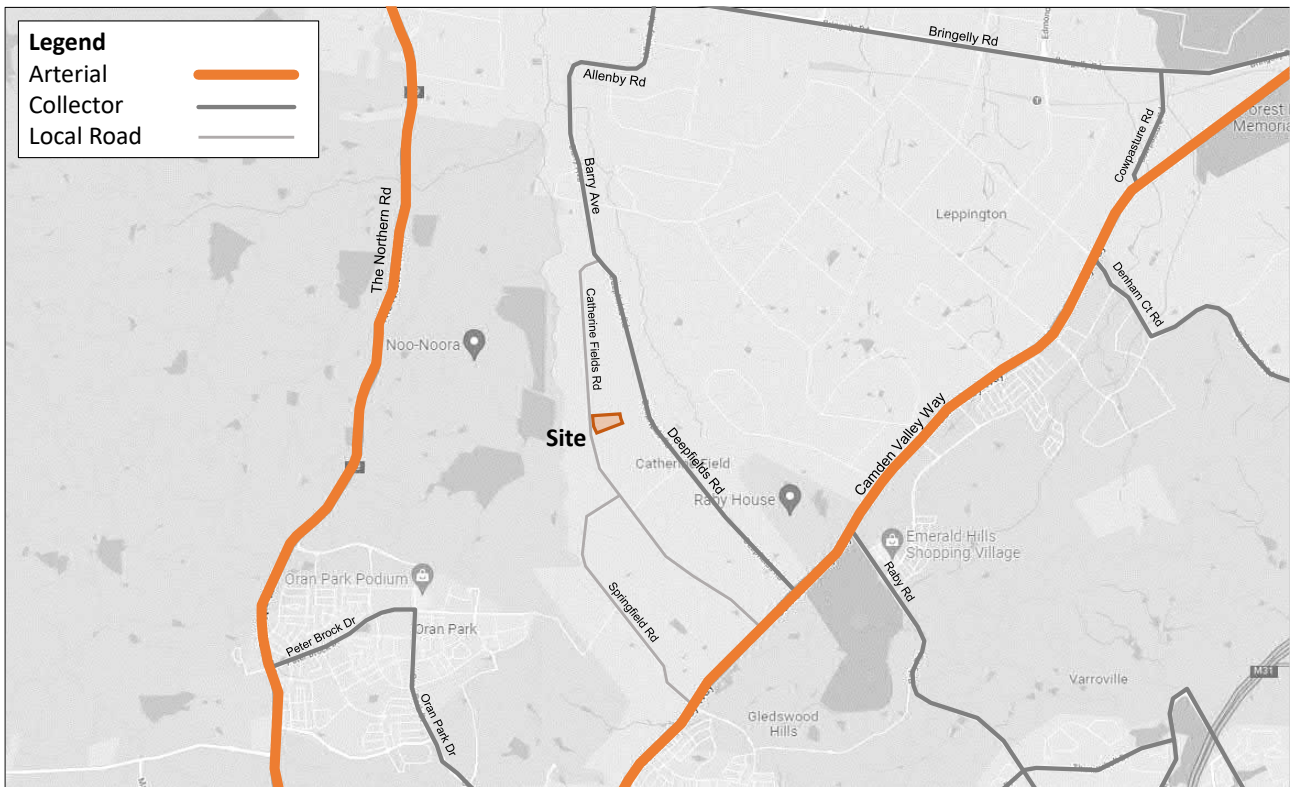


Figure 3: Site Context and Road Hierarchy

## 2.2 Site Transport Facilities

The architectural plans for the School development indicate locations of frontages, crossovers and access locations relevant to transport facilities associated with the school. This includes, but is not limited to:

- Bicycle parking locations
- Kiss & ride locations
- Bus stop locations
- Concrete pedestrian footpaths and access points
- Existing and Proposed crossing locations.

**Figure 4** demonstrates the configuration of existing and proposed transport facilities.

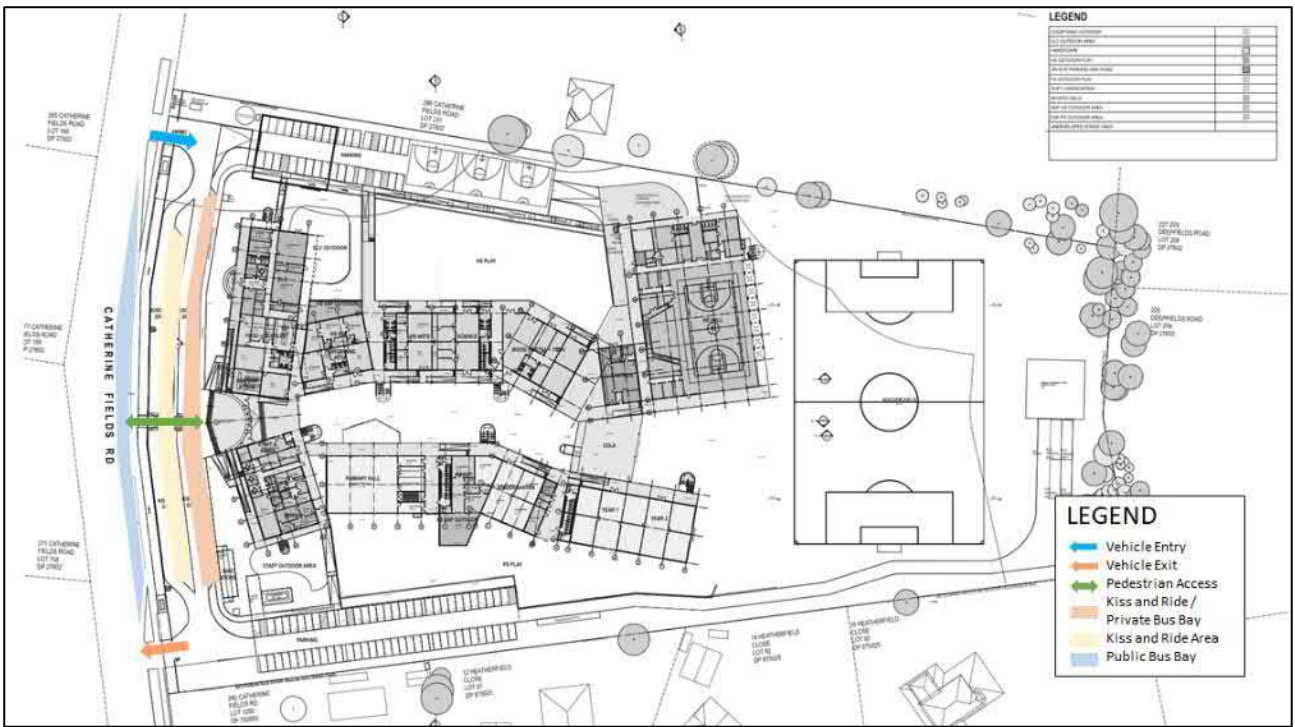


Figure 4: Site Access Diagram

As defined above, the Site has one frontage to Catherine Field Road and provides connectivity to the limited pedestrian network in the area.

As no cycleway connections exist to / from the School and none are planned to be built by TfNSW or Council, no one can safely cycle to / from the school. Council has requested a provision of some bicycle parking be provided as part of this masterplan. As such, 30 bicycle spaces in the form of Class-B secured 24 double racks in accordance with AS2890.3, have been proposed, as shown in **Figure 5**. The bicycle parking is located at the site with convenient access via Catherine Fields Road, safe, secured and under cover.

The required End of Trip (EoT) facilities (i.e, lockers and shower/change facilities) will be detailed as part of the STP.

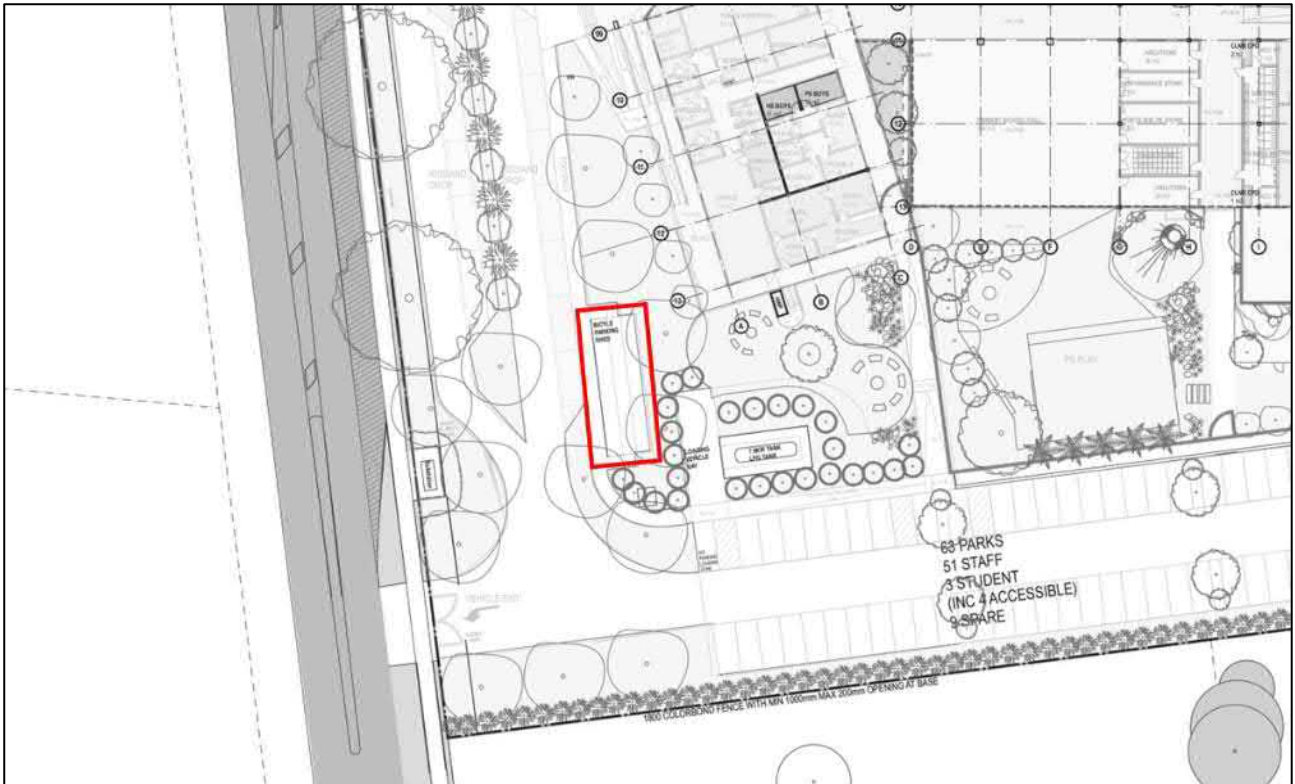


Figure 5: Proposed Bicycle Parking Location

## 2.3 Public Transport

### 2.3.1 Train Connectivity

With regard to accessibility to the existing and proposed rail network, the proposed school location is not situated within walking distance of a train station. Notwithstanding, there is a potential opportunity for ancillary serviceability (via shuttle or chartered services) from Leppington Station 5km to the north-east or Minto Station approximately 8km to the south-east.

Serviceability details are provided in **Table 3**, with reference to **Figure 6** below.

**TABLE 4: TRAIN SERVICES**

Line	Connection	Name	Frequency
T2	Leppington Stn.	Parramatta or Leppington to City	~ 4 services per hour
T5		Richmond to Leppington	~ 2 services per hour
T8	Minto Stn.	Macarthur to City via Airport or Sydenham	~ 4 services per hour
		City to Macarthur via Airport or Sydenham	~ 2 services per hour
T5		Leppington to Richmond	~ 2 services per hour



Figure 6: Train Stations

### 2.3.2 Public Bus Connectivity

With reference to existing public bus service connectivity for the area, a single bus stop location exists south of the Site along Catherine Fields Road and provides serviceability to two routes, summarised in the table below.

TABLE 5: BUS SERVICES			
Route	Description	Provider	Frequency
850	Narellan Town Centre to Minto	Interline Bus Services	~ 2 per hour during the day
857	Narellan to Liverpool	Interline Bus Services	~1 every 2-3 hours during the day.

Both routes listed above access Catherine Fields Road via Camden Valley Way, and typically loop via the adjacent Springfield Road as demonstrated below rather than travelling the full extents of Catherine Fields Road northwards.



Figure 7: Catherine Fields Bus Routing

### 2.3.3 Future Opportunities for Services

Having regard to the above, it is demonstrated that part of Catherine Fields Road is adequately dimensioned to provide bus serviceability. As part of the school development, potential school bus routes should be explored in consideration of servicing the future student population.

Notwithstanding, there is a potential opportunity for ancillary serviceability (via shuttle or chartered services) from Leppington Station 5km to the northeast or Minto Station approximately 8km to the south-east.

Subject to the bus ridership demand, it is recommended that private chartered buses for exclusive school use provide services to and from Leppington Station and Minto Station every 30-minute during the School's AM and PM peak hours. The recommended chartered bus routes to/from these train stations are shown in **Figure 8** and **Figure 9**.

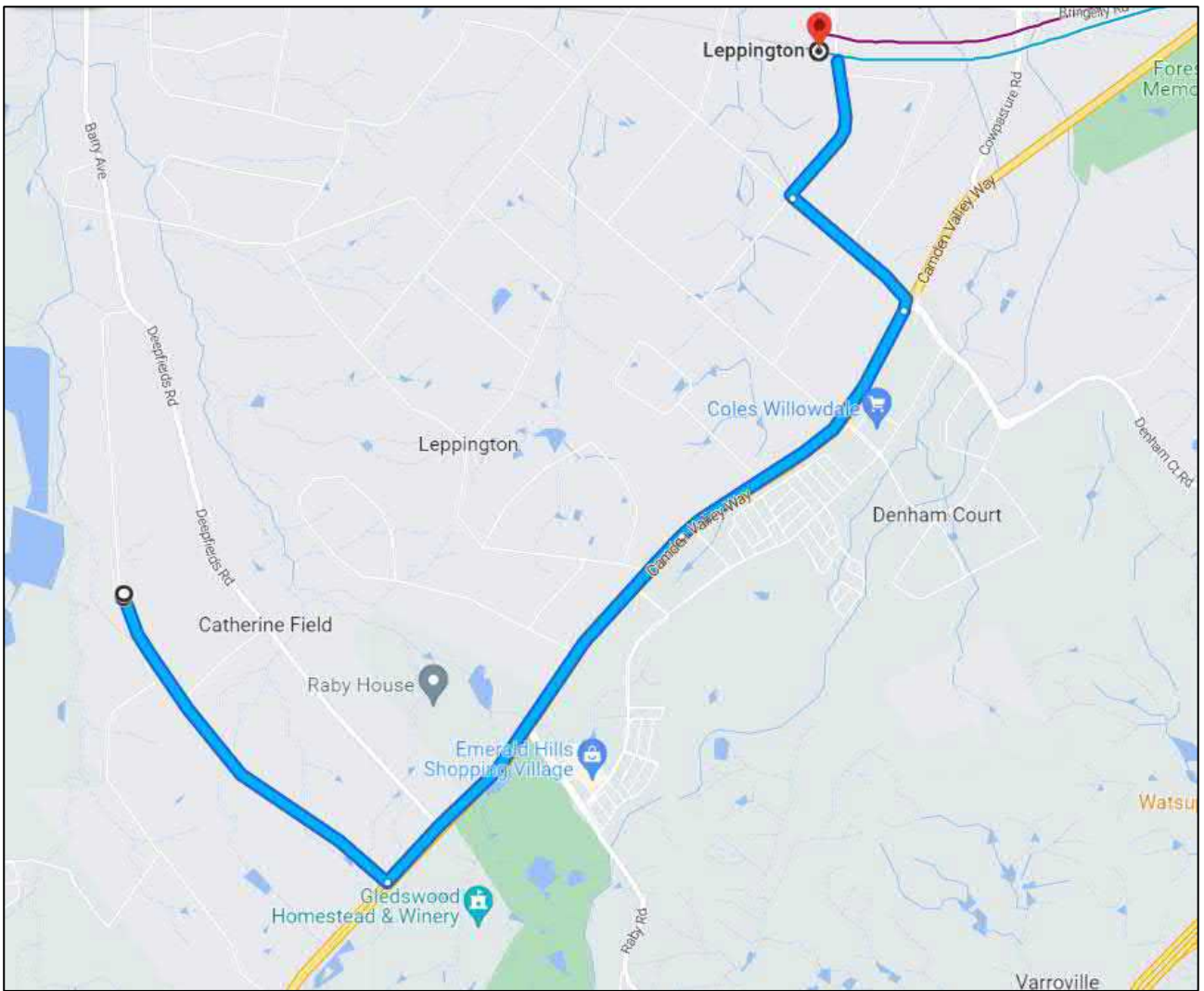


Figure 8: School – Leppington Train Station Bus Routing

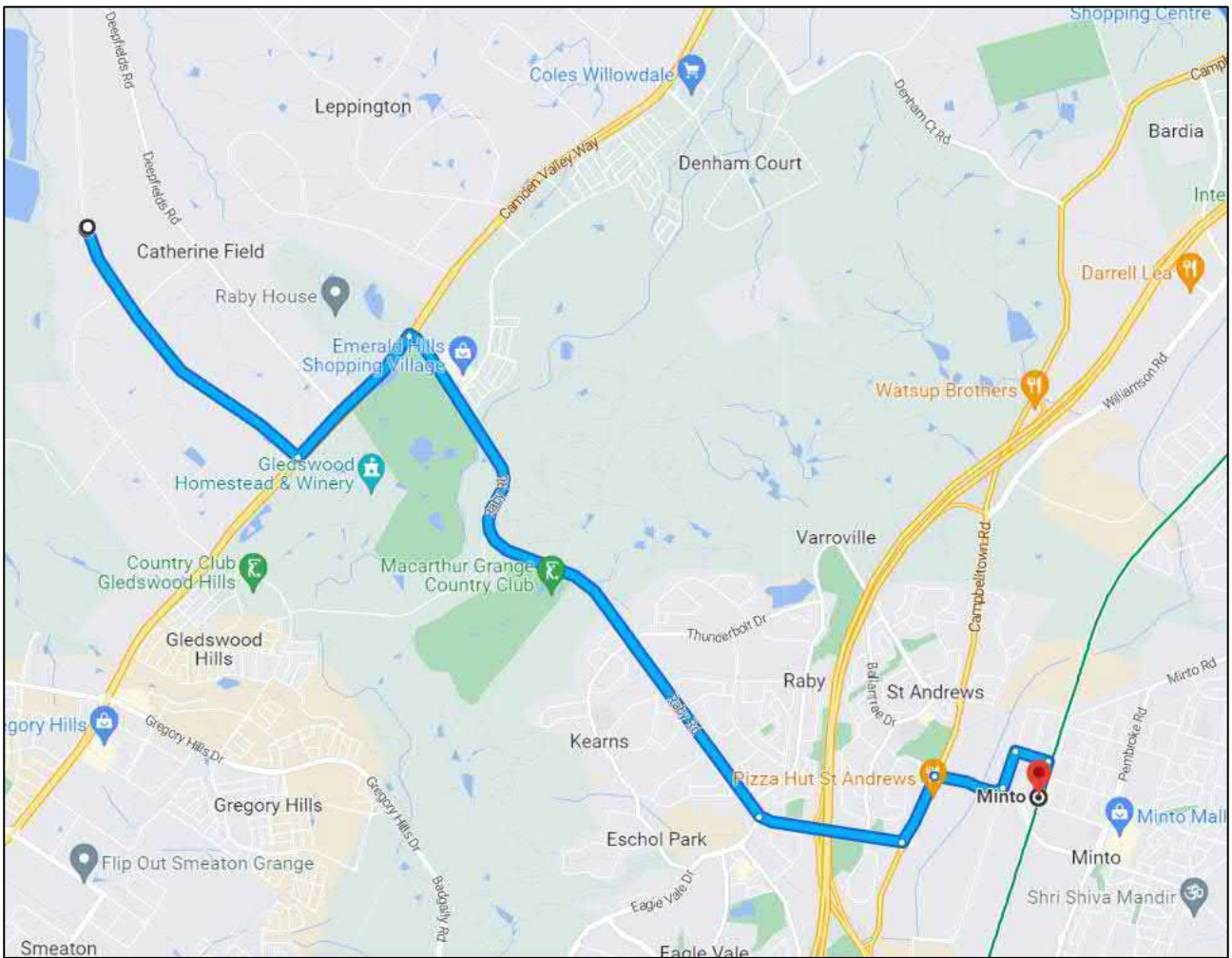


Figure 9: School – Minto Train Station Bus Routing

## 2.4 Active Transport

### 2.4.1 Pedestrian Network

Currently, there are no provisions for footpaths along the Catherine Fields Road frontage in the northern or southern directions. As part of the Councils' Pedestrian Access and Mobility Plan (2014), there is no anticipated footpath works planned for the Catherine Field area.

In the longer term, it is anticipated that future provisions relating to the residential development potential of the Catherine Field North Precinct will facilitate the growth and expansion of the footpath network and provide adequate connectivity through the locality.

### 2.4.2 Cycling Network

At present, there is limited cycling connectivity through the Catherine Field area, with no planned provisions immediate to the Site along Catherine Field Road, nor are there any plans of future provision for cycling connections through this area.

## 2.5 Catchment Analysis

A preliminary catchment analysis has been undertaken by Lawrence Consulting as part of the project team submission. Reference should be made to this document that accompanies the EIS.

The catchment analysis has nominated a 10km radius around the school and captures the following suburbs:

- Cobbity – Leppington
- Camden – Ellis Lane
- Elderslie – Harrington Park
- Mount Annan – Currans Hill
- Claymore – Eagle Vale – Raby
- Ingleburn – Denham Court
- Austral – Greendale
- Hoxton Park – Carne's hill – Horningsea Park
- West Hoxton – Middleton Grange, and
- Prestons – Edmondson Park.

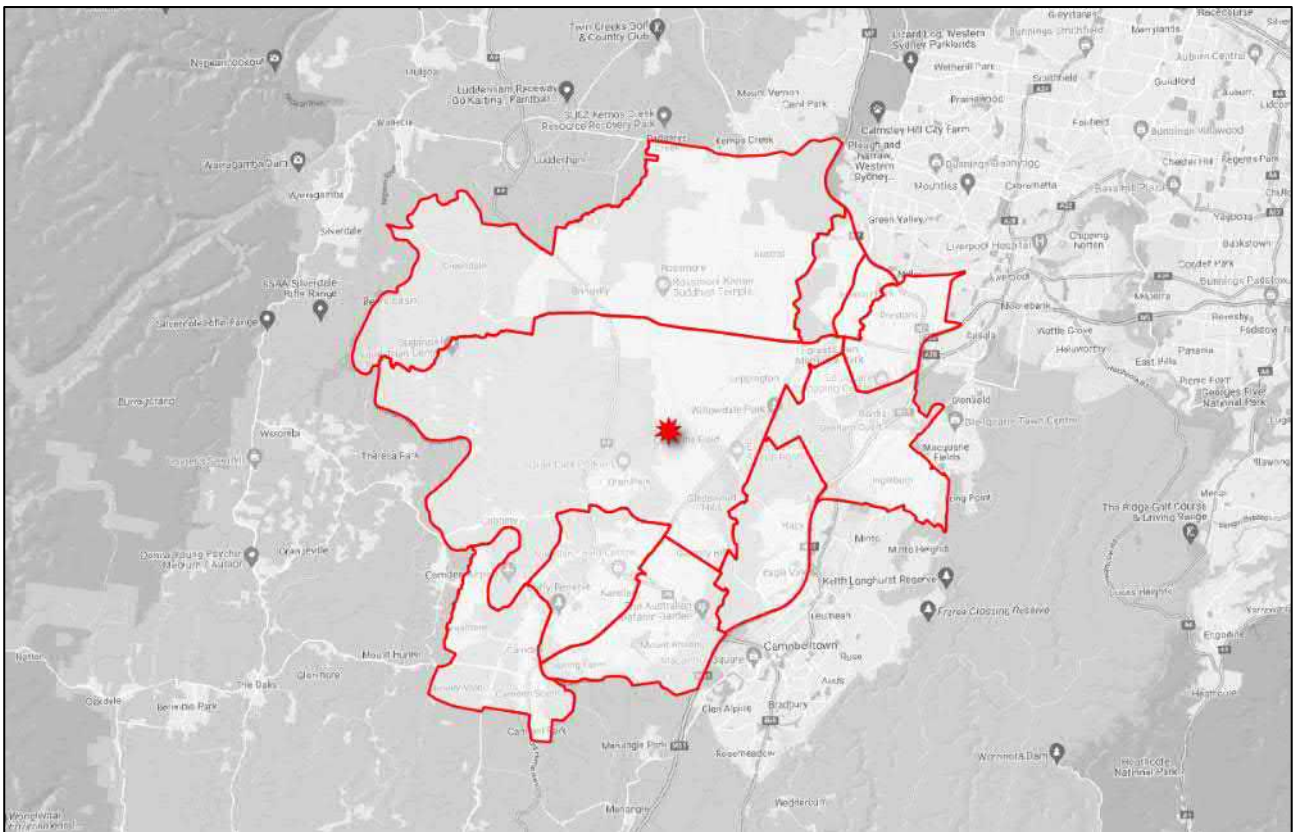


Figure 10: Catchment Map

It is considered that at this stage, the nominated catchment is indicatively provided until further consultation is undertaken with Department of Education, to define specific catchment bounds. Noting that the GVC is observed to have a similarly large catchment area, the above can be denoted as acceptable.

## 2.5.1 Public Transport Catchment

In line with guidelines outlined by the NSW Government and TfNSW, the School Student Transport Scheme (SSTS) provides catchment guidelines to provide eligibility for school public transport.

For grades K-2, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- Aged 4 years 6 months, or older.
- No minimum walking distance criteria apply to these students.

For grades 3–6, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- The straight-line distance from their home address to school is more than 1.6 km.
- The walking distance from home to school is 2.3 km or further.

For grades 7–12, the following eligibility criteria apply:

- They are a resident of NSW, or an overseas student eligible for free government education.
- The straight-line distance from their home address to school is more than 2 km.
- The walking distance from home to school is 2.9 km or further.

As defined below, **Figure 11** below demonstrates the catchment exclusion zones for Grades 7-12 with reference to the proposed schools' location. The exclusion zones above demonstrate that both the 2km radius and 2.9km distance capture the more immediate Catherine Field area, indicating suitability for the school in terms of public transport eligibility.

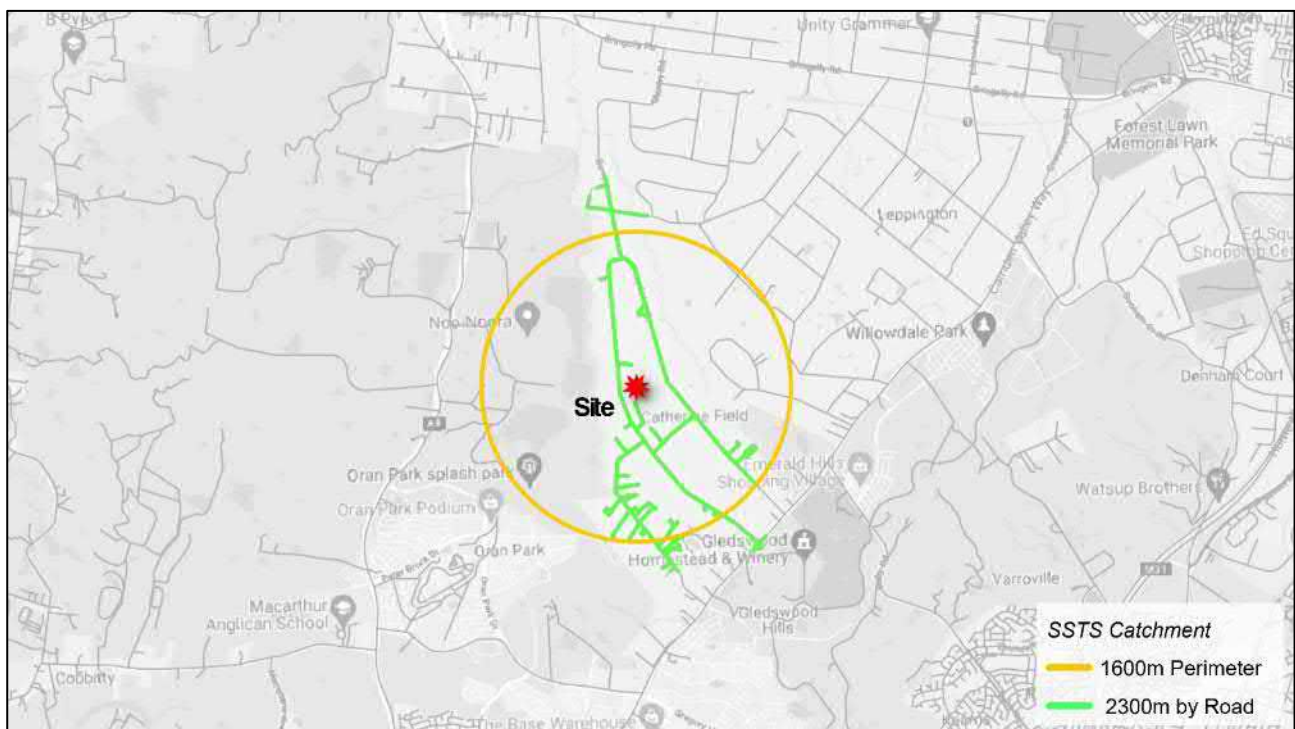


Figure 11: SSTS Exclusion Zones

The exclusion zones above demonstrate that both the 2km radius and 2.9km distance capture the more immediate Catherine Field area.

## 2.5.2 Active Transport Catchment

### Pedestrian Catchment

SINSW has characterised the walking catchment of a school within 5, 10 and 15-minute walking distance increments (approximately 400m increments) of the school, representing desirability for the catchment area. **Figure 12** demonstrates the maximum catchment extents (1,200m) relative to the Site.

Given the nature of surrounding developments, the catchment perimeter demonstrates limited catchment effectivity as a result of the low-density / large lot nature of the surrounding residential area. In addition, the catchment lacks any meaningful pedestrian pathway provision to facilitate walking catchment, and no existing safe crossing opportunities to facilitate movements east-west across Catherine Field Road.

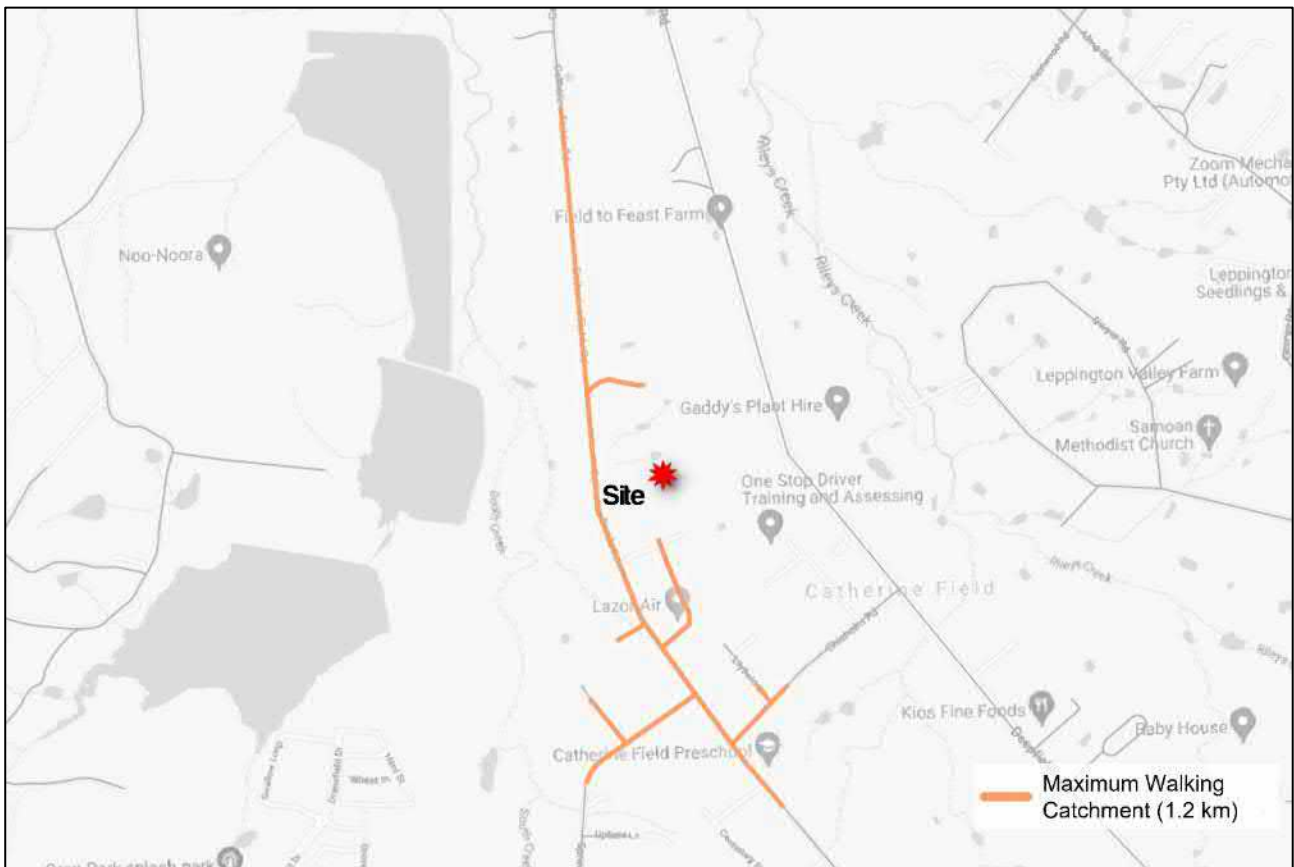


Figure 12: Pedestrian Catchment Zone

### Cycling Catchment

In addition to the pedestrian catchment guidelines described by SINSW, the catchment areas for cycling are defined in a similar format based on 5-minute increments (approximately 1.2km increments). **Figure 13** illustrates the maximum extent of the cycling catchment zone (3.6km).

While the catchment map exhibits further-reaching extents, particularly towards the north and south, it should be noted that certain elements of cycling infrastructure – specifically relating to on-road cycling lanes, or lack thereof - may not be applicable, particularly for younger students as safe provisioning.



Figure 13: Cycling Catchment Zones

## 2.6 Travel Mode Surveys

As Minarah College – Catherine Field Campus will be a new school, there is no existing school or staff cohort. Comparison is instead drawn to the Green Valley Campus, which is run by the organisation.

Surveys of GVC staff and students were conducted to provide an understanding of travel characteristics, including:

- Travel mode for both the arrival and departure trips;
- Vehicle occupancy;
- Out of Hours School Care;
- Car Pooling, and
- Interest in different green travel strategies and initiatives.

Out of 1100 students, there were 386 responses, representing a 35% response rate. Out of 90 staff, there were 31 responses, representing a 34% response rate. Generally, a response rate of 20% or higher is considered an acceptable representation of the cohort, hence the resulting travel mode surveys are considered an accurate depiction of the travel patterns of GVC. It is envisioned as part of the maintenance of

the future School Transport Plan as a live document, similar travel mode surveys are conducted for Minarah College – Catherine Field Campus to inform the travel patterns of the school.

## 2.6.1 Students

### Student Arrival/ Departure Time

In an operating capacity, the school period and bell times occur between 08:55 and 14:55 during weekdays, with student arrival typically occurring between 7:30 am and 8:30 am, peaking in the 8:00 am-8:15 am window. Student departure typically occurs between 3:00 pm and 4:00 pm, peaking in the 3:15 pm-3:30 pm window. The exact school hours are to be confirmed for the Catherine Field Campus, however, are expected to be similar to GVC at this stage. Figure 14 and Figure 15 present the typical student arrival/ departure times for GVC.

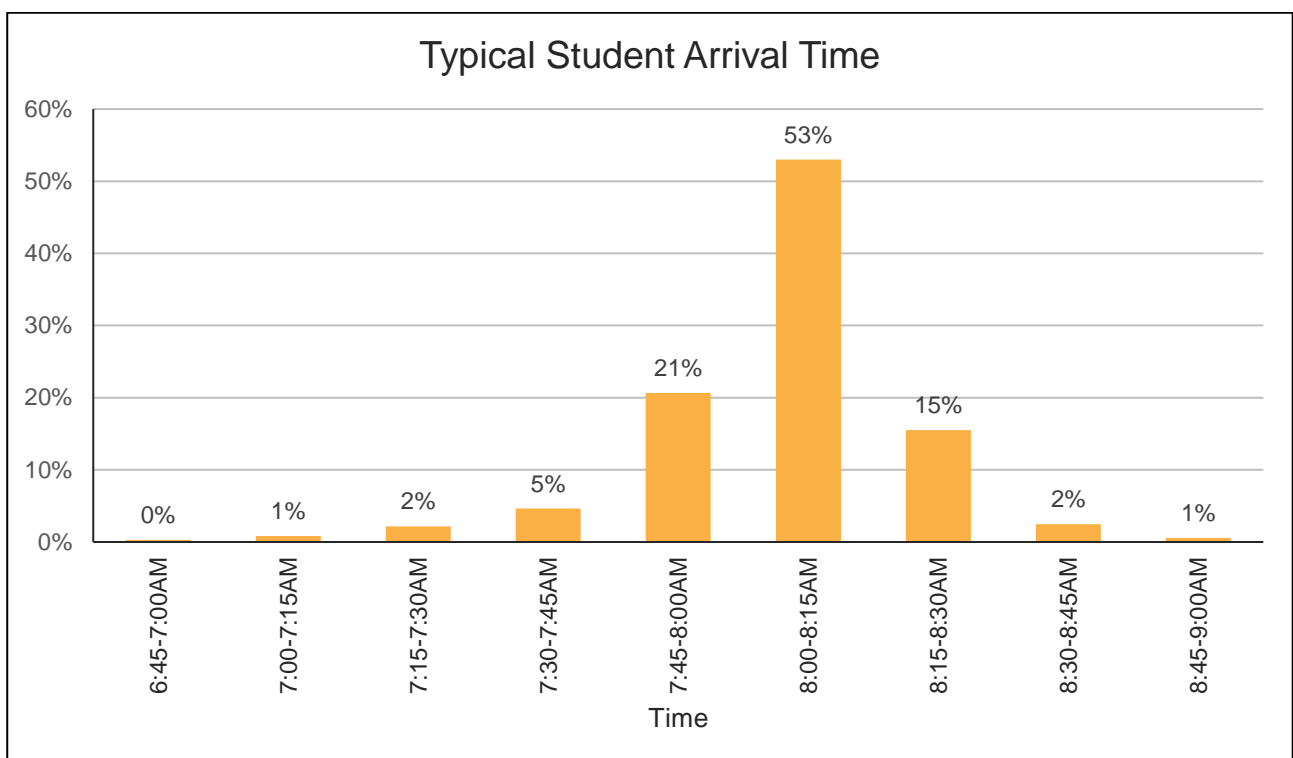


Figure 14: Typical Student Arrival Time (GVC)

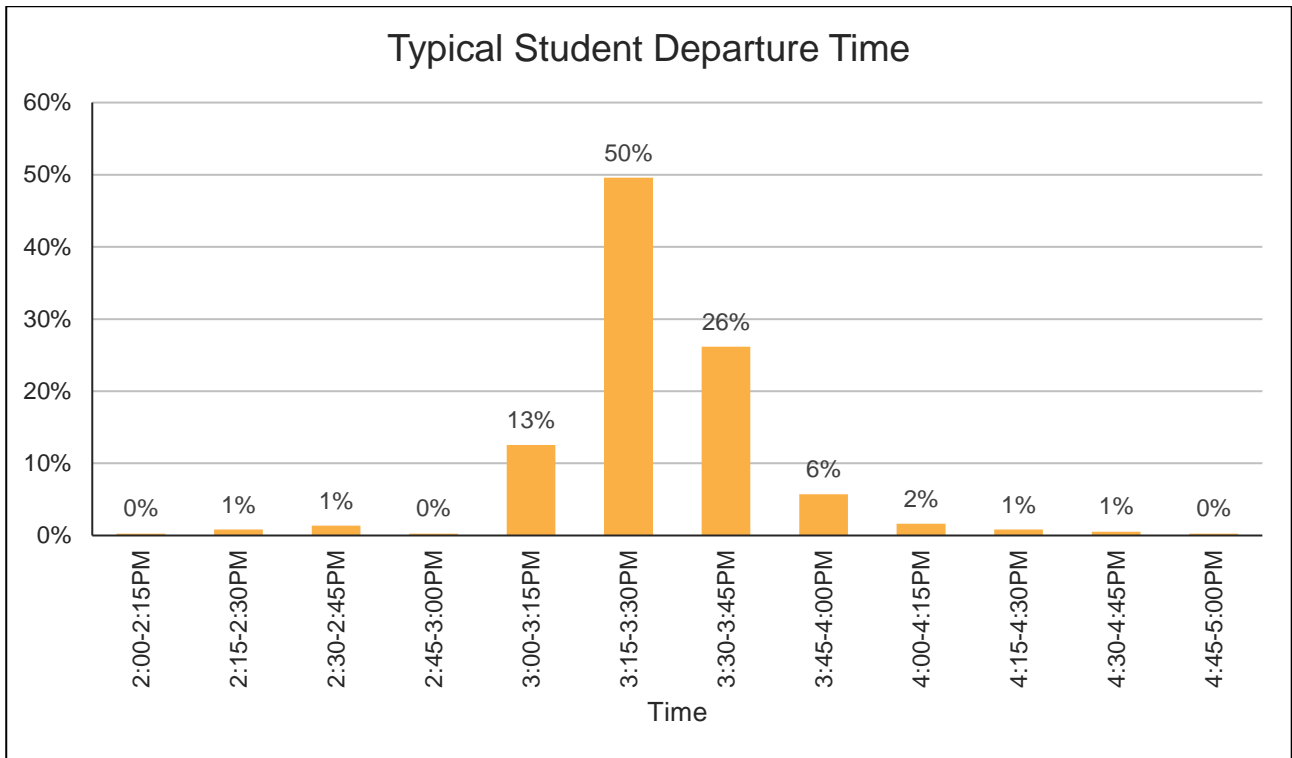


Figure 15: Typical Student Departure Time (GVC)

### Student Travel Mode Share

As part of the undertaken student surveys, an appreciation for modal travel has been obtained to provide indicators for travel behaviour and interactions with the School. Accordingly, Figure 16 demonstrates the modal breakdown of student trips to GVC.

As seen in the graph, GVC demonstrates a high dependency on private vehicle travel with car mode share representing almost 90% of the modal split. Small numbers of the GVC student cohort catch the bus (around 4%) and walk (around 6-7%). The “other” trips represent survey responses where the mode share was not able to be determined due to a lack of clarity in the response.

It is anticipated that the nature of the GVC is expected to be similar to the proposed Catherine Field Campus, due to the nature of the surrounding area and school catchment.

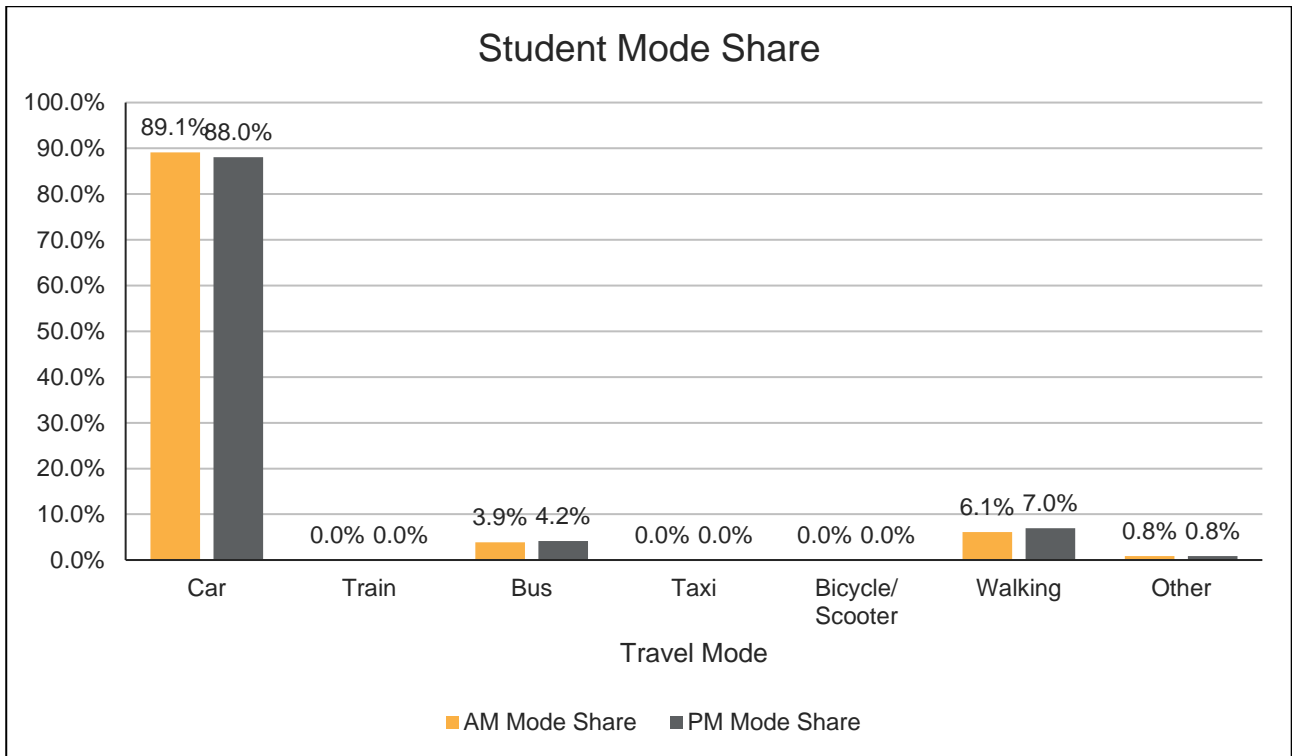


Figure 16: Student Mode Share (GVC)

### Car Pooling

The GVC surveys found a moderate level of car pooling. 75% of students that travelled via car did not have another student in the vehicle, however, some students travelled with large numbers of other GVC students as indicated in **Figure 17**. Based on the survey data, an average occupancy rate of 1.61 students per car was determined.

As the student population of Minarah is expected to present similar family structure characteristics, this occupancy rate is also adopted for the traffic assessment.

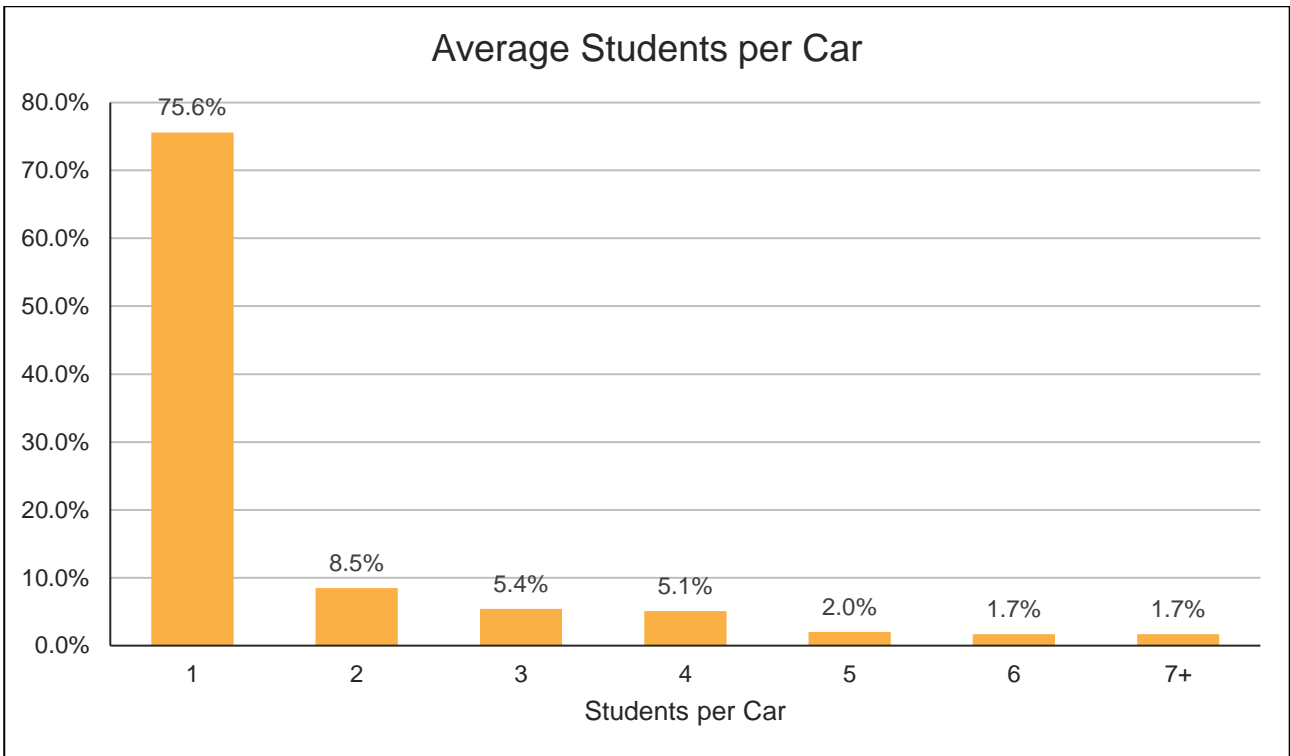


Figure 17: Average Students per Car (GVC)

## 2.6.2 Staff

### Staff Arrival/ Departure Time

As outlined in Section 2.6.1, the student peak periods based on the travel mode surveys were 7:30 am-8:30 am and 3:00 pm-4:00 pm. Based on the surveys, the staff peak periods are noted to be slightly earlier than the morning student peak and substantially later than the evening student peak, as illustrated in **Figure 18** and **Figure 19**. Around 70% of staff arrivals coincide with the morning peak and around 27% of staff departures coincide with the evening peak. This is typical in our experience for school developments due to marking and other administrative tasks that occur after students depart. It is expected that similar patterns will hold for Minarah.

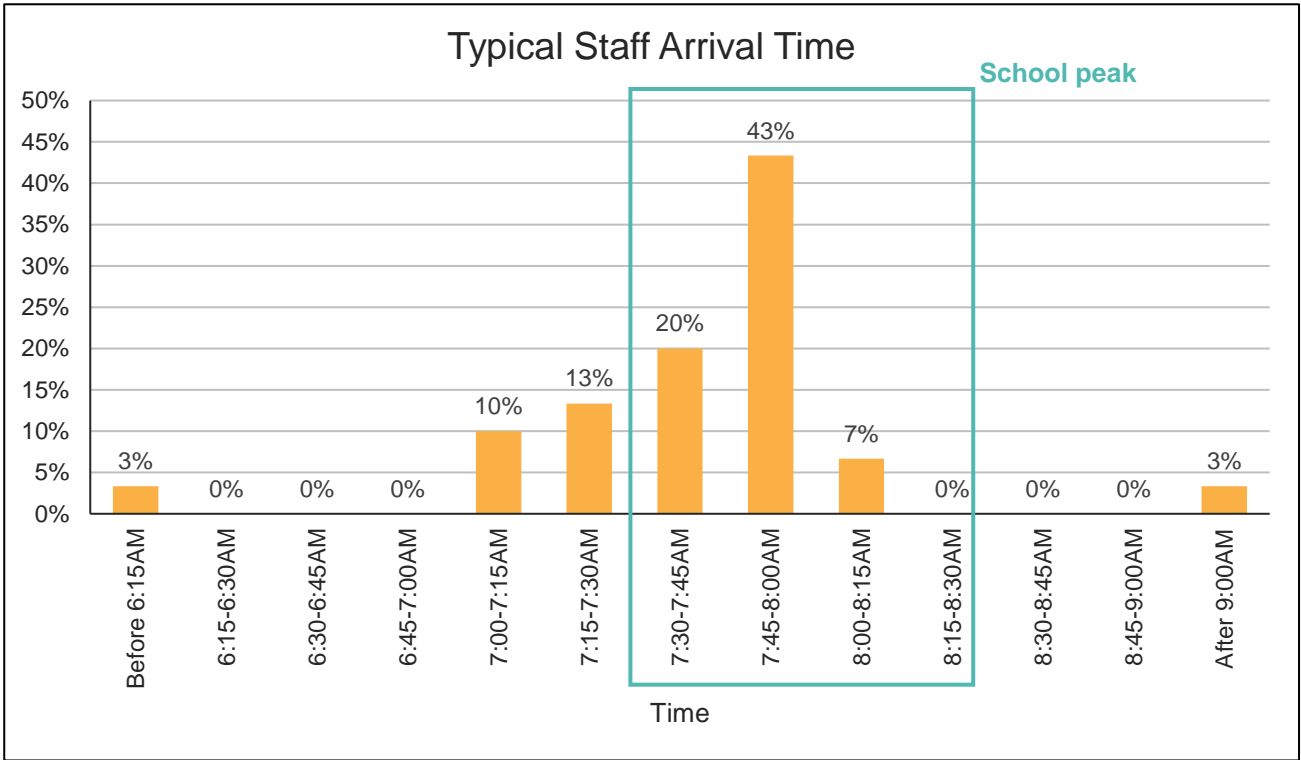


Figure 18: Typical Staff Arrival Time (GVC)

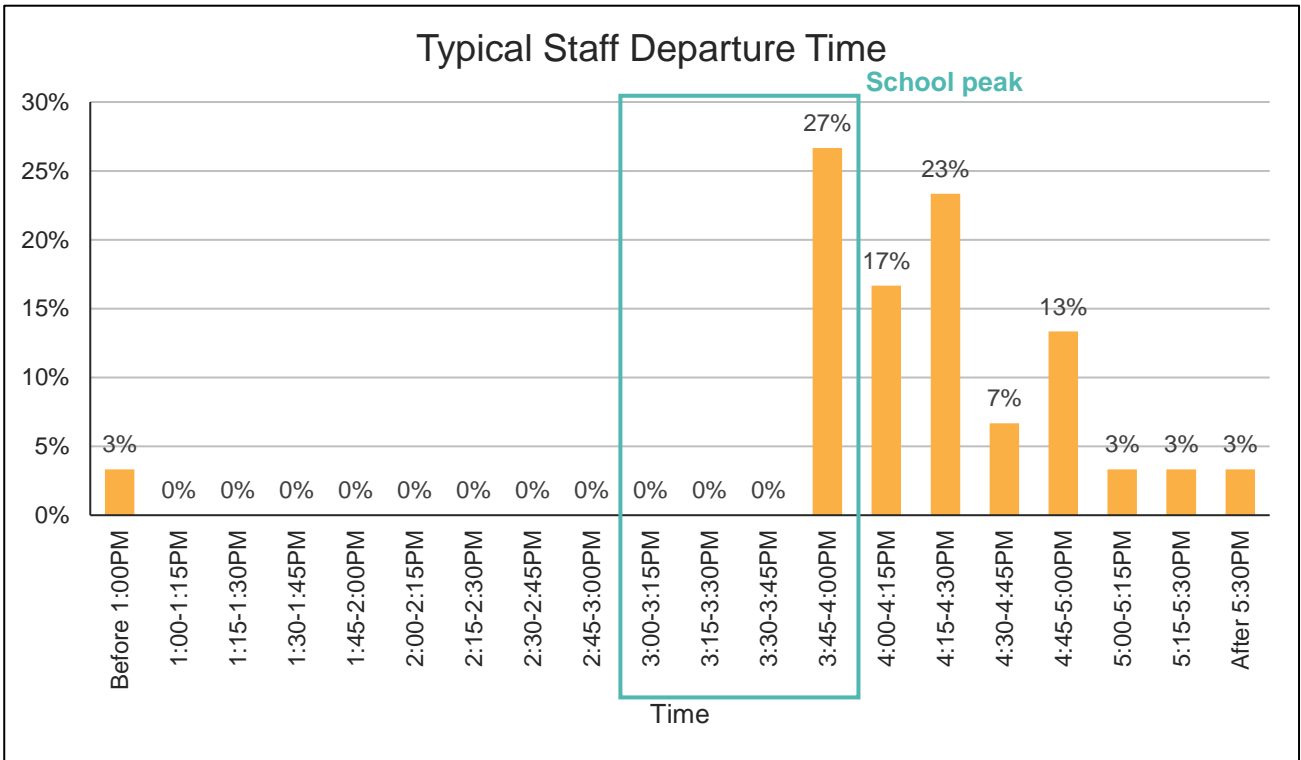


Figure 19: Typical Staff Departure Time (GVC)

## Staff Travel Mode Share

The staff surveys found that almost all staff drive. Of the 30 responses, 29 travel to and from school via car, representing a 97% mode share. One respondent travelled to and from school by walking.

## Students Traveling with Staff

Based on the GVC surveys, it was found that a third of the surveyed staff had children (GVC students) that travelled with them to/ from school (see **Figure 20**). As a result, these students effectively do not generate any additional trips as their travel to school would be captured within the staff trips. Each staff member had an average of 0.67 students that also travelled with them to/ from school.

As the student/ staff population of Minarah is expected to present similar family structure characteristics, this consideration is also adopted for the traffic assessment.

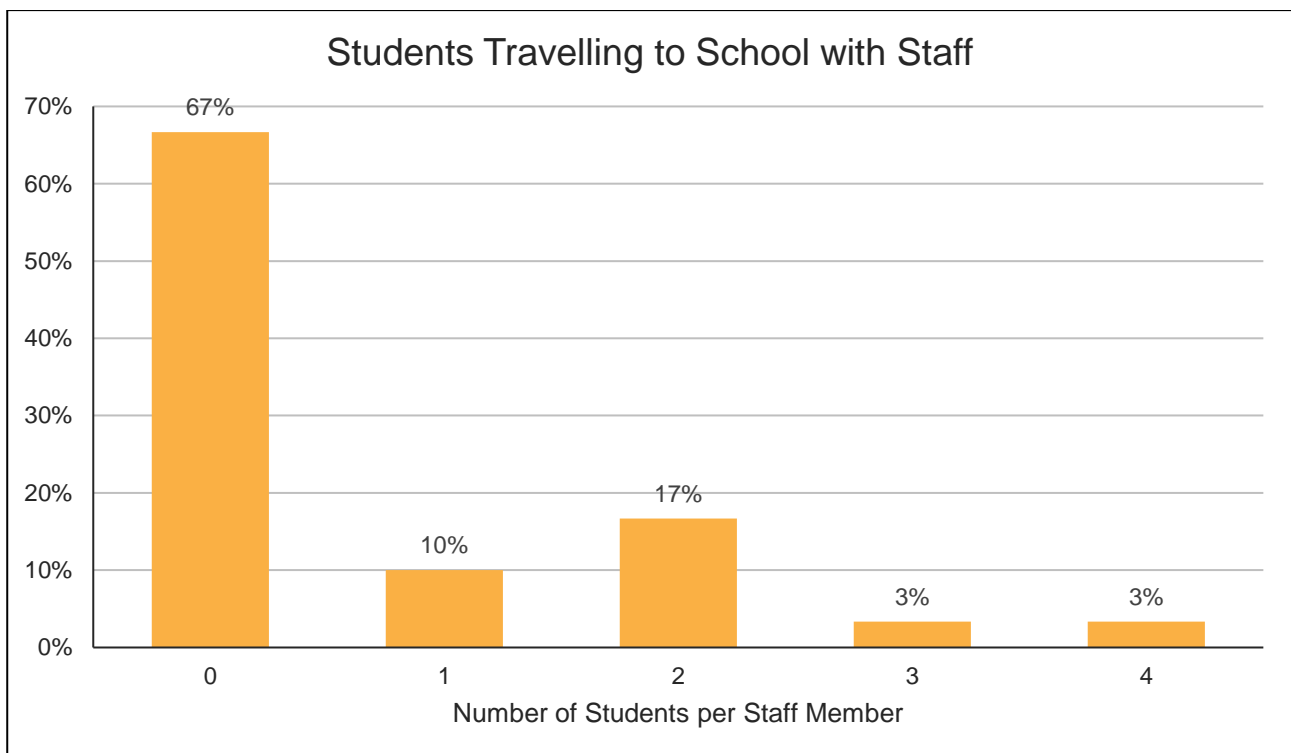


Figure 20; Students Travelling to School with Staff

## Staff Attendance

From the GVC surveys, it was found that not all staff attend the school full-time. Some staff worked part-time (around 7%) and one surveyed staff member only attended the school once a fortnight. A review of the data found that each staff member, on average, attends the school 4.7 days per week, or 94% of an equivalent full-time attendance. This rate is also adopted for the Minarah staff traffic generation.

# 3 School Transport Plan Framework

## 3.1 Transport Objectives

The primary objectives of this Plan are to:

- Reduce the environmental footprint of the school,
- Promote the use of ‘active transport’ modes such as walking and cycling, particularly for short-medium distance journeys,
- Promote the use of ‘public transport’ modes including a bus network with full coverage of the catchment area,
- Reduce reliance on the use of private vehicles for travel to/from the School, and
- Encourage a healthier, happier, and more active social culture.

Having regard for the above, this Plan adopts the following movement hierarchy with priority given to ‘active transport’ followed by mass public transport and lastly the use of cars and other private vehicles. This hierarchy is reflected in the recently released Road User Space Allocation Policy, January 2021 prepared by TfNSW.

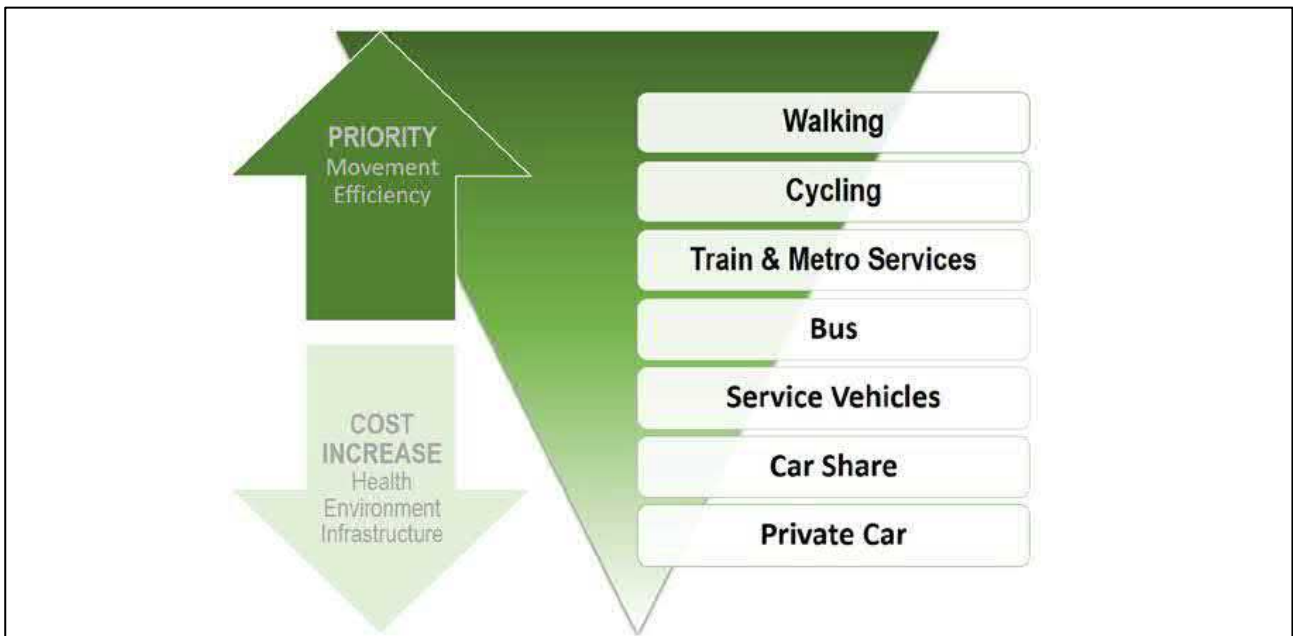


Figure 21: Movement Hierarchy

In a broad sense, this Plan is intended to encourage the use of active transport thereby reducing the overall distance travelled by private vehicles.

## 3.2 Action Plan

### 3.2.1 Action Plan Measures

The following specific actions have been identified to aid the achievement of the STP targets. These identified strategies include the promotion of some event or day-specific activities. In isolation, these may not dramatically alter the day-to-day travel of staff. However, there are benefits of such activities whereby

participation can increase awareness of alternative modes of travel that can then form the basis of future travel patterns.

Table 6: Action Plan Measures

ITEM NO.	ACTION / DESCRIPTION	TARGET	TIMEFRAME	RESPONSIBILITY
<b>1. General</b>				
1.1	Establish a centralised Travel Plan Coordinator (TPC) who is to take responsibility for the ongoing review and monitoring of this Plan. This person(s) shall also provide direction to staff/parents in relation to specific requirements arising from the Plan.  Estimated annual budget for a TPC assuming 10 weeks per term, 4 terms, and 4 hours per week is \$50,000 excl. GST	School Administration	Prior to the occupation of the School	School Administration
1.2	Provide 'Travel Welcome Pack' for staff, highlighting alternate modes of transport other than the use of a private vehicle.	Staff	Prior to the occupation of the School and ongoing	TPC
1.3	Review of Plan as a regular item on the agenda of staff/management meetings.	Staff	Annually	TPC
1.4	Preparation of a Transport Access Guide (TAG) and review following changes stipulated by the TPC.	Staff, Students, and Parents	Prior to the occupation of the School and ongoing	TPC
<b>2. Walking &amp; Cycling</b>				
2.1	Promote National <a href="#">Ride2Work</a> Day and coincide with participation in Ride-To-School Day. This provides an opportunity for students, parents, and staff to try riding to school as well as celebrate those that currently utilise bicycles.	Staff, Students, and Parents	Annual	TPC
2.2	Promote <a href="#">Walk to Work Day</a> and coincide with participation in "Walk Safely to School" Day. Similar to the above, it would encourage alternative modes of transport. Older students can be paired with younger students who live close together to walk to school as a pair or group	Staff, Students, and Parents	Annual	TPC
2.3	Develop further school-specific activities designed to get people moving with reward participation. For example, a competition to see which staff and/or student in each year can get the most 'steps' in a given time period; similar to <a href="#">September</a> activities or the introduction of the 'Make your Move' campaign, which provided students with a 'Travel Passport' which can be stamped every time they walk, ride, skate or scoot to school.	Staff, Students, and Parents	Annual	TPC
2.4	Encourage volunteers to organise a 'walking school bus'. This allows for students to travel to school in an organised group guided by two adults. This would require liaising with the TPC.	Students and Parents	Weekly, Monthly, Annually	TPC / Parents
2.5	Advocate, provide and maintain safe pedestrian and bicycle facilities to and from the school.	Staff and Students	On-going	TPC / Council

2.6	In accordance with the cycling mode share targets identified, sufficient secure parking spaces and 'EoJ' facilities shall be provided and maintained.	Staff and Students	On-going	TPC
2.7	Refresh the pavement marking surrounding the school. Estimated budget of \$20,000 excl. GST	Students and Parents	As required	School Administration
2.8	The provision of bicycle spaces and End of Trip (EoT) Facilities will be monitored over time to ensure there is sufficient provision to further encourage cycling as a mode – both for staff, students and visitors.	Staff, Parents and Students	On-going	TPC
<b>3. Education Initiatives</b>				
3.1	For Year K-2 students include education programs teaching road awareness using play-based learning	Students	On-going	TPC
3.2	For Year 3 students include education programs teaching road safety with a focus on walking independently to school.	Students	On-going	TPC
3.3	For Year 4 students include education programs to teach road safety with a focus on cycling independently to school. This may include an experience or an excursion.	Students	On-going	TPC
3.4	For Year 5-6 students include education programs to teach how to travel independently on the public bus system in preparation for travelling to high school and other destinations.	Students	On-going	TPC
<b>4. Public Transport</b>				
4.1	Display route maps and timetables (for services within 10 minutes walking distance) in high trafficable areas within the school.	Staff and Students	On-going	TPC
4.2	Update this Plan and TAG to reflect changes to any bus routes and service times.	Staff and Students	On-going	TPC
4.3	Undertake a review to promote initiatives for staff using public transport. This may include a review of potential tax incentives for Government employees that use public transport.	Staff	On-going	TPC
4.4	Promote the use of public transport for students with a rewards scheme. i.e., students are provided incentives to travel to and from the school.	Students	On-going	TPC
<b>5. Reducing Car Travel</b>				
5.1	Review initiatives for staff and parents to promote car-pooling. This may include (but is not limited to) the provision of online services or forums to facilitate ease of finding carpooling scheme participants, a parking management plan which prioritises use by staff and visitors on a needs basis to could include providing dedicated spaces for those who are carpooling / car sharing to encourage this mode share. Consideration may be given to providing charging stations for electric vehicles (EV), if needed.	Staff and Parents	To be undertaken prior to the occupation of the School	TPC
5.2	If required, introduce and enforcement of parking restrictions around the school. This is	Staff and Parents	To be undertaken prior to the	TPC

	to be discussed and implemented in collaboration with Council's Road Safety Officer		occupation of the School	
5.3	Liaise with staff to discuss the feasibility of a parking management scheme which would discourage the use of single-occupant car travel to the site while incentivising employees to travel by alternative modes of transport.	Staff	To be undertaken prior to the occupation of the School	TPC

### 3.3 Communications Strategy

With consideration of the above measures, a communication strategy has been developed that can be adopted by the future school administration and TPC to communicate the measures detailed above. It should be noted that this communication strategy is subject to review following further discussions with the School administration.

Table 7: Communications Strategy

WHAT	WHEN	METHOD	TARGET	RESPONSIBILITY
Share objectives and goals with the student body and staff	Prior to the commencement of every term during operation	<ul style="list-style-type: none"> <li>- Welcome packs to new staff and families.</li> <li>- Social media.</li> <li>- Website.</li> </ul>	Staff, Students, Parents	TPC
Provide information regarding transport options to and from the school, and on-site end-of-trip facilities.	Prior to the commencement of the term. This information is to be available always and presented every term	<ul style="list-style-type: none"> <li>- Welcome packs to new staff and families.</li> <li>- Website.</li> <li>- Information boards within school grounds.</li> </ul>	Staff, Students, Parents	TPC
Provide details regarding school-promoted initiatives that encourage alternative modes of transport, such as Ride-To-School Day, Walk-To-School Day, September, etc.	Annually prior to the event	<ul style="list-style-type: none"> <li>- Social Media.</li> <li>- Website.</li> <li>- Skool Bag App</li> <li>- E-newsletters.</li> </ul>	Staff, Students, Parents	TCP
Provide details regarding the safety and volunteer process to manage a walking school bus	This information is to be available always and presented every term	<ul style="list-style-type: none"> <li>- Welcome packs to new families.</li> <li>- Website.</li> <li>- Skool Bag App</li> <li>- E-newsletters.</li> </ul>	Students and Parents	TCP
Provide details regarding the availability of student bus passes	Prior to, and at term commencement. This information is to be available always and presented every term	<ul style="list-style-type: none"> <li>- Welcome packs to new families.</li> <li>- Website.</li> </ul>	Students and Parents	TCP
Liaise with parents regarding the education programs provided by the school that encourage alternative transport modes	Prior to term commencement. This information is to be available always and presented every term	<ul style="list-style-type: none"> <li>- Welcome packs to new families.</li> <li>- Website.</li> </ul>	Students and Parents	TCP

Link key resources regarding the operation of school zones, road safety, and parking restrictions within the local area.	Prior to, and at term commencement. This information is to be available always and presented every term.	- Welcome packs to new families. - Social Media - Website. - Skool Bag App - E-newsletters.	Parents	TPC
Detailed information regarding the operation of the drop-off/pick-up area	Prior to, and at term commencement. This information is to be available always and presented every term.	- Welcome packs to new families. - Social Media - Website. - Skool Bag App - E-newsletters.	Parents	TPC

### 3.3.1 Welcome Packs

As detailed above, new staff and families shall be provided with a ‘welcome pack’ as part of the on-site induction process which includes the Transport Access Guide and other information in relation to sustainable transport choices. This pack shall include a copy of the Transport Access Guide as well as general information regarding the health and social benefits of active transport. Advice on where to find further information should also be included.

### 3.3.2 Accurate Transport Information

In addition to these ‘welcome packs’, a Transport Access Guide (TAG) shall be provided to all staff.

A copy of the TAG should also be displayed prominently in staff areas, such as lunchrooms and foyer areas, and information boards throughout the school for parents and students. The TAG shall be presented in a form that is reflective of the commitment to achieving positive transport objectives.

The TAG is currently being completed and will be provided as part of the School Transport Plan.

## 3.4 Mode Share Targets

With consideration of the existing site and surrounds, the current travel modes and the proposed Action Plan and the communication strategy, the following target mode shares at completion of Stage 4 have been identified.

<b>TABLE 8: MODE SHARE TARGETS – STUDENTS</b>						
<b>TRAVEL MODE</b>	<b>BASE</b>		<b>MODERATE</b>		<b>REACH</b>	
	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>
Walking incl. pedestrian scooter	-	-	-	-	20/980	2%
Bicycle	-	-	-	-	20/980	2%

<b>Public transport bus</b>	-	-	20/980	2%	49/980	5%
<b>School bus</b>	49/980	5%	98/980	10%	196/980	20%
<b>Kiss and drop</b>	862/980	88%	804/980	82%	627/980	64%
<b>Single Occupancy Vehicle (SOV)</b>	49/980	5%	29/980	3%	20/980	2%
<b>Carpool</b>	20/980	2%	29/980	3%	49/980	5%

**TABLE 9: MODE SHARE TARGETS – STAFF**

<b>TRAVEL MODE</b>	<b>BASE</b>		<b>MODERATE</b>		<b>REACH</b>	
	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>
<b>Walking incl. pedestrian scooter</b>	-	-	-	-	1/51	2%
<b>Bicycle</b>	-	-	-	-	2/51	2%
<b>Public transport bus</b>	-	-	1/51	2%	2/51	4%
<b>Kiss and drop</b>	-	-	-	-	-	-
<b>Single Occupancy Vehicle (SOV)</b>	46/51	90%	43/51	85%	35/51	68%
<b>Carpool</b>	5/51	10%	7/51	13%	7/51	14%

Travel mode surveys would be undertaken once the School is operational to establish baseline figures from which progress can be measured.

# 4 School Transport Operations and Access Management Plan

## 4.1 Operational management Measures

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### 4.1.1 Plan of Management

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The School can and will coordinate pedestrians and vehicles on-site and within the local road network to meet operational requirements and ensure the safety of students with maintaining efficiency on street. The following management measures are proposed.

### 4.1.2 Key Responsibilities of management

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Management shall:

- Ensure all staff is provided with sufficient training to undertake the required tasks. This includes responsibility for measures to ensure that all staff, parents/carers, visitors, and students are familiar with site-specific rules through appropriate site induction procedures.
- Be familiar with and address their respective duty of care requirements in accordance with the applicable state Work Health and Safety legislation.
- Ensure WHS Incident logbooks are maintained and undertake necessary action(s) in relation to any reported issues.

### 4.1.3 Hours of Operations

---

The School is accessible from 6:30 am – 6:30 pm on weekdays with restricted access outside of these hours. The bell times are as follows:

- Start Time: 8:20 AM
- Finish Time: 3:20 PM

The school also offers on and off-site Out of School Hours Care (OSHC) services between the following times:

- Before School: 7:00 am to 8:20 AM
- After School: 3:20 pm to 6:30 PM

The proposed ELC facilities operate as follows:

- 60-place ELC pre-K (on-site)

It is noted that the aforementioned hours will vary during the days when weekend sports and after-hours activities, etc will occur.

#### 4.1.4 Pedestrian Access

---

The main entrance to the School is to be provided along Catherine Fields Road, which shall be designed to accommodate accessible access.

No pedestrian surveys were commissioned along the proposed site access given there is currently no pedestrian pathway along Catherine Fields Road.

If deemed appropriate, traffic counts can be commissioned approximately 6 months following Day 1 operations of the School to review and validate whether the level of pedestrian/traffic activities is sufficient, to meet the latest pedestrian crossing warrants.

#### 4.1.5 Visitor Access

---

Visitor access to the school will be via the northern access gate on Catherine Fields Road. During the nominated set-down and pick-up hours (before 9.00 am) and after 3.00 pm, visitors to the school can be reliant on the primary school parking spaces or the kiss and ride area.

All gates to / from the school shall be generally locked before 6:30 am, between 8.30 am and 3.30 pm, and after 6:30 pm on weekdays as well as throughout the weekends and public holidays (with the exception of during community uses and after hours sports activities, etc.), with all visitors required to park within the indented bus bay along Catherine Fields Road and enter via the front gate and proceed directly to the school office to sign in.

#### 4.1.6 Out of Hours Access

---

The on-site OSHC hours are expected to be operating between 7:00 am and 6:30 PM. Regarding the general site as a whole; access will be generally restricted to between the times:

- weekdays: before 6:30 am and after 6:30 pm
- weekends and public holidays: No access

#### 4.1.7 Staff Car Park Access

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Access to the staff parking areas will occur via the northern crossover on Catherine Field Road. Staff accessing the southern car park will proceed through the Kiss & Ride area, as demonstrated in Figure 22. The parking area provides 51 parking spaces.

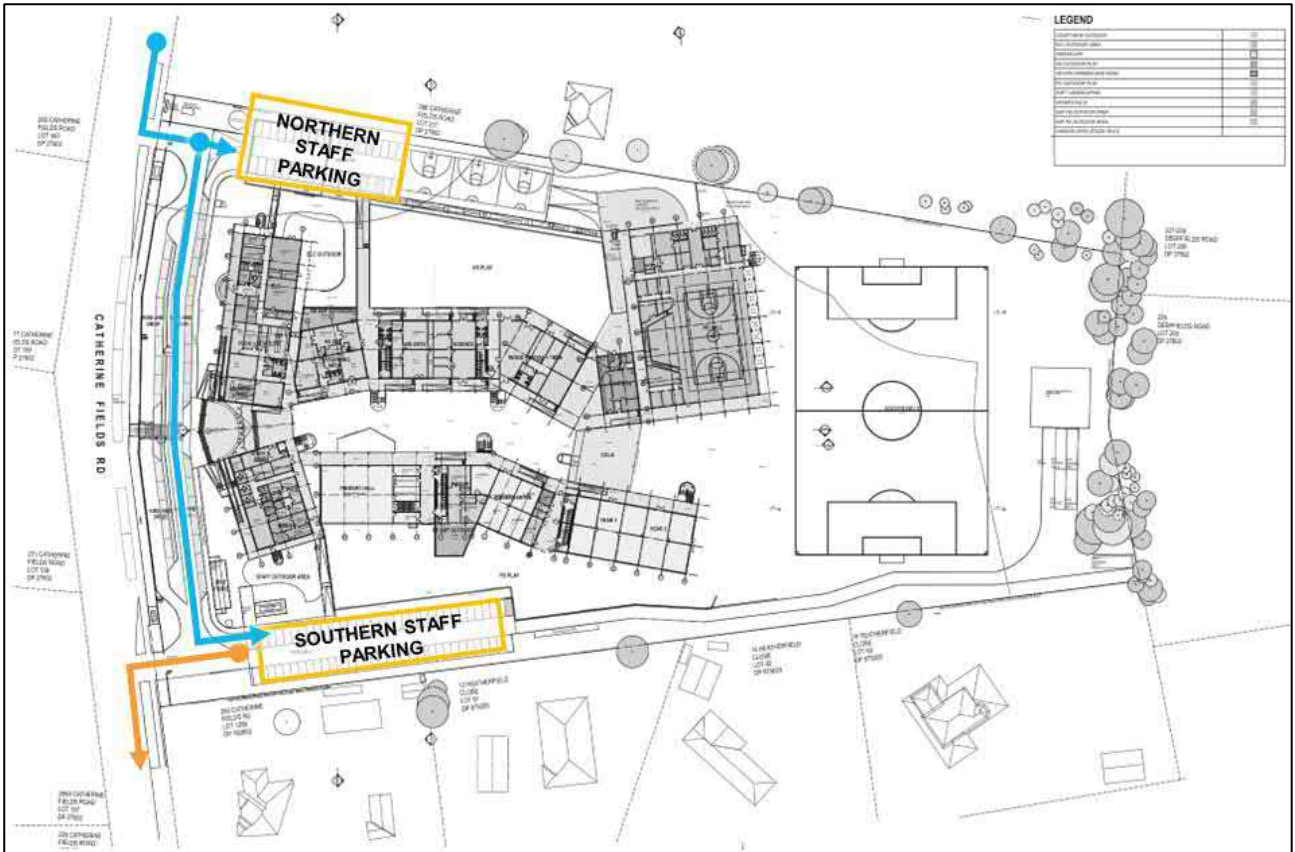


Figure 22: Staff Car Park Location

#### 4.1.8 Student & ELC Car Park Access

Student and ELC parking are proposed with the following parking provision:

- Student: 23 spaces (for primary and secondary students per Camden Council DCP), with the following allocation:
  - 18 spaces in the northern car park
  - 5 spaces in the southern car park
- ELC: 15 spaces in the northern car park (per Camden Council DCP)

Access and egress to the area are demonstrated in **Figure 5**.

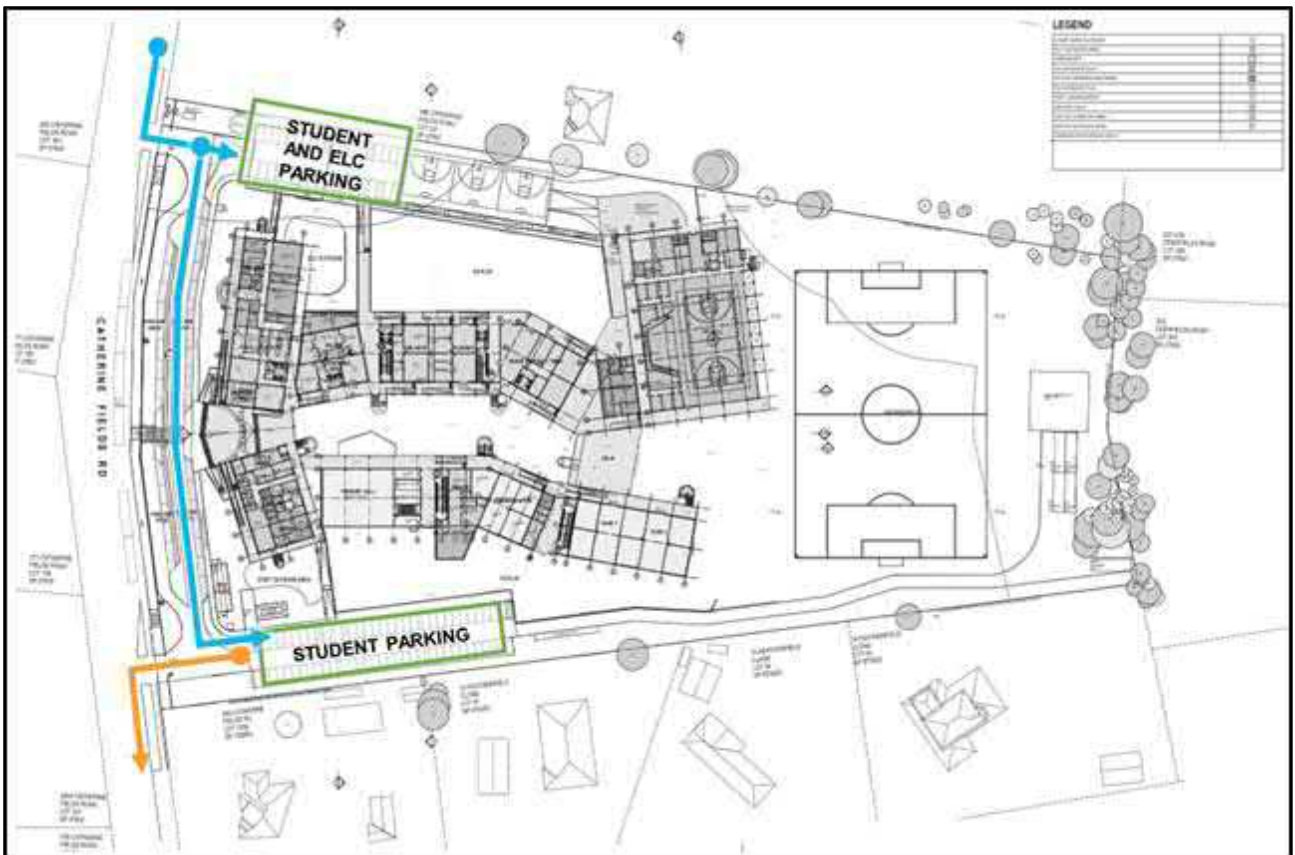


Figure 23: Student & ELC Car Park Location

#### 4.1.9 Kiss & Ride Area Access

A total of 30 spaces are provided for Kiss & Ride access, divided between two lanes. These spaces are accessed via the northern crossover and exit via the southern crossover as demonstrated in **Figure 6**.





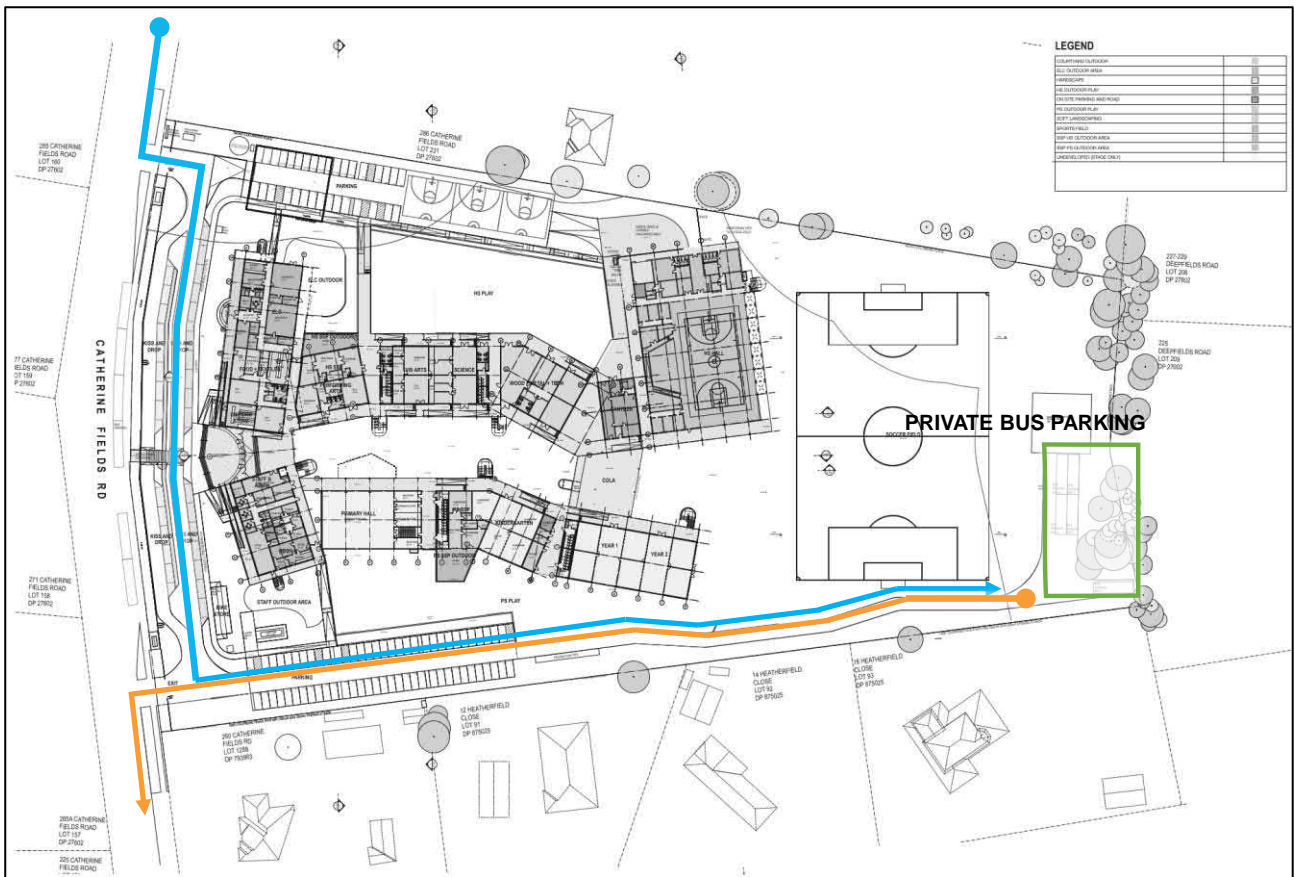


Figure 26: Private Chartered Bus Access

#### 4.1.12 Service Vehicles Access

All major deliveries and waste collection will occur in the designated loading area north of the hall through the northern carpark.

To minimise conflicts with student activity, the following measures will be implemented:

- The loading area has been designed in accordance with AS 2890.2:2018 and can accommodate up to one 12.5m heavy rigid vehicle (HRV).
- The truck will enter and exit the School in a forward direction via a 3-point turn.
- Delivery times will be strictly managed, whereby regular services are subject to strict timelines to ensure the minimum movements possible, and these occur outside of the school's peak periods. Deliveries will be managed by the School's administration and management staff and will ensure that drivers are familiar with the details of the Plan, as well as the Code of Conduct (Appendix B).

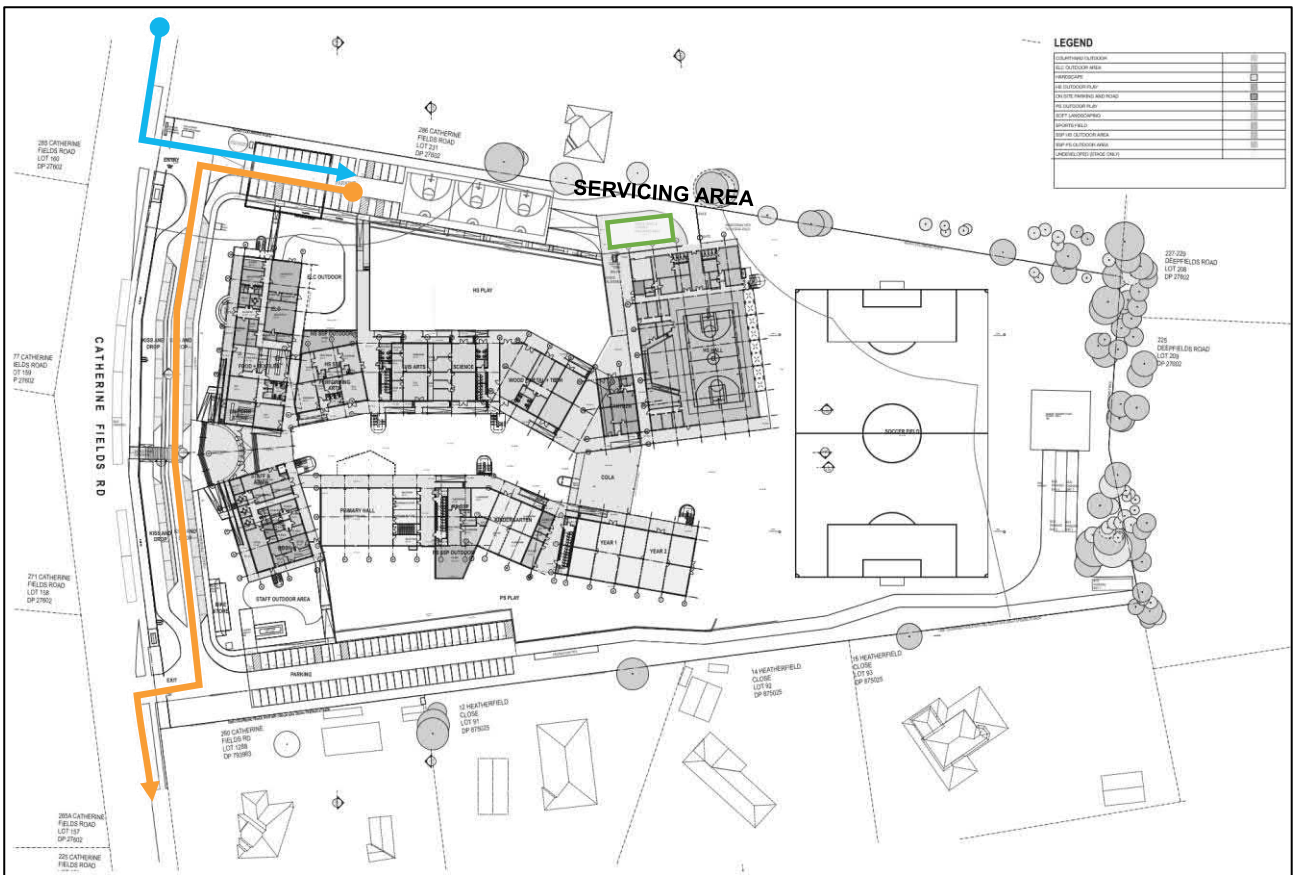


Figure 27: Servicing Location

#### 4.1.13 Driver Code of Conduct

All drivers are to operate in a manner consistent with the requirements of applicable Work Health and Safety (WHS) legislation and other business-specific policies.

All commercial vehicle drivers are to be familiar with the Driver Code of Conduct before attending the Site. A copy of the Code is included in **Appendix B**.

# 5 Governance and Support

## 5.1 Travel Plan Coordinator

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To assist with the management of the School Transport Plan, a person(s) shall be nominated as the Travel Plan Coordinator (TPC) and be responsible for:

- Engagement with the staff and parent bodies,
- Implementation and promotion of the School Transport Plan actions,
- Monitoring the effectiveness of the Plan (refer to monitoring requirements outlined in **Section 6**) and ongoing maintenance of the School Transport Plan,
- Provide advice in relation to transport-related subjects to staff, management, and visitors, as required, and
- Liaise with external parties (i.e., Council, public transport, and car share operators) in relation to Travel Plan matters.

This role does not necessarily require a full-time position; however, it should be clearly designated among the key responsibilities of the building management group.

This may include financial incentives for staff to use active transport and public transport to travel to work. However, this is not a mandatory requirement and would be subject to the management's discretion.

## 5.2 Resourcing

---

It is not anticipated that the maintenance of this Plan will have significant ongoing cost implications and shall be reviewed on an annual basis by the TPC in order for the best outcome. To fund the monitoring of the PSTP, it is recommended that \$50k per year be allocated by the School beyond the initial 13 months of implementation of the School Transport Plan.

# 6 Monitoring and Review Process

## 6.1 Plan Maintenance

---

This Plan shall be subject to ongoing review, ideally biennially, and will be updated accordingly. Regular reviews will be undertaken by the TPC, as required.

Key considerations regarding the review of the Plan shall be:

- Updating baseline conditions to reflect any changes to the transport environment in the vicinity of the Site such as changes to bus services, new cycle routes, new roads, etc. In this regard, a review of the Plan – and associated TAG in particular – may be undertaken on a more frequent basis,
- Tracking progress against proposed travel mode targets,
- To identify any shortfalls and develop an updated action plan to address issues, and
- To ensure travel mode targets are updated (if necessary) to ensure they remain realistic but also ambitious.

## 6.2 Monitoring and Review Actions

---

To assess the efficacy of the Plan strategies, the following actions are to be undertaken by the TPC:

- Review updated de-personalised data from the School Administration with GIS analysis.
- Travel mode surveys to determine the proportion of persons travelling to/from the site by each transport mode. This will be in the form of annual travel mode questionnaire surveys to be completed by all persons attending the Site, as far as practicable. This survey may be undertaken online or in-person at the discretion of the TPC.
- Review information regarding participation in active travel programs.
- Undertake community consultation to gauge feedback regarding implemented strategies and areas for improvement to further encourage the use of alternative modes of transport.
- Periodic on-site review of facilities such as the drop-off/pick-up area and bicycle racks.

It is recommended that an initial audit be undertaken within 6-months of the occupation of the School to establish baseline mode share as early as possible.

## 6.3 Feedback Framework

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Following the actions undertaken as part of the review process, feedback is to be provided to key stakeholders including the community, TfNSW, Council, and the School, detailing the efficacy of the strategies. The strategies and Plan will be adapted accordingly

# Appendix A. TfNSW School Drop-off and Pick-up: Organising the Initiative

# School Drop-off and Pick-up

## Organising the initiative

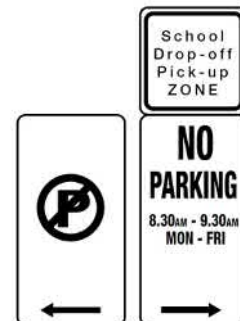
### What is a school Drop-off and Pick-up zone?

Some schools and councils use No Parking areas, signed as Drop-off and Pick-up, Kiss and Ride, or Kiss and Drop zones.

These areas are always on the school side of the road and are designated by “No Parking” signs.

They provide a safe spot for parents and carers to drop off and collect their children from school by car.

Drivers may drop off and pick up passengers legally within a two-minute timeframe.



### What is a school Drop-off and Pick-up initiative?

This strategy allows the efficient use of the Drop-off and Pick-up area during busy times at the beginning and end of the school day.

A driver pulls into the kerb and remains in control of the vehicle while an identified supervising adult from the school community assists students to exit or enter the vehicle.



Kids and Traffic  
Safety Door sticker  
RTA45091021K

### What must be planned?

The school community needs to:

- Consult with the local council to consider whether the traffic environment outside the school would support the initiative without disrupting traffic flow.
- Consider existing school access points and school entry and exit procedures.
- Confirm school community support for the initiative.
- Fully understand all legal issues regarding liability in respect of students and volunteers.

### How to implement the initiative

The school community needs to:

- Consider relevant insurance policies and child protection guidelines.
- Determine the operating times of the initiative.
- Develop a system for matching the child to the correct vehicle at pick-up times.
- Develop a roster of those adults approved by the school community to supervise students as they exit or enter a vehicle.
- Communicate details of the initiative’s operation and safety procedures to drivers, students, supervising adults and the general school community.
- [Keeping our kids safe around schools](#) has information for principals, parents and members of the school community. Order Safety Door stickers from our [online catalogue](#).

[roadsafety.transport.nsw.gov.au](https://roadsafety.transport.nsw.gov.au)

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Centre for Road Safety

# Appendix B. Drivers Code of Conduct

# - Driver Code of Conduct -

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## Drivers Code of Conduct

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Safe Driving Policy for the Minarah College Catherine Field Campus

### Objectives of the Drivers Code of conduct

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- Minimise conflict with other road users;
- Minimise road traffic noise; and
- Ensure minibus and bus drivers use specified routes.

### Code of Conduct

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All vehicle operators accessing the site must:

- Take reasonable care for his or her own personal health and safety.
- Not adversely, by way of actions or otherwise, impact on the health and safety of other persons.
- Notify their employer if they are not fit for duty prior to commencing their shift.
- Obey all applicable road rules and laws at all times.
- In the event of an emergency vehicle behind your vehicle, pull over and allow the emergency vehicle to pass immediately.
- Obey the applicable driving hours in accordance with legislation and take all reasonable steps to manage their fatigue and not drive with high levels of drowsiness.
- Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas.
- Ensure all loads are safely restrained, as necessary.
- Operate their vehicles in a safe and professional manner, with consideration for all other road users.
- Hold a current Australian State or Territory issued driver's licence.
- Notify their employer or operator immediately should the status or conditions of their driver's license change in any way.
- Comply with other applicable workplace policies, including a zero-tolerance of driving while under the influence of alcohol and/or illicit drugs.
- Do not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location prior to the use of any mobile device.
- Advise management of any situations in which you know, or think may present a threat to workplace health and safety.
- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary.
- Have necessary identification documentation at hand and be ready to present to security staff on entry and departure from the site, as necessary, to avoid unnecessary delays to other vehicles.

### Crash or incident Procedure

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- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic. Ensure your own safety first, then help any injured people and seek assistance immediately if required.

- Ensure the following information is noted:
- Details of the other vehicles and registration numbers
- Names and addresses of the other vehicle drivers
- Names and addresses of witnesses
- Insurers details
- Give the following information to the involved parties:
- Name, address, and company details
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to contact the company.
- Ensure that the police are contacted should the following circumstances occur:
- If there is a disagreement over the cause of the crash.
- If there are injuries.
- If you damage property other than your own.
- As soon as reasonably practical, report all details gathered to your manager.

# Appendix C. TfNSW Consultation Record

## Wendy Zheng

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**From:** Wendy Zheng  
**Sent:** Thursday, 4 November 2021 2:28 PM  
**To:** Zhaleh Najari alamouti; Zeliha Cansiz; Louise Moran; Majed Marzouk; Robert Rutledge; Pahee Rathan; Bikram Singh; sophia.grieve@transport.nsw.gov.au  
**Cc:** Dora Choi; Eric Ye; Toby James  
**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field  
**Attachments:** P1769\_Minarah TfNSW Presentation 211028.pptx

Hi Zhaleh

Thank you for organising the meeting last week.

As discussed, please see attached for the presentation from that meeting for review.

Please find below our meeting notes for your review and confirmation:

Attendees: Zhaleh Najari Alamouti (TfNSW), Zeliha Cansiz (TfNSW), Louise Moran (TfNSW), Robert Rutledge (TfNSW), Sophie Grieve (TfNSW), Toby James (Midson), Jay Halai(Principal, GVIC), Dora Choi (Ason), Wendy Zheng (Ason)

- Presentation of proposed Minarah College secondary campus at Catherine Field
- Ason presented data collected for the modelling of proposed Minarah College Catherine Field Campus and posed questions on the background growth and development of the area based on STFM data collected
- TfNSW confirmed that Catherine Field will not be rezoned near future and it is not part of a growth precinct
- There are no further upgrades planned for either Bringelly Road nor Camden Valley Way
- Assume that no collector roads in the network are being upgraded for future in our traffic impact assessment
- TfNSW has answered that we can assume a minimum 3% growth in background traffic – **to be reviewed internally by TfNSW**
- TfNSW does want to see cycling infrastructure and shared paths as part of the wok but neither Council nor TfNSW have any plans for cycling or pedestrian infrastructure upgrades in the area and Catherine Field Road is not part of the bicycle network for Camden
- TfNSW expressed enthusiasm for shuttle buses to and from train stations and this proposal was compared to the shuttle bus system at nearby Broughton Anglican College
- The speed zone on Catherine Field Road transitions from 60km/hr from the intersection of Camden Valley Way to 80km/hr in front of the proposed school site. TfNSW has indicated that the project can apply to the Road Network Safety Officer for an extension of the 60km/hr speed zone

One of our reasons for this meeting is that following a review of the STFM data provided, we have the following questions before we can complete the modelling:

- How would background growth be applied?
- How can the changing road network be accommodated?
- Is the same growth rate to be applied on Camden Valley Way and Catherine Field Road
- Is there a standard practice to adopt a specific percentage of growth?

We look forward to receiving your responses at your earliest convenience.

Regards,  
**Wendy Zheng**  
Senior Traffic Design Engineer | Ason Group

T: +61 2 9083 6601 | M: +61 401 969 768 | E: [wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)

A: Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>

**Sent:** Friday, 22 October 2021 10:07 AM

**To:** Eric Ye <[eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)>

**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>

**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

Hi Eric,

I sent an outlook invite for the proposed time below.

Please accept and feel free to forward to other attendees.

Regards

Zhaleh

---

**From:** Eric Ye <[eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)>

**Sent:** Friday, 22 October 2021 8:41 AM

**To:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>

**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>

**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

**CAUTION:** This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Zhaleh,

Could we please lock in the Thursday 28 October for 3:30pm?

In terms of the STFM growth plots, we've received this earlier (see attached emails), which I understand is the standard TZP19.

Regards,

**Eric Ye**

Traffic Engineer / Analyst | Ason Group

T: +61 2 9083 6601 | M: +61 466 620 261 | E: [eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)

A: Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>

**Sent:** Thursday, 21 October 2021 2:14 PM

**To:** Eric Ye <[eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)>

**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>

**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

Hi Eric,

I'm still waiting for some internal advise before I can set up a meeting, however please find below our free times for meeting:

Thursday 28 October 3:30pm  
Tuesday 2 November 3:30pm  
Thursday 4 November 1:30pm

Please let me know your preferred time.

In the meantime, we can provide STFM growth on the links surrounding the proposal. Could you please advise if the standard TZP19 sufficient to capture the growth in the area, or are you expecting an alternative land use scenario?

Regards

Zhaleh Alamouti  
A/Senior Land Use Assessment Coordinator  
Planning and Programs  
Greater Sydney  
**Transport for NSW**  
[transport.nsw.gov.au](http://transport.nsw.gov.au)

T 02 8849 2331  
Level 5, 27 Argyle Street Parramatta NSW 2150

---

**From:** Eric Ye <[eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)>  
**Sent:** Wednesday, 20 October 2021 5:28 PM  
**To:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>  
**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>  
**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

**CAUTION:** This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Zhaleh,

Just touching base on this again. Could you please provide some times/ dates suitable for a meeting?

Thanks,

**Eric Ye**

Traffic Engineer / Analyst | Ason Group

T: +61 2 9083 6601 | M: +61 466 620 261 | E: [eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)  
A: Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

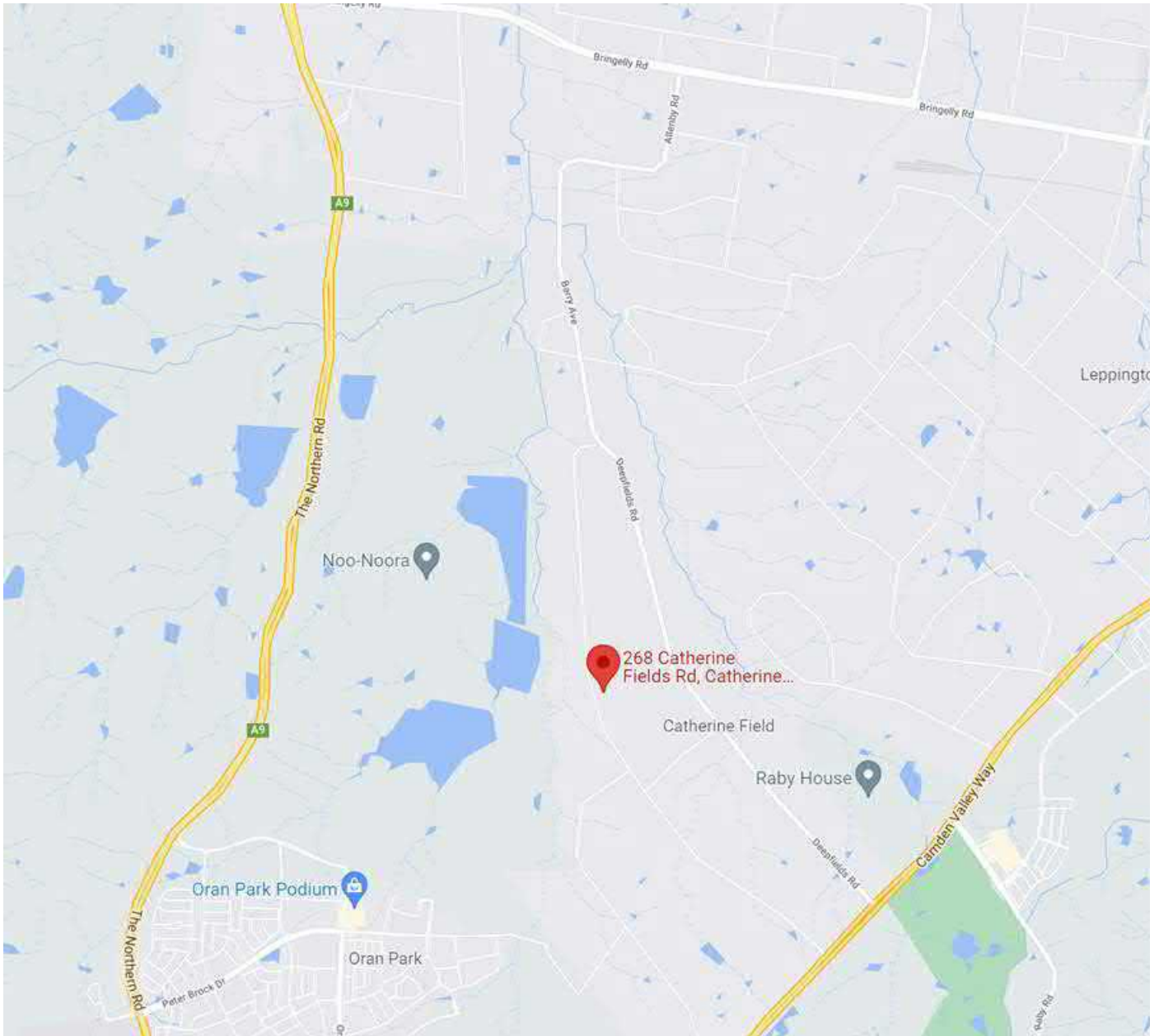
---

**From:** Eric Ye  
**Sent:** Thursday, 14 October 2021 6:13 PM  
**To:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>  
**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>  
**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

Hi Zhaleh,

Please find attached architectural plans from the team to assist. I've also taken a screenshot from google maps to indicate the location of the site as well.

Please let me know if the attached along with my initial email is enough context for the proposal and could you let us know what times/ dates might be suitable for a meeting?



Kind regards,

**Eric Ye**

Traffic Engineer / Analyst | Ason Group

T: +61 2 9083 6601 | M: +61 466 620 261 | E: [eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)

A: Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Zhaleh Najari alamouti <[Zhaleh.ALAMOUTI@transport.nsw.gov.au](mailto:Zhaleh.ALAMOUTI@transport.nsw.gov.au)>

**Sent:** Friday, 8 October 2021 8:37 AM

**To:** Eric Ye <[eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)>

**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>

**Subject:** RE: Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

Hi Eric,

I'm reviewing your request, do you have any plan or preliminary report for the proposal?

Regards

Zhaleh

Zhaleh Alamouti  
A/Senior Land Use Assessment Coordinator  
Planning and Programs  
Greater Sydney  
**Transport for NSW**  
[transport.nsw.gov.au](http://transport.nsw.gov.au)

T 02 8849 2331  
Level 5, 27 Argyle Street Parramatta NSW 2150

---

**From:** Eric Ye [<mailto:eric.ye@asongroup.com.au>]  
**Sent:** Thursday, 7 October 2021 3:37 PM  
**To:** Development Sydney <[Development.Sydney@transport.nsw.gov.au](mailto:Development.Sydney@transport.nsw.gov.au)>  
**Cc:** Wendy Zheng <[wendy.zheng@asongroup.com.au](mailto:wendy.zheng@asongroup.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>  
**Subject:** Request for meeting to discuss proposal for Islamic College at Catherine Fields Road, Catherine Field

**CAUTION:** This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Development Team,

We'd like to organise a meeting with TfNSW to discuss the proposed development of a private Islamic college in Catherine Field.

This is to inform a masterplan assessment for the development which will cater for years K-12 with the ultimate targeted student number being around 1500. Stage 1 development will be around 300 students and given that the school is to be developed in stages in a high growth area, we would like to seek direction on a number of factors based on data we have been able to source to date (we have obtained pre-lockdown traffic data for key intersections, SCATS data and STFM data for the area) and seek clarification on further aspects of the STFM model.

In particular:

- Growth factor for the road network, along the Catherine Fields Road and Barry Avenue/ Allenby Road corridor between Camden Valley Way and Bringelly Road, and also along Camden Valley Way and Bringelly Road
- Road network upgrade timeline and clarification on new road connections adjoining Catherine Fields Road (see attached)
- Seek some preliminary thoughts on potential future school buses to/ from the site.

Please let us know your availabilities for the meeting.

If you require any additional information, please do not hesitate to contact me.

Regards,

**Eric Ye**  
Traffic Engineer / Analyst | Ason Group

T: +61 2 9083 6601 | M: +61 466 620 261 | E: [eric.ye@asongroup.com.au](mailto:eric.ye@asongroup.com.au)  
A: Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

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 **Consider the environment. Please don't print this e-mail unless really necessary.**

# Appendix D. Council Consultation Record

23 December 2021

Green Valley Islamic College Ltd  
L 8 123 Pitt St  
SYDNEY NSW 2000

Dear Sir/Madam,

**RE: Pre-Development Application Meeting PDM/2021/133/1**

**PROPERTY: 268 Catherine Fields Road CATHERINE FIELD,  
278 Catherine Fields Road CATHERINE FIELD  
LOT: 11 DP: 833983, LOT: 12 DP: 833784**

I refer to the above pre-development application meeting which was held on 9 December 2021. I provide the following as advice for your assistance.

This advice is based on the development discussed at the meeting as described by you. Should the development or any relevant planning policy change in any way prior to the lodgement of a State Significant Development Application (SSDA) then this advice may no longer be fully accurate or complete.

Please note that this advice is preliminary in nature and that no detailed assessment of the site or development has been undertaken. Following lodgement of the SSDA and a detailed assessment, additional issues may arise that are not detailed in this letter and that may require the development to be modified or additional information to be provided. Council may also determine that the development cannot be supported on the site.

### Development

New school, namely, Minarah College.

Minarah College will be a co-educational K-12 school accommodating 1,500 students; 840 in primary school and 660 in high school. In addition, there will also be an Early Learning Centre for 60 students and a Special Education School for 40 students.

SSDA No: SSD-30759158.

Estimated Cost of development \$70 million.

## Zoning/Permissibility

The site is zoned RU4 Primary Production Small Lots under the Camden Local Environmental Plan 2010.

Schools are permitted with consent in the zone under State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.

Development for the purpose of a centre-based child care facility may be carried out by any person with development consent on land within the boundaries of an existing school under State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.

## Development Classification

The application is state significant development (SSD) if the development has a capital investment value of more than \$20 million. A SSDA will be submitted to and assessed by the Department of Planning, Industry and Environment (DPIE).

The application is regional development if the development has a capital investment value of more than \$5 million but less than \$20 million.

The application is local development if the development has a capital investment value of less than \$5 million.

## Capital Investment Value

Any DA lodged with Council must clearly state the capital investment value (CIV) of the development. Please refer to the DPIE's Planning Circular PS 21-020 which describes what items must be included and excluded when calculating the CIV for development. Depending upon this value the DA may be determined by the Sydney Western City Planning Panel (SWCPP).

## Town Planning Advice

Regardless of whether the development is local, regional or state significance development the submission requirements outlined in the SEARS should be provided. However the EIS will be titled Statement of Environmental Effects (SEE) if the development is regional or local development.

The EIS / SEE must fully describe the proposed development and assess it against all relevant environmental planning instruments and development control plans applicable to the site and development. These include (but may not be strictly limited to):

- State Environmental Planning Policy (State and Regional Development) 2011;
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017;
- State Environmental Planning Policy (Sydney Region Growth Centres) 2006;
- State Environmental Planning Policy No. 55 – Remediation of Land;
- State Environmental Planning Policy No. 64 – Advertising and Signage;
- State Environmental Planning Policy (Infrastructure) 2007;

- Deemed State Environmental Planning Policy No. 20 – Hawkesbury-Nepean River; and
- Camden Development Control Plan 2019.

The site is subject to a maximum building height development standard of 9.5m. The proposed development must be designed to comply with the maximum building height development standard.

Details of required operational deliveries to and from the site must be submitted with the DA. It must be demonstrated that suitable access, manoeuvring and parking facilities will exist within the site for all required delivery vehicles.

An appropriate landscape plan must be provided that includes details of all proposed landscaping including species, numbers, pot sizes and planting ratios. The landscaping must be designed to soften the proposed development and help integrate it into its surroundings. All side and rear setbacks should be heavily landscaped with dense plantings at low, medium and high heights.

Subject to Clause 2.18.2 of Camden DCP 2019, Educational establishments (schools) are to provide car parking based on the following rate:

- 1 car parking space per full time equivalent staff member, plus
- 1 car parking space per 100 students, plus
- 1 car parking space per 5 students in year 12 where appropriate.

An off-street drop off and pick up area must be provided for the proposed development. This area must incorporate sufficient area for vehicle queuing to ensure that vehicles will be contained within the site. The length of any on-street drop off area must be sufficient to accommodate a number of vehicles and avoid queuing and blocking two way traffic movement along the surrounding roads

The proposed development must demonstrate compliance with the relevant zone objectives of the RU4 zone:

- To enable sustainable primary industry and other compatible land uses.
- To encourage and promote diversity and employment opportunities in relation to primary industry enterprises, particularly those that require smaller lots or that are more intensive in nature.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

The development must avoid unacceptable impacts on adjoining residential development. Side boundary setbacks must be significant, and the high intensity uses sited internally. The car park and bushfire trail access along the southern side of the property will need to be carefully considered to reduce their impact. The fire trail should be clearly shown as such (possibly through the use of unsealed surface) to ensure it is not used for other inappropriate uses.

All mechanical plant and equipment must be suitably screened and integrated into the overall design of the proposed development.

The proposed development must incorporate a high degree of articulation and visual interest. This should include a variety of elements including horizontal and vertical building modulation; building breakdown and separation to minimise excessive bulk and improve massing; a range of colours, material and finishes; and meaningful architectural expression. The development will also need to be in keeping with the rural character of the area and the zone objectives.

Subject to Clause 35(6)(a) & (b) of the Education SEPP the development will need to demonstrate that it is consistent with the design quality principles as per Schedule 4. In addition, details of any proposal for the use of school facilities (including recreational facilities) to be shared with the community must be outlined as part of the DA.

Although the land is bio-certified by virtue of its location within the Growth Centre, much of the site's existing vegetation is identified as environmentally sensitive land. The proposed development must retain this vegetation wherever possible.

Turning template diagrams that demonstrate adequate manoeuvring areas, in accordance with AS 2890, for all vehicles utilising the site must be provided with the DA.

A construction and operational waste management plan must be submitted that describes how all construction and operational waste will be stored and disposed of. Plans must show storage for front lift bins (2 or 3) as well as access for a HRV to service the bins. The Plan must show bin storage and collection locations on plans and vehicle swept paths.

The design of the proposed development must be consistent with the Safer by Design principles. These principles, and the proposed development's compliance with them, must be assessed in the SEE / EIS lodged with the DA. The DA must also include a list of all safety features (e.g. lighting, alarms, etc.) proposed to be incorporated into the development.

The DA will be publicly exhibited in accordance with Camden Community Participation Plan 2021. The public exhibition period will be for a minimum of 14 days. You are encouraged to undertake your own community consultation ahead of the DA lodgement given the likely contentious nature of the proposal.

## **Environmental Health Advice**

### Acoustic Assessment

The acoustic assessment should also consider the advice and criteria relating to "Educational Establishments" contained within Council's Environmental Noise Policy 2018.

### Contamination Assessment

Where contamination is identified on site that requires remediation the proposed remediation works will be considered "Category 1" remediation works that requires development consent under Council's Management of Contaminated Lands policy.

## Salinity Assessment

A salinity management plan should be provided and conditioned for compliance for the construction phase where moderately saline or mildly aggressive soils to concrete and steel is identified on site.

## **Engineering Advice**

A stormwater management strategy must be submitted together with the supporting DRAINS and MUSIC model files and engineering plans to demonstrate post-development discharged water quality and quantity is equal or less than pre-dev scenario. This includes details on the on-site detention system, water treatment trains and re-use of rainwater on-site. Pre and post internal and external catchments must be provided. The design must complement existing contours and have a discharge point on to Catherine Field Drive. It may require some works within Catherine Field Drive for the outlet point/s.

Deposited plans of Lots 11 & 12 show a small section of the land as "intended to dedicate for road widening". Confirmation that this has or will occur is required. Currently Catherine Fields Road is a rural road. Details of the on-street frontage works/upgrades that are proposed/required are to be detailed in the plans submitted as part of any DA.

It is understood that two vehicle access points and one main central access point have been proposed. It is not clear if the central access point is a vehicular access. Engineering plans should clearly include proposed works within road verge and area marked as "road widening" on the DPs.

Engineering plans showing existing and proposed levels and the location of all proposed stormwater pipes and pits, on-site stormwater detention and stormwater quality control devices must be submitted with the DA. The plans must also show the dimensions of all driveways, traffic aisles and car parking spaces, gradients, loading bays and swept paths (wherever applicable) compliant with the applicable Australian Standards

## **Flooding Advice**

No. 268 lot is in a flood fringe area. The proposal must adhere with the Development Guidelines Matrix in Section 6.3 of the Flood Risk Management Policy.

The site is affected by an area of overland flow which is treated no differently to mainstream flooding and therefore is subject to the same Flood Risk Management development controls and guidelines detailed in the Policy. The Flood Planning Level is set by the 1% AEP level plus 600mm of freeboard.

All fencing on land below the 1% AEP flood level must be of a form that:

- does not result in the undesirable obstruction of the free flow of floodwaters; and
- does not become unsafe during floods and potentially become moving debris which threatens the integrity of structures or the safety of people.

No fencing will be allowed across, over or through watercourses, drainage easements and overland flowpaths.

## Traffic Advice

A Traffic Impact Assessment undertaken by a suitably qualified practitioner must be submitted detailing, but not limited to, the following:

- Traffic generation and impact;
- Queuing at kiss and ride – measures to prevent queuing from extending onto Catherine Fields Drive;
- Compliance of the design with relevant design guides and standards;
- Pedestrian safety; and
- The capacity for the narrow rural road (Catherine Fields Road) to handle the traffic volumes associated with the development and likely maintenance burden.

Car parking rates shall comply with DCP requirements for off-street parking. Although the number of proposed parking spaces is provided in the documents, the detail required for their calculation is not (i.e. number of year 12 students, number of staff etc).

The proposal states 36 Kiss and ride spaces internally. Additional detail of the Kiss and ride area would be required, and it must be designed in a manner that ensures queuing does not extend onto Catherine Field Drive (impacting on traffic flow). The school proposes 1500 students, and it is envisaged that the majority of students would travel by private vehicle or bus. The efficacy of the proposed provision shall be justified by assessment of similar sites.

Plans depicting dimensions (aisle width, indent width, length), signage and line marking must be submitted with any future application.

Parking / loading areas shall be designed to comply with relevant Australian Standards.

Relevant swept paths to be depicted include (but are not limited to) the following:

- Vehicles entering and exiting driveways and parking aisles simultaneously; and
- Largest design vehicle entering, manoeuvring with the site and egress the site.

A bus shelter must be provided as part of the proposed development. All indented bus bays must be designed in accordance with the relevant standards and design guides.

Answers to specific queries:

- *What growth rate should be applied in our traffic model? Note that TfNSW has directed us to use the standard growth rate which is 2.5%. 2.5% would be satisfactory at this stage considering the area is not yet rezoned.*
- *Do we need to provide any bicycle parking within the school as it is currently not accessible via bicycles? Although bicycle accessibility is not yet achieved it may be difficult to enforce provision after the school is approved and operational. We may condition that prior to completion of the final stage that all parking must be provided. However, a small amount should still be provided at stage 1 to accommodate any teachers or students that may live local and choose to cycle to the school.*
- *Footpath connecting the indented bus bay on Catherine Field Road to the school has been designed for 1.8m in width in accordance with Austroads Guide to Road Design Part 3, does it need to be widened? 3m is to be provided to accommodate students waiting to board etc. This is what we strive for around all schools.*

- *Our initial modelling shows that the CHR on Catherine Field Road does not need to be provided before Stage 4. Does Council have any comment on the timing? Right turn bay shall be provided at stage 1.*

### **Bush Fire Advice**

Part of the site is mapped as bush fire prone land. A bush fire report, demonstrating compliance with the NSW Rural Fire Service (RFS) publication 'Planning for Bush Fire Protection 2006', must be submitted with the DA.

### **Building/Fire Safety Advice**

As the proposed development will be a multi-storey construction, the services of an A1 accredited certifier must be engaged to provide a BCA design assessment with particular focus on the requirements of Part D3 Accessibility.

An access report, prepared by a suitably qualified access consultant, must be submitted with the DA.

### **Wastewater**

Currently there is no Sydney Water sewer available for this site. The owner/applicant should contact Sydney Water to enquire as to when a sewer connection will be available. Council has concerns regarding the establishment of a new school without connection to reticulated sewer.

If the proposal is to incorporate on-site wastewater disposal a wastewater report would be required and a designated location on the site would be required for just wastewater disposal (ie. a fenced area that is not accessible to students or the public). The current proposal does not show any available space for the on-site disposal of wastewater.

If it is proposed that the development is to be staged, it may be possible to use a space for irrigation, such as the location of the proposed sports field. If this is the case, the area may require remediation before the area can be used as a sports field if the future.

If the proposal is to pump-out wastewater (to be taken off site) a wastewater report would be required to size the tanks. It is advised that the owner/applicant should undertake a cost analysis for pump-out services as this type of disposal is not sustainable in the long term.

Answers to specific queries:

- *If wastewater (pump out or onsite wastewater irrigation/tertiary treated) is required for one or more initial stages (i.e connection to Sydney Water sewer may not be immediately available), what is Council's requirements around a sub-surface irrigation system on the playing field location.*

Council may consider subsurface irrigation to playing fields if it is tertiary treated, further details of a proposed system is required prior to further advise being given. Secondary treatment would not be considered for irrigation of playing fields.

- *Please provide requirements on the separation of wastewater elements to the overland flows. Will earth bunds/low walls suffice to provide freeboard/separation to wastewater infrastructure that may be below the 1%AEP level?*

Camden Council's Sewage Management Strategy states in Section 17.6 Flood Potential

1. 1% AEP (1:100) Flood Contours All components of the onsite wastewater treatment facility (tanks) shall be located above the 1% AEP (1:100) flood contour (the tank shall be located on flood free land).
2. 5% AEP (1:20) Flood Contours No portion of the related effluent application area (irrigation area or absorption or evapo-transpiration area) is permitted to be located below the 5% AEP (1:20) flood contour.

Where there is potential for the related effluent application area (i.e. evapo-transpiration beds, irrigation areas etc.) to be inundated by surface water run-off from roads or other properties, swales or bunding shall be constructed upslope of the application area to direct the water around such areas and shall be installed when so directed by Council so as to reduce the potential for contaminated water to leave the site.

### Public Health

Any areas proposed for the handling and storage of food intended for sale (including food tech room, canteen, OOSH, ELC – possibly bottle prep and kitchen) and any other ancillary areas used (toilets and garbage store) will need to comply with the Food Act 2003, Food Reg and AS 4674.

This includes, but is not limited to for each room separate room (i.e. canteen and food tech) and building (i.e. OOSH, ELC);

1. Solid Construction;
2. Pest proofing measures (including flyscreens to all doors/windows);
3. Hand wash basins (supplied with warm potable water through mixer tap) within 5m of any area where open food is handled;
4. Double bowl sink for equipment cleaning and sanitising;
5. Cleaner's sink for disposal of waste/mop water (to be in area away from open food);
6. Suitable finishes to wall/floor and ceilings (no drop in panel ceilings); and
7. Suitable mechanical ventilation to areas where steam/heat generated.

Detailed plans demonstrating compliance with Food Act 2003, Regs and AS 4674 should be provided as part of any DA.

### External Referrals

1. The DA will be referred to the RFS for comment as part of the site is mapped as bush fire prone land.
2. The DA will be referred to Transport for NSW for comment as the proposed development will be classed as traffic generating development.
3. The DA will be referred to Sydney Water for comment in accordance with Sydney Water's DA referral guidelines.
4. The DA will be referred to the Camden Local Area Command (NSW Police Force) for comment.

Please refer to the Department of Planning, Industry and Environment's [Development Referrals Guide](#) which describes what information these agencies require to be submitted with the DA.

### DA Fees

Prior to the lodgement of the DA (should the proposal be classified as local or regional development), please contact Council's Customer Relations Team on (02) 4654 7777 to obtain a fee quote. A copy of this fee quote is to be submitted with the DA.

Should you have any enquiries in relation to this matter, please do not hesitate to contact the undersigned on (02) 4654 7980.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'M Rawson'.

**Mr M Rawson**  
**Team Leader DA Assessments West**  
(Planning and Environment)

#### English

"This information is important. If you need help understanding this document please call the Translating and Interpreting Service (TIS) on 131 450 and ask them to contact Council on 02 4654-7777 on your behalf."

#### Arabic

٧٧٧٧ ٤٦٥٤ ٠٢ نيابة عنك هذه معلومات هامة. إذا كنت تحتاج إلى مساعدة في فهم هذا المستند برجاء الاتصال بخدمة الترجمة الشفهية والخطية TIS على الرقم ١٣١ ٤٥٠ وأطلب منهم أن يتصلوا بالبلدية على الرقم

#### Croatian

Ove informacije su važne. Ako trebate pomoć da biste razumijeli ovaj dokument, molimo vas nazovite Službu prevoditelja i tumača (TIS) na 131 450 i zamolite ih da u vaše ime nazovu Općinu na 02 4654 7777.

#### German

Diese Informationen sind wichtig. Wenn Sie beim Verständnis dieses Dokuments Hilfe benötigen, wenden Sie sich bitte unter der Rufnummer 131 450 an den *Translating and Interpreting Service* (Übersetzer- und Dolmetscherdienst) und bitten Sie diesen Dienst, sich in Ihrem Namen unter 02 4654-7777 an die Kommunalverwaltung zu wenden.

#### Greek

Αυτές οι πληροφορίες είναι σημαντικές. Εάν χρειάζεστε βοήθεια για να καταλάβετε αυτό το έντυπο παρακαλώ τηλεφωνείτε στην Υπηρεσία Μεταφραστών και Διερμηνέων (TIS) στο 131 450 και ζητήστε τους να επικοινωνήσουν με το Δημοτικό Συμβούλιο εκ μέρους σας στο 02 4654 7777.

#### Italian

Queste informazioni sono importanti. Se vi serve aiuto per comprendere questo documento, chiamate il servizio traduzioni e interpreti (TIS) al numero 131 450 chiedendo che contatti il Comune per vostro conto al numero 02 4654-7777.

#### Maltese

Din l-informazzjoni hija importanti. Jekk ikollok bżonn għajna biex tifhem dan id-dokument jekk jogħġbok ċempel it-Translating and Interpreting Service (TIS) (Servizz ta' Traduzzjoni u Interpreter) fuq 131 450 u itlobhom biex jikkuntattjaw lill-Kunsill fuq 02 4654 7777 f'ismek.

#### Serbian

Ove informacije su važne. Ako vam treba pomoć da biste razumeli ovaj dokument, molimo vas da nazovete Službu prevodilaца и тумача (TIS) на 131 450 и замолите их да у ваше име назову Општину на 02 4654 7777.

#### Spanish

Esta información es importante. Si necesita ayuda para entender este documento sírvase llamar al Servicio de Traducción e Interpretación (Translating and Interpreting Service / TIS) al 131 450 y pídale que se comuniquen por usted con el Municipio llamando al 02 4654-7777.

#### Tagalog

Ang impormasyong ito ay mahalaga. Kung kailangan mo ng tulong upang maintindihan ang dokumentong ito mangyari lamang na tawagan ang Serbisyo para sa Pagsasaling-wika at Pang-interpreter (TIS) sa 131 450 at hilingin sa kanila na kontakin para sa inyo ang Konseho sa 02 4654 7777.

#### Chinese

這是一份重要的資料。如果您在了解這份文件方面需要幫助，請致電 131 450 聯絡翻譯及傳譯服務 (TIS)，然後要求代致電 02 4654 7777 聯絡市議會。

# Appendix B. Queuing Analysis

**Inputs**

Time period	60	min
Total arrivals	157.00	veh
Service time	2	min/ veh
Number of servers	8	
x-th percentile queue	95%	
Acceptable queue length	28	veh

blue text are parameters that can be adjusted  
 black text generally shouldn't be adjusted  
 take care with the units! The default is x mins per veh  
 e.g. boom gates, drop-off bays, etc.  
 adjust this for desired percentile  
 excludes vehicles being serviced

**Model**

Arrival Rate (λ)	2.62	veh/ min
Service Rate (μ)	0.50	veh/ min
Number of servers (N)	8	
Rho (ρ)	5.23	
Utilisation (ρ/N)	65%	
Probability of no vehicles (P0)	0.51%	

Eqn 1  
 Eqn 1 if utilisation exceeds 100%, the model cannot accommodate the demand  
 Eqn 2

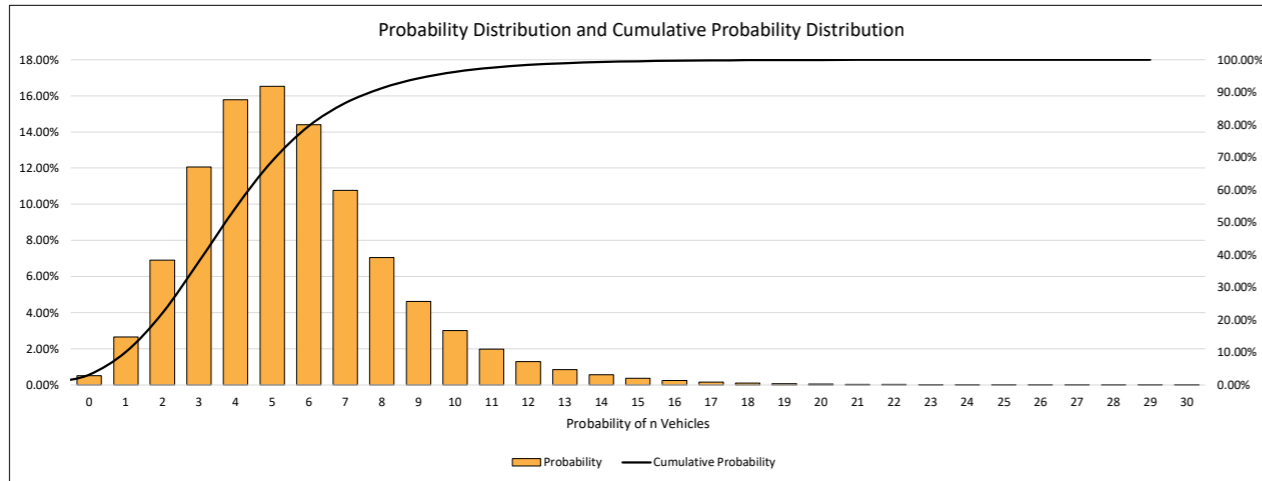
**Outputs**

95th Percentile Queue	3	veh
Probability of queuing	13.33%	
Average queue length	0.39	veh
Average time in queue	0.15	min/ veh
Average time in system	2.15	min/ veh
Average vehicles in system	5.62	veh
Probability of no vehicles (P0)	0.51%	

excludes vehicles currently being serviced

Eqn 4  
 Eqn 6  
 Eqn 5  
 Eqn 7

graph range may require manual adjustment



**Probability Table**

Probability of n vehicles (Pn)	Likelihood	Cumulative probability
0	0.51%	0.51%
1	2.64%	3.15%
2	6.92%	10.06%
3	12.07%	22.13%
4	15.79%	37.91%
5	16.52%	54.44%
6	14.41%	68.85%
7	10.77%	79.62%
8	7.05%	86.67%
9	4.61%	91.28%
10	3.02%	94.30%
11	1.97%	96.27%
12	1.29%	97.56%
13	0.84%	98.40%
14	0.55%	98.96%
15	0.36%	99.32%
16	0.24%	99.55%
17	0.15%	99.71%
18	0.10%	99.81%
19	0.07%	99.87%
20	0.04%	99.92%
21	0.03%	99.95%
22	0.02%	99.96%
23	0.01%	99.98%
24	0.01%	99.99%
25	0.01%	99.99%
26	0.00%	99.99%
27	0.00%	100.00%
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**Eqn 3**

**Formulae**

Eqn 1 **Traffic Intensity**

$$\rho = \frac{\lambda}{\mu} \quad \text{Utilisation} = \frac{\rho}{N} = \frac{\lambda}{N\mu}$$

Utilisation needs to be <1 for the service to accommodate the demand

Eqn 2 **Probability of no vehicles**

$$P_0 = \frac{1}{\sum_{n_c=0}^{N-1} \frac{\rho^{n_c}}{n_c!} + \frac{\rho^N}{N!(1-\rho/N)}}$$

Eqn 3 **Probability of n vehicles**

$$P_n = \frac{\rho^n P_0}{n!} \quad \text{for } n \leq N \quad P_n = \frac{\rho^n P_0}{N^{n-N} N!} \quad \text{for } n \geq N$$

Eqn 4 **Average Length of Queue**

$$\bar{Q} = \frac{P_0 \rho^{N+1}}{N! N} \left[ \frac{1}{(1-\rho/N)^2} \right]$$

Eqn 5 **Average Time Spent in System**

$$\bar{t} = \frac{\rho + \bar{Q}}{\lambda}$$

Eqn 6 **Average Time Waiting in Queue**

$$\bar{w} = \frac{\rho + \bar{Q}}{\lambda} - \frac{1}{\mu}$$

Eqn 7 **Average Vehicles in System**

$$L = \bar{t}_q = \rho$$

**P0 Calculation**

nc	nc<=N-1?	denominator 1
0	1	1.00
1	1	5.23
2	1	13.69
3	1	23.89
4	1	31.25
5	1	32.71
6	1	28.53
7	1	21.33
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**Inputs**

Time period	60	min
Total arrivals	320.00	veh
Service time	1.5	min/veh
Number of servers	12	
x-th percentile queue	95%	
Acceptable queue length	24	veh

blue text are parameters that can be adjusted  
 black text generally shouldn't be adjusted  
 take care with the units! The default is x mins per veh  
 e.g. boom gates, drop-off bays, etc.  
 adjust this for desired percentile  
 excludes vehicles being serviced

**Model**

Arrival Rate (λ)	5.33	veh/ min
Service Rate (μ)	0.67	veh/ min
Number of servers (N)	12	
Rho (ρ)	8.00	
Utilisation (ρ/N)	67%	
Probability of no vehicles (P0)	0.03%	

Eqn 1  
 Eqn 1 if utilisation exceeds 100%, the model cannot accommodate the demand  
 Eqn 2

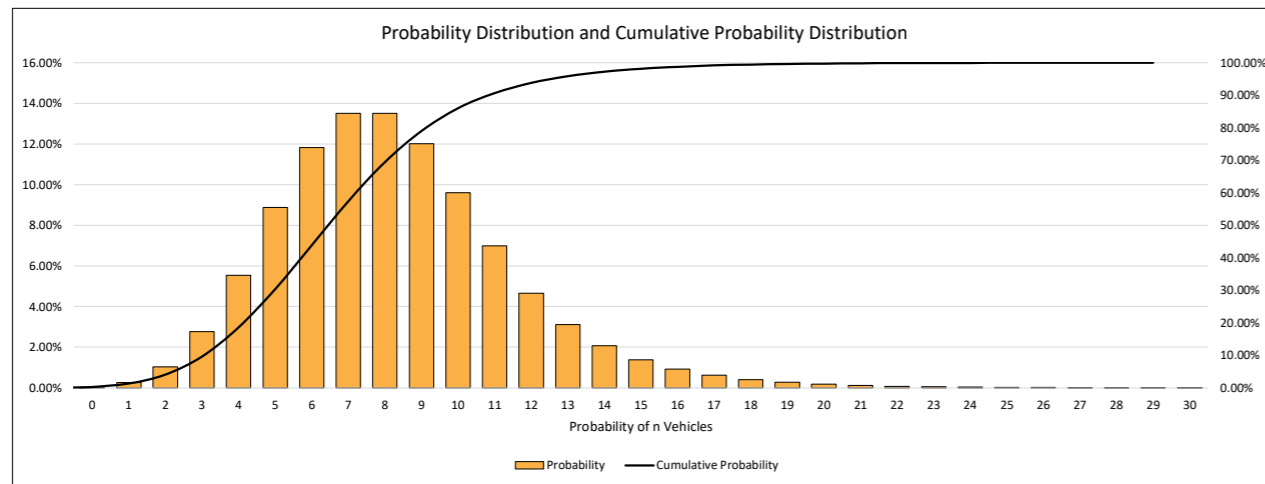
**Outputs**

95th Percentile Queue	2	veh
Probability of queuing	9.32%	
Average queue length	0.28	veh
Average time in queue	0.05	min/veh
Average time in system	1.55	min/veh
Average vehicles in system	8.28	veh
Probability of no vehicles	0.03%	

excludes vehicles currently being serviced

Eqn 4  
 Eqn 6  
 Eqn 5  
 Eqn 7

graph range may require manual adjustment



**Probability Table**

Probability of n vehicles (Pn)	Likelihood	Cumulative probability
0	0.03%	0.03%
1	0.26%	0.29%
2	1.04%	1.33%
3	2.77%	4.10%
4	5.55%	9.65%
5	8.87%	18.52%
6	11.83%	30.35%
7	13.52%	43.87%
8	13.52%	57.39%
9	12.02%	69.41%
10	9.61%	79.02%
11	6.99%	86.02%
12	4.66%	90.68%
13	3.11%	93.78%
14	2.07%	95.86%
15	1.38%	97.24%
16	0.92%	98.16%
17	0.61%	98.77%
18	0.41%	99.18%
19	0.27%	99.45%
20	0.18%	99.64%
21	0.12%	99.76%
22	0.08%	99.84%
23	0.05%	99.89%
24	0.04%	99.93%
25	0.02%	99.95%
26	0.02%	99.97%
27	0.01%	99.98%
28	0.01%	99.99%
29	0.00%	99.99%
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100	0.00%	100.00%

**Eqn 3**

**Formulae**

Eqn 1 **Traffic Intensity**

$$\rho = \frac{\lambda}{\mu} \quad \text{Utilisation} = \frac{\rho}{N} = \frac{\lambda}{N\mu}$$

Utilisation needs to be <1 for the service to accommodate the demand

Eqn 2 **Probability of no vehicles**

$$P_0 = \frac{1}{\sum_{n=0}^{N-1} \frac{\rho^n}{n!} + \frac{\rho^N}{N!(1-\rho/N)}}$$

Eqn 3 **Probability of n vehicles**

$$P_n = \frac{\rho^n P_0}{n!} \quad \text{for } n \leq N \quad P_n = \frac{\rho^n P_0}{N^{n-N} N!} \quad \text{for } n \geq N$$

Eqn 4 **Average Length of Queue**

$$\bar{Q} = \frac{P_0 \rho^{N+1}}{N! N} \left[ \frac{1}{(1-\rho/N)^2} \right]$$

Eqn 5 **Average Time Spent in System**

$$\bar{t} = \frac{\rho + \bar{Q}}{\lambda}$$

Eqn 6 **Average Time Waiting in Queue**

$$\bar{w} = \frac{\rho + \bar{Q}}{\lambda} - \frac{1}{\mu}$$

Eqn 7 **Average Vehicles in System**

$$L = \bar{t}_q = \rho$$

**P0 Calculation**

nc	nc<=N-1?	denominator 1
0	1	1.00
1	1	8.00
2	1	32.00
3	1	85.33
4	1	170.67
5	1	273.07
6	1	364.09
7	1	416.10
8	1	416.10
9	1	369.87
10	1	295.89
11	1	215.20
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Inputs

Time period	60	min
Total arrivals	482.00	veh
Service time	1.5	min/veh
Number of servers	14	
x-th percentile queue	95%	
Acceptable queue length	22	veh

blue text are parameters that can be adjusted  
 black text generally shouldn't be adjusted  
 take care with the units! The default is x mins per veh  
 e.g. boom gates, drop-off bays, etc.  
 adjust this for desired percentile  
 excludes vehicles being serviced

Model

Arrival Rate (λ)	8.03	veh/min
Service Rate (μ)	0.67	veh/min
Number of servers (N)	14	
Rho (ρ)	12.05	
Utilisation (ρ/N)	86%	
Probability of no vehicles (P0)	0.00%	

Eqn 1  
 Eqn 1 if utilisation exceeds 100%, the model cannot accommodate the demand  
 Eqn 2

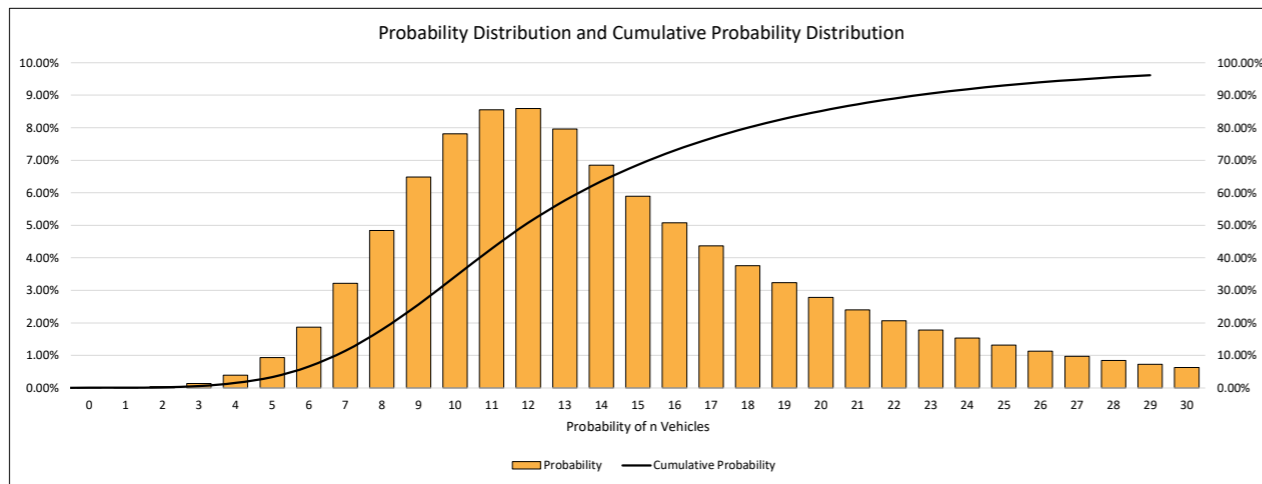
Outputs

95th Percentile Queue	15	veh
Probability of queuing	42.35%	
Average queue length	3.04	veh
Average time in queue	0.38	min/veh
Average time in system	1.88	min/veh
Average vehicles in system	15.09	veh
Probability of no vehicles	0.00%	

excludes vehicles currently being serviced

Eqn 4  
 Eqn 6  
 Eqn 5  
 Eqn 7

graph range may require manual adjustment



50% of all bays are operational

Probability Table

Probability of n vehicles (Pn)	Likelihood	Cumulative probability
0	0.00%	0.00%
1	0.01%	0.01%
2	0.03%	0.04%
3	0.13%	0.17%
4	0.39%	0.55%
5	0.93%	1.48%
6	1.87%	3.35%
7	3.21%	6.56%
8	4.84%	11.40%
9	6.48%	17.88%
10	7.81%	25.69%
11	8.55%	34.24%
12	8.59%	42.83%
13	7.96%	50.80%
14	6.85%	57.65%
15	5.90%	63.55%
16	5.08%	68.63%
17	4.37%	73.00%
18	3.76%	76.76%
19	3.24%	79.99%
20	2.79%	82.78%
21	2.40%	85.18%
22	2.06%	87.24%
23	1.78%	89.02%
24	1.53%	90.55%
25	1.32%	91.87%
26	1.13%	93.00%
27	0.98%	93.97%
28	0.84%	94.81%
29	0.72%	95.54%
30	0.62%	96.16%
31	0.54%	96.69%
32	0.46%	97.15%
33	0.40%	97.55%
34	0.34%	97.89%
35	0.29%	98.18%
36	0.25%	98.44%
37	0.22%	98.66%
38	0.19%	98.84%
39	0.16%	99.00%
40	0.14%	99.14%
41	0.12%	99.26%
42	0.10%	99.36%
43	0.09%	99.45%
44	0.08%	99.53%
45	0.07%	99.59%
46	0.06%	99.65%
47	0.05%	99.70%
48	0.04%	99.74%
49	0.04%	99.78%
50	0.03%	99.81%
51	0.03%	99.84%
52	0.02%	99.86%
53	0.02%	99.88%
54	0.02%	99.89%
55	0.01%	99.91%
56	0.01%	99.92%
57	0.01%	99.93%
58	0.01%	99.94%
59	0.01%	99.95%
60	0.01%	99.96%
61	0.01%	99.96%
62	0.01%	99.97%
63	0.00%	99.97%
64	0.00%	99.98%
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69	0.00%	99.99%
70	0.00%	99.99%
71	0.00%	99.99%
72	0.00%	99.99%
73	0.00%	99.99%
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98	0.00%	100.00%
99	0.00%	100.00%
100	0.00%	100.00%

Eqn 3

Formulae

Eqn 1 Traffic Intensity

$$\rho = \frac{\lambda}{\mu} \quad \text{Utilisation} = \frac{\rho}{N} = \frac{\lambda}{N\mu}$$

Utilisation needs to be <1 for the service to accommodate the demand

Eqn 2 Probability of no vehicles

$$P_0 = \frac{1}{\sum_{n=0}^{N-1} \frac{\rho^n}{n!} + \frac{\rho^N}{N!(1-\rho/N)}}$$

Eqn 3 Probability of n vehicles

$$P_n = \frac{\rho^n P_0}{n!} \quad \text{for } n \leq N \quad P_n = \frac{\rho^n P_0}{N^{n-N} N!} \quad \text{for } n \geq N$$

Eqn 4 Average Length of Queue

$$\bar{Q} = \frac{P_0 \rho^{N+1}}{N! N} \left[ \frac{1}{(1-\rho/N)^2} \right]$$

Eqn 5 Average Time Spent in System

$$\bar{t} = \frac{\rho + \bar{Q}}{\lambda}$$

Eqn 6 Average Time Waiting in Queue

$$\bar{w} = \frac{\rho + \bar{Q}}{\lambda} - \frac{1}{\mu}$$

Eqn 7 Average Vehicles in System

$$L = \bar{t}_q = \rho$$

P0 Calculation

nc	nc<=N-1?	denominator 1
0	1	1.00
1	1	12.05
2	1	72.60
3	1	291.62
4	1	878.49
5	1	2117.16
6	1	4251.97
7	1	7319.46
8	1	11024.93
9	1	14761.16
10	1	17787.19
11	1	19485.06
12	1	19566.25
13	1	18136.41
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**Inputs**

Time period	60	min
Total arrivals	432.00	veh
Service time	1.5	min/veh
Number of servers	14	
x-th percentile queue	95%	
Acceptable queue length	22	veh

blue text are parameters that can be adjusted  
 black text generally shouldn't be adjusted  
 take care with the units! The default is x mins per veh  
 e.g. boom gates, drop-off bays, etc.  
 adjust this for desired percentile  
 excludes vehicles being serviced

**Model**

Arrival Rate (λ)	7.20	veh/min
Service Rate (μ)	0.67	veh/min
Number of servers (N)	14	
Rho (ρ)	10.80	
Utilisation (ρ/N)	77%	
Probability of no vehicles (P0)	0.00%	

Eqn 1  
 Eqn 1 if utilisation exceeds 100%, the model cannot accommodate the demand  
 Eqn 2

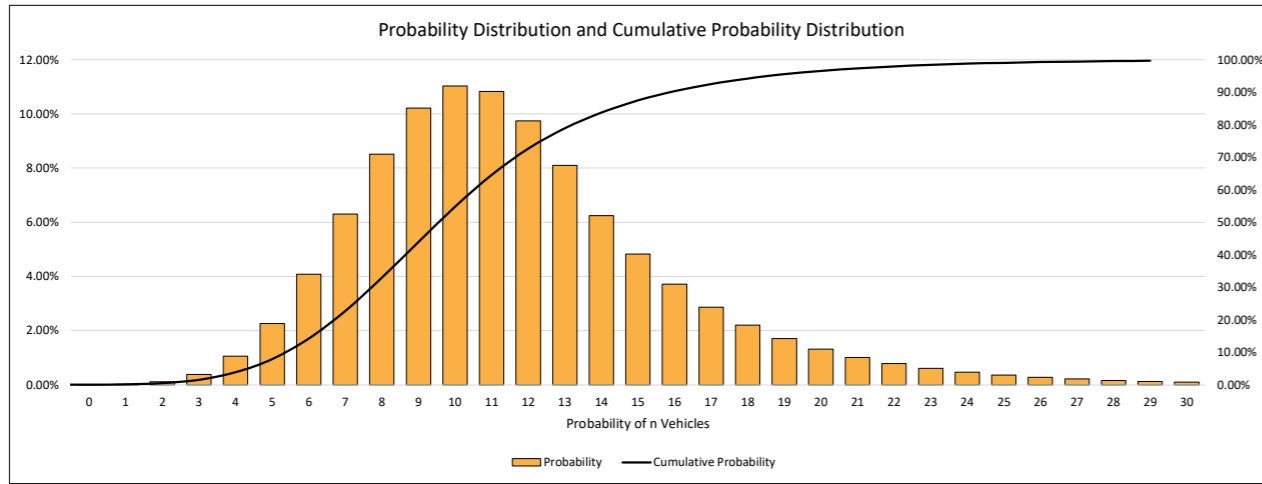
**Outputs**

95th Percentile Queue	6	veh
Probability of queuing	21.08%	
Average queue length	0.92	veh
Average time in queue	0.13	min/veh
Average time in system	1.63	min/veh
Average vehicles in system	11.72	veh
Probability of no vehicles	0.00%	

excludes vehicles currently being serviced

Eqn 4  
 Eqn 6  
 Eqn 5  
 Eqn 7

graph range may require manual adjustment



50% of all bays are operational

**Probability Table**

Probability of n vehicles (Pn)	Likelihood	Cumulative probability
0	0.00%	0.00%
1	0.02%	0.02%
2	0.11%	0.13%
3	0.39%	0.52%
4	1.05%	1.57%
5	2.27%	3.84%
6	4.09%	7.93%
7	6.31%	14.23%
8	8.51%	22.74%
9	10.21%	32.96%
10	11.03%	43.99%
11	10.83%	54.82%
12	9.75%	64.57%
13	8.10%	72.67%
14	6.25%	78.92%
15	4.82%	83.73%
16	3.72%	87.45%
17	2.87%	90.32%
18	2.21%	92.53%
19	1.71%	94.24%
20	1.32%	95.56%
21	1.02%	96.57%
22	0.78%	97.36%
23	0.60%	97.96%
24	0.47%	98.43%
25	0.36%	98.79%
26	0.28%	99.06%
27	0.21%	99.28%
28	0.17%	99.44%
29	0.13%	99.57%
30	0.10%	99.67%
31	0.08%	99.74%
32	0.06%	99.80%
33	0.05%	99.85%
34	0.03%	99.88%
35	0.03%	99.91%
36	0.02%	99.93%
37	0.02%	99.95%
38	0.01%	99.96%
39	0.01%	99.97%
40	0.01%	99.98%
41	0.01%	99.98%
42	0.00%	99.99%
43	0.00%	99.99%
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45	0.00%	99.99%
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96	0.00%	100.00%
97	0.00%	100.00%
98	0.00%	100.00%
99	0.00%	100.00%
100	0.00%	100.00%

**Eqn 3**

**Formulae**

Eqn 1 **Traffic Intensity**

$$\rho = \frac{\lambda}{\mu} \quad \text{Utilisation} = \frac{\rho}{N} = \frac{\lambda}{N\mu}$$

Utilisation needs to be <1 for the service to accommodate the demand

Eqn 2 **Probability of no vehicles**

$$P_0 = \frac{1}{\sum_{n=0}^{N-1} \frac{\rho^n}{n!} + \frac{\rho^N}{N!(1-\rho/N)}}$$

Eqn 3 **Probability of n vehicles**

$$P_n = \frac{\rho^n P_0}{n!} \quad \text{for } n \leq N \quad P_n = \frac{\rho^n P_0}{N^{n-N} N!} \quad \text{for } n \geq N$$

Eqn 4 **Average Length of Queue**

$$\bar{Q} = \frac{P_0 \rho^{N+1}}{N! N} \left[ \frac{1}{(1-\rho/N)^2} \right]$$

Eqn 5 **Average Time Spent in System**

$$\bar{t} = \frac{\rho + \bar{Q}}{\lambda}$$

Eqn 6 **Average Time Waiting in Queue**

$$\bar{w} = \frac{\rho + \bar{Q}}{\lambda} - \frac{1}{\mu}$$

Eqn 7 **Average Vehicles in System**

$$L = \bar{t}_q = \rho$$

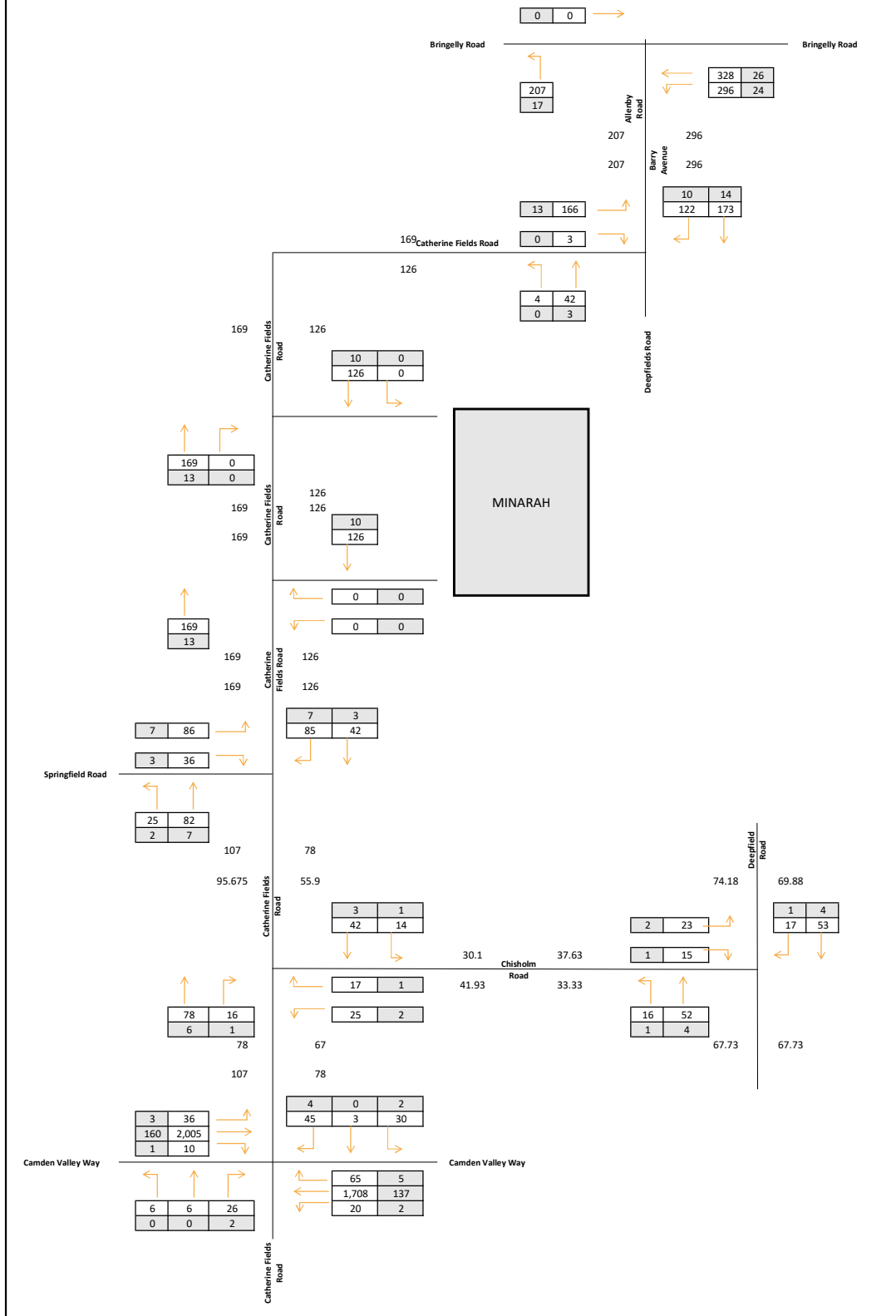
**P0 Calculation**

nc	nc<=N-1?	denominator 1
0	1	1.00
1	1	10.80
2	1	58.32
3	1	209.95
4	1	566.87
5	1	1224.44
6	1	2203.99
7	1	3400.44
8	1	4590.60
9	1	5508.72
10	1	5949.42
11	1	5841.25
12	1	5257.12
13	1	4367.46
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# Appendix C. Network Diagrams

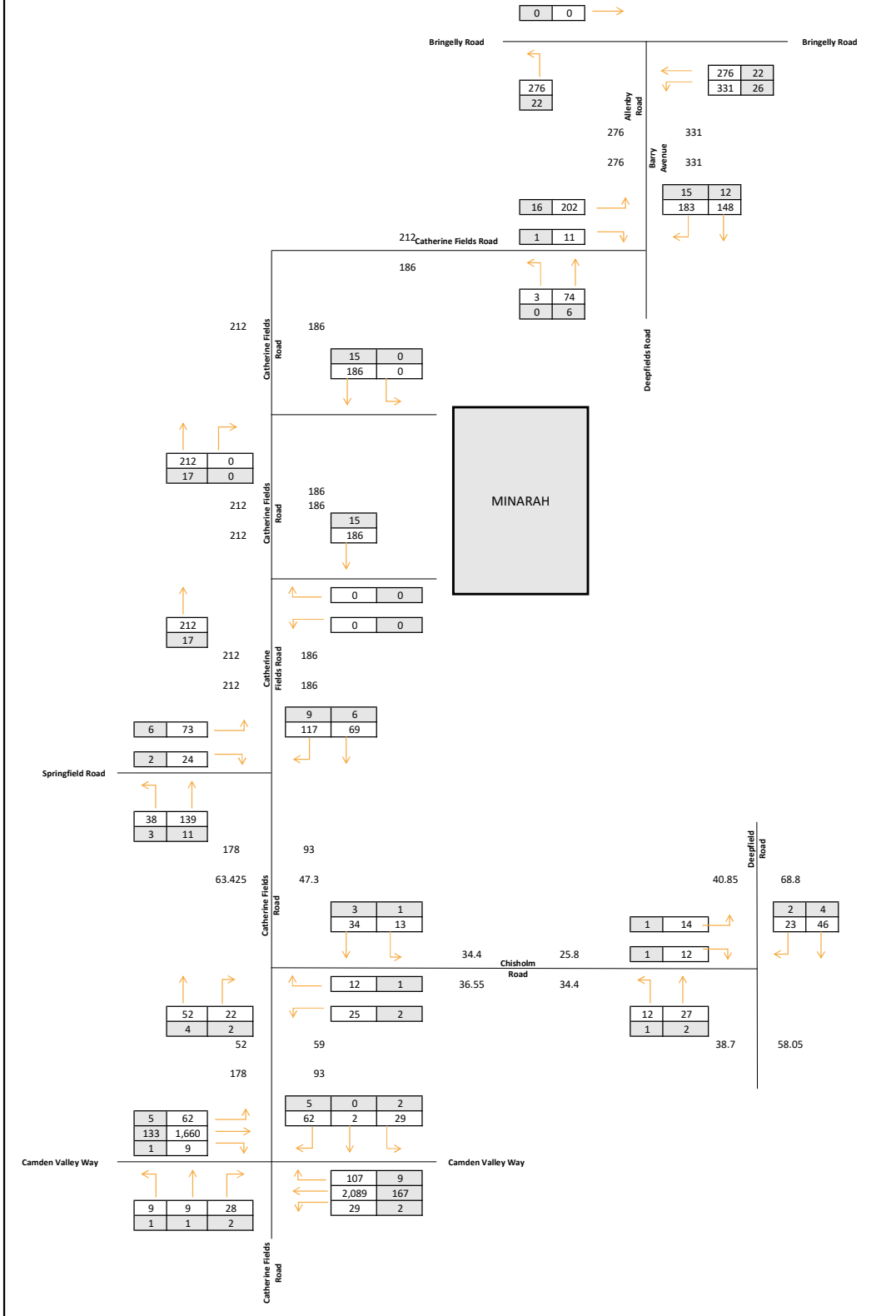
Display-A: 10 AM - 2025 Base TOT  
 Display-B: 9 AM - 2025 Base HV

### AM -2025 Base TOT



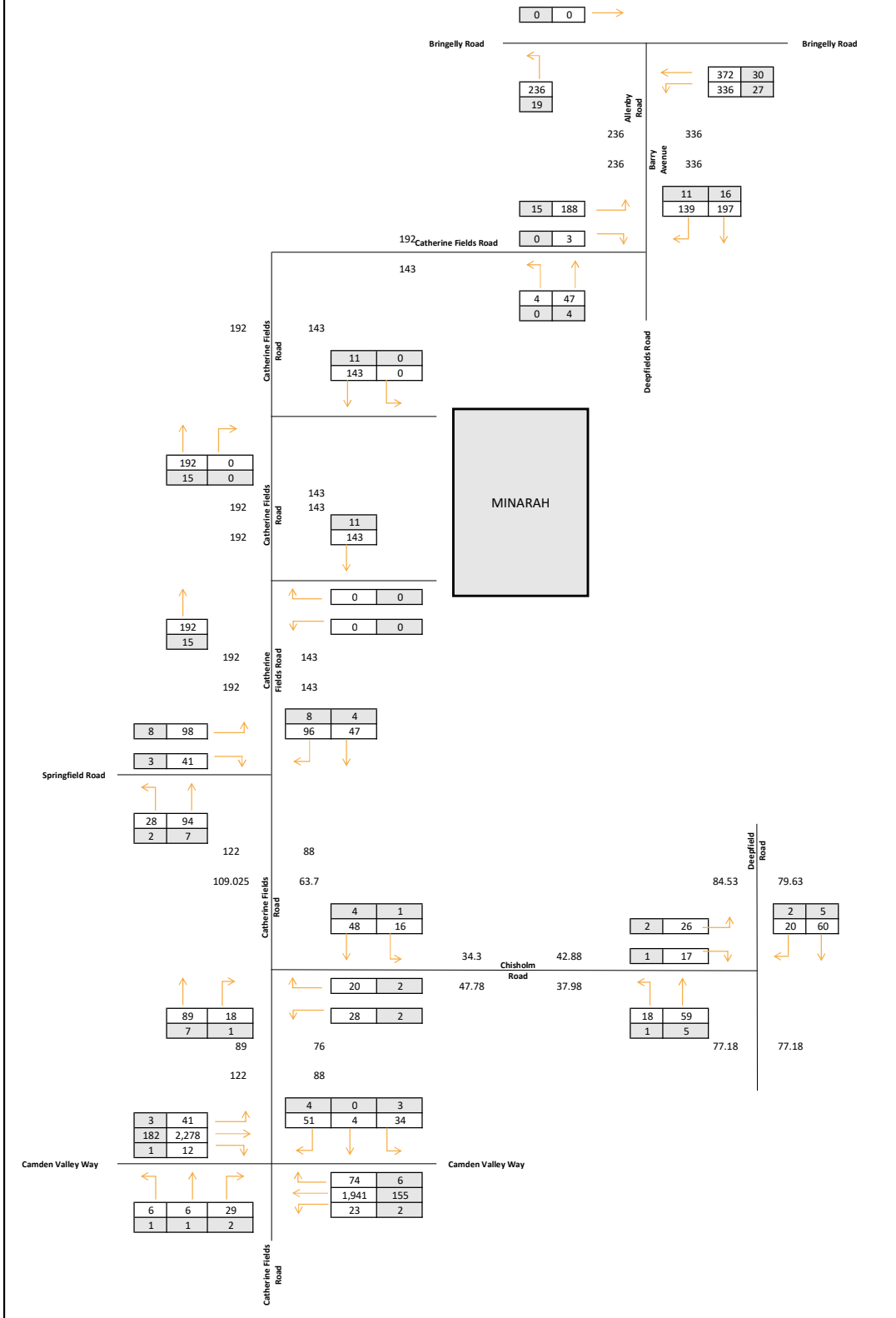
Display-A: 23 PM - 2025 Base TOT  
 Display-B: 22 PM - 2025 Base HV

# PM -2025 Base TOT



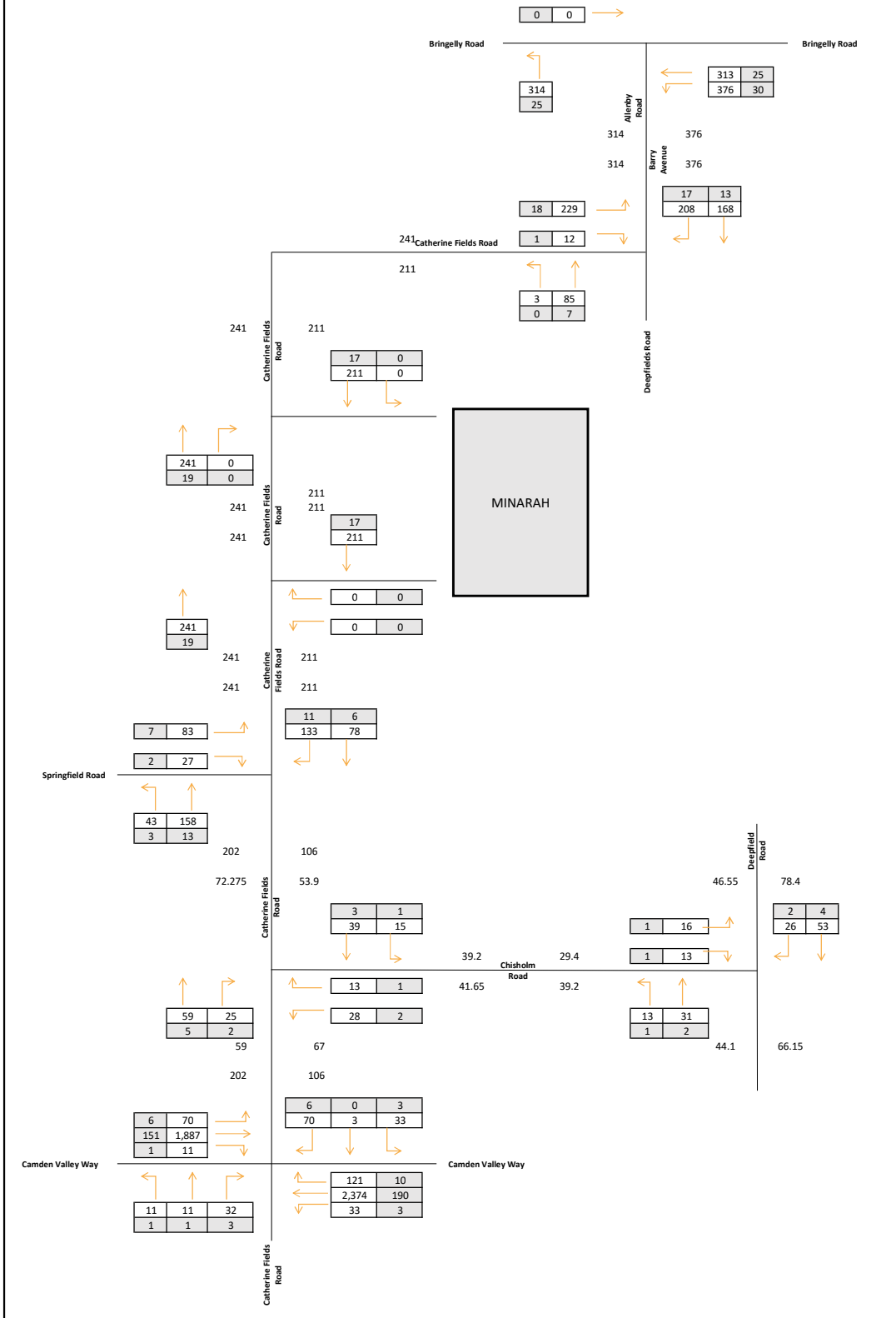
Display-A: 10 AM - 2031 Base TOT  
 Display-B: 9 AM - 2031 Base HV

### AM -2031 Base TOT



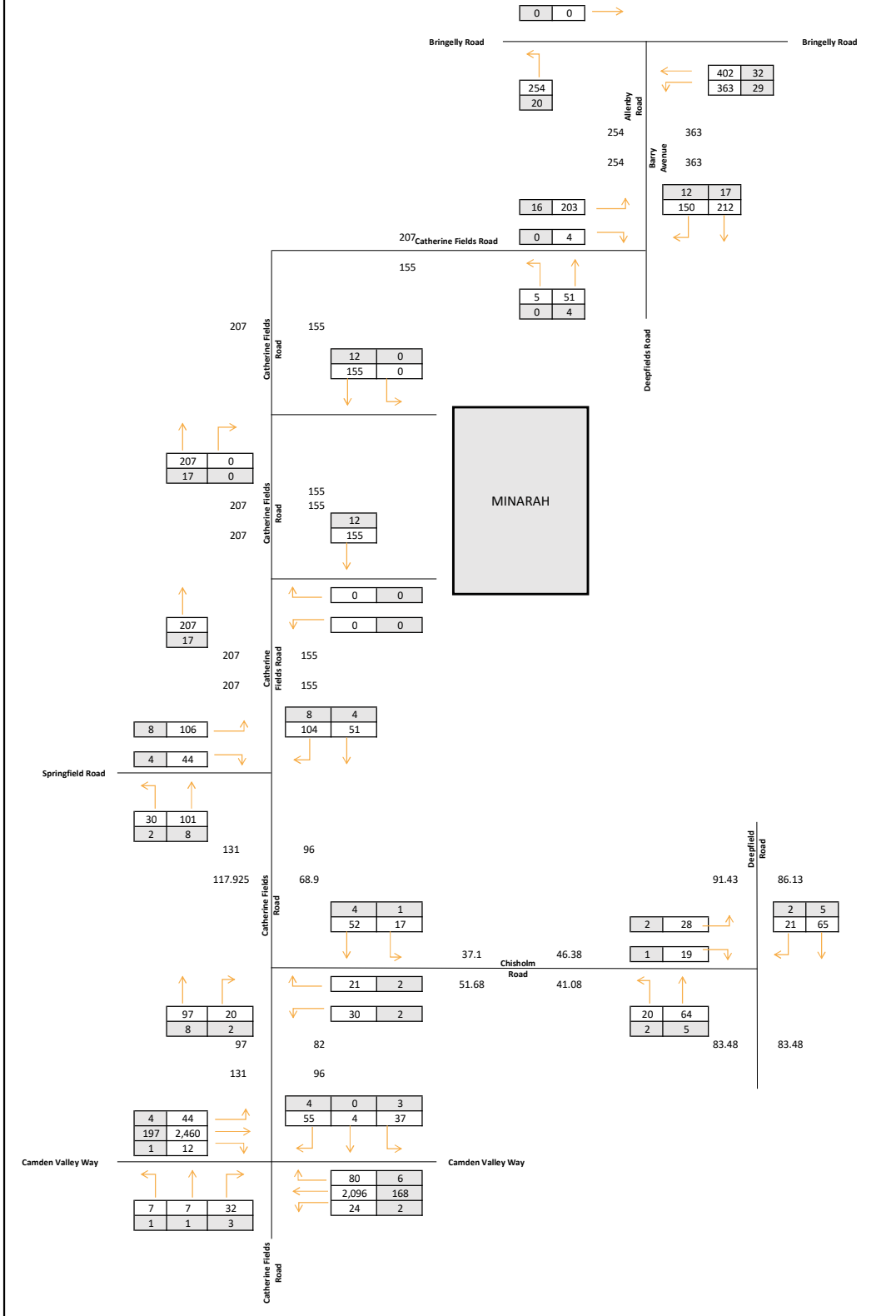
Display-A: 23 PM - 2031 Base TOT  
 Display-B: 22 PM - 2031 Base HV

### PM -2031 Base TOT



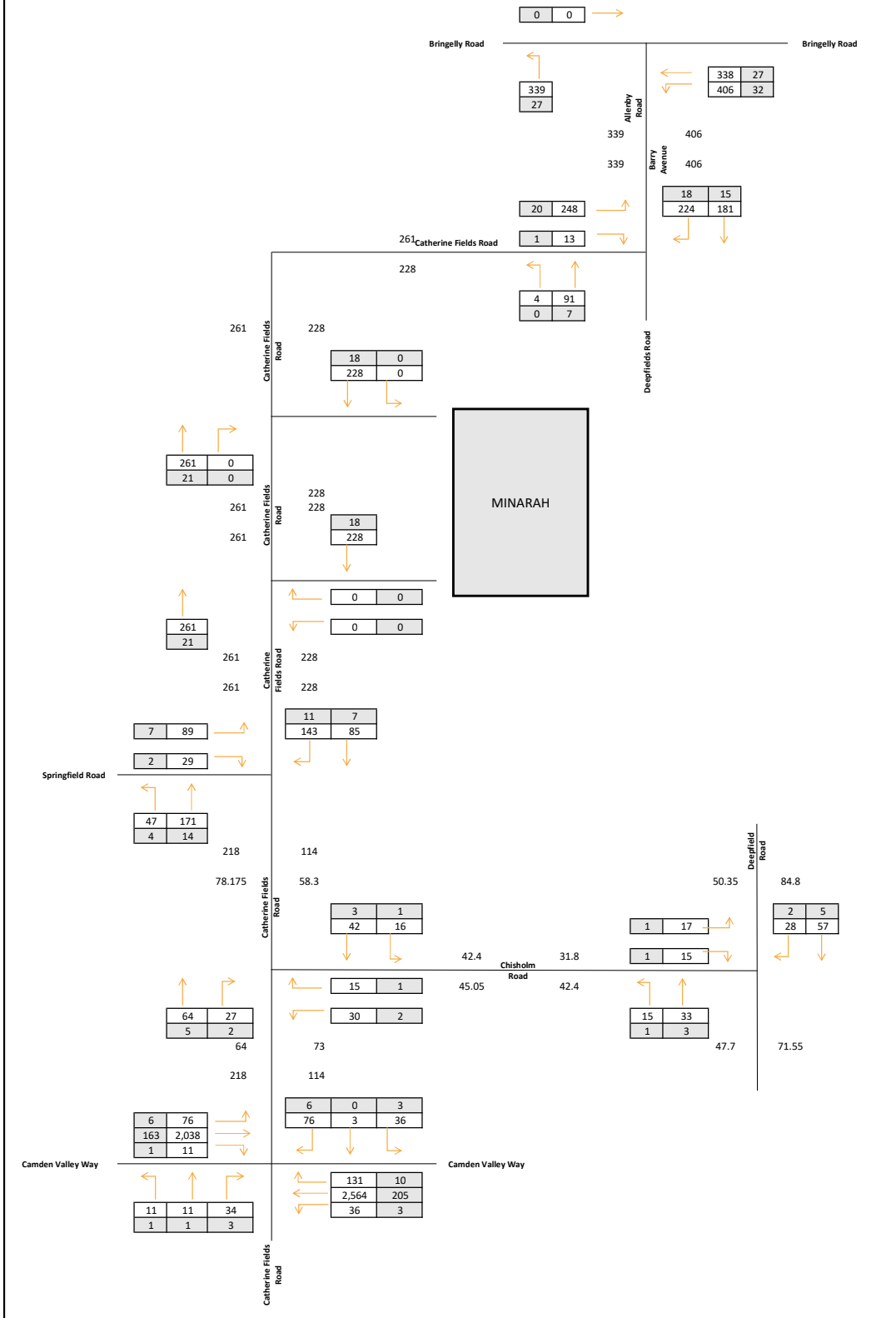
Display-A: 10 AM - 2035 Base TOT  
 Display-B: 9 AM - 2035 Base HV

# AM -2035 Base TOT



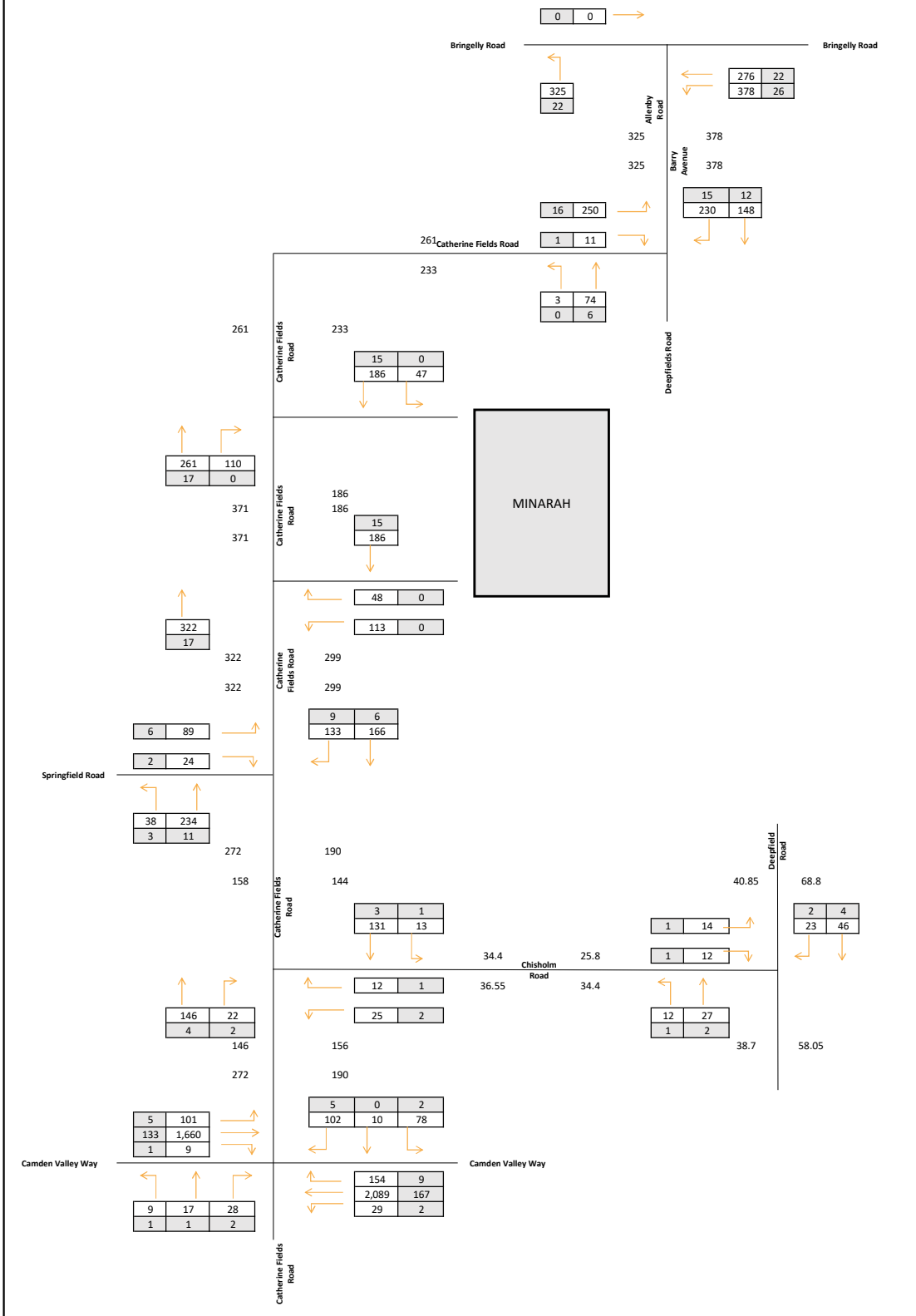
Display-A: 23 PM - 2035 Base TOT  
 Display-B: 22 PM - 2035 Base HV

# PM -2035 Base TOT



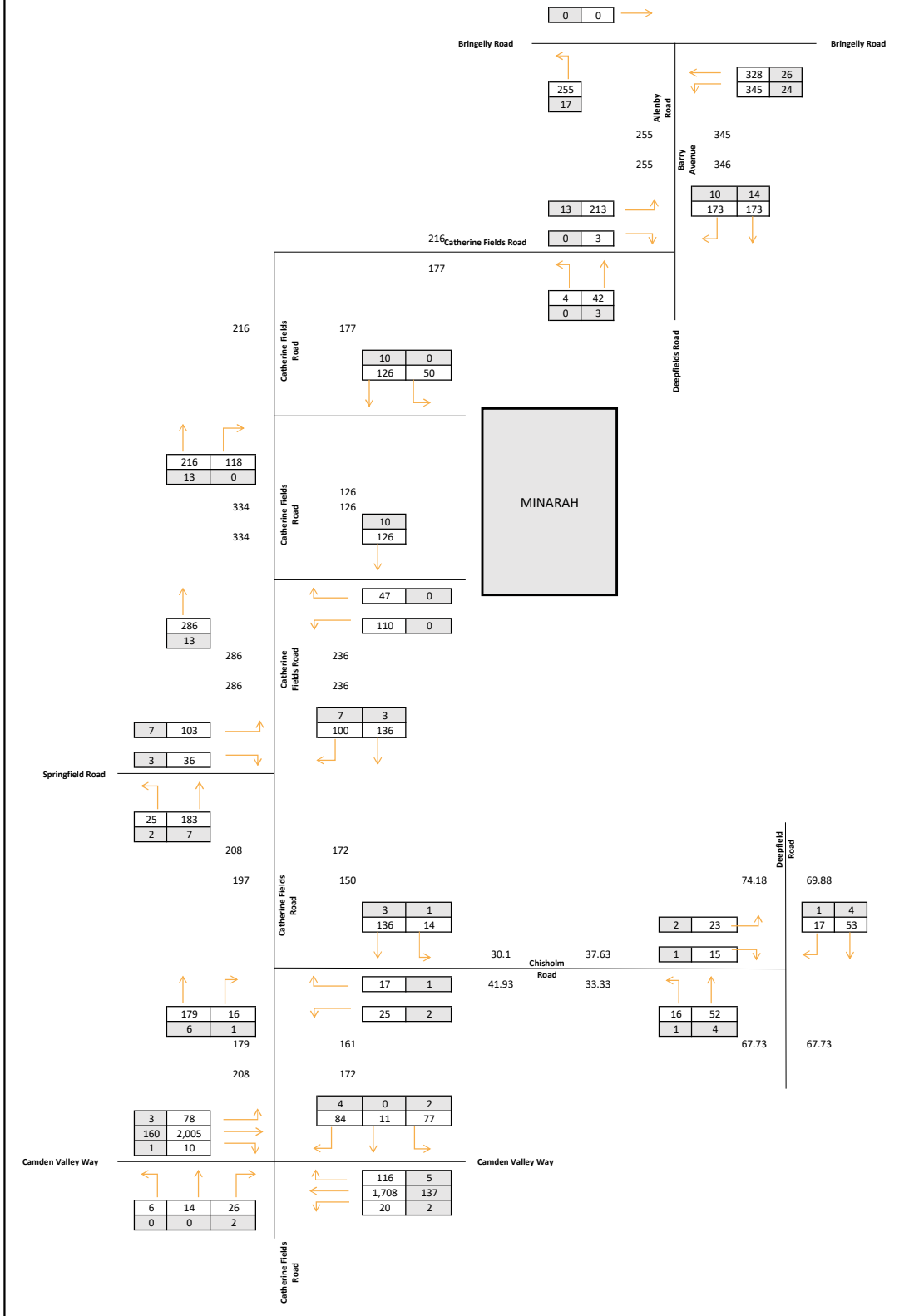
Display-A: 23 PM - 2025 Base TOT + School  
 Display-B: 22 PM - 2025 Base HV + School

### PM -2025 Base TOT + School



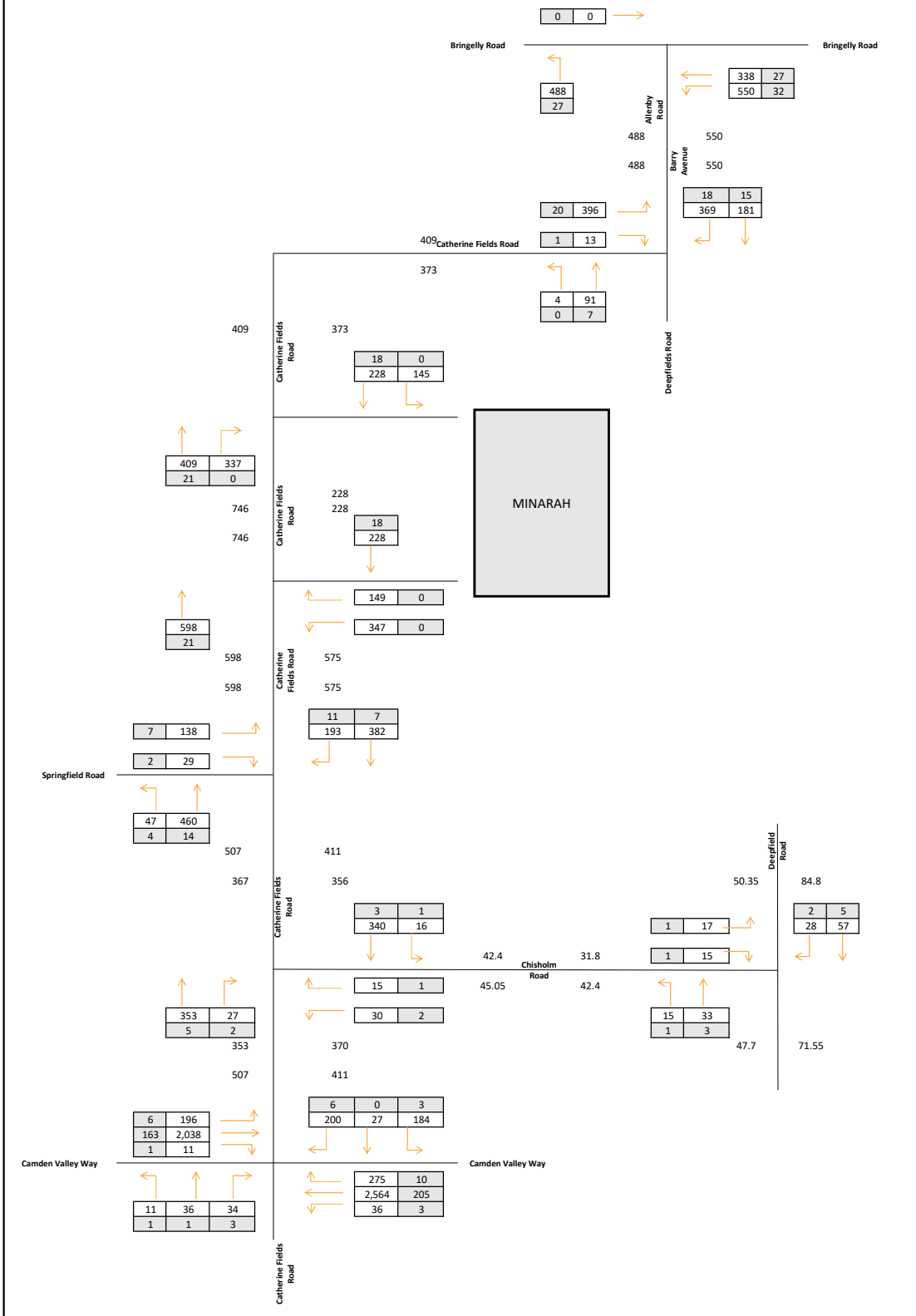
Display-A: 10 AM - 2025 Base TOT + School  
 Display-B: 9 AM - 2025 Base HV + School

### AM -2025 Base TOT + School



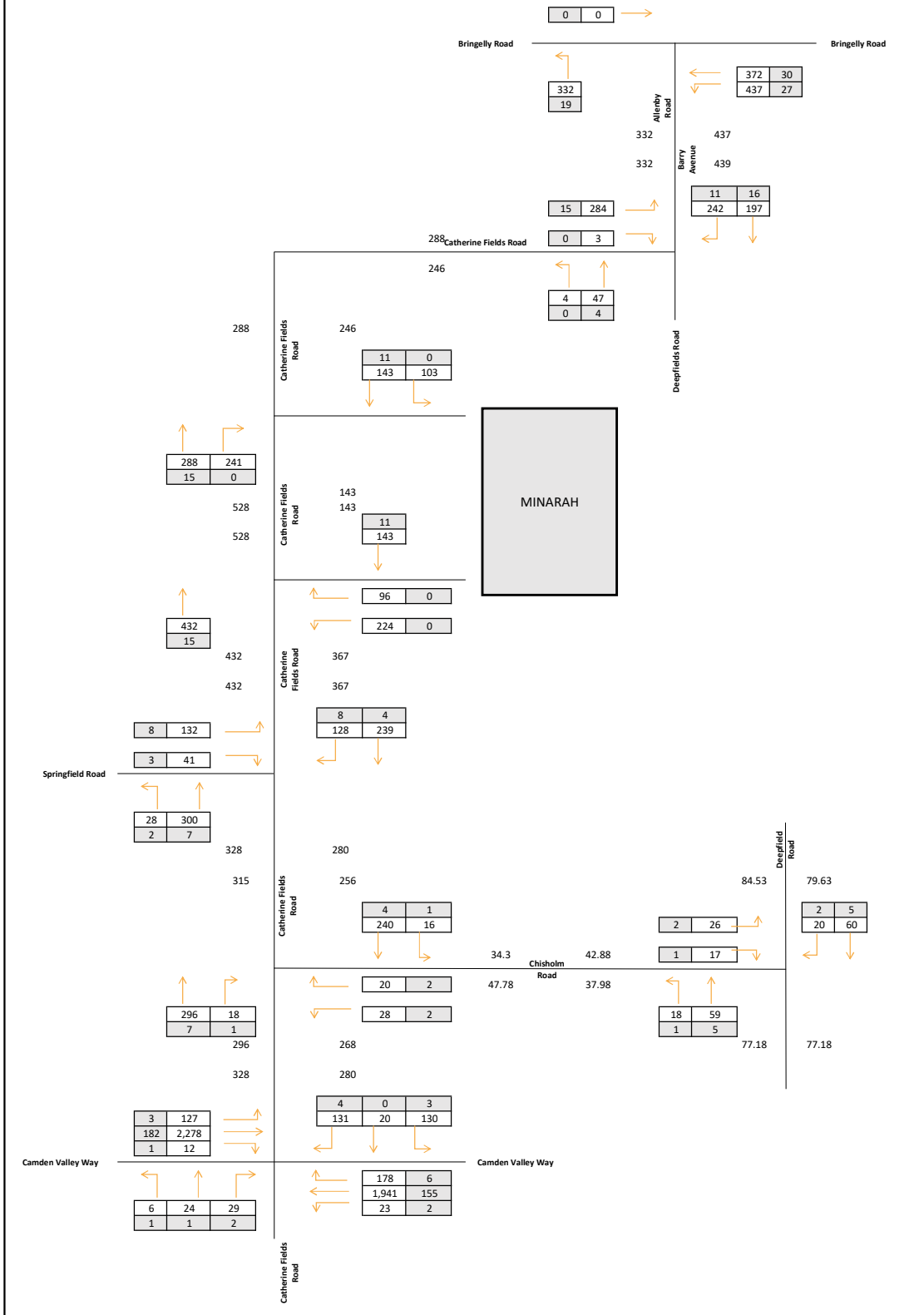
Display-A: 23 PM - 2035 Base TOT + School  
 Display-B: 22 PM - 2035 Base HV + School

### PM -2035 Base TOT + School



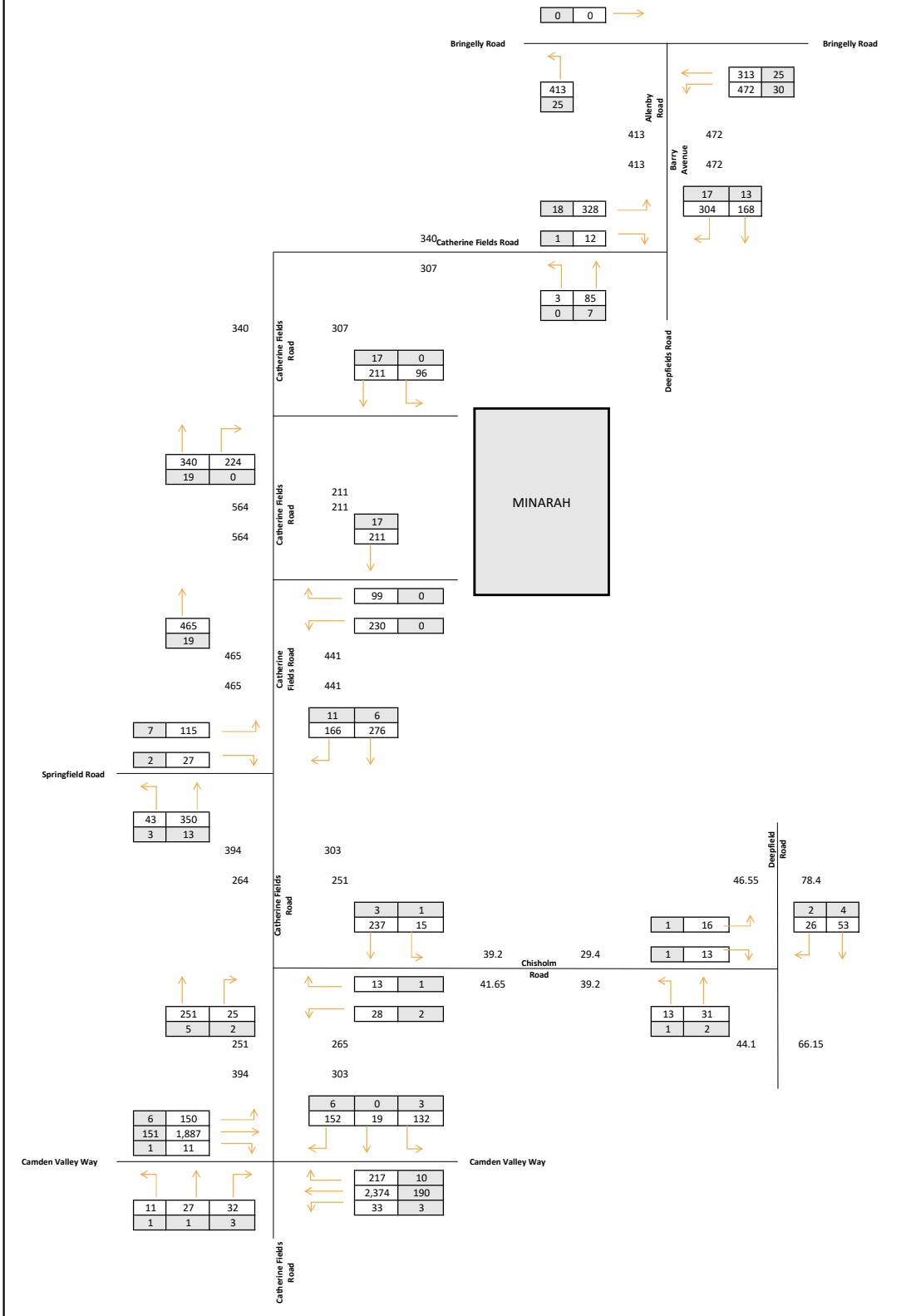
Display-A: 10 AM - 2031 Base TOT + School  
 Display-B: 9 AM - 2031 Base HV + School

### AM -2031 Base TOT + School



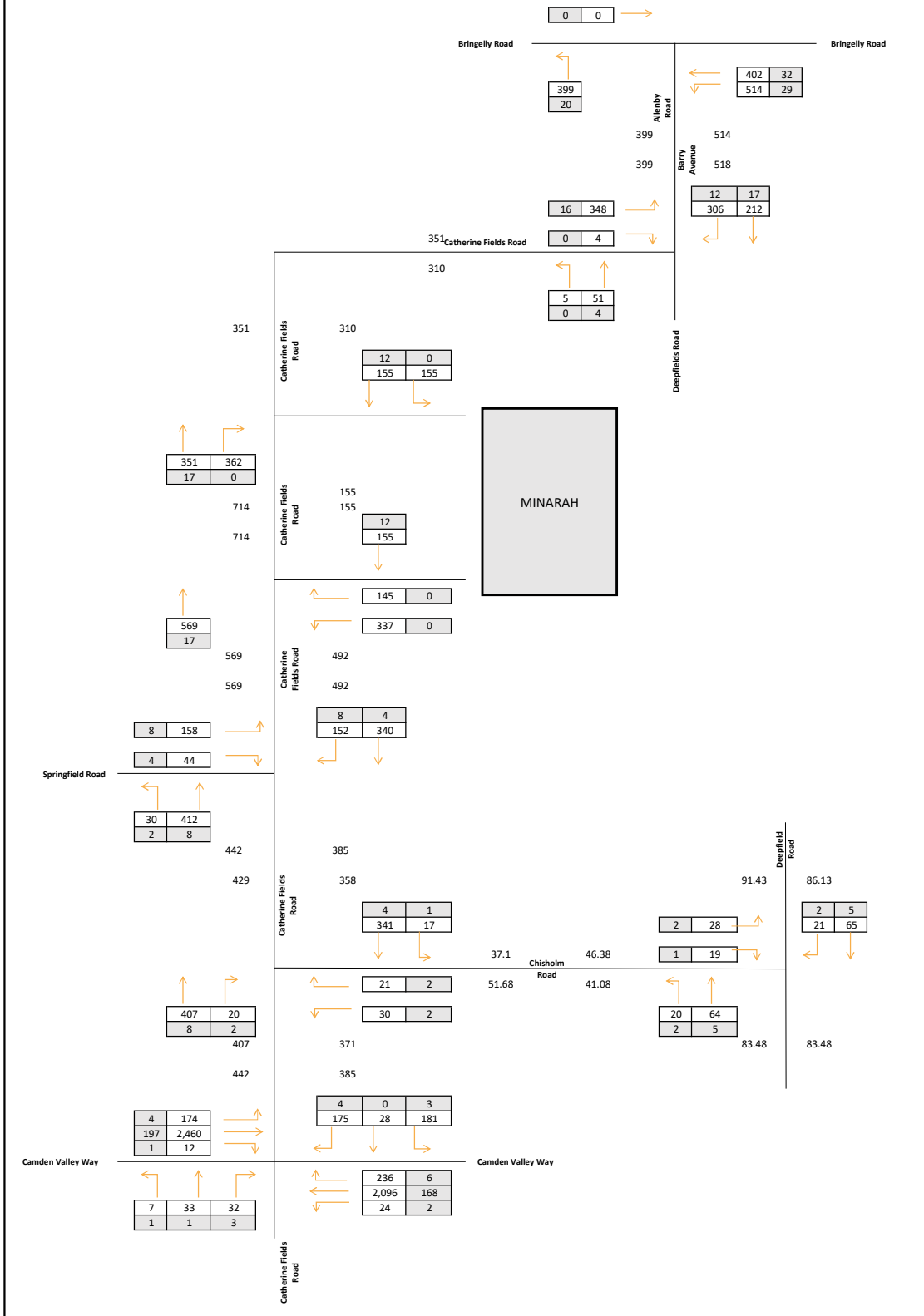
Display-A: 23 PM - 2031 Base TOT + School  
 Display-B: 22 PM - 2031 Base HV + School

### PM -2031 Base TOT + School



Display-A: 10 AM - 2035 Base TOT + School  
 Display-B: 9 AM - 2035 Base HV + School

### AM -2035 Base TOT + School



# Appendix D. Existing SIDRA Results

# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	16	0.0	16	0.0	0.036	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
2	T1	51	8.3	51	8.3	0.036	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
Approach		66	6.3	66	6.3	0.036	1.3	NA	0.0	0.0	0.00	0.14	0.00	59.2
North: Deepfields Rd														
8	T1	52	6.2	52	6.2	0.028	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	17	6.4	17	6.4	0.010	5.7	LOS A	0.0	0.1	0.16	0.55	0.16	57.5
Approach		68	6.3	68	6.3	0.028	1.4	NA	0.0	0.1	0.04	0.14	0.04	59.6
West: Chisholm Rd														
10	L2	22	13.4	22	13.4	0.030	5.9	LOS A	0.0	0.4	0.15	0.55	0.15	52.7
12	R2	15	7.2	15	7.2	0.030	6.2	LOS A	0.0	0.4	0.15	0.55	0.15	56.5
Approach		37	10.9	37	10.9	0.030	6.0	LOS A	0.0	0.4	0.15	0.55	0.15	55.3
All Vehicles		172	7.3	172	7.3	0.036	2.4	NA	0.0	0.4	0.05	0.23	0.05	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	199	8.0	199	8.0	0.146	7.7	LOS A	0.3	1.9	0.28	0.61	0.28	74.3
Approach		199	8.0	199	8.0	0.146	7.7	LOS A	0.3	1.9	0.28	0.61	0.28	74.3
East: Bringelly Rd														
4	L2	283	8.0	283	8.0	0.160	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	314	8.0	314	8.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
Approach		597	8.0	597	8.0	0.160	3.4	NA	0.0	0.0	0.00	0.30	0.00	73.1
All Vehicles		796	8.0	796	8.0	0.160	4.5	NA	0.3	1.9	0.07	0.38	0.07	73.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - AM  
(Site Folder: 2021-2022 Base)]

Network: N101 [Base AM  
2021-2022 (Network Folder:  
BASE 2021-2022)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	3	8.0	3	8.0	0.023	7.1	LOS A	0.0	0.0	0.00	0.05	0.00	79.6
2	T1	40	8.0	40	8.0	0.023	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	79.6
Approach		43	8.0	43	8.0	0.023	0.5	NA	0.0	0.0	0.00	0.05	0.00	79.6
North: Barry Avenue														
8	T1	165	8.0	165	8.0	0.089	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
9	R2	117	8.0	117	8.0	0.070	7.0	LOS A	0.1	1.0	0.13	0.60	0.13	76.5
Approach		282	8.0	282	8.0	0.089	2.9	NA	0.1	1.0	0.05	0.25	0.05	78.5
West: Catherine Fields Rd														
10	L2	159	8.0	159	8.0	0.109	7.2	LOS A	0.2	1.4	0.12	0.59	0.12	73.6
12	R2	3	8.0	3	8.0	0.109	9.2	LOS A	0.2	1.4	0.12	0.59	0.12	73.6
Approach		162	8.0	162	8.0	0.109	7.3	LOS A	0.2	1.4	0.12	0.59	0.12	73.6
All Vehicles		487	8.0	487	8.0	0.109	4.2	NA	0.2	1.4	0.07	0.35	0.07	77.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road Entry  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	161	8.0	161	8.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	1	8.0	1	8.0	0.089	6.3	LOS A	0.0	0.0	0.00	0.00	0.00	55.6
Approach		162	8.0	162	8.0	0.089	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
North: Catherine Fields Rd														
7	L2	1	8.0	1	8.0	0.067	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	59.1
8	T1	121	8.0	121	8.0	0.067	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		122	8.0	122	8.0	0.067	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles		284	8.0	284	8.0	0.089	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road Exit  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	161	8.0	161	8.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		161	8.0	161	8.0	0.088	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: School Exit														
4	L2	1	8.0	1	8.0	0.002	6.0	LOS A	0.0	0.0	0.24	0.56	0.24	49.5
6	R2	1	8.0	1	8.0	0.002	6.9	LOS A	0.0	0.0	0.24	0.56	0.24	49.5
Approach		2	8.0	2	8.0	0.002	6.4	LOS A	0.0	0.0	0.24	0.56	0.24	49.5
North: Catherine Fields Rd														
8	T1	121	8.0	121	8.0	0.066	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		121	8.0	121	8.0	0.066	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles		284	8.0	284	8.0	0.088	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist m				km/h
South: Catherine Fields Rd														
1	L2	24	8.0	24	8.0	0.057	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.3
2	T1	79	8.0	79	8.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.7
Approach		103	8.0	103	8.0	0.057	1.3	NA	0.0	0.0	0.00	0.14	0.00	56.5
North: Catherine Fields Rd														
8	T1	40	8.0	40	8.0	0.074	0.3	LOS A	0.1	1.0	0.22	0.38	0.22	52.4
9	R2	81	8.0	81	8.0	0.074	5.9	LOS A	0.1	1.0	0.22	0.38	0.22	53.5
Approach		121	8.0	121	8.0	0.074	4.1	NA	0.1	1.0	0.22	0.38	0.22	53.3
West: Springfield Rd														
10	L2	82	8.0	82	8.0	0.090	7.4	LOS A	0.1	1.1	0.18	0.61	0.18	60.3
12	R2	35	8.0	35	8.0	0.090	7.7	LOS A	0.1	1.1	0.18	0.61	0.18	60.3
Approach		117	8.0	117	8.0	0.090	7.4	LOS A	0.1	1.1	0.18	0.61	0.18	60.3
All Vehicles		341	8.0	341	8.0	0.090	4.4	NA	0.1	1.1	0.14	0.39	0.14	55.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Camden Valley Way/ Catherine Fields Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	[ HV %	[ Total veh/h	[ HV %	v/c	sec		[ Veh. veh	[ Dist m				km/h
South: Catherine Fields Rd														
1	L2	5	8.0	5	8.0	0.078	75.2	LOS F	0.4	3.1	0.95	0.67	0.95	30.4
2	T1	5	8.0	5	8.0	*0.078	66.1	LOS E	0.4	3.1	0.95	0.67	0.95	20.3
3	R2	25	8.0	25	8.0	0.285	80.6	LOS F	1.1	8.1	1.00	0.71	1.00	28.1
Approach		36	8.0	36	8.0	0.285	77.7	LOS F	1.1	8.1	0.98	0.70	0.98	27.6
East: Camden Valley Way														
4	L2	19	8.0	19	8.0	0.027	14.1	LOS A	0.4	3.3	0.33	0.54	0.33	60.1
5	T1	1635	8.0	1635	8.0	0.650	13.4	LOS A	19.0	141.3	0.61	0.57	0.61	61.9
6	R2	63	8.0	63	8.0	*0.240	48.5	LOS D	1.4	10.2	0.95	0.72	0.95	26.3
Approach		1717	8.0	1717	8.0	0.650	14.7	LOS B	19.0	141.3	0.62	0.57	0.62	60.3
North: Catherine Fields Rd														
7	L2	28	8.0	28	8.0	0.089	48.4	LOS D	0.9	6.4	0.87	0.71	0.87	53.4
8	T1	3	8.0	3	8.0	0.024	66.1	LOS E	0.1	0.9	0.95	0.60	0.95	48.8
9	R2	43	8.0	43	8.0	*0.499	82.0	LOS F	1.9	14.1	1.00	0.74	1.00	43.4
Approach		75	8.0	75	8.0	0.499	68.6	LOS E	1.9	14.1	0.95	0.72	0.95	46.9
West: Camden Valley Way														
10	L2	35	8.0	35	8.0	0.035	12.7	LOS A	0.4	2.9	0.38	0.63	0.38	53.7
11	T1	1919	8.0	1919	8.0	*0.882	30.6	LOS C	36.1	269.6	0.92	0.89	0.96	48.0
12	R2	9	8.0	9	8.0	0.093	77.3	LOS F	0.4	2.9	0.97	0.67	0.97	28.6
Approach		1963	8.0	1963	8.0	0.882	30.5	LOS C	36.1	269.6	0.91	0.88	0.95	47.9
All Vehicles		3791	8.0	3791	8.0	0.882	24.5	LOS B	36.1	269.6	0.78	0.74	0.80	52.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	[ Dist m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	31.6	LOS D	0.1	0.1	0.92	0.92	189.7	205.5	1.08	
All Pedestrians	263	57.7	LOS E	0.2	0.2	0.95	0.95	230.4	224.4	0.97	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - AM (Site Folder: 2021-2022 Base)]

Network: N101 [Base AM 2021-2022 (Network Folder: BASE 2021-2022)]

Camden Valley Way/ Chisholm Rd  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	77	6.9	77	6.9	0.052	0.0	LOS A	0.0	0.3	0.06	0.10	0.06	59.4
3	R2	16	12.7	16	12.7	0.052	5.8	LOS A	0.0	0.3	0.06	0.10	0.06	59.4
Approach		93	7.9	93	7.9	0.052	1.0	NA	0.0	0.3	0.06	0.10	0.06	59.4
East: Chisholm Rd														
4	L2	24	4.5	24	4.5	0.030	5.7	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
6	R2	17	0.0	17	0.0	0.030	5.9	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
Approach		41	2.7	41	2.7	0.030	5.8	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
North: Catherine Fields Rd														
7	L2	14	0.0	14	0.0	0.029	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	56.3
8	T1	41	7.7	41	7.7	0.029	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	56.3
Approach		55	5.8	55	5.8	0.029	1.4	NA	0.0	0.0	0.00	0.15	0.00	56.3
All Vehicles		188	6.1	188	6.1	0.052	2.2	NA	0.0	0.3	0.05	0.22	0.05	58.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	12	9.0	12	9.0	0.021	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
2	T1	26	14.8	26	14.8	0.021	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
Approach		38	13.0	38	13.0	0.021	1.7	NA	0.0	0.0	0.00	0.18	0.00	59.0
North: Deepfields Rd														
8	T1	45	7.0	45	7.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	22	13.4	22	13.4	0.014	5.7	LOS A	0.0	0.2	0.12	0.56	0.12	57.5
Approach		67	9.1	67	9.1	0.024	1.9	NA	0.0	0.2	0.04	0.18	0.04	59.4
West: Chisholm Rd														
10	L2	14	0.0	14	0.0	0.020	5.6	LOS A	0.0	0.2	0.10	0.56	0.10	52.9
12	R2	12	16.5	12	16.5	0.020	6.2	LOS A	0.0	0.2	0.10	0.56	0.10	56.4
Approach		25	7.6	25	7.6	0.020	5.9	LOS A	0.0	0.2	0.10	0.56	0.10	55.4
All Vehicles		131	10.0	131	10.0	0.024	2.6	NA	0.0	0.2	0.04	0.26	0.04	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	264	8.0	264	8.0	0.189	7.6	LOS A	0.3	2.6	0.26	0.60	0.26	74.3
Approach		264	8.0	264	8.0	0.189	7.6	LOS A	0.3	2.6	0.26	0.60	0.26	74.3
East: Bringelly Rd														
4	L2	317	8.0	317	8.0	0.178	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	263	8.0	263	8.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
Approach		580	8.0	580	8.0	0.178	3.9	NA	0.0	0.0	0.00	0.34	0.00	71.8
All Vehicles		844	8.0	844	8.0	0.189	5.1	NA	0.3	2.6	0.08	0.42	0.08	73.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - PM  
(Site Folder: 2021-2022 Base)]

Network: N101 [Base PM  
2021-2022 (Network Folder:  
BASE 2021-2022)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	3	8.0	3	8.0	0.040	7.1	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
2	T1	72	8.0	72	8.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
Approach		75	8.0	75	8.0	0.040	0.3	NA	0.0	0.0	0.00	0.03	0.00	79.8
North: Barry Avenue														
8	T1	141	8.0	141	8.0	0.076	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
9	R2	175	8.0	175	8.0	0.108	7.1	LOS A	0.2	1.6	0.19	0.60	0.19	76.4
Approach		316	8.0	316	8.0	0.108	3.9	NA	0.2	1.6	0.10	0.33	0.10	77.9
West: Catherine Fields Rd														
10	L2	193	8.0	193	8.0	0.145	7.4	LOS A	0.3	1.9	0.17	0.59	0.17	73.4
12	R2	11	8.0	11	8.0	0.145	10.0	LOS A	0.3	1.9	0.17	0.59	0.17	73.4
Approach		203	8.0	203	8.0	0.145	7.5	LOS A	0.3	1.9	0.17	0.59	0.17	73.4
All Vehicles		594	8.0	594	8.0	0.145	4.7	NA	0.3	1.9	0.12	0.38	0.12	77.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road Entry  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	203	8.0	203	8.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	1	8.0	1	8.0	0.112	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	55.6
Approach		204	8.0	204	8.0	0.112	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
North: Catherine Fields Rd														
7	L2	1	8.0	1	8.0	0.098	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
8	T1	178	8.0	178	8.0	0.098	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		179	8.0	179	8.0	0.098	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		383	8.0	383	8.0	0.112	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road Exit  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist ] m				km/h
South: Catherine Fields Rd														
2	T1	203	8.0	203	8.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		203	8.0	203	8.0	0.111	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: School Exit														
4	L2	1	8.0	1	8.0	0.002	6.2	LOS A	0.0	0.0	0.30	0.56	0.30	49.2
6	R2	1	8.0	1	8.0	0.002	7.4	LOS A	0.0	0.0	0.30	0.56	0.30	49.2
Approach		2	8.0	2	8.0	0.002	6.8	LOS A	0.0	0.0	0.30	0.56	0.30	49.2
North: Catherine Fields Rd														
8	T1	178	8.0	178	8.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		178	8.0	178	8.0	0.097	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles		383	8.0	383	8.0	0.111	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	37	8.0	37	8.0	0.095	5.6	LOS A	0.0	0.0	0.00	0.13	0.00	56.4
2	T1	134	8.0	134	8.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.9
Approach		171	8.0	171	8.0	0.095	1.2	NA	0.0	0.0	0.00	0.13	0.00	56.7
North: Catherine Fields Rd														
8	T1	66	8.0	66	8.0	0.114	0.6	LOS A	0.2	1.6	0.29	0.37	0.29	52.3
9	R2	112	8.0	112	8.0	0.114	6.2	LOS A	0.2	1.6	0.29	0.37	0.29	53.4
Approach		178	8.0	178	8.0	0.114	4.1	NA	0.2	1.6	0.29	0.37	0.29	53.2
West: Springfield Rd														
10	L2	69	8.0	69	8.0	0.076	7.6	LOS A	0.1	0.9	0.25	0.61	0.25	59.8
12	R2	23	8.0	23	8.0	0.076	8.2	LOS A	0.1	0.9	0.25	0.61	0.25	59.8
Approach		93	8.0	93	8.0	0.076	7.7	LOS A	0.1	0.9	0.25	0.61	0.25	59.8
All Vehicles		441	8.0	441	8.0	0.114	3.7	NA	0.2	1.6	0.17	0.33	0.17	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Camden Valley Way/ Catherine Fields Road

Site Category: 2021 Base

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [ Total HV ]		ARRIVAL FLOWS [ Total HV ]		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [ Veh. Dist ]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Catherine Fields Rd														
1	L2	9	8.0	9	8.0	0.127	75.7	LOS F	0.8	5.6	0.96	0.69	0.96	30.6
2	T1	9	8.0	9	8.0	*0.127	65.5	LOS E	0.8	5.6	0.96	0.69	0.96	20.4
3	R2	27	8.0	27	8.0	0.270	79.1	LOS F	1.2	8.6	0.99	0.72	0.99	28.4
Approach		46	8.0	46	8.0	0.270	75.6	LOS F	1.2	8.6	0.98	0.71	0.98	27.6
East: Camden Valley Way														
4	L2	28	8.0	28	8.0	0.031	14.1	LOS A	0.4	3.8	0.33	0.60	0.33	59.0
5	T1	2000	8.0	2000	8.0	*0.828	18.5	LOS B	30.2	225.2	0.80	0.75	0.80	57.1
6	R2	102	8.0	102	8.0	*0.323	45.4	LOS D	2.1	15.8	0.94	0.75	0.94	27.5
Approach		2131	8.0	2131	8.0	0.828	19.7	LOS B	30.2	225.2	0.80	0.74	0.80	55.6
North: Catherine Fields Rd														
7	L2	28	8.0	28	8.0	0.076	43.4	LOS D	0.8	6.0	0.84	0.71	0.84	54.9
8	T1	2	8.0	2	8.0	0.014	64.5	LOS E	0.1	0.6	0.94	0.58	0.94	49.2
9	R2	59	8.0	59	8.0	*0.596	81.6	LOS F	2.6	19.3	1.00	0.77	1.05	43.5
Approach		89	8.0	89	8.0	0.596	69.1	LOS E	2.6	19.3	0.95	0.75	0.98	46.7
West: Camden Valley Way														
10	L2	59	8.0	59	8.0	0.065	13.6	LOS A	0.7	5.8	0.42	0.63	0.42	52.7
11	T1	1589	8.4	1589	8.4	0.778	25.8	LOS B	25.7	191.5	0.84	0.77	0.84	51.3
12	R2	9	8.0	9	8.0	0.083	75.8	LOS F	0.4	2.9	0.97	0.68	0.97	28.9
Approach		1658	8.4	1658	8.4	0.778	25.6	LOS B	25.7	191.5	0.83	0.77	0.83	51.0
All Vehicles		3924	8.2	3924	8.2	0.828	24.0	LOS B	30.2	225.2	0.81	0.75	0.82	52.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [ Ped Dist ]		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	30.5	LOS D	0.1	0.1	0.92	0.92	188.6	205.5	1.09	
All Pedestrians	263	57.5	LOS E	0.2	0.2	0.95	0.95	230.1	224.4	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - PM (Site Folder: 2021-2022 Base)]

Network: N101 [Base PM 2021-2022 (Network Folder: BASE 2021-2022)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	51	13.7	51	13.7	0.040	0.1	LOS A	0.0	0.3	0.08	0.17	0.08	58.8
3	R2	21	0.0	21	0.0	0.040	5.6	LOS A	0.0	0.3	0.08	0.17	0.08	58.8
Approach		72	9.7	72	9.7	0.040	1.7	NA	0.0	0.3	0.08	0.17	0.08	58.8
East: Chisholm Rd														
4	L2	24	8.6	24	8.6	0.026	5.7	LOS A	0.0	0.3	0.10	0.56	0.10	52.9
6	R2	12	0.0	12	0.0	0.026	5.8	LOS A	0.0	0.3	0.10	0.56	0.10	52.9
Approach		36	5.8	36	5.8	0.026	5.8	LOS A	0.0	0.3	0.10	0.56	0.10	52.9
North: Catherine Fields Rd														
7	L2	13	0.0	13	0.0	0.026	5.5	LOS A	0.0	0.0	0.00	0.16	0.00	55.8
8	T1	34	14.5	34	14.5	0.026	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	55.8
Approach		46	10.6	46	10.6	0.026	1.5	NA	0.0	0.0	0.00	0.16	0.00	55.8
All Vehicles		154	9.0	154	9.0	0.040	2.6	NA	0.0	0.3	0.06	0.26	0.06	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# Appendix E. Future SIDRA Results

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	218	8.1	218	8.1	0.163	7.8	LOS A	0.3	2.1	0.30	0.61	0.30	74.2
Approach		218	8.1	218	8.1	0.163	7.8	LOS A	0.3	2.1	0.30	0.61	0.30	74.2
East: Bringelly Rd														
4	L2	312	8.1	312	8.1	0.176	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	345	8.1	345	8.1	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		657	8.1	657	8.1	0.176	3.4	NA	0.0	0.0	0.00	0.30	0.00	73.1
All Vehicles		875	8.1	875	8.1	0.176	4.5	NA	0.3	2.1	0.07	0.38	0.07	73.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - AM  
(Site Folder: 2026 Base)]

Network: N101 [AM  
(Network Folder: 2026 Base)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	4	8.1	4	8.1	0.026	7.1	LOS A	0.0	0.0	0.00	0.06	0.00	79.5
2	T1	44	8.1	44	8.1	0.026	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	79.5
Approach		48	8.1	48	8.1	0.026	0.6	NA	0.0	0.0	0.00	0.06	0.00	79.5
North: Barry Avenue														
8	T1	182	8.1	182	8.1	0.098	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	128	8.1	128	8.1	0.078	7.0	LOS A	0.1	1.1	0.14	0.60	0.14	76.4
Approach		311	8.1	311	8.1	0.098	2.9	NA	0.1	1.1	0.06	0.25	0.06	78.5
West: Catherine Fields Rd														
10	L2	175	8.1	175	8.1	0.120	7.2	LOS A	0.2	1.6	0.13	0.59	0.13	73.5
12	R2	3	8.1	3	8.1	0.120	9.6	LOS A	0.2	1.6	0.13	0.59	0.13	73.5
Approach		178	8.1	178	8.1	0.120	7.3	LOS A	0.2	1.6	0.13	0.59	0.13	73.5
All Vehicles		537	8.1	537	8.1	0.120	4.2	NA	0.2	1.6	0.08	0.34	0.08	77.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Catherine Fields Road Entry  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	178	8.1	178	8.1	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	1	8.1	1	8.1	0.098	6.3	LOS A	0.0	0.0	0.00	0.00	0.00	55.6
Approach		179	8.1	179	8.1	0.098	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
North: Catherine Fields Rd														
7	L2	1	8.1	1	8.1	0.073	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
8	T1	133	8.1	133	8.1	0.073	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		134	8.1	134	8.1	0.073	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		313	8.1	313	8.1	0.098	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Catherine Fields Road Exit  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. %	Dist ] m				
South: Catherine Fields Rd														
2	T1	178	8.1	178	8.1	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		178	8.1	178	8.1	0.098	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: School Exit														
4	L2	1	8.1	1	8.1	0.002	6.0	LOS A	0.0	0.0	0.25	0.56	0.25	49.4
6	R2	1	8.1	1	8.1	0.002	7.0	LOS A	0.0	0.0	0.25	0.56	0.25	49.4
Approach		2	8.1	2	8.1	0.002	6.5	LOS A	0.0	0.0	0.25	0.56	0.25	49.4
North: Catherine Fields Rd														
8	T1	133	8.1	133	8.1	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		133	8.1	133	8.1	0.073	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles		313	8.1	313	8.1	0.098	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	26	8.1	26	8.1	0.063	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.3
2	T1	86	8.1	86	8.1	0.063	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.7
Approach		113	8.1	113	8.1	0.063	1.3	NA	0.0	0.0	0.00	0.14	0.00	56.5
North: Catherine Fields Rd														
8	T1	44	8.1	44	8.1	0.083	0.4	LOS A	0.2	1.2	0.23	0.38	0.23	52.3
9	R2	89	8.1	89	8.1	0.083	5.9	LOS A	0.2	1.2	0.23	0.38	0.23	53.4
Approach		134	8.1	134	8.1	0.083	4.1	NA	0.2	1.2	0.23	0.38	0.23	53.2
West: Springfield Rd														
10	L2	91	8.1	91	8.1	0.100	7.4	LOS A	0.2	1.2	0.19	0.61	0.19	60.2
12	R2	38	8.1	38	8.1	0.100	7.8	LOS A	0.2	1.2	0.19	0.61	0.19	60.2
Approach		128	8.1	128	8.1	0.100	7.5	LOS A	0.2	1.2	0.19	0.61	0.19	60.2
All Vehicles		375	8.1	375	8.1	0.100	4.4	NA	0.2	1.2	0.15	0.39	0.15	55.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Camden Valley Way/ Catherine Fields Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [ Total HV ]		ARRIVAL FLOWS [ Total HV ]		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [ Veh. Dist ]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Catherine Fields Rd														
1	L2	6	8.1	6	8.1	0.093	75.9	LOS F	0.5	3.8	0.96	0.68	0.96	30.4
2	T1	6	8.1	6	8.1	*0.093	66.3	LOS E	0.5	3.8	0.96	0.68	0.96	20.2
3	R2	27	8.1	27	8.1	0.309	80.8	LOS F	1.2	8.8	1.00	0.72	1.00	28.1
Approach		40	8.1	40	8.1	0.309	77.7	LOS F	1.2	8.8	0.99	0.71	0.99	27.5
East: Camden Valley Way														
4	L2	21	8.1	21	8.1	0.030	14.1	LOS A	0.4	3.7	0.33	0.54	0.33	60.1
5	T1	1798	8.7	1798	8.7	0.719	14.5	LOS B	22.8	170.5	0.67	0.62	0.67	60.8
6	R2	68	8.1	68	8.1	*0.260	48.6	LOS D	1.5	11.1	0.95	0.73	0.95	26.2
Approach		1887	8.6	1887	8.6	0.719	15.8	LOS B	22.8	170.5	0.67	0.63	0.67	59.3
North: Catherine Fields Rd														
7	L2	32	8.1	32	8.1	0.099	49.3	LOS D	1.0	7.2	0.87	0.71	0.87	53.4
8	T1	3	8.1	3	8.1	0.024	66.1	LOS E	0.1	0.9	0.95	0.60	0.95	48.8
9	R2	47	8.1	47	8.1	*0.548	82.4	LOS F	2.1	15.5	1.00	0.75	1.03	43.3
Approach		82	8.1	82	8.1	0.548	69.1	LOS E	2.1	15.5	0.95	0.73	0.97	46.9
West: Camden Valley Way														
10	L2	38	8.1	38	8.1	0.038	12.7	LOS A	0.4	3.2	0.38	0.63	0.38	53.7
11	T1	2111	8.3	2111	8.3	*0.975	64.0	LOS E	56.6	424.1	1.00	1.14	1.25	33.5
12	R2	11	8.1	11	8.1	0.104	77.4	LOS F	0.4	3.3	0.98	0.68	0.98	28.6
Approach		2159	8.3	2159	8.3	0.975	63.1	LOS E	56.6	424.1	0.99	1.13	1.23	33.5
All Vehicles		4168	8.5	4168	8.5	0.975	41.9	LOS C	56.6	424.1	0.85	0.89	0.97	42.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [ Ped Dist ]		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95
West: Camden Valley Way											

P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96
P4B Slip/ Bypass	53	31.6	LOS D	0.1	0.1	0.92	0.92	189.7	205.5	1.08
All Pedestrians	263	57.7	LOS E	0.2	0.2	0.95	0.95	230.4	224.4	0.97

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	82	6.9	82	6.9	0.055	0.0	LOS A	0.0	0.3	0.06	0.10	0.06	59.4
3	R2	17	12.7	17	12.7	0.055	5.8	LOS A	0.0	0.3	0.06	0.10	0.06	59.4
Approach		99	7.9	99	7.9	0.055	1.0	NA	0.0	0.3	0.06	0.10	0.06	59.4
East: Chisholm Rd														
4	L2	26	4.5	26	4.5	0.033	5.7	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
6	R2	18	0.0	18	0.0	0.033	6.0	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
Approach		44	2.7	44	2.7	0.033	5.8	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
North: Catherine Fields Rd														
7	L2	15	0.0	15	0.0	0.032	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	56.3
8	T1	44	7.7	44	7.7	0.032	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	56.3
Approach		59	5.8	59	5.8	0.032	1.4	NA	0.0	0.0	0.00	0.15	0.00	56.3
All Vehicles		202	6.1	202	6.1	0.055	2.2	NA	0.0	0.3	0.06	0.22	0.06	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - AM (Site Folder: 2026 Base)]

Network: N101 [AM (Network Folder: 2026 Base)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	17	0.0	17	0.0	0.039	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
2	T1	55	8.3	55	8.3	0.039	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
Approach		72	6.4	72	6.4	0.039	1.3	NA	0.0	0.0	0.00	0.14	0.00	59.2
North: Deepfields Rd														
8	T1	56	6.2	56	6.2	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	18	6.4	18	6.4	0.011	5.7	LOS A	0.0	0.1	0.17	0.55	0.17	57.5
Approach		74	6.3	74	6.3	0.030	1.4	NA	0.0	0.1	0.04	0.13	0.04	59.6
West: Chisholm Rd														
10	L2	24	13.4	24	13.4	0.033	5.9	LOS A	0.1	0.4	0.16	0.55	0.16	52.6
12	R2	16	7.2	16	7.2	0.033	6.3	LOS A	0.1	0.4	0.16	0.55	0.16	56.5
Approach		40	11.0	40	11.0	0.033	6.0	LOS A	0.1	0.4	0.16	0.55	0.16	55.2
All Vehicles		185	7.3	185	7.3	0.039	2.4	NA	0.1	0.4	0.05	0.23	0.05	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - PM (Site Folder: 2026 Base)]

Network: N101 [PM (Network Folder: 2026 Base)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	291	7.7	291	7.7	0.211	7.7	LOS A	0.4	2.9	0.28	0.61	0.28	74.3
Approach		291	7.7	291	7.7	0.211	7.7	LOS A	0.4	2.9	0.28	0.61	0.28	74.3
East: Bringelly Rd														
4	L2	348	7.7	348	7.7	0.196	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	291	7.7	291	7.7	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
Approach		639	7.7	639	7.7	0.196	3.9	NA	0.0	0.0	0.00	0.34	0.00	71.8
All Vehicles		929	7.7	929	7.7	0.211	5.1	NA	0.4	2.9	0.09	0.43	0.09	73.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - PM] Network: N101 [PM (Network Folder: 2026 Base)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	3	7.7	3	7.7	0.043	7.1	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
2	T1	78	7.7	78	7.7	0.043	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
Approach		81	7.7	81	7.7	0.043	0.3	NA	0.0	0.0	0.00	0.03	0.00	79.8
North: Barry Avenue														
8	T1	156	7.7	156	7.7	0.084	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
9	R2	193	7.7	193	7.7	0.120	7.1	LOS A	0.2	1.8	0.20	0.60	0.20	76.3
Approach		348	7.7	348	7.7	0.120	4.0	NA	0.2	1.8	0.11	0.33	0.11	77.9
West: Catherine Fields Rd														
10	L2	213	7.7	213	7.7	0.162	7.4	LOS A	0.3	2.2	0.19	0.60	0.19	73.4
12	R2	12	7.7	12	7.7	0.162	10.4	LOS A	0.3	2.2	0.19	0.60	0.19	73.4
Approach		224	7.7	224	7.7	0.162	7.5	LOS A	0.3	2.2	0.19	0.60	0.19	73.4
All Vehicles		654	7.7	654	7.7	0.162	4.7	NA	0.3	2.2	0.12	0.38	0.12	77.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - PM (Site Folder: 2026 Base)] Network: N101 [PM (Network Folder: 2026 Base)]

Catherine Fields Road Entry  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	223	7.7	223	7.7	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	1	7.7	1	7.7	0.123	6.6	LOS A	0.0	0.0	0.00	0.00	0.00	55.7
Approach		224	7.7	224	7.7	0.123	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Catherine Fields Rd														
7	L2	1	7.7	1	7.7	0.108	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
8	T1	196	7.7	196	7.7	0.108	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		197	7.7	197	7.7	0.108	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		421	7.7	421	7.7	0.123	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - PM (Site Folder: 2026 Base)]

Network: N101 [PM (Network Folder: 2026 Base)]

Catherine Fields Road Exit  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	223	7.7	223	7.7	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		223	7.7	223	7.7	0.122	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: School Exit														
4	L2	1	7.7	1	7.7	0.002	6.2	LOS A	0.0	0.0	0.32	0.57	0.32	49.0
6	R2	1	7.7	1	7.7	0.002	7.6	LOS A	0.0	0.0	0.32	0.57	0.32	49.0
Approach		2	7.7	2	7.7	0.002	6.9	LOS A	0.0	0.0	0.32	0.57	0.32	49.0
North: Catherine Fields Rd														
8	T1	196	7.7	196	7.7	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		196	7.7	196	7.7	0.107	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		421	7.7	421	7.7	0.122	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - PM (Site Folder: 2026 Base)] Network: N101 [PM (Network Folder: 2026 Base)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	40	7.7	40	7.7	0.103	5.6	LOS A	0.0	0.0	0.00	0.13	0.00	56.4
2	T1	146	7.7	146	7.7	0.103	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	57.0
Approach		186	7.7	186	7.7	0.103	1.2	NA	0.0	0.0	0.00	0.13	0.00	56.7
North: Catherine Fields Rd														
8	T1	73	7.7	73	7.7	0.126	0.6	LOS A	0.2	1.9	0.31	0.38	0.31	52.1
9	R2	123	7.7	123	7.7	0.126	6.3	LOS A	0.2	1.9	0.31	0.38	0.31	53.4
Approach		196	7.7	196	7.7	0.126	4.2	NA	0.2	1.9	0.31	0.38	0.31	53.1
West: Springfield Rd														
10	L2	77	7.7	77	7.7	0.085	7.6	LOS A	0.1	1.0	0.26	0.62	0.26	59.6
12	R2	25	7.7	25	7.7	0.085	8.4	LOS A	0.1	1.0	0.26	0.62	0.26	59.6
Approach		102	7.7	102	7.7	0.085	7.8	LOS A	0.1	1.0	0.26	0.62	0.26	59.6
All Vehicles		484	7.7	484	7.7	0.126	3.8	NA	0.2	1.9	0.18	0.33	0.18	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

**Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - PM (Site Folder: 2026 Base)]**    **Network: N101 [PM (Network Folder: 2026 Base)]**

Camden Valley Way/ Catherine Fields Road

Site Category: 2021 Base

Signals - EQUISAT (Fixed-Time/SCATS) Isolated    Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist ] m				km/h
South: Catherine Fields Rd														
1	L2	9	7.7	9	7.7	0.127	76.5	LOS F	0.8	5.6	0.96	0.69	0.96	30.6
2	T1	9	7.7	9	7.7	*0.127	65.5	LOS E	0.8	5.6	0.96	0.69	0.96	20.4
3	R2	29	7.7	29	7.7	0.290	79.2	LOS F	1.2	9.3	0.99	0.72	0.99	28.4
Approach		48	7.7	48	7.7	0.290	76.0	LOS F	1.2	9.3	0.98	0.71	0.98	27.7
East: Camden Valley Way														
4	L2	31	7.7	31	7.7	0.034	14.1	LOS A	0.5	4.1	0.33	0.60	0.33	59.0
5	T1	2199	8.0	2199	8.0	*0.912	29.6	LOS C	42.4	316.3	0.90	0.90	0.96	48.7
6	R2	113	7.7	113	7.7	*0.355	45.6	LOS D	2.3	17.5	0.94	0.75	0.94	27.4
Approach		2342	8.0	2342	8.0	0.912	30.1	LOS C	42.4	316.3	0.89	0.89	0.95	47.9
North: Catherine Fields Rd														
7	L2	31	7.7	31	7.7	0.082	43.9	LOS D	0.9	6.4	0.84	0.71	0.84	54.9
8	T1	2	7.7	2	7.7	0.014	64.5	LOS E	0.1	0.6	0.94	0.58	0.94	49.2
9	R2	65	7.7	65	7.7	*0.659	82.4	LOS F	2.9	21.5	1.00	0.79	1.11	43.3
Approach		98	7.7	98	7.7	0.659	70.0	LOS E	2.9	21.5	0.95	0.76	1.02	46.5
West: Camden Valley Way														
10	L2	65	7.7	65	7.7	0.071	13.7	LOS A	0.8	6.4	0.42	0.64	0.42	52.6
11	T1	1747	8.4	1747	8.4	0.859	30.4	LOS C	31.9	238.4	0.91	0.86	0.93	48.2
12	R2	9	7.7	9	7.7	0.083	75.8	LOS F	0.4	2.9	0.97	0.68	0.97	29.0
Approach		1822	8.3	1822	8.3	0.859	30.1	LOS C	31.9	238.4	0.89	0.85	0.91	48.0
All Vehicles		4311	8.1	4311	8.1	0.912	31.5	LOS C	42.4	316.3	0.89	0.87	0.94	47.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	Dist ] m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95
West: Camden Valley Way											

P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96
P4B Slip/ Bypass	53	30.5	LOS D	0.1	0.1	0.92	0.92	188.6	205.5	1.09
All Pedestrians	263	57.5	LOS E	0.2	0.2	0.95	0.95	230.1	224.4	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - PM (Site Folder: 2026 Base)] Network: N101 [PM (Network Folder: 2026 Base)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	55	13.7	55	13.7	0.044	0.1	LOS A	0.0	0.4	0.08	0.18	0.08	58.8
3	R2	23	0.0	23	0.0	0.044	5.6	LOS A	0.0	0.4	0.08	0.18	0.08	58.8
Approach		78	9.6	78	9.6	0.044	1.7	NA	0.0	0.4	0.08	0.18	0.08	58.8
East: Chisholm Rd														
4	L2	26	8.6	26	8.6	0.028	5.8	LOS A	0.0	0.3	0.11	0.56	0.11	52.8
6	R2	13	0.0	13	0.0	0.028	5.9	LOS A	0.0	0.3	0.11	0.56	0.11	52.8
Approach		39	5.8	39	5.8	0.028	5.8	LOS A	0.0	0.3	0.11	0.56	0.11	52.8
North: Catherine Fields Rd														
7	L2	14	0.0	14	0.0	0.027	5.5	LOS A	0.0	0.0	0.00	0.16	0.00	55.8
8	T1	36	14.5	36	14.5	0.027	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	55.8
Approach		49	10.5	49	10.5	0.027	1.5	NA	0.0	0.0	0.00	0.16	0.00	55.8
All Vehicles		166	9.0	166	9.0	0.044	2.6	NA	0.0	0.4	0.06	0.26	0.06	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - PM (Site Folder: 2026 Base)] Network: N101 [PM (Network Folder: 2026 Base)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	13	9.0	13	9.0	0.023	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
2	T1	28	14.8	28	14.8	0.023	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
Approach		41	13.0	41	13.0	0.023	1.8	NA	0.0	0.0	0.00	0.18	0.00	59.0
North: Deepfields Rd														
8	T1	48	7.0	48	7.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	24	13.4	24	13.4	0.015	5.7	LOS A	0.0	0.2	0.13	0.56	0.13	57.5
Approach		73	9.2	73	9.2	0.026	1.9	NA	0.0	0.2	0.04	0.19	0.04	59.4
West: Chisholm Rd														
10	L2	15	0.0	15	0.0	0.022	5.6	LOS A	0.0	0.3	0.11	0.56	0.11	52.8
12	R2	13	16.5	13	16.5	0.022	6.3	LOS A	0.0	0.3	0.11	0.56	0.11	56.4
Approach		27	7.6	27	7.6	0.022	5.9	LOS A	0.0	0.3	0.11	0.56	0.11	55.4
All Vehicles		141	10.0	141	10.0	0.026	2.7	NA	0.0	0.3	0.04	0.26	0.04	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist m				
South: Allenby Rd														
1	L2	268	8.2	268	8.2	0.201	7.8	LOS A	0.4	2.7	0.31	0.62	0.31	74.2
Approach		268	8.2	268	8.2	0.201	7.8	LOS A	0.4	2.7	0.31	0.62	0.31	74.2
East: Bringelly Rd														
4	L2	363	7.3	363	7.3	0.204	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	345	8.2	345	8.2	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		708	7.8	708	7.8	0.204	3.7	NA	0.0	0.0	0.00	0.32	0.00	72.4
All Vehicles		977	7.9	977	7.9	0.204	4.8	NA	0.4	2.7	0.09	0.40	0.09	73.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - AM  
(Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM  
(Network Folder: 2026 Base +  
Stage 1 Dev)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	4	25.0	4	25.0	0.026	7.4	LOS A	0.0	0.0	0.00	0.06	0.00	79.6
2	T1	44	9.5	44	9.5	0.026	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	79.6
Approach		48	10.9	48	10.9	0.026	0.7	NA	0.0	0.0	0.00	0.06	0.00	79.6
North: Barry Avenue														
8	T1	182	8.1	182	8.1	0.098	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	182	5.9	182	5.9	0.109	6.9	LOS A	0.2	1.6	0.15	0.60	0.15	76.4
Approach		364	7.0	364	7.0	0.109	3.5	NA	0.2	1.6	0.07	0.30	0.07	78.2
West: Catherine Fields Rd														
10	L2	224	6.6	224	6.6	0.152	7.2	LOS A	0.3	2.0	0.13	0.59	0.13	73.5
12	R2	3	0.0	3	0.0	0.152	9.8	LOS A	0.3	2.0	0.13	0.59	0.13	73.5
Approach		227	6.5	227	6.5	0.152	7.3	LOS A	0.3	2.0	0.13	0.59	0.13	73.5
All Vehicles		640	7.1	640	7.1	0.152	4.6	NA	0.3	2.0	0.09	0.38	0.09	77.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road Entry  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	227	6.5	227	6.5	0.206	0.4	LOS A	0.3	2.4	0.24	0.20	0.24	34.8
3	R2	124	0.0	124	0.0	0.206	4.6	LOS A	0.3	2.4	0.24	0.20	0.24	38.1
Approach		352	4.2	352	4.2	0.206	1.9	NA	0.3	2.4	0.24	0.20	0.24	37.0
North: Catherine Fields Rd														
7	L2	53	0.0	53	0.0	0.101	3.5	LOS A	0.0	0.0	0.00	0.13	0.00	39.8
8	T1	133	7.9	133	7.9	0.101	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	39.7
Approach		185	5.7	185	5.7	0.101	1.1	NA	0.0	0.0	0.00	0.13	0.00	39.8
All Vehicles		537	4.7	537	4.7	0.206	1.6	NA	0.3	2.4	0.16	0.18	0.16	39.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road Exit  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	301	5.0	301	5.0	0.162	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		301	5.0	301	5.0	0.162	0.1	NA	0.0	0.0	0.00	0.00	0.00	40.0
East: School Exit														
4	L2	116	0.0	116	0.0	0.138	3.9	LOS A	0.2	1.5	0.25	0.52	0.25	36.4
6	R2	49	0.0	49	0.0	0.138	6.0	LOS A	0.2	1.5	0.25	0.52	0.25	36.4
Approach		165	0.0	165	0.0	0.138	4.5	LOS A	0.2	1.5	0.25	0.52	0.25	36.4
North: Catherine Fields Rd														
8	T1	133	7.9	133	7.9	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		133	7.9	133	7.9	0.073	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		599	4.3	599	4.3	0.162	1.3	NA	0.2	1.5	0.07	0.14	0.07	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	26	8.0	26	8.0	0.118	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	56.9
2	T1	193	4.0	193	4.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.3
Approach		219	4.4	219	4.4	0.118	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.0
North: Catherine Fields Rd														
8	T1	143	2.6	143	2.6	0.153	0.6	LOS A	0.3	2.0	0.29	0.26	0.29	54.0
9	R2	105	6.0	105	6.0	0.153	6.4	LOS A	0.3	2.0	0.29	0.26	0.29	54.4
Approach		248	4.1	248	4.1	0.153	3.0	NA	0.3	2.0	0.29	0.26	0.29	54.2
West: Springfield Rd														
10	L2	108	6.9	108	6.9	0.130	7.8	LOS A	0.2	1.5	0.32	0.64	0.32	59.2
12	R2	38	8.3	38	8.3	0.130	9.1	LOS A	0.2	1.5	0.32	0.64	0.32	59.2
Approach		146	7.2	146	7.2	0.130	8.1	LOS A	0.2	1.5	0.32	0.64	0.32	59.2
All Vehicles		614	5.0	614	5.0	0.153	3.4	NA	0.3	2.0	0.19	0.28	0.19	56.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Camden Valley Way/ Catherine Fields Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist ] m				km/h
South: Catherine Fields Rd														
1	L2	6	16.7	6	16.7	0.170	78.0	LOS F	0.9	7.0	0.97	0.70	0.97	29.6
2	T1	15	20.0	15	20.0	*0.170	68.4	LOS E	0.9	7.0	0.97	0.70	0.97	20.2
3	R2	27	7.7	27	7.7	0.308	80.8	LOS F	1.2	8.7	1.00	0.72	1.00	28.1
Approach		48	12.6	48	12.6	0.308	76.7	LOS F	1.2	8.7	0.99	0.71	0.99	26.4
East: Camden Valley Way														
4	L2	21	10.0	21	10.0	0.030	14.1	LOS A	0.4	3.8	0.33	0.54	0.33	60.0
5	T1	1798	8.0	1798	8.0	0.720	14.5	LOS A	22.4	167.2	0.67	0.62	0.67	60.8
6	R2	122	5.3	122	5.3	*0.455	49.6	LOS D	2.7	20.0	0.97	0.75	0.97	25.9
Approach		1941	7.9	1941	7.9	0.720	16.7	LOS B	22.4	167.2	0.68	0.63	0.68	58.2
North: Catherine Fields Rd														
7	L2	81	3.3	81	3.3	0.245	50.7	LOS D	2.5	18.3	0.90	0.75	0.90	53.4
8	T1	12	0.0	12	0.0	0.082	66.9	LOS E	0.5	3.2	0.96	0.66	0.96	48.5
9	R2	88	4.8	88	4.8	*1.000	119.8	LOS F	4.9	36.0	1.00	1.02	1.79	36.3
Approach		181	3.8	181	3.8	1.000	85.5	LOS F	4.9	36.0	0.95	0.88	1.34	43.2
West: Camden Valley Way														
10	L2	82	4.0	82	4.0	0.074	12.8	LOS A	0.8	6.3	0.39	0.66	0.39	52.8
11	T1	2111	8.0	2111	8.0	*0.983	68.9	LOS E	59.3	442.5	1.00	1.16	1.28	32.1
12	R2	11	10.0	11	10.0	0.105	77.5	LOS F	0.4	3.3	0.98	0.68	0.98	28.4
Approach		2203	7.9	2203	7.9	0.983	66.9	LOS E	59.3	442.5	0.98	1.14	1.25	32.2
All Vehicles		4374	7.8	4374	7.8	1.000	45.5	LOS D	59.3	442.5	0.84	0.90	1.00	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	Dist ] m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	31.6	LOS D	0.1	0.1	0.92	0.92	189.7	205.5	1.08	
All Pedestrians	263	57.7	LOS E	0.2	0.2	0.95	0.95	230.4	224.4	0.97	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	188	6.9	188	6.9	0.113	0.1	LOS A	0.1	0.4	0.06	0.05	0.06	59.6
3	R2	17	12.7	17	12.7	0.113	6.2	LOS A	0.1	0.4	0.06	0.05	0.06	59.6
Approach		205	7.4	205	7.4	0.113	0.6	NA	0.1	0.4	0.06	0.05	0.06	59.6
East: Chisholm Rd														
4	L2	26	4.5	26	4.5	0.038	6.0	LOS A	0.1	0.4	0.26	0.58	0.26	52.2
6	R2	18	0.0	18	0.0	0.038	6.9	LOS A	0.1	0.4	0.26	0.58	0.26	52.2
Approach		44	2.7	44	2.7	0.038	6.4	LOS A	0.1	0.4	0.26	0.58	0.26	52.2
North: Catherine Fields Rd														
7	L2	15	0.0	15	0.0	0.085	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	58.5
8	T1	143	7.7	143	7.7	0.085	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	58.5
Approach		158	7.0	158	7.0	0.085	0.5	NA	0.0	0.0	0.00	0.06	0.00	58.5
All Vehicles		407	6.7	407	6.7	0.113	1.2	NA	0.1	0.4	0.06	0.11	0.06	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - AM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [AM (Network Folder: 2026 Base + Stage 1 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	17	0.0	17	0.0	0.039	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
2	T1	55	8.3	55	8.3	0.039	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
Approach		72	6.4	72	6.4	0.039	1.3	NA	0.0	0.0	0.00	0.14	0.00	59.2
North: Deepfields Rd														
8	T1	56	6.2	56	6.2	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	18	6.4	18	6.4	0.011	5.7	LOS A	0.0	0.1	0.17	0.55	0.17	57.5
Approach		74	6.3	74	6.3	0.030	1.4	NA	0.0	0.1	0.04	0.13	0.04	59.6
West: Chisholm Rd														
10	L2	24	13.4	24	13.4	0.033	5.9	LOS A	0.1	0.4	0.16	0.55	0.16	52.6
12	R2	16	7.2	16	7.2	0.033	6.3	LOS A	0.1	0.4	0.16	0.55	0.16	56.5
Approach		40	11.0	40	11.0	0.033	6.0	LOS A	0.1	0.4	0.16	0.55	0.16	55.2
All Vehicles		185	7.3	185	7.3	0.039	2.4	NA	0.1	0.4	0.05	0.23	0.05	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	342	8.0	342	8.0	0.249	7.7	LOS A	0.5	3.6	0.29	0.61	0.29	74.2
Approach		342	8.0	342	8.0	0.249	7.7	LOS A	0.5	3.6	0.29	0.61	0.29	74.2
East: Bringelly Rd														
4	L2	398	7.2	398	7.2	0.223	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	291	8.3	291	8.3	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
Approach		688	7.7	688	7.7	0.223	4.1	NA	0.0	0.0	0.00	0.36	0.00	71.2
All Vehicles		1031	7.8	1031	7.8	0.249	5.3	NA	0.5	3.6	0.10	0.45	0.10	73.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - PM] Network: N101 [PM (Network (Site Folder: 2026 Base + Stage 1 (320 Students)))] Folder: 2026 Base + Stage 1 (Dev)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	3	0.0	3	0.0	0.043	7.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
2	T1	78	8.1	78	8.1	0.043	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
Approach		81	7.8	81	7.8	0.043	0.3	NA	0.0	0.0	0.00	0.03	0.00	79.8
North: Barry Avenue														
8	T1	156	8.1	156	8.1	0.084	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
9	R2	242	6.5	242	6.5	0.150	7.1	LOS A	0.3	2.2	0.20	0.60	0.20	76.3
Approach		398	7.1	398	7.1	0.150	4.3	NA	0.3	2.2	0.12	0.36	0.12	77.7
West: Catherine Fields Rd														
10	L2	263	6.9	263	6.9	0.197	7.4	LOS A	0.4	2.7	0.19	0.60	0.19	73.3
12	R2	12	9.1	12	9.1	0.197	11.3	LOS A	0.4	2.7	0.19	0.60	0.19	73.3
Approach		275	7.0	275	7.0	0.197	7.5	LOS A	0.4	2.7	0.19	0.60	0.19	73.3
All Vehicles		754	7.1	754	7.1	0.197	5.1	NA	0.4	2.7	0.14	0.41	0.14	76.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

▼ Site: 3 [3. Catherine Fields Rd Entry - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]
 ■ Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road Entry  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	275	7.0	275	7.0	0.231	0.5	LOS A	0.4	2.6	0.25	0.18	0.25	35.1
3	R2	116	0.0	116	0.0	0.231	4.9	LOS A	0.4	2.6	0.25	0.18	0.25	38.2
Approach		391	4.9	391	4.9	0.231	1.8	NA	0.4	2.6	0.25	0.18	0.25	37.0
North: Catherine Fields Rd														
7	L2	49	0.0	49	0.0	0.134	3.6	LOS A	0.0	0.0	0.00	0.09	0.00	39.9
8	T1	196	8.1	196	8.1	0.134	0.2	LOS A	0.0	0.0	0.00	0.09	0.00	39.8
Approach		245	6.4	245	6.4	0.134	0.9	NA	0.0	0.0	0.00	0.09	0.00	39.8
All Vehicles		636	5.5	636	5.5	0.231	1.4	NA	0.4	2.6	0.15	0.14	0.15	39.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]

Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road Exit  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	339	5.3	339	5.3	0.183	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach		339	5.3	339	5.3	0.183	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
East: School Exit														
4	L2	119	0.0	119	0.0	0.153	4.1	LOS A	0.2	1.7	0.33	0.55	0.33	36.2
6	R2	51	0.0	51	0.0	0.153	6.7	LOS A	0.2	1.7	0.33	0.55	0.33	36.2
Approach		169	0.0	169	0.0	0.153	4.9	LOS A	0.2	1.7	0.33	0.55	0.33	36.2
North: Catherine Fields Rd														
8	T1	196	8.1	196	8.1	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		196	8.1	196	8.1	0.107	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		704	4.8	704	4.8	0.183	1.2	NA	0.2	1.7	0.08	0.13	0.08	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - PM (Site Folder: 2026 Base + Stage 1 (320 Students))] Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	40	7.9	40	7.9	0.155	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	56.8
2	T1	246	4.7	246	4.7	0.155	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.0
Approach		286	5.1	286	5.1	0.155	0.8	NA	0.0	0.0	0.00	0.08	0.00	57.7
North: Catherine Fields Rd														
8	T1	175	2.8	175	2.8	0.204	0.9	LOS A	0.4	2.9	0.36	0.28	0.36	53.3
9	R2	140	7.5	140	7.5	0.204	6.8	LOS A	0.4	2.9	0.36	0.28	0.36	54.0
Approach		315	4.9	315	4.9	0.204	3.5	NA	0.4	2.9	0.36	0.28	0.36	53.8
West: Springfield Rd														
10	L2	94	6.7	94	6.7	0.112	8.0	LOS A	0.2	1.3	0.36	0.66	0.36	58.8
12	R2	25	8.3	25	8.3	0.112	10.0	LOS A	0.2	1.3	0.36	0.66	0.36	58.8
Approach		119	7.1	119	7.1	0.112	8.4	LOS A	0.2	1.3	0.36	0.66	0.36	58.8
All Vehicles		720	5.4	720	5.4	0.204	3.3	NA	0.4	2.9	0.22	0.27	0.22	55.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

■ Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]
 ■ Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Camden Valley Way/ Catherine Fields Road  
 Site Category: 2021 Base  
 Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	[ HV %	[ Total veh/h	[ HV %	v/c	sec		[ Veh. veh	[ Dist m				km/h
South: Catherine Fields Rd														
1	L2	9	0.0	9	0.0	0.188	78.0	LOS F	1.1	8.2	0.97	0.71	0.97	31.0
2	T1	18	11.1	18	11.1	*0.188	67.2	LOS E	1.1	8.2	0.97	0.71	0.97	20.3
3	R2	29	7.1	29	7.1	0.289	79.2	LOS F	1.2	9.3	0.99	0.72	0.99	28.5
Approach		57	7.2	57	7.2	0.289	75.2	LOS F	1.2	9.3	0.98	0.72	0.98	26.9
East: Camden Valley Way														
4	L2	31	6.9	31	6.9	0.041	14.8	LOS B	0.6	5.3	0.35	0.57	0.35	59.2
5	T1	2199	8.2	2199	8.2	*0.916	30.7	LOS C	42.7	318.4	0.89	0.90	0.97	48.0
6	R2	162	5.8	162	5.8	*0.505	46.4	LOS D	3.5	25.4	0.96	0.77	0.96	27.1
Approach		2392	8.1	2392	8.1	0.916	31.6	LOS C	42.7	318.4	0.89	0.89	0.96	46.8
North: Catherine Fields Rd														
7	L2	82	4.9	82	4.9	0.215	45.2	LOS D	2.4	17.5	0.87	0.75	0.87	54.7
8	T1	11	0.0	11	0.0	0.068	65.5	LOS E	0.4	2.9	0.95	0.65	0.95	48.9
9	R2	107	5.0	107	5.0	*1.064	157.1	LOS F	7.1	51.8	1.00	1.11	2.00	30.6
Approach		200	4.7	200	4.7	1.064	106.3	LOS F	7.1	51.8	0.95	0.94	1.48	38.3
West: Camden Valley Way														
10	L2	106	5.0	106	5.0	0.097	13.8	LOS A	1.1	8.5	0.43	0.68	0.43	51.2
11	T1	1747	7.6	1747	7.6	0.866	31.4	LOS C	32.8	244.2	0.91	0.87	0.94	47.5
12	R2	9	0.0	9	0.0	0.079	75.5	LOS F	0.4	2.7	0.97	0.67	0.97	29.5
Approach		1863	7.4	1863	7.4	0.866	30.6	LOS C	32.8	244.2	0.88	0.86	0.91	47.5
All Vehicles		4512	7.6	4512	7.6	1.064	35.0	LOS C	42.7	318.4	0.89	0.88	0.96	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	[ Dist m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	30.5	LOS D	0.1	0.1	0.92	0.92	188.6	205.5	1.09	
All Pedestrians	263	57.5	LOS E	0.2	0.2	0.95	0.95	230.1	224.4	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Version\_Y.sip9

# MOVEMENT SUMMARY

▼ Site: 101 [7. Catherine Fields Road/ Chisholm Rd - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]
 ■ Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	154	13.7	154	13.7	0.100	0.1	LOS A	0.1	0.5	0.08	0.08	0.08	59.3
3	R2	23	0.0	23	0.0	0.100	6.0	LOS A	0.1	0.5	0.08	0.08	0.08	59.3
Approach		177	11.9	177	11.9	0.100	0.9	NA	0.1	0.5	0.08	0.08	0.08	59.3
East: Chisholm Rd														
4	L2	26	8.6	26	8.6	0.032	6.1	LOS A	0.0	0.3	0.25	0.57	0.25	52.2
6	R2	13	0.0	13	0.0	0.032	6.7	LOS A	0.0	0.3	0.25	0.57	0.25	52.2
Approach		39	5.8	39	5.8	0.032	6.3	LOS A	0.0	0.3	0.25	0.57	0.25	52.2
North: Catherine Fields Rd														
7	L2	14	0.0	14	0.0	0.085	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	58.5
8	T1	138	14.5	138	14.5	0.085	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	58.5
Approach		152	13.2	152	13.2	0.085	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.5
All Vehicles		367	11.8	367	11.8	0.100	1.3	NA	0.1	0.5	0.07	0.12	0.07	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

▼ Site: 101 [8. Chisholm Rd/ Deepfields Rd - PM (Site Folder: 2026 Base + Stage 1 (320 Students))]
 
■ Network: N101 [PM (Network Folder: 2026 Base + Stage 1 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	13	9.0	13	9.0	0.023	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
2	T1	28	14.8	28	14.8	0.023	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	59.0
Approach		41	13.0	41	13.0	0.023	1.8	NA	0.0	0.0	0.00	0.18	0.00	59.0
North: Deepfields Rd														
8	T1	48	7.0	48	7.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	24	13.4	24	13.4	0.015	5.7	LOS A	0.0	0.2	0.13	0.56	0.13	57.5
Approach		73	9.2	73	9.2	0.026	1.9	NA	0.0	0.2	0.04	0.19	0.04	59.4
West: Chisholm Rd														
10	L2	15	0.0	15	0.0	0.022	5.6	LOS A	0.0	0.3	0.11	0.56	0.11	52.8
12	R2	13	16.5	13	16.5	0.022	6.3	LOS A	0.0	0.3	0.11	0.56	0.11	56.4
Approach		27	7.6	27	7.6	0.022	5.9	LOS A	0.0	0.3	0.11	0.56	0.11	55.4
All Vehicles		141	10.0	141	10.0	0.026	2.7	NA	0.0	0.3	0.04	0.26	0.04	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	19	0.0	19	0.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
2	T1	62	8.3	62	8.3	0.044	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
Approach		81	6.4	81	6.4	0.044	1.3	NA	0.0	0.0	0.00	0.14	0.00	59.2
North: Deepfields Rd														
8	T1	63	6.2	63	6.2	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	21	6.4	21	6.4	0.013	5.8	LOS A	0.0	0.2	0.18	0.55	0.18	57.4
Approach		84	6.3	84	6.3	0.034	1.5	NA	0.0	0.2	0.05	0.14	0.05	59.6
West: Chisholm Rd														
10	L2	27	13.4	27	13.4	0.037	5.9	LOS A	0.1	0.5	0.18	0.56	0.18	52.6
12	R2	18	7.2	18	7.2	0.037	6.4	LOS A	0.1	0.5	0.18	0.56	0.18	56.5
Approach		45	11.0	45	11.0	0.037	6.1	LOS A	0.1	0.5	0.18	0.56	0.18	55.2
All Vehicles		211	7.3	211	7.3	0.044	2.4	NA	0.1	0.5	0.06	0.23	0.06	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	349	8.1	349	8.1	0.267	8.0	LOS A	0.5	3.8	0.35	0.63	0.35	74.1
Approach		349	8.1	349	8.1	0.267	8.0	LOS A	0.5	3.8	0.35	0.63	0.35	74.1
East: Bringelly Rd														
4	L2	460	6.8	460	6.8	0.257	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	392	8.1	392	8.1	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		852	7.4	852	7.4	0.257	3.8	NA	0.0	0.0	0.00	0.34	0.00	71.9
All Vehicles		1201	7.6	1201	7.6	0.267	5.1	NA	0.5	3.8	0.10	0.43	0.10	73.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - AM  
(Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM  
(Network Folder: 2031 Base +  
Stage 2 Dev)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	4	0.0	4	0.0	0.028	7.0	LOS A	0.0	0.0	0.00	0.05	0.00	79.5
2	T1	49	6.4	49	6.4	0.028	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	79.5
Approach		54	5.9	54	5.9	0.028	0.6	NA	0.0	0.0	0.00	0.05	0.00	79.5
North: Barry Avenue														
8	T1	207	8.1	207	8.1	0.112	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	255	4.7	255	4.7	0.152	6.9	LOS A	0.3	2.3	0.16	0.60	0.16	76.4
Approach		462	6.2	462	6.2	0.152	3.9	NA	0.3	2.3	0.09	0.33	0.09	78.0
West: Catherine Fields Rd														
10	L2	299	6.0	299	6.0	0.201	7.2	LOS A	0.4	2.8	0.15	0.59	0.15	73.5
12	R2	3	0.0	3	0.0	0.201	11.2	LOS A	0.4	2.8	0.15	0.59	0.15	73.5
Approach		302	5.9	302	5.9	0.201	7.3	LOS A	0.4	2.8	0.15	0.59	0.15	73.5
All Vehicles		818	6.1	818	6.1	0.201	4.9	NA	0.4	2.8	0.10	0.41	0.10	76.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road Entry  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	303	6.3	303	6.3	0.345	0.9	LOS A	0.8	5.5	0.38	0.28	0.38	33.1
3	R2	254	0.0	254	0.0	0.345	5.1	LOS A	0.8	5.5	0.38	0.28	0.38	37.6
Approach		557	3.4	557	3.4	0.345	2.8	NA	0.8	5.5	0.38	0.28	0.38	36.4
North: Catherine Fields Rd														
7	L2	108	0.0	108	0.0	0.142	3.6	LOS A	0.0	0.0	0.00	0.19	0.00	39.7
8	T1	151	7.7	151	7.7	0.142	0.2	LOS A	0.0	0.0	0.00	0.19	0.00	39.6
Approach		259	4.5	259	4.5	0.142	1.6	NA	0.0	0.0	0.00	0.19	0.00	39.7
All Vehicles		816	3.7	816	3.7	0.345	2.4	NA	0.8	5.5	0.26	0.25	0.26	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road Exit  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	455	96.4	455	96.4	0.385	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
Approach		455	96.4	455	96.4	0.385	0.3	NA	0.0	0.0	0.00	0.00	0.00	39.8
East: School Exit														
4	L2	236	0.0	236	0.0	0.360	4.3	LOS A	0.7	4.9	0.33	0.58	0.37	35.2
6	R2	101	0.0	101	0.0	0.360	10.8	LOS A	0.7	4.9	0.33	0.58	0.37	35.2
Approach		337	0.0	337	0.0	0.360	6.3	LOS A	0.7	4.9	0.33	0.58	0.37	35.2
North: Catherine Fields Rd														
8	T1	151	7.7	151	7.7	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		151	7.7	151	7.7	0.082	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		942	47.8	942	47.8	0.385	2.4	NA	0.7	4.9	0.12	0.21	0.13	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	29	7.1	29	7.1	0.184	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	57.2
2	T1	316	2.5	316	2.5	0.184	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	58.7
Approach		345	2.9	345	2.9	0.184	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.4
North: Catherine Fields Rd														
8	T1	252	1.5	252	1.5	0.245	0.9	LOS A	0.5	3.3	0.36	0.23	0.36	54.1
9	R2	135	6.3	135	6.3	0.245	7.2	LOS A	0.5	3.3	0.36	0.23	0.36	54.5
Approach		386	3.1	386	3.1	0.245	3.1	NA	0.5	3.3	0.36	0.23	0.36	54.3
West: Springfield Rd														
10	L2	139	6.2	139	6.2	0.192	8.4	LOS A	0.3	2.2	0.44	0.71	0.44	57.7
12	R2	43	7.3	43	7.3	0.192	11.4	LOS A	0.3	2.2	0.44	0.71	0.44	57.7
Approach		182	6.4	182	6.4	0.192	9.1	LOS A	0.3	2.2	0.44	0.71	0.44	57.7
All Vehicles		914	3.7	914	3.7	0.245	3.3	NA	0.5	3.3	0.24	0.26	0.24	56.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Camden Valley Way/ Catherine Fields Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist ] m				km/h
South: Catherine Fields Rd														
1	L2	6	0.0	6	0.0	0.228	77.8	LOS F	1.3	9.0	0.97	0.71	0.97	31.3
2	T1	25	0.0	25	0.0	*0.228	67.7	LOS E	1.3	9.0	0.97	0.71	0.97	20.6
3	R2	31	6.9	31	6.9	0.341	81.0	LOS F	1.3	9.7	1.00	0.72	1.00	28.1
Approach		62	3.4	62	3.4	0.341	75.3	LOS F	1.3	9.7	0.99	0.72	0.99	26.0
East: Camden Valley Way														
4	L2	24	8.7	24	8.7	0.034	14.1	LOS A	0.5	4.3	0.33	0.54	0.33	60.0
5	T1	2043	8.0	2043	8.0	0.823	16.5	LOS B	29.2	217.8	0.76	0.71	0.76	58.8
6	R2	187	3.5	187	3.5	*0.690	52.7	LOS D	4.4	31.6	0.99	0.80	1.03	24.8
Approach		2255	7.6	2255	7.6	0.823	19.5	LOS B	29.2	217.8	0.78	0.72	0.78	55.5
North: Catherine Fields Rd														
7	L2	137	3.1	137	3.1	*0.413	52.9	LOS D	4.4	31.9	0.93	0.79	0.93	52.7
8	T1	21	5.0	21	5.0	0.154	67.8	LOS E	0.9	6.2	0.97	0.69	0.97	48.3
9	R2	138	3.1	138	3.1	*1.541	552.7	LOS F	18.6	133.4	1.00	1.58	3.50	12.0
Approach		296	3.2	296	3.2	1.541	287.0	LOS F	18.6	133.4	0.97	1.15	2.13	20.3
West: Camden Valley Way														
10	L2	134	2.5	134	2.5	0.115	13.1	LOS A	1.4	10.1	0.41	0.68	0.41	52.4
11	T1	2398	8.0	2398	8.0	*1.127	175.4	LOS F	101.2	755.6	1.00	1.67	1.91	16.5
12	R2	13	8.3	13	8.3	0.125	77.7	LOS F	0.5	3.9	0.98	0.69	0.98	28.5
Approach		2544	7.7	2544	7.7	1.127	166.4	LOS F	101.2	755.6	0.97	1.62	1.83	16.7
All Vehicles		5157	7.4	5157	7.4	1.541	108.0	LOS F	101.2	755.6	0.88	1.19	1.38	24.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		[ Ped ped	Dist ] m			sec	m	m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	31.6	LOS D	0.1	0.1	0.92	0.92	189.7	205.5	1.08	
All Pedestrians	263	57.7	LOS E	0.2	0.2	0.95	0.95	230.4	224.4	0.97	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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 \1769m01v02 Minarah\_2022 Base - TL Version\_Y.sip9

# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - AM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [AM (Network Folder: 2031 Base + Stage 2 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	312	6.9	312	6.9	0.183	0.1	LOS A	0.1	0.5	0.06	0.04	0.06	59.7
3	R2	19	12.7	19	12.7	0.183	6.9	LOS A	0.1	0.5	0.06	0.04	0.06	59.7
Approach		331	7.3	331	7.3	0.183	0.5	NA	0.1	0.5	0.06	0.04	0.06	59.7
East: Chisholm Rd														
4	L2	29	4.5	29	4.5	0.053	6.5	LOS A	0.1	0.5	0.37	0.64	0.37	51.5
6	R2	21	0.0	21	0.0	0.053	8.3	LOS A	0.1	0.5	0.37	0.64	0.37	51.5
Approach		51	2.6	51	2.6	0.053	7.2	LOS A	0.1	0.5	0.37	0.64	0.37	51.5
North: Catherine Fields Rd														
7	L2	17	0.0	17	0.0	0.145	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	59.0
8	T1	253	7.7	253	7.7	0.145	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.0
Approach		269	7.2	269	7.2	0.145	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.0
All Vehicles		651	6.9	651	6.9	0.183	1.0	NA	0.1	0.5	0.06	0.08	0.06	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

▼ Site: 101 [8. Chisholm Rd/ Deepfields Rd - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]
 
■ Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	14	9.0	14	9.0	0.026	5.7	LOS A	0.0	0.0	0.00	0.17	0.00	59.0
2	T1	33	14.8	33	14.8	0.026	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	59.0
Approach		46	13.1	46	13.1	0.026	1.7	NA	0.0	0.0	0.00	0.17	0.00	59.0
North: Deepfields Rd														
8	T1	56	7.0	56	7.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	27	13.4	27	13.4	0.017	5.8	LOS A	0.0	0.2	0.14	0.56	0.14	57.5
Approach		83	9.2	83	9.2	0.030	1.9	NA	0.0	0.2	0.04	0.18	0.04	59.4
West: Chisholm Rd														
10	L2	17	0.0	17	0.0	0.025	5.6	LOS A	0.0	0.3	0.12	0.56	0.12	52.8
12	R2	14	16.5	14	16.5	0.025	6.4	LOS A	0.0	0.3	0.12	0.56	0.12	56.4
Approach		31	7.4	31	7.4	0.025	6.0	LOS A	0.0	0.3	0.12	0.56	0.12	55.4
All Vehicles		160	10.0	160	10.0	0.030	2.6	NA	0.0	0.3	0.05	0.25	0.05	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	435	8.0	435	8.0	0.322	7.9	LOS A	0.7	4.9	0.34	0.62	0.34	74.2
Approach		435	8.0	435	8.0	0.322	7.9	LOS A	0.7	4.9	0.34	0.62	0.34	74.2
East: Bringelly Rd														
4	L2	497	6.8	497	6.8	0.278	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	329	8.0	329	8.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
Approach		826	7.3	826	7.3	0.278	4.3	NA	0.0	0.0	0.00	0.38	0.00	70.7
All Vehicles		1261	7.5	1261	7.5	0.322	5.5	NA	0.7	4.9	0.12	0.46	0.12	73.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - PM] Network: N101 [PM (Network (Site Folder: 2031 Base + Stage 2 Dev (650 students)))] Folder: 2031 Base + Stage 2 Dev]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	3	0.0	3	0.0	0.050	7.0	LOS A	0.0	0.0	0.00	0.02	0.00	79.8
2	T1	89	8.2	89	8.2	0.050	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	79.8
Approach		93	8.0	93	8.0	0.050	0.3	NA	0.0	0.0	0.00	0.02	0.00	79.8
North: Barry Avenue														
8	T1	177	7.7	177	7.7	0.095	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	320	5.6	320	5.6	0.199	7.1	LOS A	0.4	3.1	0.23	0.60	0.23	76.3
Approach		497	6.4	497	6.4	0.199	4.6	NA	0.4	3.1	0.15	0.39	0.15	77.6
West: Catherine Fields Rd														
10	L2	345	6.1	345	6.1	0.259	7.4	LOS A	0.5	3.7	0.22	0.60	0.22	73.2
12	R2	13	8.3	13	8.3	0.259	13.4	LOS A	0.5	3.7	0.22	0.60	0.22	73.2
Approach		358	6.2	358	6.2	0.259	7.6	LOS A	0.5	3.7	0.22	0.60	0.22	73.2
All Vehicles		947	6.5	947	6.5	0.259	5.3	NA	0.5	3.7	0.16	0.43	0.16	76.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

▼ Site: 3 [3. Catherine Fields Rd Entry - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]
 ■ Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road Entry  
 Site Category: 2036 Base + Stage 2 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	358	6.2	358	6.2	0.374	1.1	LOS A	0.9	6.3	0.41	0.27	0.44	33.2
3	R2	236	0.0	236	0.0	0.374	5.7	LOS A	0.9	6.3	0.41	0.27	0.44	37.6
Approach		594	3.8	594	3.8	0.374	3.0	NA	0.9	6.3	0.41	0.27	0.44	36.3
North: Catherine Fields Rd														
7	L2	101	0.0	101	0.0	0.177	3.6	LOS A	0.0	0.0	0.00	0.15	0.00	39.8
8	T1	222	8.1	222	8.1	0.177	0.2	LOS A	0.0	0.0	0.00	0.15	0.00	39.7
Approach		323	5.5	323	5.5	0.177	1.3	NA	0.0	0.0	0.00	0.15	0.00	39.7
All Vehicles		917	4.4	917	4.4	0.374	2.4	NA	0.9	6.3	0.27	0.22	0.28	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]

Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road Exit  
 Site Category: 2036 Base + Stage 2 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	489	4.1	489	4.1	0.262	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach		489	4.1	489	4.1	0.262	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
East: School Exit														
4	L2	242	0.0	242	0.0	0.353	4.6	LOS A	0.7	4.9	0.41	0.63	0.46	35.4
6	R2	104	0.0	104	0.0	0.353	9.3	LOS A	0.7	4.9	0.41	0.63	0.46	35.4
Approach		346	0.0	346	0.0	0.353	6.0	LOS A	0.7	4.9	0.41	0.63	0.46	35.4
North: Catherine Fields Rd														
8	T1	222	8.1	222	8.1	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		222	8.1	222	8.1	0.122	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		1058	3.6	1058	3.6	0.353	2.0	NA	0.7	4.9	0.13	0.21	0.15	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))] Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	45	7.0	45	7.0	0.222	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	57.0
2	T1	368	3.4	368	3.4	0.222	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	58.4
Approach		414	3.8	414	3.8	0.222	0.7	NA	0.0	0.0	0.00	0.06	0.00	58.1
North: Catherine Fields Rd														
8	T1	291	2.0	291	2.0	0.312	1.5	LOS A	0.7	5.0	0.44	0.27	0.46	53.2
9	R2	175	6.7	175	6.7	0.312	7.9	LOS A	0.7	5.0	0.44	0.27	0.46	54.0
Approach		465	3.7	465	3.7	0.312	3.9	NA	0.7	5.0	0.44	0.27	0.46	53.6
West: Springfield Rd														
10	L2	121	6.1	121	6.1	0.169	8.6	LOS A	0.3	1.9	0.47	0.72	0.47	57.1
12	R2	28	7.4	28	7.4	0.169	12.9	LOS A	0.3	1.9	0.47	0.72	0.47	57.1
Approach		149	6.3	149	6.3	0.169	9.4	LOS A	0.3	1.9	0.47	0.72	0.47	57.1
All Vehicles		1028	4.2	1028	4.2	0.312	3.4	NA	0.7	5.0	0.27	0.25	0.27	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

■ Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]
 ■ Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Camden Valley Way/ Catherine Fields Road  
 Site Category: 2021 Base  
 Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	12	9.1	12	9.1	0.271	79.9	LOS F	1.6	11.9	0.98	0.73	0.98	30.4
2	T1	28	3.7	28	3.7	*0.271	67.9	LOS E	1.6	11.9	0.98	0.73	0.98	20.4
3	R2	34	9.4	34	9.4	0.335	79.6	LOS F	1.4	10.8	1.00	0.73	1.00	28.2
Approach		74	7.1	74	7.1	0.335	75.2	LOS F	1.6	11.9	0.99	0.73	0.99	26.1
East: Camden Valley Way														
4	L2	35	9.1	35	9.1	0.047	14.9	LOS B	0.7	6.1	0.35	0.57	0.35	59.0
5	T1	2499	8.0	2499	8.0	*1.044	104.3	LOS F	83.9	624.5	1.00	1.36	1.51	24.4
6	R2	228	4.1	228	4.1	*0.704	48.2	LOS D	5.1	37.1	0.98	0.80	1.03	26.4
Approach		2762	7.7	2762	7.7	1.044	98.5	LOS F	83.9	624.5	0.99	1.30	1.46	24.6
North: Catherine Fields Rd														
7	L2	139	3.1	139	3.1	0.360	47.3	LOS D	4.2	30.3	0.90	0.78	0.90	54.4
8	T1	20	0.0	20	0.0	0.129	66.2	LOS E	0.8	5.6	0.96	0.68	0.96	48.7
9	R2	160	4.0	160	4.0	*1.575	582.2	LOS F	22.1	159.8	1.00	1.66	3.57	11.5
Approach		319	3.4	319	3.4	1.575	316.8	LOS F	22.1	159.8	0.96	1.21	2.25	18.9
West: Camden Valley Way														
10	L2	158	4.0	158	4.0	0.148	14.1	LOS A	1.8	13.7	0.45	0.69	0.45	51.2
11	T1	1986	8.0	1986	8.0	1.001	84.5	LOS F	61.3	456.2	1.00	1.22	1.37	28.3
12	R2	12	9.1	12	9.1	0.102	76.1	LOS F	0.5	3.6	0.97	0.68	0.97	28.8
Approach		2156	7.7	2156	7.7	1.001	79.3	LOS F	61.3	456.2	0.96	1.18	1.30	28.7
All Vehicles		5311	7.4	5311	7.4	1.575	103.5	LOS F	83.9	624.5	0.97	1.24	1.43	25.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed	
					[ Ped ped	Dist ] m						
South: Catherine Fields Rd												
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93	
East: Camden Valley Way												
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97	
North: Catherine Fields Rd												
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95	

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	30.5	LOS D	0.1	0.1	0.92	0.92	188.6	205.5	1.09	
All Pedestrians	263	57.5	LOS E	0.2	0.2	0.95	0.95	230.1	224.4	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

▼ Site: 101 [7. Catherine Fields Road/ Chisholm Rd - PM (Site Folder: 2031 Base + Stage 2 Dev (650 students))]
 ■ Network: N101 [PM (Network Folder: 2031 Base + Stage 2 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	264	13.7	264	13.7	0.166	0.1	LOS A	0.1	0.7	0.09	0.06	0.09	59.5
3	R2	26	0.0	26	0.0	0.166	6.6	LOS A	0.1	0.7	0.09	0.06	0.09	59.5
Approach		291	12.4	291	12.4	0.166	0.7	NA	0.1	0.7	0.09	0.06	0.09	59.5
East: Chisholm Rd														
4	L2	29	8.6	29	8.6	0.043	6.6	LOS A	0.1	0.5	0.36	0.62	0.36	51.7
6	R2	14	0.0	14	0.0	0.043	8.1	LOS A	0.1	0.5	0.36	0.62	0.36	51.7
Approach		43	5.9	43	5.9	0.043	7.0	LOS A	0.1	0.5	0.36	0.62	0.36	51.7
North: Catherine Fields Rd														
7	L2	16	0.0	16	0.0	0.149	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	58.9
8	T1	249	14.5	249	14.5	0.149	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	58.9
Approach		265	13.7	265	13.7	0.149	0.4	NA	0.0	0.0	0.00	0.04	0.00	58.9
All Vehicles		599	12.5	599	12.5	0.166	1.0	NA	0.1	0.7	0.07	0.09	0.07	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 101 [8. Chisholm Rd/ Deepfields Rd - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	21	0.0	21	0.0	0.048	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
2	T1	67	8.3	67	8.3	0.048	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	59.2
Approach		88	6.3	88	6.3	0.048	1.4	NA	0.0	0.0	0.00	0.14	0.00	59.2
North: Deepfields Rd														
8	T1	68	6.2	68	6.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	22	6.4	22	6.4	0.014	5.8	LOS A	0.0	0.2	0.19	0.55	0.19	57.4
Approach		91	6.3	91	6.3	0.037	1.4	NA	0.0	0.2	0.05	0.13	0.05	59.6
West: Chisholm Rd														
10	L2	29	13.4	29	13.4	0.042	5.9	LOS A	0.1	0.5	0.19	0.56	0.19	52.5
12	R2	20	7.2	20	7.2	0.042	6.5	LOS A	0.1	0.5	0.19	0.56	0.19	56.5
Approach		49	10.9	49	10.9	0.042	6.2	LOS A	0.1	0.5	0.19	0.56	0.19	55.2
All Vehicles		228	7.3	228	7.3	0.048	2.4	NA	0.1	0.5	0.06	0.23	0.06	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	420	7.9	420	7.9	0.326	8.1	LOS A	0.7	4.9	0.39	0.65	0.39	74.1
Approach		420	7.9	420	7.9	0.326	8.1	LOS A	0.7	4.9	0.39	0.65	0.39	74.1
East: Bringelly Rd														
4	L2	569	6.3	569	6.3	0.317	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	423	8.0	423	8.0	0.113	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		993	7.0	993	7.0	0.317	4.1	NA	0.0	0.0	0.00	0.36	0.00	71.2
All Vehicles		1413	7.3	1413	7.3	0.326	5.3	NA	0.7	4.9	0.11	0.45	0.11	73.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - AM  
(Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM  
(Network Folder: 2035 Base +  
Stage 3 Dev)]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
Site Category: 2021 Base  
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	5	20.0	5	20.0	0.032	7.3	LOS A	0.0	0.0	0.00	0.06	0.00	79.6
2	T1	54	7.8	54	7.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	79.6
Approach		59	8.9	59	8.9	0.032	0.7	NA	0.0	0.0	0.00	0.06	0.00	79.6
North: Barry Avenue														
8	T1	223	8.0	223	8.0	0.120	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	322	4.1	322	4.1	0.193	7.0	LOS A	0.4	2.9	0.18	0.60	0.18	76.4
Approach		545	5.7	545	5.7	0.193	4.2	NA	0.4	2.9	0.10	0.35	0.10	77.8
West: Catherine Fields Rd														
10	L2	366	5.7	366	5.7	0.251	7.3	LOS A	0.5	3.6	0.16	0.59	0.16	73.4
12	R2	4	25.0	4	25.0	0.251	15.4	LOS B	0.5	3.6	0.16	0.59	0.16	73.4
Approach		371	5.9	371	5.9	0.251	7.4	LOS A	0.5	3.6	0.16	0.59	0.16	73.4
All Vehicles		975	6.0	975	6.0	0.251	5.2	NA	0.5	3.6	0.12	0.42	0.12	76.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 3 [3. Catherine Fields Rd Entry - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road Entry  
 Site Category: 2036 Base + Stage 3 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	369	5.3	369	5.3	0.491	2.1	LOS A	1.8	12.8	0.53	0.40	0.66	31.2
3	R2	381	0.0	381	0.0	0.491	6.4	LOS A	1.8	12.8	0.53	0.40	0.66	36.9
Approach		751	2.6	751	2.6	0.491	4.3	NA	1.8	12.8	0.53	0.40	0.66	35.6
North: Catherine Fields Rd														
7	L2	163	0.0	163	0.0	0.179	3.6	LOS A	0.0	0.0	0.00	0.23	0.00	39.7
8	T1	163	8.4	163	8.4	0.179	0.2	LOS A	0.0	0.0	0.00	0.23	0.00	39.5
Approach		326	4.2	326	4.2	0.179	1.9	NA	0.0	0.0	0.00	0.23	0.00	39.6
All Vehicles		1077	3.1	1077	3.1	0.491	3.6	NA	1.8	12.8	0.37	0.35	0.46	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road Exit  
 Site Category: 2036 Base + Stage 3 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	599	2.9	599	2.9	0.318	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach		599	2.9	599	2.9	0.318	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
East: School Exit														
4	L2	355	0.0	355	0.0	0.523	5.4	LOS A	1.5	10.8	0.39	0.67	0.56	34.5
6	R2	153	0.0	153	0.0	0.523	12.0	LOS A	1.5	10.8	0.39	0.67	0.56	34.5
Approach		507	0.0	507	0.0	0.523	7.3	LOS A	1.5	10.8	0.39	0.67	0.56	34.5
North: Catherine Fields Rd														
8	T1	163	8.4	163	8.4	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		163	8.4	163	8.4	0.090	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		1269	2.5	1269	2.5	0.523	3.0	NA	1.5	10.8	0.16	0.27	0.22	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 5 [5. Catherine Fields Road/ Springfield Road - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	32	6.7	32	6.7	0.247	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	57.2
2	T1	434	2.1	434	2.1	0.247	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	58.9
Approach		465	2.4	465	2.4	0.247	0.4	NA	0.0	0.0	0.00	0.04	0.00	58.7
North: Catherine Fields Rd														
8	T1	358	1.0	358	1.0	0.341	1.6	LOS A	0.8	5.7	0.42	0.23	0.48	53.6
9	R2	160	5.3	160	5.3	0.341	8.4	LOS A	0.8	5.7	0.42	0.23	0.48	54.3
Approach		518	2.3	518	2.3	0.341	3.7	NA	0.8	5.7	0.42	0.23	0.48	53.9
West: Springfield Rd														
10	L2	166	5.2	166	5.2	0.272	9.2	LOS A	0.4	3.3	0.54	0.79	0.57	55.3
12	R2	46	6.8	46	6.8	0.272	14.9	LOS B	0.4	3.3	0.54	0.79	0.57	55.3
Approach		213	5.5	213	5.5	0.272	10.4	LOS A	0.4	3.3	0.54	0.79	0.57	55.3
All Vehicles		1196	2.9	1196	2.9	0.341	3.6	NA	0.8	5.7	0.28	0.26	0.31	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Camden Valley Way/ Catherine Fields Road

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [ Total veh/h HV % ]		ARRIVAL FLOWS [ Total HV % ]		Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [ Veh. Dist ]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Catherine Fields Rd														
1	L2	7	14.3	7	14.3	0.312	79.6	LOS F	1.7	12.7	0.98	0.73	0.98	30.1
2	T1	35	3.2	35	3.2	*0.312	68.6	LOS E	1.7	12.7	0.98	0.73	0.98	20.5
3	R2	34	9.4	34	9.4	0.383	81.3	LOS F	1.5	11.0	1.00	0.73	1.00	27.9
Approach		76	7.0	76	7.0	0.383	75.3	LOS F	1.7	12.7	0.99	0.73	0.99	25.3
East: Camden Valley Way														
4	L2	25	8.3	25	8.3	0.036	13.8	LOS A	0.5	4.4	0.32	0.54	0.32	60.4
5	T1	2206	8.0	2206	8.0	0.893	22.4	LOS B	37.5	279.5	0.84	0.82	0.87	53.8
6	R2	248	3.1	248	3.1	*0.912	67.5	LOS E	6.7	48.0	0.99	0.93	1.27	20.8
Approach		2480	7.5	2480	7.5	0.912	26.8	LOS B	37.5	279.5	0.85	0.83	0.91	49.6
North: Catherine Fields Rd														
7	L2	191	2.3	191	2.3	*0.572	59.8	LOS E	6.2	44.4	0.97	0.87	0.97	50.6
8	T1	29	0.0	29	0.0	0.209	68.2	LOS E	1.2	8.4	0.98	0.71	0.98	48.2
9	R2	184	2.3	184	2.3	*2.048	996.6	LOS F	32.1	229.2	1.00	1.89	4.45	7.2
Approach		404	2.1	404	2.1	2.048	487.3	LOS F	32.1	229.2	0.98	1.32	2.55	13.5
West: Camden Valley Way														
10	L2	183	2.4	183	2.4	0.155	13.3	LOS A	1.9	14.1	0.42	0.69	0.42	52.0
11	T1	2589	8.0	2589	8.0	*1.225	259.3	LOS F	132.1	985.6	1.00	2.01	2.33	11.9
12	R2	13	8.3	13	8.3	0.125	77.7	LOS F	0.5	3.9	0.98	0.69	0.98	28.5
Approach		2785	7.6	2785	7.6	1.225	242.3	LOS F	132.1	985.6	0.96	1.92	2.20	12.2
All Vehicles		5745	7.2	5745	7.2	2.048	164.3	LOS F	132.1	985.6	0.91	1.39	1.65	17.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [ Ped Dist ]		Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Catherine Fields Rd											
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93
East: Camden Valley Way											
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97
North: Catherine Fields Rd											
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	31.6	LOS D	0.1	0.1	0.92	0.92	189.7	205.5	1.08	
All Pedestrians	263	57.7	LOS E	0.2	0.2	0.95	0.95	230.4	224.4	0.97	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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# MOVEMENT SUMMARY

Site: 101 [7. Catherine Fields Road/ Chisholm Rd - AM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [AM (Network Folder: 2035 Base + Stage 3 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	428	6.9	428	6.9	0.249	0.2	LOS A	0.1	0.7	0.07	0.03	0.07	59.7
3	R2	21	12.7	21	12.7	0.249	7.7	LOS A	0.1	0.7	0.07	0.03	0.07	59.7
Approach		449	7.2	449	7.2	0.249	0.5	NA	0.1	0.7	0.07	0.03	0.07	59.7
East: Chisholm Rd														
4	L2	32	4.5	32	4.5	0.070	7.0	LOS A	0.1	0.7	0.47	0.70	0.47	50.4
6	R2	22	0.0	22	0.0	0.070	10.3	LOS A	0.1	0.7	0.47	0.70	0.47	50.4
Approach		54	2.7	54	2.7	0.070	8.3	LOS A	0.1	0.7	0.47	0.70	0.47	50.4
North: Catherine Fields Rd														
7	L2	18	0.0	18	0.0	0.203	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	59.1
8	T1	359	7.7	359	7.7	0.203	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.1
Approach		377	7.3	377	7.3	0.203	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.1
All Vehicles		880	7.0	880	7.0	0.249	0.9	NA	0.1	0.7	0.06	0.07	0.06	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

▼ Site: 101 [8. Chisholm Rd/ Deepfields Rd - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]
 
■ Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Chisholm Rd/ Deepfields Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	16	9.0	16	9.0	0.029	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	58.9
2	T1	35	14.8	35	14.8	0.029	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	58.9
Approach		51	13.0	51	13.0	0.029	1.8	NA	0.0	0.0	0.00	0.18	0.00	58.9
North: Deepfields Rd														
8	T1	60	7.0	60	7.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	29	13.4	29	13.4	0.018	5.8	LOS A	0.0	0.3	0.14	0.56	0.14	57.5
Approach		89	9.2	89	9.2	0.032	1.9	NA	0.0	0.3	0.05	0.18	0.05	59.4
West: Chisholm Rd														
10	L2	18	0.0	18	0.0	0.028	5.6	LOS A	0.0	0.3	0.13	0.56	0.13	52.8
12	R2	16	16.5	16	16.5	0.028	6.5	LOS A	0.0	0.3	0.13	0.56	0.13	56.4
Approach		34	7.7	34	7.7	0.028	6.0	LOS A	0.0	0.3	0.13	0.56	0.13	55.4
All Vehicles		174	10.0	174	10.0	0.032	2.7	NA	0.0	0.3	0.05	0.26	0.05	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

Site: 1 [1. Bringelly Rd/ Allenby Rd - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Bringelly Road/ Allenby Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Allenby Rd														
1	L2	514	8.0	514	8.0	0.385	8.0	LOS A	0.8	6.3	0.37	0.63	0.37	74.1
Approach		514	8.0	514	8.0	0.385	8.0	LOS A	0.8	6.3	0.37	0.63	0.37	74.1
East: Bringelly Rd														
4	L2	579	6.4	579	6.4	0.323	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.5
5	T1	356	8.0	356	8.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		935	7.0	935	7.0	0.323	4.4	NA	0.0	0.0	0.00	0.39	0.00	70.4
All Vehicles		1448	7.3	1448	7.3	0.385	5.7	NA	0.8	6.3	0.13	0.48	0.13	73.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 2 [2. Barry Ave/ Deepfields Rd/ Catherine Fields Rd - PM] Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev (980 students))] Folder: 2035 Base + Stage 3 Dev]

Barry Avenue/ Deepfields Road/ Catherine Fields Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Deepfields Rd														
1	L2	4	25.0	4	25.0	0.054	7.4	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
2	T1	96	7.7	96	7.7	0.054	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	79.8
Approach		100	8.4	100	8.4	0.054	0.3	NA	0.0	0.0	0.00	0.03	0.00	79.8
North: Barry Avenue														
8	T1	191	7.7	191	7.7	0.102	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	388	4.9	388	4.9	0.242	7.2	LOS A	0.5	3.9	0.25	0.60	0.25	76.3
Approach		579	5.8	579	5.8	0.242	4.8	NA	0.5	3.9	0.17	0.40	0.17	77.4
West: Catherine Fields Rd														
10	L2	417	5.8	417	5.8	0.315	7.5	LOS A	0.6	4.7	0.24	0.60	0.24	73.2
12	R2	14	7.7	14	7.7	0.315	15.6	LOS B	0.6	4.7	0.24	0.60	0.24	73.2
Approach		431	5.9	431	5.9	0.315	7.7	LOS A	0.6	4.7	0.24	0.60	0.24	73.2
All Vehicles		1109	6.1	1109	6.1	0.315	5.6	NA	0.6	4.7	0.18	0.45	0.18	76.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

▼ Site: 3 [3. Catherine Fields Rd Entry - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]
 ■ Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road Entry  
 Site Category: 2036 Base + Stage 3 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	431	5.9	431	5.9	0.526	2.6	LOS A	2.1	14.9	0.57	0.40	0.79	30.5
3	R2	355	0.0	355	0.0	0.526	7.3	LOS A	2.1	14.9	0.57	0.40	0.79	36.7
Approach		785	3.2	785	3.2	0.526	4.7	NA	2.1	14.9	0.57	0.40	0.79	35.0
North: Catherine Fields Rd														
7	L2	153	0.0	153	0.0	0.215	3.7	LOS A	0.0	0.0	0.00	0.18	0.00	39.7
8	T1	240	7.9	240	7.9	0.215	0.3	LOS A	0.0	0.0	0.00	0.18	0.00	39.6
Approach		393	4.8	393	4.8	0.215	1.6	NA	0.0	0.0	0.00	0.18	0.00	39.7
All Vehicles		1178	3.8	1178	3.8	0.526	3.7	NA	2.1	14.9	0.38	0.33	0.53	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 4 [4. Catherine Fields Rd Exit - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]

Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road Exit  
 Site Category: 2036 Base + Stage 3 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	629	3.5	629	3.5	0.335	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach		629	3.5	629	3.5	0.335	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
East: School Exit														
4	L2	365	0.0	365	0.0	0.603	6.7	LOS A	2.0	13.9	0.51	0.84	0.88	33.4
6	R2	157	0.0	157	0.0	0.603	14.8	LOS B	2.0	13.9	0.51	0.84	0.88	33.4
Approach		522	0.0	522	0.0	0.603	9.2	LOS A	2.0	13.9	0.51	0.84	0.88	33.4
North: Catherine Fields Rd														
8	T1	240	7.9	240	7.9	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		240	7.9	240	7.9	0.131	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		1392	3.0	1392	3.0	0.603	3.5	NA	2.0	13.9	0.19	0.31	0.33	36.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

▼ Site: 5 [5. Catherine Fields Road/ Springfield Road - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]
 ■ Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Catherine Fields Road/ Springfield Road  
 Site Category: 2021 Base  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	49	8.5	49	8.5	0.286	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	57.0
2	T1	484	3.0	484	3.0	0.286	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	58.6
Approach		534	3.6	534	3.6	0.286	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.3
North: Catherine Fields Rd														
8	T1	402	1.7	402	1.7	0.426	2.7	LOS A	1.3	9.5	0.52	0.29	0.70	51.6
9	R2	203	6.3	203	6.3	0.426	9.7	LOS A	1.3	9.5	0.52	0.29	0.70	53.2
Approach		605	3.2	605	3.2	0.426	5.0	NA	1.3	9.5	0.52	0.29	0.70	52.4
West: Springfield Rd														
10	L2	145	5.8	145	5.8	0.244	9.4	LOS A	0.4	2.8	0.56	0.80	0.58	54.7
12	R2	31	6.9	31	6.9	0.244	17.5	LOS B	0.4	2.8	0.56	0.80	0.58	54.7
Approach		176	6.0	176	6.0	0.244	10.8	LOS A	0.4	2.8	0.56	0.80	0.58	54.7
All Vehicles		1315	3.7	1315	3.7	0.426	4.0	NA	1.3	9.5	0.32	0.26	0.40	54.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

■ Site: 6 [6. Camden Valley Way/ Catherine Fields Rd - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))]
 ■ Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Camden Valley Way/ Catherine Fields Road  
 Site Category: 2021 Base  
 Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
1	L2	12	0.0	12	0.0	0.329	79.3	LOS F	2.0	14.4	0.98	0.74	0.98	31.3
2	T1	38	2.8	38	2.8	*0.329	67.6	LOS E	2.0	14.4	0.98	0.74	0.98	20.5
3	R2	36	5.9	36	5.9	0.348	79.6	LOS F	1.5	11.2	1.00	0.73	1.00	28.5
Approach		85	3.7	85	3.7	0.348	74.2	LOS F	2.0	14.4	0.99	0.74	0.99	26.0
East: Camden Valley Way														
4	L2	38	16.7	38	16.7	0.045	14.3	LOS A	0.6	5.6	0.33	0.60	0.33	58.4
5	T1	2699	8.0	2699	8.0	*1.132	175.2	LOS F	112.6	840.1	1.00	1.69	1.92	16.5
6	R2	289	3.6	289	3.6	*0.888	60.4	LOS E	7.3	52.9	0.99	0.91	1.21	22.6
Approach		3026	7.7	3026	7.7	1.132	162.2	LOS F	112.6	840.1	0.99	1.60	1.83	16.8
North: Catherine Fields Rd														
7	L2	194	2.3	194	2.3	0.499	50.3	LOS D	6.0	43.1	0.94	0.82	0.94	53.5
8	T1	28	0.0	28	0.0	0.184	66.7	LOS E	1.1	8.0	0.97	0.70	0.97	48.6
9	R2	211	3.1	211	3.1	*2.059	1006.7	LOS F	36.8	264.5	1.00	1.97	4.46	7.1
Approach		433	2.5	433	2.5	2.059	516.8	LOS F	36.8	264.5	0.97	1.37	2.65	12.8
West: Camden Valley Way														
10	L2	206	3.1	206	3.1	0.193	14.5	LOS A	2.4	18.4	0.46	0.70	0.46	50.9
11	T1	2145	8.0	2145	8.0	1.087	144.9	LOS F	83.8	623.3	1.00	1.53	1.74	19.2
12	R2	12	0.0	12	0.0	0.096	75.7	LOS F	0.5	3.3	0.97	0.68	0.97	29.5
Approach		2363	7.5	2363	7.5	1.087	133.2	LOS F	83.8	623.3	0.95	1.45	1.62	19.6
All Vehicles		5907	7.2	5907	7.2	2.059	175.3	LOS F	112.6	840.1	0.97	1.51	1.80	16.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed	
					[ Ped ped	Dist ] m						
South: Catherine Fields Rd												
P1	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	228.1	213.0	0.93	
East: Camden Valley Way												
P2	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	250.0	241.5	0.97	
North: Catherine Fields Rd												
P3	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95	

West: Camden Valley Way											
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	248.5	239.5	0.96	
P4B Slip/ Bypass	53	30.5	LOS D	0.1	0.1	0.92	0.92	188.6	205.5	1.09	
All Pedestrians	263	57.5	LOS E	0.2	0.2	0.95	0.95	230.1	224.4	0.98	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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 \1769m01v02 Minarah\_2022 Base - TL Version\_Y.sip9

# MOVEMENT SUMMARY

▼ Site: 101 [7. Catherine Fields Road/ Chisholm Rd - PM (Site Folder: 2035 Base + Stage 3 Dev (980 students))] 
 ■ Network: N101 [PM (Network Folder: 2035 Base + Stage 3 Dev)]

Camden Valley Way/ Chisholm Rd  
 Site Category: 2025 Base + Stage 1 Dev  
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] m				
South: Catherine Fields Rd														
2	T1	372	13.7	372	13.7	0.230	0.2	LOS A	0.1	0.9	0.09	0.05	0.09	59.5
3	R2	28	0.0	28	0.0	0.230	7.3	LOS A	0.1	0.9	0.09	0.05	0.09	59.5
Approach		400	12.7	400	12.7	0.230	0.7	NA	0.1	0.9	0.09	0.05	0.09	59.5
East: Chisholm Rd														
4	L2	32	8.6	32	8.6	0.058	7.1	LOS A	0.1	0.6	0.46	0.69	0.46	50.7
6	R2	16	0.0	16	0.0	0.058	9.9	LOS A	0.1	0.6	0.46	0.69	0.46	50.7
Approach		47	5.8	47	5.8	0.058	8.0	LOS A	0.1	0.6	0.46	0.69	0.46	50.7
North: Catherine Fields Rd														
7	L2	17	0.0	17	0.0	0.210	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	59.1
8	T1	358	14.5	358	14.5	0.210	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.1
Approach		375	13.9	375	13.9	0.210	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.1
All Vehicles		822	12.8	822	12.8	0.230	0.9	NA	0.1	0.9	0.07	0.07	0.07	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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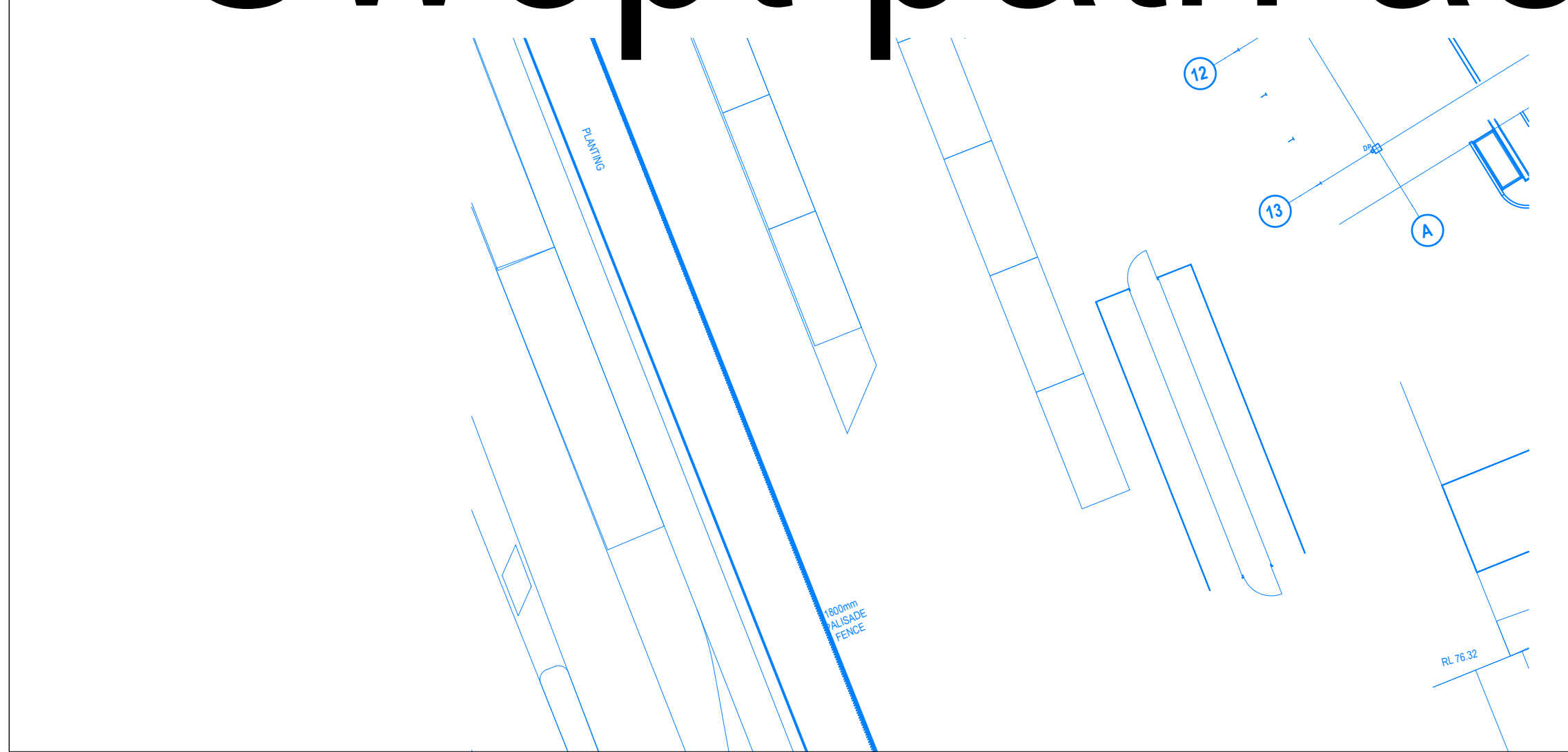
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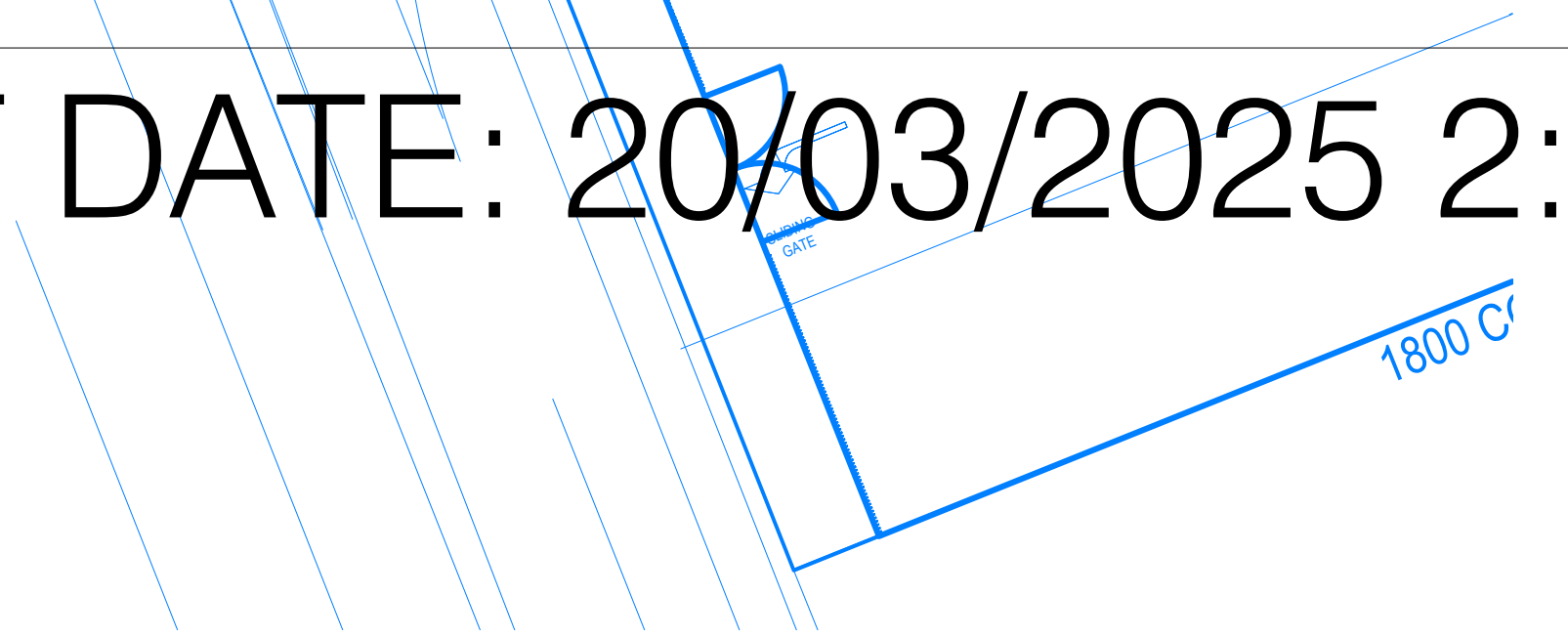
# Appendix F. Design Review



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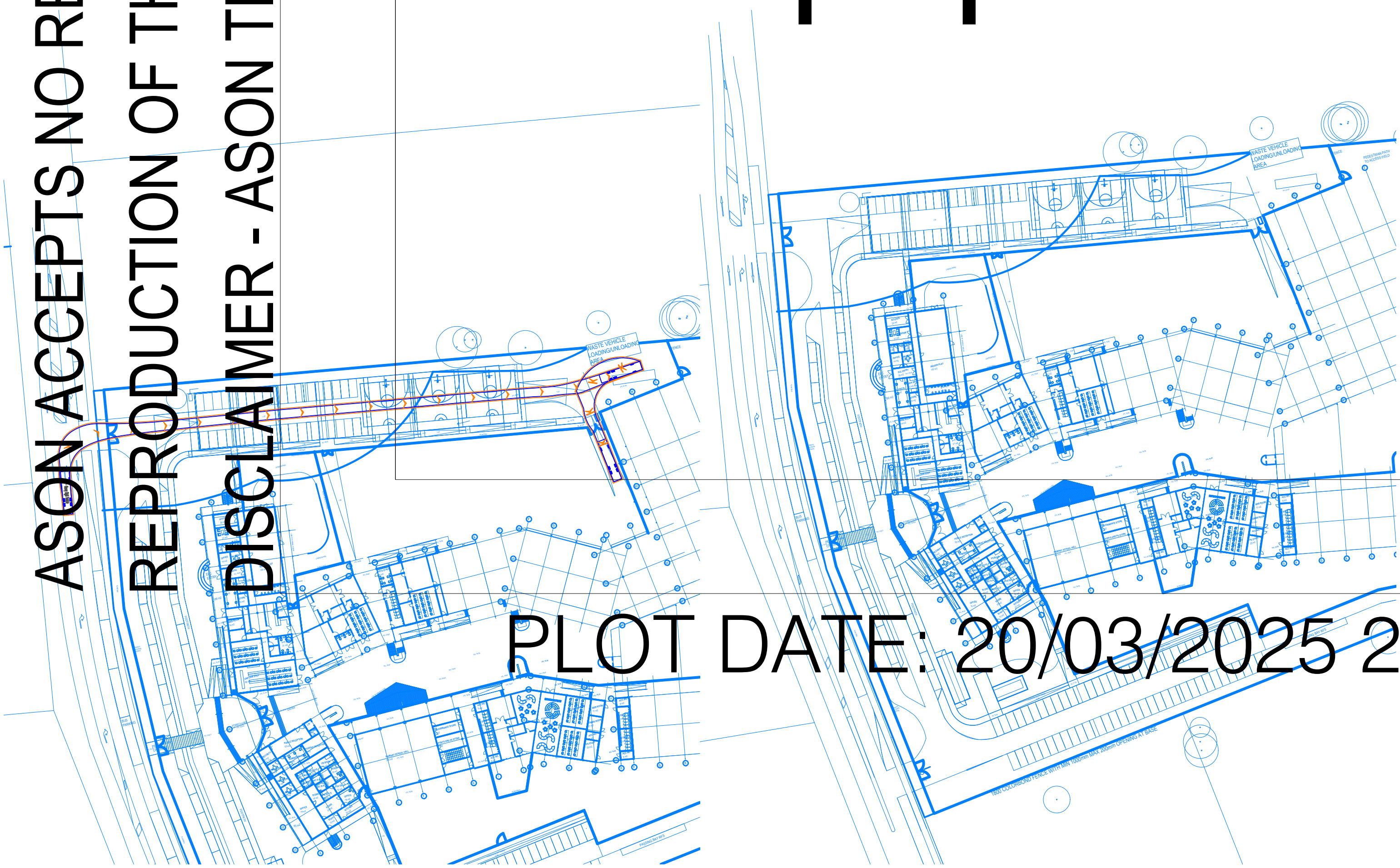
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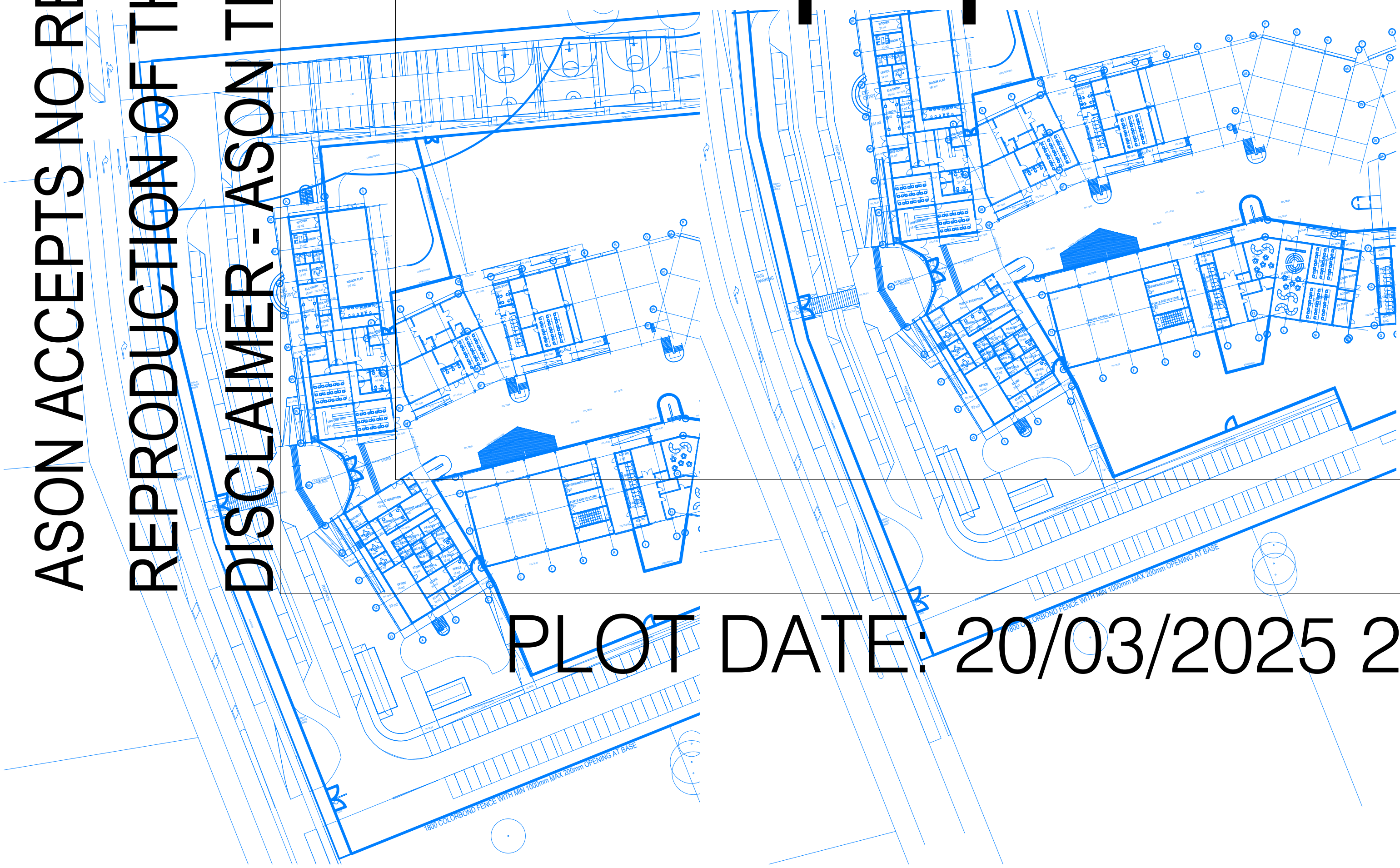


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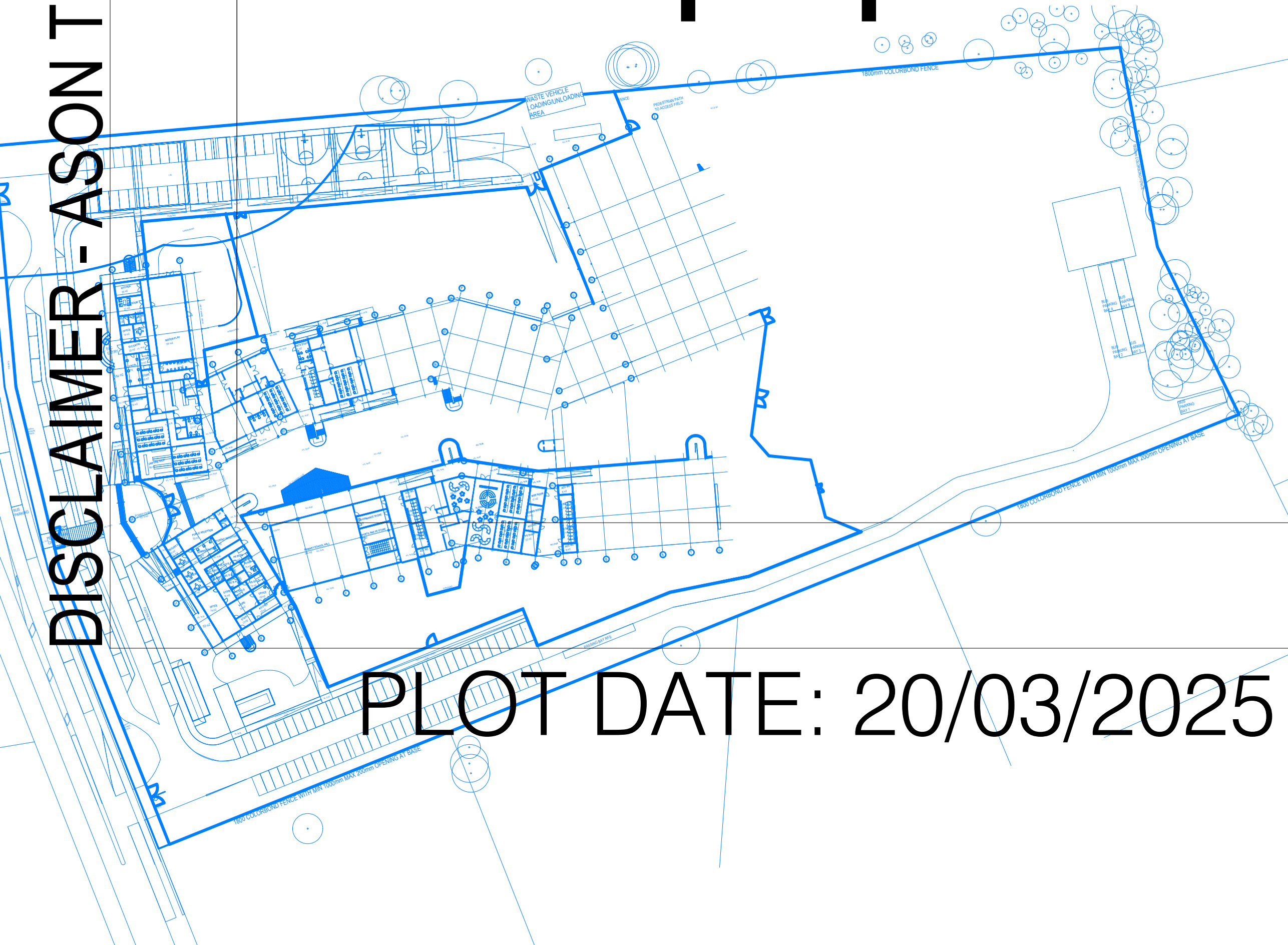
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