Box Hill Public School and Box Hill High School

Transport and Accessibility Impact Assessment

50-52 Terry Road, Box Hill
31/07/2025
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Glossary

Acronym	Description
Box Hill Precinct	Box Hill and Box Hill Industrial Precinct
Box Hill CP	The Hills Section 7.11 Contributions Plan No. 15 - Box Hill Precinct
Box Hill DCP	Box Hill Growth Centre Precincts Development Control Plan 2018
Council	The Hills Shire Council
DCP	Development Control Plan
DoE	Department of Education
DoS	Degree of Saturation
DPHI	Department of Planning, Housing & Infrastructure
EFSG	Educational Facility Standards and Guidelines
FTE	Full Time Equivalent
GTIA	Guide to Transport Impact Assessment (Transport for NSW)
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LoS	Level of Service
MRV	Medium Rigid Vehicle (as defined by AS2890.2:2018)
PPF	Peak Flow Factor
REF	Review of Environmental Factors
RMS Guide	Roads and Maritime Services Guide to Traffic Generating Developments v2.2 (2002)
STP	School Transport Plan
SI	School Infrastructure
SLU	Supported Learning Unit
SRV	Small Rigid Vehicle (as defined by AS2890.2:2018)
TAIA	Transport and Accessibility Impact Assessment
TfNSW	Transport for New South Wales
TWG	Transport Working Group
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

1 Introduction

1.1 Overview

This Transport and Accessibility Impact Assessment has been prepared by Ason Group on behalf of the Department of Education (DoE) to assess the potential environmental impacts that could arise from the new Box Hill Public School (also incorporating a preschool) and Box Hill High School (the activity) at 50-52 Terry Road, Box Hill (the site).

This report has been prepared to outline the traffic impacts of the activity as well as to identify and evaluate key infrastructure to support multi-modal transport for students (and staff) travelling to/from the site. This Transport Assessment also evaluates travel demands in the context of the emerging Box Hill Precinct and should be read in conjunction with the Preliminary School Transport Plan prepared by Ason Group.

This report accompanies a Review of Environment Factors (REF) that seeks approval for the new Box Hill Public School and Box Hill High School, which involves the following works:

- Demolition, tree removal and site preparation works.
- Construction of a new 1,000 student Public School of up to 3-storeys in height, and a 1,000 student High School of up to 4-storeys in height, including co-located halls.
- Construction of a 60 place preschool.
- Associated site landscaping, fencing and open space including sports fields and games courts.
- Changes to vehicular access including internal access road and car parking, new bus zone and Drop-Off and Pick-Up zones, pedestrian access, waste storage and loading areas.
- Augmentation of services and utilities to support the new school.

The Review of Environmental Factors prepared by Ethos Urban provides a full description of the proposed works.

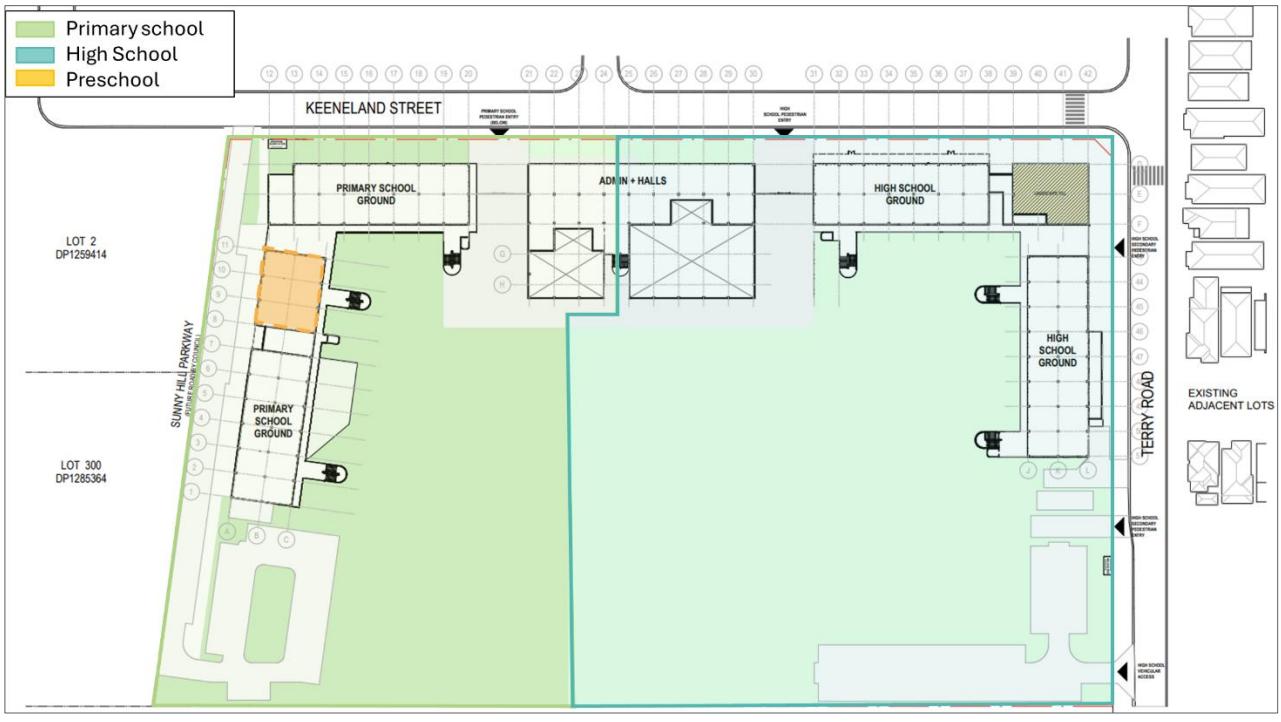


Figure 1: Concept Design (Source: Architectus)

1.2 Key References

This Transport Assessment makes reference to a series of key strategic, design and planning instruments in the assessment of the traffic and transport-related elements of the project. These instruments include:

Planning Instruments and Guidelines	Agency
State Environmental Planning Policy (Transport and Infrastructure) 2021	NSW Government
Box Hill Growth Centres Precinct Development Control Plan 2018	DPHI
The Hills Section 7.11 Contributions Plan No. 15 - Box Hill Precinct	The Hills Shire Council
Educational Facility Standards and Guidelines 2025	School Infrastructure
Guidelines for Division 5.1 Assessments June 2022	DPHI
Guidelines for Division 5.1 Assessments Addendum October 2024	DPHI

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

Technical Guidelines and Standards	Agency
Guide to Transport Impact Assessment v1.1	TfNSW
Pedestrian Crossing Guideline TS00043:10	TfNSW
Walking Space Guide	TfNSW
AS2890.1:2004 Parking Facilities – Off-Street Car Parking	Australian Standards
AS2890.2:2018 Parking Facilities – Off-Street Commercial Vehicle Facilities	Australian Standards
AS2890.3:2015 Parking Facilities – Bicycle Parking	Australian Standards
AS2890.5:2020 Parking Facilities – On-Street Parking	Australian Standards
AS2890.6:2009 Parking Facilities – Off-Street Parking for People with Disabilities	Australian Standards

1.3 Significance of Environmental Impacts

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts are **moderate** and will not have significant adverse effects on the locality, community and the environment;
- Potential impacts **can** be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community and environment.

1.4 REF Reporting Requirements

TABLE 1: REF REPORTING REQUIREMENTS

Key Traffic / Transport Issue	Requirement	Relevant Report Section
-	Does the REF include a Transport and Accessibility Impact Assessment (TAIA)?	**This Report**
RTA / early consultation	Does the TAIA summarise the work undertaken as part of, and the findings of, a Rapid Transport Assessment (RTA)?	**Section 0**
	Does the REF summarise consultation undertaken through the Transport Working Group (TWG) process, including issues raised by transport agencies and proposed responses?	**Section 1.5**
Existing conditions	Does the TAIA describe the existing road network, including: – the wider state network and local network? – speed and parking restrictions? – public transport? – pedestrian infrastructure? – any known road safety issues? – any significant infrastructure gaps identified?	**Section 4 and Section 5**
Construction traffic	Does the TAIA: – set out proposed construction vehicle routes and site access arrangements and estimated movements per day? – include a high level assessment of / conclusion that the local road network could accommodate the movements subject to appropriate management? – set out parking arrangements for construction workers and conclude that sufficient parking would be available on site / proposed arrangements would avoid detrimental impacts to local roads? – set out whether works zones are required? – include a preliminary construction management plan that details management and mitigation measures to minimise impacts and ensure safety of road users and pedestrians?	**Construction Traffic Management Plan (Separate Document)**
Operational traffic	Does the TAIA: – estimate the expected trip generation as a result of the proposed development having regard to:	**Section 8.6**
	– proposed number of students and staff?	**Section 6.1**
	– assumed travel mode share for the school developed having regard to: ▪ existing mode share ▪ proposed measures to reduce car-based travel mode shares achieved for schools with similar use and transport characteristics?	**Section 0**

	▪ data from other nearby schools / previous studies and/or census data?	**Section 8.6**
	▪ expected distribution across the local road network?	**Section 8.7**
	– outline future surrounding roads/road infrastructure shown on a relevant Indicative Layout Plan/Masterplan and how the development responds to these?	**Section 2.2**
	– include a SIDRA analysis (or other modelling agreed through the TWG) of key nearby intersections before the proposed development (i.e. existing) and after the development at completion and 10 years after?	**Section 8.5**
	– include the detailed SIDRA modelling results?	**Appendix F**
	– include a conclusion that the SIDRA analysis (or alternative) demonstrates that the local road network can accommodate the additional traffic generated by the development?	**Section 8.8**
	– if there is a reduction in Level of Service (LoS) from pre to post development, does the TIA justify that this is acceptable or set out measures to mitigate the impact / accommodate the additional demand?	**Section 8.8**
	– identify how significant infrastructure gaps will be addressed?	**Section 6.2 and Section 8.8**
	– include an existing conditions road safety assessment if existing road safety issues were identified?	**N/A**
	– identify how any known safety issues will be addressed?	**N/A**
School Transport Plan	Has a School Transport Plan been included in the TAIA which: – sets out measures to reduce car-based travel?	**School Transport Plan (separate document)**
	– sets achievable targets for mode shift with supporting explanation and evidence?	
	– include provisions for the monitoring and review of the plan?	
Operational Parking	Does the TAIA clearly set out: – proposed car parking?	**Section 9.2**
	– proposed bicycle car parking?	
	– proposed end-of trip facilities?	
	Does the TAIA include an assessment of likely demand for parking having regard to the expected/target mode share?	
	– If so, does the proposal meet the expected demand?	
	– If it doesn't match expected demand, does it include information to demonstrate why this is acceptable? i.e. availability of on street parking in surrounding streets based on a parking demand survey to demonstrate spare capacity?	

	Does the TAIA include a similar assessment of bicycle parking?	
Private vehicle drop-off and pick-up	Does the TAIA: – describe the proposed private vehicle drop-off and pick-up arrangements?	**Section 9.1**
	– identify the expected private vehicle drop-off / pick-up demand based on the expected/target mode share, number of trips / drop-offs and likely dwell time?	
	– assess the capacity of the existing / proposed private vehicle drop-off / pick-up areas to accommodate the above demand?	
Bus drop-off and pick-up	Does the TAIA: – describe the proposed bus drop-off / pick-up arrangements?	**Section 9.3**
	– identify the expected bus drop-off / pick-up demand based on the expected/target mode share and likely dwell time?	
	– assess the capacity of the existing / proposed bus drop-off / pick-up to accommodate the above demand?	
Service and emergency vehicle access	Does the TAIA: – set out the proposed access arrangements for service vehicles (i.e. garbage and other deliveries) and emergency vehicles?	**Section 9.4**
	– set out any required mitigation or management measures?	
	– assess the above arrangements and conclude that they would not have significant impacts?	
Overall assessment	Does the TAIA: – include a list of measures to mitigate the impacts of the activity?	**Section 11**
	– conclude overall, that the activity would not be likely to have significant environment impacts?	

1.5 Transport Working Group

During the preparation of the REF, Ason Group facilitated three (3) Transport Working Group (TWG) sessions between key stakeholders including:

- School Infrastructure (SI)
- The Hills Shire Council (Council)
- Transport for NSW (TfNSW).

The key outcomes of the TWG sessions are outlined in **Table 2** below with documented minutes copied in **Appendix A** (it is also noteworthy that these TWGs were a continuation of an earlier series of sessions during SI's infrastructure planning phase which informed initial site selection and concept design).

TABLE 2: CONSULTATION RECORD

Session	Key Outcomes
TWG #4 *5 March 2025*	Ason Group presented an overview of SI's initial Schematic Design for the schools with respect to site orientation and kerbside functions for Drop-Off and Pick-Up and Bus Activity. An overview of the street environment was provided for Terry Road and Keeneland Street frontages.
TWG #5 *2 April 2025*	Ason Group presented details of proposed future road profiles for Terry Road and Keeneland Street. This considered the need to maintain appropriate widths for the shared path on Terry Road in conjunction with bus operations as well as Drop-Off and Pick-Up activity on Keeneland Street.
TWG #6 *7 May 2025*	Ason Group presented a summary of road upgrades proposed in the vicinity of the school site including capacity upgrades at the intersection of Terry Road and Keeneland Street and provision of wombat crossings on Terry Road and Keeneland Street. A signalised mid-block crossing was raised by Council particularly in the context of Terry Road being upgraded in the long-term.

2 Precinct Context

2.1 Overview of Box Hill Precinct

The Box Hill and Box Hill Industrial Precinct (Box Hill Precinct) was rezoned by the Department of Planning, Housing and Infrastructure (DPHI) in coordination with The Hills Shire Council (Council) in 2013.

DPHI envisage the precincts will accommodate up to 9,600 new homes and provide the following outline of amenities and transport options:

- a new town centre and three village centres
- 133 hectares of employment land
- upgrades to major roads
- new public and high schools
- protection of significant vegetation
- improved connections to encourage walking and cycling.

The Indicative Layout Plan for the Box Hill and Box Hill Industrial Precinct is reproduced in **Figure 2**.

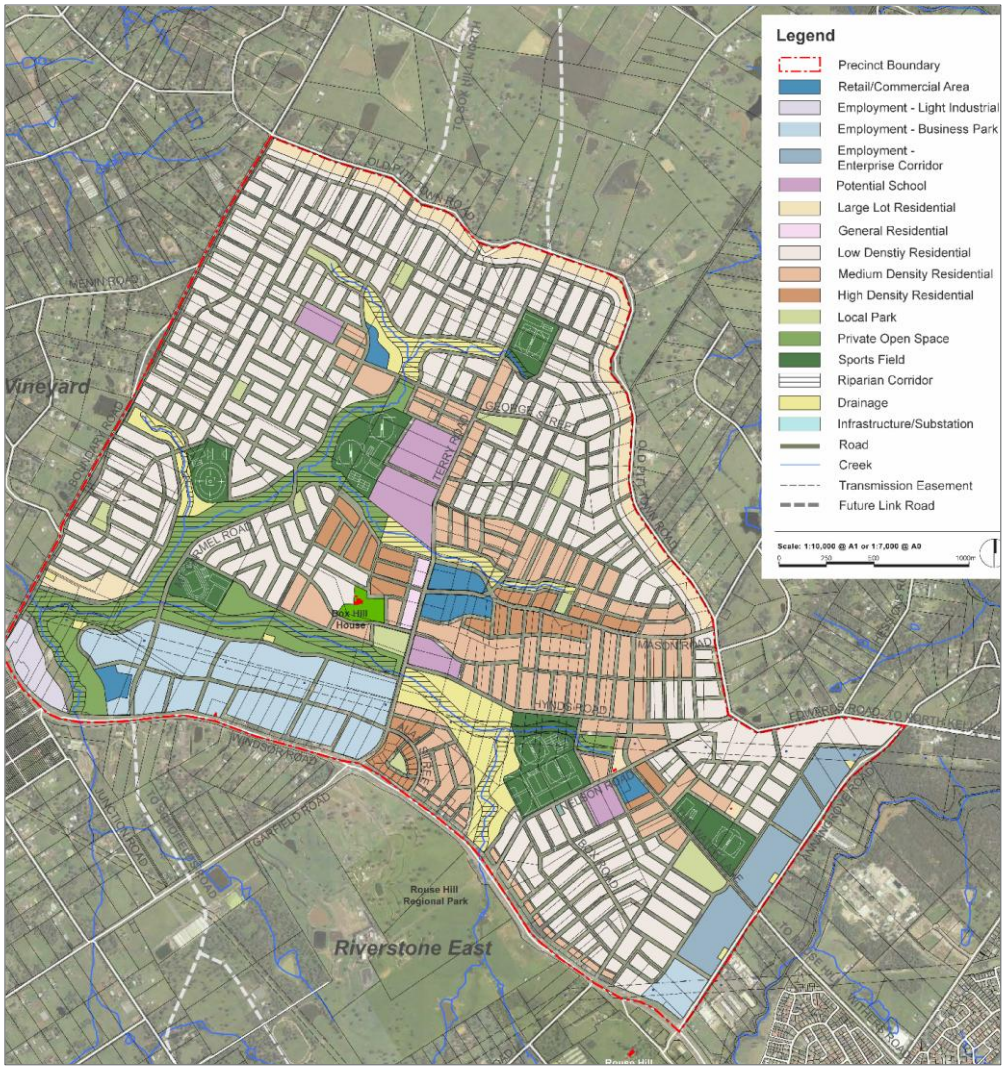
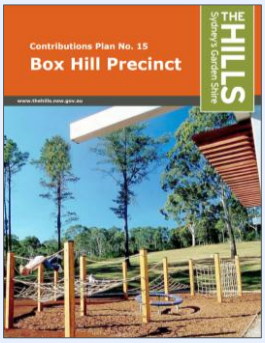


Figure 2: Box Hill Indicative Layout Plan (Source DPHI)

To facilitate construction of open space, active transport links, road works, drainage and administration costs within the Box Hill Precinct, Council prepared The Hills Section 7.11 Contributions Plan No. 15 - Box Hill Precinct (Box Hill CP). Expenditure will occur on a pro-rata basis in accordance with development competition, with the latest published projections (August 2024 revision) referenced in **Table 3**.

TABLE 3: BOX HILL PRECINCT – PROJECTED DEVELOPMENT COMPLETION

Year	Residential Development	Non-Residential Development
0-5	21%	0%
6-10	48%	21%
11-15	14%	32%
16-20	12%	34%
21-25	5%	13%
Total	**100%**	**100%**



Source: Box Hill CP

While financial contributions do not apply for Part 5 REF activities, it is emphasised in any case that the Box Hill CP includes an exemption of transport costs for schools based on direction from the Minister of Planning as follows:

Contributions for Schools

In accordance with the requirements of the Minister for Planning (27 June 2017), development for the purpose of schools within the Box Hill Precinct will only be required to make contributions towards water management land and capital.

Box Hill Precinct – Contributions Plan No. 15

2.2 Box Hill Precinct Network

2.2.1 Road Hierarchy

DPHI prepared the Box Hill and Box Hill Industrial Development Control Plan March 2018 (Box Hill DCP) to guide future development and networks within the Box Hill Precinct.

The Road Hierarchy for the Box Hill Precinct as envisaged under the Box Hill DCP is shown in **Figure 3**.

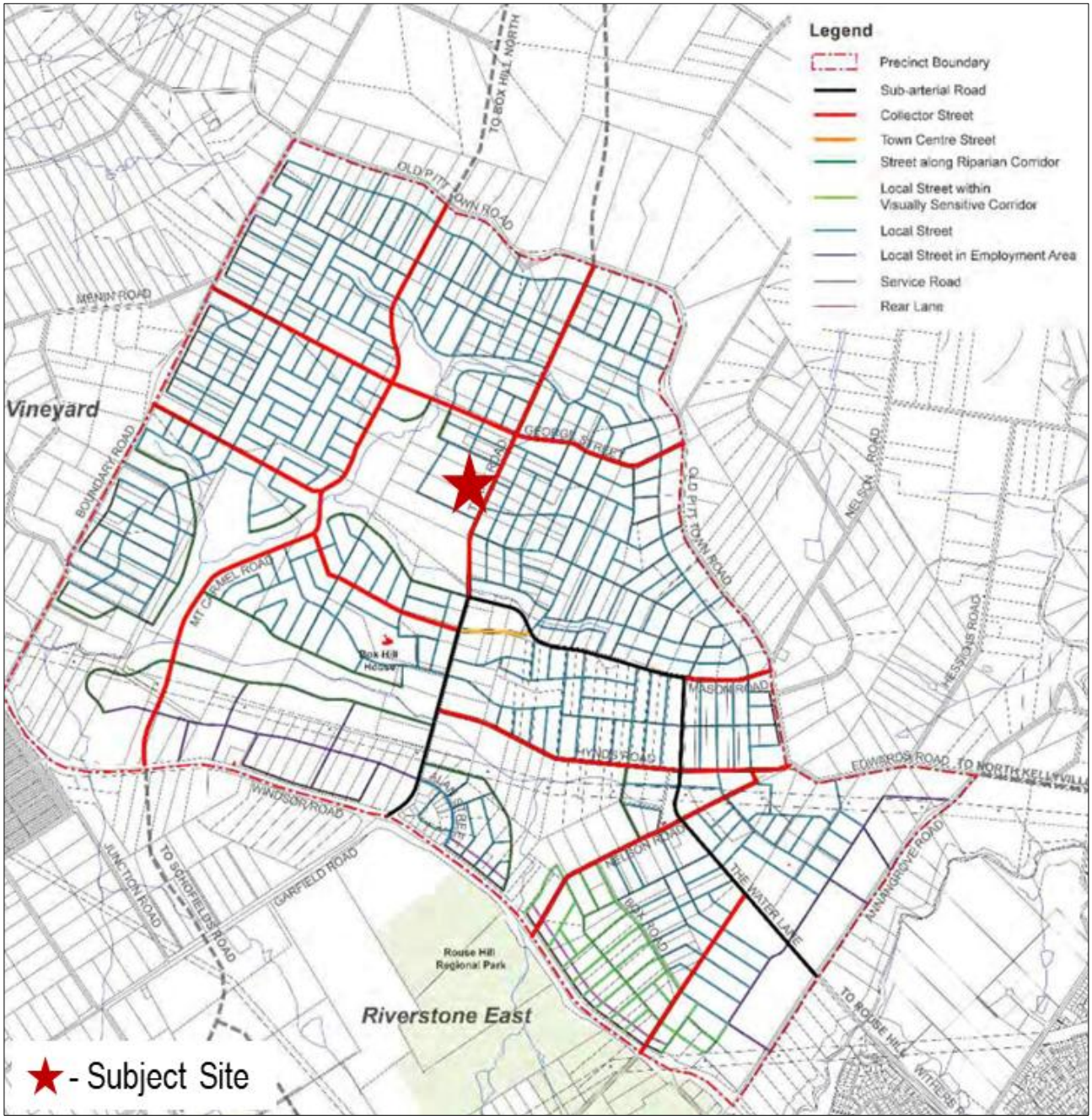


Figure 3: Box Hill Road Network (Box Hill DCP)

The description and key design elements for roads in proximity to the subject site are described in **Table 4**. Extracts of cross-sections for collector streets and local streets are also included in **Figure 4** and **Figure 5** respectively.

TABLE 4: BOX HILL PRECINCT – ROAD HIERARCHY

Street Type	Function	Design Elements
Sub-Arterial Road	Mediates between regional and local traffic routes, as well as linking arterial routes to town centres.	• Two traffic lanes in each direction (minimum width 6.5m for each direction); • A 1.2m strip of median to physically separate the two directions of traffic; • One 1.5m minimum footpath strip on one side, and a 2.5m shared path strip on the other.
Collector Street *Terry Road* Note 1	Collects traffic from local streets, with higher volumes of vehicles per day, linking neighbourhoods and centres, and accommodating public transport routes.	• One traffic lane in each direction (approx. 3.5m wide) • One 1.5m footpath strip on one side, and a 2.5m shared path strip on the other.
Local Street *Keeneland Street* *Sunnyhill Parkway*	Provides local residential access. Designed to slow residential traffic to give priority to pedestrians.	• One traffic lane in each direction (approx. 3m wide) • A minimum provision of one 1.2m footpath strip (depending on the expected traffic volumes).

Note 1: Section of Terry Road between Mason Road North and Old Pitt Town Road.

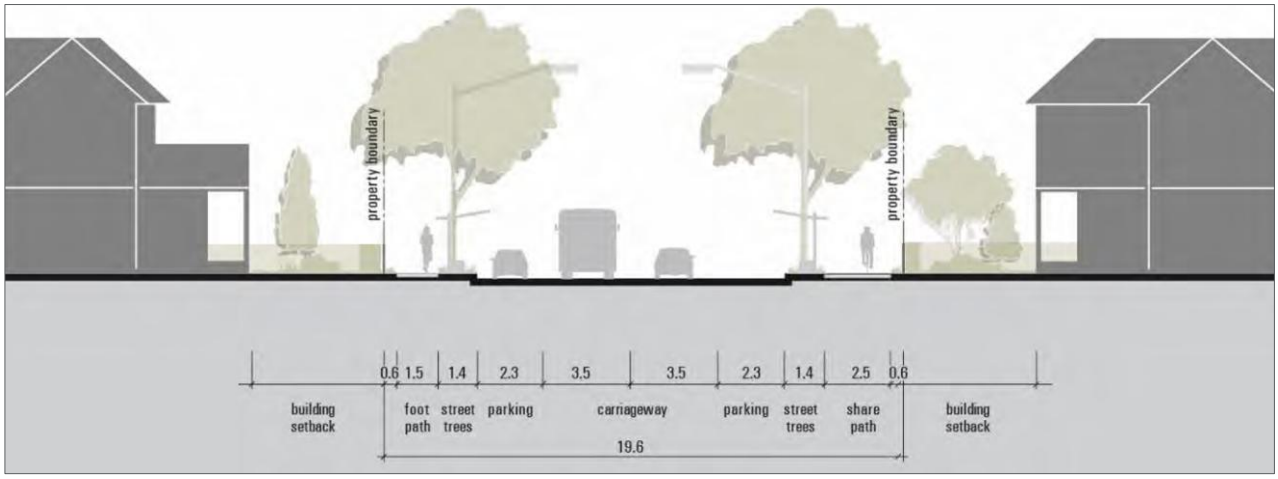


Figure 4: Collector Road Profile (Box Hill DCP)

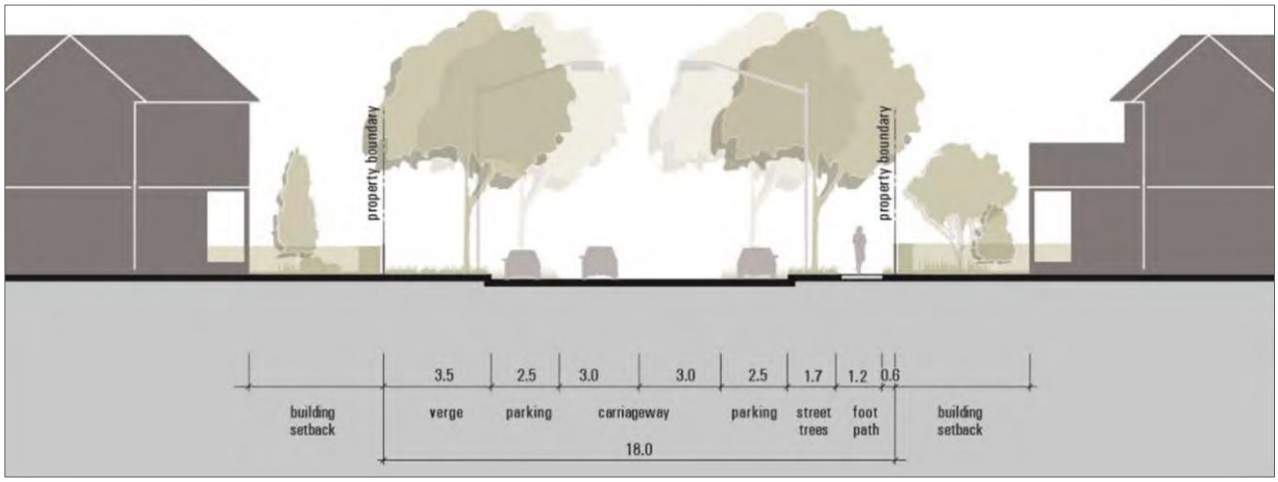
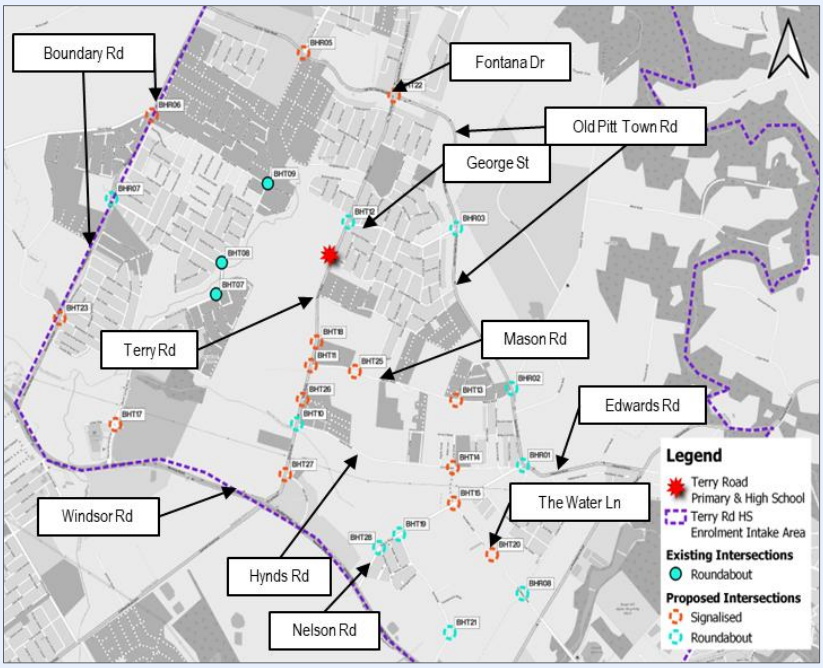


Figure 5: Local Road Profile (Box Hill DCP)

2.2.2 Key Precinct Intersections

The Box Hill CP adopted the outcomes of a strategic transport model (NETANAL) which nominated key intersection upgrades[1] as identified in **Figure 6**.



	Signalised Intersections		Roundabout Intersections
1	Windsor Rd / Annangrove Rd	15	Grandhill Parkway / Box Rd
2	Terry Rd / Hynds Rd	16	Hynds Rd / Nelson Rd / Edwards Rd
3	Terry Rd / Mason Rd	17	Mt Carmel Rd / Gardiner Dr
4	Terry Rd / George St	18	Mt Carmel Rd / Brahman Rd
5	Mason Rd / The Water Ln	19	Mt Carmel Rd / George St
6	Hynds Rd / The Water Ln	20	Mason Rd / Old Pitt Town Rd / Nelson Rd
7	Nelson Rd / The Water Ln	21	George St / Old Pitt Town Rd
8	Mt Carmel Rd / Prosper St	22	The Water Ln / Outback St
9	Box Rd / Nelson Rd		
10	Grandhill Parkway / The Water Ln		
11	Old Pitt Town Rd / Terry Rd / Fontana Dr		
12	Mt Carmel Dr / Old Pitt Town Rd / Valetta Dr		
13	Boundary Rd / George St		
14	Boundary Rd / Brahman Rd		

Figure 6: Key Intersection Upgrades – Box Hill CP

[1] *The Box Hill CP notes Council has also been preparing updated traffic modelling and warrant studies for various intersections in response to higher than anticipated yield estimates*

3 The Site

3.1 Site & Location

The site is located at 50 and 52 Terry Road, Box Hill. The site comprises two (2) separate lots, which have a combined area of 4.7ha, within a broadly rectangular parcel of land. The legal description of the site includes Lot 299 in DP 1285364 (50 Terry Road) and Lot 10 in DP 1285590 (52 Terry Road). An aerial map of the site is provided at **Figure 7**.

Figure 7: Site Aerial (Source: Nearmap / Ethos Urban, March 2025)

The site is located in Box Hill in The Hills Shire Council Local Government Area in the north-west of Sydney.

Box Hill is part of the North-West Growth Centre, which is being re-developed from rural/residential land to low- and medium-density residential subdivisions. The area was rezoned in 2013 to form the Box Hill Release Area. By completion, Box Hill will be home to approximately 42,480 residents (13,276 dwellings).

The site has frontages to Terry Road to the east and Keeneland Street to the north. It presently accommodates two large lot dwellings with access from Terry Road.

3.2 Surrounding Development

An outline of key community facilities in relation to the site is shown in **Figure 8**.

1	Carmel Village Shopping Centre	6	Future K-12 Catholic School
2	Brindle Parkway Reserve	7	Early Years Academy Box Hill
3	Equinox Drive Reserve	8	Future Box Hill Town Centre
4	Hannaford Avenue Reserve	9	10-minute drive to Metro Station
5	Temporary Box Hill Public School, George Street		

Figure 8: Site Context (Source: Architectus)

With respect to adjacent properties, the opposing frontages on Terry Road and Keeneland Street include built or zoned low density residential dwellings.

As indicated in **Figure 9**:

- to the west of the site (and included within the parcels of 50-52 Terry Road) a reservation is made for the future Sunnyhill Parkway (local road) which will include the Sunnyhill Parkway Sports Complex on the opposing side.

- Immediately to the south of the site, the property at 48 Terry Road is currently subject to a Planning Proposal to rezone land to enable medium density residential dwellings. It is also understood that land to the south of this site (and opposing Sunnyhill Parkway) has been acquired for the purposes of a future Catholic Private School.

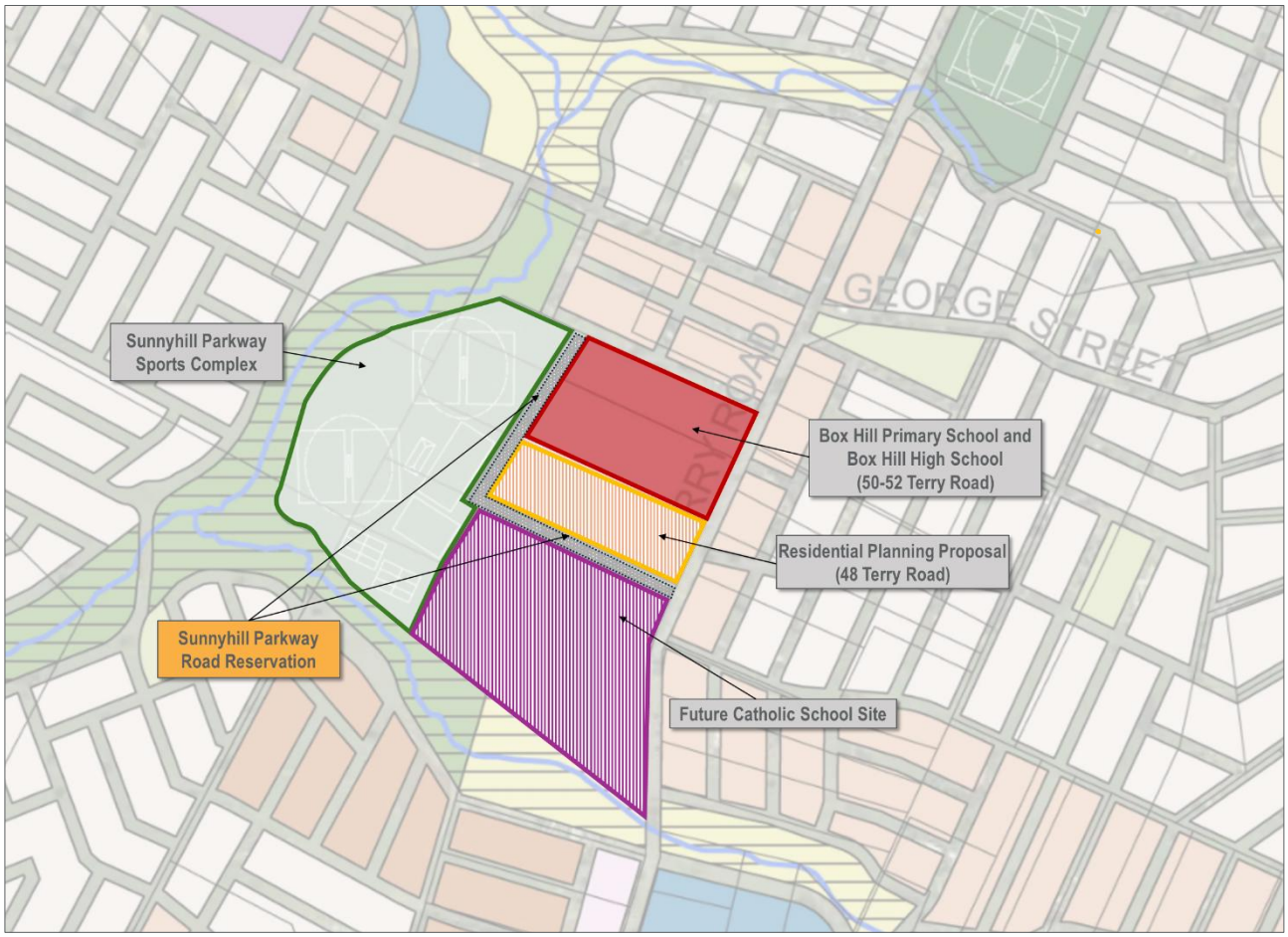


Figure 9: Adjacent Development

4 The Road Network

4.1 Key Roads and Intersections

With reference to the Box Hill Precinct Road Hierarchy, key roads and intersections in proximity to the site are identified in **Figure 10**.

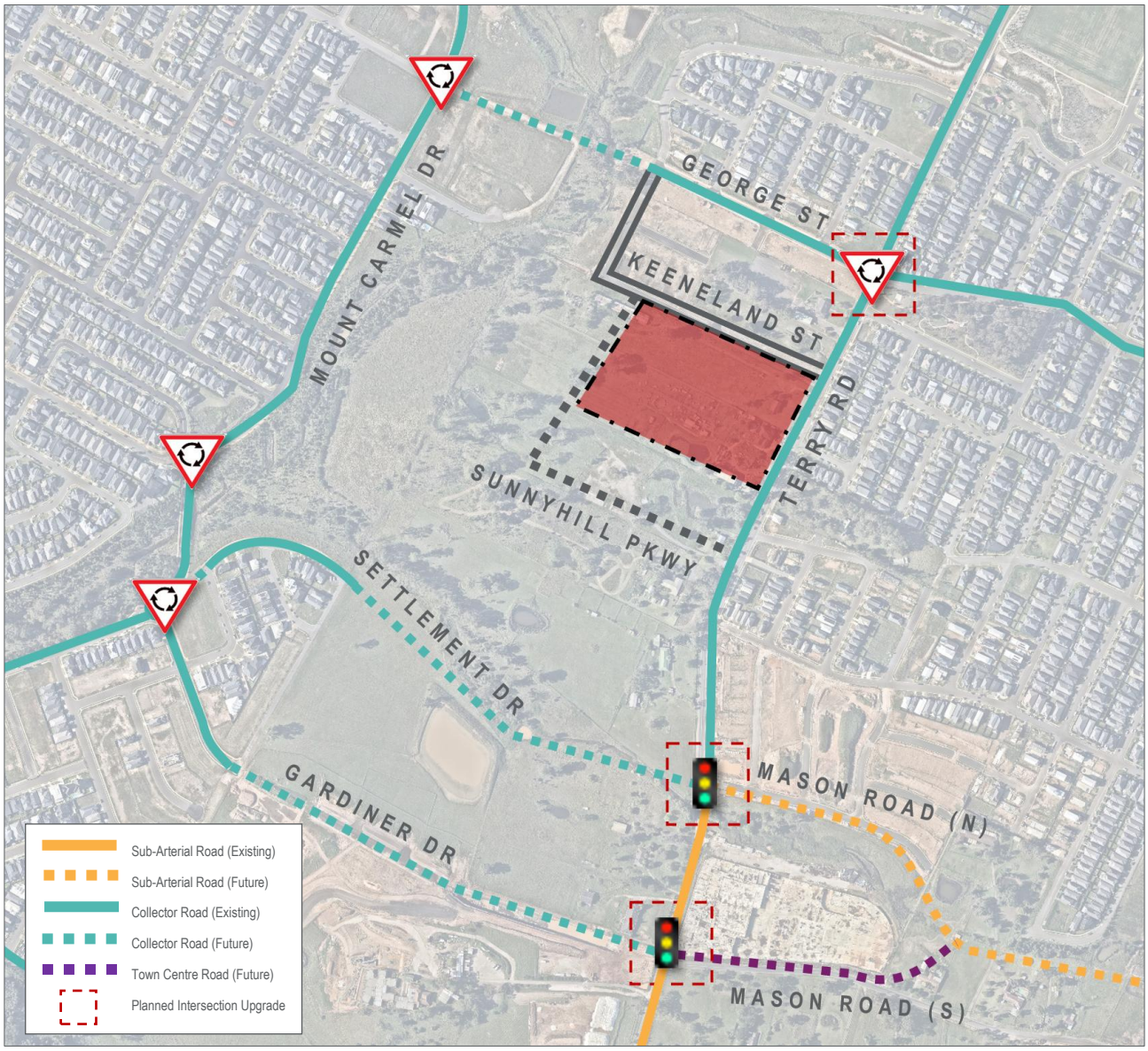


Figure 10: Box Hill Precinct Road Network (Source: Box Hill DCP)

Details of the key road reserves are provided in **Table 5** below.

TABLE 5: KEY ROADS

Road Name	Road Classification	Carriageway Width (DCP)	Road Reserve Width (DCP)	Status
Terry Road	Collector Road Note 1	19.6m	11.6m	Existing road built to rural standards and upgraded in sections. Site frontage effectively built to DCP standard (with some minor variability in kerb alignment)
George Street	Collector Road	19.6m	11.6m	Existing road which has missing segment between Mount Carmel Drive and Terry Road. Understood from Council advice that this segment will not be complete prior to 2028.
Keeneland Street	Local Road	18.0m	11.0m	Existing road built to DCP standard.
Sunnyhill Parkway	Local Road	18.0m	11.0m	Future road dependent on Council acquisition of land.

Note 1: Section of Terry Road between Mason Road North and Old Pitt Town Road.

To ascertain current traffic volumes on Terry Road, a traffic count was undertaken at the intersection of George Street on Tuesday 26 November 2024 between 6:30am – 9:30am and 3:00pm – 6:00pm. The directional volumes for the identified AM peak hour and PM peak hour are shown in **Table 6**.

TABLE 6: TERRY ROAD VOLUMES (NOVEMBER 2024)

Period	Peak Hour	Direction	Volumes
AM	8:00am – 9:00am	Northbound	181 veh/hr
		Southbound	414 veh/hr
PM	3:00pm – 4:00pm	Northbound	270 veh/hr
		Southbound	321 veh/hr

With reference to **Figure 10**, the existing key intersections in proximity to the site as well as any planned upgrades have been summarised in **Table 7**.

TABLE 7: KEY INTERSECTIONS

Intersection	Existing Configuration	Future Configuration	Staging
Terry Road and Keeneland Street	Priority Control	-	Intersection has not been identified under the Box Hill CP. Notwithstanding, Council has identified within TWG of the need for evaluation and potential upgrade of this intersection to accommodate the subject school.
Terry Road and George Street	Priority Control	Roundabout	Whilst initially identified for signalisation under the Box Hill CP, Council has since confirmed intentions to deliver a roundabout. It is assumed that this upgrade will be delivered prior to 2028.
George Street and Keeneland Street	Priority Control	-	-
Terry Road, Mason Road North and Settlement Drive	-	Signalised	Mason Road North and Settlement Drive will be extended to form a new 4-leg intersection at Terry Road. It is assumed that this will be delivered as a signalised intersection as per the Box Hill CP and prior to 2028.
Terry Road, Mason Road South and Gardiner Drive	Priority Control	Signalised	Terry Road currently forms a priority intersection with Mason Road. Gardiner Drive will be extended from the west to form a 4-leg intersection. It is assumed that this will be delivered as a signalised intersection as per the Box Hill CP and prior to 2028.
Terry Road and Keeneland Street	-	-	-

4.2 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 2019 and 2023. Locations of recorded crashes are shown in **Figure 11** and details summarised in **Table 8** below.

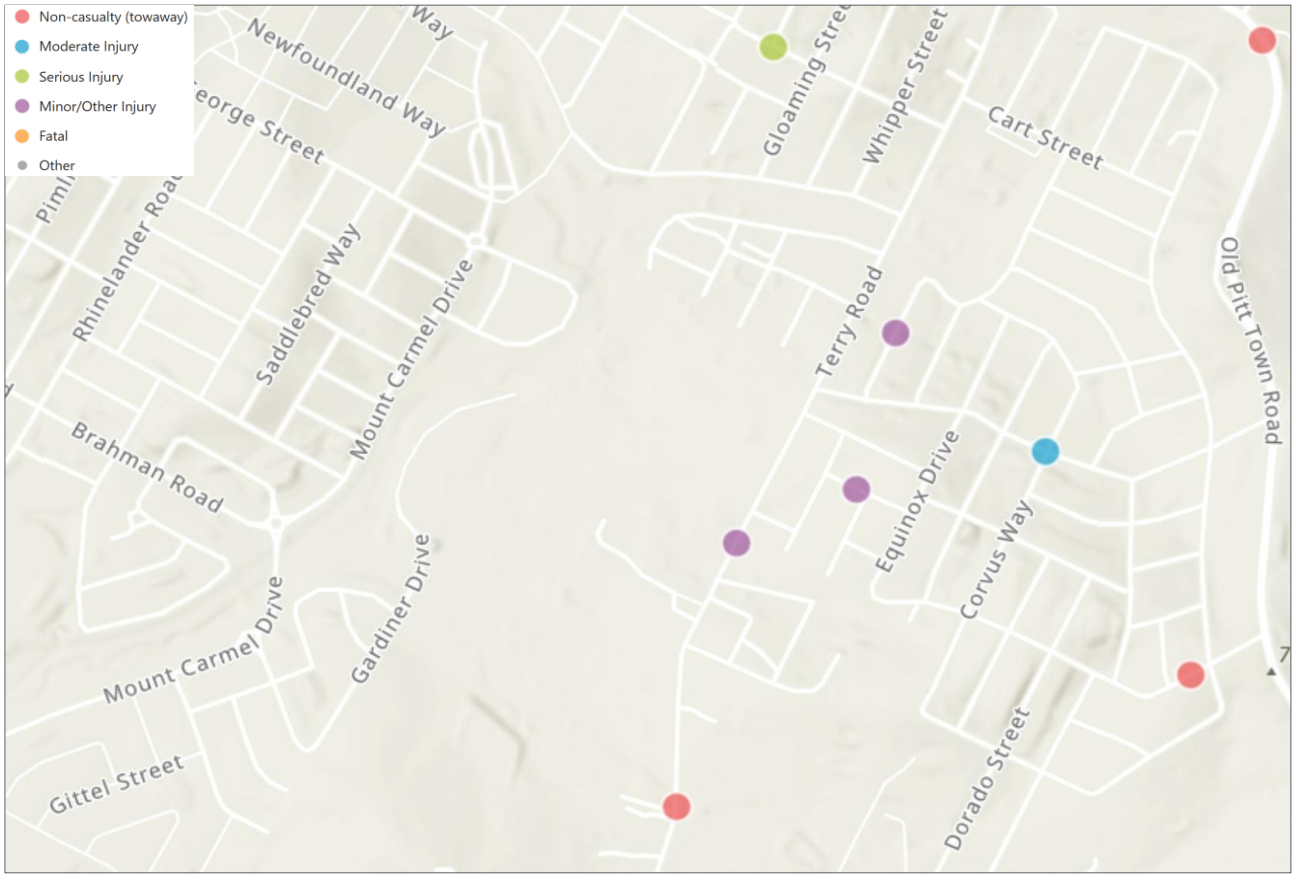


Figure 11: Collision Locations

TABLE 8: COLLISION TYPOLOGY

Year	Location	RUM Code	Number Injured	Degree of Crash
2019	Terry Road	87 – Off carriageway left on left bend into object / parked vehicle	1	Minor / other injury
2020	North of 36 Terry Road	85 – Off carriageway right on left bend into object / parked vehicle	0	Non-casualty (towaway)
2022	Dressage Street	71 – Left off carriageway into object / parked vehicle	1	Minor / other injury
	Intersection of George Street, Rangy Street and Corvus Way	21 – Right through	1	Moderate injury
	Old Pitt Town Road	81 – Off carriageway left on right bend into object / parked vehicle	0	Non-casualty (towaway)
	West of intersection of Limax Street and Capella Street	71 – Left off carriageway into object / parked vehicle	1	Minor / other injury
2023	Intersection of Newmarket Parkway and Gilgai Street	10 – Cross traffic	1	Serious injury
	Andromeda Parkway	71 – Left off carriageway into object / parked vehicle	0	Non-casualty (towaway)

Collisions which occurred within 500m of the Site are extracted and detailed above. Collisions which occurred in the area in the last five years have not take place along the immediate Site frontage roads. No fatalities were reported between 2019 – 2023. Six of the collisions identified involved vehicles veering off the carriageway suggesting vehicle speeds may have been a contributing factor.

It can be concluded that consideration should be given to reviewing vehicle speed limits on streets surrounding the school and extent of the required 40 km/h ‘School Zone’ speed restrictions.

5 Public and Active Transport

5.1 Public Transport

5.1.1 Existing Public Transport

The existing public transport network operating within the precinct comprises of bus services. Existing routes are summarised in **Table 9** and illustrated in **Figure 12**.

TABLE 9: EXISTING BUS ROUTES

Route	Operator	Service	Frequency
740	Busways	Box Hill to Rouse Hill	15 minutes
746	Busways	Riverstone to Rouse Hill	30 minutes

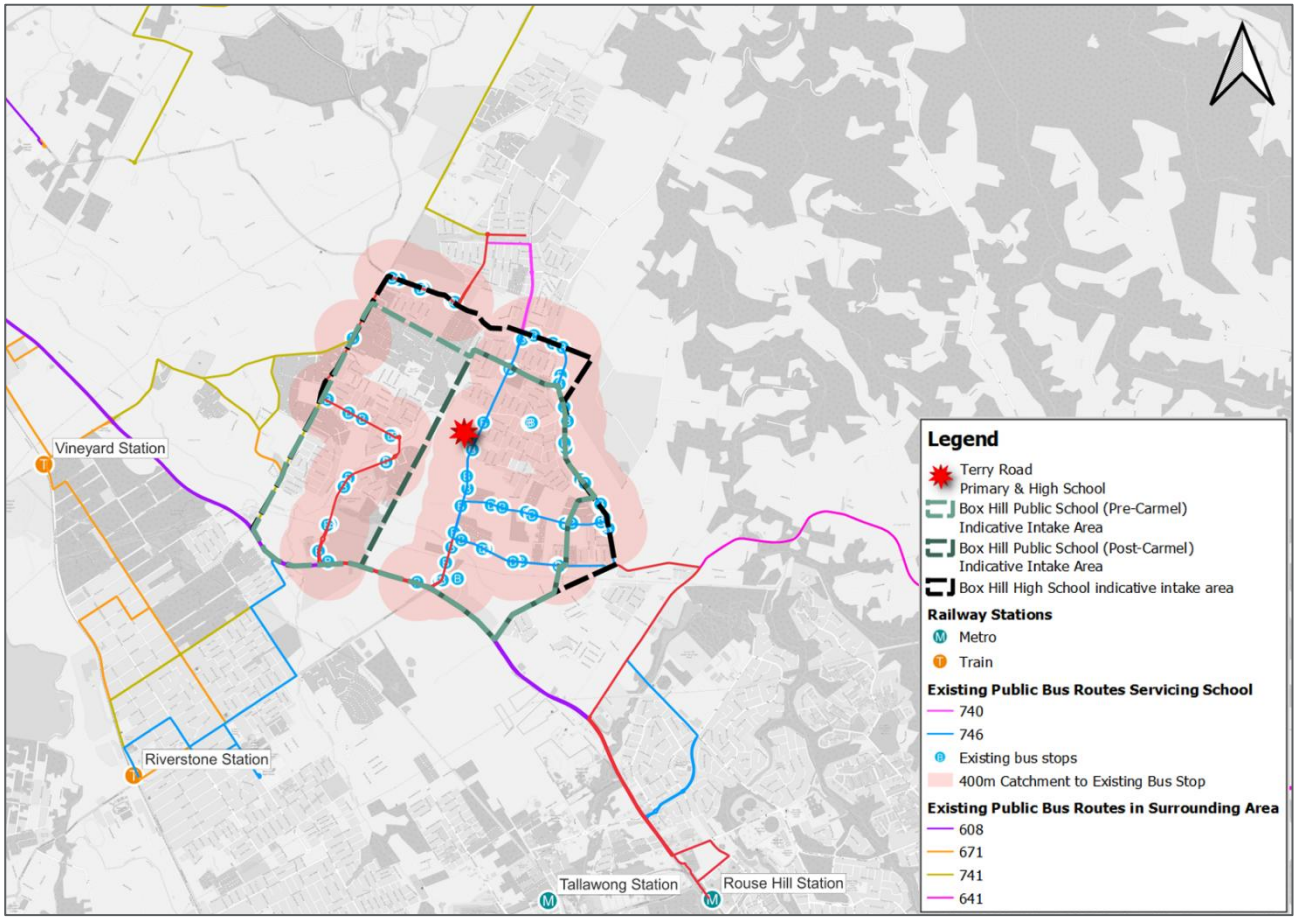


Figure 12: Public Bus Service Extents

5.1.2 Future Services

Under the Box Hill DCP, additional bus routes are intended to be introduced in the future (known as District Bus Routes).

These are shown in **Figure 13** and include bus stops which are generally spaced to service a 400m catchment.

The closest public bus stop in proximity to the school is situated in proximity to George Street, which will include both north-south and east-west routes.

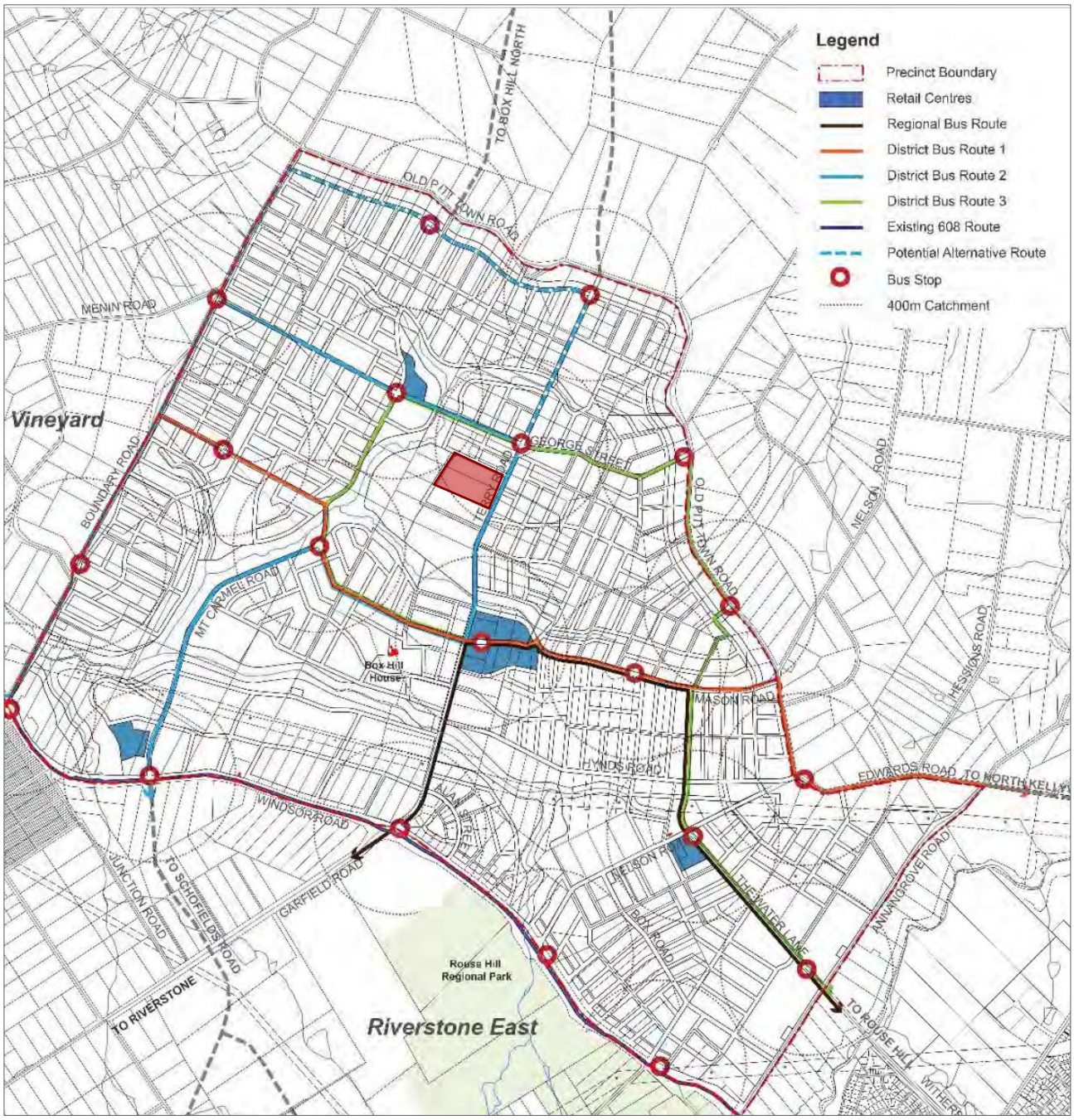


Figure 13: Future Bus Network (Box Hill DCP)

5.2 Active Transport

5.2.1 Pedestrian Infrastructure

The future Pedestrian and Cycle Network for the Box Hill Precinct is shown in **Figure 14**, as envisaged under the Box Hill DCP. This network will be enhanced by a pedestrian bridge which completes a connection between Sunnyhill Parkway and Mt Carmel Drive as per the Box Hill DCP.

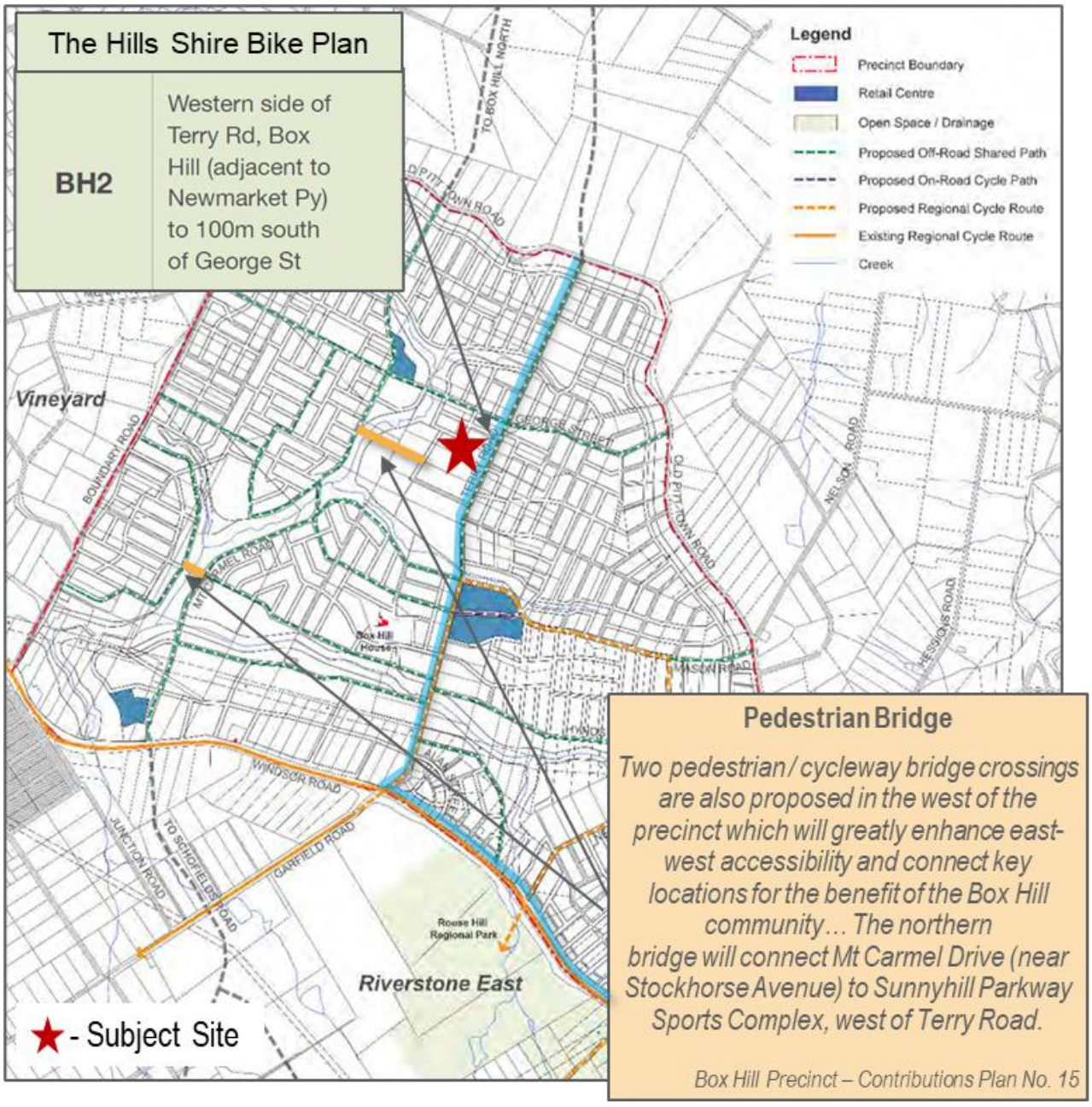


Figure 14: Pedestrian and Cycle Network (Box Hill DCP)

Footpath typologies from the Box Hill DCP are outlined in **Table 10** below, noting that Terry Road has been identified to provide an off-road shared path of width 2.5m to facilitate pedestrian and cycle movement.

TABLE 10: PATH REQUIREMENTS UNDER BOX HILL DCP

Street Type	Nominal Path Requirement
Local Street (≤3,000 veh/day)	1.2m path on one side
Local Street (>3,000 veh/day)	1.2m path on both sides
Collector Road	1.5m path on both sides
Town Centre Main Street	4.0m path and 6.0m path
Shared Path (Terry Road)	2.5m shared cycle / pedestrian path

6 The Activity

6.1 Project Description

The Activity is for a new public and high school at Terry Road, Box Hill that generally comprises the following:

- Demolition, tree removal and site preparation works.
- Construction of a new 1,000 student Public School of up to 3-storeys in height, and a 1,000 student High School of up to 4-storeys in height, including co-located halls.
- Construction of a 60 place preschool.
- Associated site landscaping, fencing and open space including sports fields and games courts.
- Changes to vehicular access including internal access road and car parking, new bus zone and Drop-Off and Pick-Up zones, pedestrian access, waste storage and loading areas.
- Augmentation of services and utilities to support the new school.

Reference should be made to the architectural drawings prepared by Architectus. Key entry points and kerbside facilities have been highlighted in **Figure 15**.

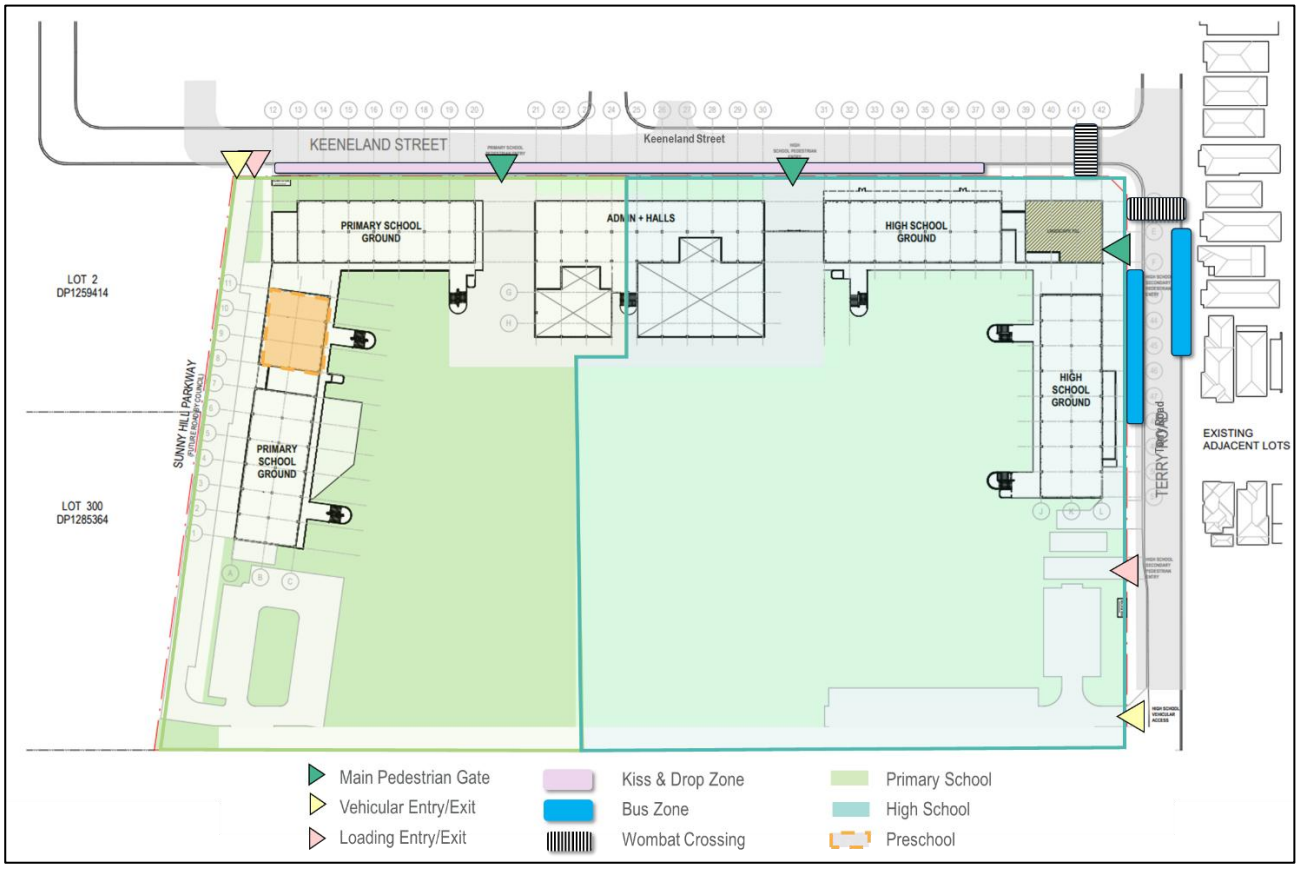


Figure 15: Concept Design – Access Points and Kerbside Facilities (Image Source: Architectus)

6.2 Kerbside and External Infrastructure

A Public Domain Plan has been prepared by Ason Group is has been prepared and is included in **Appendix D** to indicate the arrangement of kerbside and external infrastructure to support the operation of Box Hill Public School and Box Hill High School and is included in **Appendix D**. Key pedestrian infrastructure is identified in **Table 11** with kerbside and internal parking facilities outlined in **Table 12**. Intersection and network upgrades have also been identified in **Table 13**.

TABLE 11: ACTIVE TRANSPORT INFRASTRUCTURE

No	Type	Details
1	**Wombat Crossing**	Wombat crossing on Terry Road, adjacent to intersection with Keeneland Street. The wombat crossing has been offset by 10m from the intersection with pedestrian movements during morning and afternoons facilitated by an accredited crossing supervisor.
2	**Wombat Crossing**	Wombat crossing on Keeneland Street with integrated bicycle lanes, adjacent to intersection with Terry Road. The wombat crossing has been offset by 10m from the intersection with pedestrian movements during morning and afternoons facilitated by an accredited crossing supervisor.
3	**Shared Path**	Shared Path with minimum 4.0m width maintained along site frontage (increased from 2.5m standard width on Terry Road). The increased width of the shared path will facilitate concurrent pedestrian activity along the school frontage. It is recommended for Council to consider the application of signage and linemarking treatments that encourage a slow speed environment.
4	**Footpath**	Footpath with 3.5m default width (verge width) with provision for landscaping pockets. This footpath/verge configuration is consistent with many schools situated on local roads in Greater Sydney.
5	**Linemarking**	Double centreline treatment on Keeneland Street to discourage U-Turns during drop-off and pick-up periods.

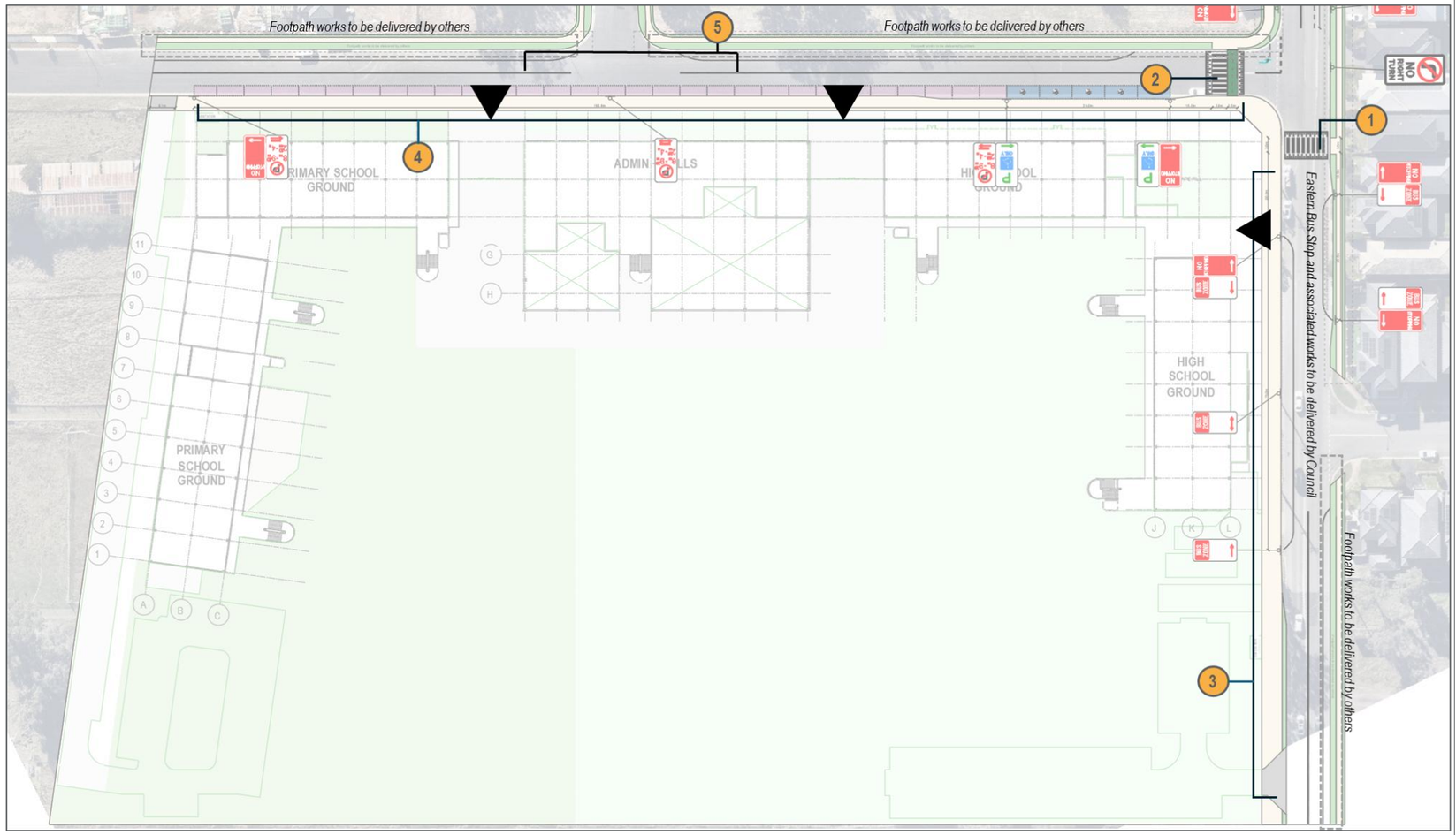
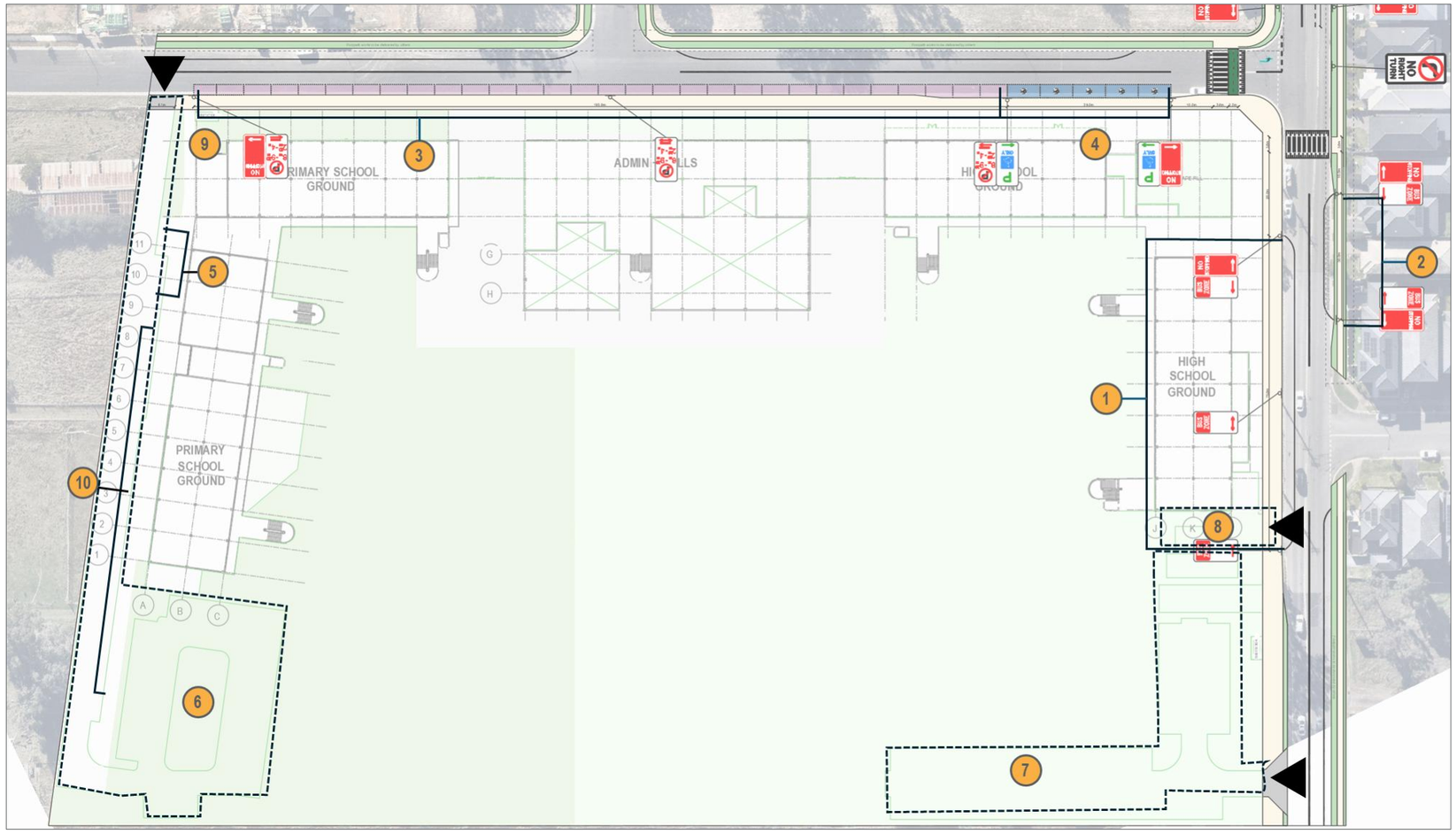


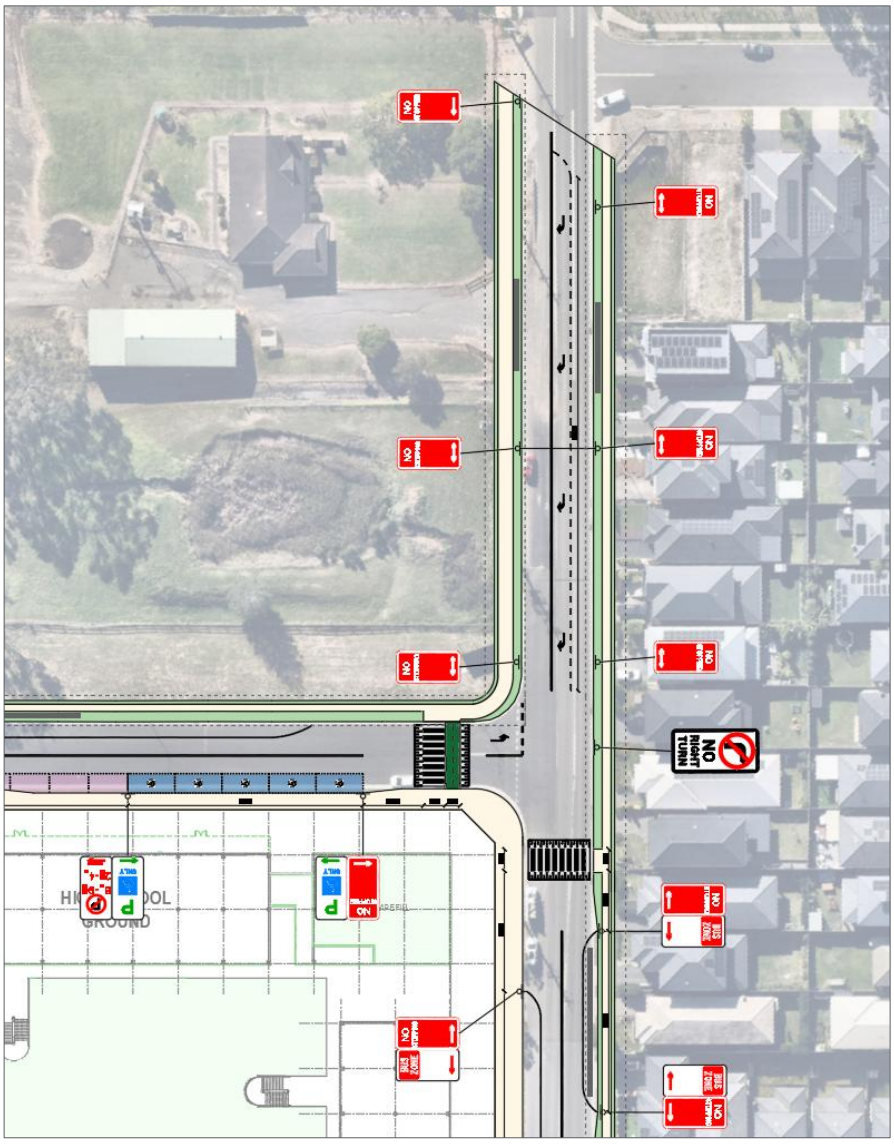
TABLE 12: KERBSIDE AND PARKING INFRASTRUCTURE

No	Type	Details	Provision
1	Bus Zone	75m Bus Zone on western side of Terry Road, south of Keeneland Street (including minor widening works)	5 buses
2	Bus Zone	30m Bus Zone on eastern side of Terry Road, north of Nix Street (including minor widening works)	2 buses
3	Drop-Off and Pick-Up Zone	194m No Parking (8:00am-9:30am, 2:30pm-4:00pm, School Days) Zone	30 spaces
4	High School SLU	39m Mobility Impaired Parking Zone on Keeneland Street, in accordance with accessible requirements of AS2890.5 (2020)	5 spaces
5	Public School SLU	4 spaces in PS car park designed in accordance with accessible requirements of AS2890.6 (2009)	4 spaces
6	Public School Staff and Preschool Staff	62 parking spaces including 56 spaces for public school staff and 6 spaces for preschool staff	
7	High School Staff	81 parking spaces	
8	High School Loading Zone	Loading dock suitable for waste collection and service vehicles up to size of 8.8m Medium Rigid Vehicle.	
9	Public School Loading Zone	Loading area suitable for waste collection and service vehicles up to size of 8.8m Medium Rigid Vehicle.	
10	Preschool	12 visitor spaces (for parents) including one accessible space.	



Note 1: Minibus design vehicle assumed as Toyota HiAce 12 seat commuter bus.

TABLE 13: INTERSECTION INFRASTRUCTURE

No	Intersection	Details
1	**Terry Road and Keeneland Street**	The intersection of Terry Road and Keenland Street has been constructed as a priority intersection and built to the standard Collector (2 lane) and Local Road (2 lane) profiles respectively. Currently all turning movements are permissible. To facilitate Drop-off and Pick-up activity, it is proposed to reconfigure the intersection as follows: • Provision of 85m right turn bay on Terry Road north approach, with offset through lanes. • No Right Turn restriction for traffic exiting on Keeneland Street onto Terry Road. These measures are proposed to encourage use of the designated kerbside facility on the southern side of Keeneland Street (school frontage) as well as to minimise impacts on through traffic on Terry Road.
		

7 Catchment Analysis

7.1 Student Catchment

The anticipated school enrolment catchment boundaries in relation to the future Box Hill Public School and Box Hill High School as informed by School Infrastructure (SI) are shown in **Figure 16** and **Figure 18** respectively. Notably this includes a shift in the catchment area for Box Hill Public School that would respond to the development of a future public school in the Mount Carmel area west of the site.

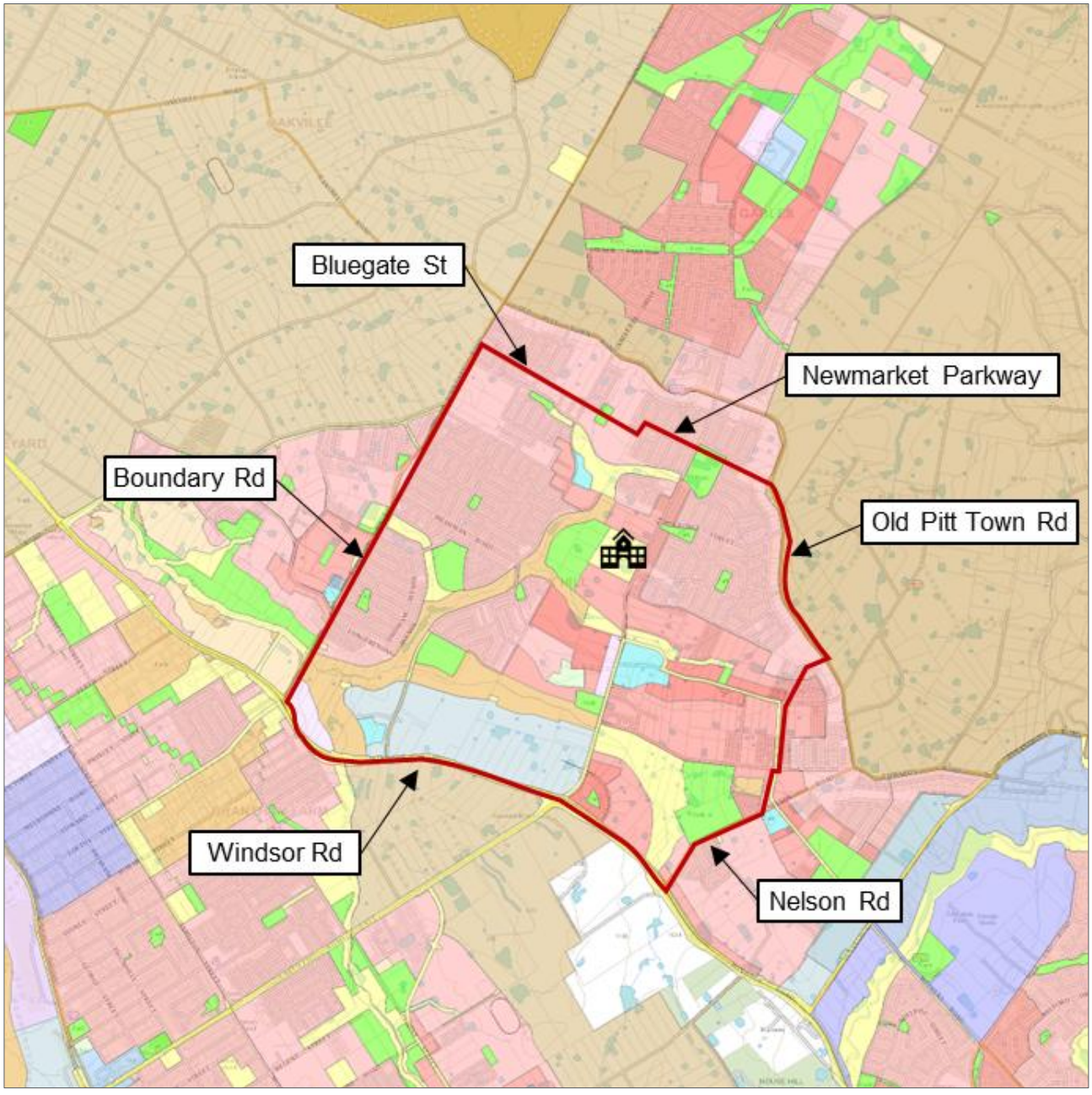


Figure 16: Box Hill Public School Catchment – Pre-Carmel

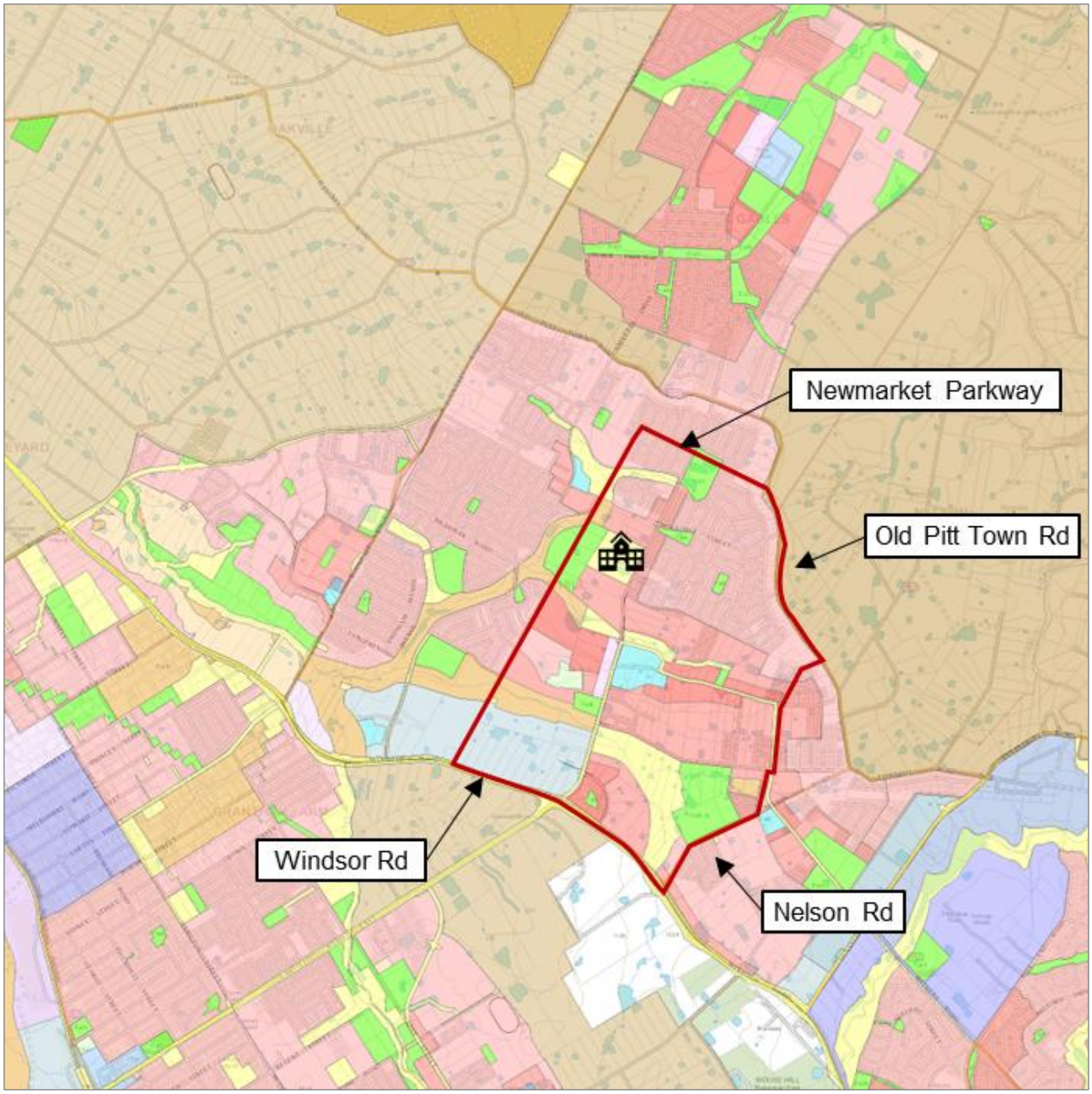


Figure 17: Box Hill Public School Catchment – Post-Carmel

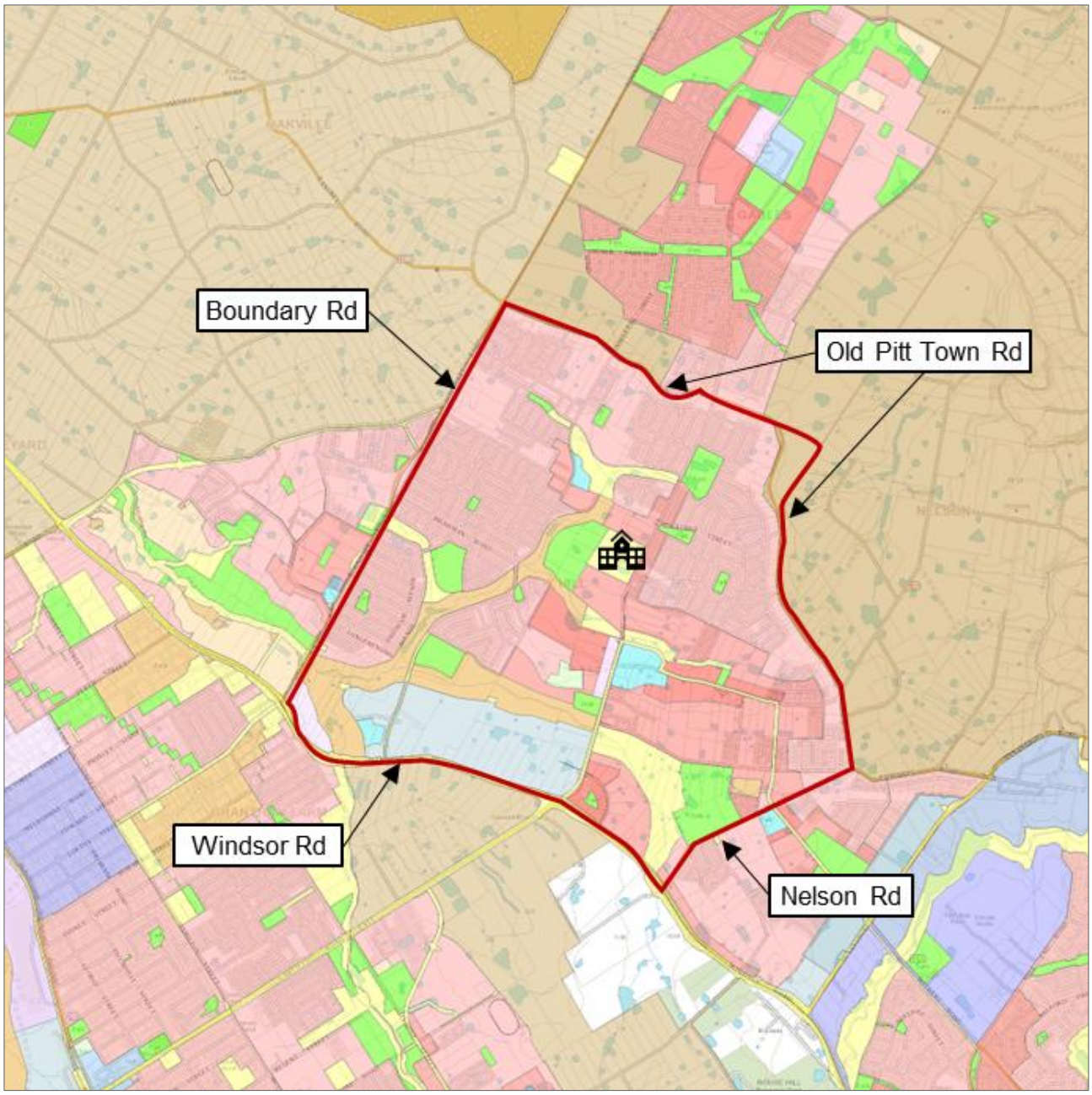


Figure 18: Box Hill High School Catchment

7.1.1 Student Enrolment Geospatial Analysis

In consideration of the School being constructed as a new development in a greenfield precinct undergoing significant population growth, SI provide a database of indicative dwellings forecast to be built by years 2026, 2031 and 2036 within the public and high school indicative catchment areas. Using these dataset, Ason Group conducted a student density projection analysis for the respective school catchments in assessment years 2028 and 2036 (as adopted for traffic modelling of network performance).

Figure 19, **Figure 20**, **Figure 21** and **Figure 22** demonstrate the density of student locations within the indicative intake boundary of the proposed school with reference to Day-of-Opening (2028) and Design Horizone (2036).

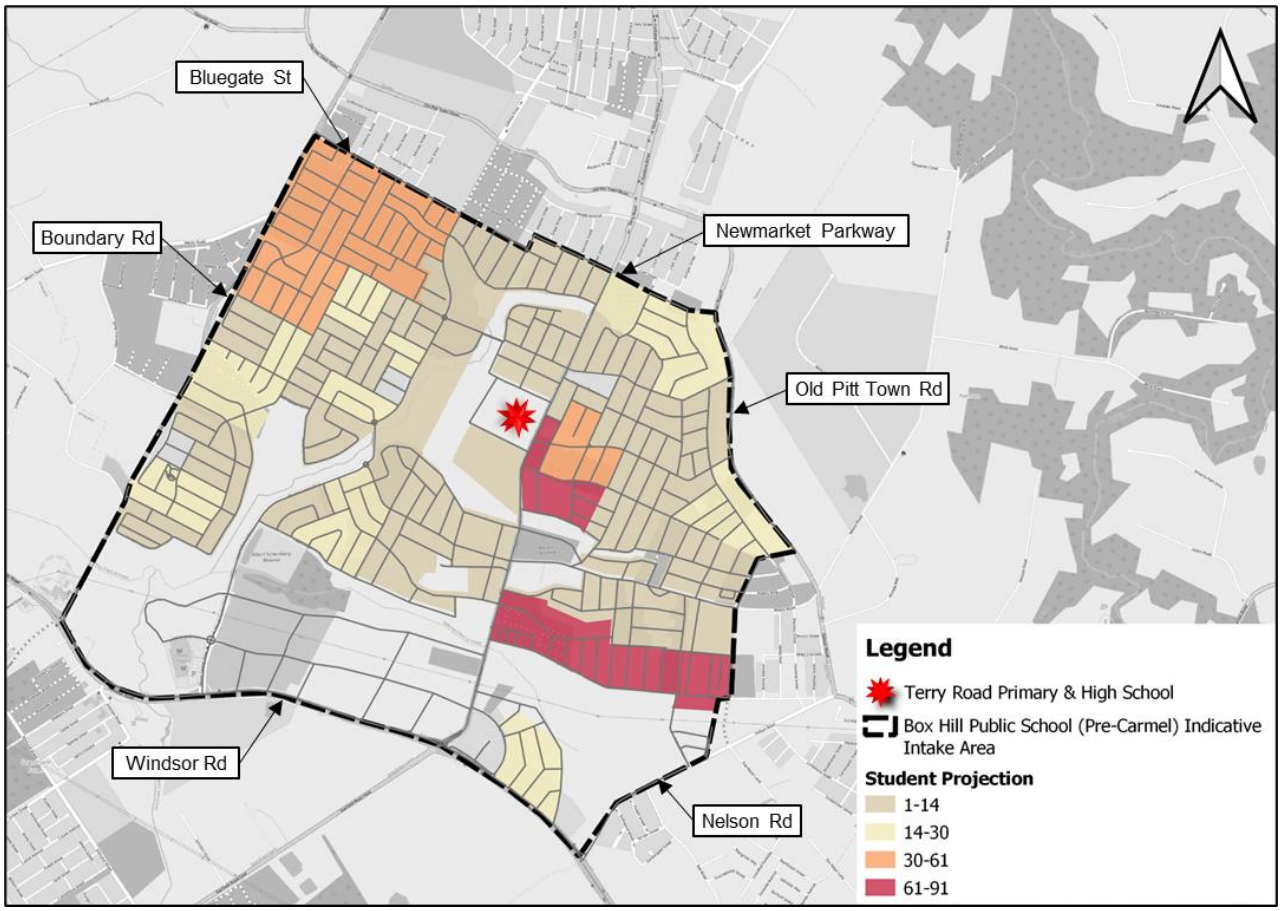


Figure 19: Student Density Projection: Box Hill Public School – Pre-Carmel (2028)

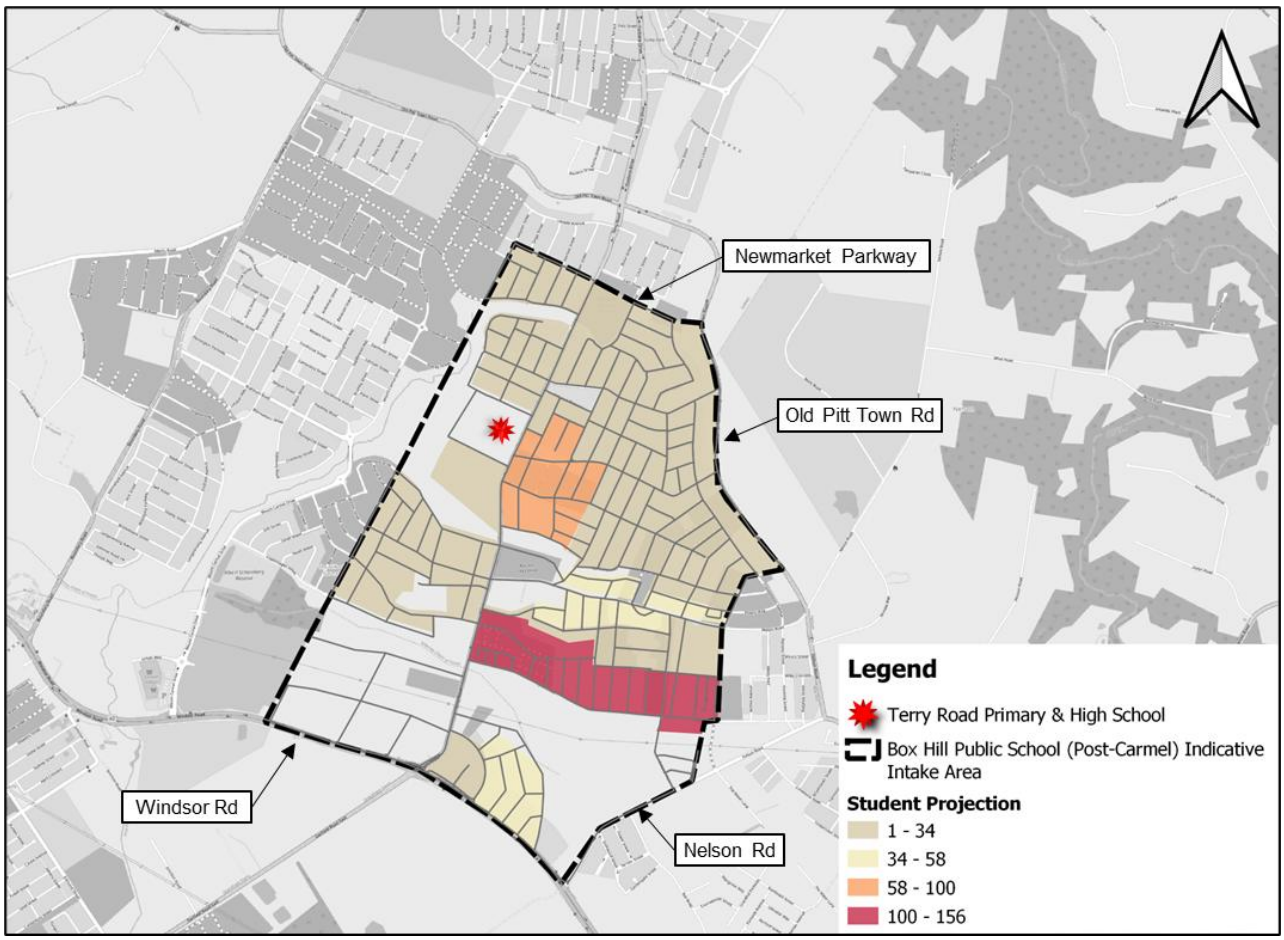


Figure 20: Student Density Projection – Box Hill Public School Post-Carmel (2036)

As shown in Figure 20 above, the anticipated intake boundary for Box Hill Primary School is significantly reduced for the Post-Carmel catchment in 2036, with medium to high density residential developments located within 1200m on-path walking distance to the school.

Therefore, a significantly increased student travel mode share by active transport is anticipated as a result of the adjusted catchment.

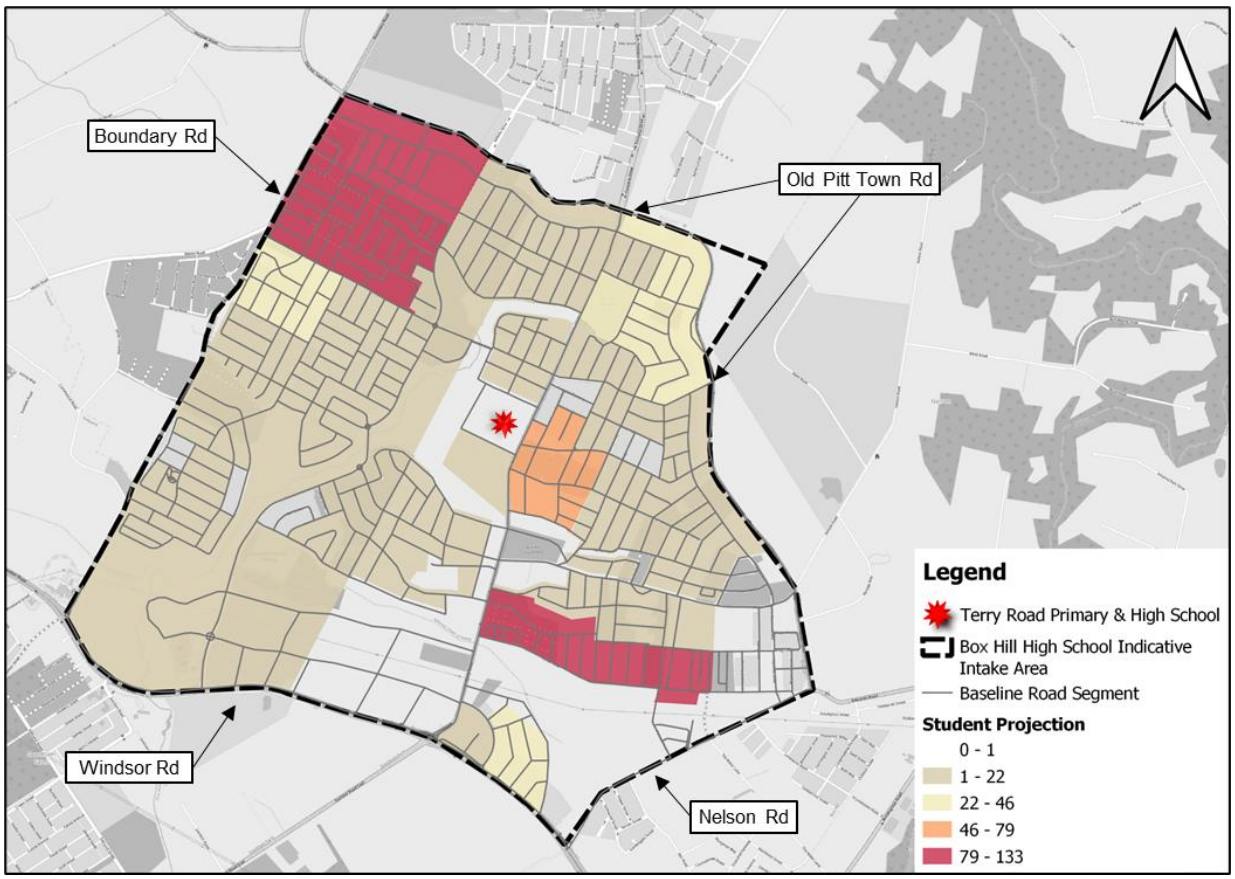


Figure 21: Student Density Projection: Box Hill High School (2028)

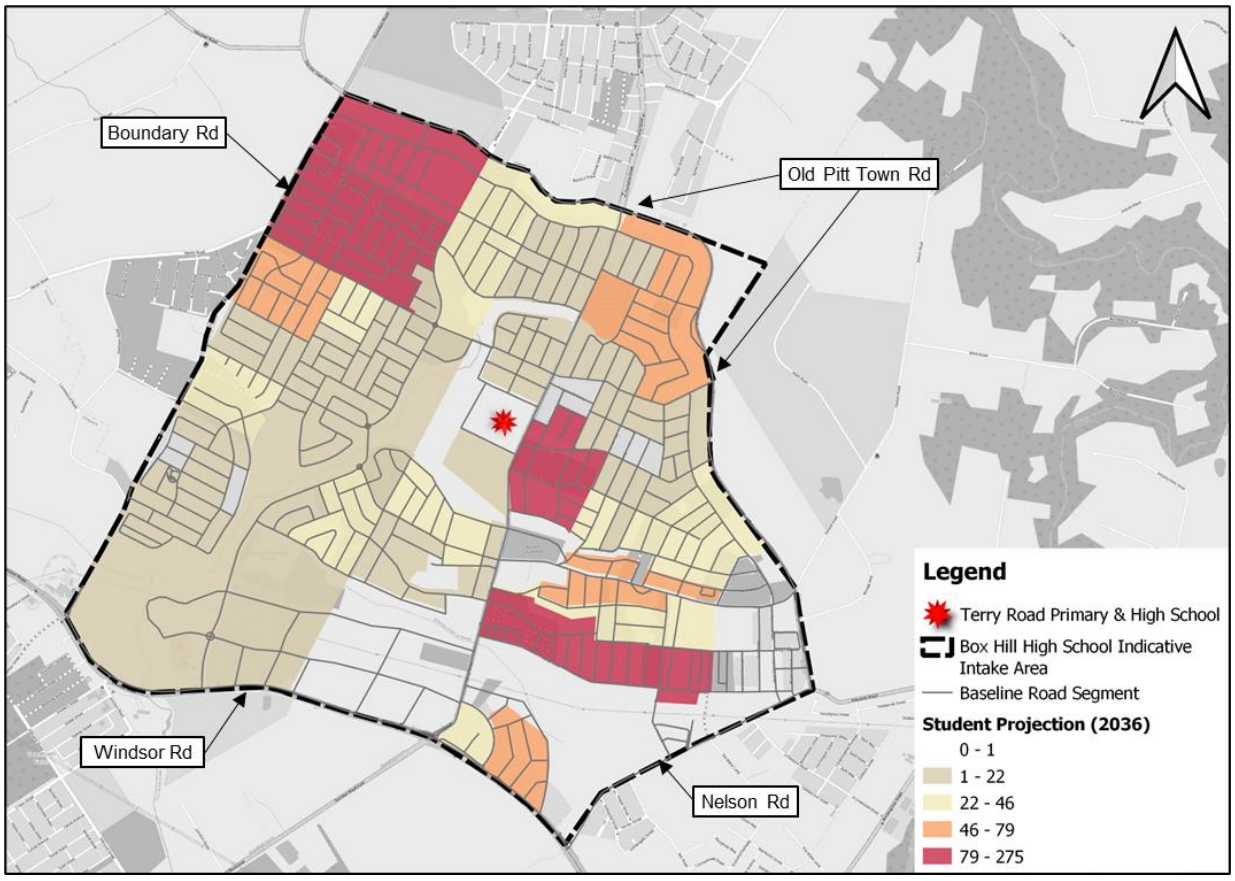


Figure 22: Student Density Projection: Box Hill High School (2036)

A comparison of Figure 21 and Figure 22 indicates an increase in the delivery of medium and high density residential dwelling within 1.2km walking distance and 3.6km cycling distance to the School, in particular dwellings located to the east and north east of the School.

Therefore, it is anticipated that the change in Public School intake area, the increase in nearby residential dwelling density and the subsequence increase in student population in close proximity to the School would allow more students to travel to and from the School via non-vehicle trips in 2036. The anticipated change in mode share and relevant supporting infrastructure to achieve the mode share targets are detailed in the School Transport Plan prepared separately to the Transport Assessment.

7.1.2 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 Kindergarten to Year 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 Year 3 to Year 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 1.6km.
- The walking distance from home to school is 2.3km or further.

As defined above, **Figure 23** demonstrates the SSTS exclusion zones within the proposed School's enrolment catchment boundaries for Year 3 to Year 6 with reference to the proposed School's location.

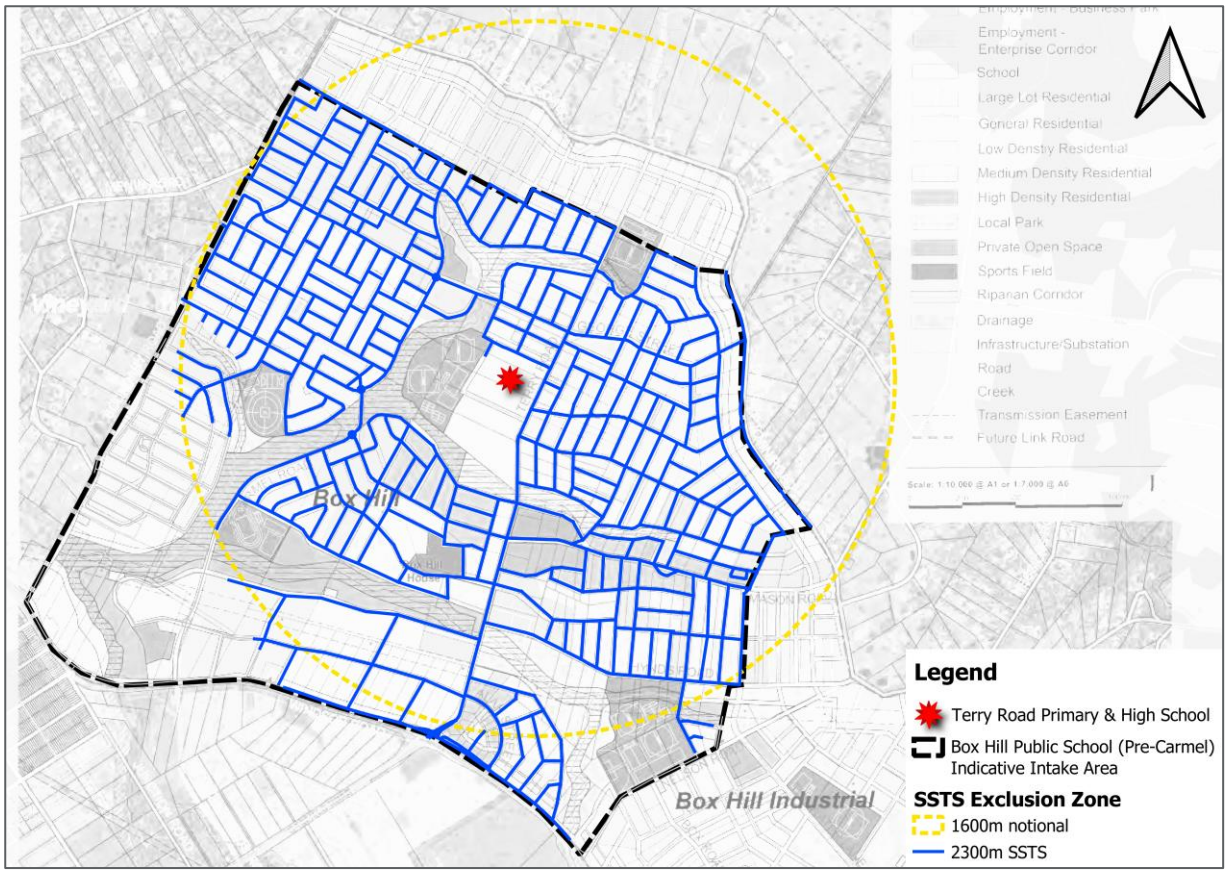


Figure 23: SSTS Exclusion Zones (Box Hill Public School – Pre-Carmel)

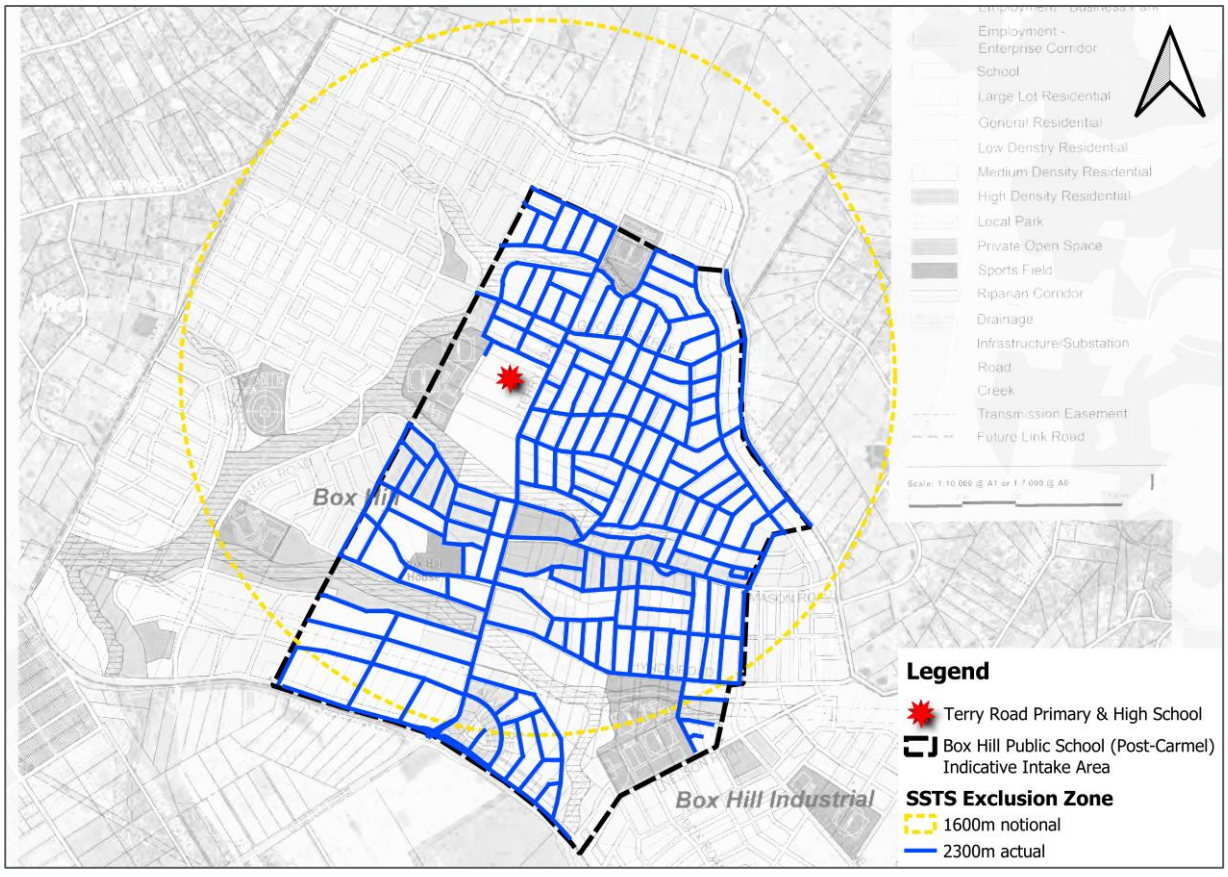


Figure 24: SSTS Exclusion Zones (Box Hill Public School – Post-Carmel)

Figure 25: SSTS Exclusion Zones (Box Hill High School)

The exclusion zones above demonstrate that both the 1.6km radius and 2.3km on-path distance within the Public School and 2.0km radius and 2.9km on-path distance within the High School capture the wider proportion of the local area in which the majority of the student population is would be residing. Therefore, it is anticipated that the majority of the public and high school aged students would not be eligible for the SSTS public transport subsidies.

7.2 Active Transport Catchment

7.2.1 Pedestrian Catchment

SI has characterized the walking catchment of a school within 5, 10 and 15-minute walking distance increments of the school, representing desirability for the catchment area.

In this regard, the on-path and notional walking distance relative to the Site for Box Hill Public School demonstrated in **Figure 26**.

It should be noted that the walking catchment analysis assumes active transport infrastructure provision between George Street and Mt Carmel Drive for Day-of-Opening, on the basis of the school servicing this sub-catchment.

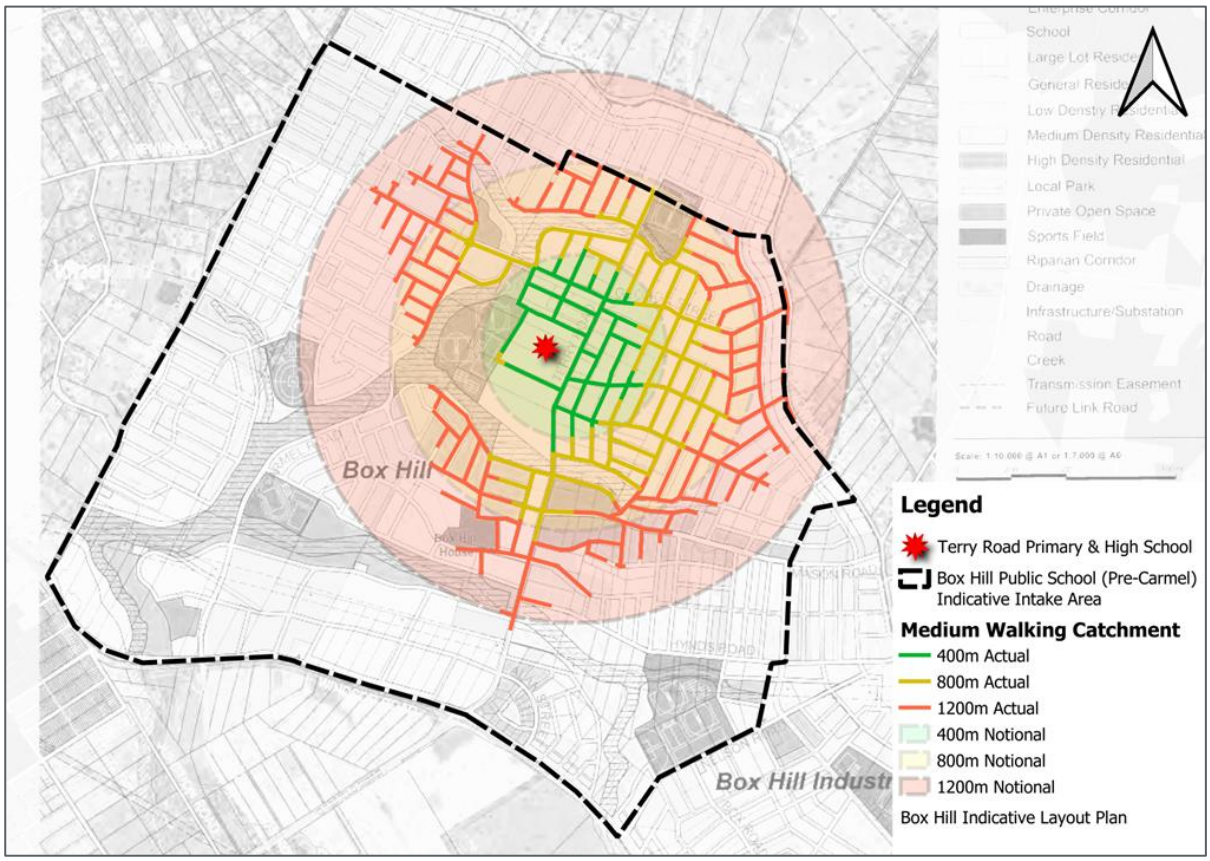


Figure 26: Box Hill Public School (Pre-Carmel) Walking Catchments

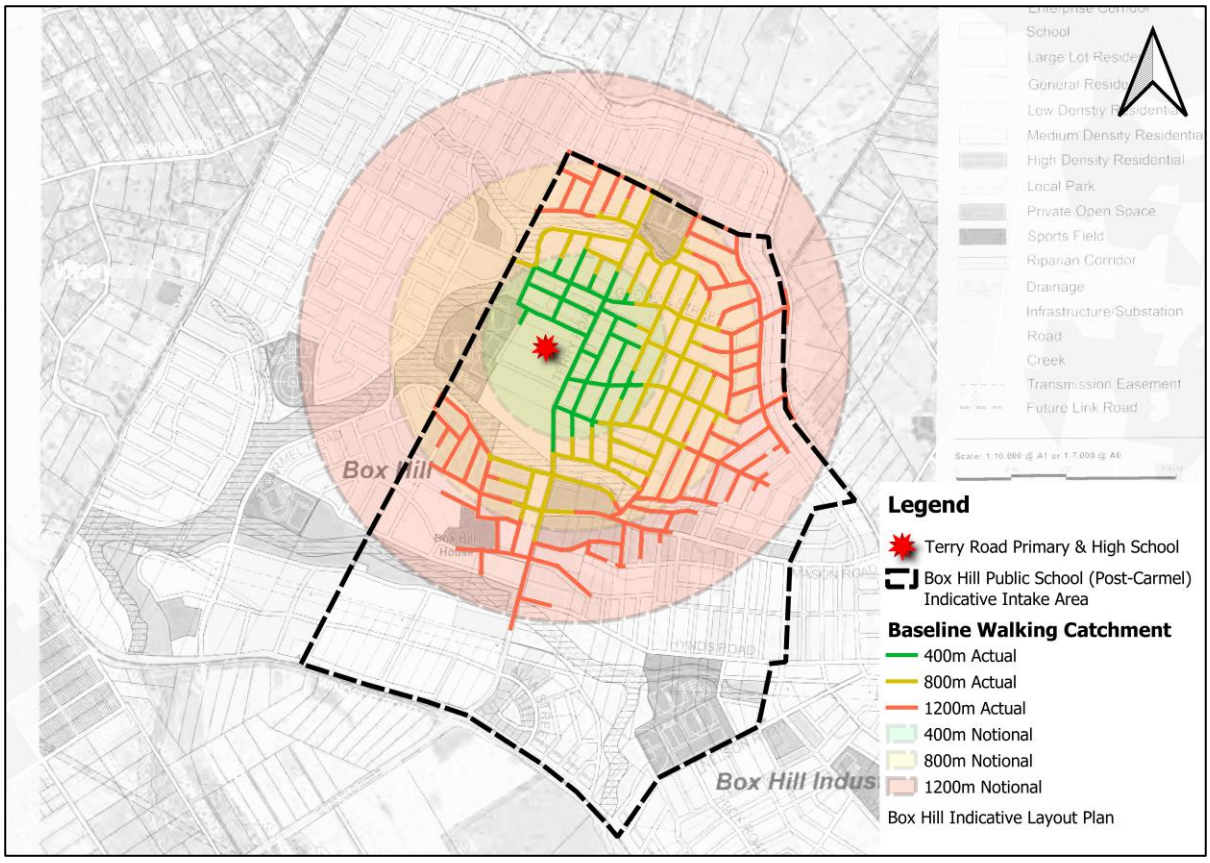


Figure 27: Primary School (Post-Carmel) Walking Catchments

As shown, the Public School walking catchments are anticipated to cover a large proportion of the School's Post-Carmel enrolment catchment boundary, indicating beneficial proximity to the surrounding residential areas.

Similarly, the on-path and notional walking catchments to Box Hill High School is indicated in **Figure 28** below.

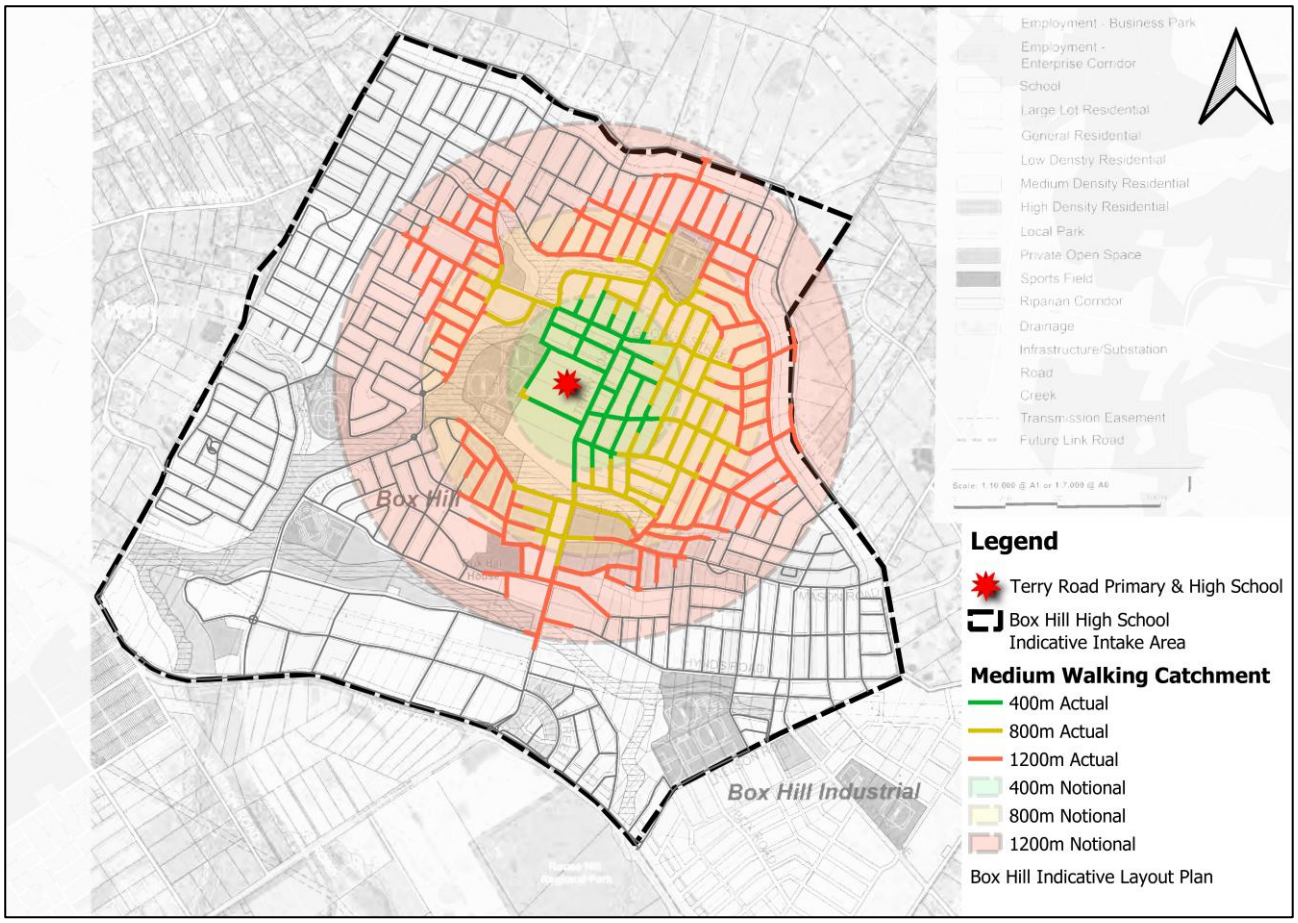


Figure 28: High School Walking Catchments

7.2.2 Cycling Catchment

In addition to the pedestrian catchment guidelines described by SI, the catchment areas for cycling are defined in a similar format of 5-minute increments (approximately 1.2km increments). Accordingly, the extent of the catchment captures cycling movements as applicable to the usage of pedestrian and shared pathways.

Figure 29 and **Figure 30** illustrate the maximum extent of the cycling catchment zones for Box Hill Public School and Box Hill High School respectively.

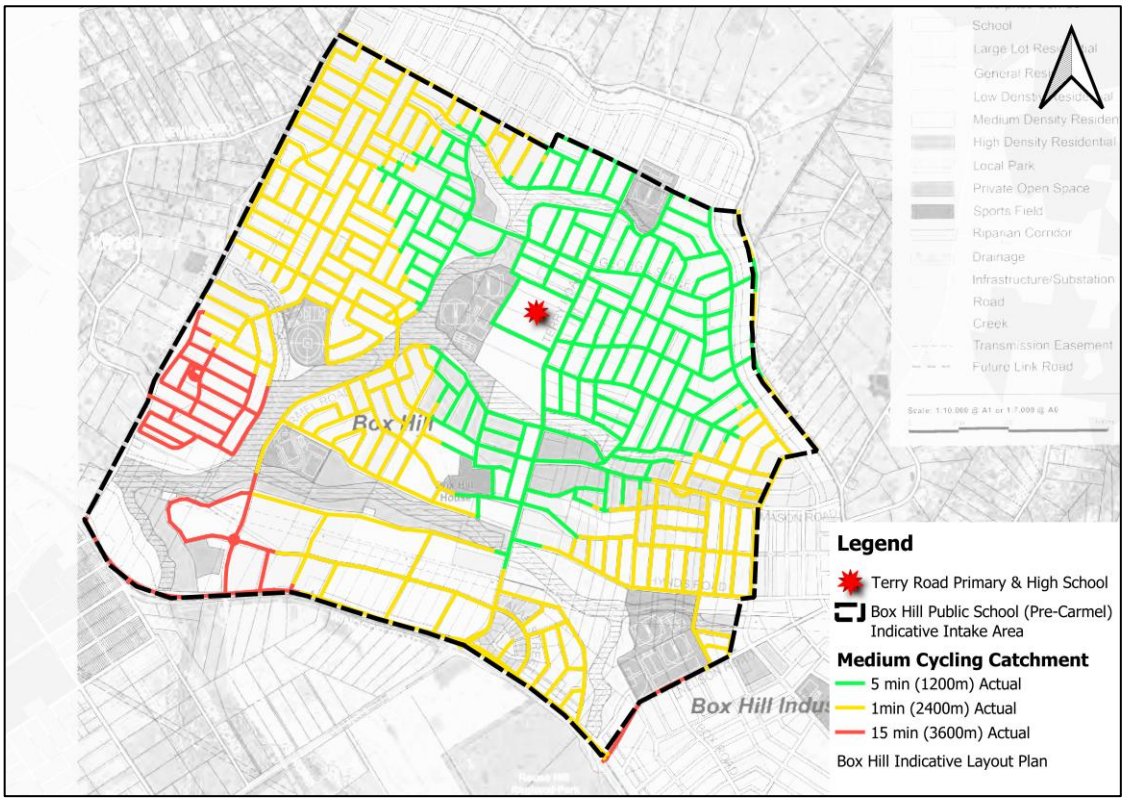


Figure 29: Box Hill Public School Cycling Catchment

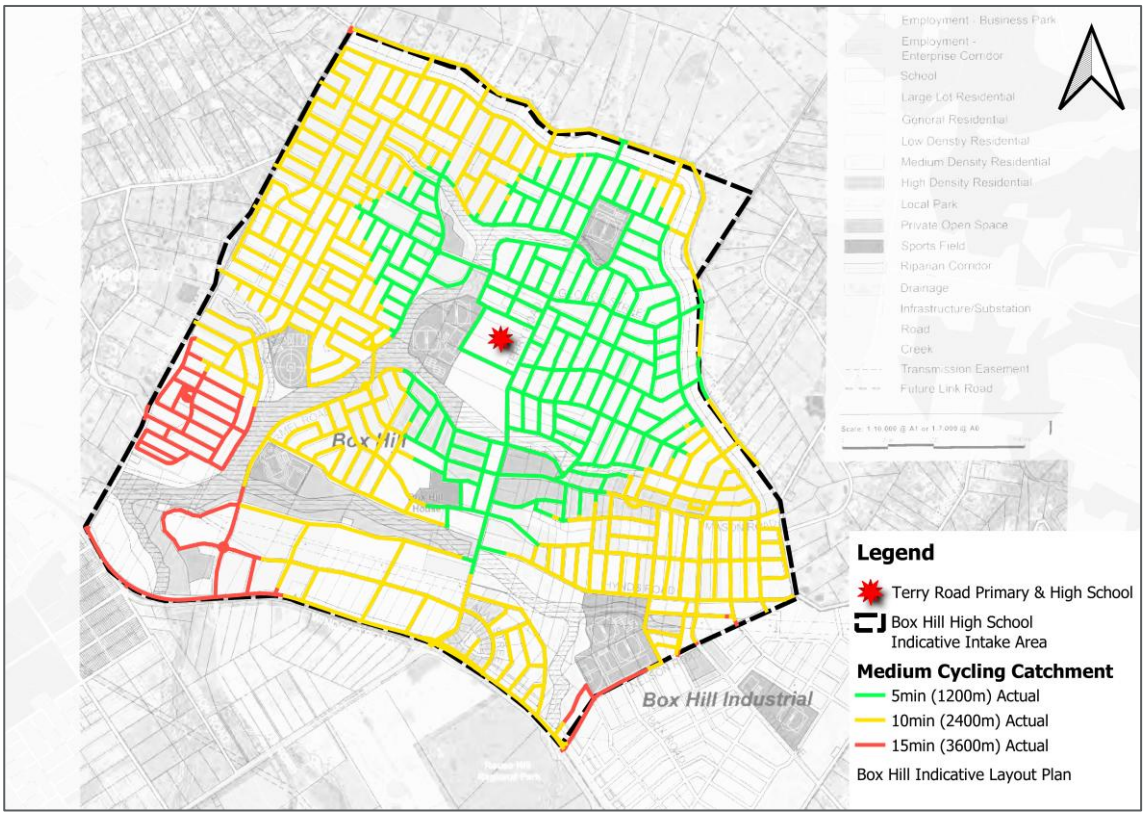


Figure 30: Box Hill High School Cycling Catchment

With reference to the above figures, it is evident that the majority of the students would be living within the respective public and high school cycling catchments.

7.3 Mode Shares

With consideration of the kerbside and external infrastructure (Section 6.2) and catchment data analysis results (Section 0), the below mode shares have been nominated for Pre-Carmel (2028) and Post-Carmel scenarios (2036) to reflect precinct changes with residential development in the Box Hill Precinct.

TABLE 14: MODE SHARES – BOX HILL PUBLIC SCHOOL – PRE-CARMEL (2028)

Travel Mode	Staff		Students	
	Number	%	Number	%
Car (as driver)	53	95%	-	-
Car (as passenger)	1	2%	439	44%
Bus	1	1.5%	183	18%
Walking	1	1.5%	338	34%
Bicycle / Scooter	0	0%	40	4%
Total	**56**	**100%**	**1,000**	**100%**

TABLE 15: MODE SHARES – BOX HILL HIGH SCHOOL – PRE-CARMEL (2028)

Travel Mode	Staff		Students	
	Number	%	Number	%
Car (as driver)	77	95%	-	-
Car (as passenger) Note 1	2	2%	240	24%
Bus	1	1.5%	200	20%
Walking	1	1.5%	500	50%
Bicycle / Scooter	0	0%	60	6%
Total	**81**	**100%**	**1,000**	**100%**

Note 1) Mode share includes low proportion of Year 12 drivers (based on similar trip distribution characteristics).

TABLE 16: MODE SHARES – BOX HILL PUBLIC SCHOOL – POST-CARMEL (2036)

Travel Mode	Staff		Students	
	Number	%	Number	%
Car (as driver)	53	95%	-	-
Car (as passenger)	1	2%	220	22%
Bus	1	1.5%	240	24%
Walking	1	1.5%	500	50%
Bicycle / Scooter	0	0%	40	4%
Total	**56**	**100%**	**1,000**	**100%**

TABLE 17: MODE SHARES – BOX HILL HIGH SCHOOL – POST-CARMEL (2036)

Travel Mode	Staff		Students	
	Number	%	Number	%
Car (as driver)	77	95%	-	-
Car (as passenger) Note 1	2	2%	120	12%
Bus	1	1.5%	260	26%
Walking	1	1.5%	560	56%
Bicycle / Scooter	0	0%	60	6%
Total	**81**	**100%**	**1,000**	**100%**

Note 1) Mode share includes low proportion of Year 12 drivers (based on similar trip distribution characteristics).

8 Traffic Impacts

8.1 Study Network

The following study area has been identified in consultation with TfNSW. Key intersections which have been considered as part of the Transport Assessment are shown in **Figure 31** below and include:

- Keeneland Street / George Street – existing
- Terry Road / George Street – existing
- Terry Road / Keeneland Street – future
- Terry Road / Sunnyhill Parkway – future
- Terry Road / Mason Road (North) – future
- Terry Road / Mason Road (South) – future

Figure 31: Study Area

8.2 Reference Documents

The following data and analysis reports have been reviewed and referenced to ascertain the development trip generation rates associated with the activities for this site:

- GTA Consultants, Roads and Maritime Services Trip Generation Surveys, Schools Data Report dated 04/09/2014 (Schools Trip Generation Data Report).
- GTA Consultants, Roads and Maritime Services Trip Generation Surveys, Schools Analysis Report dated 25/08/2014 (Schools Trip Generation Analysis Report).

Furthermore, Council has previously conducted warrant assessment and transport studies for Terry Road to substantiate the necessity for signalisation of several critical intersections as part of the forthcoming infrastructure upgrades aligned with the Box Hill Masterplan.

The following list outlines the documents previously prepared by Council and submitted to TfNSW:

- The Hills Shire Council, Warrant Study for Terry Road, Fontana Drive and Old Pitt Town Road Intersection, Issue 2, dated 21/02/2022 (Terry Road/Old Pitt Town Road intersection Warrant Study).
- The Hills Shire Council, Network Modelling, dated September 2023 (Terry Road Network Modelling).

To inform background growth, Council obtained STFM data from TfNSW to determine the projected traffic volumes on Terry Road for assessment years 2026 and 2036. Findings from these studies, along with the corresponding SIDRA modelling outputs, have been submitted to TfNSW, which has approved the Terry Road/Old Pitt Town Road intersection Warrant Study. Therefore, this traffic impact assessment adopts the intersection geometry and demand of Council's 2026 and 2036 model as the future base case, the impact of the proposed school development has been assessed in addition to the future base network demand.

8.3 Modelled Scenarios

The scenarios considered for network performance assessment for future base case and the proposed school development are outlined in **Table 18** below.

TABLE 18: MODELLING SCENARIOS

Scenario			Inputs		
#	Description	Year	Geometry	Background Traffic	Development Traffic
1	**Reference Case**	2026	Priority-controlled intersections: – Keeneland St / Terry Rd – Terry Rd / George St (Roundabout) – Keeneland St / George St – Mason Rd (N) / Terry Rd / Settlement Dr – Mason Rd (S) / Terry Rd / Gardiner Dr	Demand from Council's Network Modelling memo[1]	n/a
2	**Opening Baseline**	2028	Per Scenario 1	Scenario 1 + Linear quantum growth p.a. extracted from Warrant Study 2026~2036 x 2 years + Keeneland St low density residential	n/a
3	**Project Opening**	2028	Per Scenario 1	Per Scenario 2	Full Capacity *Pre-Carmel Catchment*
4	**Project Future**	2036	Per Scenario 1 – with extension of George Street to the west of Keeneland Street.	Per Scenario 2	Full Capacity *Post-Carmel Catchment*

Notes:

1) A Peak Flow Factor of 1 is to be applied to Scenario 1 SIDRA model to ensure consistency with Council's model.

3) Negligible trip generation from the sports complex is anticipated during network peak hours. For conservative assessment, a notional volume of 20 veh/hr will be assigned with an even distribution in the northbound and southbound direction along Terry Road.

8.4 Modelling Input / Assumptions

8.4.1 SIDRA Input Parameters

All modelling assessments for this study were carried out in SIDRA Network software version 9.1, with the below input parameters:

- 'Current Setup' was set to New South Wales.
- Site Level of Service Method was set to 'Delay (RTA NSW)'.
- Physical features of the existing intersection geometries were coded with reference to the latest Nearmap aerial imageries (captured on 20th January 2025).
- SIDRA default values for Basic Saturation Flow were unchanged.
- Speed limits were input as per existing posted speed limits at each location. School zone speed of 40km/h has been applied to Keeneland St and Terry Road between George St and Sunnyhill Parkway for all project case scenarios.
- Pedestrian walking speed of 1.2m/sec was applied per TfNSW Traffic Modelling Guidelines for pedestrian modelling in NSW.
- Peak Flow Factor (PPF) adjustments:
  - PFF of 100% was applied to background traffic volume to replicate Council's Terry Road Network Modelling results.
  - PFF of 85% (AM peak) and 72% (PM peak) was applied to school traffic to reflect Drop-off Pick-up (DOPU) demand during peak periods. The above PFF values are calculated based on trip generation data of selected benchmark public and high schools detailed within the Schools Trip Generation Data Report for a 30-minutes peak flow (analysis) period as per SIDRA default setup for NSW. The selected benchmark sites are detailed in Section 8.6 below.

8.4.2 Background Growth

As abovementioned, Council has previously prepared a Warrant Study and Network Modelling to evaluate Terry Road capacity at critical intersections, under 2026 and 2036 horizon years, with reference to TfNSW's STFM data. Noting that the Site has been identified as a SP2 – Infrastructure land use zone by the SEPP, it is anticipated that the traffic generation demand of the Site has been captured by TfNSW's STFM data.

Nevertheless, this traffic impact assessment did not remove the development trips associated with the School from the STFM for conservatism. The 2026 and 2036 Council network model volumes have therefore been adopted for the future base case scenarios (1, 5 and 6).

Linear quantum growth along Terry Road corridor has been extracted from Council's 2026 and 2036 models, and have been applied to establish the 2028 future baseline volume in Scenarios 2 to 4. The following quantum growth volumes have been applied in the AM and PM peaks respectively:

- AM peak:
  - Terry Road northbound: 13 vehicles per hour per annum
  - Terry Road southbound: 16 vehicles per hour per annum
- PM peak:
  - Terry Road northbound: 24 vehicles per hour per annum

– Terry Road southbound: 10 vehicles per hour per annum

8.4.3 Other Assumptions

The following assumptions have been made with regard to the geometric assumptions of the broader network:

- As a conservative measure for modelling traffic impacts, the connection between George Street (west) and Mount Carmel Drive is assumed to be unavailable in the 2026 and 2028 assessment year, this connection is assumed in 2036. Notwithstanding, it is assumed in the catchment analysis that dwelling projections would trigger the completed segment of George Street (which as a minimum would include the provisioning of footpath infrastructure requisite with surrounding development).

8.5 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 9.1 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 9.1 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, 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 19**.

TABLE 19: TFNSW LEVEL OF SERVICE GUIDELINES

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

8.5.1 SIDRA Layout

Figure 32 captures the layout geometry of the modelled network configurations as interpreted in the SIDRA modelling software.

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

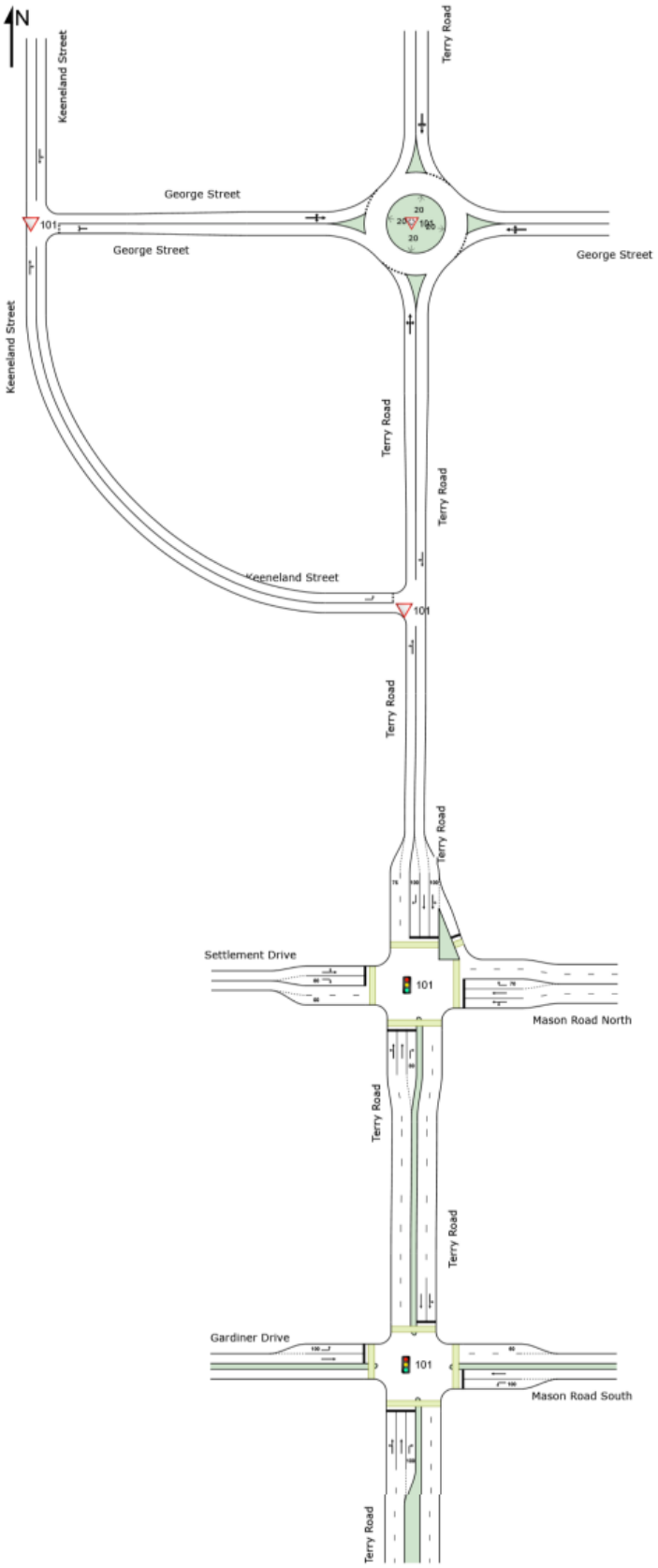


Figure 32: Modelled network layout in SIDRA Intersection 9.1 (2026 Council Reference Case)

8.5.2 Council Reference Case Intersection Performance

As the majority of the intersections within the study area do not currently exist, Council's 2026 network model has been replicated to establish the base reference case. As this traffic impact assessment intend to assess the network performance during school drop-off pick-up (DOPU) periods, an adjustment factor of 0.87 has been applied to Council's PM peak model (4-5pm) to reflect the background traffic volume during the anticipated school PM peak (3-4pm). This adjustment factor is calculated based on turning movement survey conducted at the Terry Road/George Street intersection, undertaken by Ason Group in December 2024.

The results of the 2026 reference case SIDRA Network assessment are provided in **Table** 20 below.

TABLE 20: 2026 SCHOOL AM & PM PEAK HOUR INTERSECTION PERFORMANCE

#	Intersection Name	Control	Period	Intersection Delay (s)	Degree of Saturation	Level of Service
1	**Keeneland St / George St**	Priority	AM	5.6	0.030	LOS A
			PM	5.6	0.001	LOS A
2	**George St / Terry Rd**	Roundabout	AM	12.5	0.192	LOS A
			PM	10.8	0.133	LOS A
3	**Terry Rd / Keeneland St**	Priority	AM	6.5	0.001	LOS A
			PM	6.8	0.001	LOS A
4	**Terry Rd / Mason Rd (N)**	Signalised	AM	30.2	0.575	LOS C
			PM	32.4	0.548	LOS C
5	**Terry Rd / Mason Rd (S)**	Signalised	AM	20.5	0.528	LOS B
			PM	21.9	0.438	LOS B

A copy of the existing detailed SIDRA results is presented in **Appendix G1**.

8.6 Trip Generation

With reference to TfNSW's Guide to Transport Impact Development (GTIA), the benchmarking method has been adopted for trip generation selection, which *"involves developing an understanding of proposed development characterises and benchmarking the site with similar surveyed sites to determine an average rate".*

In this regard, Ason Group has undertaken a detailed review of the Schools Trip Generation Data and Analysis Report, which informed TfNSW trip generation rates of schools, for selection of appropriate benchmark sites for the proposed Public School and High School. Average vehicle trip rates for these benchmark sites have been derived to establish a reference case trip rate and associated mode share assumption.

The Schools Trip Generation Data and Analysis Reports determined contemporary trip generation rates for the land use "School" within Metropolitan Sydney and Regional NSW. Rates were determined on the back of surveys conducted in March 2014. In this regard, the following key characteristics have been considered for benchmark site selection:

- Bus services;
- Immediately adjacent residential area of such as to utilise all of the school's capacity;
- Number of pedestrian access points;
- Number of vehicle access points;
- School type / status (i.e., public or high school); and
- On-site car parking provision

On this basis, **Table 21** and **Table 22** provide a summary of the surveyed public and high schools within Greater Sydney which provide the comparative data for the assessment – noting that the trip rates also include staff and visitor trip generation.

TABLE 21: TFNSW SCHOOL SURVEY COMPARATIVE SITES – PUBLIC SCHOOL

Year	Grays Point Public School	Harrington Street Public School	Kurnell Public School	Woronora River Public School
Suburb	Grays Point	Cabramatta	Kurnell	Woronora
Students	383	1055	215	115
Staff	20	73	15	10
Staff/Student	0.05	0.07	0.07	0.08
Parking Spaces	20	43	14	10
OOSH	Yes	Yes	Yes	Yes

TABLE 22: TFNSW SCHOOL SURVEY COMPARATIVE SITES – HIGH SCHOOL

Year	Bass Hill High School	Casula High School	Eagle Vale High School	Galston High School	JJ Cahill Memorial High School	Turramurra High School
Suburb	Bass Hill	Casula	Eagle Vale	Galston	Mascot	South Turramurra
Students	764	650	570	750	320	1250
Staff	73	70	70	70	50	110
Staff/Student	0.09	0.11	0.12	0.09	0.15	0.088
Parking Spaces	51	59	70	100+	63	74

With reference to the tables above, an average of the surveyed person trip rates for the above public and high school have been adopted for the assessment. The anticipated vehicle mode share for the proposed Box Hill Public and High School has subsequently been applied to the surveyed average person trip rates to establish the anticipated vehicle trip rate, as follows:

$$Project\ Trip\ Rate = Benchmark\ Trip\ Rate\ x\ \frac{Project\ Car\ Mode\ Share}{Benchmark\ Car\ Mode\ Share}$$

This approach considers the proposed schools' catchment characteristic and provide a more accurate traffic impact assessment with consideration of the active transport network within the catchment.

As such, it is estimated that the proposed Box Hill Public and High School will have the following trip generation for the Pre-Carmel and Post-Carmel catchments:

TABLE 23: TRIP GENERATION – PRE-CARMEL CATCHMENT (2028)

Institution	No.	Period	Vehicle Trip Rate (per Student)	Total Vehicle Trips (veh/hr)
Box Hill Public School	1,000 Students	AM	0.47	466
		PM	0.42	423
Box Hill High School	1,000 Students	AM	0.53	534
		PM	0.48	479
Preschool	60 Children	AM	0.86	52
		PM	0.76	46
Total		**AM**		**1,052**
		PM		**948**

TABLE 24: TRIP GENERATION – POST-CARMEL CATCHMENT (2036)

Institution	No.	Period	Vehicle Trip Rate (per Student)	Total Vehicle Trips (veh/hr)
Box Hill Public School	1,000 Students	AM	0.23	233
		PM	0.21	211
Box Hill High School	1,000 Students	AM	0.27	267
		PM	0.24	240
Preschool	60 Children	AM	0.86	52
		PM	0.76	46
Total		**AM**		**552**
		PM		**497**

The survey data also revealed the following inbound and outbound traffic distribution splits for public and high schools as shown in the table below. An inbound and outbound distribution of 50% in and 50% out is also adopted for Preschool DOPU.

TABLE 25: VEHICLE DIRECTIONAL SPLIT

School Type	Period	Inbound Split	Outbound Split
Box Hill Public School	AM	51%	49%
	PM	49%	51%
Box Hill High School	AM	59%	41%
	PM	39%	61%
Preschool	AM	50%	50%
	PM	50%	50%

Based on the above distributions, the peak-hour inbound and outbound traffic generations are shown below.

TABLE 26: TRIP GENERATION – PRE-CARMEL CATCHMENT (2028)

Institution	No.	Period	Inbound Trips (veh/hr)	Outbound Trips (veh/hr)	Total Trips (veh/hr)
Box Hill Public School	1,000 Students	AM	238	228	466
		PM	207	216	423
Box Hill High School	1,000 Students	AM	315	219	534
		PM	187	292	479
Preschool	60 Children	AM	26	26	52
		PM	23	23	46
Total		**AM**	**579**	**473**	**1,052**
		PM	**417**	**531**	**948**

TABLE 27: TRIP GENERATION – POST-CARMEL CATCHMENT (2036)

Institution	No.	Period	Inbound Trips (veh/hr)	Outbound Trips (veh/hr)	Total Trips (veh/hr)
Box Hill Public School	1,000 Students	AM	119	114	233
		PM	103	108	211
Box Hill High School	1,000 Students	AM	315	219	534
		PM	187	292	479
Preschool	60 Children	AM	26	26	52
		PM	23	23	46
Total		**AM**	**460**	**359**	**819**
		PM	**313**	**423**	**736**

8.7 Trip Assignment

8.7.1 Student Trip Distribution

The traffic directional distribution and assignment of traffic generated by the proposed development would be influenced by the following factors:

- Configuration of access points to the site
- Geographical location of households near the site and the proposed school catchment areas in the locality where students will likely travel to and from the school via private vehicles.
- Existing operation of intersections providing access between the local road network and the school site
- Probable distribution of student residences with respect to the Site

In this regard, the adopted directional distribution for DOPU activity is outlined in **Figure 33** and **Figure 34** for Box Hill High School and Box Hill High School respectively.

It is noted that a direct connection of George Street between Terry Road and Mount Carmel Drive is not expected to be available in the short-term. As such, traffic assignment to/from the Carmel Precinct has been redistributed in 2028 Opening Year scenarios. In the longer term (2036), it is assumed that this connection will be available.

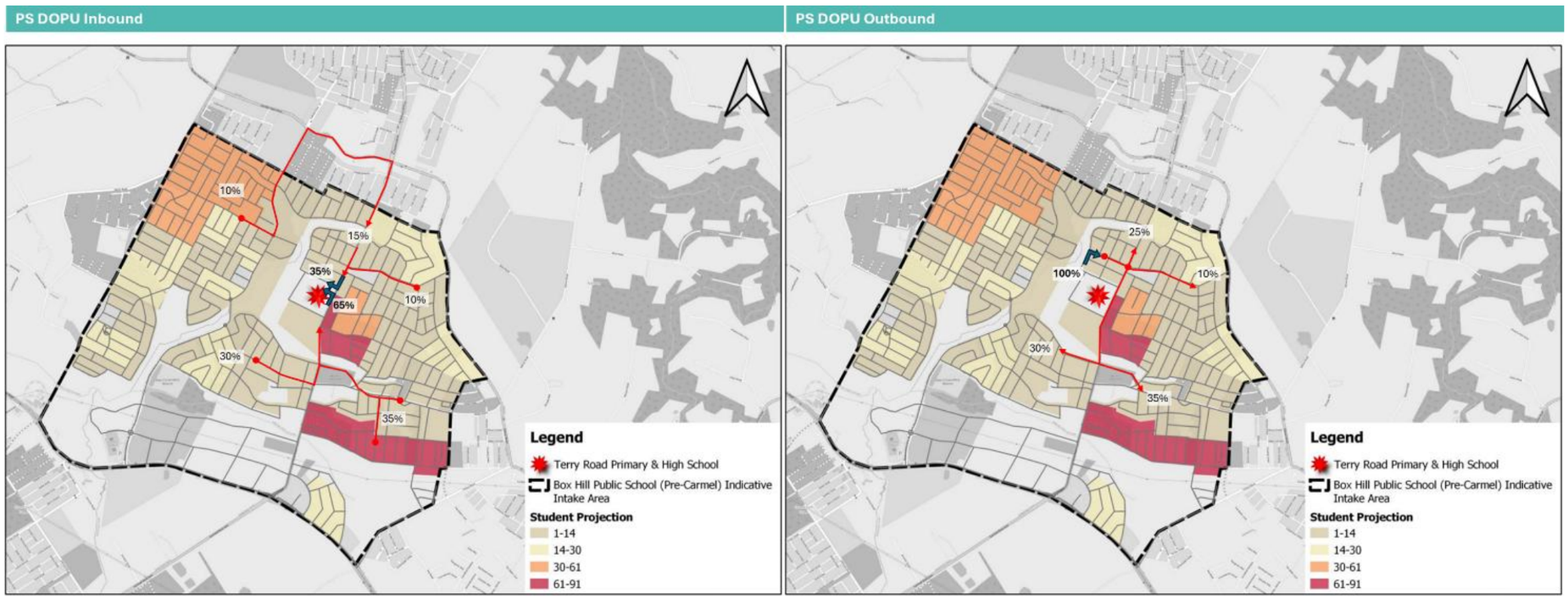


Figure 33: Box Hill Public School – Pre-Carmel Trip Distribution (2028)

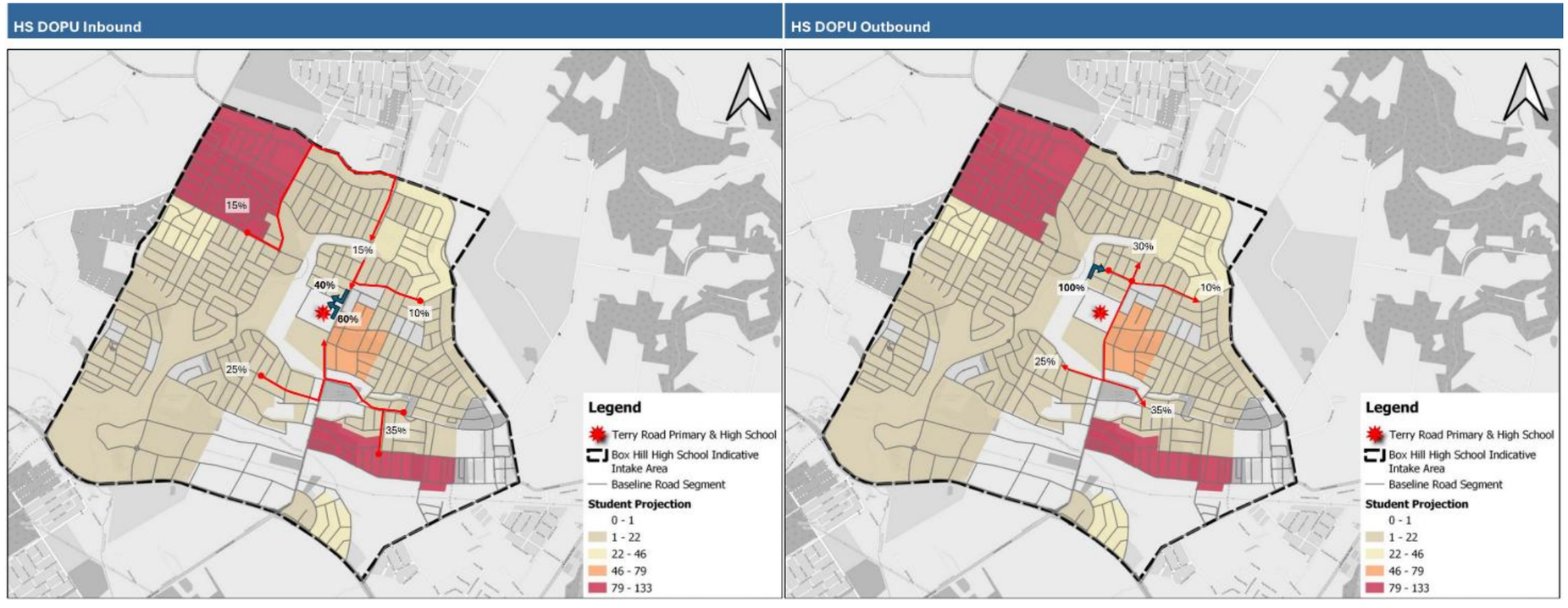


Figure 34: Box Hill High School – Pre-Carmel Trip Distribution

Figure 35: Box Hill Public School – Post-Carmel Trip Distribution

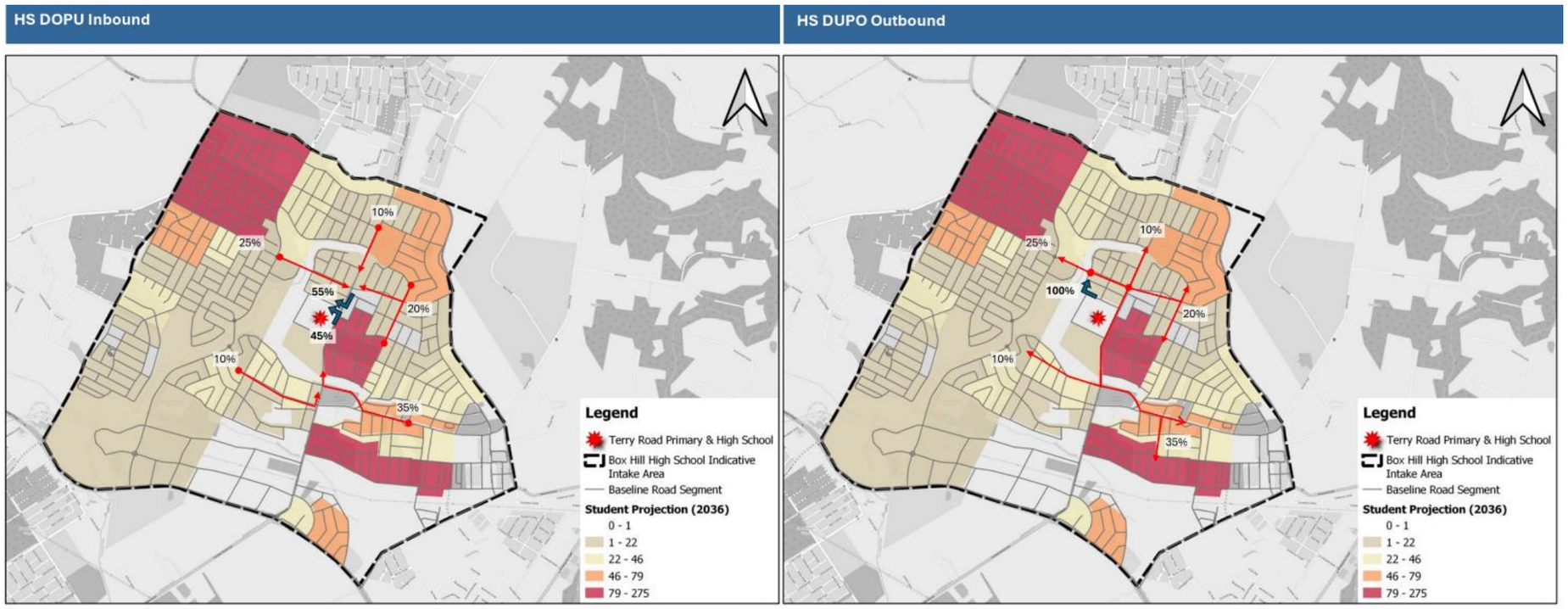


Figure 36: Box Hill High School – Post-Carmel Trip Distribution

8.7.2 Staff Trip Distribution

Staff vehicle trip to the School are anticipated to travel to/from the broader sub-region, with only a minority of trips generated within Box Hill area. A directional distribution of 30% to / from north of the Site and 70% to / from the south of the Site have been adopted for staff trip distribution.

In this regard, staff trips would take place during the morning peak hour with the majority being arrival trips and, in the evening, staff trips would take place after 3:30 pm once the student pick-up period is over and would predominately be departure trips.

It is noted that the staff vehicle trips are captured as part of the surveys conducted for the Schools Trip Generation Data and Analysis Reports. These staff vehicle trips have been included in the SIDRA modelling for school AM and PM peak vehicle demand assessment during the typical DOPU peak periods, providing a conservative estimate of traffic impacts compared to the expected day-to-day operation of the school.

8.7.3 All Development Trip Distribution and Assignments

The combined student DOPU and staff vehicle trips to and from the School during the school AM and PM peak-hour generated traffic to/from the Site for each assessed project case scenario are illustrated in **Appendix E**.

8.8 Intersection Performance

8.8.1 Opening Year Baseline

2028 Opening Year Baseline – Without Development Traffic (Scenario 2)

The SIDRA Network modelling results for the 2028 Opening Year with respective quantum growth applied to the Terry Road corridor are presented in Table 28 below. The intersection geometry as outlined in Council's network model are adopted for consistency. The full SIDRA output data is provided in **02**.

TABLE 28: SCENARIO 2 - NETWORK PERFORMANCE 2028 OPENING YEAR BASELINE

#	Intersection Name	Control	Period	AVD (s)	DoS	LOS
1	Keeneland St / George St	Priority	AM	3.7	0.006	LOS A
			PM	3.7	0.002	LOS A
2	George St / Terry Rd	Roundabout	AM	13.2	0.209	LOS A
			PM	11.3	0.144	LOS A
3	Terry Rd / Keeneland St	Priority	AM	6.7	0.029	LOS A
			PM	7.4	0.256	LOS A
4	Terry Rd / Mason Rd (N)	Signalised	AM	30.2	0.594	LOS C
			PM	34.3	0.568	LOS C
5	Terry Rd / Mason Rd (S)	Signalised	AM	20.2	0.532	LOS B
			PM	21.3	0.456	LOS B

As shown in table above, all intersections within the study network are expected to operate with good performance in 2028 opening year baseline scenario with capacity for development trips. It is noted that minor queue exceedance is observed at the following intersections in the 2028 future base case scenario:

- AM peak: Terry Road / Mason Road (N) north approach left turn bay by ~19m
- PM peak: Terry Road / Mason Road (N) south approach right turn bay by ~4m

8.8.2 Development Impact

2028 Opening Year Project Case – With Development Traffic (Scenario 3)

The SIDRA Network modelling results for the 2028 Opening Year with school development trips are presented in **Table 29** below. The full SIDRA output data is provided in **03**.

TABLE 29: SCENARIO 3 - NETWORK PERFORMANCE 2028 OPENING YEAR PROJECT CASE

#	Intersection Name	Control	Period	AVD (s)	DoS	LOS
1	Keeneland St / George St	Priority	AM	5.6	0.288	LOS A
			PM	4.9	0.175	LOS A
2	George St / Terry Rd	Roundabout	AM	34.7	0.622	LOS C
			PM	29.5	0.868	LOS C
3	Terry Rd / Keeneland St	Priority	AM	13.1	0.532	LOS A
			PM	13.3	0.431	LOS A
4	Keeneland St Wombat Crossing	Pedestrian Crossing	AM	4.4	0.021	LOS A
			PM	4.4	0.006	LOS A
5	Terry Rd Wombat Crossing	Pedestrian Crossing	AM	8.2	0.845	LOS A
			PM	7.1	0.651	LOS A
6	Terry Rd / Mason Rd (N)	Signalised	AM	39.3	0.891	LOS C
			PM	39.0	0.776	LOS C
7	Terry Rd / Mason Rd (S)	Signalised	AM	21.7	0.598	LOS B
			PM	22.6	0.554	LOS B

With reference to the tables above, all intersections analysed are anticipated to perform well during the school AM and PM peak periods on Day-of-Opening with school yield. All DoS are below 1, which suggests that the network is operating under capacity. It is noted that Terry Road / Mason Road (N) intersection and George Street / Terry Road roundabout are approaching capacity during the AM and PM peak respectively, however, the school demand can be readily accommodated.

Queue exceedance is observed at the following intersections in the 2028 opening year project case scenario:

- AM peak:
  - Keeneland St wombat crossing east approach by 6m (1 light vehicle)
  - Terry Rd wombat crossing north approach by 15m (3 light vehicles)
  - Terry Road / Mason Road (N) north approach left turn by ~72m, east approach right turn by ~35m
- PM peak:
  - Keeneland St wombat crossing east approach by 1m
  - Terry Rd wombat crossing north approach by 15m (3 light vehicles)
  - Terry Road / Mason Road (N) north approach left turn by ~62m, east approach right turn by ~25m and south approach right turn by ~11m

It is noted that the network model indicates the Terry Road wombat crossing north approach queue would spill back into the upstream Terry Road / Keeneland Street intersection, however, this queue spillback does not obstruct any vehicle movement at the upstream priority-controlled intersection.

It is important to note that school crossing supervisors are anticipated to be in place from Day-of-Opening to facilitate safe and efficient pedestrian crossing at both wombat crossings across Keeneland St and Terry Road. However, the SIDRA Network model assumes a continuous stream of pedestrian flow which does not take into account of the pedestrian bunching effect from the operation of the crossing supervisor. Therefore, it is concluded that the modelled queuing results of both wombat crossings are conservative. The impact of the modelled queue spillback is therefore considered acceptable.

2036 Future Year Project Case – With Development Traffic (Scenario 4)

Further to assessment of the above scenarios, a sensitivity analysis considering the school development impact in the 2036 Future Year has been assessed. The SIDRA Network modelling results for the 2036 Future Year Project Case considering the same student yield but Post-Carmel catchment are summarised in **Table 30** below. The full SIDRA output results are provided in **Appendix F4**.

TABLE 30 SCENARIO 4: NETWORK PERFORMANCE 2036 FUTURE YEAR PROJECT CASE

#	Intersection Name	Control	Period	AVD (s)	DoS	LOS
1	Keeneland St / George St	Priority	AM	7.6	0.269	A
			PM	7.9	0.401	A
2	George St / Terry Rd	Roundabout	AM	46.9	0.830	D
			PM	16.5	0.580	B
3	Terry Rd / Keeneland St	Priority	AM	9.5	0.209	A
			PM	11.5	0.217	A
4	Keeneland St Wombat Crossing	Pedestrian Crossing	AM	4.7	0.022	A
			PM	4.7	0.005	A
5	Terry Rd Wombat Crossing	Pedestrian Crossing	AM	6.3	0.813	A
			PM	5.5	0.516	A
6	Terry Rd / Mason Rd (N)	Signalised	AM	36.5	0.846	C
			PM	36.9	0.755	C
7	Terry Rd / Mason Rd (S)	Signalised	AM	19.5	0.638	B
			PM	20.7	0.562	B

With reference to the tables above, all intersections analysed are anticipated to perform well during the school AM and PM peak periods in future year 2036 with school yield with the reduced Post-Carmel school catchment. All DoS are below 0.9, which suggests that the network is operating under capacity. This result is expected as reduced school catchment area would result in the uptake of active transport mode to and from the School, in turn reducing vehicle trip generation.

Minor queue exceedance is observed at the following intersections in the 2028 opening year project case scenario:

- AM peak:
  - Terry Rd wombat crossing north approach by 13m (2 light vehicles)
  - Terry Road / Mason Road (N) north approach left turn by ~100m, east approach right turn by ~5m and south approach right turn by ~8m
- PM peak:
  - Terry Rd wombat crossing north approach by 18m (3 light vehicles)
  - Terry Road / Mason Road (N) north approach left turn by ~45m, east approach right turn by ~15m and south approach right turn by ~17m

As noted above, the network model indicates the Terry Road wombat crossing north approach queue would also spill back into the upstream Terry Road / Keeneland Street intersection in the 2036 future project case scenario, however, this queue spillback does not obstruct any vehicle movement at the upstream priority-controlled intersection.

Again, the SIDRA Network model assumes a continuous stream of pedestrian flow which does not take into account of the pedestrian bunching effect from the operation of the crossing supervisor. Therefore, it is concluded that the modelled queuing results of both wombat crossings are conservative. The impact of the modelled queue spillback is therefore considered acceptable.

In summary, the SIDRA network assessment results demonstrate that the network will be able to perform at an acceptable level of performance with the school development traffic on day-of-opening as well as the 2036 future year, which accounts for future growth, including within the Box Hill Precinct.

Notwithstanding, it is clear that Council should monitor Terry Road corridor network performance as the precinct evolves so that necessary intersections can be made, as necessary.

9 Demands Assessment

9.1 Drop-Off and Pick-Up Demands

An assessment of Drop-Off and Pick-Up demands has been undertaken based on the mode shares in **Table 31**. In the case of Box Hill Public School, the mode shares reflect anticipated day one targets (for each stage), whilst for Box Hill High School, a higher mode share assumption has been assumed.

TABLE 31: DROP-OFF AND PICK-UP MODE SHARES AND DEMANDS

School	Student Capacity	Car Mode Share	Students Arriving by Car	Number of Vehicles
Box Hill Public School	**1,000**	44%	440	314
Box Hill High School	**1,000**	24%	250	179

In consideration of designing for a Drop-Off and Pick-Up facility, Keeneland Street was nominated for this function due to several criteria including direct proximity to the principal school pedestrian entrances, accessibility from the road network as evidenced by the access strategy in **Figure 37**.

Figure 37: Drop-Off and Pick-Up Access Strategy

Indeed, this orientation benefits from a large 200m contiguous supply of Drop-Off and Pick-Up restrictions which has been benchmarked with several schools in **Table 32**. The layout is indicated in **Figure 38**.

TABLE 32: DROP-OFF AND PICK-UP SCHOOL BENCHMARKING

School	Year Opened	Capacity		Drop-Off and Pick-Up Length	
		Public School	High School	Public School	High School
Melonba Public School and High School	2025	1,000 students	2,000 students	16 spaces	16 spaces
Edmondson Park Public School Note 1	2023	1,000 students	-	~200m (30 spaces)	-
Box Hill Public School and Box Hill High School	-	**1,000 students**	**1,000 students**	**30 spaces**	

Note 1) Edmondson Park Public School is noted to encompass a very large catchment area, extending to 8km west of the school site (this school may thus not be considered a suitable benchmark in relation to car mode shares and demands).

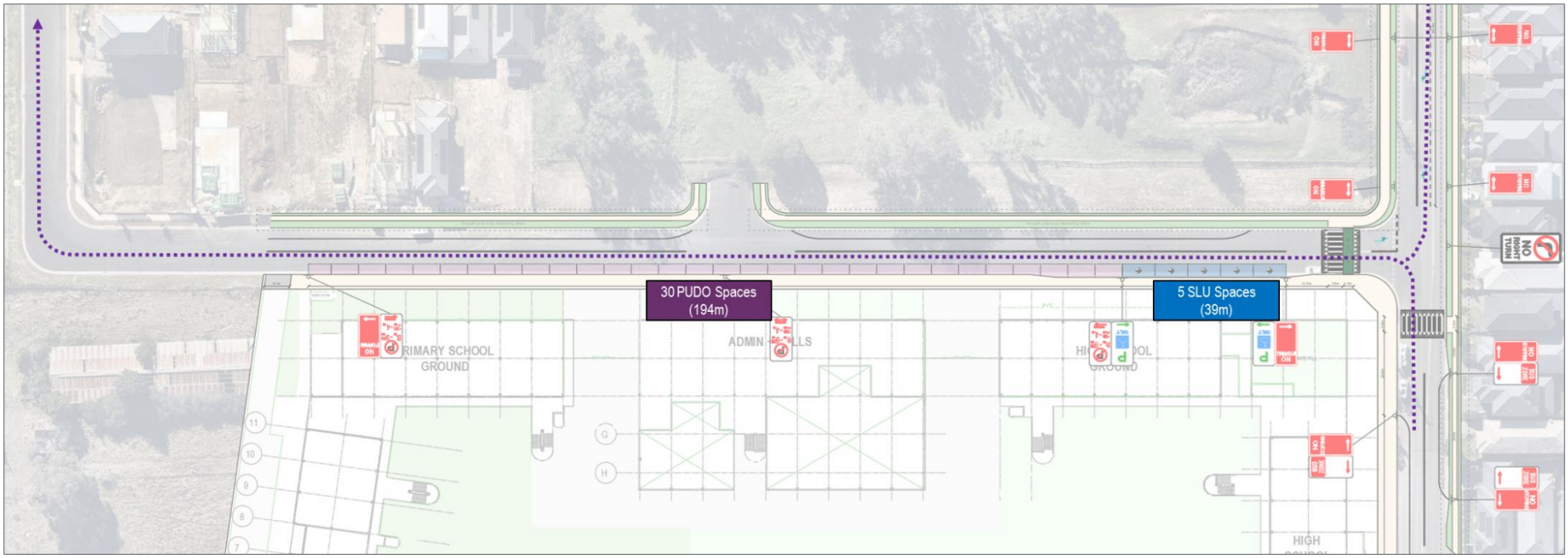


Figure 38: Drop-Off and Pick-Up Configuration – Keeneland Street

Forecast Kiss-and-Drop demands have been calculated utilising the following assumptions including staggered finish times (20 min) for the public school and high school:

- Dwell time: 1.5 minutes per car
- Arrival Period:
  - AM Peak: 30 Minutes (combined public school and high school)
  - PM Peak: 15 Minutes (separate periods for public school and high school).
- Car Occupancy: 1.4 passengers per car
- Car Length: 6.5m
- Parents/Carers parking in alternate locations (short-term parking):
  - Public School: 5%
  - High School: 0%

The assessed demands during AM and PM peak conditions are outlined in **Figure 39** and **Figure 40** respectively, noting that the accumulation of cars has been combined for the public and high schools during the AM peak period (given the shared window of usage).

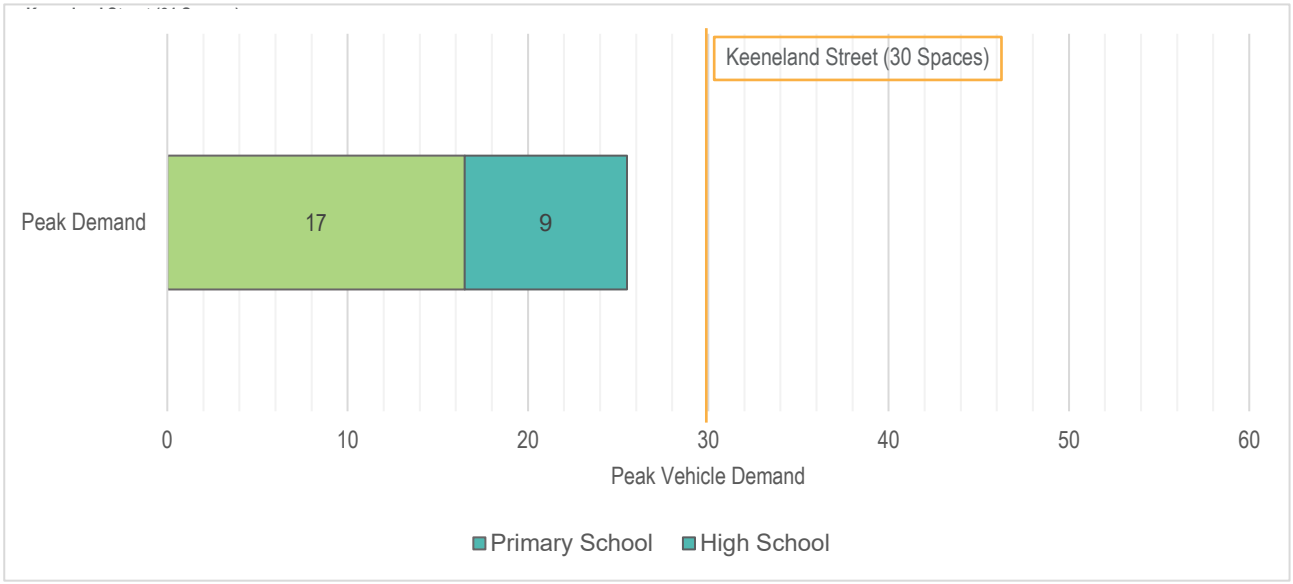


Figure 39: AM – Drop-Off and Pick-Up Demand Analysis

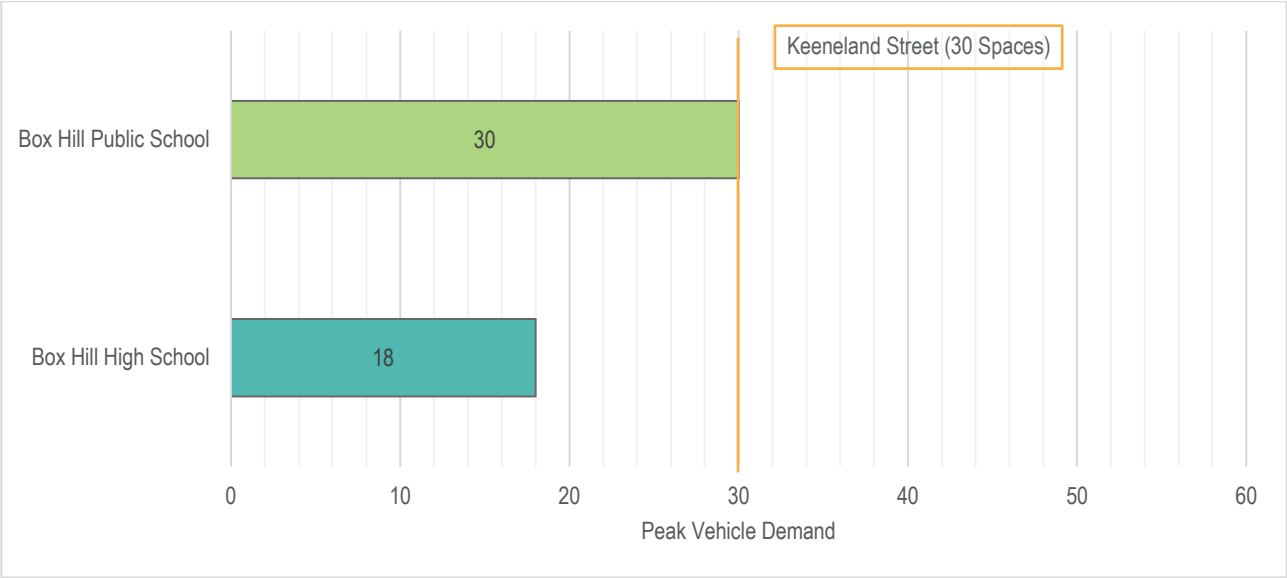


Figure 40: PM – Drop-Off and Pick-Up Demand Analysis

It is evident that the peak accumulation of cars will occur during the PM peak period which reflects the concentration of activity in contrast to the AM peak period which assumes arrivals over a longer period of time. The anticipated demand of 30 spaces can be met by the overall provision of **30 spaces** for Drop-Off and Pick-Up activity on Keeneland Street and in this regard, queuing can be contained within the kerbside of Keeneland Street subject to achieving day one target mode shares will be actively monitored and managed via the School Transport Plan.

9.2 Car Parking Demands

9.2.1 Staff and Visitor Parking

The suitability of parking rates for development should take into account local characteristics and in this regard reference has been made to planning controls from The Hills Council to estimate parking demands[2]. With respect to Educational Establishments, **Table 20** provides the following car parking requirements:

- 1 car parking space per staff member, plus
- 1 car parking space per 100 students, plus
- 1 car parking space per 5 students in Year 12

The Box Hill DCP defers parking rates for preschool (child care centres) to The Hills Development Control Plan, which outlines the following requirements:

- Minimum 1 space per employee, plus
- 1 space per 6 children enrolled for visitors and/or parent parking
  (For the purpose of assessment, it is assumed that the facility would employ 5 staff at any one time).

Additionally, School Infrastructure specifies additional provisions for safe parking facilities for the Supported Learning Units (SLUs) for both Box Hill Public School and Box Hill High School. SLU provisions have been accounted for in accordance with School Infrastructure requirements and are proposed as exclusive use spaces, thereby avoiding issues of scheduling/management. The use of these spaces will be governed in a further refined School Transport Plan (during delivery stages) which considers school travel arrangements including minibuses.

TABLE 33: ADOPTED PARKING RATES – SCHOOLS

User	Parking Rate
Schools	
Staff	1 car parking space per full-time equivalent staff member
Visitors	1 car parking space per 100 students
Year 12	1 space per 5 students in Year 12
SLU Note 1	N/A
Preschool Note 2	Minimum 1 space per employee, plus 1 space per 6 children enrolled for visitors and/or parent parking

Note 1) School Infrastructure has identified a requirement for 4 accessible parking spaces for Box Hill Public School and *5 accessible parking spaces for Box Hill High School (in addition to DCP requirements).*

Note 2) Parking rate sourced from The Hills Council Development Control Plan.

The above rates have collectively been applied for Box Hill Public School (and the preschool) in **Table 34** and Box Hill High School in **Table 35**.

[2] Planning controls under The Hills Local Environment Plan / The Hills Development Control Plan 2019 are not strictly applicable to the subject REF submission.

TABLE 34: PARKING PROVISION – BOX HILL PUBLIC SCHOOL

User	No.	Parking Demand	On-Site Parking Provision	On-Street Reliance
Public School				
Staff	56 FTE Note 1	56 spaces	56 spaces	-
Visitors	1,000 Students	10 spaces	-	10 spaces
SLU	-	4 spaces	4 spaces	-
Preschool				
Visitors	60 Children	10 spaces	12 spaces *Prior to construction of Sunnyhill Parkway* 0 spaces *Post-completion of Sunnyhill Parkway*	0 *Prior to construction of Sunnyhill Parkway* 12 spaces *Post-completion of Sunnyhill Parkway*
Staff	5 FTE Note 1	5 spaces	6 spaces	-
Total – *No Sunnyhill Parkway*		**75 spaces**	**66 spaces**	**10 spaces**
Total – *with Sunnyhill Parkway*			**78 spaces**	**22 spaces**

Note 1) Full Time Equivalent Employee

TABLE 35: PARKING PROVISIONS – BOX HILL HIGH SCHOOL

User	No.	Parking Demand	Parking Provision	On-Street Reliance
Staff	81 FTE Note 1	81 spaces	81 spaces	-
Visitors	1,000 Students	10 spaces	0 spaces	10 spaces
Year 12	167 Students	33 spaces	0 spaces	33 spaces
SLU	-	5 spaces	0 spaces	5 spaces
Total		**129 spaces**	**81 spaces**	**48 spaces**

Note 1) Full Time Equivalent Employee

In evaluating the provisions for Box Hill Public School, Box Hill High School and the Preschool:

- Staff parking for all components satisfy respective DCP requirements. There is not expected to be any reliance on on-street parking for staff members noting the 1:1 ratio of spaces.

  No on-site visitor spaces are proposed for either Box Hill Public School or Box Hill High School noting that the timing of visitor parking demands is generally complimentary to Drop-Off and Pick-Up demands (e.g. occurring during school hours or evenings outside of the DOPU periods). As such, it is expected that the Drop-Off and Pick-Up restriction on Keeneland Street (30 spaces) would accommodate the cumulative public school and high school visitor demands for 20 spaces.

- While the site will initially meet demands for the preschool, the future development of Sunnyhill Parkway would necessitate the loss of visitor parking spaces which would in effect be transferred to on-street parking. This outcome (reliance on on-street parking) is consistent with SI practice for the design of pre-school facilities and it is noted that the demands could be contained within the future Sunnyhill Parkway frontage with appropriate parking restrictions and timing considerations.

- There is a nominal demand for 33 parking spaces for Year 12 students under the DCP rates, which is considered to be intended for private schools given that the dedication of spaces for these users on-site is not typically considered appropriate for public schools.
    - It is noteworthy that DoE has not supported the provision of Year 12 student parking on public school sites on grounds of safety risks, liability issues and the prioritisation of open space for students.
    - In this regard, a provisional exercise has been undertaken to determine the approximate supply of unrestricted parking in the vicinity of the site in **Figure 41**. There is anticipated to be some 1,125m of kerbspace excluding the provision of driveways when compared to the resulting demand for some 198m of kerbspace for Year 12 parking (30 spaces with 6m length). Given there are no competing demands (e.g. town centre or commuter parking) in the vicinity of the site, it is anticipated that Year 12 car parking demands can be accommodated, with the on-street parking supply to expand with further development of the precinct.

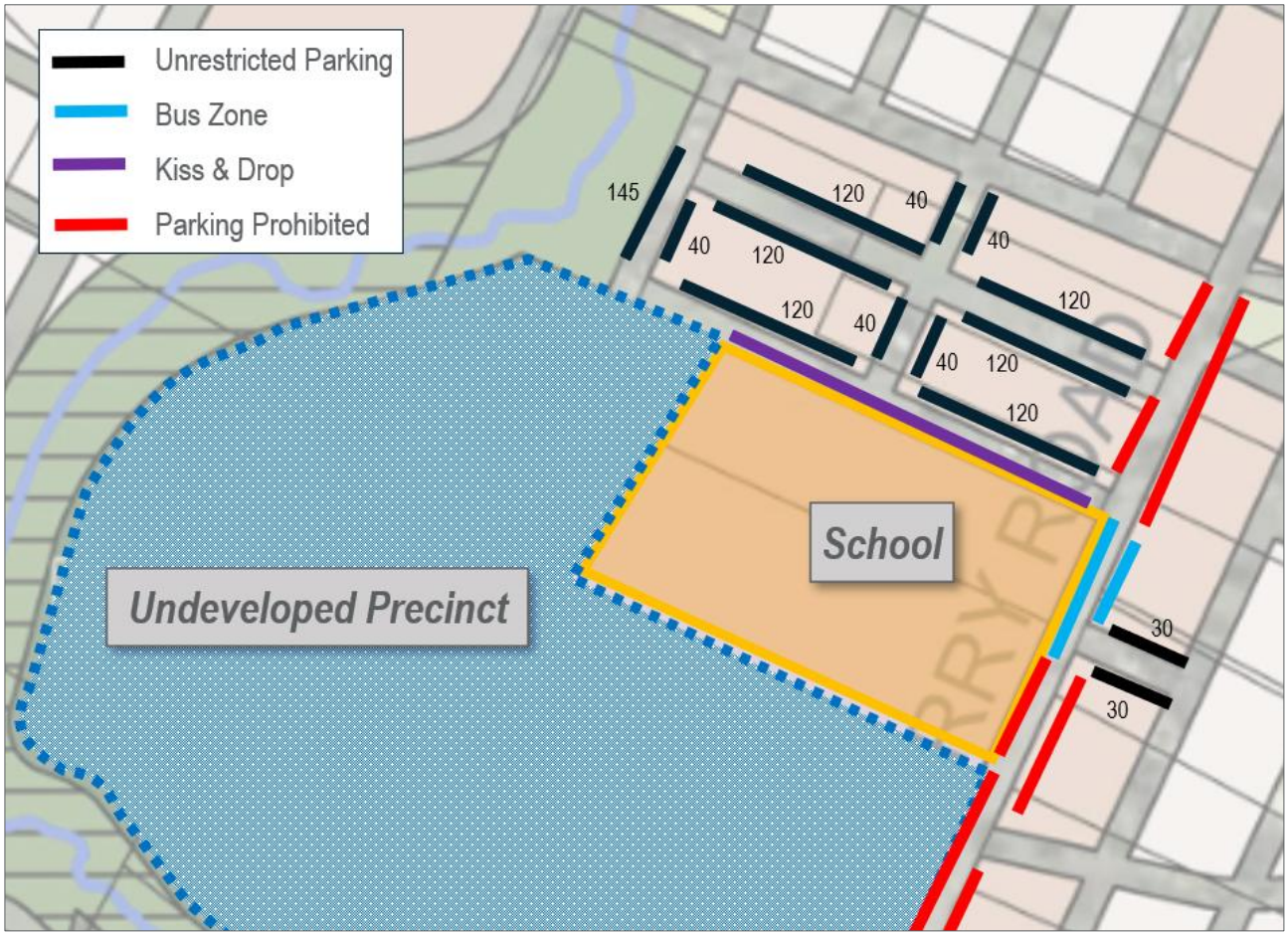


Figure 41: Anticipated Availability of Unrestricted Parking (Excluding Driveways)

9.2.2 Accessible Car Parking

Reference has been made to National Construction Code (NCC 2019) – formerly referred to as the Building Code of Australia (BCA) for accessible parking requirements.

Table D3.5 of the NCC 2019 in turn requires that accessible parking be provided at a rate of 1 space per 100 carparking spaces or part thereof, on the basis that school development is a Class 9b building based on the definition outlined in the NCC 2019.

With respect to the above NCC requirement, the recommended accessible car parking provision for each user group are outlined below:

- Public School:
    - Staff – 1 accessible parking space
    - Visitors – 1 accessible parking space (proposed as SLU parking)
    - Preschool – 1 accessible parking space
- High School:
    - Staff – 1 accessible parking space
    - Visitors – 1 accessible parking space (proposed as SLU parking).

All accessible parking spaces are to be provided in the respective public and high school on-site parking areas and in accordance with AS2890.6:2022 design requirements.

9.2.3 Bicycle Parking

The Education Facilities Standards and Guidelines (EFSG) published by School Infrastructure recommends a bicycle parking rate of 1 space per 20 students. This would equate to a nominal requirement for 100 bicycle spaces for the combined site.

This demand has been validated by considering an approach of providing sufficient spaces to meet the active transport mode share demands of the school. In this regard, the spatial analysis undertaken for the school catchments indicate that cycling mode shares would equate to between 40-50 students for each school arriving via this mode. A comparison of bicycle parking provision requirement with regards for the anticipated operational demands and proposed provision is summarised in **Table 36** below.

TABLE 36: BICYCLE PARKING DEMAND AND PROVISION

School	User	Yield	Mode Share [Note 1]	Demand	Provision
Box Hill Public School	Students	1,000	4%	40 spaces	40 spaces
	Staff	56	5%	3 spaces	3 spaces
Box Hill High School	Students	1,000	6%	60 spaces	60 spaces
	Staff	81	5%	5 spaces	5 spaces

Note 1: First Principle Analysis for anticipated school active transport demand based on catchment analysis and typical uptake

As shown in table above, the proposed on-site bicycle parking provision meets the anticipated cycling demand for both Box Hill Public School and Box Hill High School,

9.3 Bus Operations

The following bus facilities are proposed on Terry Road as indicated in **Figure 42**:

- 75m Bus Zone on western side – capable of accommodating **5 buses**.
- 30m Bus Zone on eastern side – capable of accommodating **2 buses**.

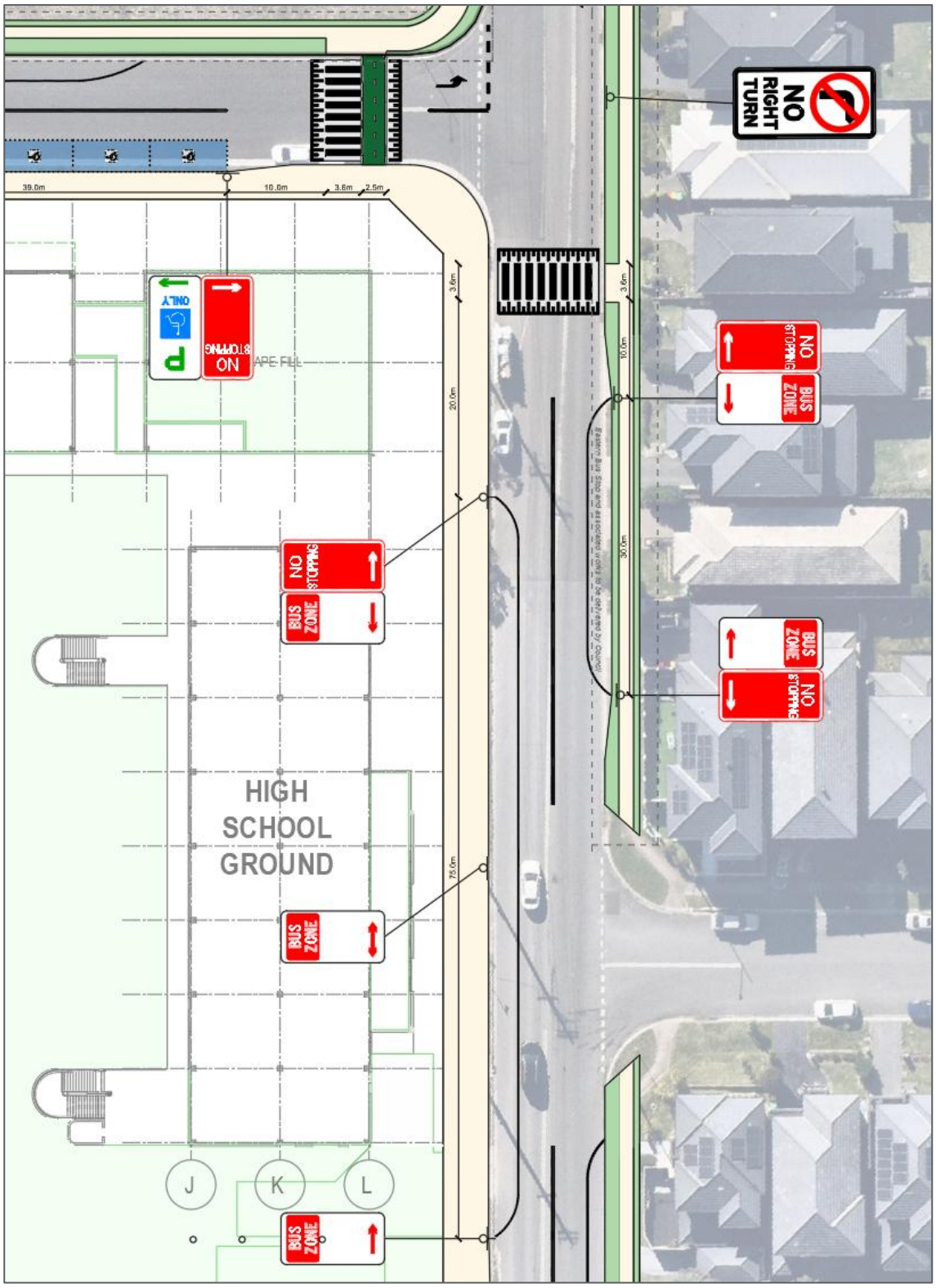


Figure 42: Proposed Bus Zones on Terry Road

With respect to the adequacy of the proposed bus facilities, outcomes from the Transport Working Groups, have been addressed in **Table 37**.

TABLE 37: BUS CONSIDERATIONS FROM TRANSPORT WORKING GROUP

TWG	Response
Consensus on buses operating from Terry Road, noting that this is a designated bus capable road servicing the Box Hill Precinct. Eastern bus stop required to circuitous loops to access school frontage.	The proposed bus arrangements initially included a single Bus Zone on the western side of Terry Road along the school frontage. This was amended to include a proposed Bus Zone on the eastern side of Terry Road, north of Nix Avenue.
TfNSW commented on a priority to accommodate public bus services over school services where possible. In this regard, there are two existing services operating on Terry Road (740 & 746) and provisions should be made to accommodate stops for these routes.	The proposed Bus Zone on the western side of Terry Road has an overall length of 75m which is anticipated to accommodate the demands of any school only routes as well as the two mentioned public routes. It is also noted that the two future signalised intersections at Mason Road (Gardiners Drive and Settlement Drive) can facilitate a loop such that school buses only rely on the western bus stop.
The design of bus stops needs to conform with relevant geometry and not disrupt traffic on Terry Road. A safe waiting area is also needed at the school frontage to avoid issues with cyclists (and pedestrians on the shared path).	The proposed Bus Zones have been proposed as a parking lane type bus stop that allows for buses to be sheltered by the kerbside parking lane. In this regard, some minor carriageway widening is required to expand the parking lane from 2.3m to 3.0m to meet requirements under bus design guidelines. It is also noteworthy that the design of the school will include a covered area that can facilitate waiting students to avoid crowding in the shared path area and it is anticipated that bus stop infrastructure including street furniture on the kerbside can be confirmed in delivery stages in consultation with Council and TfNSW.
The eastern bus stop is contingent on a safe crossing solution provided from Terry Road.	The proposed wombat crossing on Terry Road will provide pedestrian priority and remains a suitable option noting the two-lane collector road status of this road. Its positioning near Keeneland Street will respond to the direct desire lines of school students accessing the eastern bus stop and has been offset by the minimum No Stopping distances required to maintain safe sight lines.

9.4 Other Vehicles

9.4.1 Waste and Service Vehicle Access

Waste vehicle access will occur in the designated on-site waste collection area for both the public and high school. Waste collection area for the public school is located in the public school carpark, accessible via Keeneland Street. High school waste collection area is accessible via Terry Road and is located within the high school staff carpark along the eastern frontage of the school.

Design vehicle assumed to be 8.8m Medium Rigid Vehicle for each school. The loading area has been designed in accordance with AS 2890.2:2018 for the nominated design vehicle. The truck will enter the School in a forward direction, before reversing into the loading bay from within the turnaround area on-site. Trucks can exit in a forward direction.

9.4.2 Emergency Vehicle Access

Emergency vehicles will utilise the short-term parking facilities along school frontage roads for access to and from the Site when required at all times.

10 Design

10.1 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 2890.6:2009 Parking Facilities – Off-Street Parking for People with Disabilities (AS 2890.6:2022)
- Box Hill Precinct Development Control Plan (2018)

Reference should be made to the design review and associated swept path assessments included in Error! Reference source not found..

10.2 Design Commentary

10.2.1 Access Design

The Proposal includes:

- One vehicular driveway on the western end of the school's Keeneland Street frontage providing access for B99 vehicles for public school staff and Preschool parents drop-off access to the public school on-site carpark. This driveway will also provide access for waste collection vehicle (8.8m MRV) for on-site waste pad area access by the Department of Education's Private Waste Collection Contractors.
- One vehicular driveway on the southern end of the school's Terry Road frontage providing access for B99 vehicles for high school staff parking to the on-site high school staff carpark.
- One vehicular driveway on the school's Terry Road frontage providing access for waste collection vehicle (8.8m MRV) to the waste pad area located to the north of high school staff carpark.

Swept path assessment has been prepared to demonstrate the access and circulation proposed meets the relevant requirements of AS2890.1:2004 and AS2890.2:2018 for the respective design vehicles, appended in Error! Reference source not found..

10.2.2 Short Stay Parking

The proposed short stay parking area on Keeneland Street has been designed in accordance with AS2890.5:2020 requirements with 2.5m wide and 6m long short stay parking spaces to allow for safe dropping off / picking up of students and allows for additional width to provide buffer space between parked vehicles and through traffic.

The proposed drop-off area for Supported Learning Units on Keeneland Street have been designed in accordance with the respective requirements for accessible parking spaces with (3.2m wide and 7.8m long) to allow for safe dropping off / picking up of students.

It is expected that delivery vehicles will be utilising either of the short-stay parking areas for loading/unloading when required and that loading/unloading will take place outside of peak school hours of 8:30 AM – 3:30 PM, whereby conflict with cars accessing the school can be minimised.

10.2.3 Internal Car Park

The plan prepared by Architectus have been reviewed and assessed against AS2890.1:2004 and AS2890.6:2009. Noting the following:

- Access to the car park is provided by a 7.0m-wide crossover and access driveway
- All car parking spaces have been designed in accordance with Figure 2.2 of AS2890.1:2004, with the following minimum dimensions:
  - Width of 2.4m and a length of 5.4m accessed via a minimum 6.0m wide aisle (staff spaces). A 6.2m minimum aisle has been achieved which also corresponds to higher turnover (Class 3A) requirements.
  - Parallel spaces of minimum width 2.1m with 0.5m additional aisle width for opposing 90-degree angled spaces.
- Accessible car spaces have been designed in accordance with AS 2890.6:2009, with a width of 2.4m and a length of 5.4m accessed via a minimum 6.0m wide aisle. The shared zones have been provided with a width of 2.4m and a length of 5.4m.

Detailed design review and associated swept path assessment are attached in in Error! Reference source not found..

10.2.4 On-Site Waste Collection Area

The proposed on-site waste collection area is located to the north of the site with access through a 7.0m wide car park crossover and access driveway located along the west side of Keeneland Street within the public school staff carpark. A second on-site waste collection area is located to the north of the high school staff carpark which can be accessed via Terry Road.

The on-site waste collection point has been designed based on a 8.8m Medium Rigid Vehicle (MRV).

It is expected that waste collection will take place outside of peak school hours of 8:30 AM – 3:30 PM, whereby conflict with cars accessing the school can be minimised. This would be addressed in the operational management plan.

Detailed design review and associated swept path assessment are attached in in **Error! Reference source not found.**.

10.2.5 Bicycle Parking Provision

With reference to AS2890.3:2015, bicycle parking associated with Schools is classified as a Class B facility in accordance with Table 1.1, therefore requiring:

- A secure room or structure, protected from weather
- Contains bicycle parking devices that allow users to lock the bicycle frame and both wheels
- Located within areas that are controlled by entrance gates
- Located in a well-lit area
- Situated close to entrance/exits

Ason Group's experience with similar School projects demonstrated a direct connection between active transport usage and weather cover provision for outdoor bicycle/scooter parking facilities. Active transport usage was observed significantly lower when the temperature exceeded 30 degrees for a School bicycle parking facility with no weather protection, as students were unable to ride or push the bicycle due to the excessive heat of the seat and the handles.

A total of 108 bicycle parking spaces are proposed within the school grounds.

11 Conclusion

11.1 Summary

Ason Group has been commissioned by the Department of Education to prepare a Transport Assessment to accompany a Review of Environmental Factors submission for the new Box Hill Public School and Box Hill High School.

Further to a detailed assessment of the Activity, we provide the following conclusions:

- The schools will be located in the Box Hill and Box Hill Industrial Precinct and will serve local catchments that respond to existing and future housing growth.
- The schools have been assessed with respect to mode share potential. It is emphasised that the ultimate catchments will be well suited to a strong uptake of active transport modes as the precinct evolves with increasing residential density.
- Adopted traffic generation rates have been determined based on the surveyed rates of similar public schools and adjusted based on the mode share potential specific to the school catchments and relative to the staging year.

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

School	Capacity	Period	Vehicle Trips	
			Pre-Carmel	Post-Carmel
Public School	1,000 Students	AM	466	233
		PM	423	211
High School	1,000 Students	AM	534	267
		PM	479	240
Preschool	60 Students	AM	52	52
		PM	46	46
Total		AM	1,052	552
		PM	948	497

- The network modelling demonstrates that the surrounding key intersections will continue to operate at Los D or better for 2028 and 2036 assessments, demonstrating that the network can adequately accommodate School related traffic including with continued growth of the Box Hill Precinct.
- All access, parking and servicing areas have been designed in accordance with the relevant Australian Standards.

With regard to the above key findings, the Activity is considered supportable on traffic and transport planning grounds; and is not anticipated to result in any adverse impacts on the surrounding road network.

11.2 Mitigation Measures

TABLE 38: STANDARD MITIGATION MEASURES

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of Report
C	Construction Traffic and Pedestrian Management	Please refer to Preliminary Construction Traffic and Pedestrian Management Plan in **Appendix A**.
C	Preliminary Worker Transport Strategy	Please refer to Preliminary Construction Traffic and Pedestrian Management Plan in **Appendix A**.
O	Prior to the commencement of operations, a School Transport Plan must be prepared to the satisfaction of the DoE Transport Planning Team. If the school already has a School Transport Plan, the existing plan is to be reviewed and updated if necessary to reflect the impacts of the REF works, to the satisfaction of the DoE Transport Planning Team. A copy of the School Transport Plan is to be provided to the relevant DoE Project Lead for implementation during operations.	Please refer to Preliminary School Transport Plan in **Appendix B**.

TABLE 39: BESPOKE MITIGATION MEASURES

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of Report
D	Intersection Upgrade at Terry Road and Keeneland Street.	Please refer description of upgrades in **Table 13** and assessment of network performance in **Section 8**.

Appendix A. Preliminary Construction Traffic and Pedestrian Management Plan

Box Hill Public School & Box Hill High School

Preliminary Construction and Pedestrian Management Plan

50-52 Terry Road, Box Hill
24/07/2025
P2269r03

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Document Control

Project No	P2269
Project	Box Hill Public School & Box Hill High School
Client	School Infrastructure
File Reference	P2269r03v1 Box Hill Public School and Box Hill High School - Preliminary CTPMP

Revision History

Revision No.	Date	Details	Author	Approved by
-	23/05/2025	Draft	E. Lally	T. Lewis
I	24/07/2025	Issue	K. Ballurkar	K. Ballurkar

contents

contents continued

Figures

Tables

1 Introduction

1.1 Introduction

Ason Group has been engaged by School Infrastructure to prepare a Preliminary Construction and Pedestrian Management Plan (Preliminary CTPMP) in relation to the Review of Environmental Factors for the construction of Box Hill Primary and Box Hill High School (the Activity) at 50-52 Terry Road, Box Hill (the Site).

This Preliminary CTPMP details the measures and strategies to be undertaken during construction to minimise the effects of work on the surrounding road network, and to ensure the safety and efficiency of the community, all workers, and all road users including pedestrians.

It is emphasised that this plan is preliminary and prepared prior to selection of a building contractor. Prior to construction, an updated CTPMP shall be prepared by a professional who holds Prepare a Work Zone Traffic Management Plan' from SafeWork NSW.

1.2 Project Representatives & Stakeholders

This Preliminary CTPMP has been prepared to meet the requirements outlined in Section E.2 of the Transport for NSW Traffic Control at Work Sites Technical Manual (Issue No. 6.1, 2022). It is a preliminary document and will be developed further upon appointment of the main Contractor.

Key stakeholders to be consulted in the development of the final CTPMP are listed below:

- Transport for New South Wales (TfNSW)
- The Hills Shire Council
- School Infrastructure New South Wales (SI NSW)

Preliminary consultation with the above has been undertaken throughout the numerous Transport Working Group meetings; however, discussion regarding construction management measures has been premature given a Contractor is not yet appointed.

2 Site Details

2.1 Site Description and Location

The site is located at 50 and 52 Terry Road, Box Hill. The site comprises two (2) separate lots, which have a combined area of 4.7ha, within a broadly rectangular parcel of land. The legal description of the site includes Lot 299 in DP 1285364 (50 Terry Road) and Lot 10 in DP 1285590 (52 Terry Road). An aerial map of the site is provided at **Figure 1**.

Figure 1: Site Aerial (Source: Nearmap / Ethos Urban, March 2025)

The site is located in Box Hill in The Hills Shire Council Local Government Area (LGA) in the north-west of Sydney.

Box Hill is part of the North-West Growth Centre, which is being re-developed from rural/residential land to low- and medium-density residential subdivisions. The area was rezoned in 2013 to form the Box Hill Release Area. By completion, the precinct will be home to approximately 42,480 residents (13,276 dwellings).

The site has frontages to Terry Road to the east and Keeneland Street to the north. It presently accommodates two large lot dwellings with access from Terry Road.

2.2 Surrounding Development

To the north, east and south of the site, land is emerging and recently completed residential development. Further south is land zoned for a future private School.

West of the site is the future Sunnyhill Parkway Sports Complex. However, it is expected that the construction works will be completed prior to development and/or opening of that recreational facility.

2.3 Surrounding Road Network

2.3.1 Road Hierarchy

With reference to the Box Hill Precinct Road Hierarchy, key roads and intersections in proximity to the site are identified in **Figure 2**.

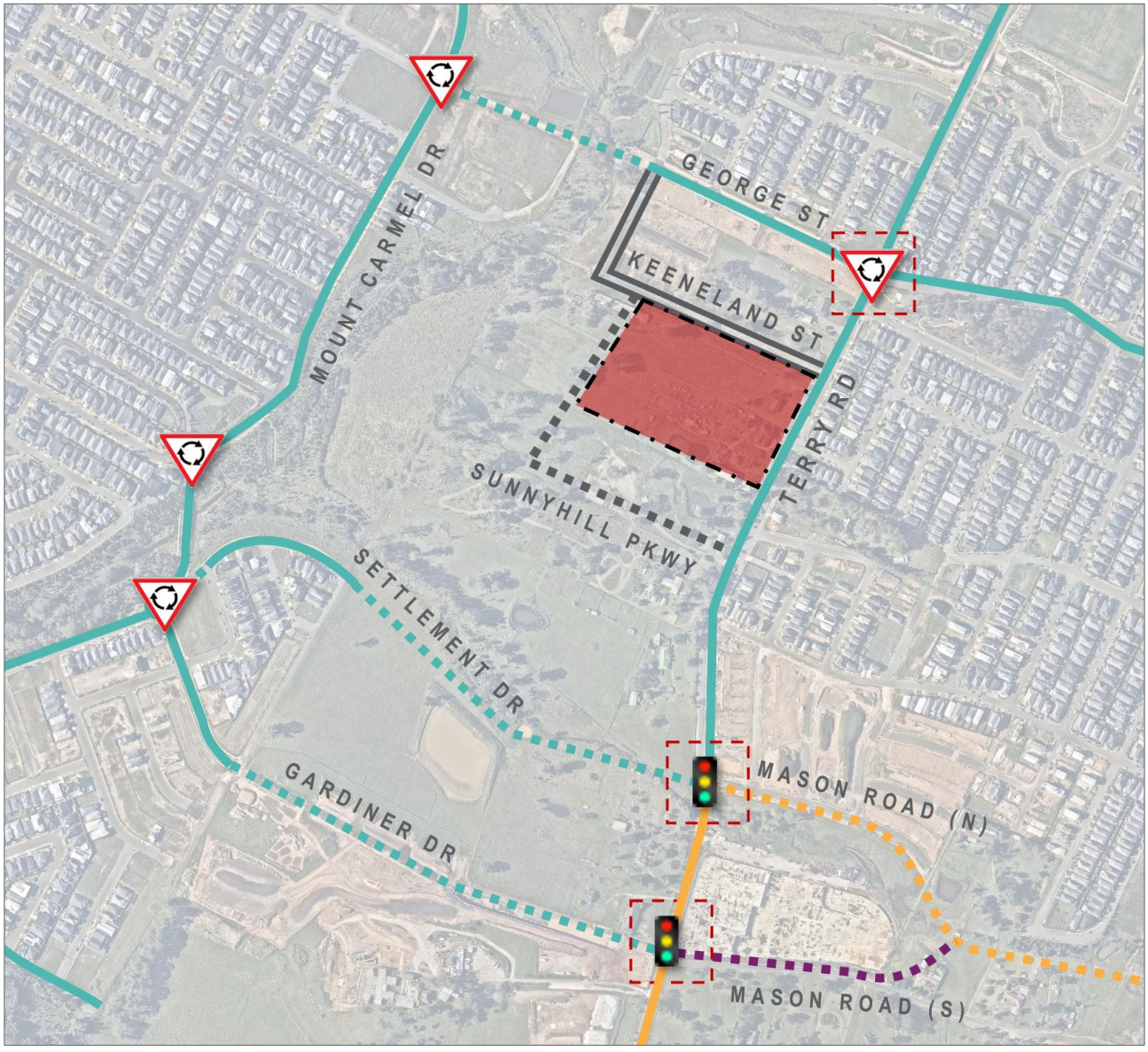

Figure 2: Box Hill Precinct Road Network (Source: Box Hill DCP)

2.3.2 Traffic Volumes

Existing traffic volumes in Terry Road in the vicinity of the site are consistent with a local collector road as follows:

- AM peak 595 veh/hr two-way (181 northbound, 414 southbound)
- PM peak 591 veh/hr two-way (270 northbound, 321 southbound)

Given the emerging nature of the broader precinct, traffic volumes should be reviewed regularly to inform future Traffic Guidance Scheme (TGS) development.

2.4 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 2019 and 2023, reflecting the most recent data available. Locations of recorded crashes are shown in Figure 3 and details summarised in Table 1 .

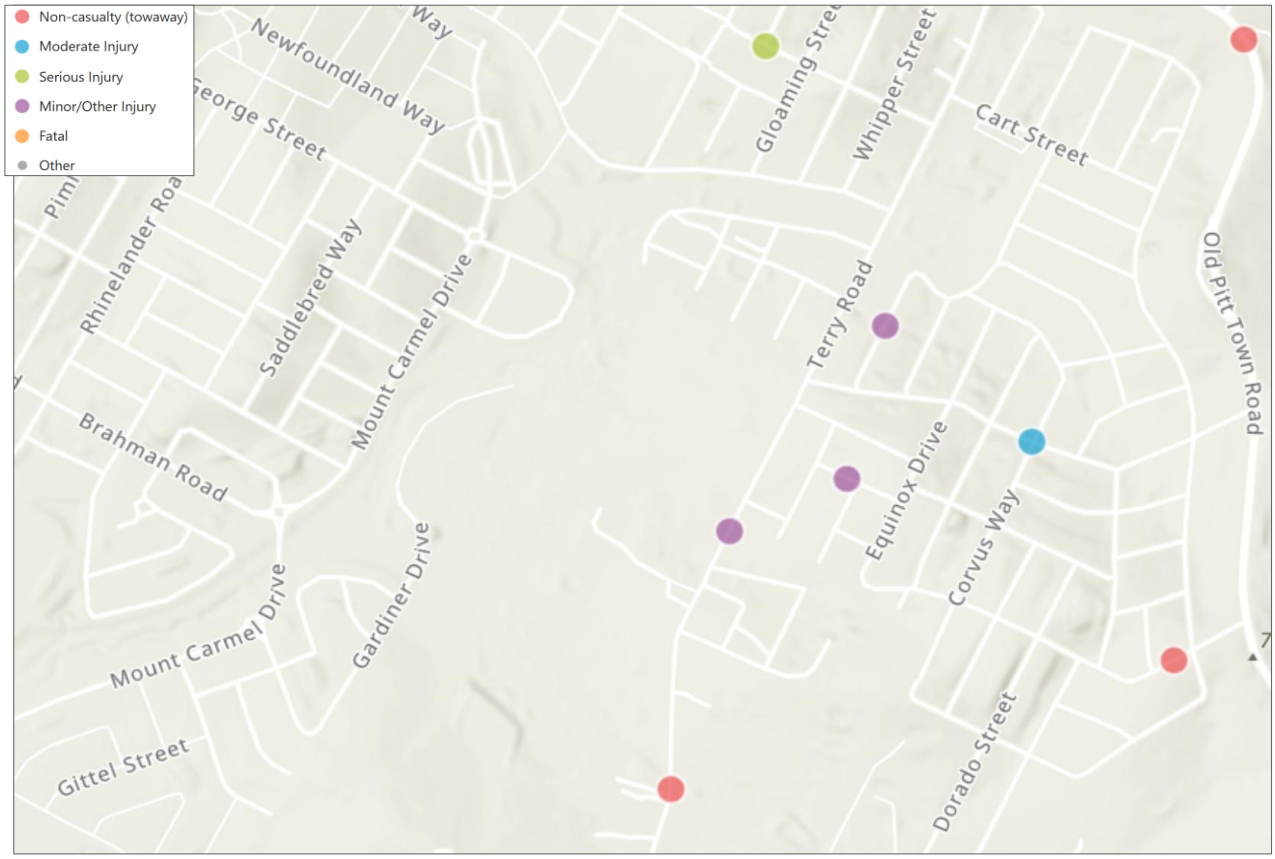

Figure 3: Collision Locations

TABLE 1 COLLISION TYPOLOGY

Reporting Year	Location	RUM Code	Number Injured	Degree of Crash
2019	Terry Road	87 – Off carriageway left on left bend into object / parked vehicle	1	Minor / other injury
2020	North of 36 Terry Road	85 – Off carriageway right on left bend into object / parked vehicle	0	Non-casualty (towaway)
2022	Dressage Street	71 – Left off carriageway into object / parked vehicle	1	Minor / other injury
	Intersection of George Street, Rangy Street and Corvus Way	21 – Right through	1	Moderate injury
	Old Pitt Town Road	81 – Off carriageway left on right bend into object / parked vehicle	0	Non-casualty (towaway)
	West of intersection of Limax Street and Capella Street	71 – Left off carriageway into object / parked vehicle	1	Minor / other injury
2023	Intersection of Newmarket Parkway and Gilgai Street	10 – Cross traffic	1	Serious injury
	Andromeda Parkway	71 – Left off carriageway into object / parked vehicle	0	Non-casualty (towaway)

Collisions which occurred within 500m of the Site are extracted and detailed above. Collisions which occurred in the area in the last five years have not taken place along the immediate Site frontage roads. No fatalities were reported between 2019 – 2023. Six of the collisions identified involved vehicles veering off the carriageway suggesting vehicle speeds may have been a contributing factor.

It can be concluded that consideration should be given to reviewing vehicle speed limits on streets surrounding the school and extent of the required ‘School Zone’ speed restrictions.

2.5 Stakeholder Engagement

2.5.1 Stakeholder Notification

The contractor shall liaise with the below stakeholders and undertake consultation actions shown in

The contractor shall consult with the following stakeholders as part of the preparation and submission of the detailed CTPMP. Following submission of the detailed CTPMP, the contractor shall liaise with the various stakeholders detailed below to address any comments ahead of submission of the final CTPMP.

- Regulatory Stakeholders
  - TfNSW
  - The Hills Shire Council
- Advisory Stakeholders
  - Local bus operators:
    - CDC NSW
    - Busways
  - NSW Police and emergency services
  - Nearby construction contractors – given the emerging nature of the Box Hill Precinct it is anticipated that construction will also taking place at nearby sites and so coordination would take place with nearby major construction sites.

In the event that any disruptions to roadways / footpath occur as a result of construction works, the procedure outlined below is to be followed:

- If any future disruptions to roadways / footpaths are required, Council / TfNSW is to be notified first and depending on the extent of the disruption the contractor is to notify affected property occupiers using letter drops and Variable Message Sign (VMS)
- If any unforeseen disruptions to roadways / footpaths occur, Council / TfNSW is to be notified first and depending on the extent of the disruption the contractor is to notify affected property occupiers via traffic controllers and Variable Message Sign (VMS)
- In the event that heavy vehicle damage to Council / TfNSW assets / infrastructure, contractors will notify The Hills Council's Traffic & Transport team and / or Assets Branch.

3 Proposed Works and Staging

3.1 Proposed Construction Programme

The programme has not yet been determined and a detailed CTPMP will be prepared by the appointed Contractor, prior to construction.

3.2 Construction Hours

Construction works will be undertaken during standard construction-working hours as follows:

- Monday to Friday: 7:00 AM to 5:00 PM.
- Saturday: 8:00 AM to 3:00 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.

3.3 Truck Routes

All trucks accessing the Site will comply with the requirements of the NSW freight network. Upon appointment of the contractor, this CTPMP will be updated to include further detail on proposed construction truck routes to and from the Site.

At this stage, it is anticipated that all construction vehicles will approach the Site from the south via the A2, a B-double approved route, before travelling northbound along Terry Road. Indicative construction access routes are provided in **Figure 4**.

Figure 4: Indicative Construction Access Routes

3.4 Road Occupancy and Opening Permit

Works within Terry Road are required along the Site frontage, to facilitate verge works and bus bays and associated widening.

Necessary Road Occupancy Licenses (ROL) and Road Opening Permits will be obtained from TfNSW and Council, as required. These applications are separate to the overarching CTPMP and will be accompanied by relevant temporary traffic management measures, as required.

3.5 Temporary Traffic Management

Traffic management shall be undertaken in accordance with the methodology outlined within relevant Traffic Guidance Schemes (TGS). Traffic and non-vehicle related roads users are expected to follow the instructions of traffic controller(s) to minimise their exposure to potential hazards near the construction access driveway and construction site.

Key elements expected to required temporary traffic management include:

- Kerb works along Terry Road, including driveway crossover construction
- Kerb works along Keeneland Street, including driveway crossover construction
- General access – trucks turning ahead signage throughout construction

Construction of wombat crossings and other works within the public road reserve shall be subject to separate approvals and therefore outside the scope of this Plan.

3.6 On-street Works Zone

At this stage, an on-street Works Zone is not expected to be required.

3.7 Risk Assessment

A risk assessment is aimed to identify the hazards and risks associated with the works. The purpose of this risk assessment is to determine the controls required for the protection of the road workers and road users.

Upon appointment of a contractor, a risk assessment will be undertaken and appended to this CTPMP.

3.8 Site Contact

At this time, no contractor has been appointed. Once a contractor has been appointed contact details of the Site Manager will be provided. An updated version of this CTPMP will be issued reflecting the live nature of the document.

The Site Manager will be responsible for liaising the site managers of surrounding construction sites to ensure a coordinated approach to traffic management. Communication between the various construction sites will ensure:

- Project programmes are shared.
- Detail of peak activity days are where possible coordinated to avoid excessive impact on the surrounding road network.
- Oversize / over mass deliveries would be communicated and where possible coordinated to avoid excessive impact on the surrounding road network.

- Traffic control measures are shared to ensure the impact of any lane closures / diversions are known in advance and can be accounted for in route planning.

4 Traffic Management

4.1 Overall Principles of Construction Traffic Management

The overall principles of traffic management during construction activities 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 parking
- Maintaining access to/from 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 Council's approved hours of work.

4.2 Contractor Parking

Car parking for construction contractors will be provided on-site with no on-street car parking permitted.

The construction contractor will be required to ensure contractors working on the project are aware of the limited available on-site parking and minimise overflow of parking in surrounding streets, as well as the need to comply with parking rules in accordance with the Road Rules.

4.3 Proposed Construction Stage Site Layout

The proposed construction site layout through the various phases of construction will be confirmed upon appointment of the Contractor.

Where possible, contractor parking shall be provided on-site as outlined in Section 4.2 above.

4.4 Worker Induction

All workers and subcontractors engaged on-site will 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 will be suitably trained and covered by adequate and appropriate insurance.

4.5 Authorised Traffic Controller

If there is a requirement for authorised traffic controllers to be present throughout the construction stages of the project, their responsibilities shall 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.
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project.

When required, a Traffic Guidance Scheme for details of the proposed work zone and associated traffic management measures will be provided.

4.6 Construction Traffic Volumes

4.6.1 Typical Construction Movements

The maximum number of trucks accessing the Site will be confirmed upon appointment of the Contractor.

However, with reference to other school CTPMPs, the following truck volumes are anticipated:

- 15-20 trucks per day during non-peak activities, and
- Up to 60 trucks per day during peak construction.

These forecasts are indicative at this stage and have been informed by construction of similar size schools.

The Contractor will be required to ensure contractors working on the project are aware of the available on-site parking; and are encouraged to carpool or travel to/from the site using public transport where practicable to minimise any reliance on on-street parking.

4.6.2 Construction Traffic Impacts

The above construction traffic volumes will be substantially less than future operational traffic and, as such, will not present any unacceptable impacts to the surrounding road network.

4.7 Construction Mitigation Measures

Construction traffic, whilst expected be a moderate increase above existing traffic, will be less than future operational traffic and therefore deemed to have an acceptable impact on the surrounding road network.

Notwithstanding, the following measures should be undertaken to minimise the impacts of the construction activities:

- Temporary construction fencing shall be provided along site boundaries/works area boundaries to provide safe pedestrian access. Fencing shall be maintained for the duration of the construction program associated with the stage of works being undertaken.

- Traffic control will 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.
- 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 will be managed outside of peak hour vehicle and pedestrian activity.

4.8 Public Transport Services

Construction works are not expected to impact existing public transport services as the construction works are expected to be largely contained on-site.

No bus stops are present along the immediate frontages of the site.

Any works impacting traffic along Terry Road – a local bus route – shall require advance notice to be provided to TfNSW and relevant bus operators.

4.9 Pedestrian and Cyclist Management

During construction, pedestrian movements will be maintained along the eastern side of Terry Road.

For the footpath closure on the western side of Terry Road, a site specific TGS will be developed and implemented by contractor to detour the pedestrians safely along Terry Road.

Traffic controller(s) will be present at the construction areas as required to manage pedestrian and vehicular traffic to ensure public safety.

4.10 Truck Access

Construction vehicles accessing the construction areas are expected to travel in a forward direction when accessing and egressing the Site.

Further detail on the proposed location for vehicles accessing the Site will be provided upon appointment of the Contractor when more detailed construction staging plans are available.

5 Monitoring and Review

5.1 Work Site Inspections, Recording, Reporting and Monitoring Programme

Construction work should be monitored to ensure it complies with this CTPMP. A daily inspection before starting works should take place to ensure that conditions are in accordance with those stipulated in the plan and there are no potential hazards. Any potential risks or non-conformances to the CTPMP must be identified, recorded, and appropriately resolved if they arise.

5.2 Contingency Plan

A contingency plan shall be established by the contractor and is to be included in the overarching CEMP. Notwithstanding, Table 2 outlines an indicative plan to be undertaken by the builder in the event that the monitoring program identifies the management plan is not effective in managing the construction impacts.

TABLE 2: CONTINGENCY PLAN

Risk		Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Construction traffic volume is in accordance with permissible and programmed volume and time constraints	Construction traffic volumes exceed programmed volume but is within permissible volume constraints	Construction traffic volumes exceed permissible volume and time constraints
	Response	No response required	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Review CTPMP and update where necessary • Provide additional training.	As with Condition Amber, plus; • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Stop all transportation into and out of the site.
	Trigger	No construction vehicle movement during peak periods	Construction vehicle movement close to peak periods	Construction vehicle movement during peak periods
	Response	No response required Continue monitoring program	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Provide additional training (including toolbox talks and further notification of	As with Condition Amber, plus; • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.

			Driver Code of Conduct)	• Stop all transportation into and out of the site. • Review CTPMP and update where necessary.
Queuing	Trigger	No queuing identified	Queuing identified within site	Queuing identified on the public road
	Response	No response required Continue monitoring program	Review the delivery schedule prepared by the builder. If drivers are not following the correct schedule, then they should be provided with additional training and an extra copy of the Driver Code of Conduct	As with Condition Amber, plus • Review and investigate construction activities. • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Temporary halting of activities and resuming when conditions have improved. • Stop all transportation into and out of the site. • Review CTPMP and update where necessary, provide additional training.
Noise	Trigger	Noise levels do not exceed imposed noise constraints	Noise levels in minor excess of imposed noise constraints	Noise levels greatly in excess of imposed noise constraints
	Response	No response required	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	As with Condition Amber If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.
Traffic Guidance Scheme	Trigger	No observable issues	Minor inconsistencies with TGS to onsite operations	Near miss or incident occurring regardless of / as a result of the TGS being implemented
	Response	No response required	Traffic Controller to amend TGS on site and to keep a log of all changes	Stop work until an investigation has been undertaken into the incident. There are to be changes made to the TGS to ensure that the safety of all workers,

				students and civilians is catered for.
Dust	Trigger	No observable dust	Minor quantities of dust in the air and tracking on to the road	Large quantities of dust in the air and tracking on to the road
	Response	No response required	Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as: • Deployment of additional water sprays • Relocation or modification of dust-generating sources • Check condition of vibrating grids to ensure they are functioning correctly. • Temporary halting of activities and resuming when conditions have improved	As with Condition Amber. • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Implement relevant responses and undertake immediate review to avoid such occurrence in future.

Appendix B. Preliminary School Transport Plan

Box Hill Public School & Box Hill High School

Preliminary School Transport Plan

50-52 Terry Road, Box Hill
24/07/2025
P2296r02

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Document Control

Project No	P2296
Project	Box Hill Public School and Box Hill High School
Client	Department of Education
File Reference	P2269r02v2 Box Hill Public School and Box Hill High School - School Transport Plan

Revision History

Revision No.	Date	Details	Author	Approved by
-	26/05/2025	Draft	E. Lally K. Ballurkar	
I	24/07/2025	Draft	K. Ballurkar	K. Ballurkar
II	24/07/2025	Issue	K. Ballurkar	K. Ballurkar

contents

Figures

Tables

1 Introduction

1.1 Background

Ason Group has been engaged by Department of Education to prepare a Preliminary School Transport Plan in relation to the Review of Environmental Factors for the construction of Box Hill Public and Box Hill High School (the Proposed Development) at 50-52 Terry Road, Box Hill (the Site).

1.2 Purpose of the School Transport Plan

The principal objective of a School Transport Plan (STP) is to facilitate sustainable travel to and from the School. School Transport Plans are the key management tool for implementing the transport solutions highlighted in the Transport Assessment and are one of the public tools for mitigating transport impacts. They are long-term strategies which set out principles and measures to ensure site-wide sustainable travel.

This Preliminrary School Transport Plan (PSTP) 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.

This PSTP sets out objectives and strategies to assist the School in achieving green travel goals to improve sustainability. It shall be treated as a 'live' document and therefore will be continuously monitored and updated, as required (refer **Section 5**).

2 Objectives and Targets

2.1 Objectives

The principal objective of this PSTP is to develop and implement a series of transport solutions and measures that facilitate sustainable travel to and from the Site.

To achieve this principal objective the following site-specific aims and principles have been established:

- Reduce the environmental footprint of the school,
- Promote the use of active travel 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, and
- Reduce reliance on the use of private vehicles for travel to/from the School.

Having regard for the above, this Plan adopts the following movement hierarchy with priority given to 'active travel', followed by public transport; and lastly the use of cars and other private vehicles. This hierarchy is reflected in TfNSW's Road User Space Allocation Policy (2024) and shown in **Figure 1** below.

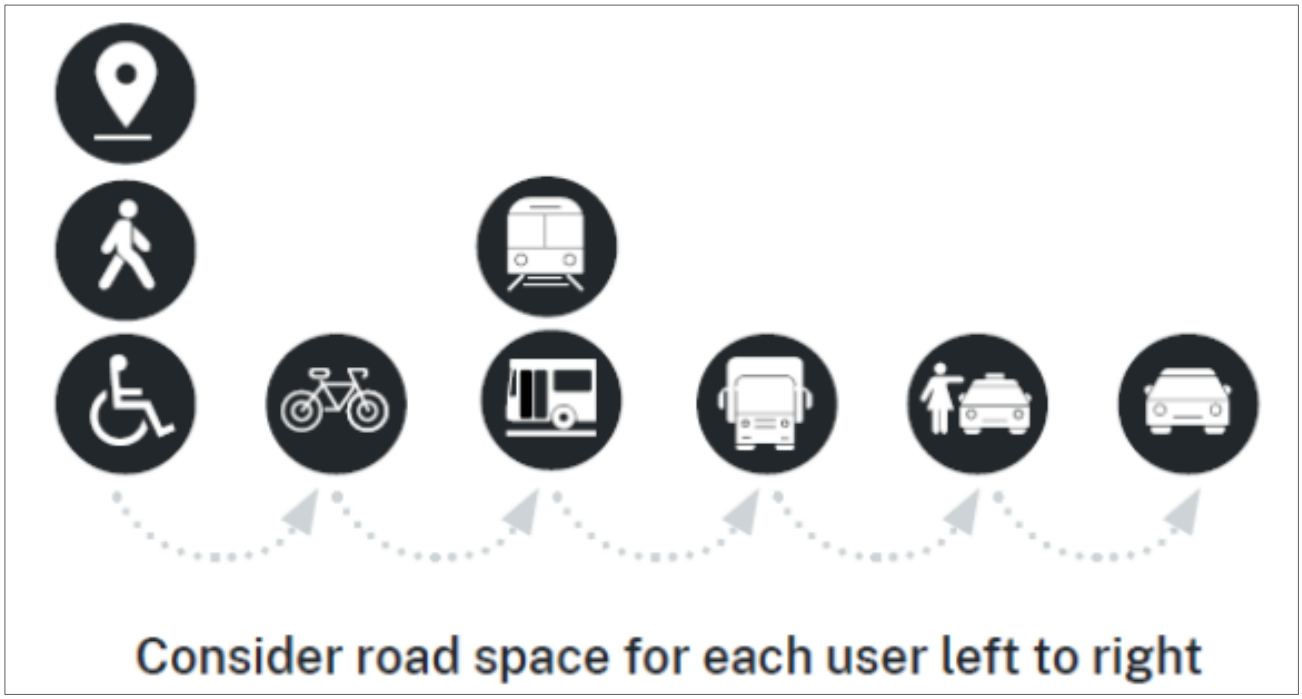

Figure 1: Road User Space Hierarchy

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

2.2 Targets

To achieve the identified objectives of the PSTP, a series of perceived targets have been developed. This Preliminary Plan provides initial targets which will be developed upon occupation and site-specific surveys. The perceived targets are listed below:

- Specific percentage increase in the number of staff, students, and visitors walking and cycling by a specific time period.
- Ensure that all staff, students, visitors and parents are aware of the Travel Plan and its objectives by a specific time period (e.g. within six months of occupation).
- Increase in public transport usage by a specific percentage within an identified time period.

The targets will be specific, measurable, attainable, realistic and time-bound and link directly to the objectives of STP and be supported by action plan measures discussed in **Section 4**.

Achievement of these targets would result in mode share change over time. As such, based on the identified targets and objectives, forecast for mode share change across the timeframes detailed below are targeted.

2.2.1 Mode Share Targets

Based on the targets identified above and the key objectives of this PSTP, the following mode share targets have been identified.

Upon occupation and following the collection of survey data to identify travel patterns to the Site the targets outlined below could subsequently be revised after the surveys have been completed.

TABLE 1: MODE SHARE TARGETS

Proposed Mode Share						
Travel Mode	Staff		High School Students		Public School Students	
	Number	%	Number	%	Number	%
Car (as driver)	130	95%	-	-	-	-
Car (as passenger)	3	2%	240	24%	439	44%
Bus	2	1.5%	200	20%	183	18%
Walking	2	1.5%	500	50%	338	34%
Bicycle / Scooter	0	0%	60	6%	40	4%
Total:	**137**	**100%**	**1,000**	**100%**	**1,000**	**100%**

2.3 Policies and Procedures

To ensure the purpose of the PSTP is achieved a series of site specific policies and procedures are to be implemented at the Site and include:

- Multi-modal transport access is prioritised.
  - The Proposed Development will include the delivery of new wombat crossings on Terry Road and Keeneland Drive.
  - The Proposed Development provides a dedicated bay for bus services operated by TfNSW.
- Kiss and drop facilities along Keeneland Street (30 spaces)
- On-site car parking is limited to staff only
  - On-site car parking is provided for staff members only which will encourage High School students to consider alternative more sustainable methods of travel to the Site.
- On-street car parking should not impact neighbours
  - Any staff parking demand in excess of that which can be accommodated on-site will be carefully managed. Staff will be advised to park in locations that do not impact on residents.

3 School Transport Operations

3.1 Site Transport Access

This section describes the operation of the various access points to the Site for all modes. The proposed access strategy for the Site is detailed in **Figure 2**.

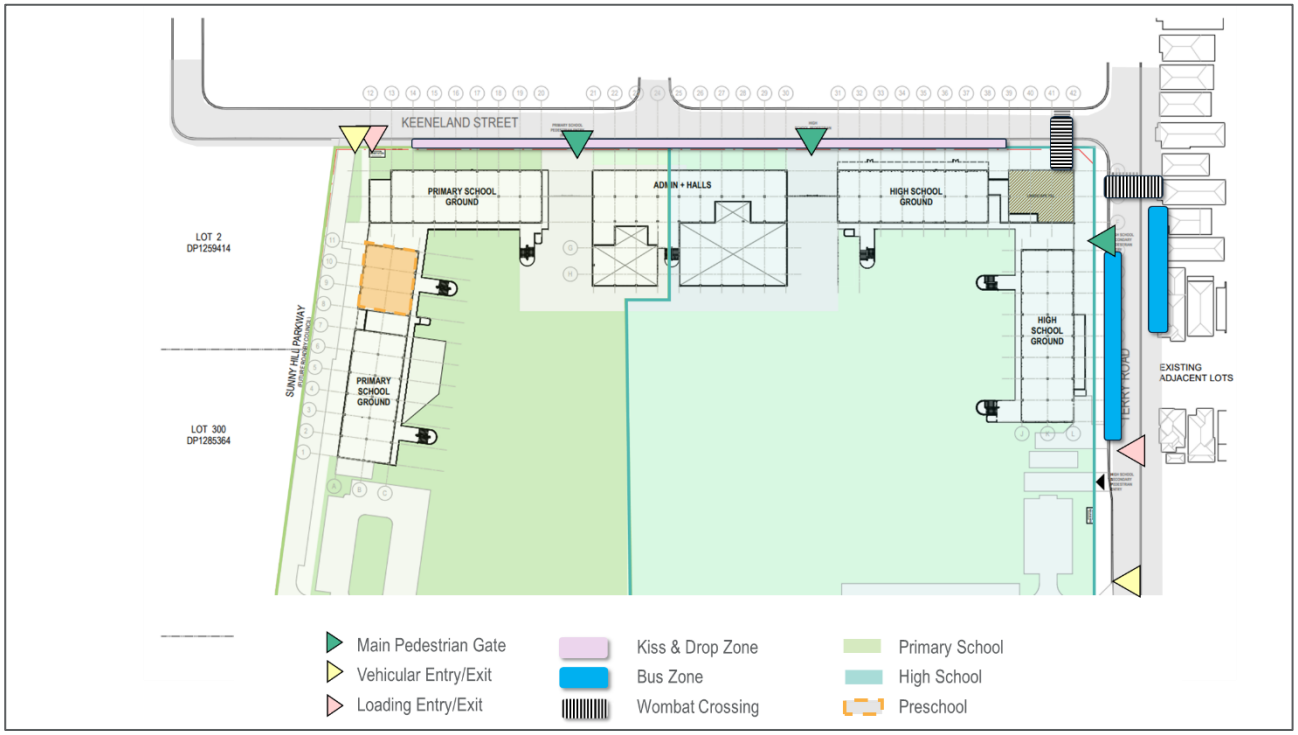

Figure 2: Site Access Strategy

3.1.1 Walking and Cycling Access

For the purposes of this Plan, this section of the report considers all arrivals and departures from the Site which will include on-foot travel. For example, pedestrian movements to and from the bus stop on Terry Road would be considered as well as pedestrian movements to and from the proposed kiss and drop facilities.

New wombat crossings shall also be introduced on Keeneland Street and Terry Road to provide a safe crossing point for students, staff and parents. Introduction of new wombat crossings will be supported by the introduction of crossing supervisors to help students safely cross both Keeneland Street and Terry Road and manage traffic congestion.

High School

The public access gate for students will be located Keeneland Street as shown in **Figure 2** with secondary access gates provided on Terry Road.

It is anticipated that High School Students arriving to the Site via bus would utilise the pedestrian gate on Terry Road adjacent to the proposed bus stop. Whilst students being dropped off by vehicle will utilise the main pedestrian access gate on Keeneland Street.

Cycle parking will be located in the south eastern corner of the Site and will be accessed from the proposed secondary gate on Terry Road. A total of 30 bicycle stands will be provided providing cycle parking for 60 cycles

Public School

The public access gate for Public School students will be located Keeneland Street as shown in **Figure 2**.

Public School Students arriving to the Site via bus would utilise the main pedestrian gate on Keeneland Street. It is also noteworthy that the designated Kiss & Drop Zone is also located on Keeneland Street to provide a safe means of entry/exit for students.

Cycle parking will be located in the south-west corner of the Site and will include the provision of 20 Sheffield stands providing space for 40 cycles. The proposed cycle parking will be accessible to all cycle types. Cycle parking will be accessed from the main gate on Keeneland Street via the school grounds.

3.1.2 Visitor Access

High School

Visitor access to the school will be via the main access gate on Keeneland Street. In summary:

- The intercom, gate control panel (GCP) and video monitor will be located and controlled from the administration office or an alternate central location for all non-staff visitors.
- Key FOBs or proximity cards will be provided to staff who have access to the car park. Others will need to use the intercom to be granted access.
- Visitors to the school will utilise on-street parking and access the School via the main gate.

Public School

Visitor access to the Public School will be via the main access gate on Keeneland Street. As with the High School, visitor access will be as follows:

- The intercom, GCP and video monitor will be located and controlled from the administration office or an alternate central location for all non-staff visitors.
- Key FOBs or proximity cards will be provided to staff who have access to the car park. Others will need to use the intercom to be granted access.
- Visitors to the school will utilise on-street parking and access the School via the main gate.

3.1.3 Vehicle Access

High School

Vehicles associated with the High School shall access the Site via a dedicated vehicle access on Terry Road.

Servicing and waste collection vehicles will access the Site from Terry Road to access the loading and waste area to the eastern boundary of the Site.

Emergency vehicles will utilise the short-term parking facilities along school frontage roads for access to and from the Site when required at all times.

Public School

Vehicles associated with the Public School shall access the Site via the dedicated vehicle entrance on Keeneland Street.

Servicing and waste collection vehicles will also access the Public School from Keeneland Street to access the loading and waste area within the car park.

Emergency vehicles will utilise the short-term parking facilities along school frontage roads for access to and from the Site when required at all times.

3.1.4 Support Learning Drop-Off Facilities

Dedicated drop-off facilities for support learning unit (SLU) / accessible access will be provided along Keeneland Street, with 5 SLU bays provided.

During the morning drop off and afternoon pick up period this area will be restricted to use by support learning student carers only. Outside of those hours, visitors to the school may utilise this area for on-street parking for accessible visitor needs.

3.1.5 Pick-Up and Drop-Off Facilities

Pick-up and Drop-off (PUDO) facilities will be provided along Sunny Hill Parkway and Keeneland Street. A total of 30 spaces are provided for short stay parking to accommodate vehicles during the AM drop-off and PM pick-up period.

This short stay parking provision will be sign posted for short time restricted parking during the AM drop-off and PM pick-up period. Outside of these hours unrestricted parking will be permitted.

3.1.6 Staff Car Park

High School

Parking for High School Staff will be located in the southeastern corner of the Site and will be accessed via Terry Road. A total of 81 car parking spaces will be provided including four accessible parking spaces designed to AS2890.6:2009 standards. Parking allocation is to be determined by the School administration.

Vehicles will access the High School Car Park via the proposed entry gate on Terry Road as shown in **Figure 2**. Vehicles will access the Site in forward gear and egress the Site in forward gear, no reversing will be permitted onto the road.

Public School and Preschool

Parking for Public School and Preschool Staff will be located on the western boundary of the Site and will be accessed via Sunny Hill Parkway. A total of 81 car parking spaces for public school staff, 6 spaces for preschool staff and 18 visitor spaces for preschool parents will be provided in addition four SLU accessible parking spaces designed to AS2890.6:2009 standards. Parking allocation is to be determined by the School administration.

Vehicles will access the Public School Car Park via the vehicle access gate on Keeneland Street as shown in **Figure 2**. Vehicles will access the Site in forward gear and egress the Site in forward gear, no reversing will be permitted onto the road.

3.1.7 Bus Access

A bus stop is proposed on Terry Road (northbound) and will be capable of accommodating five buses, including both school buses and regular public bus services.

A separate bus stop will also be provided on Terry Road (southbound) catering for up to two buses at any one time. The proposed bus stop will cater for demand from both the Primary School and High School. A waiting area will be provided on Terry Road and shall include a shelter and associated seating.

At this stage, the service frequency for school bus services is not known and so as the anticipated timetable is developed the STP would be updated accordingly.

3.1.8 On-site Loading

Two separate on-site loading areas are provided. The eastern loading area is separated from car parking areas and can be accessed at any time, outside of morning and afternoon peak pick-up/drop-off periods.

The western loading area is located within the staff car park and shall be used outside of normal school hours.

3.1.9 Out of School Hours Care Operations

The Public School is anticipated to provide Out of School Hours Care (OSHC) services. Services would be expected to operate between the following times:

- Before School: 6:30AM to 8:40AM
- After School 3:10PM to 6:30PM

It is anticipated that the OSHC services would primarily cater for students from the Public School, however, as required a number of high school students could also be accommodated.

4 School Transport Plan Management

4.1 Delivery and Transport Plan Management

To assist with the management of the STP, a staff member from both the High School and Public School 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 5) and ongoing maintenance of the STP,
- Provide advice in relation to transport-related subjects to staff, management, and visitors, as required, and
- Liaise with external parties (i.e., The Hills Shire 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.

4.2 Action Plan

4.2.1 Action Plan Measures

The following specific actions have been identified to aid the achievement of the PSTP targets. The Action Plan provides details on the specific measures that are to be pursued in relation to encouraging more sustainable travel patterns.

TABLE 2: ACTION PLAN MEASURES

Item No.	Action / Description	Target	Timeframe	Responsibility
1. General				
1.1	Establish a centralised 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. The estimated annual budget for a TPC assuming 10 weeks per term, 4 terms, and 4 hours per week is $80,000 excl. GST	School Administration / Department of Education	By operational commencement date	Department of Education
1.2	Provide 'Travel Welcome Pack' for newly employed staff, highlighting alternate modes of transport other than the use of a private vehicle.	Staff	By operational commencement date and ongoing	TPC
1.3	Review of Plan as a regular item on the agenda of staff/management meetings.	Staff	Annually	TPC

TABLE 2: ACTION PLAN MEASURES				
1.4	Preparation of a Transport Access Guide (TAG) and review following changes stipulated by the TPC	Staff, Students and Parents	By operational commencement date	TPC
2. Walking & Cycling				
2.1	Promote National Ride2Work 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 celebrating those that currently utilise bicycles.	Staff, Students and Parents	Annually	TPC
2.2	Promote Walk to Work Day 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	Annually	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 students in each year can get the most 'steps' in a given time period; similar to Steptember activities.	Staff, Students and Parents	Annually	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 / Parents
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	Introduce crossing supervisors at the proposed wombat crossings on Keeneland Street and Terry Road.	Staff, Students and Parents	By operational commencement date	TfNSW / Department of Education
3. Education Initiatives				
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	Students	On-going	TPC

TABLE 2: ACTION PLAN MEASURES				
	safety with a focus on walking independently to school.			
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
4. Public Transport				
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 / DoE
4.2	Advocate for TfNSW to improve public transport services in response to increased development within the surrounding area.	Staff and Students	On-going	TPC / DoE
4.3	Update this Plan and TAG to reflect changes to any bus routes and service times.	Staff and Students	On-going	TPC
4.4	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
4.5	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
4.6	Liaise and discuss with TfNSW the feasibility of providing bus services for students outside of the 2.3km driving distance from the School.	Students	To be undertaken prior to school opening	TfNSW / Project Team
5. Reducing Car Travel				
5.1	Review initiatives for staff and parents to promote carpooling. This may include (but not limited to) the provision of online services or forums to facilitate ease of finding carpooling scheme participants.	Staff and Parents	To be undertaken prior to school opening	TPC
5.2	Potentially introduce and enforce parking restrictions around the school. This is to be discussed and implemented in collaboration with	Staff and Parents	To be undertaken prior to school opening	TPC

TABLE 2: ACTION PLAN MEASURES				
	the Hill's Council's Road Safety Officer			
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 school opening	TPC

4.3 Communications Strategy

The success of the Travel Plan is dependent on future staff, students and parents awareness through the promotion and advertisement which will be developed by the TPC in conjunction with the future school administration. Various forms of suitable communication will be used and are discussed further below.

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 3: COMMUNICATION STRATEGY

What	When	Method	Target	Responsibility
Share objectives and goals with the student body and staff.	Prior to school opening and every term during operation	- Welcome packs to new staff and families. - Social media. - Website.	Staff, Students, Parents	TPC
Provide information regarding transport options to and from the school, and on-site end-of-trip facilities.	Prior to school opening. This information is to be available always and presented every term.	- Welcome packs to new staff and families. - Website. - Information boards within school grounds.	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, Steptember, etc.	Annually prior to the event	- Social media. - Website. - Skool Bag App. - E-newsletters.	Staff, Students, Parents	TPC
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	- Welcome packs to new staff and families. - Website. - Skool Bag App.	Students and Parents	TPC

TABLE 3: COMMUNICATION STRATEGY				
		- E-newsletters.		
What	**When**	**Method**	**Target**	**Responsibility**
Provide details regarding the availability of student bus passes.	Prior to, and at school opening. This information is to be available always and presented every term	- Welcome packs to new staff and families. - Website.	Students and Parents	TPC
Liaise with parents regarding the education programs provided by the school that encourages alternative transport modes.	Prior to, and at school opening. This information is to be available always and presented every term	- Welcome packs to new staff and families. - Website.	Students and Parents	TPC
Link key resources regarding the operation of school zones, road safety, and parking restrictions within the local area.	Prior to, and at school opening. This information is to be available always and presented every term.	- Welcome packs to new staff and families. - Social Media. - Website. - Skool Bag App. - E-newsletters.	Parents	TPC
Detail information regarding the operation of short stay parking areas.	Prior to, and at school opening. This information is to be available always and presented every term.	- Welcome packs to new staff and families. - Social Media. - Website. - Skool Bag App. - E-newsletters.	Parents	TPC

4.3.1 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 Plan and other information in relation to sustainable transport choices. This pack shall include a copy of the Plan 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.

4.3.2 Transport Access Guide

The aim of a Transport Access Guide is to visually present site users with information about sustainable options available for travel to and from the Site. A Transport Access Guide will be prepared prior to occupation.

Transport Access Guides can be distributed to staff, students and parents and included within the school’s website for ease of access. The Transport Access Guide will be updated as required to reflect any changes to the local sustainable transport network.

The Transport Access Guide will include the following details:

- Map(s) to show the Site location in the context of the local surrounding transport network including:
  - Walking catchments of the Site
  - Walking routes to local bus stops
  - Routing of local bus services
  - Local cycling infrastructure network and recommended routes
  - Access points to the Site for people walking, cycling, using public transport and driving.
- Detail on public transport services available within proximity of the Site
  - Detail on available bus routes and Metro services.
- Links to apps and websites that provide assistance in planning journeys in real time and timetables including Opal Travel, CityMapper and Transport Info (TfNSW).
- Detail on Places of Interest within 800m of the Site including advice on key routes to each destination.
- Detail on where to find appropriate guidance in cycling safety tips

The Transport Access Guide would be developed in accordance with the School Infrastructure NSW template.

5 Monitoring and Review Process

5.1 Plan Maintenance

This Plan shall be subject to ongoing review, ideally biannually, and will be updated accordingly. Regular reviews will be undertaken by the TPC, as required noting the 'live' nature of the Plan.

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.

5.2 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 Department of Education 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 short stay parking area, and bicycle racks.

It is recommended that an initial audit be undertaken within six months of the school opening to establish baseline mode share as early as possible.

Following the review process, the Plan will be updated with consideration for the findings and resubmitted to appropriate stakeholders. It should be noted that the initial review of the STP will be undertaken shortly after the operational commencement of the School.

5.3 Feedback Forms

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

Appendix C. TWG Minutes

3 April 2025

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TO	TWG Group
FROM	Ason Group

SUBJECT **Proposed School - Terry Road, Box Hill - TWG 05**

MEETING DETAILS	
Date	02 April 2025
Time	9:30AM
Location	MS Teams
Purpose	To discuss proposed road profile (cross-section) details
Attendance	• Ason Group – Kedar Ballurkar (KB) – Tim Lewis (TL) • SINSW – Kamoru Adetunmbi (KA) – Annelise Beljaars (AB) – Becky Chung – Angelo Parissis • Essence (Project Management) – Marie Khoury – Cameron Hay (CH) • TfNSW – Jed Coppa (JC) – Jonathan Ap – Ken Hind (KH) – Michelle Andrews – Steven Finnan (SF) • Council – Brent Woodhams – Michael Hogan (MH) – Amy Brooks – Brendan MacGillicuddy

ACTIONS:

Ref:	Proposed Actions	By	When
01	Share presentation	SINSW	ASAP
02	Further comments from TWG group	TfNSW (and Council)	Within 1 week
03	Organise separate meeting with TfNSW bus planning team	SINSW	ASAP
04	Share examples of good bus stop design, integrating with Shared Path	TfNSW (MA)	1 week

NOTES:

1. KB intro:
    a. Making allowance for Sunnyhill Parkway but not proposing to construct as part of the School development
    b. Assuming Terry Road past the site is a “collector road”. Ason Group has reviewed previous Council modelling which supports single lane, based on forecast demands.
    c. Proposing 4m width pathway to provide best practice widths – Walking Space Guide requires only 3.9m
    d. Will be localised widening for bus bay (up to 1.2m), with a bus
    e. Keenland St – width allows two vehicles to pass (6m travel lanes + parking)
2. MH: query location of buses on eastern side of Tery Rd and associated pedestrian crossing facilities. – will be provided
3. KB: preference is for school buses on the western kerb (fronting the site), with the eastern kerb providing a public bus stop.
4. MH: acknowledge can U-turn at George St when departing but buses from the north will not be able to U-turn to access the bus bay on the school side
5. MH: signals at Keenland will provide safe crossing facilities
6. KB: setbacks to buildings provide capacity to accommodate localised widening
7. KH: query comment about Austroads moving away from Shared Paths – does that mean they’re moving towards separate pedestrian and dedicated cycle paths? Not aware of that change.
    a. KB: yes, was released approximately a month ago
8. KH: assuming we have collectively moved away from 90-degree K&D
    a. KB: yes, believe that parallel is safer
    b. TL: previous example provided by Andrew (King) was 90-degree parking for a sports field and not the K&D for the nearby school.
    c. KH – agree, parallel works better
9. JC -
    a. TfNSW would encourage students to use public bus services where available and school buses only where public services are not available - refer Melonba High for a good example.
    Google link to Melonba High: https://maps.app.goo.gl/48Afb5JiA4dUBP6NA
    b. Suitable bus stop on eastern side and crossing facilities are critical to good planning. Without a good crossing, there will be issues with access.
    (echoed by SF)
10. KB: type and location of crossing shall be subject to further detailed assessment and dependent on modelling outcomes
11. SF –
    a. Terry Rd is the main link in the area and substantial bus services (~the “Light Rail of Box Hill”) in the future
    b. Large school size means even moderate uptake will have substantial demand for buses
    c. Query – where is the school catchment
12. AB: school catchment is quite centralised

13. Need to consult with TfNSW (Jed's team) if planning to change bus services (except if proposing a private dedicated buses)
14. Michelle Andrews (MA) – like more time to review / provide commentary on the sections.
    a. SINSW to share slide deck after meeting for further review
    b. Cameron: request comments within 1-week
    c. MA: Looking at examples of shared path integration into the bus stop
15. MA: would prefer separation of peds / bikes
16. Michael Hogan: query need for additional path widths based on high number of children
    a. TL: Ason team have already undertaken analysis of ped demands to inform Walking Space Guide review which has led to the proposed widths, generally wider than required by the DCP or Austroads.
17. Steven Finnan: primary school needing to traverse through the school is likely to deter use of buses
18. SF: missing links in ped network may be cause for additional students to be eligible for a bus pass
19. SF: a number of large schools in the area so efficient use of bus services is needed and this may impact on bell times etc. so that this can be managed effectively at a precinct level. This is detail for down the track however.
20. KA: Group consensus – bus bay on Terry Rd is the best option

14 May 2025

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TO	n/a – file note only
FROM	Tim Lewis
SUBJECT	**Terry Road, Box Hill – TWG #6**

MEETING DETAILS	
Date	07 May 2025
Time	9:30AM
Location	MS Teams
Purpose	Update on proposal in relation to active transport, public transport and road network implications.
Attendance	• Ason Group – Tim Lewis (TL) • School Infrastructure – Angelo Parissis – Annelise Beljaars (AB) – Becky Chung • Essence – Cameron Hay (CH) • TfNSW – Jed Coppa (JC) – Bus planning – Michelle Andrews (MA) – active transport – Okka Maw (OM) – transport planner – Ken Hind (KH) – network safety – Simon Turner • Council – Brent Woodhams (BW) – planning – Brendan MacGillicuddy (BM) – transport planner – Andrew King (AK) - observer

ACTIONS:

Ref:	Proposed Actions	By	When
01	Provide Ason Group with copy of long term strategic design for Terry Road (showing signalised intersections)	Council	ASAP 14/5
02	Investigate median or continuous path treatment for local road intersection extending north of Keeneland St	SI	Ongoing – part of REF submission
03	Provide pedestrian and vehicular traffic volume forecasts adopted for - Pedestrian crossing warrant analysis - SIDRA modelling	Ason	
04	Investigate feasibility of signalised pedestrian crossing in lieu of wombat crossing for Terry Rd	SI	
05	Investigate pedestrian waiting space requirements and ability to bend Shared Path around Terry Road bus stop waiting area	SI	

NOTES:

1. Kam – intro and acknowledgement of country
2. TL – Ason Group presentation
3. OM – response to presentation:
    a. Consider bend in Shared Path behind the bus waiting area
    b. Put green strip (cycle path) element on Keeneland wombat crossing to the eastern side of the crossing, closer to Terry Rd.
    c. Query design of George St roundabout – is it part of the scope
        i. KA – no, that's out of scope for this project and Council is leading design and delivery of intersection upgrades there
        ii. BW – Council funded via Contributions Plan
4. OM - think a radial design required
        i. TL – clarified Council modelling (and Ason assumption) is for a single lane roundabout
        ii. AK – constrained by approved residential subdivision but believes it to be radial
5. AK – pedestrian crossing inputs need clarification
    a. Pedestrian demands
    b. Vehicular traffic assumptions
    c. Are the "warrants" met?
6. TL – Ason to include that detail in REF report
7. AB – Authorities will be notified once the REF has been submitted
8. BW – noted significant development to the north of this site could place additional demands on Terry Rd as the proposed high school is the only high school in the area, which will also service the Gables to the north. Concern was raised for the increase in traffic demand caused by the HS.
9. AK –
    a. Terry Rd expected to be a 4-lane sub-arterial in the longer term, including signals at George Street
    b. Roundabout proposed in short term because demand for signals not (yet) met
10. TL – question ability for a dual lane roundabout to fit
    a. AK – George St would be signalised – there is a strategic concept plan already prepared within Council
    b. BW – Council can provide Ason with that concept plan
11. AB – SI note, in response to #8 above, that school catchment doesn't extend to the Gables to the north
    a. BW – noted however issue is related to the background demand heading north-south in Terry Road which is linked to external development / rezonings
12. AK – see concern regarding operation of Terry Road with a wombat crossing
    a. Would like to see a signalised pedestrian crossing
    b. With 4 lanes in Terry Rd, a wombat crossing is not a suitable treatment
        i. JC – however, with the 1 lane in each direction, per current plans / intent for "collector road", it is a suitable treatment so that issue is really a long term (20-year) matter

ii. AK – with approval of Box Hill North Release Area – believe signalised crossing should be provided at day one.

c. Cost differential between raised wombat crossing and signals assumed to be minimal and, as such, should pursue pedestrian signals now.

13. BW – “no timeframe” for Sunnyhill Pkwy pedestrian crossing and extension of George St across to the west due to acquisition discussions delaying delivery

14. TL – noted that the “long-term” should be considered but is not the responsibility for the Project Team. Clear Council has a longer term issue to resolve but expect that is required regardless of this school project.

    a. AK – acknowledge role of Council is determining corridor requirements into the future. However, view is that wombat crossing will create traffic issues into the future.

    b. AK/BW/BM – all confirm that preference is for a signalised pedestrian crossing on Terry Rd.

15. OM – query traffic volumes and the need for 4 lanes i.e. is it up around 2,200 veh/hr in each direction?

    a. TL – currently a “collector road” and – whilst don’t have numbers at hand - hourly volume much less than that

    b. BM – Council view is that even with a single lane in each direction, preference is for a signalised pedestrian crossing.

    c. BW/AK – Gilbert Rd signalised pedestrian crossing are examples where the crossing works quite well, because it’s signalised

16. OM – if a signalised pedestrian crossing, need to think about

    a. whether there is sufficient pedestrian holding areas, particularly on the eastern side of Terry Rd

        i. Hawkesbury Rd, Westmead is an example of where there is insufficient storage

        ii. BM – agreed – may need to fully concrete 10m either side of the signalise to provide pedestrian queuing / waiting areas

    b. Signal cycle times – if above 90 seconds, pedestrians aren’t going to wait

    c. Query need for pedestrian fencing to channel students / pedestrians to safe crossing points

17. TL – query view about whether a signalised crossing can be supported with future signalisation of George St / Terry Rd

    a. KH – would be too close.

    b. BW – George St / Terry Rd signals not funded / committed so not a barrier to providing a signalised pedestrian crossing in the short-term.

    c. TL – note inconsistency – asked to consider planned development but then disregard planned infrastructure to support that development

    d. Action: Council to send Ason strategic concept so that future staging / integration can be more completely considered.

18. MA: local road connection to the north of Keeneland St (in middle of K&D area) – may need to prevent vehicles trying to do a u-turn in there.

    a. MA recommend consideration of:

        i. install median in Keeneland St to prevent, or

        ii. raised continuous footpath treatment to discourage

    b. KA – query whether Keeneland St has sufficient width for a median

        i. MA: could do continuous pedestrian treatment but up to the Project Team to investigate

5 March 2025

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TO	n/a – file note only
FROM	

SUBJECT **Terry Rd, Box Hill – TWG 04**

MEETING DETAILS

Date	05 March 2025
Time	9:30AM
Location	MS Teams
Purpose	Discuss
Attendance	• Ason Group – Tim Lewis (TL) (notes) – Kedar Ballurkar (presenting) • SINSW – Annelise Beljaars (AB) – Angelo Parissis – Becky Chung – Kamoru Adetunmbi • Essence (PM) – Cameron Hay • TfNSW – Michelle Andrews – Ken Hind – safety – Jonathan Ap – transport planner – Simon Turner – land use planning team – Jed Coppa – bus planning – Mukwinder Athwal – bus planning – Steven Finnan • Council – Amy Brooks – property team – Tony Napoli – Principal Coordinator Transport Planning and Project Design Services - transport planning and infrastructure (such as roads) – Eric Ruiz – acting manager infrastructure and transport planning team – Mike Hogan – senior design engineer – Brent Woodhams (BW) – forward planning team – Brendan MacGillicuddy - principal manager transport planning – Andrew King (on long service leave so just listening in)

ACTIONS:

Ref:	Proposed Actions	By	Proposed Timing (not agreed)
01	Liaise with TfNSW bus planning team r.e. bus routes	Ason Group	TBC
02	Share TWG presentation to group	SINSW	ASAP
03	Provide any further feedback	TWG members	Within 1 week from receipt of TWG pack
04	Provide examples of public schools with 90-degree angle parking for Kiss & Drop" parking	Council	ASAP

NOTES:

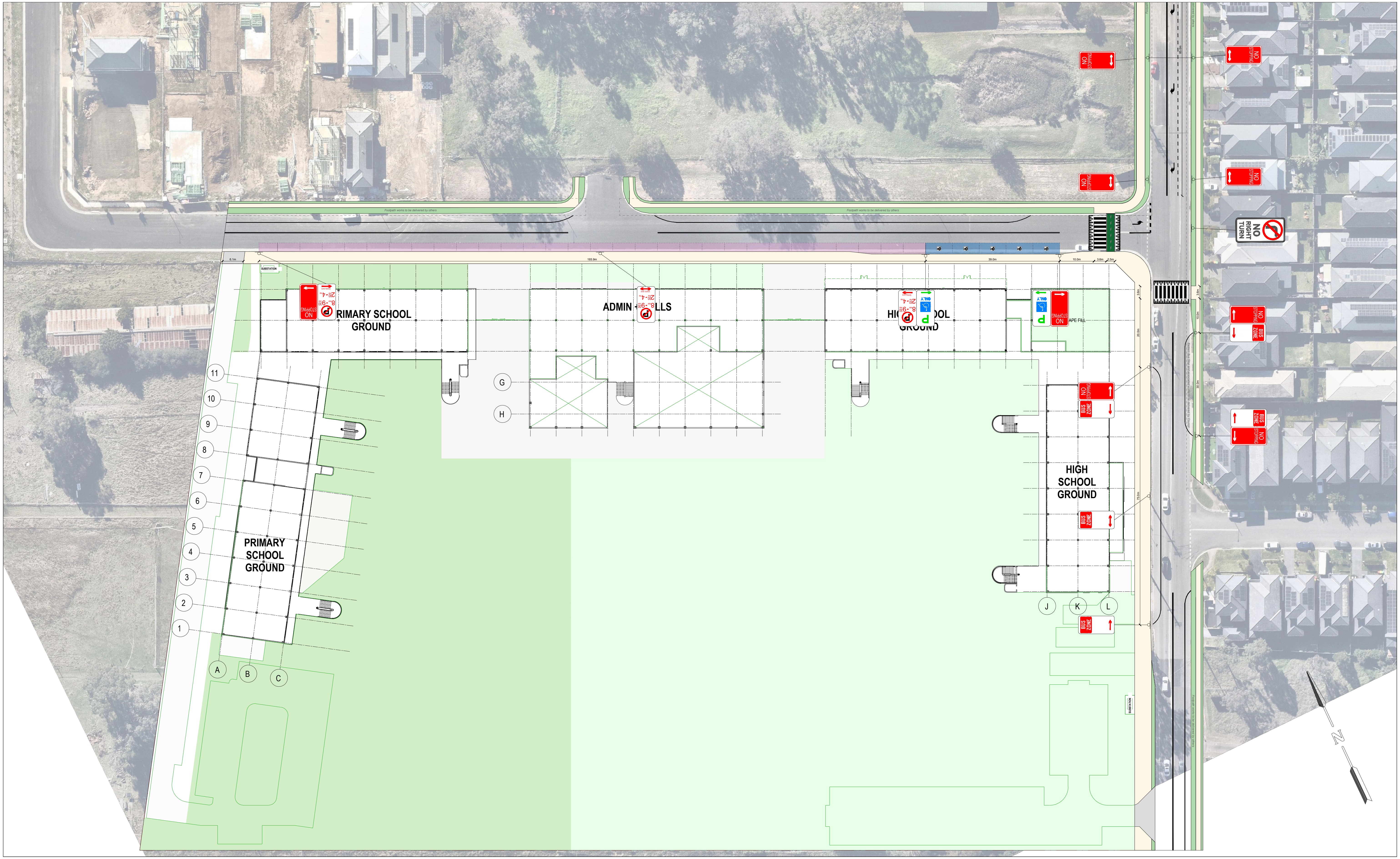
1. Discussed in 2023/2024, however didn't receive funding at that time so went on pause
2. 2024/2025 budget now includes funding and has secured land on 50 & 52 Terry Rd, Box Hill
3. 2013 – site established as a school in Structure Plan
4. Plan is to open school in D1T1 2028 for 1,000 primary + 1,000 high school and 60 pre-school students
5. Current developing Master Plan options and Transport Assessment for REF (statutory planning phase) as we have moved past Business Case
6. New team – will be responsible for delivery of the project
7. Key desires:
    a. More walking infrastructure
    b. Improved buses

    Want to establish good mode share habits from the outset
8. Catchment is capable of supporting high walkability – challenge will be practical crossings
9. Note: Sunnyhill Parkway crossing pedestrian link is captured in Contributions Plan; however, SINSW aware that it may be delayed due to requirement for acquisition of land (from Hills of Carmel developer)
10. MA: the above will need to include path for cyclists too
11. KB: Council shall be the lead agency for the design of that
12. BW: Council assessing Planning Proposal for 48 Terry Rd – looking to change to medium density residential
    a. Will make some alterations to the proposed road layout
    b. Wil be a road along the western and southern boundary so will include a new local road on School southern boundary – will be located on the 48 Terry Rd site and not directly impact the school site.
13. AB: SINSW are aware of the above but, as it's uncertain, SINSW haven't relied upon that.
14. Council has thought been given to signalisation of Keenland St?
    a. KB: Ason will be looking at that in further detail as part of the Transport Assessment (for the REF)

b. KB: not currently identified as a signalised intersection
c. Council neither was a signalised pedestrian crossing

15. Council query: how many students on Day 1?
    a. AB response: Not all on day 1 but capacity is for 1,000 PS and 1,000 HS + 60 pre-school.
16. BW: believe that Terry Rd signalised crossing should be there from day 1
17. Michael Hogan – Terry Road parking lane currently 2.3m need to widen to 3.5m for increased bus stopping on opposite side of Terry Rd (i.e. southbound)
18. Council believe signals at Keenland St and 90 degree angle parking on Keenland St for K&D will be needed
    a. KB: understand that 90 degree parking might deliver more spaces, however don't like that as a treatment for K&D
19. Jed: southbound bus stop – provision school buses where there is not demand
    a. Not many HS students eligible
    b. Students from the north would alight from eastern side. Similar for students to the south
    c. End result to be considered: provision for bus stops on eastern side of Terry Rd (southbound)
20. MA: has concern regarding roundabouts and pedestrian friendly nature of roundabouts (e.g. George St).
    a. KB: share that view r.e. roundabouts and walkability
    b. MA: action for Council to consider a roundabout design that includes raised pedestrian crossings
    c. Tony Napoli – roundabout is small so limited ability – would need to setback crossings even further along the side streets
        i. Design is done and seeking funding now
        ii. Subject to funding, looking to construct next financial year
    d. MA: suggested action: Council see what they can fit to facilitate a design more suitable for children to cross the road.
21. KB: under Medium scenario, we don't rely upon Sunnyhill Parkway or Terry Rd frontage for K&D parking demands.
    a. Bella Vista is an example of local school where 90 degree parking is provided.
    { --- post meeting review: Bella Vista Public School kiss & drop is actually parallel kerbside parking. 90-degree parking is for the sports field across the road --- }
22. AK: reinforce – we will meet the reduced signalised crossing from Day 1, therefore that should be included.
23. TL: was a signalised intersection considered as part of the VPA for the PP to the south
    a. BW: that was considered but found not to be supported, due to impact on already approved developments
24. AK: Council has expectation that SINSW would deliver all frontage roads (incl. Sunnyhill Parkway)
    a. BW: Contributions Plan 15 – only Sunnyhill Rd funded by contributions plan
    b. Contributions plan is currently $200M in deficit

Appendix D. Public Domain Plan



GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by Architectus, received 2025.07.18

DESIGNED	Kedar Ballurkar
PAPER SIZE	A3 OR A1
APPROVED BY	K. Ballurkar
DATE	31.07.2025
SCALE	1:1000

0 10 20

CLIENT

School Infrastructure

PROJECT

P2269

50-52 Terry Rd, Box Hill NSW 2765

DOCUMENT INFORMATION

Box Hill Public School and Box Hill High School

Public Domain Plan

FILE NAME	SHEET
AG2269-09-v04.dwg	AG00

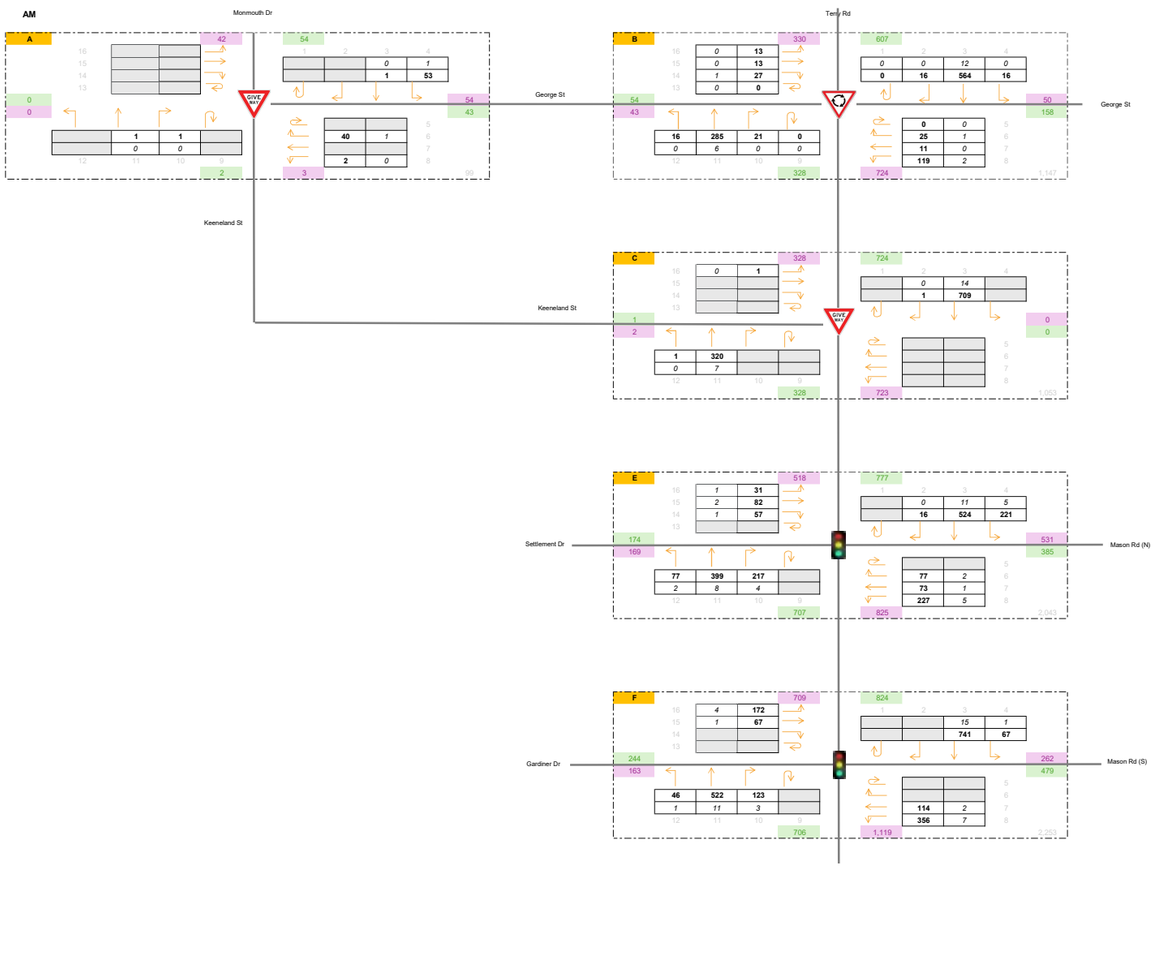
asongroup

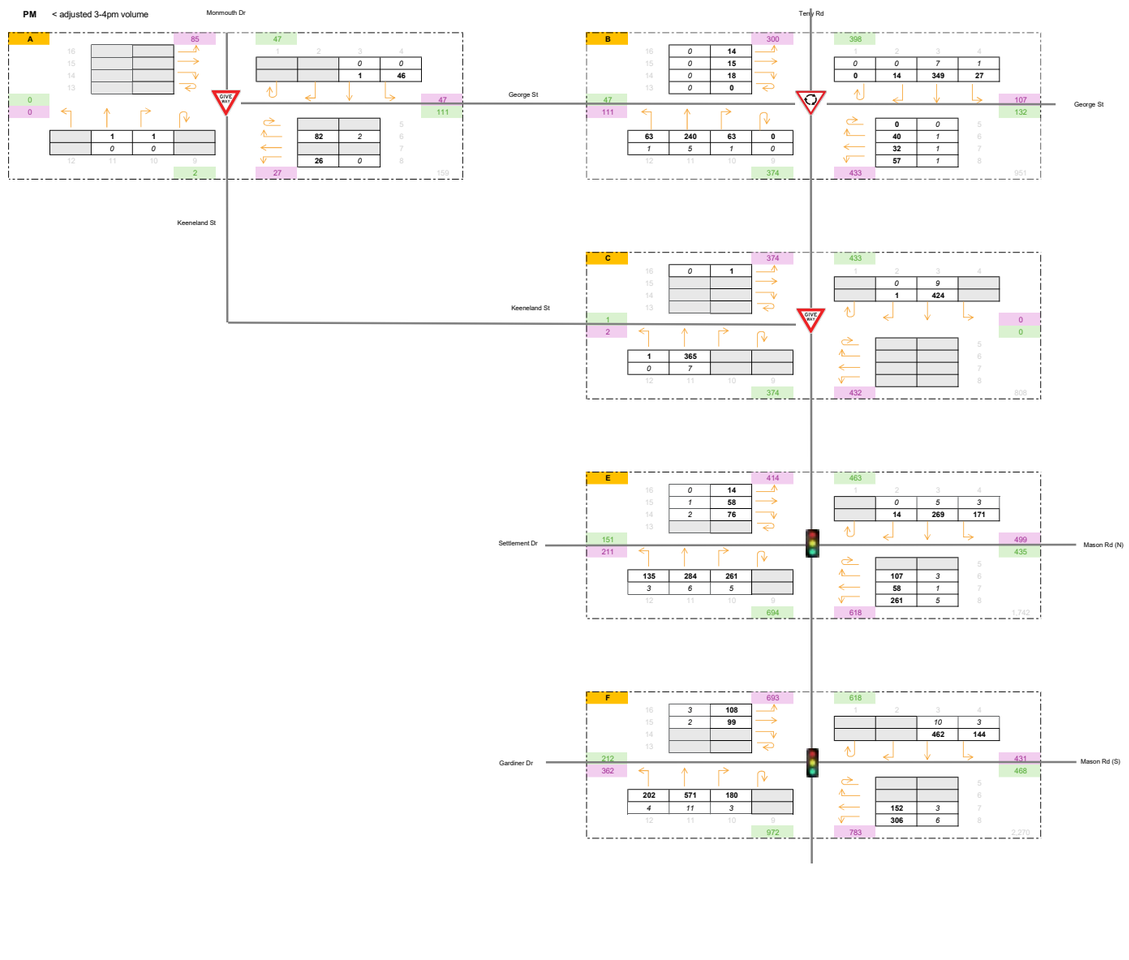
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 31/07/2025 3:17:48 PM | CAD REFERENCE: C:\Users\Kedar Ballurkar\OneDrive - Ason Group\P2269\AG2269-09-v04.dwg | Kedar Ballurkar |

Appendix E. Network Diagram

Appendix F1. Scenario 1 – 2026 Council Reference Case


AM
Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
A
B
C
E
F


PM
< adjusted 3-4pm volume
Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
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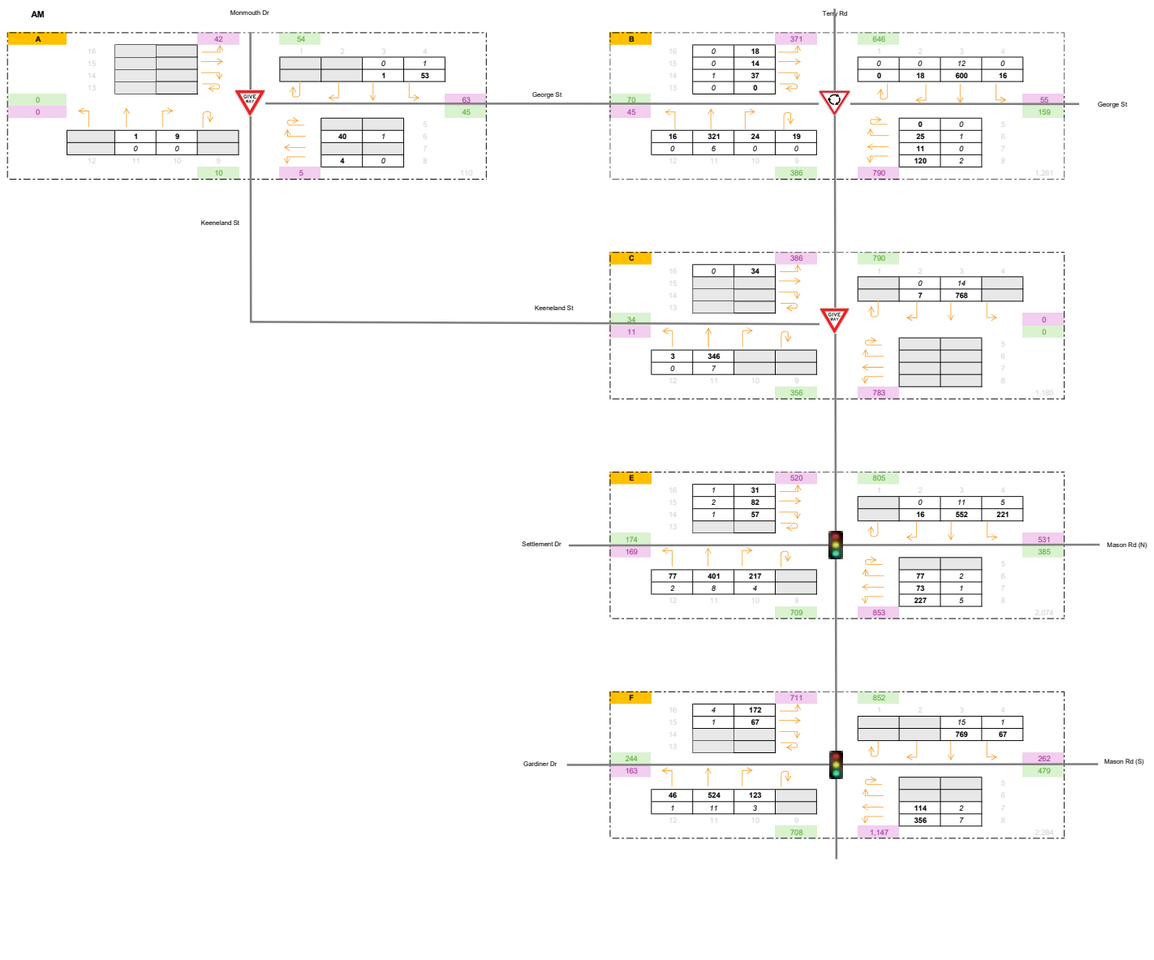
B
C
E
F

Appendix F2. Scenario 2 – 2028 Opening Baseline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Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
A
B
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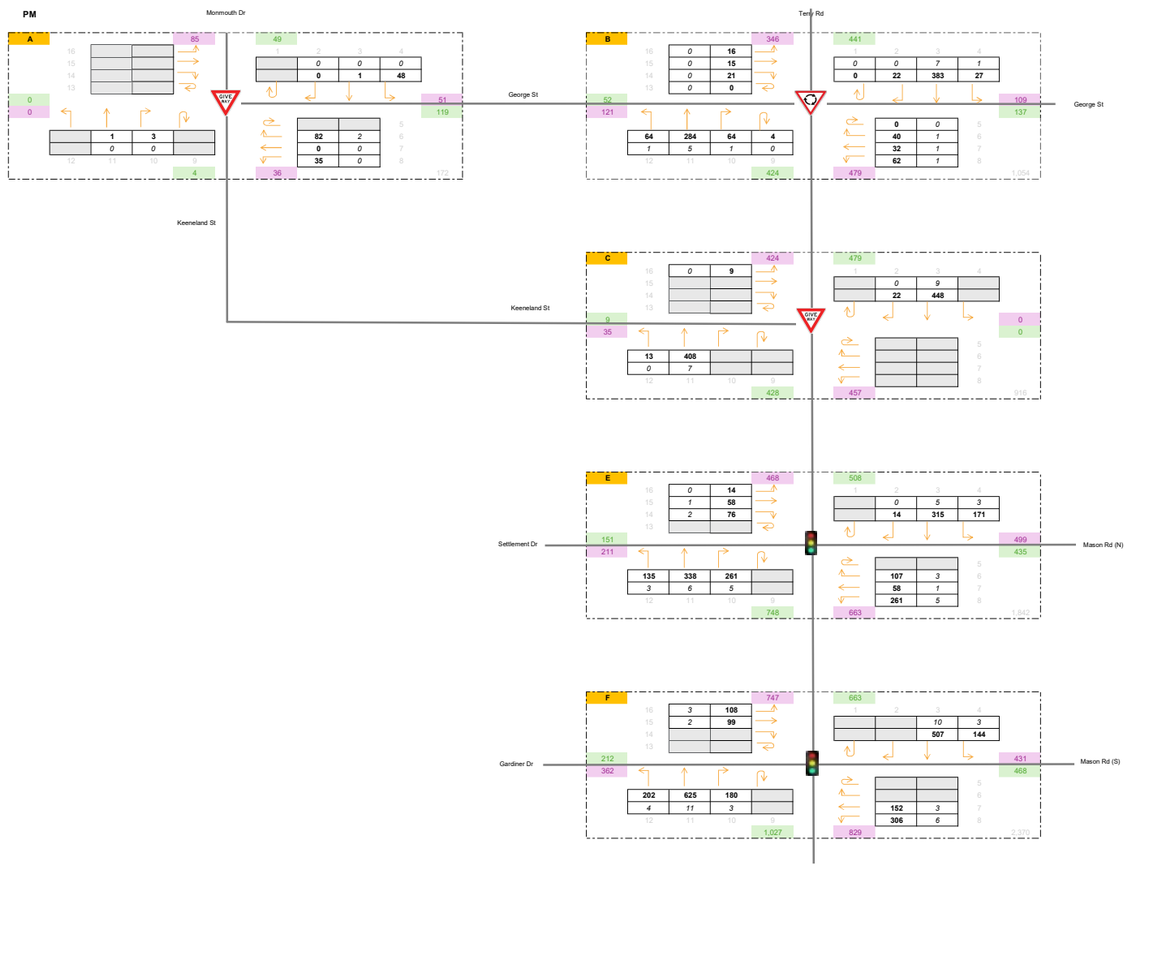
F
GIVE WAY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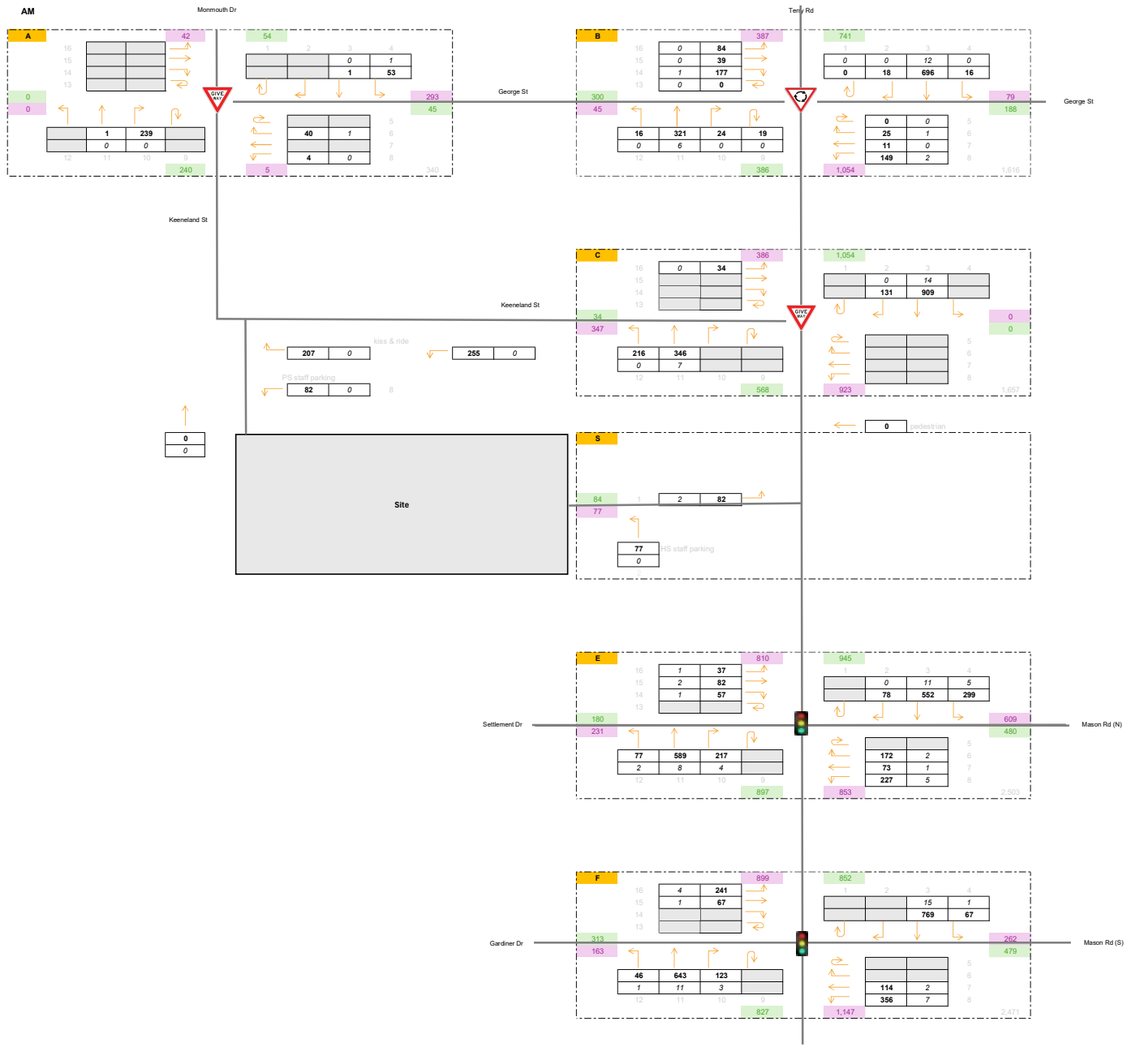
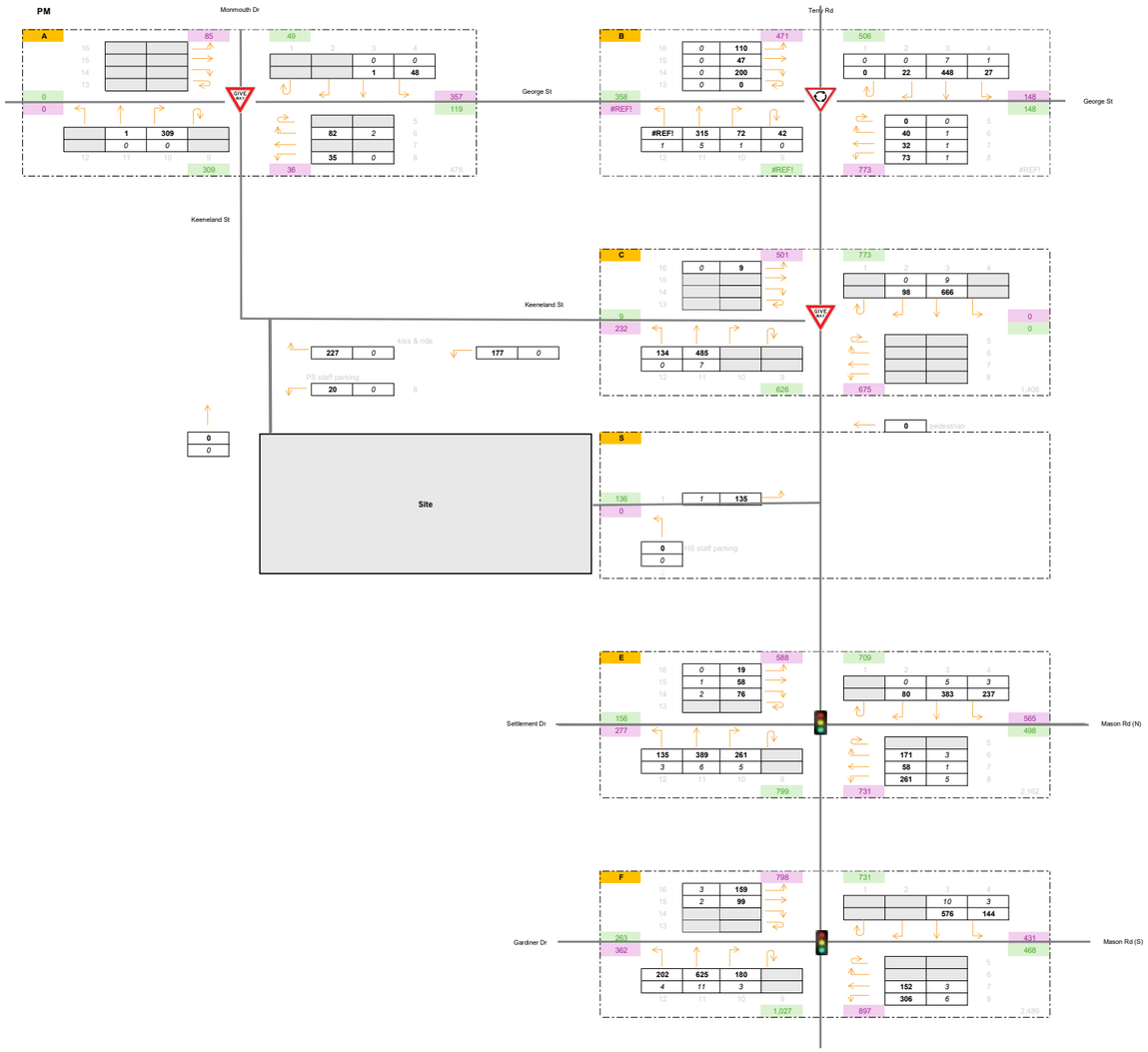
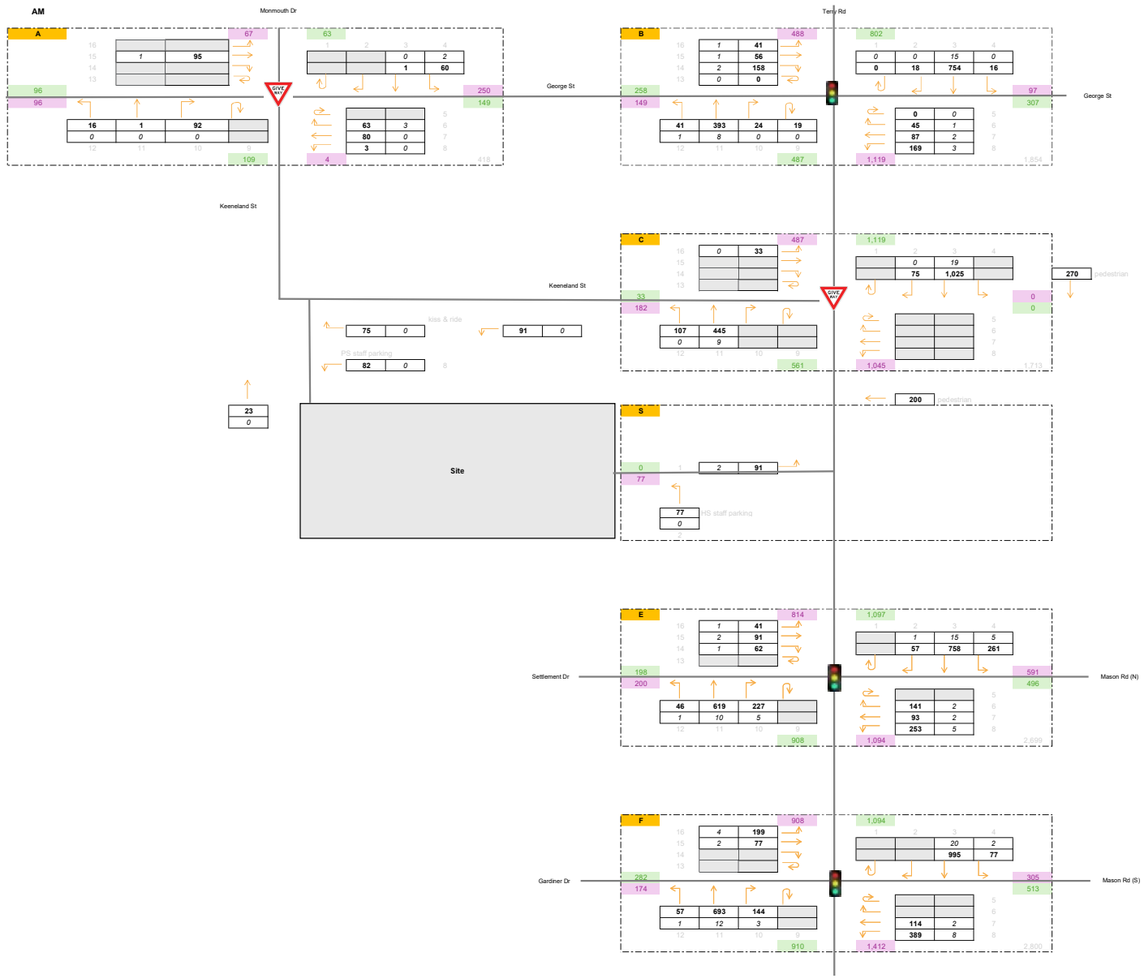
Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
A
B
C
E
F
GIVE WAY

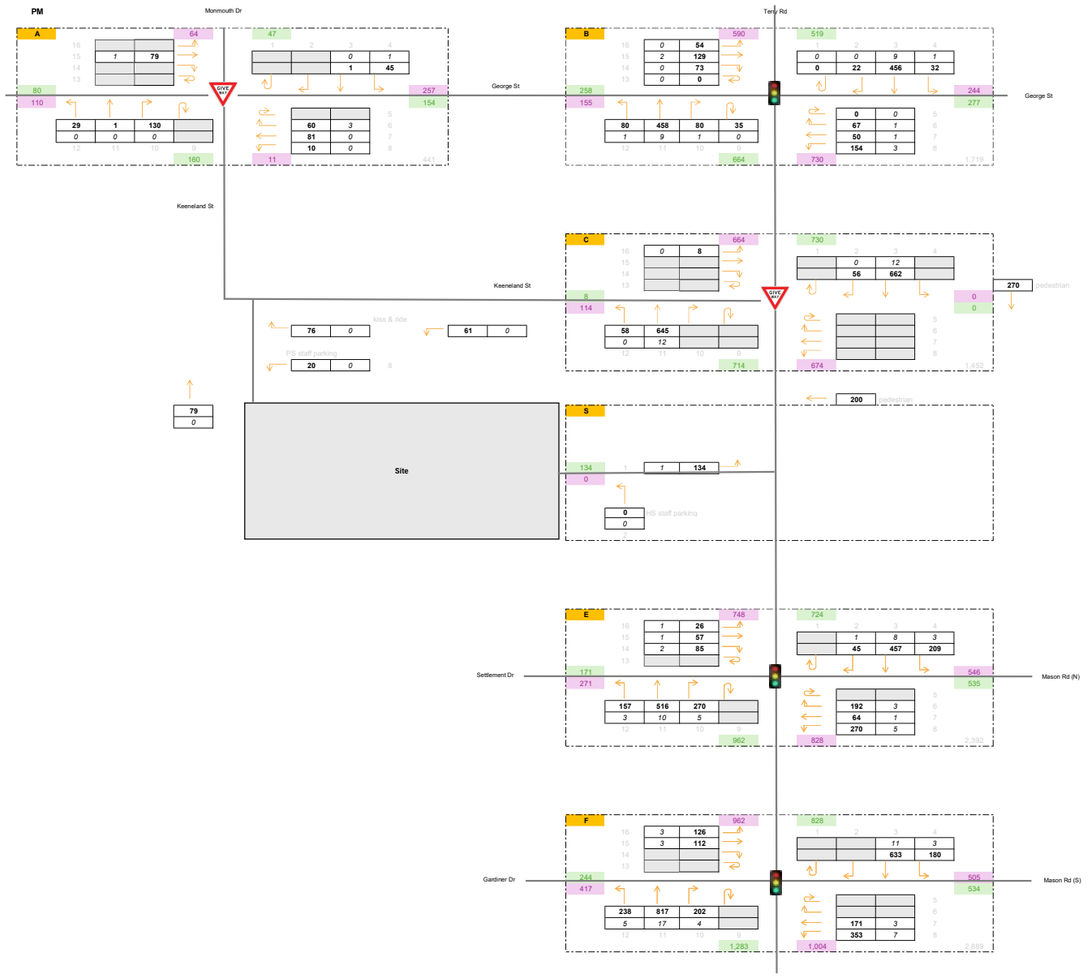
Appendix F3. Scenario 3 – 2028 Project Opening


AM
Monmouth Dr
Terry Rd
George St
Keeneland St
Keeneland St
Site
kiss & ride
PS staff parking
pedestrian
HS staff parking
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
A
B
C
S
E
F


PM
Monmouth Dr
Terry Rd
George St
Keeneland St
Keeneland St
Site
kiss & ride
PS staff parking
pedestrian
HS staff parking
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
A
B
C
S
E
F

Appendix F4. Scenario 4 – 2036 Future Year Project Case


AM
Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
Site
A
B
C
S
E
F
kiss & ride
PS staff parking
pedestrian


PM
Monmouth Dr
Terry Rd
George St
Keeneland St
Settlement Dr
Mason Rd (N)
Gardiner Dr
Mason Rd (S)
Site
A
B
C
S
E
F
kiss & ride
PS staff parking
pedestrian

Appendix F. SIDRA Results

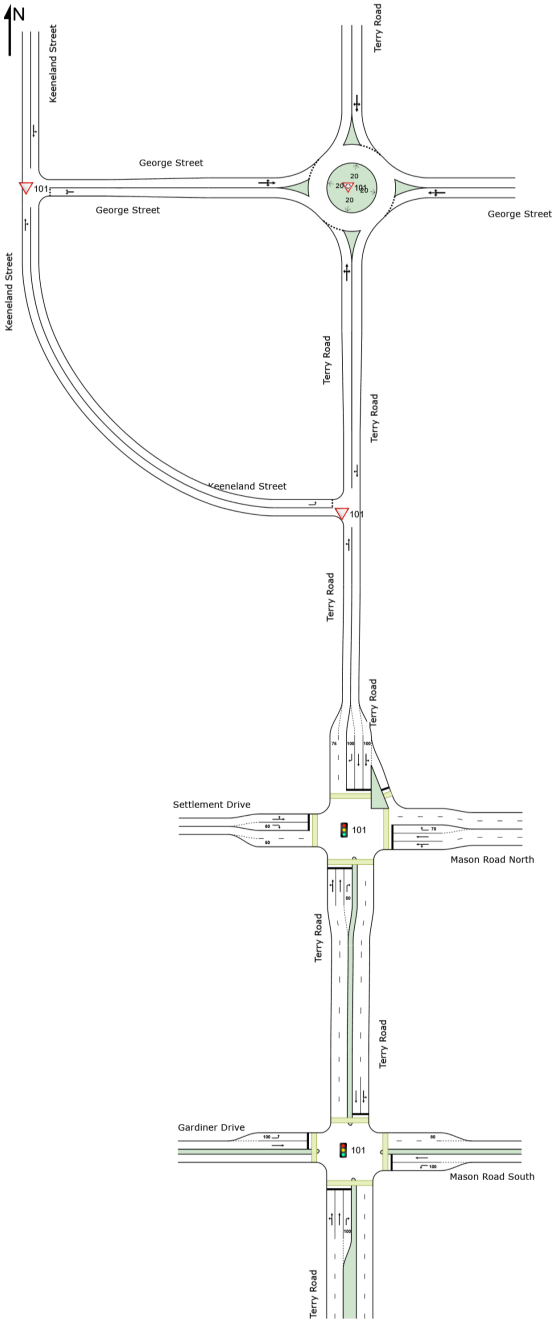
Appendix E1. Scenario 1 – 2026 Council Reference Case

NETWORK LAYOUT

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.001	0.1	LOS A	0.0	0.0	0.12	0.29	0.12	57.0
3	R2	All MCs	1	0.0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.12	0.29	0.12	54.3
Approach			2	0.0	2	0.0	0.001	2.8	NA	0.0	0.0	0.12	0.29	0.12	56.1
East: George Street															
4	L2	All MCs	2	0.0	2	0.0	0.034	5.5	LOS A	0.1	0.8	0.05	0.58	0.05	46.9
6	R2	All MCs	41	2.4	41	2.4	0.034	5.5	LOS A	0.1	0.8	0.05	0.58	0.05	51.1
Approach			43	2.3	43	2.3	0.034	5.5	LOS A	0.1	0.8	0.05	0.58	0.05	51.0
North: Keeneland Street															
7	L2	All MCs	54	1.9	54	1.9	0.030	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	51.0
8	T1	All MCs	1	0.0	1	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.57	0.00	51.0
Approach			55	1.8	55	1.8	0.030	5.5	NA	0.0	0.0	0.00	0.57	0.00	51.0
All Vehicles			100	2.0	100	2.0	0.034	5.4	NA	0.1	0.8	0.02	0.57	0.02	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	16	2.0	16	2.0	0.231	4.1	LOS A	1.5	10.4	0.21	0.42	0.21	40.6
2	T1	All MCs	291	2.0	291	2.0	0.231	4.3	LOS A	1.5	10.4	0.21	0.42	0.21	51.5
3	R2	All MCs	21	2.0	21	2.0	0.231	9.0	LOS A	1.5	10.4	0.21	0.42	0.21	50.3
Approach			328	2.0	328	2.0	0.231	4.6	LOS A	1.5	10.4	0.21	0.42	0.21	51.2
East: George Street															
4	L2	All MCs	121	2.0	121	2.0	0.192	7.7	LOS A	1.1	8.1	0.68	0.68	0.68	47.2
5	T1	All MCs	11	2.0	11	2.0	0.192	7.8	LOS A	1.1	8.1	0.68	0.68	0.68	47.2
6	R2	All MCs	26	2.0	26	2.0	0.192	12.5	LOS A	1.1	8.1	0.68	0.68	0.68	50.9
Approach			158	2.0	158	2.0	0.192	8.5	LOS A	1.1	8.1	0.68	0.68	0.68	48.2
North: Terry Road															
7	L2	All MCs	16	2.0	16	2.0	0.419	4.3	LOS A	3.1	22.4	0.27	0.41	0.27	53.5
8	T1	All MCs	575	2.0	575	2.0	0.419	4.4	LOS A	3.1	22.4	0.27	0.41	0.27	50.9
9	R2	All MCs	16	2.0	16	2.0	0.419	9.1	LOS A	3.1	22.4	0.27	0.41	0.27	50.9
Approach			607	2.0	607	2.0	0.419	4.6	LOS A	3.1	22.4	0.27	0.41	0.27	51.0
West: George Street															
10	L2	All MCs	13	2.0	13	2.0	0.052	5.5	LOS A	0.3	1.9	0.46	0.61	0.46	50.2
11	T1	All MCs	13	2.0	13	2.0	0.052	5.7	LOS A	0.3	1.9	0.46	0.61	0.46	50.6
12	R2	All MCs	28	2.0	28	2.0	0.052	10.3	LOS A	0.3	1.9	0.46	0.61	0.46	43.3
Approach			54	2.0	54	2.0	0.052	8.0	LOS A	0.3	1.9	0.46	0.61	0.46	47.9
All Vehicles			1147	2.0	1147	2.0	0.419	5.3	LOS A	3.1	22.4	0.32	0.46	0.32	50.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	1	0.0	1	0.0	0.171	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
2	T1	All MCs	327	2.1	327	2.1	0.171	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			328	2.1	328	2.1	0.171	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Terry Road															
8	T1	All MCs	723	1.9	723	1.9	0.376	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
9	R2	All MCs	1	0.0	1	0.0	0.376	5.5	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
Approach			724	1.9	724	1.9	0.376	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.9
West: Keeneland Street															
10	L2	All MCs	1	0.0	1	0.0	0.001	6.5	LOS A	0.0	0.0	0.37	0.52	0.37	48.9
Approach			1	0.0	1	0.0	0.001	6.5	LOS A	0.0	0.0	0.37	0.52	0.37	48.9
All Vehicles			1053	2.0	1053	2.0	0.376	0.0	NA	0.0	0.1	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 (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	79	2.0	79	2.0	0.172	12.1	LOS A	2.2	15.6	0.32	0.48	0.32	45.8
2	T1	All MCs	407	2.0	407	2.0	0.380	12.5	LOS A	8.2	58.5	0.50	0.47	0.50	30.7
3	R2	All MCs	221	2.0	221	2.0	*0.575	47.6	LOS D	10.2	72.9	0.98	0.83	0.98	27.8
Approach			707	2.0	707	2.0	0.575	23.4	LOS B	10.2	72.9	0.63	0.58	0.63	30.9
East: Mason Road North															
4	L2	All MCs	232	2.0	232	2.0	0.302	26.2	LOS B	7.5	53.2	0.71	0.77	0.71	32.5
5	T1	All MCs	74	2.0	74	2.0	*0.214	38.2	LOS C	3.1	22.3	0.89	0.69	0.89	37.0
6	R2	All MCs	79	2.0	79	2.0	0.539	56.3	LOS D	3.9	28.1	1.00	0.77	1.01	21.4
Approach			385	2.0	385	2.0	0.539	34.7	LOS C	7.5	53.2	0.80	0.75	0.80	30.9
North: Terry Road															
7	L2	All MCs	226	2.0	226	2.0	0.569	25.4	LOS B	16.0	113.7	0.83	0.78	0.83	41.8
8	T1	All MCs	535	2.0	535	2.0	*0.569	31.3	LOS C	16.0	113.7	0.87	0.77	0.87	34.1
9	R2	All MCs	16	2.0	16	2.0	0.146	56.5	LOS D	0.8	5.6	0.98	0.69	0.98	32.4
Approach			777	2.0	777	2.0	0.569	30.1	LOS C	16.0	113.7	0.86	0.77	0.86	36.8
West: Settlement Drive															
10	L2	All MCs	32	2.0	32	2.0	0.388	41.5	LOS C	5.2	37.1	0.94	0.76	0.94	25.2
11	T1	All MCs	84	2.0	84	2.0	0.388	44.0	LOS D	5.2	37.1	0.94	0.76	0.94	35.2
12	R2	All MCs	58	2.0	58	2.0	*0.528	58.7	LOS E	3.0	21.2	1.00	0.76	1.02	20.8
Approach			174	2.0	174	2.0	0.528	48.5	LOS D	5.2	37.1	0.96	0.76	0.97	29.2
All Vehicles			2043	2.0	2043	2.0	0.575	30.2	LOS C	16.0	113.7	0.78	0.70	0.78	33.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	47	2.0	47	2.0	0.234	14.3	LOS A	5.7	40.5	0.44	0.43	0.44	50.6
2	T1	All MCs	533	2.0	533	2.0	0.234	7.5	LOS A	5.8	41.2	0.44	0.41	0.44	47.7
3	R2	All MCs	126	2.0	126	2.0	* 0.382	45.4	LOS D	5.5	39.4	0.93	0.78	0.93	33.6
Approach			706	2.0	706	2.0	0.382	14.7	LOS B	5.8	41.2	0.53	0.47	0.53	42.9
East: Mason Road South															
4	L2	All MCs	363	2.0	363	2.0	0.522	25.6	LOS B	12.1	86.2	0.82	0.80	0.82	41.0
5	T1	All MCs	116	2.0	116	2.0	0.262	34.3	LOS C	4.7	33.3	0.86	0.69	0.86	38.5
Approach			479	2.0	479	2.0	0.522	27.7	LOS B	12.1	86.2	0.83	0.78	0.83	40.3
North: Terry Road															
7	L2	All MCs	68	2.0	68	2.0	* 0.528	30.2	LOS C	14.4	102.8	0.78	0.70	0.78	37.4
8	T1	All MCs	756	2.0	756	2.0	0.528	13.8	LOS A	14.4	102.8	0.55	0.49	0.55	45.0
Approach			824	2.0	824	2.0	0.528	15.1	LOS B	14.4	102.8	0.57	0.51	0.57	44.3
West: Gardiner Drive															
10	L2	All MCs	175	2.0	175	2.0	* 0.478	44.5	LOS D	7.7	54.9	0.93	0.80	0.93	24.6
11	T1	All MCs	68	2.0	68	2.0	0.154	33.2	LOS C	2.7	18.9	0.83	0.65	0.83	38.9
Approach			243	2.0	243	2.0	0.478	41.3	LOS C	7.7	54.9	0.91	0.76	0.91	29.3
All Vehicles			2252	2.0	2252	2.0	0.528	20.5	LOS B	14.4	102.8	0.65	0.58	0.65	40.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

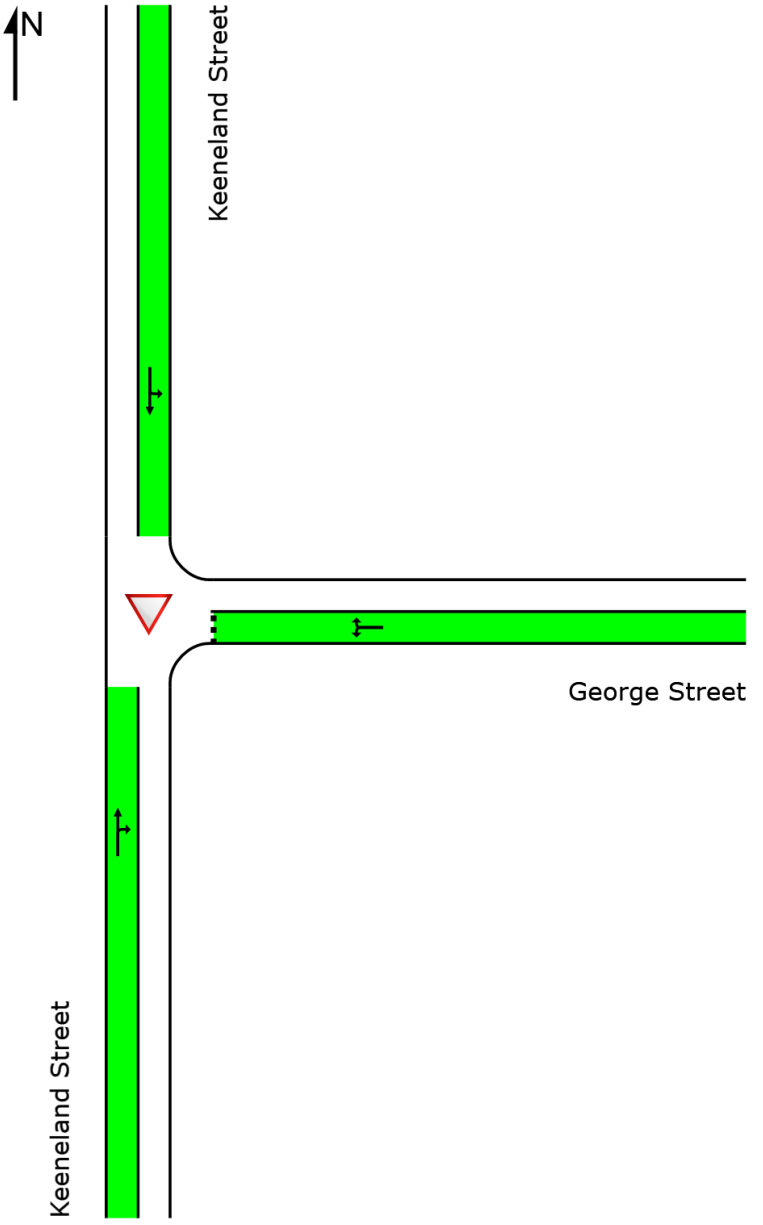
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

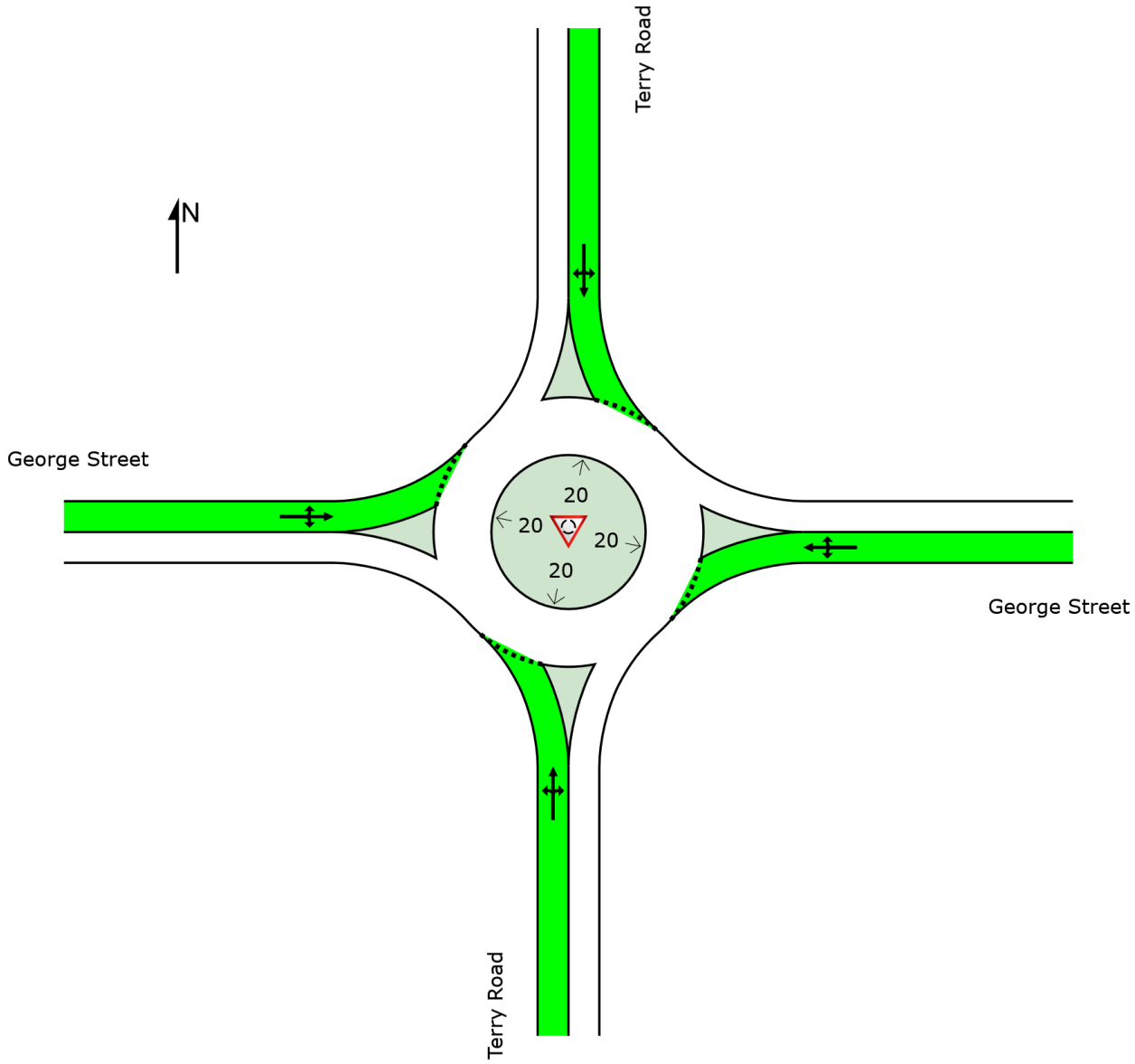
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.06	0.02	0.04	0.01	0.06

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

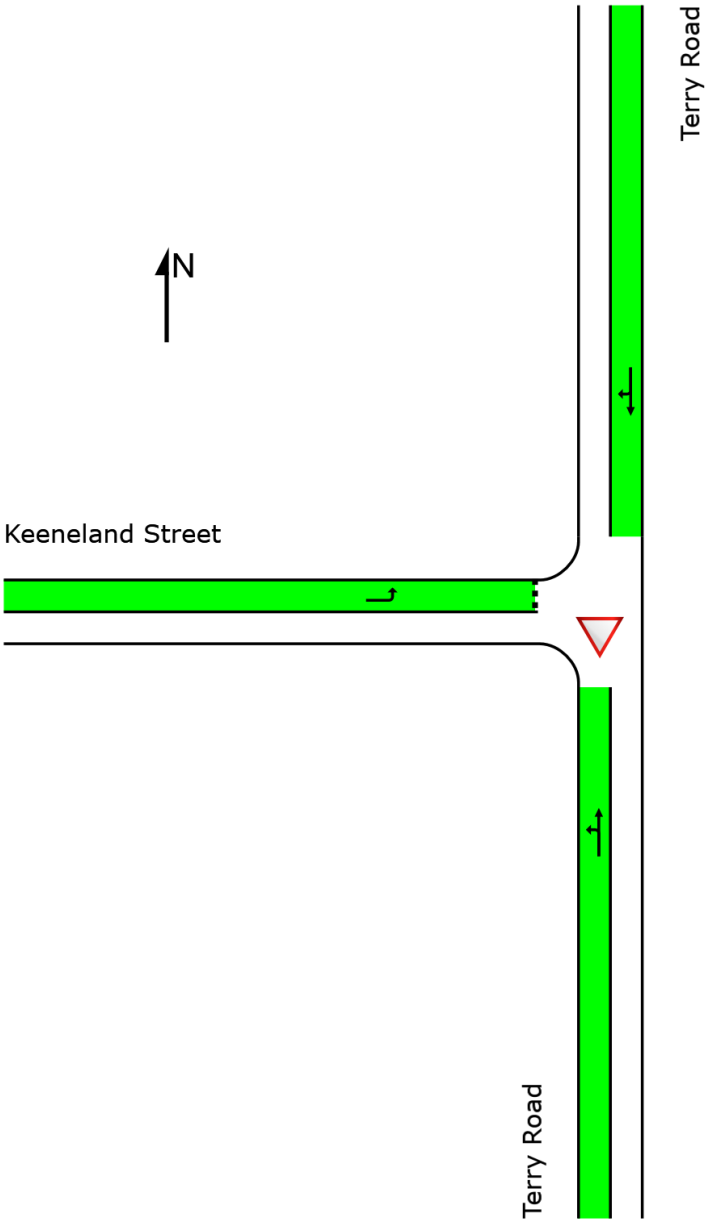
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

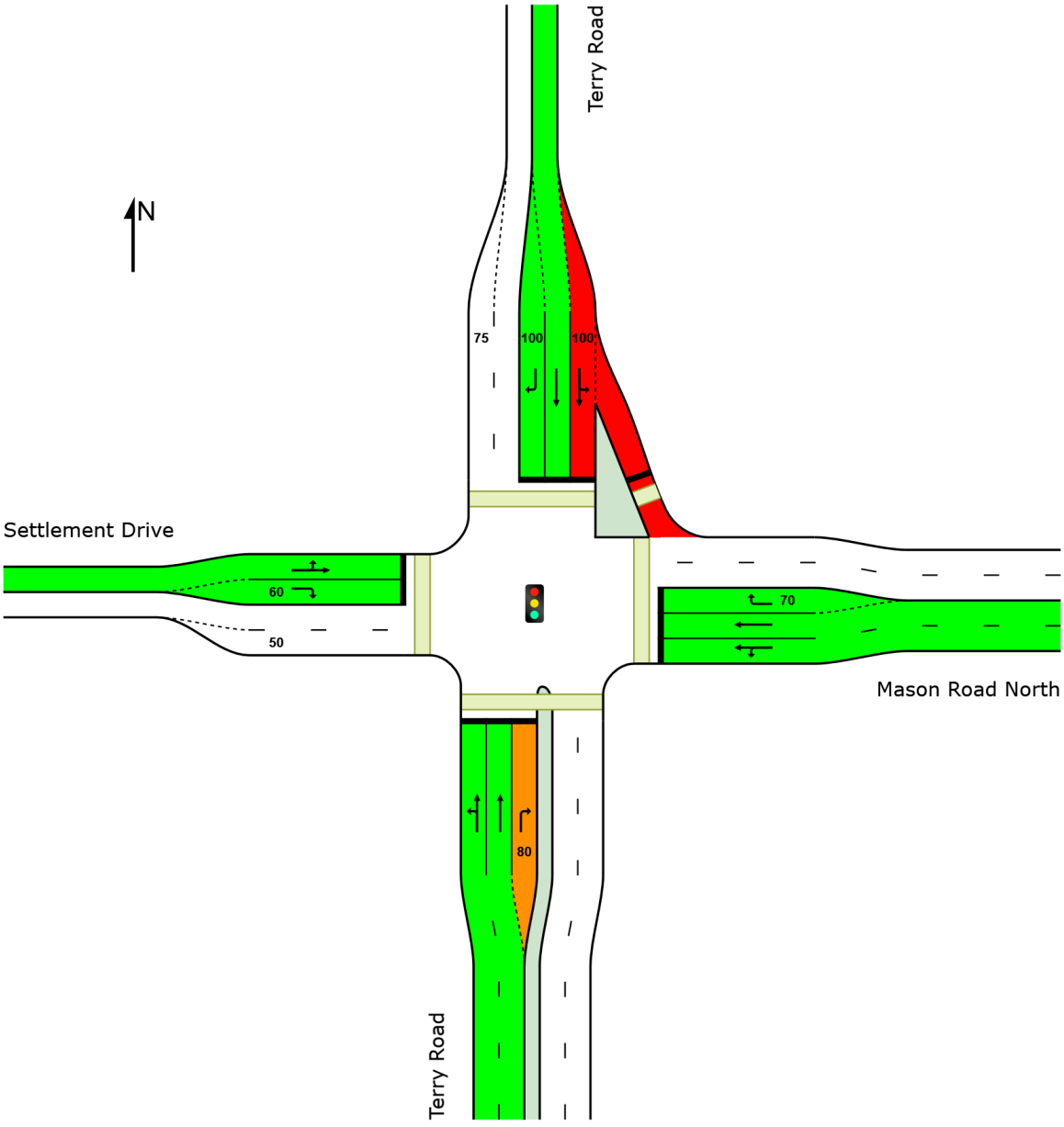
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.29	0.11	0.16	0.07	0.29

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_AM)]

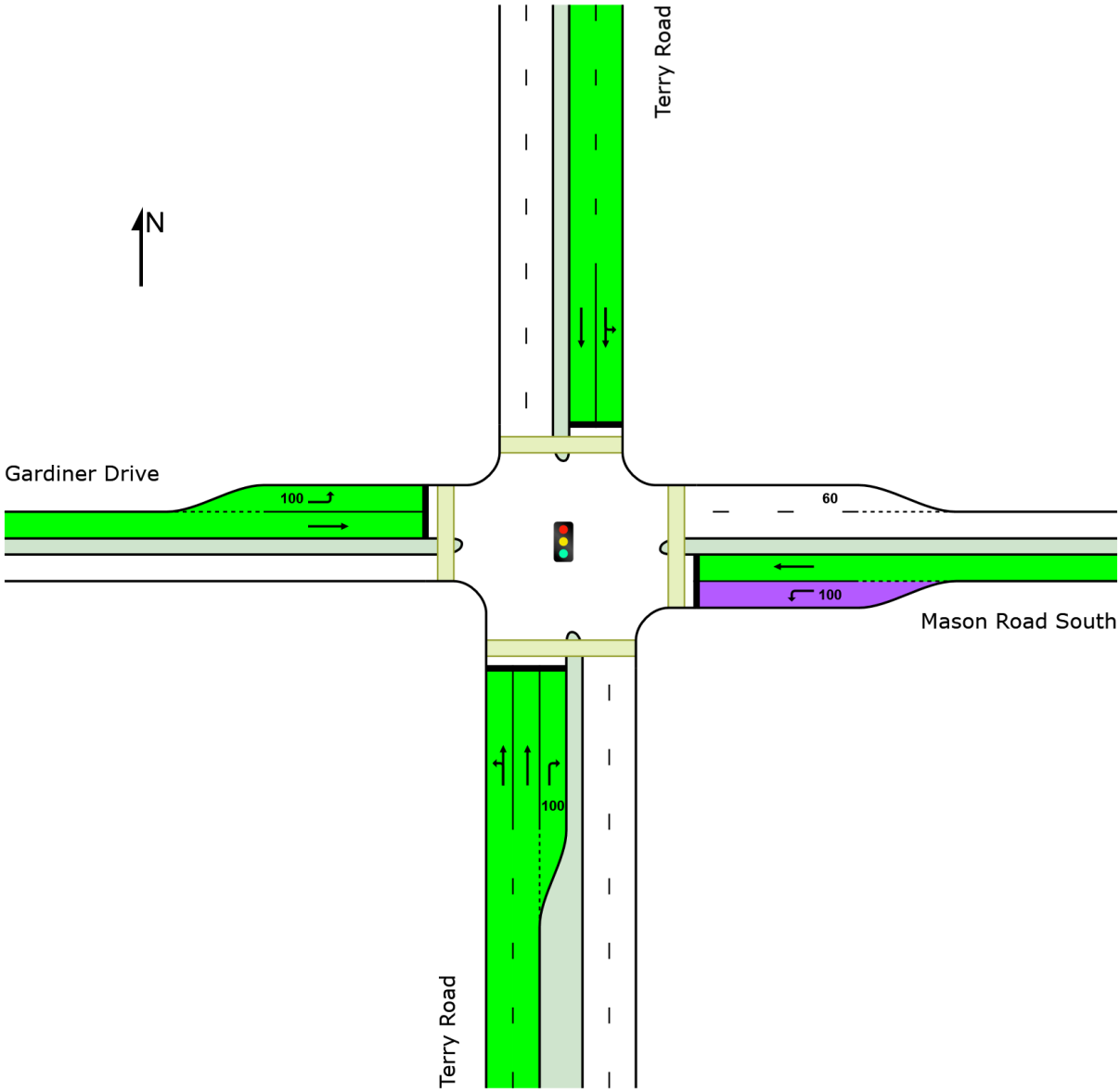
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_AM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.08	0.07	0.51	0.04	0.51

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

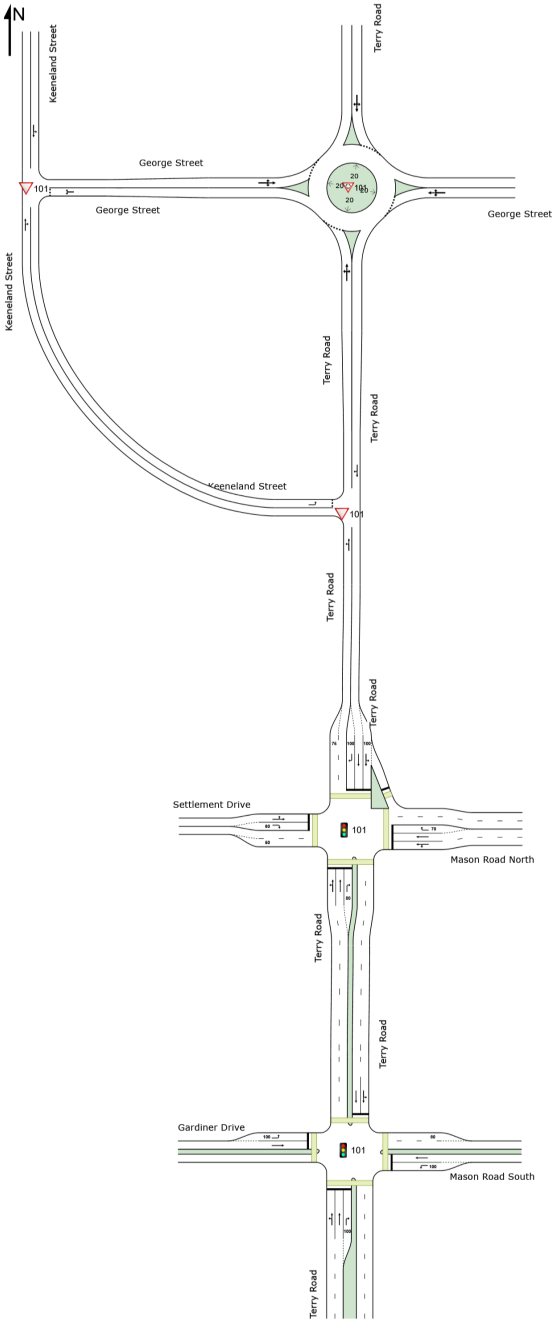
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

NETWORK LAYOUT

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.001	0.1	LOS A	0.0	0.0	0.11	0.29	0.11	57.0
3	R2	All MCs	1	0.0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.11	0.29	0.11	54.4
Approach			2	0.0	2	0.0	0.001	2.8	NA	0.0	0.0	0.11	0.29	0.11	56.1
East: George Street															
4	L2	All MCs	2	0.0	2	0.0	0.069	5.5	LOS A	0.2	1.6	0.06	0.58	0.06	46.8
6	R2	All MCs	84	2.4	84	2.4	0.069	5.5	LOS A	0.2	1.6	0.06	0.58	0.06	51.0
Approach			86	2.3	86	2.3	0.069	5.5	LOS A	0.2	1.6	0.06	0.58	0.06	51.0
North: Keeneland Street															
7	L2	All MCs	46	0.0	46	0.0	0.025	5.5	LOS A	0.0	0.0	0.00	0.56	0.00	51.0
8	T1	All MCs	1	0.0	1	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.56	0.00	51.0
Approach			47	0.0	47	0.0	0.025	5.4	NA	0.0	0.0	0.00	0.56	0.00	51.0
All Vehicles			135	1.5	135	1.5	0.069	5.5	NA	0.2	1.6	0.04	0.57	0.04	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	64	1.6	64	1.6	0.276	4.4	LOS A	1.8	12.7	0.29	0.46	0.29	50.1
2	T1	All MCs	245	2.0	245	2.0	0.276	4.5	LOS A	1.8	12.7	0.29	0.46	0.29	53.4
3	R2	All MCs	64	1.6	64	1.6	0.276	9.2	LOS A	1.8	12.7	0.29	0.46	0.29	52.5
Approach			373	1.9	373	1.9	0.276	5.3	LOS A	1.8	12.7	0.29	0.46	0.29	52.9
East: George Street															
4	L2	All MCs	58	1.7	58	1.7	0.133	5.9	LOS A	0.7	5.2	0.53	0.61	0.53	48.2
5	T1	All MCs	33	3.0	33	3.0	0.133	6.1	LOS A	0.7	5.2	0.53	0.61	0.53	48.2
6	R2	All MCs	41	2.4	41	2.4	0.133	10.8	LOS A	0.7	5.2	0.53	0.61	0.53	51.4
Approach			132	2.3	132	2.3	0.133	7.5	LOS A	0.7	5.2	0.53	0.61	0.53	49.7
North: Terry Road															
7	L2	All MCs	28	3.6	28	3.6	0.296	4.4	LOS A	1.8	13.0	0.29	0.43	0.29	53.3
8	T1	All MCs	356	2.0	356	2.0	0.296	4.6	LOS A	1.8	13.0	0.29	0.43	0.29	50.7
9	R2	All MCs	14	0.0	14	0.0	0.296	9.2	LOS A	1.8	13.0	0.29	0.43	0.29	50.7
Approach			398	2.0	398	2.0	0.296	4.8	LOS A	1.8	13.0	0.29	0.43	0.29	51.0
West: George Street															
10	L2	All MCs	14	0.0	14	0.0	0.045	5.5	LOS A	0.2	1.6	0.47	0.59	0.47	50.6
11	T1	All MCs	15	0.0	15	0.0	0.045	5.7	LOS A	0.2	1.6	0.47	0.59	0.47	51.0
12	R2	All MCs	18	0.0	18	0.0	0.045	10.3	LOS A	0.2	1.6	0.47	0.59	0.47	44.0
Approach			47	0.0	47	0.0	0.045	7.4	LOS A	0.2	1.6	0.47	0.59	0.47	49.2
All Vehicles			950	1.9	950	1.9	0.296	5.5	LOS A	1.8	13.0	0.34	0.48	0.34	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	1	0.0	1	0.0	0.204	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
2	T1	All MCs	392	1.9	392	1.9	0.204	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			393	1.9	393	1.9	0.204	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Terry Road															
8	T1	All MCs	456	2.1	456	2.1	0.238	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.8
9	R2	All MCs	1	0.0	1	0.0	0.238	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	59.8
Approach			457	2.1	457	2.1	0.238	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.8
West: Keeneland Street															
10	L2	All MCs	1	0.0	1	0.0	0.001	6.8	LOS A	0.0	0.0	0.41	0.52	0.41	48.7
Approach			1	0.0	1	0.0	0.001	6.8	LOS A	0.0	0.0	0.41	0.52	0.41	48.7
All Vehicles			851	2.0	851	2.0	0.238	0.1	NA	0.0	0.1	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 (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	138	2.2	138	2.2	0.154	14.8	LOS B	2.8	20.0	0.42	0.66	0.42	42.6
2	T1	All MCs	290	2.1	290	2.1	0.341	22.2	LOS B	9.8	69.9	0.76	0.65	0.76	22.4
3	R2	All MCs	266	1.9	266	1.9	*0.484	39.2	LOS C	11.2	79.8	0.91	0.82	0.91	30.5
Approach			694	2.0	694	2.0	0.484	27.3	LOS B	11.2	79.8	0.75	0.72	0.75	30.9
East: Mason Road North															
4	L2	All MCs	266	1.9	266	1.9	0.279	19.9	LOS B	7.2	51.2	0.60	0.74	0.60	36.5
5	T1	All MCs	59	1.7	59	1.7	*0.170	37.8	LOS C	2.5	17.5	0.88	0.67	0.88	37.1
6	R2	All MCs	110	2.7	110	2.7	0.549	53.1	LOS D	5.3	38.2	0.99	0.79	0.99	22.2
Approach			435	2.1	435	2.1	0.549	30.7	LOS C	7.2	51.2	0.74	0.74	0.74	32.0
North: Terry Road															
7	L2	All MCs	174	1.7	174	1.7	0.479	30.5	LOS C	10.8	77.1	0.86	0.78	0.86	39.5
8	T1	All MCs	274	1.8	274	1.8	*0.479	39.7	LOS C	10.8	77.1	0.91	0.77	0.91	30.8
9	R2	All MCs	14	0.0	14	0.0	0.126	56.3	LOS D	0.7	4.8	0.98	0.68	0.98	32.4
Approach			462	1.7	462	1.7	0.479	36.7	LOS C	10.8	77.1	0.89	0.77	0.89	34.7
West: Settlement Drive															
10	L2	All MCs	14	0.0	14	0.0	0.242	38.3	LOS C	3.2	22.3	0.91	0.71	0.91	26.1
11	T1	All MCs	59	1.7	59	1.7	0.242	41.1	LOS C	3.2	22.3	0.91	0.71	0.91	36.1
12	R2	All MCs	78	2.6	78	2.6	*0.475	54.8	LOS D	3.8	27.3	0.99	0.77	0.99	21.8
Approach			151	2.0	151	2.0	0.475	47.9	LOS D	3.8	27.3	0.95	0.74	0.95	28.4
All Vehicles			1742	2.0	1742	2.0	0.549	32.4	LOS C	11.2	79.8	0.80	0.74	0.80	32.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	206	1.9	206	1.9	0.314	13.9	LOS A	7.9	56.1	0.46	0.58	0.46	49.2
2	T1	All MCs	582	1.9	582	1.9	0.314	7.2	LOS A	8.1	57.7	0.45	0.45	0.45	47.3
3	R2	All MCs	183	1.6	183	1.6	* 0.433	41.6	LOS C	7.8	55.0	0.90	0.80	0.90	34.8
Approach			971	1.9	971	1.9	0.433	15.1	LOS B	8.1	57.7	0.54	0.54	0.54	43.6
East: Mason Road South															
4	L2	All MCs	312	1.9	312	1.9	0.405	22.5	LOS B	9.4	66.6	0.74	0.78	0.74	42.4
5	T1	All MCs	155	1.9	155	1.9	* 0.383	37.1	LOS C	6.6	46.9	0.91	0.74	0.91	37.4
Approach			467	1.9	467	1.9	0.405	27.4	LOS B	9.4	66.6	0.80	0.76	0.80	40.6
North: Terry Road															
7	L2	All MCs	147	2.0	147	2.0	* 0.438	31.4	LOS C	10.7	76.5	0.78	0.73	0.78	35.3
8	T1	All MCs	472	2.1	472	2.1	0.438	19.7	LOS B	10.7	76.5	0.69	0.61	0.69	40.4
Approach			619	2.1	619	2.1	0.438	22.4	LOS B	10.7	76.5	0.71	0.64	0.71	39.1
West: Gardiner Drive															
10	L2	All MCs	110	2.7	110	2.7	0.318	43.9	LOS D	4.7	33.8	0.91	0.77	0.91	24.8
11	T1	All MCs	101	2.0	101	2.0	0.250	35.9	LOS C	4.2	29.6	0.87	0.69	0.87	37.9
Approach			211	2.4	211	2.4	0.318	40.0	LOS C	4.7	33.8	0.89	0.74	0.89	31.9
All Vehicles			2268	2.0	2268	2.0	0.438	21.9	LOS B	10.7	76.5	0.67	0.63	0.67	40.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

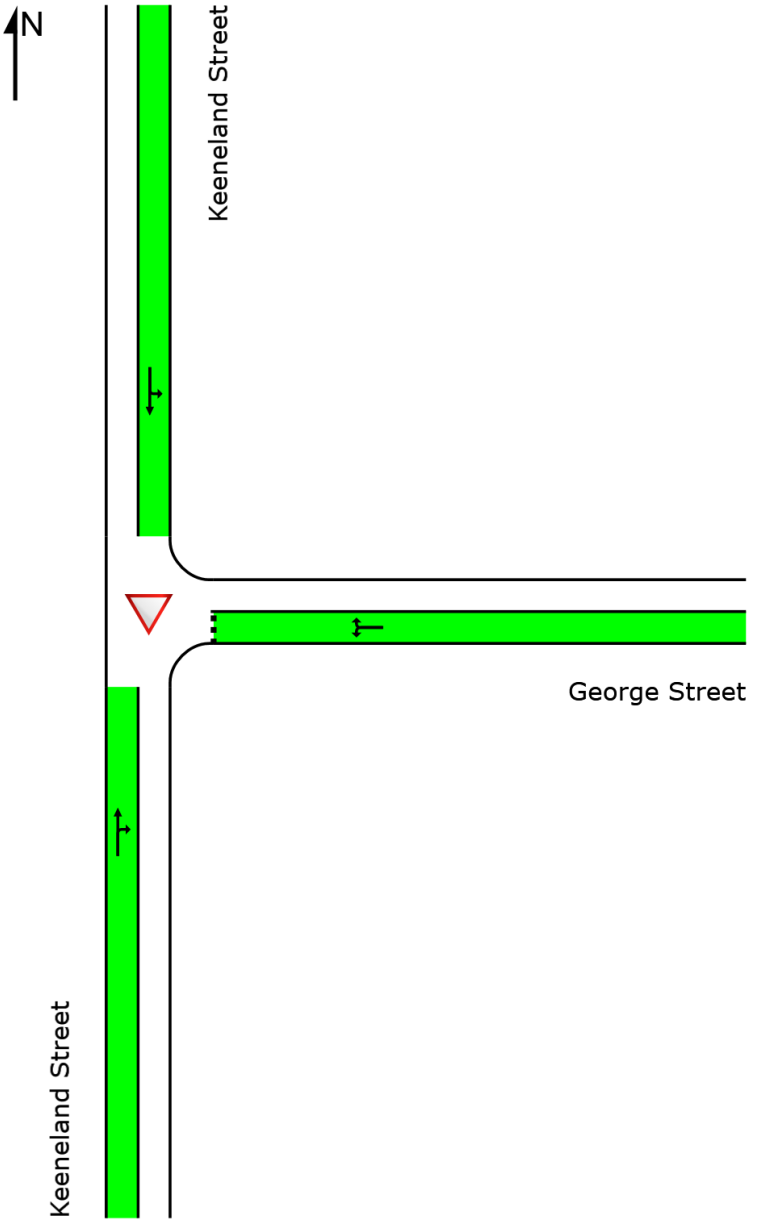
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

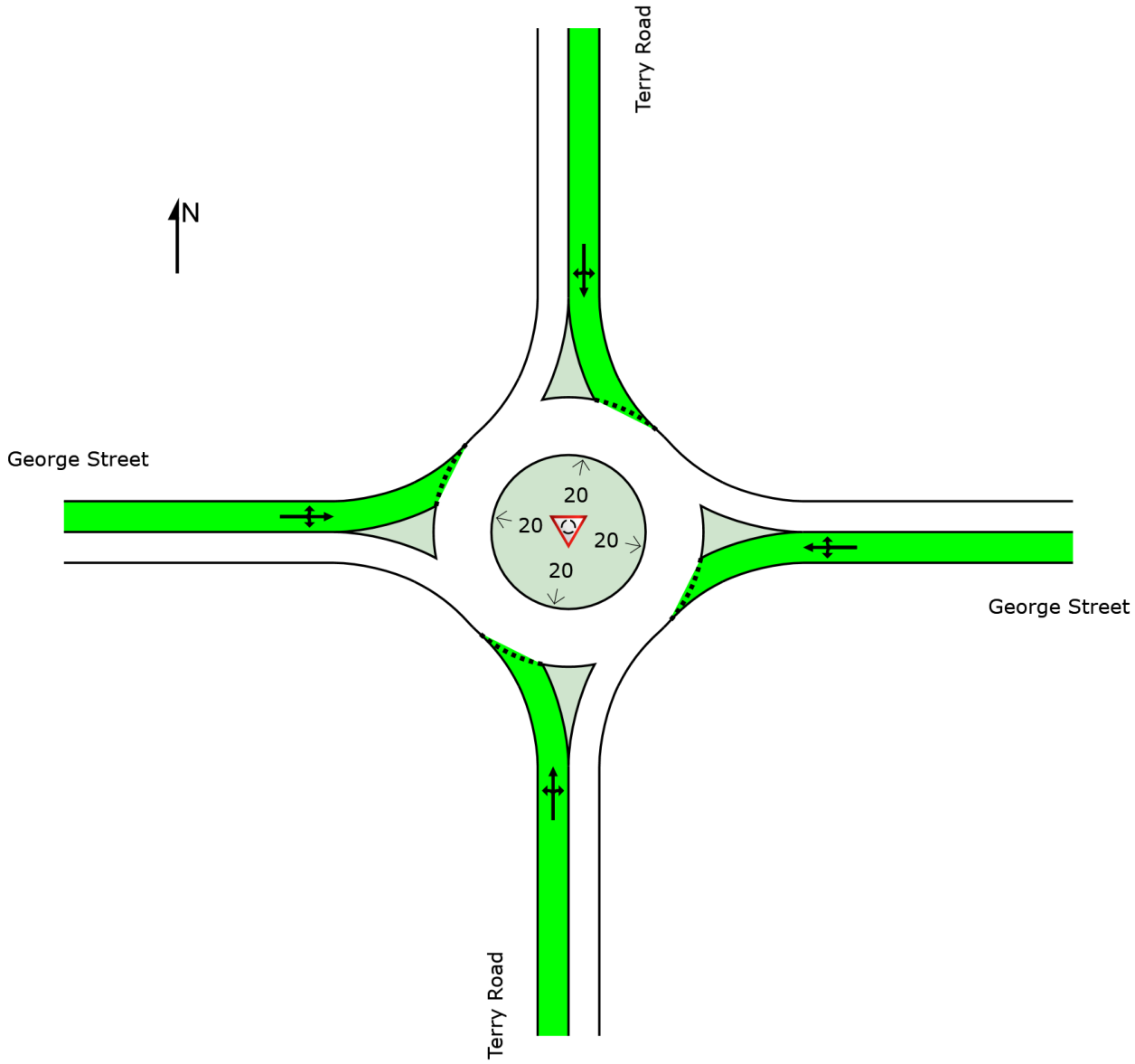
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.03	0.01	0.03	0.00	0.03

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

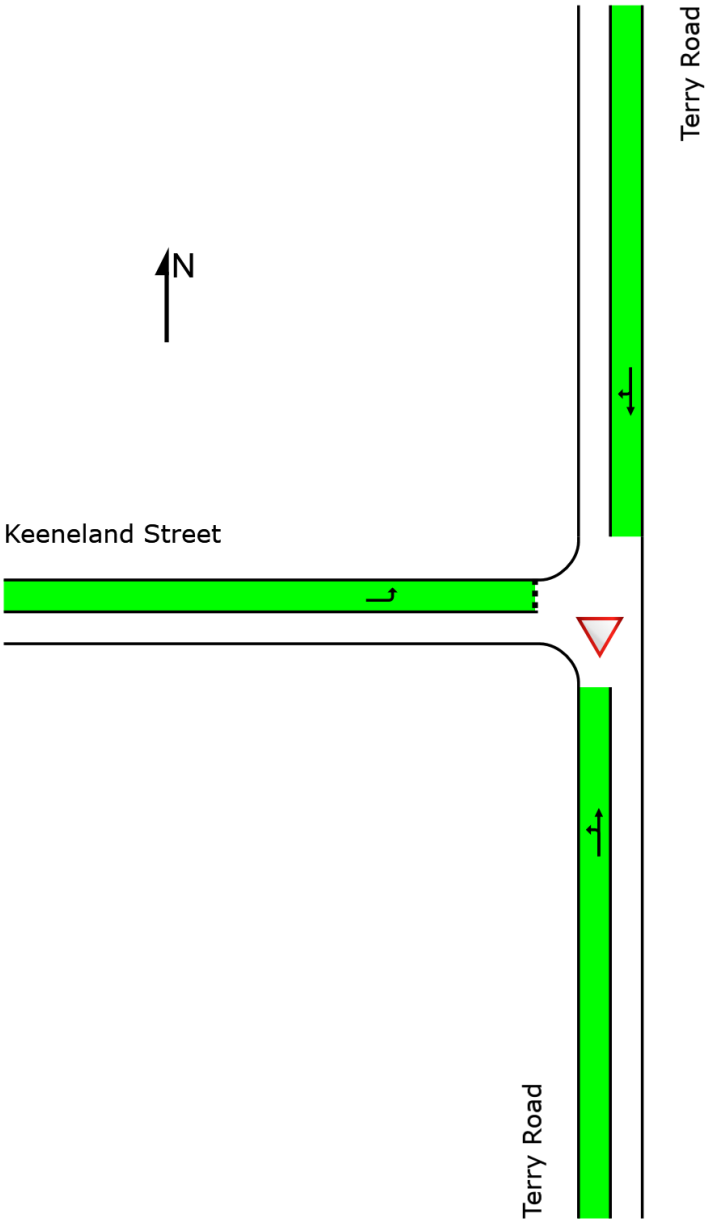
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

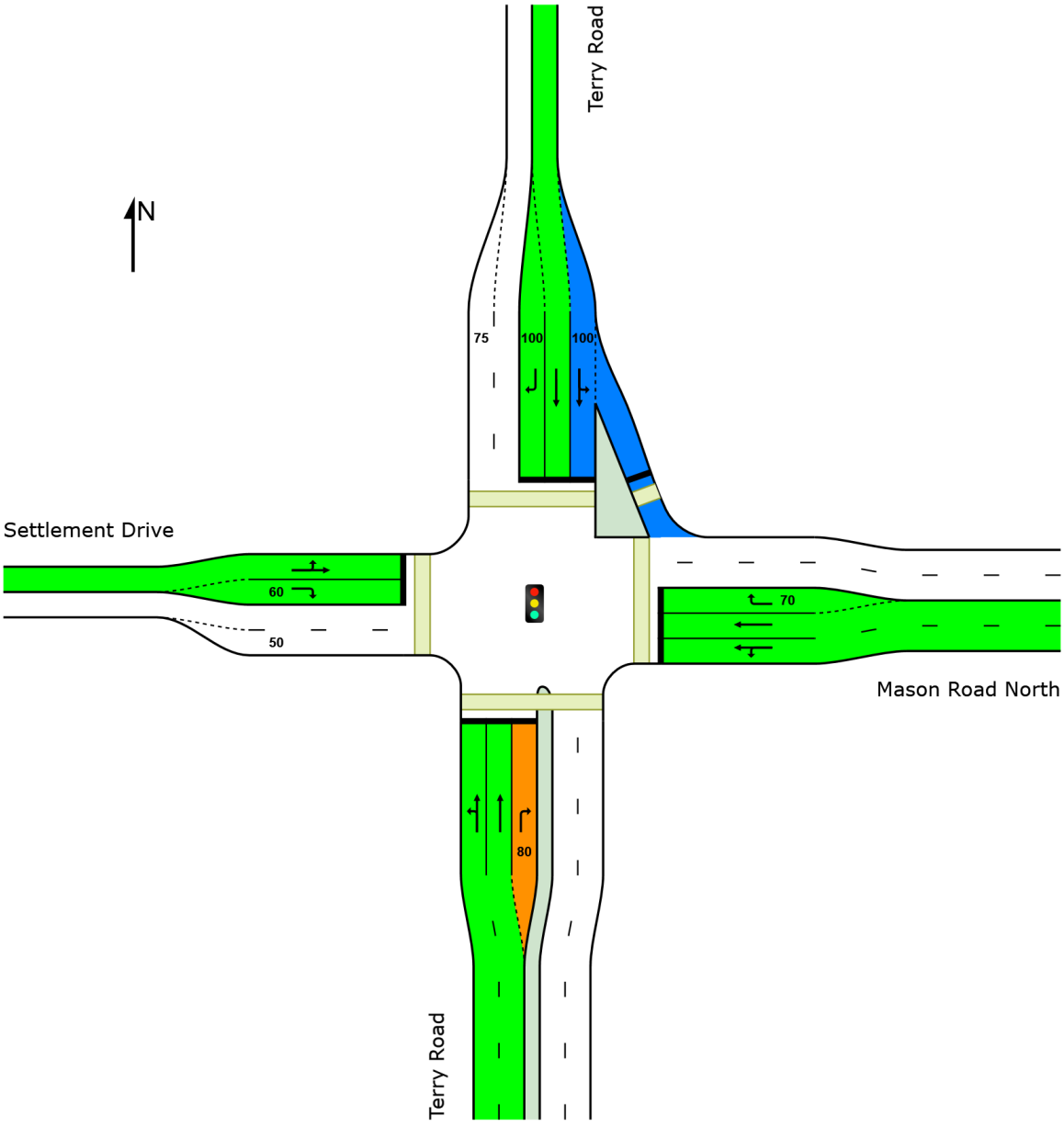
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.35	0.10	0.09	0.04	0.35

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 1: 2026 Council Reference Case_PM)]

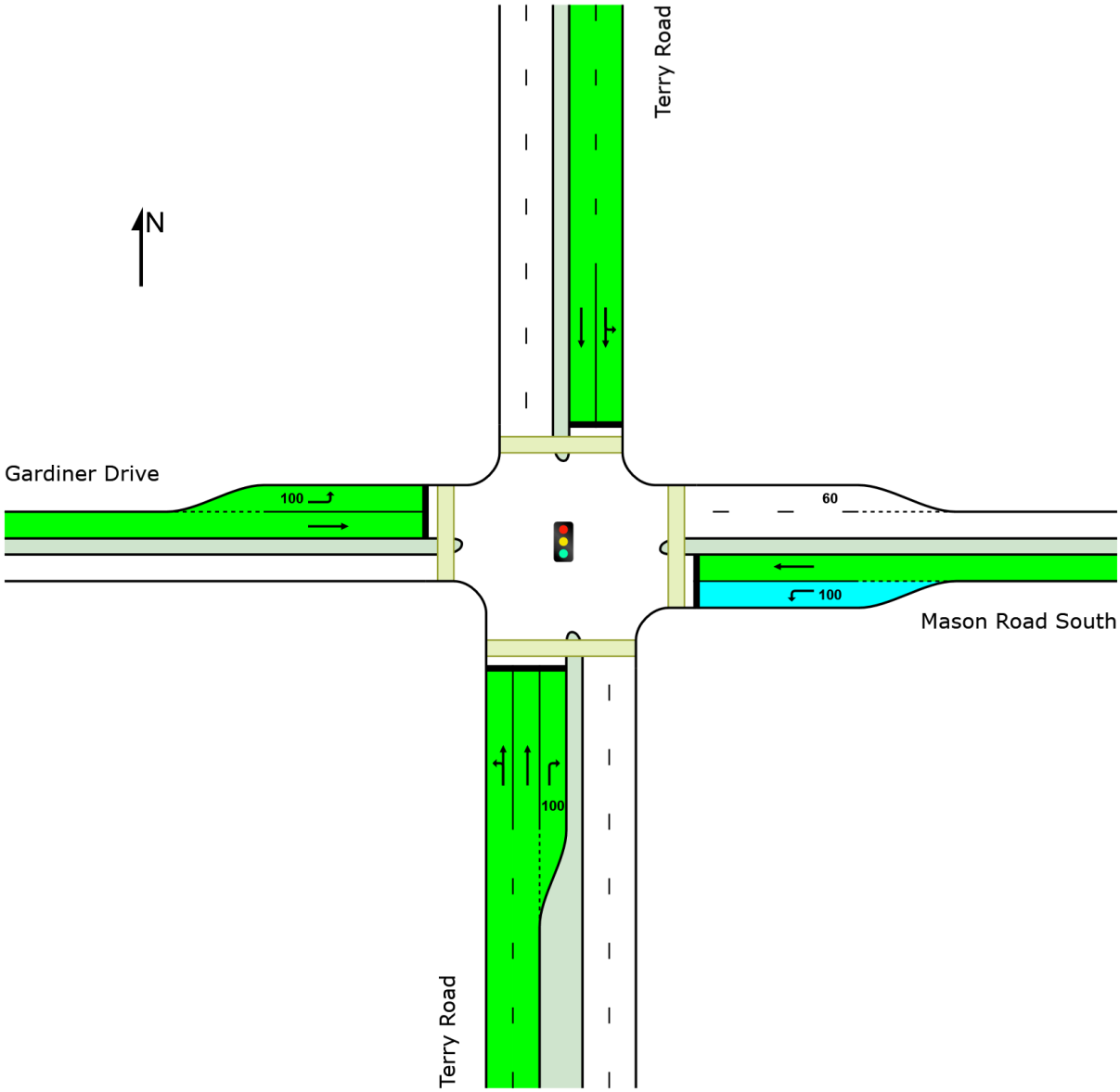
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc1: 2026 Council Reference Case_PM (Network Folder: Sc1: 2026 Council Reference Case)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.12	0.09	0.38	0.06	0.38

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

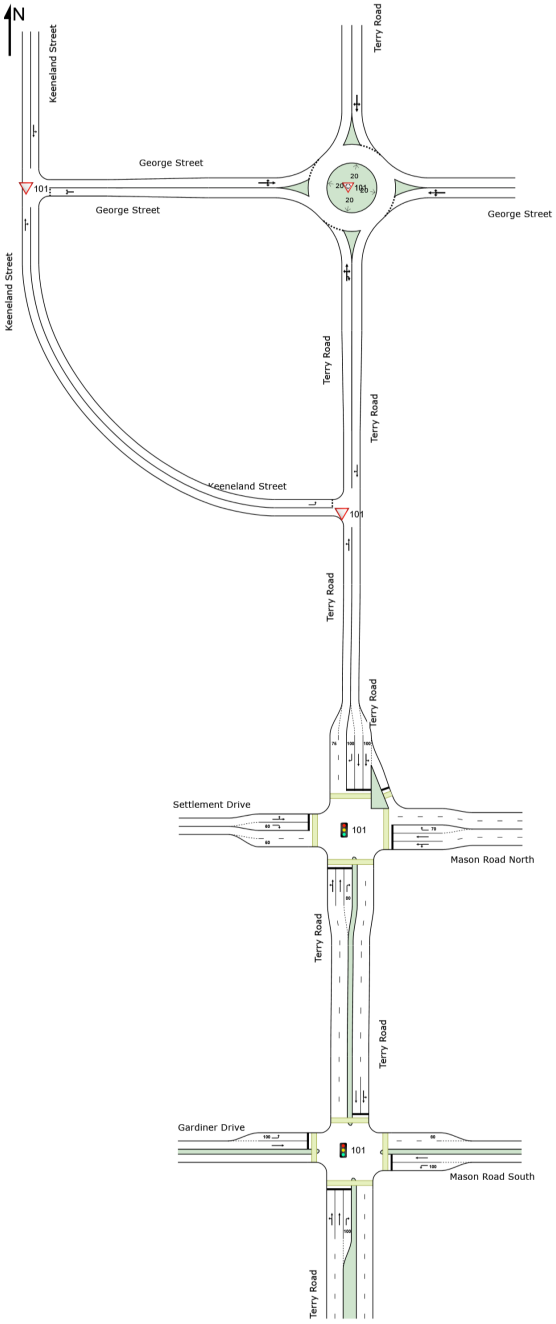
Appendix E2. Scenario 2 – 2028 Opening Baseline

NETWORK LAYOUT

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.006	0.1	LOS A	0.0	0.2	0.14	0.42	0.14	38.4
3	R2	All MCs	9	0.0	9	0.0	0.006	3.7	LOS A	0.0	0.2	0.14	0.42	0.14	37.0
Approach			10	0.0	10	0.0	0.006	3.3	NA	0.0	0.2	0.14	0.42	0.14	37.3
East: George Street															
4	L2	All MCs	4	0.0	4	0.0	0.036	3.4	LOS A	0.1	0.8	0.04	0.48	0.04	35.7
6	R2	All MCs	41	2.4	41	2.4	0.036	3.6	LOS A	0.1	0.8	0.04	0.48	0.04	37.5
Approach			45	2.2	45	2.2	0.036	3.6	LOS A	0.1	0.8	0.04	0.48	0.04	37.4
North: Keeneland Street															
7	L2	All MCs	54	1.9	54	1.9	0.030	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
8	T1	All MCs	1	0.0	1	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
Approach			55	1.8	55	1.8	0.030	3.4	NA	0.0	0.0	0.00	0.45	0.00	37.3
All Vehicles			110	1.8	110	1.8	0.036	3.4	NA	0.1	0.8	0.03	0.46	0.03	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	16	0.0	16	0.0	0.270	4.1	LOS A	1.8	12.7	0.23	0.43	0.23	39.9
2	T1	All MCs	327	1.8	327	1.8	0.270	4.3	LOS A	1.8	12.7	0.23	0.43	0.23	51.2
3	R2	All MCs	24	0.0	24	0.0	0.270	9.0	LOS A	1.8	12.7	0.23	0.43	0.23	50.0
3u	U	All MCs	19	0.0	19	0.0	0.270	11.0	LOS A	1.8	12.7	0.23	0.43	0.23	39.9
Approach			386	1.6	386	1.6	0.270	5.0	LOS A	1.8	12.7	0.23	0.43	0.23	50.7
East: George Street															
4	L2	All MCs	122	1.6	122	1.6	0.209	8.3	LOS A	1.3	9.1	0.73	0.70	0.73	46.5
5	T1	All MCs	11	0.0	11	0.0	0.209	8.4	LOS A	1.3	9.1	0.73	0.70	0.73	46.5
6	R2	All MCs	26	3.8	26	3.8	0.209	13.2	LOS A	1.3	9.1	0.73	0.70	0.73	50.4
Approach			159	1.9	159	1.9	0.209	9.1	LOS A	1.3	9.1	0.73	0.70	0.73	47.5
North: Terry Road															
7	L2	All MCs	16	0.0	16	0.0	0.468	4.5	LOS A	3.6	25.9	0.36	0.43	0.36	53.2
8	T1	All MCs	612	2.0	612	2.0	0.468	4.7	LOS A	3.6	25.9	0.36	0.43	0.36	50.2
9	R2	All MCs	18	0.0	18	0.0	0.468	9.3	LOS A	3.6	25.9	0.36	0.43	0.36	50.2
Approach			646	1.9	646	1.9	0.468	4.8	LOS A	3.6	25.9	0.36	0.43	0.36	50.3
West: George Street															
10	L2	All MCs	18	0.0	18	0.0	0.071	5.8	LOS A	0.4	2.6	0.50	0.63	0.50	50.0
11	T1	All MCs	14	0.0	14	0.0	0.071	6.0	LOS A	0.4	2.6	0.50	0.63	0.50	50.3
12	R2	All MCs	38	2.6	38	2.6	0.071	10.7	LOS A	0.4	2.6	0.50	0.63	0.50	42.9
Approach			70	1.4	70	1.4	0.071	8.5	LOS A	0.4	2.6	0.50	0.63	0.50	47.5
All Vehicles			1261	1.7	1261	1.7	0.468	5.6	LOS A	3.6	25.9	0.37	0.48	0.37	49.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	3	0.0	3	0.0	0.185	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
2	T1	All MCs	353	2.0	353	2.0	0.185	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			356	2.0	356	2.0	0.185	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
North: Terry Road															
8	T1	All MCs	782	1.8	782	1.8	0.411	0.0	LOS A	0.1	0.5	0.01	0.01	0.01	59.4
9	R2	All MCs	7	0.0	7	0.0	0.411	6.0	LOS A	0.1	0.5	0.01	0.01	0.01	59.4
Approach			789	1.8	789	1.8	0.411	0.1	NA	0.1	0.5	0.01	0.01	0.01	59.4
West: Keeneland Street															
10	L2	All MCs	34	0.0	34	0.0	0.029	6.7	LOS A	0.1	0.8	0.39	0.59	0.39	48.8
Approach			34	0.0	34	0.0	0.029	6.7	LOS A	0.1	0.8	0.39	0.59	0.39	48.8
All Vehicles			1179	1.8	1179	1.8	0.411	0.3	NA	0.1	0.8	0.02	0.02	0.02	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	79	2.5	79	2.5	0.173	13.9	LOS A	2.8	20.0	0.41	0.52	0.41	43.9
2	T1	All MCs	409	2.0	409	2.0	0.382	12.7	LOS A	8.1	57.9	0.51	0.47	0.51	30.5
3	R2	All MCs	221	1.8	221	1.8	* 0.574	46.1	LOS D	10.1	71.6	0.97	0.82	0.97	28.2
Approach			709	2.0	709	2.0	0.574	23.3	LOS B	10.1	71.6	0.64	0.59	0.64	31.0
East: Mason Road North															
4	L2	All MCs	232	2.2	232	2.2	0.295	25.5	LOS B	7.3	52.4	0.69	0.76	0.69	32.9
5	T1	All MCs	74	1.4	74	1.4	* 0.213	38.2	LOS C	3.1	22.1	0.89	0.69	0.89	37.0
6	R2	All MCs	79	2.5	79	2.5	0.541	56.3	LOS D	3.9	28.2	1.00	0.77	1.01	21.4
Approach			385	2.1	385	2.1	0.541	34.2	LOS C	7.3	52.4	0.79	0.75	0.80	31.1
North: Terry Road															
7	L2	All MCs	226	2.2	226	2.2	0.594	25.6	LOS B	16.7	118.9	0.84	0.79	0.84	41.7
8	T1	All MCs	563	2.0	563	2.0	* 0.594	31.5	LOS C	16.7	118.9	0.88	0.78	0.88	34.0
9	R2	All MCs	16	0.0	16	0.0	0.144	56.4	LOS D	0.8	5.5	0.98	0.69	0.98	32.4
Approach			805	2.0	805	2.0	0.594	30.3	LOS C	16.7	118.9	0.87	0.78	0.87	36.6
West: Settlement Drive															
10	L2	All MCs	32	3.1	32	3.1	0.390	40.7	LOS C	5.2	37.3	0.94	0.76	0.94	25.2
11	T1	All MCs	84	2.4	84	2.4	0.390	44.1	LOS D	5.2	37.3	0.94	0.76	0.94	35.2
12	R2	All MCs	58	1.7	58	1.7	* 0.527	58.7	LOS E	3.0	21.1	1.00	0.76	1.02	20.8
Approach			174	2.3	174	2.3	0.527	48.3	LOS D	5.2	37.3	0.96	0.76	0.97	29.2
All Vehicles			2073	2.0	2073	2.0	0.594	30.2	LOS C	16.7	118.9	0.79	0.71	0.79	33.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	47	2.1	47	2.1	0.231	13.8	LOS A	5.5	39.5	0.43	0.43	0.43	50.9
2	T1	All MCs	535	2.1	535	2.1	0.231	7.1	LOS A	5.6	40.2	0.43	0.40	0.43	48.2
3	R2	All MCs	126	2.4	126	2.4	* 0.383	45.4	LOS D	5.5	39.6	0.93	0.78	0.93	33.6
Approach			708	2.1	708	2.1	0.383	14.4	LOS A	5.6	40.2	0.52	0.47	0.52	43.2
East: Mason Road South															
4	L2	All MCs	363	1.9	363	1.9	0.521	26.2	LOS B	12.3	87.7	0.82	0.80	0.82	40.7
5	T1	All MCs	116	1.7	116	1.7	0.273	35.2	LOS C	4.7	33.7	0.87	0.70	0.87	38.1
Approach			479	1.9	479	1.9	0.521	28.4	LOS B	12.3	87.7	0.83	0.78	0.83	40.0
North: Terry Road															
7	L2	All MCs	68	1.5	68	1.5	* 0.532	23.6	LOS B	12.7	90.2	0.66	0.61	0.66	40.8
8	T1	All MCs	784	1.9	784	1.9	0.532	13.4	LOS A	12.7	90.2	0.58	0.52	0.58	45.3
Approach			852	1.9	852	1.9	0.532	14.2	LOS A	12.7	90.2	0.59	0.53	0.59	45.0
West: Gardiner Drive															
10	L2	All MCs	176	2.3	176	2.3	* 0.482	44.5	LOS D	7.8	55.4	0.93	0.80	0.93	24.6
11	T1	All MCs	68	1.5	68	1.5	0.160	34.2	LOS C	2.7	19.1	0.85	0.65	0.85	38.5
Approach			244	2.0	244	2.0	0.482	41.6	LOS C	7.8	55.4	0.91	0.76	0.91	29.2
All Vehicles			2283	2.0	2283	2.0	0.532	20.2	LOS B	12.7	90.2	0.65	0.59	0.65	41.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

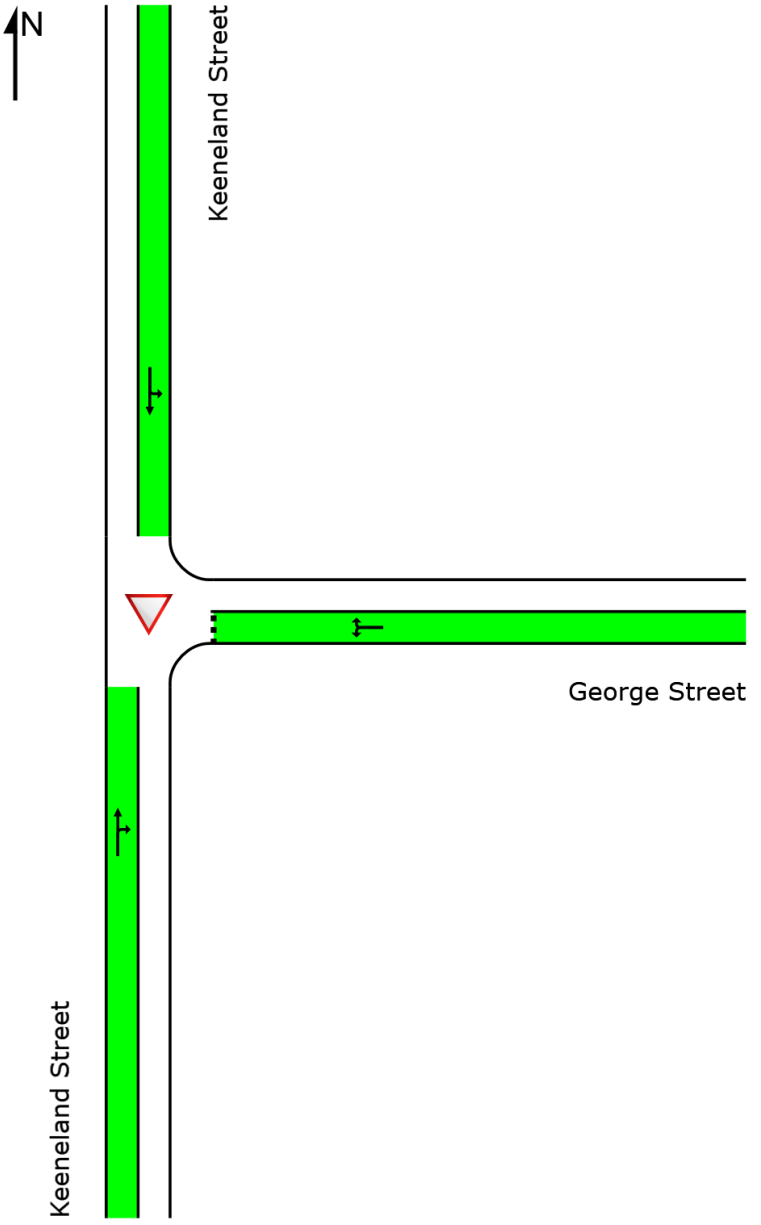
Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

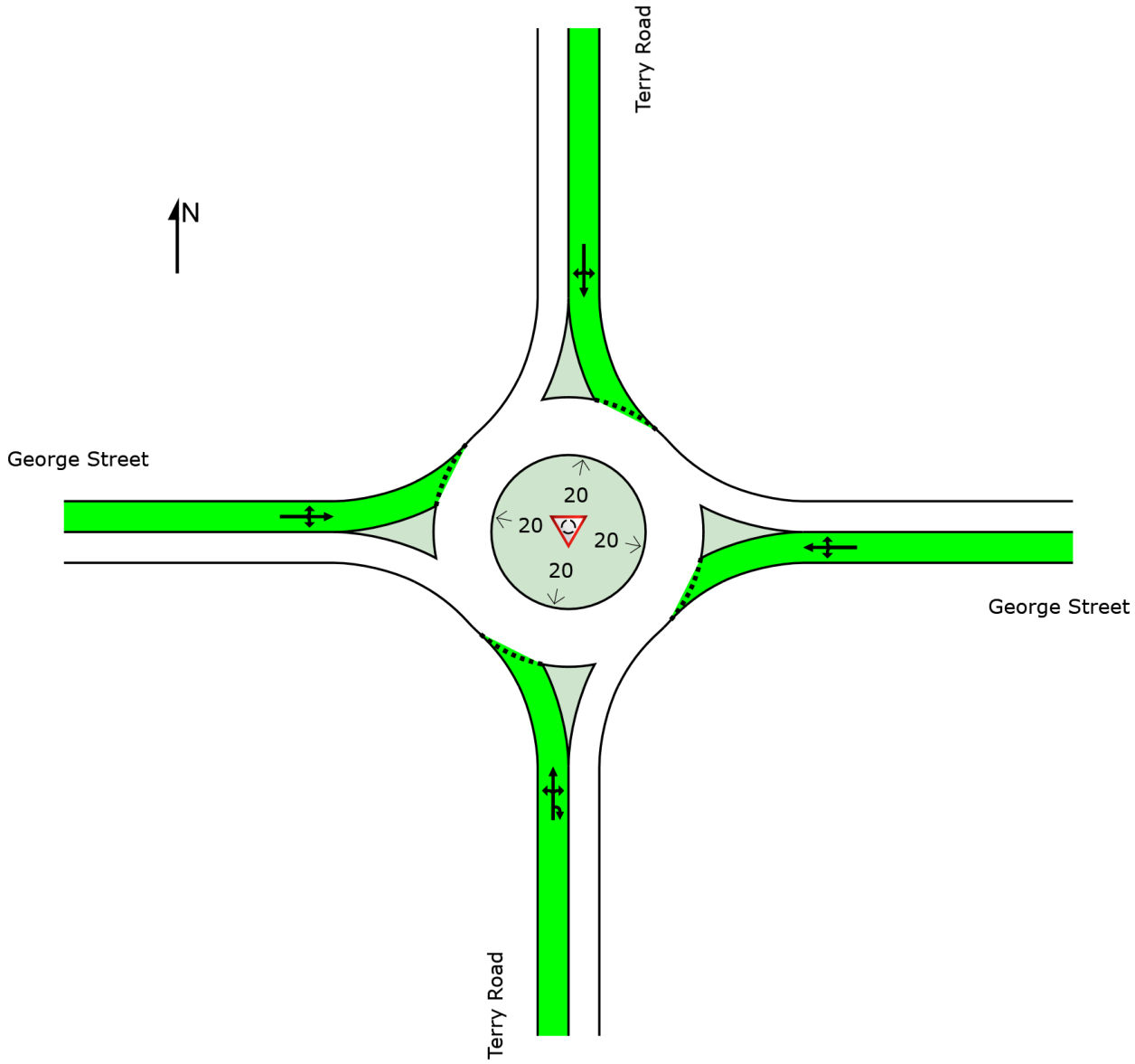
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.08	0.02	0.05	0.01	0.08

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

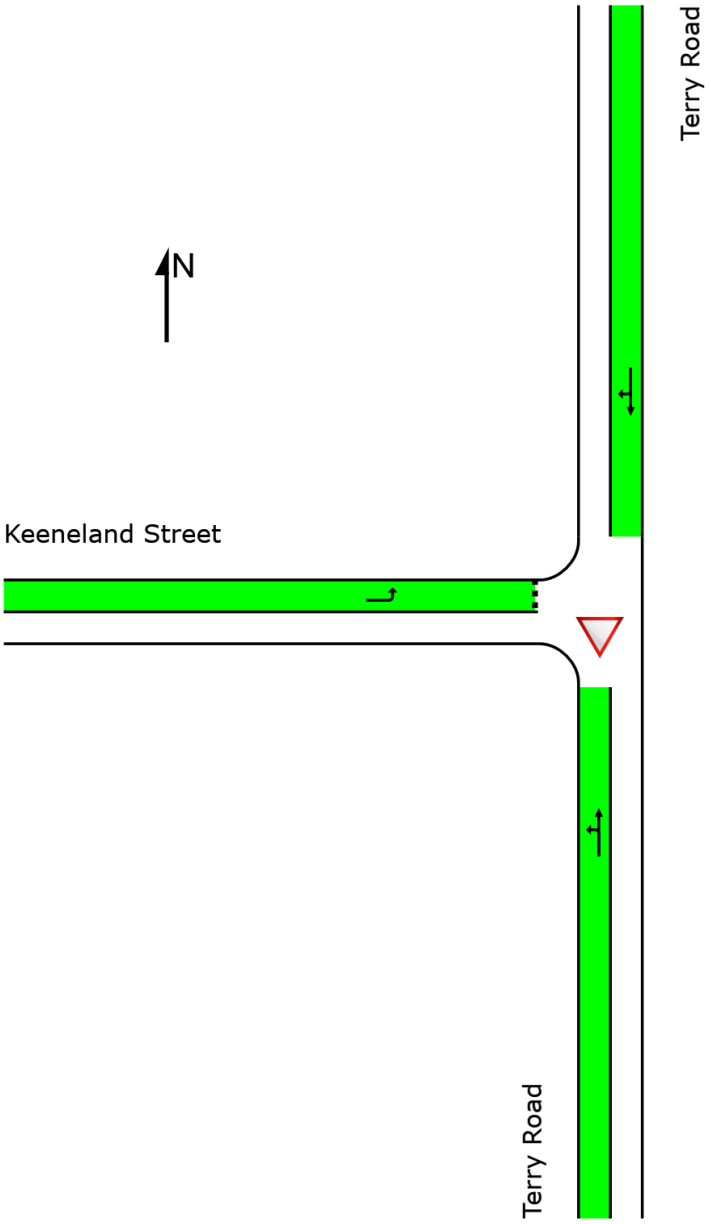
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.00	0.00	0.00

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

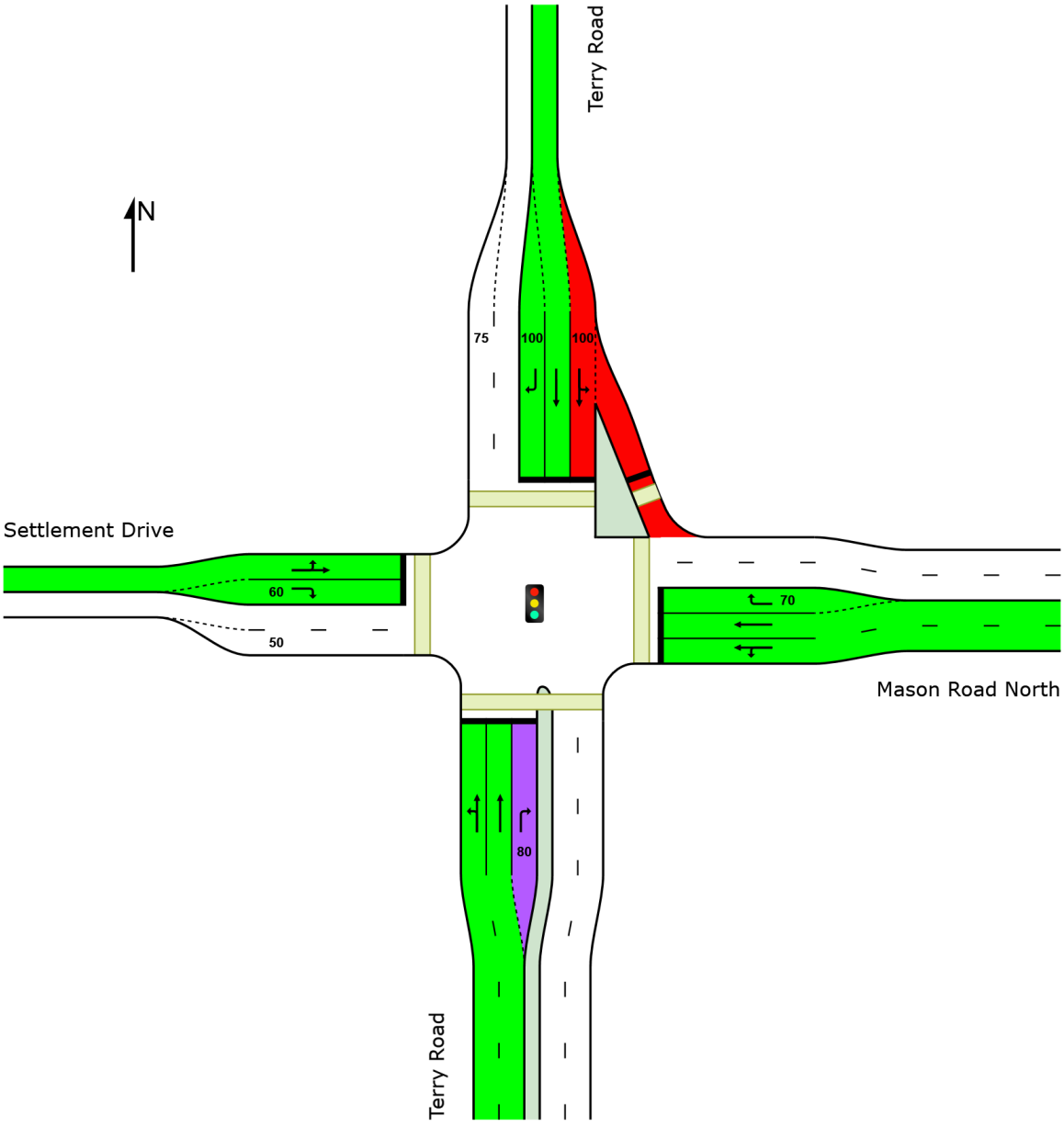
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.29	0.10	0.16	0.07	0.29

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_AM)]

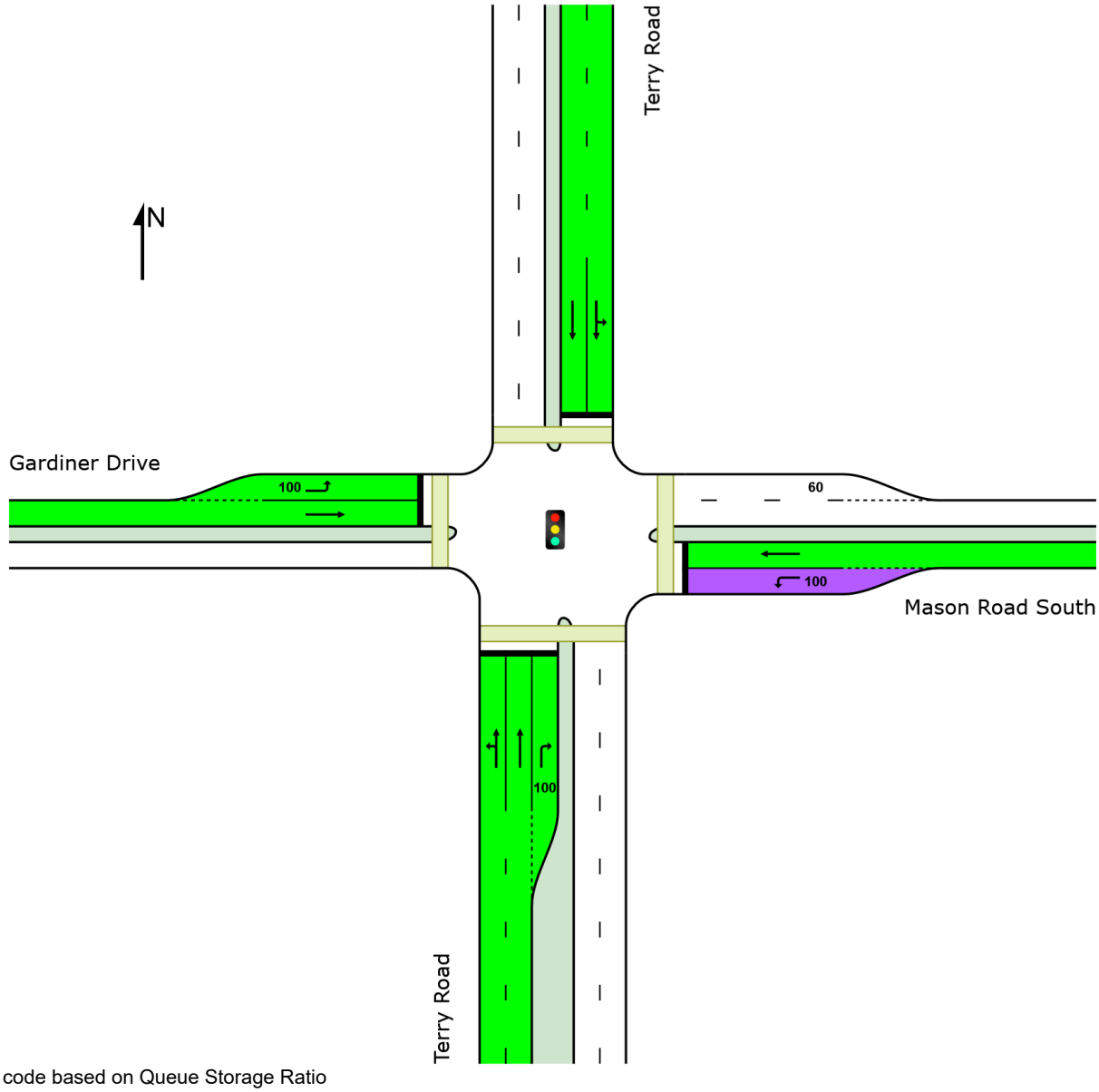
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.08	0.07	0.45	0.04	0.45

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

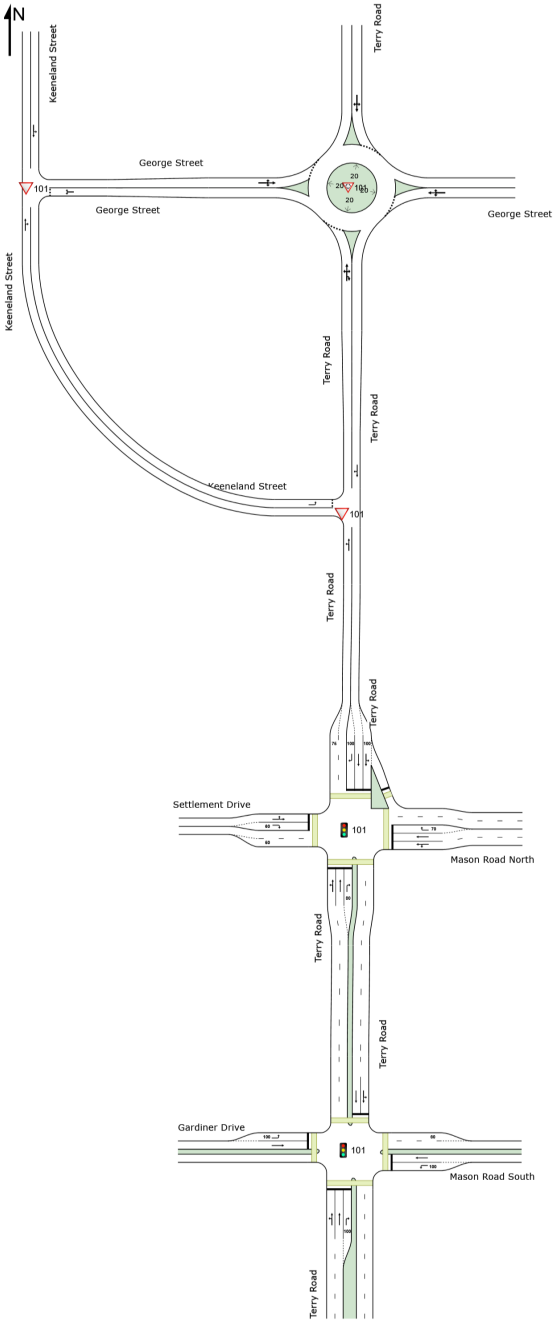
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

NETWORK LAYOUT

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.002	0.1	LOS A	0.0	0.1	0.14	0.35	0.14	38.7
3	R2	All MCs	3	0.0	3	0.0	0.002	3.7	LOS A	0.0	0.1	0.14	0.35	0.14	37.4
Approach			4	0.0	4	0.0	0.002	2.8	NA	0.0	0.1	0.14	0.35	0.14	37.9
East: George Street															
4	L2	All MCs	35	0.0	35	0.0	0.089	3.4	LOS A	0.3	2.3	0.02	0.47	0.02	35.8
6	R2	All MCs	84	2.4	84	2.4	0.089	3.6	LOS A	0.3	2.3	0.02	0.47	0.02	37.5
Approach			119	1.7	119	1.7	0.089	3.5	LOS A	0.3	2.3	0.02	0.47	0.02	37.3
North: Keeneland Street															
7	L2	All MCs	55	0.0	55	0.0	0.030	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
8	T1	All MCs	1	0.0	1	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
Approach			56	0.0	56	0.0	0.030	3.4	NA	0.0	0.0	0.00	0.45	0.00	37.3
All Vehicles			179	1.1	179	1.1	0.089	3.5	NA	0.3	2.3	0.02	0.46	0.02	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	65	1.5	65	1.5	0.314	4.4	LOS A	2.1	15.0	0.32	0.47	0.32	38.6
2	T1	All MCs	289	1.7	289	1.7	0.314	4.6	LOS A	2.1	15.0	0.32	0.47	0.32	50.6
3	R2	All MCs	65	1.5	65	1.5	0.314	9.2	LOS A	2.1	15.0	0.32	0.47	0.32	49.4
3u	U	All MCs	4	0.0	4	0.0	0.314	11.3	LOS A	2.1	15.0	0.32	0.47	0.32	38.6
Approach			423	1.7	423	1.7	0.314	5.4	LOS A	2.1	15.0	0.32	0.47	0.32	49.6
East: George Street															
4	L2	All MCs	63	1.6	63	1.6	0.144	6.2	LOS A	0.8	5.7	0.56	0.63	0.56	48.0
5	T1	All MCs	33	3.0	33	3.0	0.144	6.5	LOS A	0.8	5.7	0.56	0.63	0.56	48.0
6	R2	All MCs	41	2.4	41	2.4	0.144	11.1	LOS A	0.8	5.7	0.56	0.63	0.56	51.3
Approach			137	2.2	137	2.2	0.144	7.7	LOS A	0.8	5.7	0.56	0.63	0.56	49.4
North: Terry Road															
7	L2	All MCs	28	3.6	28	3.6	0.330	4.5	LOS A	2.1	15.0	0.32	0.44	0.32	53.2
8	T1	All MCs	390	1.8	390	1.8	0.330	4.7	LOS A	2.1	15.0	0.32	0.44	0.32	50.4
9	R2	All MCs	22	0.0	22	0.0	0.330	9.3	LOS A	2.1	15.0	0.32	0.44	0.32	50.4
Approach			440	1.8	440	1.8	0.330	4.9	LOS A	2.1	15.0	0.32	0.44	0.32	50.7
West: George Street															
10	L2	All MCs	16	0.0	16	0.0	0.054	5.8	LOS A	0.3	2.0	0.51	0.62	0.51	50.4
11	T1	All MCs	15	0.0	15	0.0	0.054	5.9	LOS A	0.3	2.0	0.51	0.62	0.51	50.7
12	R2	All MCs	22	4.5	22	4.5	0.054	10.7	LOS A	0.3	2.0	0.51	0.62	0.51	43.5
Approach			53	1.9	53	1.9	0.054	7.9	LOS A	0.3	2.0	0.51	0.62	0.51	48.7
All Vehicles			1053	1.8	1053	1.8	0.330	5.6	LOS A	2.1	15.0	0.36	0.48	0.36	50.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	13	0.0	13	0.0	0.222	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
2	T1	All MCs	415	1.7	415	1.7	0.222	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach			428	1.6	428	1.6	0.222	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
North: Terry Road															
8	T1	All MCs	457	2.0	457	2.0	0.256	0.2	LOS A	0.2	1.8	0.06	0.07	0.06	57.0
9	R2	All MCs	22	0.0	22	0.0	0.256	7.4	LOS A	0.2	1.8	0.06	0.07	0.06	57.0
Approach			479	1.9	479	1.9	0.256	0.5	NA	0.2	1.8	0.06	0.07	0.06	57.0
West: Keeneland Street															
10	L2	All MCs	9	0.0	9	0.0	0.008	6.9	LOS A	0.0	0.2	0.42	0.57	0.42	48.6
Approach			9	0.0	9	0.0	0.008	6.9	LOS A	0.0	0.2	0.42	0.57	0.42	48.6
All Vehicles			916	1.7	916	1.7	0.256	0.4	NA	0.2	1.8	0.04	0.05	0.04	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	138	2.2	138	2.2	0.198	17.8	LOS B	3.7	26.5	0.51	0.67	0.51	40.3
2	T1	All MCs	344	1.7	344	1.7	0.439	28.1	LOS B	12.8	91.0	0.85	0.74	0.85	19.2
3	R2	All MCs	266	1.9	266	1.9	* 0.558	43.0	LOS D	11.8	83.8	0.95	0.83	0.95	29.2
Approach			748	1.9	748	1.9	0.558	31.5	LOS C	12.8	91.0	0.82	0.76	0.82	28.3
East: Mason Road North															
4	L2	All MCs	266	1.9	266	1.9	0.285	20.5	LOS B	7.4	52.3	0.61	0.75	0.61	36.1
5	T1	All MCs	59	1.7	59	1.7	0.146	34.9	LOS C	2.4	16.8	0.85	0.65	0.85	38.2
6	R2	All MCs	110	2.7	110	2.7	* 0.549	53.1	LOS D	5.3	38.2	0.99	0.79	0.99	22.2
Approach			435	2.1	435	2.1	0.549	30.7	LOS C	7.4	52.3	0.74	0.74	0.74	32.0
North: Terry Road															
7	L2	All MCs	174	1.7	174	1.7	0.568	32.0	LOS C	12.4	88.2	0.90	0.80	0.90	38.7
8	T1	All MCs	320	1.6	320	1.6	* 0.568	41.6	LOS C	12.4	88.2	0.94	0.80	0.94	30.1
9	R2	All MCs	14	0.0	14	0.0	0.126	56.3	LOS D	0.7	4.8	0.98	0.68	0.98	32.4
Approach			508	1.6	508	1.6	0.568	38.7	LOS C	12.4	88.2	0.93	0.80	0.93	33.7
West: Settlement Drive															
10	L2	All MCs	14	0.0	14	0.0	0.184	33.8	LOS C	2.9	20.7	0.85	0.68	0.85	28.1
11	T1	All MCs	59	1.7	59	1.7	* 0.184	36.0	LOS C	2.9	20.7	0.85	0.68	0.85	38.0
12	R2	All MCs	78	2.6	78	2.6	0.389	52.1	LOS D	3.7	26.4	0.97	0.76	0.97	22.5
Approach			151	2.0	151	2.0	0.389	44.1	LOS D	3.7	26.4	0.91	0.72	0.91	29.6
All Vehicles			1842	1.8	1842	1.8	0.568	34.3	LOS C	12.8	91.0	0.84	0.76	0.84	31.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	206	1.9	206	1.9	0.334	14.1	LOS A	8.6	61.1	0.47	0.57	0.47	49.2
2	T1	All MCs	636	1.7	636	1.7	0.334	7.3	LOS A	8.8	62.6	0.46	0.46	0.46	47.2
3	R2	All MCs	183	1.6	183	1.6	* 0.453	42.6	LOS D	7.9	55.9	0.92	0.80	0.92	34.5
Approach			1025	1.8	1025	1.8	0.453	15.0	LOS B	8.8	62.6	0.54	0.54	0.54	43.6
East: Mason Road South															
4	L2	All MCs	312	1.9	312	1.9	0.415	23.2	LOS B	9.6	68.1	0.76	0.78	0.76	42.1
5	T1	All MCs	155	1.9	155	1.9	* 0.383	37.1	LOS C	6.6	46.9	0.91	0.74	0.91	37.4
Approach			467	1.9	467	1.9	0.415	27.8	LOS B	9.6	68.1	0.81	0.77	0.81	40.4
North: Terry Road															
7	L2	All MCs	147	2.0	147	2.0	* 0.456	29.0	LOS C	10.9	77.9	0.75	0.71	0.75	36.6
8	T1	All MCs	517	1.9	517	1.9	0.456	18.2	LOS B	10.9	77.9	0.66	0.60	0.66	41.4
Approach			664	2.0	664	2.0	0.456	20.6	LOS B	10.9	77.9	0.68	0.62	0.68	40.2
West: Gardiner Drive															
10	L2	All MCs	111	2.7	111	2.7	0.321	43.9	LOS D	4.8	34.1	0.91	0.78	0.91	24.8
11	T1	All MCs	101	2.0	101	2.0	0.250	35.9	LOS C	4.2	29.6	0.87	0.69	0.87	37.9
Approach			212	2.4	212	2.4	0.321	40.1	LOS C	4.8	34.1	0.89	0.74	0.89	31.9
All Vehicles			2368	1.9	2368	1.9	0.456	21.3	LOS B	10.9	77.9	0.67	0.63	0.67	40.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

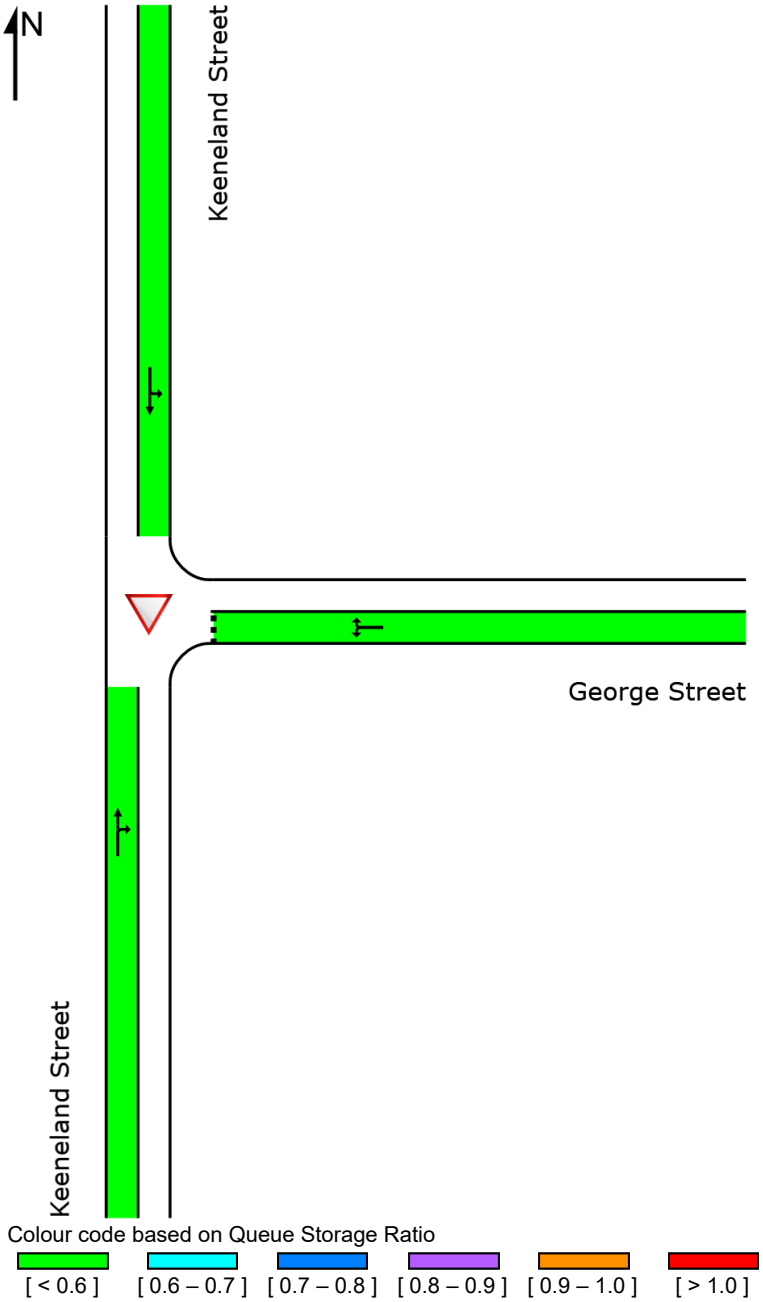
Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.00	0.01	0.00	0.01

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

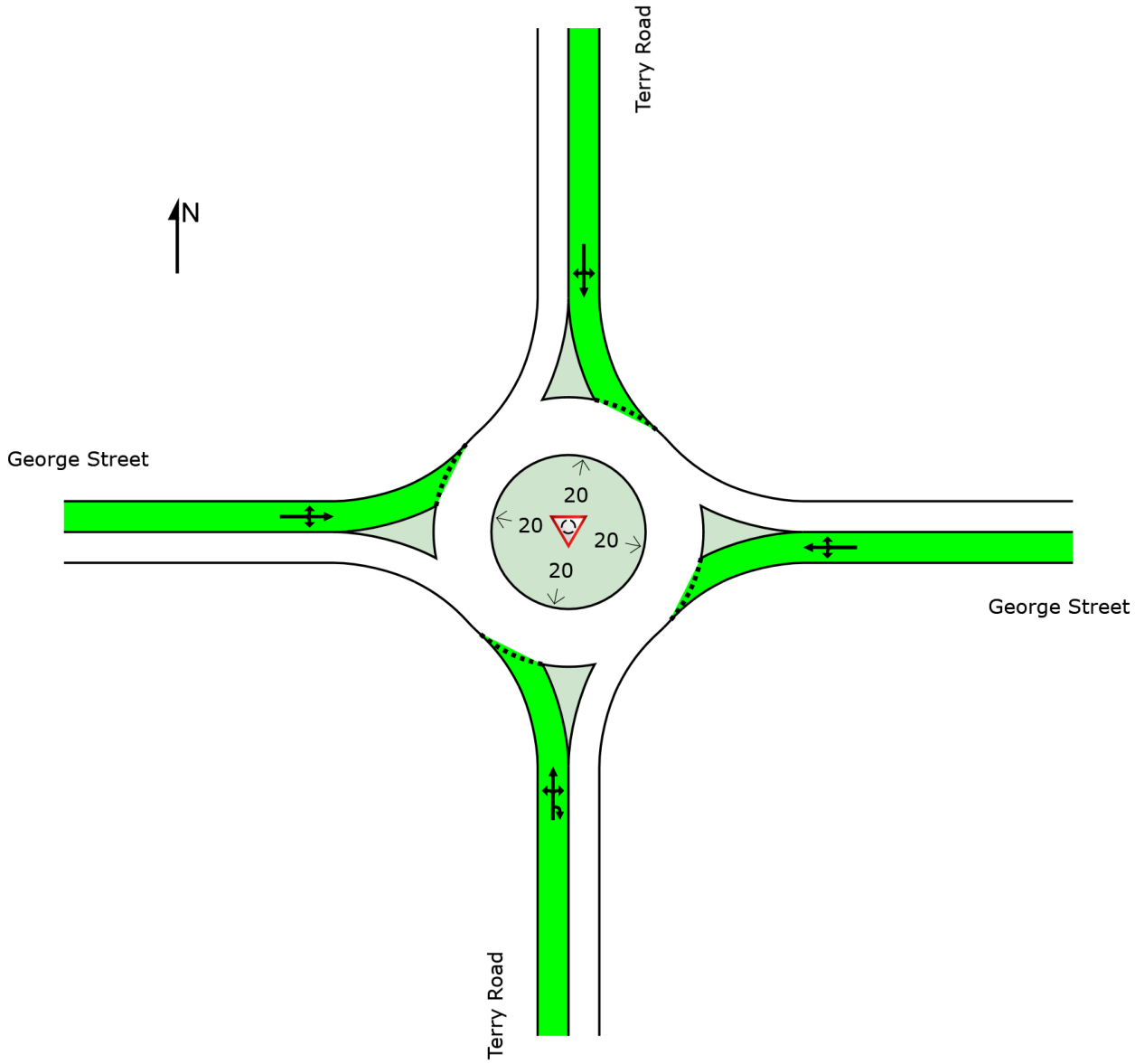
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.09	0.01	0.03	0.01	0.09

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

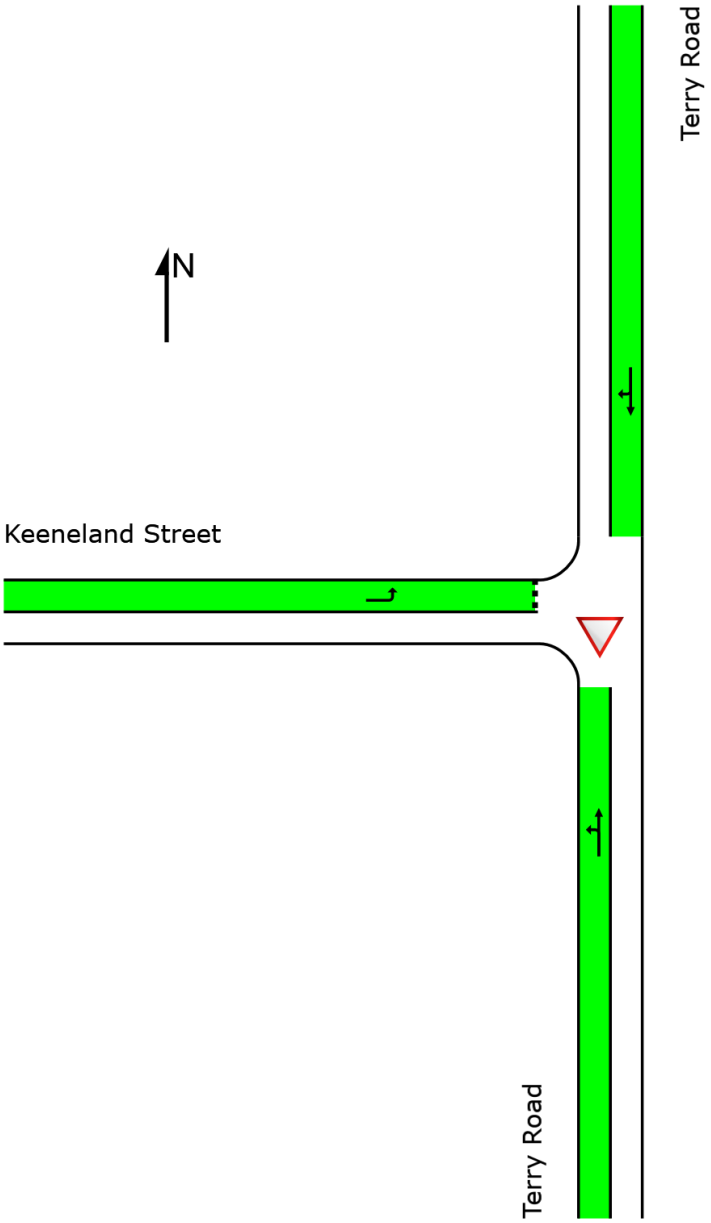
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.01	0.00	0.01

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

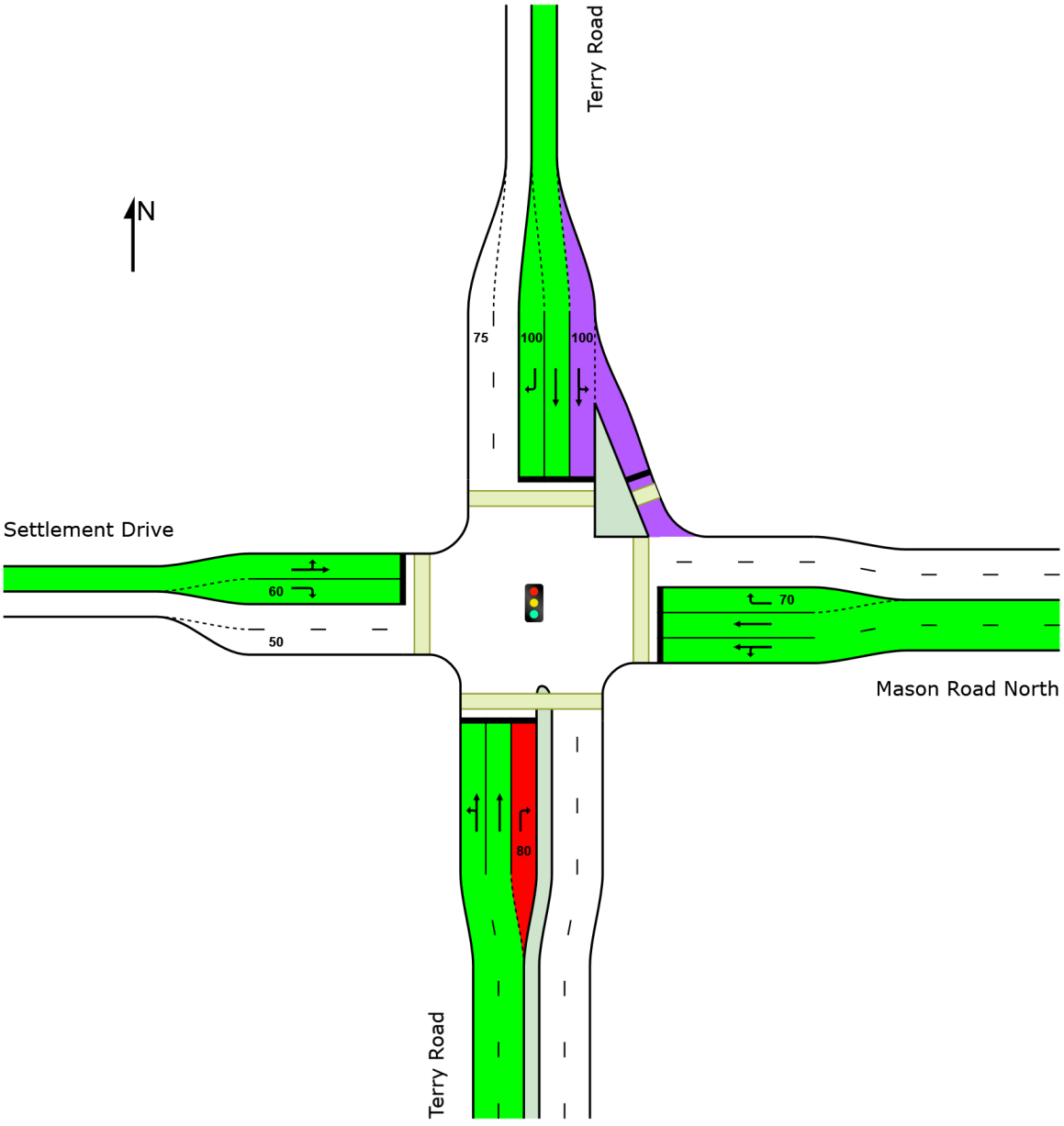
Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.45	0.10	0.10	0.04	0.45

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 2: 2028 Baseline Opening_PM)]

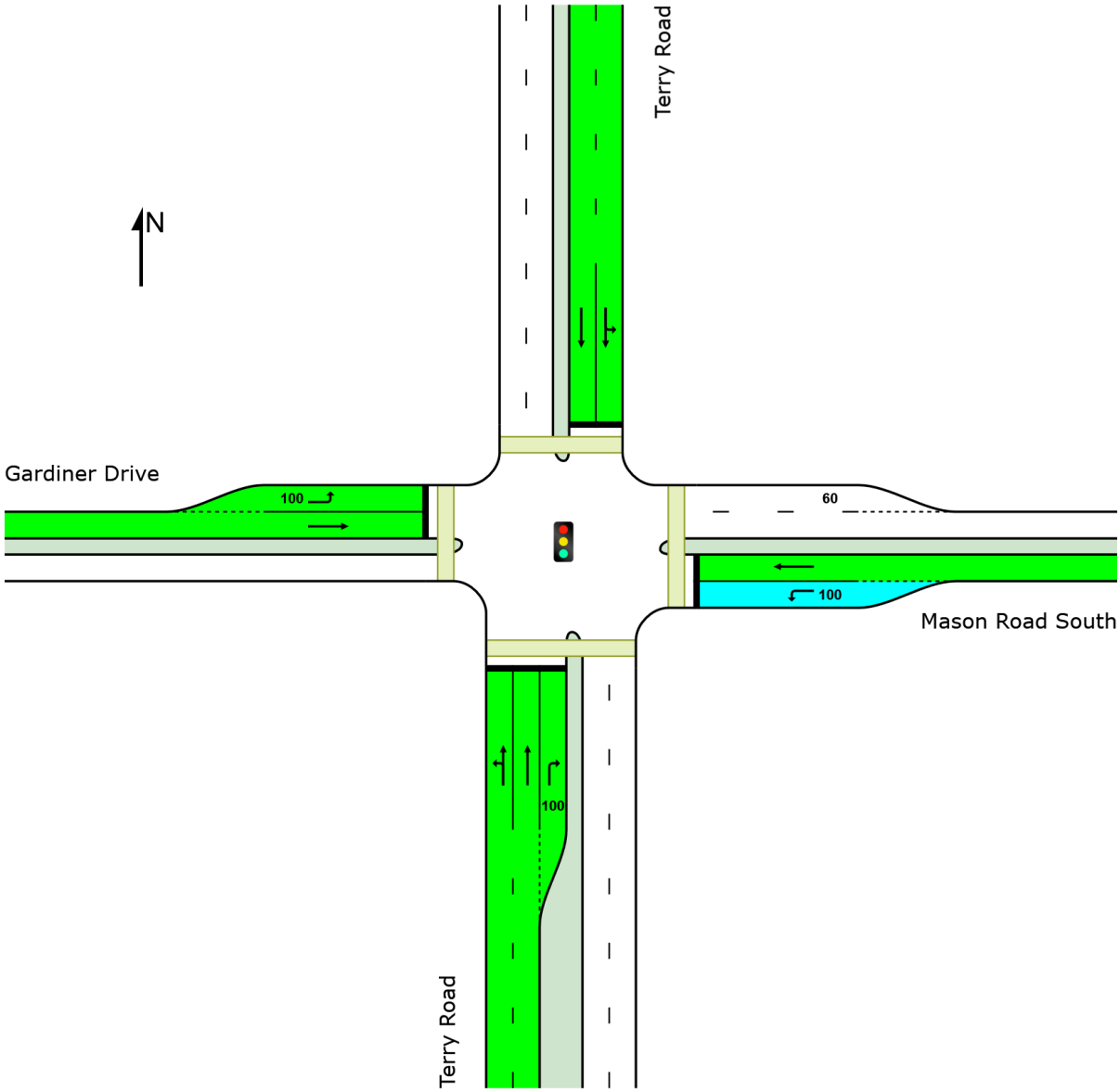
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc2: 2028 Baseline Opening Year (Network Folder: Sc2: 2028 Baseline Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.13	0.09	0.39	0.06	0.39

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

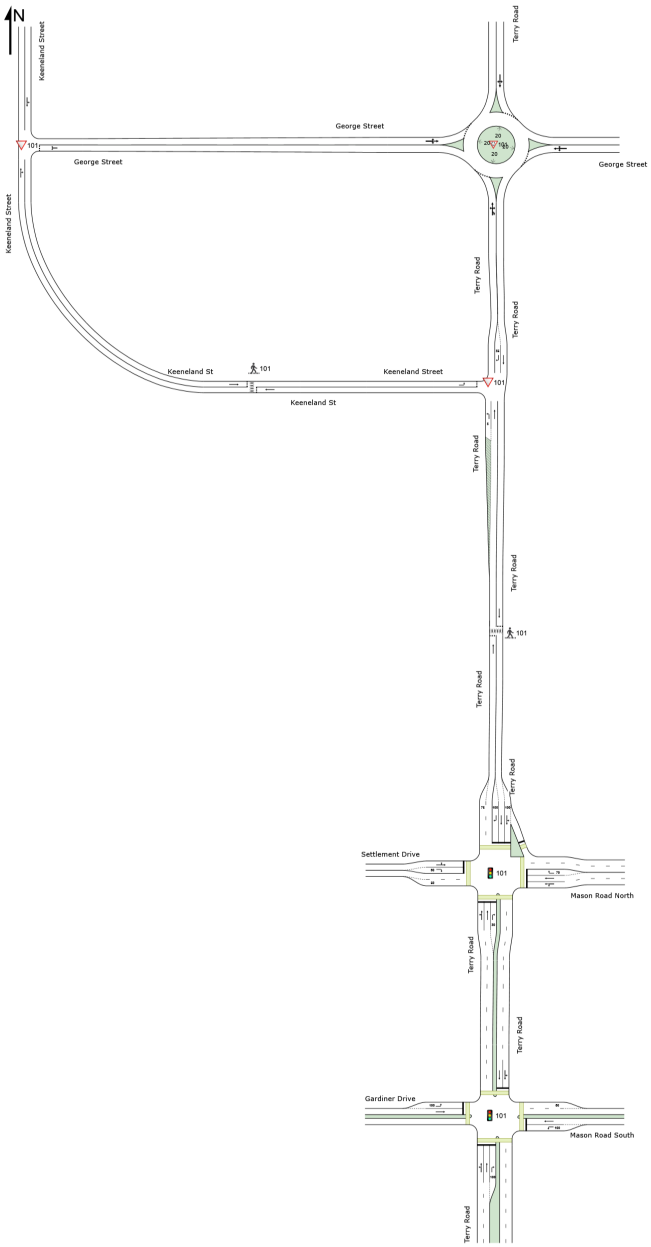
Appendix E3. Scenario 3 – 2028 Project Opening

NETWORK LAYOUT

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Keeneland St - Wombat Crossing
101	NA	Terry Road - Wombat Crossing
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.288	0.2	LOS A	1.7	11.7	0.18	0.56	0.18	44.4
3	R2	All MCs	494	0.0	494	0.0	0.288	5.6	LOS A	1.7	11.7	0.18	0.56	0.18	49.8
Approach			495	0.0	495	0.0	0.288	5.6	NA	1.7	11.7	0.18	0.56	0.18	49.8
East: George Street															
4	L2	All MCs	4	0.0	4	0.0	0.057	3.4	LOS A	0.2	1.3	0.08	0.47	0.08	34.1
6	R2	All MCs	41	2.4	41	2.4	0.057	5.4	LOS A	0.2	1.3	0.08	0.47	0.08	36.8
Approach			45	2.2	45	2.2	0.057	5.2	LOS A	0.2	1.3	0.08	0.47	0.08	36.7
North: Keeneland Street															
7	L2	All MCs	54	1.9	54	1.9	0.030	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
8	T1	All MCs	1	0.0	1	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
Approach			55	1.8	55	1.8	0.030	3.4	NA	0.0	0.0	0.00	0.45	0.00	37.3
All Vehicles			595	0.3	595	0.3	0.288	5.4	NA	1.7	11.7	0.15	0.54	0.15	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	16	0.0	16	0.0	0.271	4.1	LOS A	1.9	13.4	0.24	0.43	0.24	39.7
2	T1	All MCs	327	1.8	327	1.8	0.271	4.3	LOS A	1.9	13.4	0.24	0.43	0.24	51.1
3	R2	All MCs	24	0.0	24	0.0	0.271	9.0	LOS A	1.9	13.4	0.24	0.43	0.24	50.0
3u	U	All MCs	19	0.0	19	0.0	0.271	11.0	LOS A	1.9	13.4	0.24	0.43	0.24	39.7
Approach			386	1.6	386	1.6	0.271	5.0	LOS A	1.9	13.4	0.24	0.43	0.24	50.6
East: George Street															
4	L2	All MCs	183	1.1	183	1.1	0.622	29.6	LOS C	6.4	45.1	1.00	1.09	1.48	30.5
5	T1	All MCs	11	0.0	11	0.0	0.622	29.7	LOS C	6.4	45.1	1.00	1.09	1.48	30.5
6	R2	All MCs	26	3.8	26	3.8	0.622	34.7	LOS C	6.4	45.1	1.00	1.09	1.48	39.1
Approach			220	1.4	220	1.4	0.622	30.2	LOS C	6.4	45.1	1.00	1.09	1.48	31.9
North: Terry Road															
7	L2	All MCs	16	0.0	16	0.0	0.895	19.7	LOS B	19.7	139.6	1.00	1.21	1.78	44.4
8	T1	All MCs	798	1.5	798	1.5	0.895	19.9	LOS B	19.7	139.6	1.00	1.21	1.78	36.9
9	R2	All MCs	18	0.0	18	0.0	0.895	24.5	LOS B	19.7	139.6	1.00	1.21	1.78	36.9
Approach			832	1.4	832	1.4	0.895	20.0	LOS B	19.7	139.6	1.00	1.21	1.78	37.1
West: George Street															
10	L2	All MCs	154	0.0	154	0.0	0.552	7.5	LOS A	4.5	31.9	0.72	0.71	0.78	48.5
11	T1	All MCs	63	0.0	63	0.0	0.552	7.7	LOS A	4.5	31.9	0.72	0.71	0.78	48.9
12	R2	All MCs	337	0.3	337	0.3	0.552	12.4	LOS A	4.5	31.9	0.72	0.71	0.78	40.4
Approach			555	0.2	555	0.2	0.552	10.5	LOS A	4.5	31.9	0.72	0.71	0.78	45.0
All Vehicles			1993	1.1	1993	1.1	0.895	15.6	LOS B	19.7	139.6	0.77	0.91	1.17	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	416	0.0	416	0.0	0.290	2.3	LOS A	0.0	0.0	0.00	0.50	0.00	24.2
2	T1	All MCs	353	2.0	353	2.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			769	0.9	769	0.9	0.290	1.2	NA	0.0	0.0	0.00	0.27	0.00	28.7
North: Terry Road															
8	T1	All MCs	1081	1.3	1081	1.3	0.553	0.1	LOS A	17.8	126.2	0.00	0.00	0.00	43.7
9	R2	All MCs	254	0.0	254	0.0	0.532	13.1	LOS A	2.4	16.6	0.74	1.02	1.12	26.2
Approach			1335	1.0	1335	1.0	0.553	2.6	NA	17.8	126.2	0.14	0.19	0.21	38.8
West: Keeneland Street															
10	L2	All MCs	34	0.0	34	0.0	0.037	3.4	LOS A	0.1	0.9	0.39	0.53	0.39	16.2
Approach			34	0.0	34	0.0	0.037	3.4	LOS A	0.1	0.9	0.39	0.53	0.39	16.2
All Vehicles			2138	1.0	2138	1.0	0.553	2.1	NA	17.8	126.2	0.09	0.23	0.14	37.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Keeneland St															
8	T1	All MCs	672	0.0	672	0.0	0.414	1.7	LOS A	2.3	16.1	0.32	0.45	0.32	24.8
Approach			672	0.0	672	0.0	0.414	1.7	LOS A	2.3	16.1	0.32	0.45	0.32	24.8
West: Keeneland St															
2	T1	All MCs	34	0.0	34	0.0	0.021	4.4	LOS A	0.1	0.5	0.20	0.51	0.20	51.8
Approach			34	0.0	34	0.0	0.021	4.4	LOS A	0.1	0.5	0.20	0.51	0.20	51.8
All Vehicles			706	0.0	706	0.0	0.414	1.8	NA	2.3	16.1	0.31	0.45	0.31	35.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
2	T1	All MCs	770	0.9	770	0.9	0.600	6.7	LOS A	6.2	44.0	0.58	0.69	0.77	51.1
Approach			770	0.9	770	0.9	0.600	6.7	LOS A	6.2	44.0	0.58	0.69	0.77	51.1
North: Terry Road															
8	T1	All MCs	1081	1.3	1081	1.3	0.845	8.2	LOS A	3.5	24.9	0.93	1.03	1.73	7.6
Approach			1081	1.3	1081	1.3	0.845	8.2	LOS A	3.5	24.9	0.93	1.03	1.73	7.6
All Vehicles			1851	1.1	1851	1.1	0.845	7.6	NA	6.2	44.0	0.79	0.89	1.33	41.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	79	2.5	79	2.5	0.397	18.6	LOS B	7.6	54.2	0.67	0.63	0.67	37.8
2	T1	All MCs	702	1.1	702	1.1	* 0.879	34.4	LOS C	26.3	185.7	0.88	0.88	1.00	17.9
3	R2	All MCs	221	1.8	221	1.8	0.753	53.1	LOS D	10.8	77.0	1.00	0.87	1.09	27.1
Approach			1002	1.4	1002	1.4	0.879	37.3	LOS C	26.3	185.7	0.89	0.85	0.99	22.2
East: Mason Road North															
4	L2	All MCs	232	2.2	232	2.2	0.325	28.4	LOS B	7.9	56.2	0.74	0.77	0.74	31.3
5	T1	All MCs	74	1.4	74	1.4	0.201	37.2	LOS C	3.1	21.8	0.88	0.68	0.88	37.3
6	R2	All MCs	284	0.7	284	0.7	* 0.853	56.6	LOS E	15.2	107.3	1.00	0.97	1.24	21.3
Approach			590	1.4	590	1.4	0.853	43.1	LOS D	15.2	107.3	0.88	0.86	1.00	26.8
North: Terry Road															
7	L2	All MCs	392	1.3	392	1.3	0.755	25.4	LOS B	24.2	171.8	0.91	0.86	0.93	40.5
8	T1	All MCs	563	2.0	563	2.0	0.755	40.1	LOS C	24.2	171.8	0.96	0.88	1.00	31.1
9	R2	All MCs	149	0.0	149	0.0	* 0.891	65.6	LOS E	8.4	59.1	1.00	1.01	1.44	30.1
Approach			1104	1.4	1104	1.4	0.891	38.3	LOS C	24.2	171.8	0.95	0.89	1.03	34.6
West: Settlement Drive															
10	L2	All MCs	39	2.6	39	2.6	0.413	39.1	LOS C	5.5	39.7	0.94	0.76	0.94	25.0
11	T1	All MCs	84	2.4	84	2.4	* 0.413	45.6	LOS D	5.5	39.7	0.94	0.76	0.94	35.1
12	R2	All MCs	58	1.7	58	1.7	0.211	46.7	LOS D	2.5	18.1	0.92	0.74	0.92	24.0
Approach			181	2.2	181	2.2	0.413	44.6	LOS D	5.5	39.7	0.94	0.76	0.94	30.2
All Vehicles			2877	1.5	2877	1.5	0.891	39.3	LOS C	26.3	185.7	0.91	0.86	1.01	29.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	47	2.1	47	2.1	0.336	19.8	LOS B	9.3	66.3	0.58	0.54	0.58	47.5
2	T1	All MCs	674	1.6	674	1.6	0.336	12.6	LOS A	9.5	67.3	0.58	0.52	0.58	42.3
3	R2	All MCs	126	2.4	126	2.4	* 0.575	52.4	LOS D	6.1	43.4	0.99	0.79	0.99	31.6
Approach			847	1.8	847	1.8	0.575	18.9	LOS B	9.5	67.3	0.64	0.56	0.64	39.4
East: Mason Road South															
4	L2	All MCs	363	1.9	363	1.9	0.472	23.9	LOS B	11.6	82.6	0.77	0.79	0.77	41.8
5	T1	All MCs	116	1.7	116	1.7	0.188	26.4	LOS B	4.1	29.0	0.76	0.61	0.76	41.9
Approach			479	1.9	479	1.9	0.472	24.5	LOS B	11.6	82.6	0.77	0.75	0.77	41.8
North: Terry Road															
7	L2	All MCs	68	1.5	68	1.5	* 0.589	28.3	LOS B	14.6	103.7	0.76	0.69	0.76	38.2
8	T1	All MCs	784	1.9	784	1.9	0.589	15.3	LOS B	14.6	103.7	0.63	0.56	0.63	43.8
Approach			852	1.9	852	1.9	0.589	16.4	LOS B	14.6	103.7	0.64	0.57	0.64	43.3
West: Gardiner Drive															
10	L2	All MCs	330	1.2	330	1.2	* 0.598	38.0	LOS C	13.9	98.0	0.91	0.83	0.91	26.9
11	T1	All MCs	68	1.5	68	1.5	0.110	25.6	LOS B	2.3	16.5	0.74	0.58	0.74	42.3
Approach			398	1.3	398	1.3	0.598	35.9	LOS C	13.9	98.0	0.88	0.79	0.88	30.1
All Vehicles			2576	1.7	2576	1.7	0.598	21.7	LOS B	14.6	103.7	0.70	0.63	0.70	39.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_AM)]

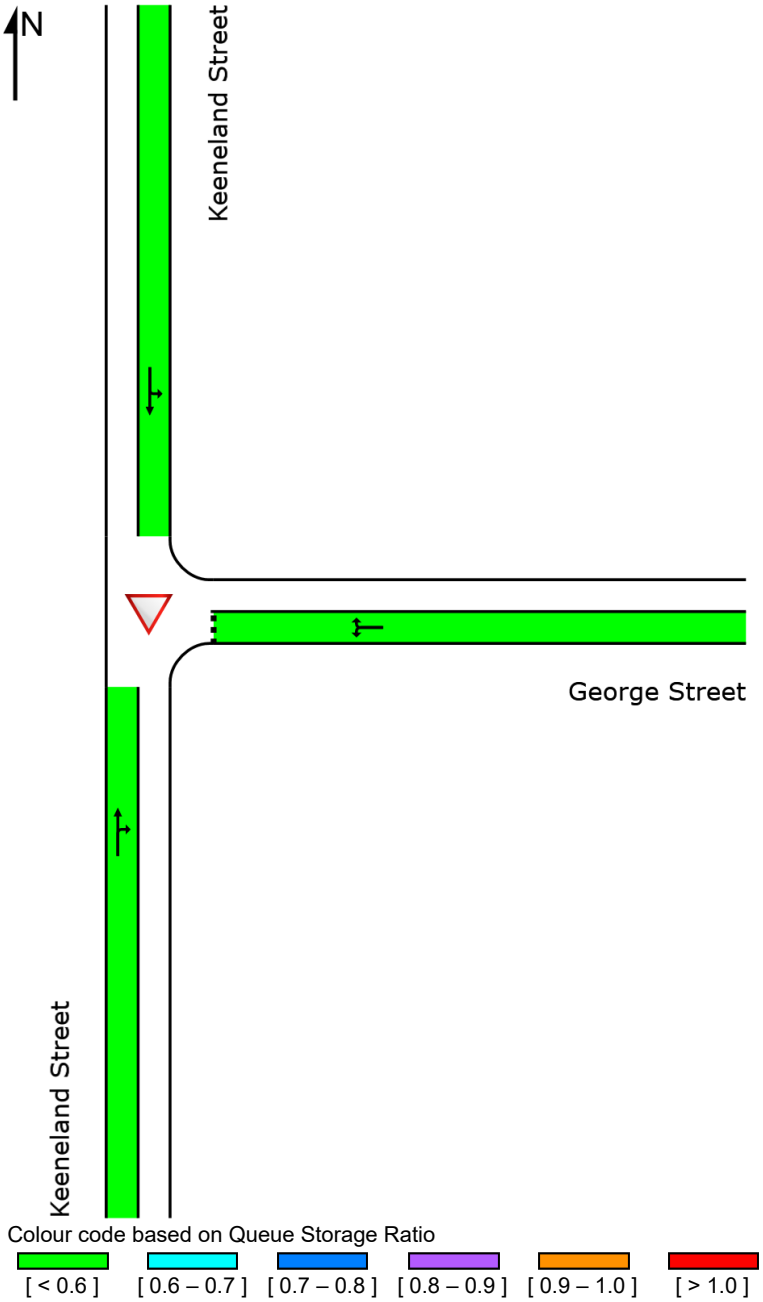
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.02	0.00	0.00	0.02

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 3: 2028 Project Opening_AM)]

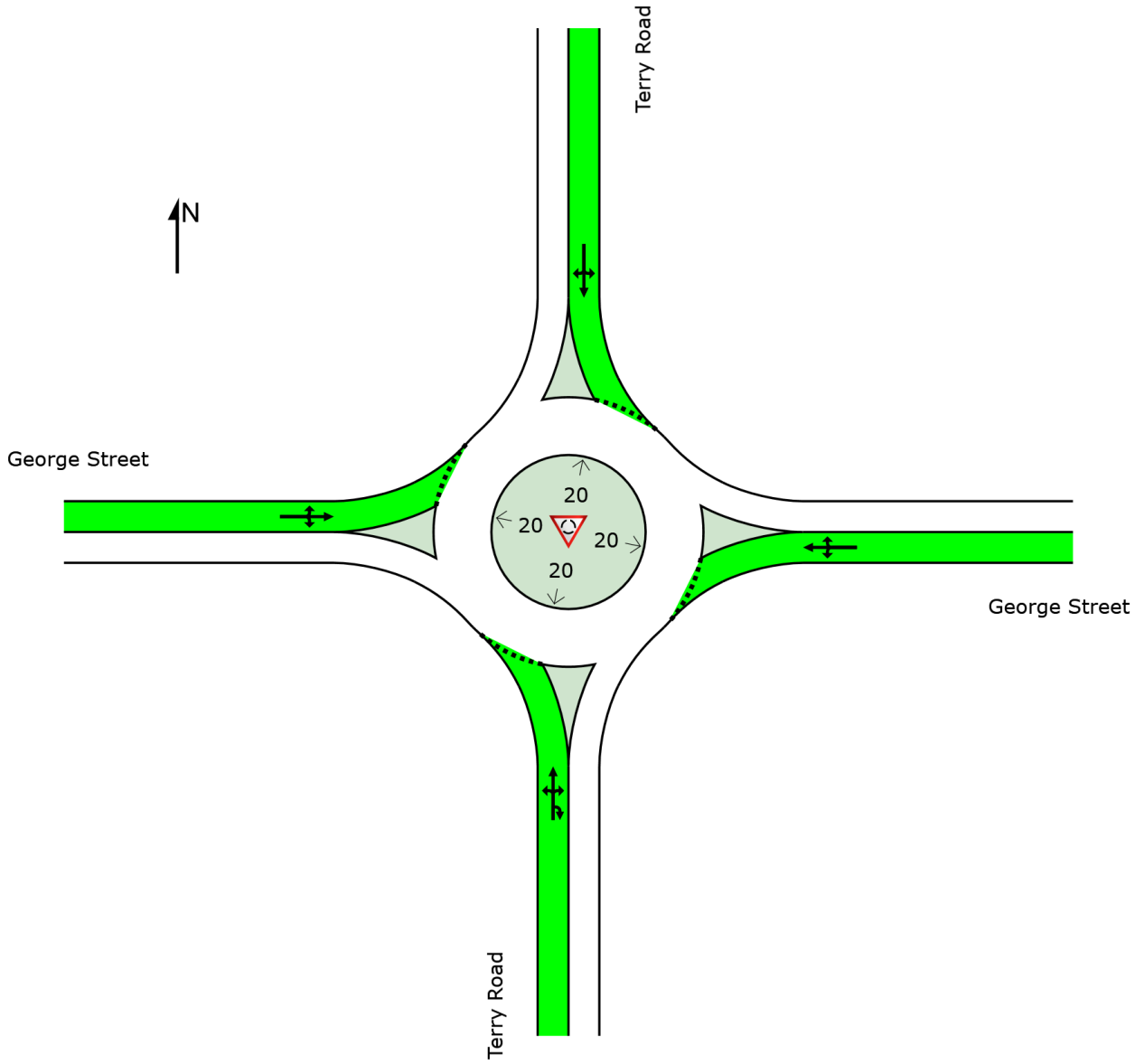
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.08	0.09	0.28	0.10	0.28

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_AM)]

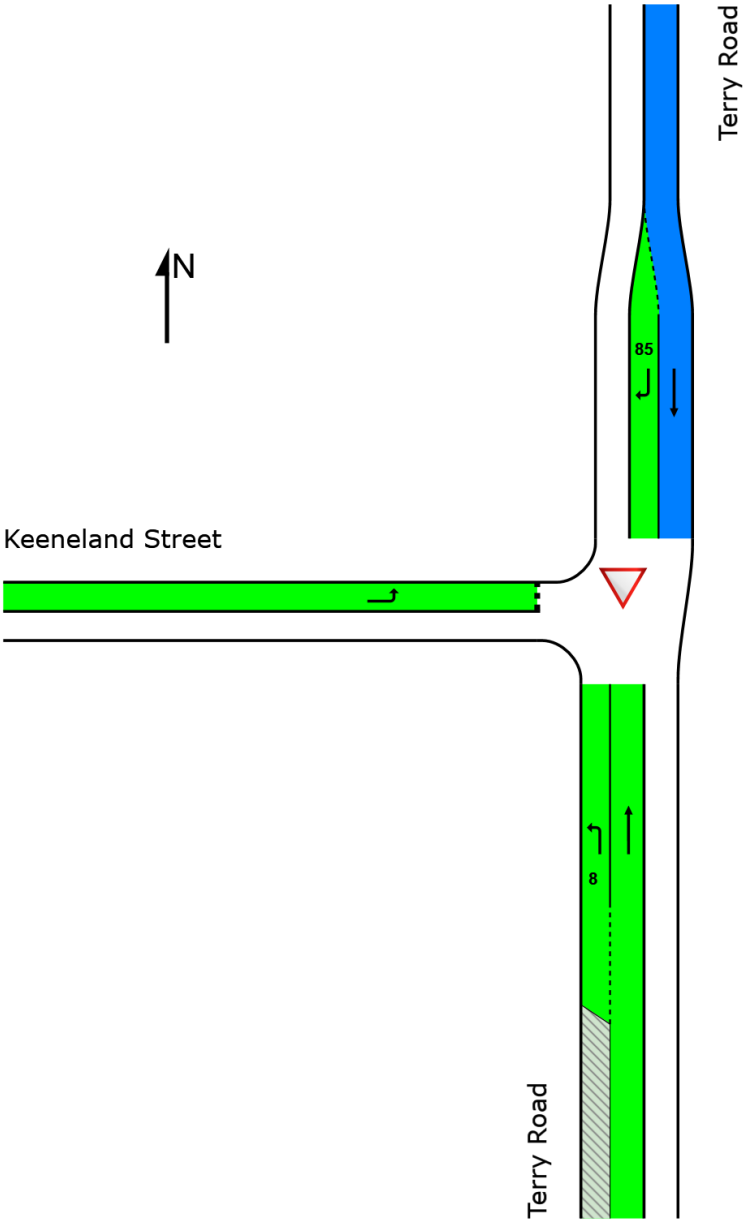
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.79	0.09	0.79

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_AM)]

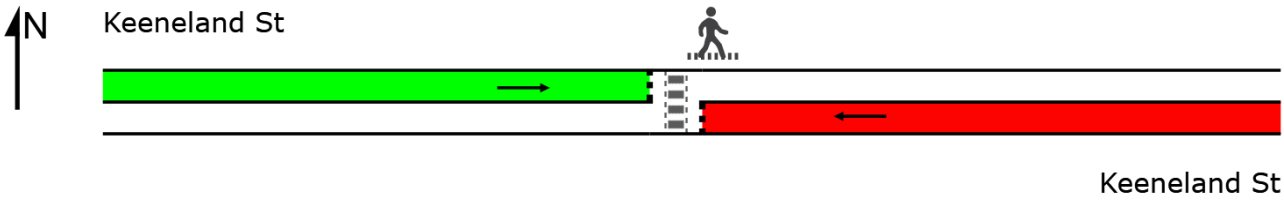
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

	Approaches		Intersection
	East	West	
Queue Storage Ratio (%ile)	1.61	0.00	1.61

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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Project: C:\Users\Angela Ji\OneDrive - Ason Group (1)\Desktop\P2269m01_Terry Road Network_20250522.sip9

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_AM)]

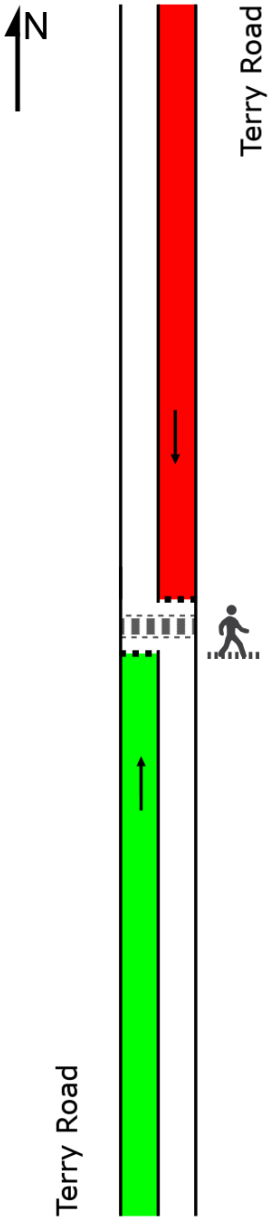
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

	Approaches		Intersection
	South	North	
Queue Storage Ratio (%ile)	0.07	2.49	2.49

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_AM)]

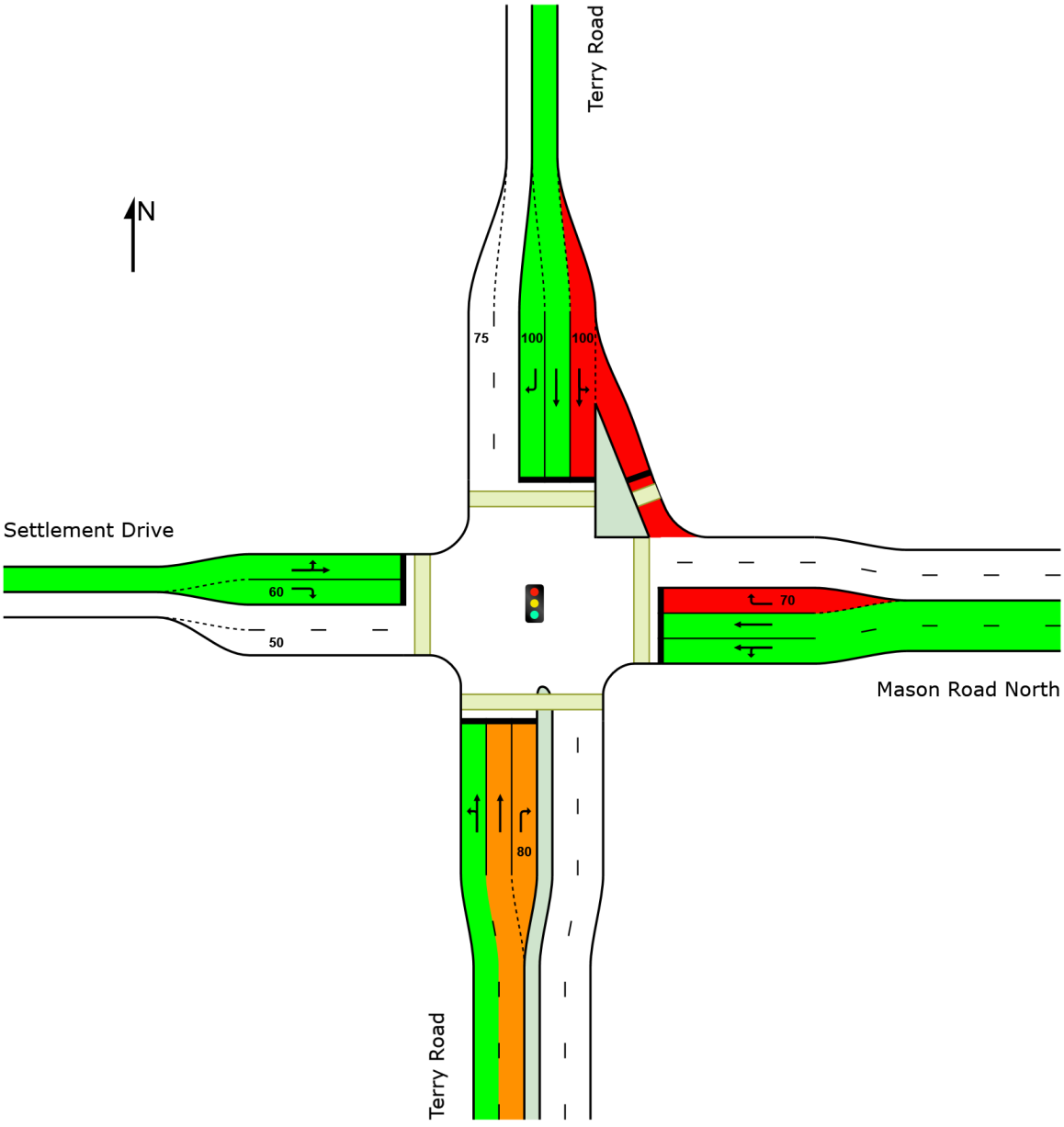
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.93	0.11	0.20	0.08	0.93

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_AM)]

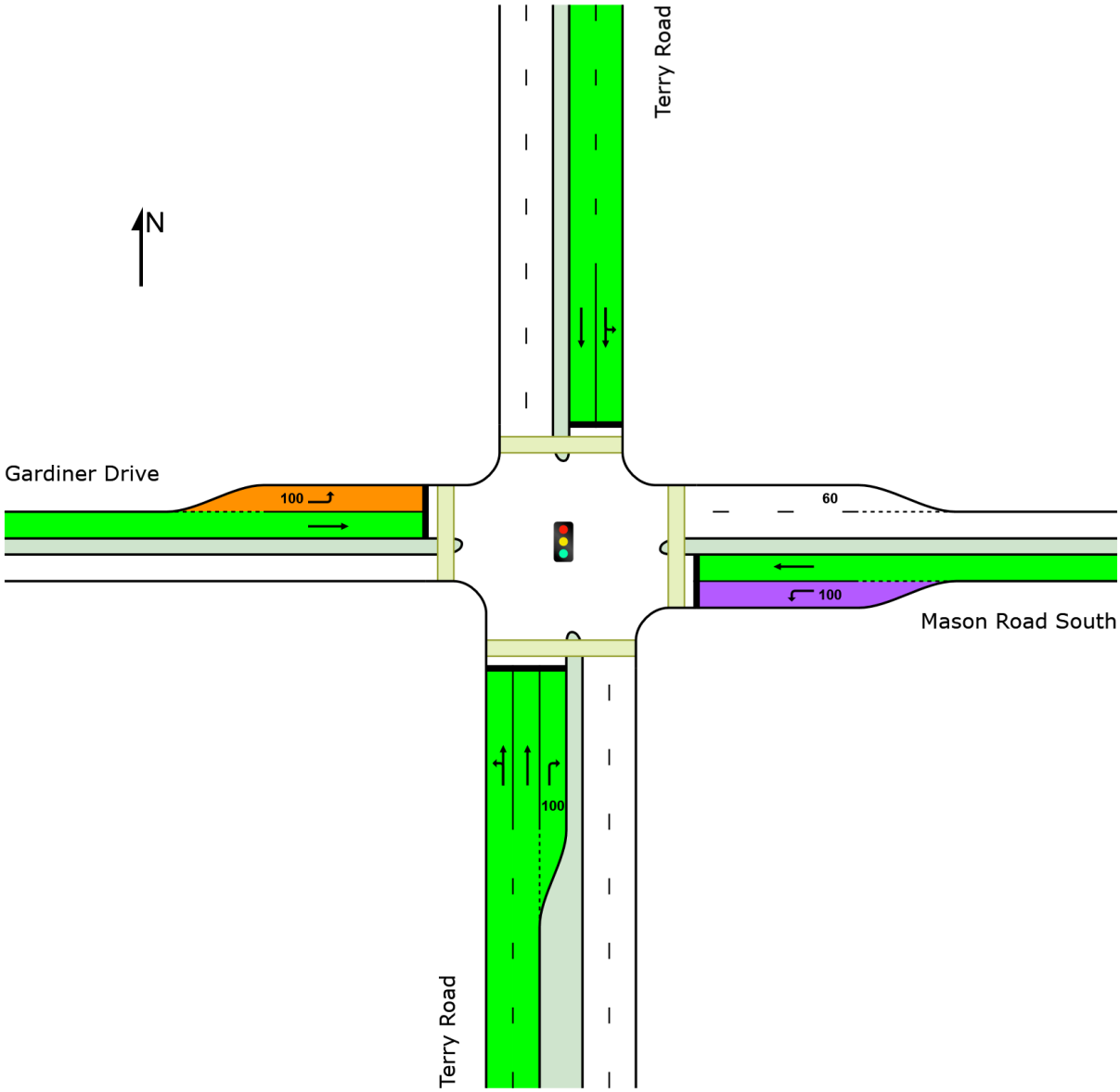
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_AM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.13	0.06	0.52	0.03	0.52

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

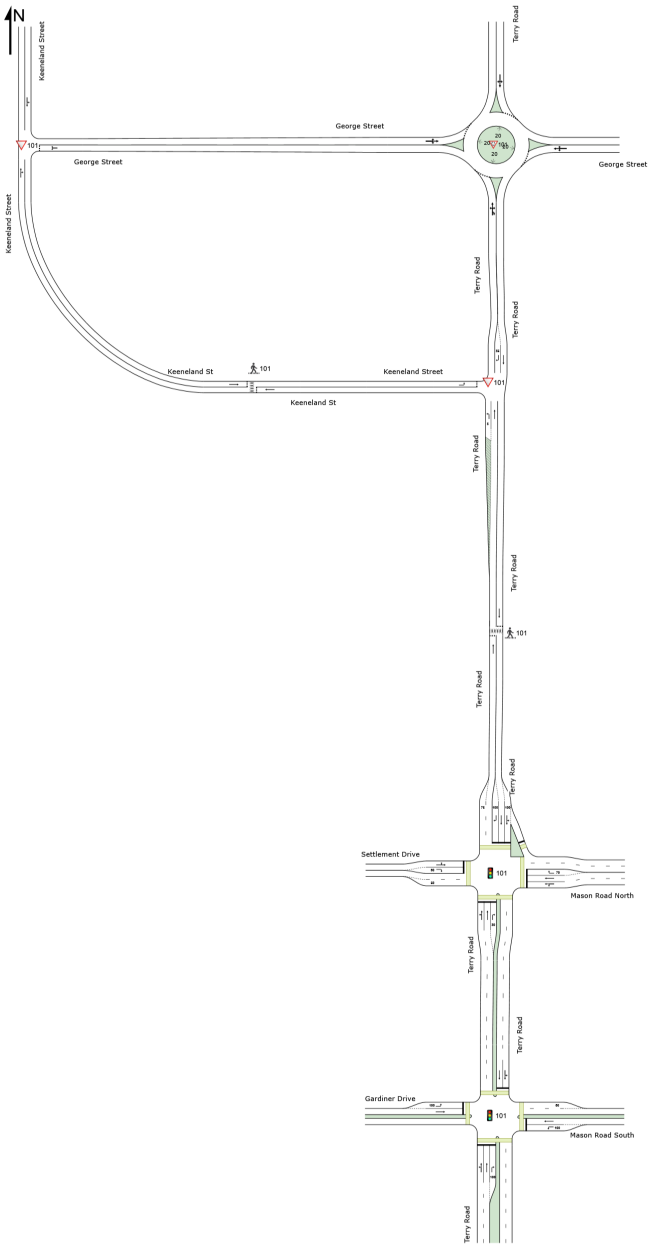
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

NETWORK LAYOUT

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Keeneland St - Wombat Crossing
101	NA	Terry Road - Wombat Crossing
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
2	T1	All MCs	1	0.0	1	0.0	0.417	0.3	LOS A	2.8	19.7	0.21	0.55	0.21	44.4
3	R2	All MCs	716	0.0	715	0.0	0.417	5.7	LOS A	2.8	19.7	0.21	0.55	0.21	49.8
Approach			717	0.0	716	0.0	0.417	5.7	NA	2.8	19.7	0.21	0.55	0.21	49.8
East: George Street															
4	L2	All MCs	35	0.0	35	0.0	0.175	3.4	LOS A	0.6	4.6	0.05	0.46	0.05	34.9
6	R2	All MCs	84	2.4	84	2.4	0.175	4.9	LOS A	0.6	4.6	0.05	0.46	0.05	37.1
Approach			119	1.7	119	1.7	0.175	4.5	LOS A	0.6	4.6	0.05	0.46	0.05	36.8
North: Keeneland Street															
7	L2	All MCs	55	0.0	55	0.0	0.030	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
8	T1	All MCs	1	0.0	1	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	37.3
Approach			56	0.0	56	0.0	0.030	3.4	NA	0.0	0.0	0.00	0.45	0.00	37.3
All Vehicles			892	0.2	891	0.2	0.417	5.4	NA	2.8	19.7	0.17	0.53	0.17	46.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	65	1.5	65	1.5	0.393	4.5	LOS A	3.1	22.1	0.37	0.49	0.37	37.2
2	T1	All MCs	332	1.5	332	1.5	0.393	4.7	LOS A	3.1	22.1	0.37	0.49	0.37	49.8
3	R2	All MCs	76	1.3	76	1.3	0.393	9.3	LOS A	3.1	22.1	0.37	0.49	0.37	48.7
3u	U	All MCs	57	0.0	57	0.0	0.393	11.3	LOS A	3.1	22.1	0.37	0.49	0.37	37.2
Approach			530	1.3	530	1.3	0.393	6.0	LOS A	3.1	22.1	0.37	0.49	0.37	48.4
East: George Street															
4	L2	All MCs	88	1.1	88	1.1	0.362	14.5	LOS A	2.7	19.1	0.97	0.83	0.98	40.0
5	T1	All MCs	33	3.0	33	3.0	0.362	14.8	LOS B	2.7	19.1	0.97	0.83	0.98	40.0
6	R2	All MCs	41	2.4	41	2.4	0.362	19.4	LOS B	2.7	19.1	0.97	0.83	0.98	46.3
Approach			162	1.9	162	1.9	0.362	15.8	LOS B	2.7	19.1	0.97	0.83	0.98	42.3
North: Terry Road															
7	L2	All MCs	28	3.6	28	3.6	0.868	25.0	LOS B	15.8	111.7	1.00	1.28	1.94	41.8
8	T1	All MCs	555	1.3	555	1.3	0.868	25.0	LOS B	15.8	111.7	1.00	1.28	1.94	33.5
9	R2	All MCs	22	0.0	22	0.0	0.868	29.5	LOS C	15.8	111.7	1.00	1.28	1.94	33.5
Approach			605	1.3	605	1.3	0.868	25.2	LOS B	15.8	111.7	1.00	1.28	1.94	34.1
West: George Street															
10	L2	All MCs	227	0.0	227	0.0	0.840	17.1	LOS B	14.7	103.1	1.00	1.08	1.64	42.3
11	T1	All MCs	89	0.0	89	0.0	0.840	17.3	LOS B	14.7	103.1	1.00	1.08	1.64	42.6
12	R2	All MCs	450	0.2	450	0.2	0.840	21.9	LOS B	14.7	103.1	1.00	1.08	1.64	31.3
Approach			766	0.1	765	0.1	0.840	19.9	LOS B	14.7	103.1	1.00	1.08	1.64	37.4
All Vehicles			2063	0.9	2063	0.9	0.868	17.6	LOS B	15.8	111.7	0.84	0.97	1.35	39.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	319	0.0	319	0.0	0.191	2.3	LOS A	0.0	0.0	0.00	0.49	0.00	24.2
2	T1	All MCs	522	1.3	522	1.3	0.267	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	42.8
Approach			841	0.8	841	0.8	0.267	0.9	NA	0.0	0.0	0.00	0.19	0.00	32.0
North: Terry Road															
8	T1	All MCs	938	1.0	938	1.0	0.479	0.1	LOS A	7.8	55.3	0.00	0.00	0.00	48.0
9	R2	All MCs	212	0.0	212	0.0	0.431	13.3	LOS A	2.0	13.7	0.75	0.98	1.03	25.7
Approach			1150	0.8	1150	0.8	0.479	2.5	NA	7.8	55.3	0.14	0.18	0.19	41.3
West: Keeneland Street															
10	L2	All MCs	9	0.0	9	0.0	0.012	4.4	LOS A	0.0	0.3	0.48	0.57	0.48	13.7
Approach			9	0.0	9	0.0	0.012	4.4	LOS A	0.0	0.3	0.48	0.57	0.48	13.7
All Vehicles			1999	0.8	1999	0.8	0.479	1.8	NA	7.8	55.3	0.08	0.19	0.11	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Keeneland St															
8	T1	All MCs	532	0.0	532	0.0	0.328	1.6	LOS A	1.6	11.3	0.28	0.45	0.28	25.3
Approach			532	0.0	532	0.0	0.328	1.6	LOS A	1.6	11.3	0.28	0.45	0.28	25.3
West: Keeneland St															
2	T1	All MCs	9	0.0	9	0.0	0.006	4.4	LOS A	0.0	0.1	0.20	0.50	0.20	51.8
Approach			9	0.0	9	0.0	0.006	4.4	LOS A	0.0	0.1	0.20	0.50	0.20	51.8
All Vehicles			541	0.0	541	0.0	0.328	1.7	NA	1.6	11.3	0.28	0.45	0.28	29.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
2	T1	All MCs	841	0.0	841	0.0	0.651	7.1	LOS A	7.9	55.6	0.63	0.73	0.88	50.6
Approach			841	0.0	841	0.0	0.651	7.1	LOS A	7.9	55.6	0.63	0.73	0.88	50.6
North: Terry Road															
8	T1	All MCs	938	0.0	938	0.0	0.726	5.2	LOS A	3.6	24.9	0.72	0.78	1.10	11.3
Approach			938	0.0	938	0.0	0.726	5.2	LOS A	3.6	24.9	0.72	0.78	1.10	11.3
All Vehicles			1778	0.0	1778	0.0	0.726	6.1	NA	7.9	55.6	0.68	0.75	1.00	45.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	138	2.2	138	2.2	0.350	23.6	LOS B	6.4	45.3	0.70	0.71	0.70	35.5
2	T1	All MCs	479	1.3	479	1.3	* 0.776	34.1	LOS C	19.1	135.1	0.92	0.84	0.97	17.1
3	R2	All MCs	266	1.9	266	1.9	0.691	50.9	LOS D	12.9	91.5	1.00	0.87	1.03	26.8
Approach			883	1.6	883	1.6	0.776	37.5	LOS C	19.1	135.1	0.91	0.83	0.94	24.6
East: Mason Road North															
4	L2	All MCs	266	1.9	266	1.9	0.338	25.9	LOS B	8.6	61.2	0.71	0.77	0.71	32.7
5	T1	All MCs	59	1.7	59	1.7	0.170	37.8	LOS C	2.5	17.5	0.88	0.67	0.88	37.1
6	R2	All MCs	271	1.1	271	1.1	* 0.774	50.9	LOS D	13.5	95.6	1.00	0.90	1.12	22.7
Approach			596	1.5	596	1.5	0.774	38.5	LOS C	13.5	95.6	0.86	0.82	0.91	28.2
North: Terry Road															
7	L2	All MCs	343	0.9	343	0.9	0.711	27.6	LOS B	20.2	142.7	0.92	0.84	0.92	39.7
8	T1	All MCs	414	1.2	414	1.2	0.711	43.6	LOS D	20.2	142.7	0.96	0.85	1.00	30.0
9	R2	All MCs	183	0.0	183	0.0	* 0.760	55.1	LOS D	9.4	65.5	1.00	0.89	1.15	32.6
Approach			941	0.8	941	0.8	0.760	40.0	LOS C	20.2	142.7	0.95	0.86	1.00	34.5
West: Settlement Drive															
10	L2	All MCs	21	0.0	21	0.0	0.266	34.2	LOS C	3.5	24.6	0.91	0.72	0.91	25.9
11	T1	All MCs	59	1.7	59	1.7	* 0.266	43.7	LOS D	3.5	24.6	0.91	0.72	0.91	35.9
12	R2	All MCs	78	2.6	78	2.6	0.252	45.2	LOS D	3.4	24.1	0.91	0.76	0.91	24.5
Approach			158	1.9	158	1.9	0.266	43.2	LOS D	3.5	24.6	0.91	0.74	0.91	29.7
All Vehicles			2578	1.3	2578	1.3	0.776	39.0	LOS C	20.2	142.7	0.91	0.83	0.95	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	206	1.9	206	1.9	0.368	17.3	LOS B	10.1	71.9	0.55	0.62	0.55	47.3
2	T1	All MCs	636	1.7	636	1.7	0.368	10.3	LOS A	10.5	74.3	0.54	0.52	0.54	43.9
3	R2	All MCs	183	1.6	183	1.6	* 0.554	46.9	LOS D	8.3	59.3	0.96	0.81	0.96	33.2
Approach			1025	1.8	1025	1.8	0.554	18.2	LOS B	10.5	74.3	0.62	0.59	0.62	41.3
East: Mason Road South															
4	L2	All MCs	312	1.9	312	1.9	0.396	22.1	LOS B	9.3	66.0	0.73	0.77	0.73	42.7
5	T1	All MCs	155	1.9	155	1.9	0.298	31.3	LOS C	6.0	42.9	0.84	0.68	0.84	39.7
Approach			467	1.9	467	1.9	0.396	25.1	LOS B	9.3	66.0	0.77	0.74	0.77	41.6
North: Terry Road															
7	L2	All MCs	147	2.0	147	2.0	* 0.547	30.8	LOS C	13.3	94.8	0.79	0.73	0.79	35.9
8	T1	All MCs	611	1.6	611	1.6	0.547	17.3	LOS B	13.3	94.8	0.66	0.59	0.66	42.0
Approach			758	1.7	758	1.7	0.547	19.9	LOS B	13.3	94.8	0.68	0.62	0.68	40.7
West: Gardiner Drive															
10	L2	All MCs	246	1.2	246	1.2	* 0.534	41.0	LOS C	10.5	74.4	0.92	0.82	0.92	25.8
11	T1	All MCs	101	2.0	101	2.0	0.194	30.3	LOS C	3.8	27.1	0.81	0.64	0.81	40.1
Approach			347	1.4	347	1.4	0.534	37.9	LOS C	10.5	74.4	0.89	0.77	0.89	30.7
All Vehicles			2597	1.7	2597	1.7	0.554	22.6	LOS B	13.3	94.8	0.70	0.65	0.70	39.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_PM)]

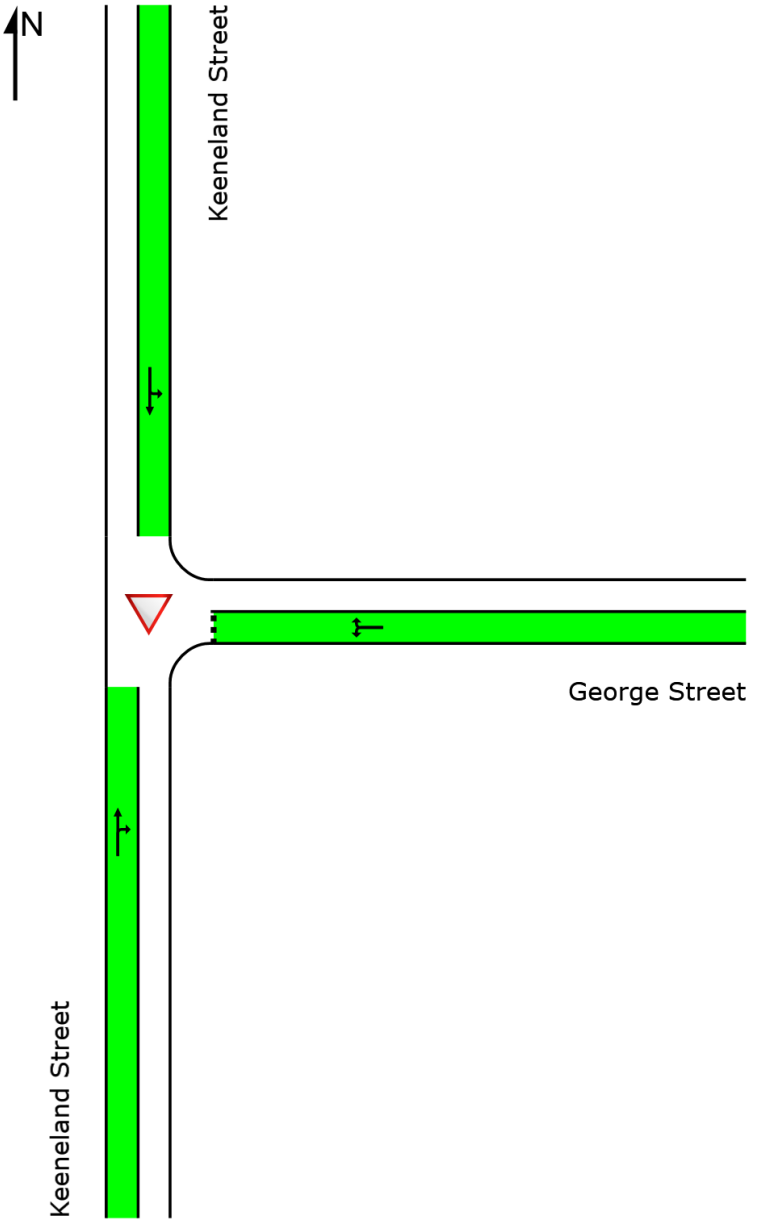
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	East	North	
Queue Storage Ratio (%ile)	0.04	0.01	0.00	0.04

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 3: 2028 Project Opening_PM)]

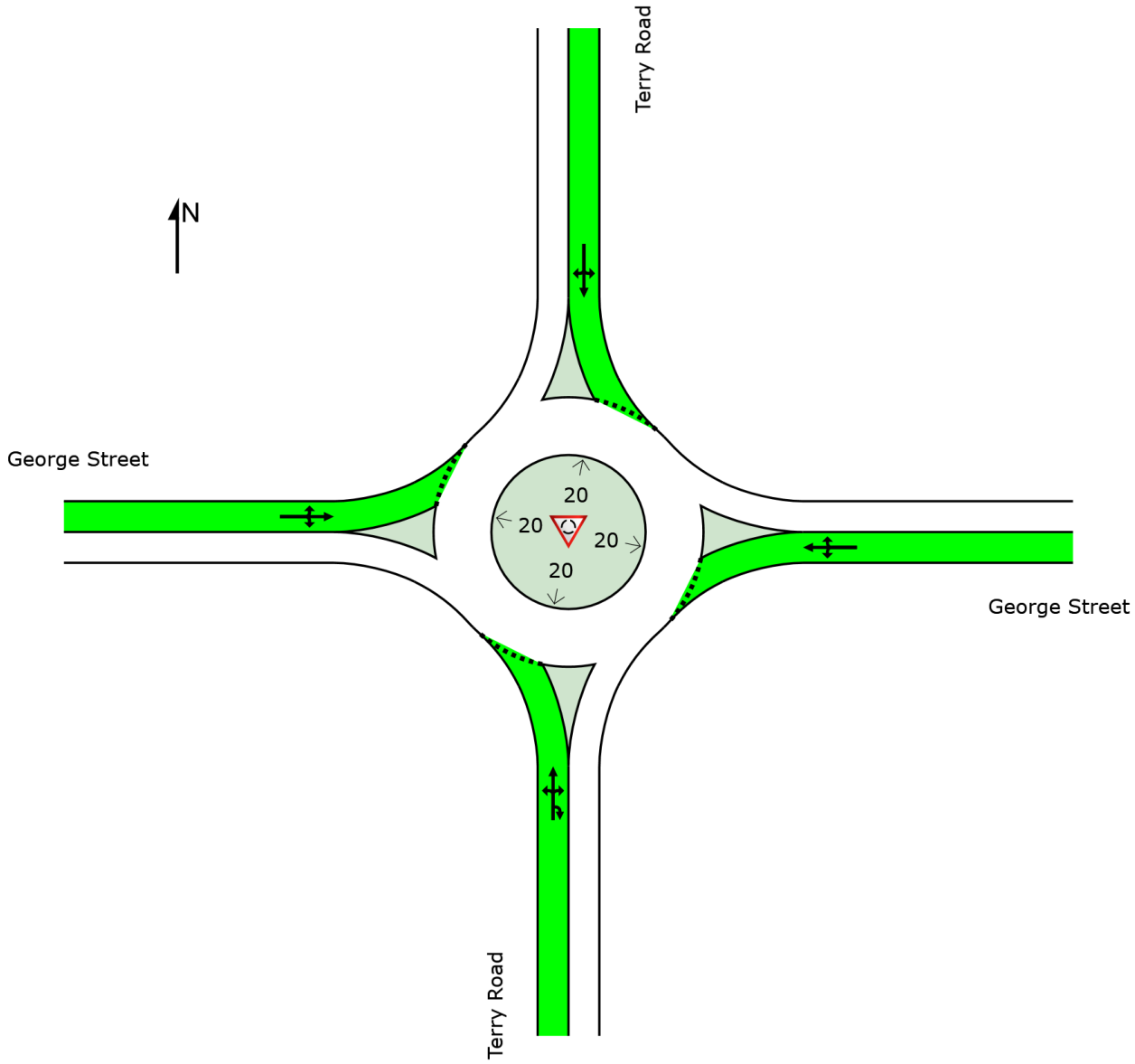
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.14	0.04	0.22	0.32	0.32

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 3: 2028 Project Opening_PM)]

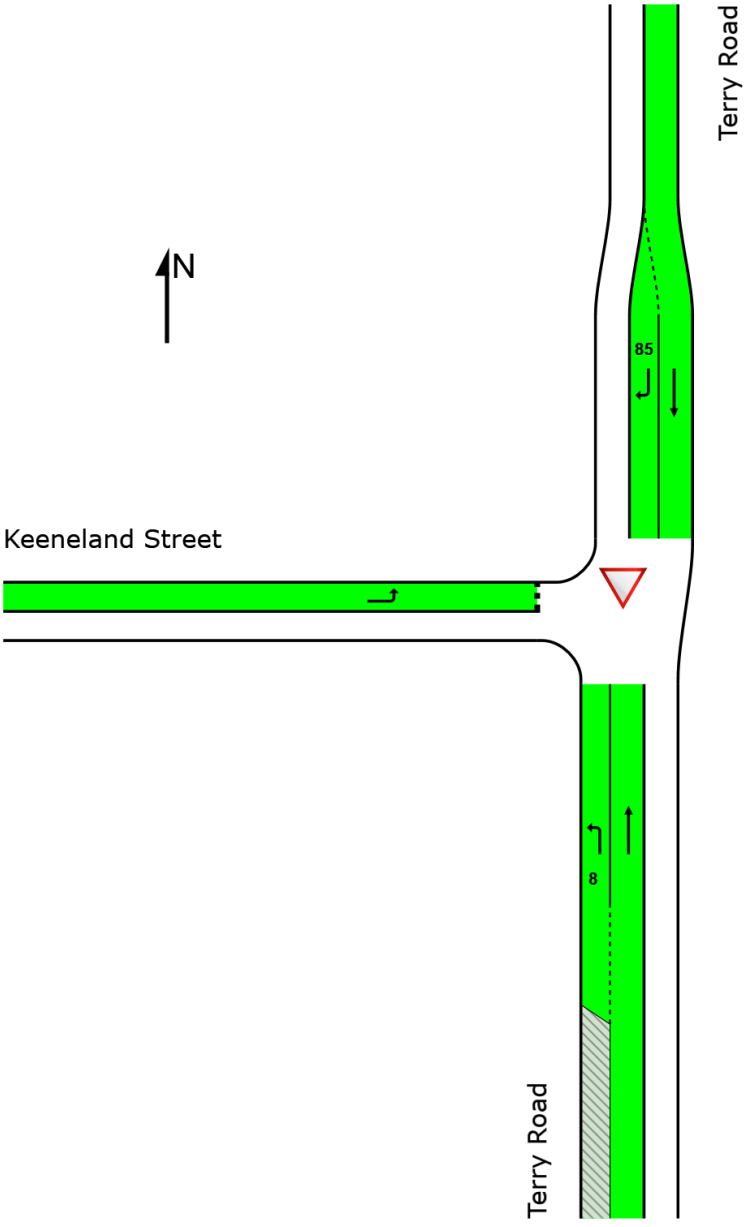
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
Queue Storage Ratio (%ile)	0.00	0.35	0.03	0.35

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_PM)]

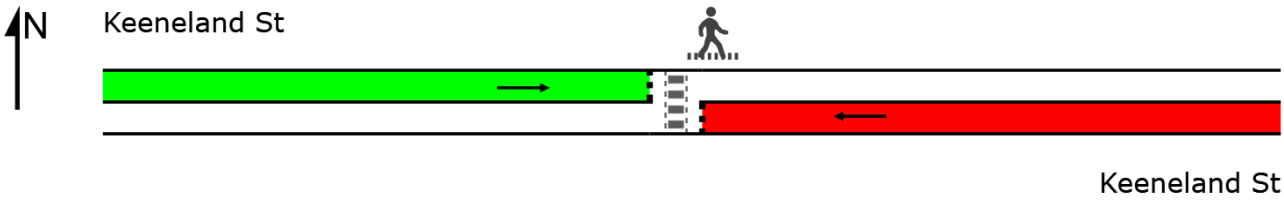
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

	Approaches		Intersection
	East	West	
Queue Storage Ratio (%ile)	1.13	0.00	1.13

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 3: 2028 Project Opening_PM)]

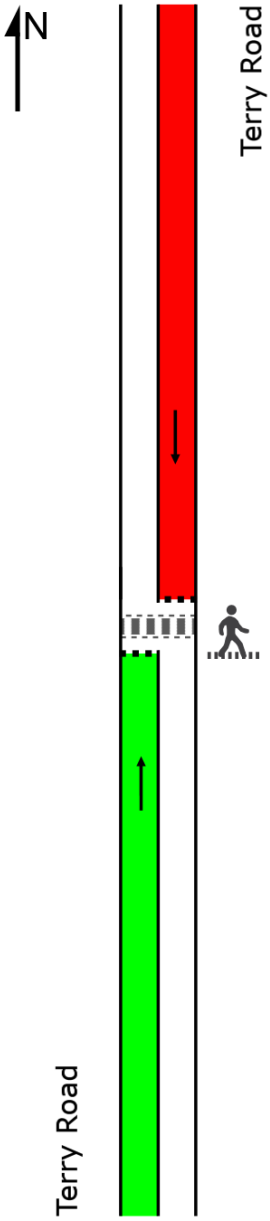
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

	Approaches		Intersection
	South	North	
Queue Storage Ratio (%ile)	0.09	2.49	2.49

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_PM)]

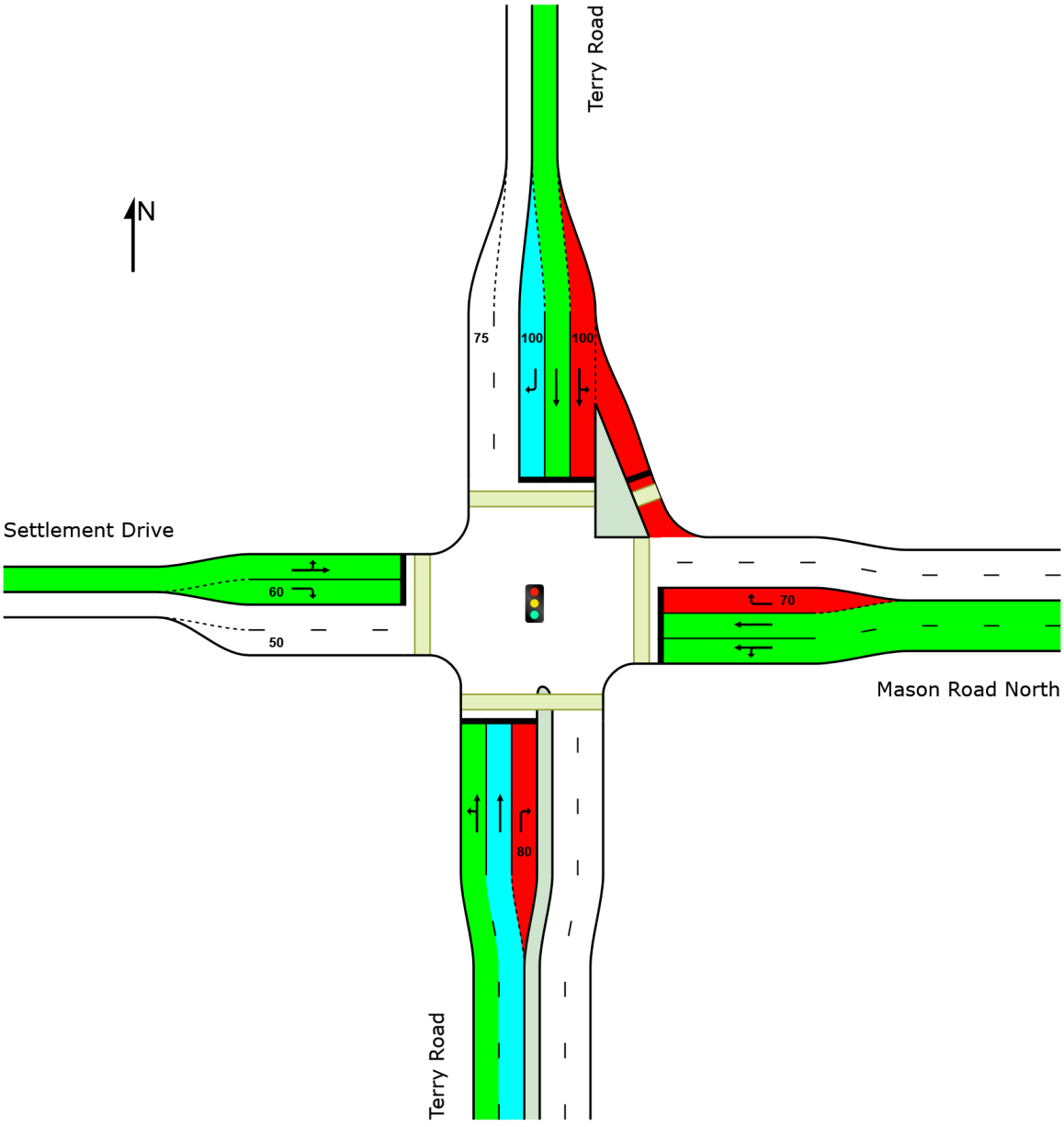
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.68	0.12	0.15	0.05	0.68

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 3: 2028 Project Opening_PM)]

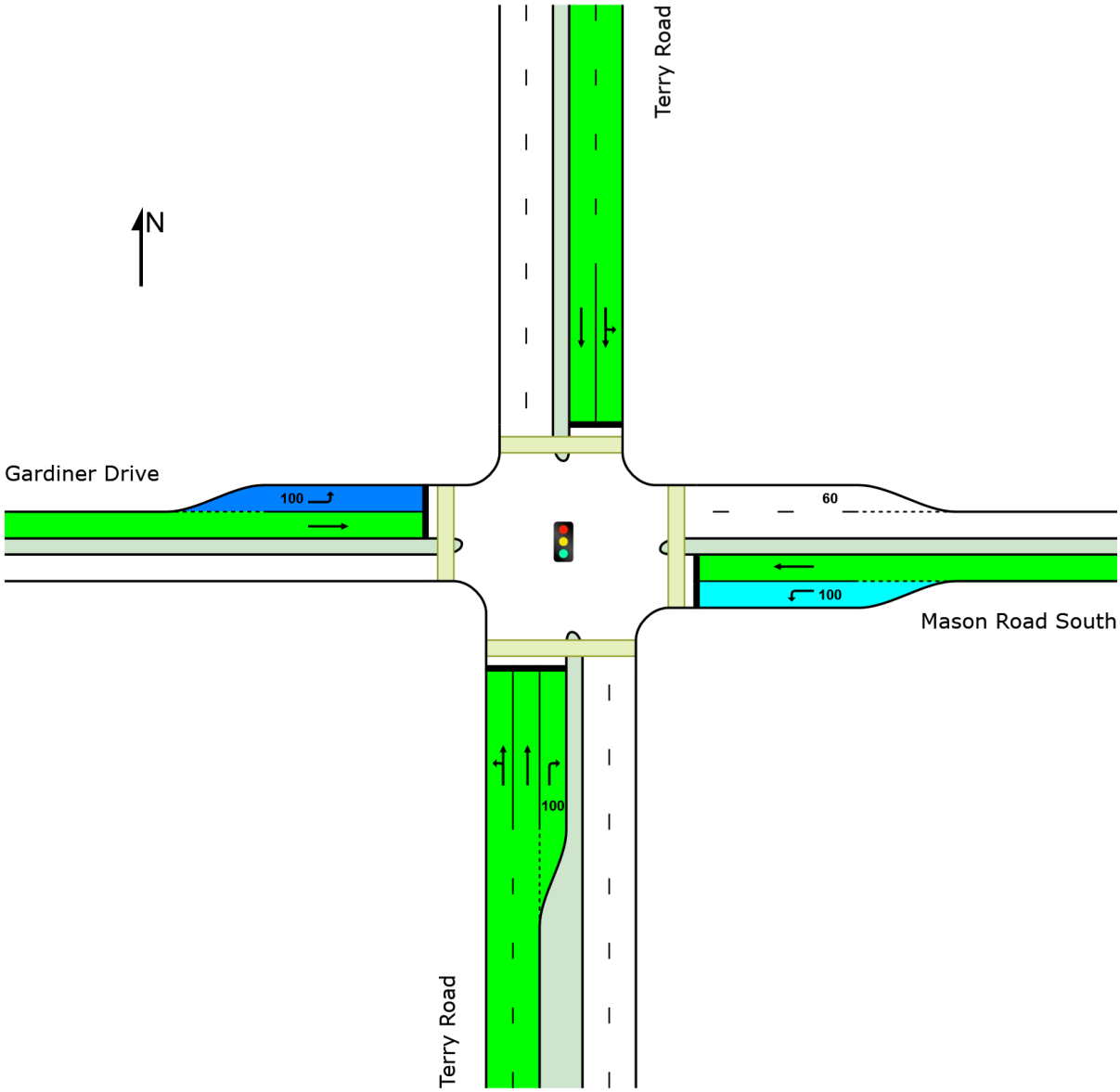
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc3: 2028 Project Opening Year_PM (Network Folder: Sc3: 2028 Project Opening Year)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

	Approaches				Intersection
	South	East	North	West	
Queue Storage Ratio (%ile)	0.15	0.09	0.47	0.05	0.47

Short Lanes are not included in determining Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

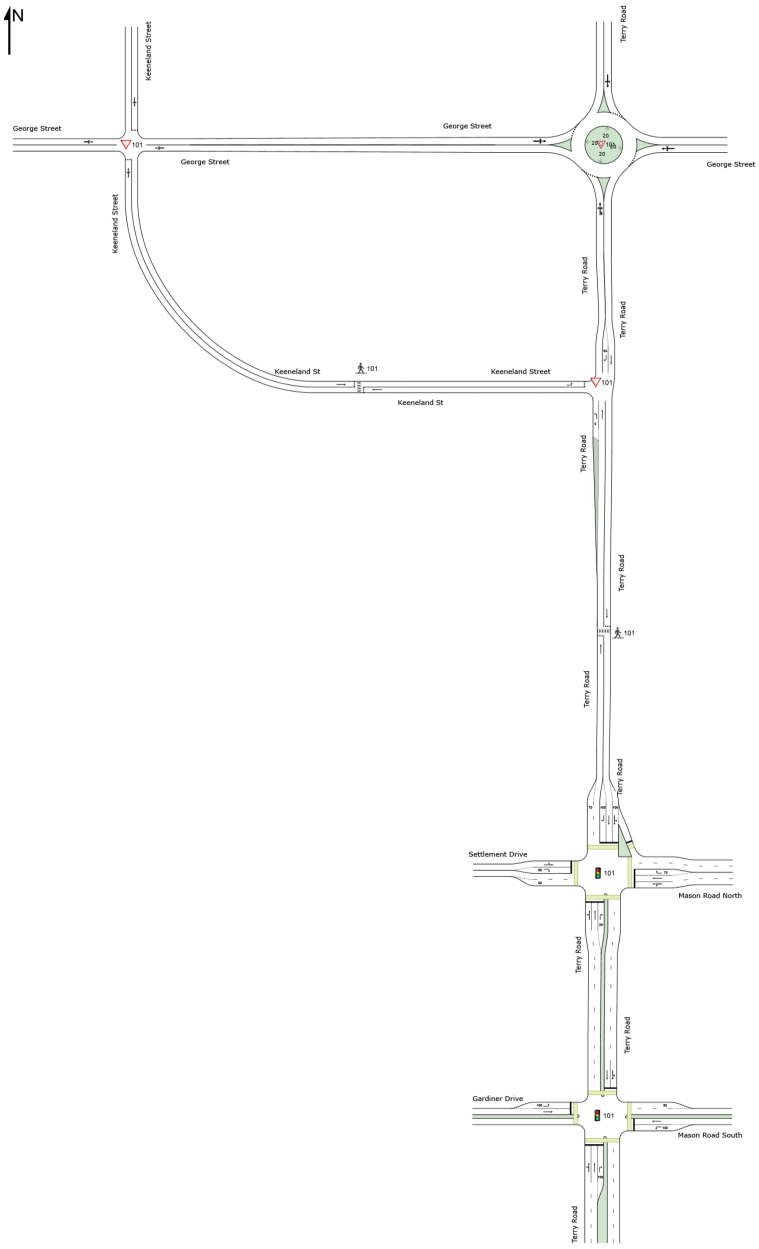
Appendix E4. Scenario 4 – 2036 Future Year Project Case

NETWORK LAYOUT

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Keeneland St - Wombat Crossing
101	NA	Terry Road - Wombat Crossing
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
1	L2	All MCs	37	0.0	37	0.0	0.269	5.8	LOS A	1.1	7.6	0.39	0.63	0.39	51.2
2	T1	All MCs	1	0.0	1	0.0	0.269	3.5	LOS A	1.1	7.6	0.39	0.63	0.39	43.3
3	R2	All MCs	195	0.0	195	0.0	0.269	7.6	LOS A	1.1	7.6	0.39	0.63	0.39	47.9
Approach			233	0.0	233	0.0	0.269	7.3	LOS A	1.1	7.6	0.39	0.63	0.39	48.7
East: George Street															
4	L2	All MCs	3	0.0	3	0.0	0.086	3.8	LOS A	0.4	2.6	0.20	0.27	0.20	44.6
5	T1	All MCs	80	0.0	80	0.0	0.086	0.3	LOS A	0.4	2.6	0.20	0.27	0.20	52.7
6	R2	All MCs	66	4.5	66	4.5	0.086	4.0	LOS A	0.4	2.6	0.20	0.27	0.20	40.9
Approach			149	2.0	149	2.0	0.086	2.0	NA	0.4	2.6	0.20	0.27	0.20	46.6
North: Keeneland Street															
7	L2	All MCs	62	3.2	62	3.2	0.045	3.8	LOS A	0.2	1.3	0.21	0.45	0.21	36.8
8	T1	All MCs	1	0.0	1	0.0	0.045	3.2	LOS A	0.2	1.3	0.21	0.45	0.21	36.8
9	R2	All MCs	1	0.0	1	0.0	0.045	7.0	LOS A	0.2	1.3	0.21	0.45	0.21	43.8
Approach			64	3.1	64	3.1	0.045	3.8	LOS A	0.2	1.3	0.21	0.45	0.21	37.0
West: George Street															
10	L2	All MCs	1	0.0	1	0.0	0.062	5.6	LOS A	0.0	0.1	0.00	0.01	0.00	57.4
11	T1	All MCs	117	0.9	117	0.9	0.062	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	59.8
12	R2	All MCs	1	0.0	1	0.0	0.062	5.5	LOS A	0.0	0.1	0.00	0.01	0.00	59.8
Approach			119	0.8	119	0.8	0.062	0.1	NA	0.0	0.1	0.00	0.01	0.00	59.7
All Vehicles			566	1.1	566	1.1	0.269	4.0	NA	1.1	7.6	0.24	0.38	0.24	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	42	2.4	42	2.4	0.396	4.9	LOS A	3.1	22.2	0.48	0.49	0.48	37.1
2	T1	All MCs	401	2.0	401	2.0	0.396	5.0	LOS A	3.1	22.2	0.48	0.49	0.48	49.9
3	R2	All MCs	24	0.0	24	0.0	0.396	9.6	LOS A	3.1	22.2	0.48	0.49	0.48	48.8
3u	U	All MCs	19	0.0	19	0.0	0.396	11.7	LOS A	3.1	22.2	0.48	0.49	0.48	37.1
Approach			486	1.9	486	1.9	0.396	5.5	LOS A	3.1	22.2	0.48	0.49	0.48	49.2
East: George Street															
4	L2	All MCs	206	1.5	206	1.5	0.830	42.0	LOS C	12.2	87.0	1.00	1.35	2.07	25.4
5	T1	All MCs	89	2.2	89	2.2	0.830	42.2	LOS C	12.2	87.0	1.00	1.35	2.07	25.4
6	R2	All MCs	46	2.2	46	2.2	0.830	46.9	LOS D	12.2	87.0	1.00	1.35	2.07	34.5
Approach			341	1.8	341	1.8	0.830	42.7	LOS D	12.2	87.0	1.00	1.35	2.07	27.1
North: Terry Road															
7	L2	All MCs	16	0.0	16	0.0	0.823	12.9	LOS A	13.9	98.6	1.00	0.92	1.38	48.3
8	T1	All MCs	781	1.9	781	1.9	0.823	13.2	LOS A	13.9	98.6	1.00	0.92	1.38	42.4
9	R2	All MCs	18	0.0	18	0.0	0.823	17.7	LOS B	13.9	98.6	1.00	0.92	1.38	42.4
Approach			815	1.8	815	1.8	0.823	13.3	LOS A	13.9	98.6	1.00	0.92	1.38	42.6
West: George Street															
10	L2	All MCs	49	2.1	49	2.1	0.429	7.3	LOS A	3.0	21.0	0.73	0.70	0.73	48.5
11	T1	All MCs	97	1.0	97	1.0	0.429	7.5	LOS A	3.0	21.0	0.73	0.70	0.73	48.9
12	R2	All MCs	237	0.8	237	0.8	0.429	12.1	LOS A	3.0	21.0	0.73	0.70	0.73	40.6
Approach			384	1.0	384	1.0	0.429	10.3	LOS A	3.0	21.0	0.73	0.70	0.73	45.0
All Vehicles			2026	1.7	2026	1.7	0.830	15.8	LOS B	13.9	98.6	0.82	0.85	1.16	40.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	202	0.0	202	0.0	0.110	2.3	LOS A	0.0	0.0	0.00	0.50	0.00	24.2
2	T1	All MCs	464	1.9	464	1.9	0.238	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			666	1.4	666	1.4	0.238	0.7	NA	0.0	0.0	0.00	0.15	0.00	32.4
North: Terry Road															
8	T1	All MCs	1101	1.7	1101	1.7	0.565	0.1	LOS A	16.0	113.8	0.00	0.00	0.00	40.9
9	R2	All MCs	142	0.0	142	0.0	0.209	9.5	LOS A	0.8	5.7	0.60	0.82	0.60	30.8
Approach			1243	1.5	1243	1.5	0.565	1.2	NA	16.0	113.8	0.07	0.09	0.07	39.4
West: Keeneland Street															
10	L2	All MCs	33	0.0	33	0.0	0.041	4.1	LOS A	0.1	1.0	0.46	0.59	0.46	14.4
Approach			33	0.0	33	0.0	0.041	4.1	LOS A	0.1	1.0	0.46	0.59	0.46	14.4
All Vehicles			1942	1.4	1942	1.4	0.565	1.1	NA	16.0	113.8	0.05	0.12	0.05	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Keeneland St															
8	T1	All MCs	345	0.0	345	0.0	0.231	1.9	LOS A	1.0	7.0	0.34	0.49	0.34	23.1
Approach			345	0.0	345	0.0	0.231	1.9	LOS A	1.0	7.0	0.34	0.49	0.34	23.1
West: Keeneland St															
2	T1	All MCs	33	0.0	33	0.0	0.022	4.7	LOS A	0.1	0.5	0.28	0.53	0.28	51.3
Approach			33	0.0	33	0.0	0.022	4.7	LOS A	0.1	0.5	0.28	0.53	0.28	51.3
All Vehicles			378	0.0	378	0.0	0.231	2.2	NA	1.0	7.0	0.34	0.50	0.34	37.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
2	T1	All MCs	656	1.4	656	1.4	0.483	5.3	LOS A	3.2	22.9	0.43	0.56	0.45	52.2
Approach			656	1.4	656	1.4	0.483	5.3	LOS A	3.2	22.9	0.43	0.56	0.45	52.2
North: Terry Road															
8	T1	All MCs	1101	1.7	1101	1.7	0.813	6.3	LOS A	3.5	24.9	0.82	0.77	1.26	9.6
Approach			1101	1.7	1101	1.7	0.813	6.3	LOS A	3.5	24.9	0.82	0.77	1.26	9.6
All Vehicles			1757	1.6	1757	1.6	0.813	5.9	NA	3.5	24.9	0.67	0.69	0.96	42.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	47	2.1	47	2.1	0.292	14.4	LOS A	5.3	37.9	0.53	0.50	0.53	42.2
2	T1	All MCs	675	1.5	675	1.5	0.648	17.8	LOS B	16.6	117.4	0.68	0.61	0.68	26.0
3	R2	All MCs	232	2.2	232	2.2	* 0.846	58.5	LOS E	12.3	87.7	1.00	0.95	1.20	24.9
Approach			954	1.7	954	1.7	0.846	27.5	LOS B	16.6	117.4	0.75	0.68	0.80	26.4
East: Mason Road North															
4	L2	All MCs	258	1.9	258	1.9	0.381	30.4	LOS C	9.2	65.7	0.78	0.79	0.78	30.3
5	T1	All MCs	95	2.1	95	2.1	0.274	38.7	LOS C	4.1	29.0	0.90	0.71	0.90	36.8
6	R2	All MCs	206	1.0	206	1.0	* 0.797	55.8	LOS D	10.7	75.4	1.00	0.92	1.19	21.5
Approach			559	1.6	559	1.6	0.797	41.2	LOS C	10.7	75.4	0.88	0.82	0.95	28.1
North: Terry Road															
7	L2	All MCs	305	1.6	305	1.6	0.829	30.9	LOS C	28.2	200.4	0.97	0.93	1.06	38.3
8	T1	All MCs	780	1.9	780	1.9	* 0.829	42.0	LOS C	28.2	200.4	0.98	0.95	1.09	30.2
9	R2	All MCs	68	1.5	68	1.5	0.618	59.5	LOS E	3.5	25.1	1.00	0.80	1.09	31.5
Approach			1153	1.8	1153	1.8	0.829	40.1	LOS C	28.2	200.4	0.98	0.94	1.08	32.6
West: Settlement Drive															
10	L2	All MCs	43	2.3	43	2.3	0.456	41.4	LOS C	6.2	44.1	0.95	0.77	0.95	24.9
11	T1	All MCs	93	2.2	93	2.2	* 0.456	45.0	LOS D	6.2	44.1	0.95	0.77	0.95	34.9
12	R2	All MCs	63	1.6	63	1.6	0.286	50.3	LOS D	2.9	20.6	0.95	0.75	0.95	23.0
Approach			199	2.0	199	2.0	0.456	45.9	LOS D	6.2	44.1	0.95	0.77	0.95	29.8
All Vehicles			2865	1.7	2865	1.7	0.846	36.5	LOS C	28.2	200.4	0.88	0.82	0.95	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North										
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road										
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive										
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_AM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	58	1.7	58	1.7	0.313	14.4	LOS A	8.1	57.2	0.46	0.45	0.46	50.7
2	T1	All MCs	733	1.6	733	1.6	0.313	7.6	LOS A	8.2	58.1	0.46	0.43	0.46	47.6
3	R2	All MCs	147	2.0	147	2.0	* 0.574	50.5	LOS D	7.0	49.6	0.98	0.80	0.98	32.1
Approach			938	1.7	938	1.7	0.574	14.8	LOS B	8.2	58.1	0.54	0.49	0.54	42.6
East: Mason Road South															
4	L2	All MCs	397	2.0	397	2.0	0.638	31.1	LOS C	14.6	104.1	0.90	0.86	0.90	38.6
5	T1	All MCs	116	1.7	116	1.7	0.273	35.2	LOS C	4.7	33.7	0.87	0.70	0.87	38.1
Approach			513	1.9	513	1.9	0.638	32.0	LOS C	14.6	104.1	0.89	0.82	0.89	38.5
North: Terry Road															
7	L2	All MCs	79	2.5	79	2.5	* 0.627	20.8	LOS B	16.0	113.8	0.65	0.61	0.65	42.7
8	T1	All MCs	1022	2.0	1022	2.0	0.627	10.6	LOS A	16.0	113.8	0.55	0.51	0.55	47.7
Approach			1101	2.0	1101	2.0	0.627	11.4	LOS A	16.0	113.8	0.56	0.51	0.56	47.3
West: Gardiner Drive															
10	L2	All MCs	221	1.8	221	1.8	* 0.604	45.7	LOS D	10.1	71.5	0.96	0.82	0.96	24.2
11	T1	All MCs	79	2.5	79	2.5	0.187	34.4	LOS C	3.2	22.6	0.85	0.67	0.85	38.4
Approach			300	2.0	300	2.0	0.604	42.7	LOS D	10.1	71.5	0.93	0.78	0.93	28.6
All Vehicles			2852	1.9	2852	1.9	0.638	19.5	LOS B	16.0	113.8	0.65	0.59	0.65	41.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

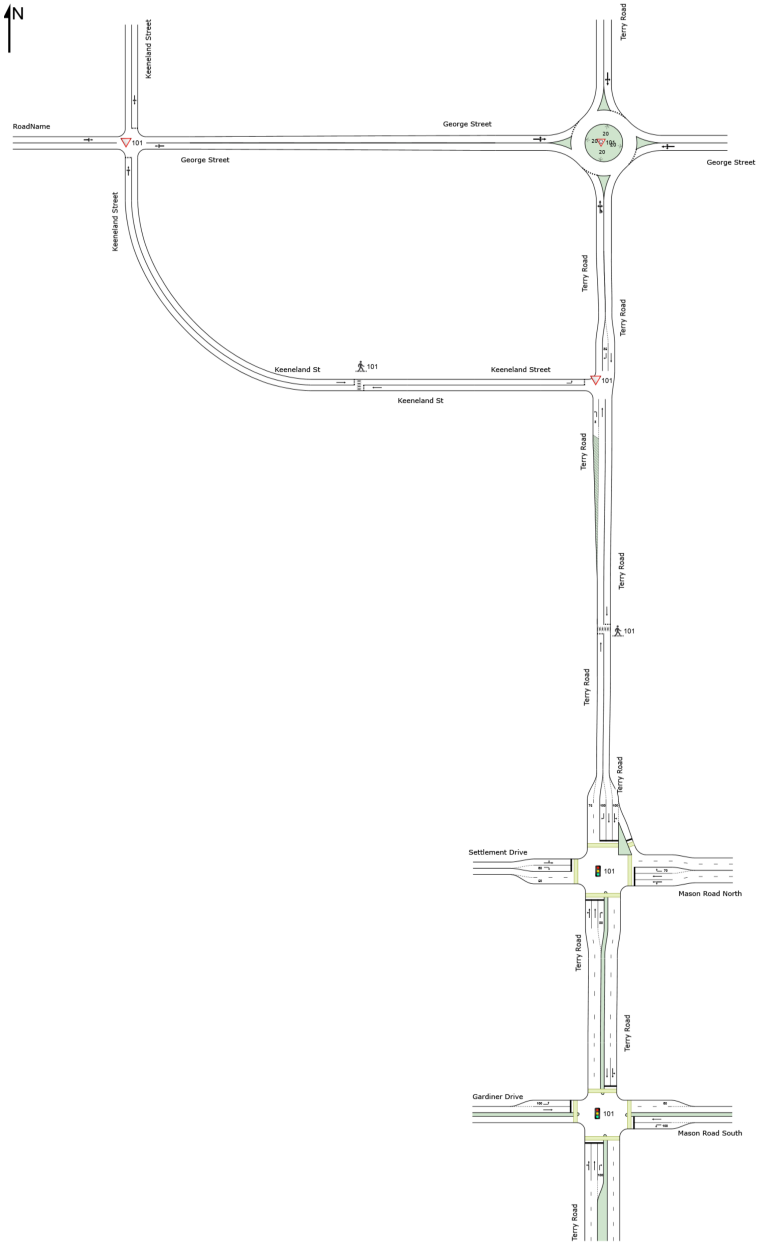
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

NETWORK LAYOUT

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	George St/Keeneland St - Priority Controlled
101	NA	George St/Terry Rd - Roundabout
101	NA	Terry Rd/Keeneland St - Priority Controlled
101	NA	Keeneland St - Wombat Crossing
101	NA	Terry Road - Wombat Crossing
101	NA	Mason Rd (N)/Settlement Dr/Terry Rd - Signal
101	NA	Mason Rd (S)/Gardiner Dr/Terry Rd - Signal

MOVEMENT SUMMARY

Site: 101 [George St/Keeneland St - Priority Controlled (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Keeneland Street															
1	L2	All MCs	73	0.0	73	0.0	0.401	6.1	LOS A	2.1	14.5	0.42	0.64	0.44	51.3
2	T1	All MCs	1	0.0	1	0.0	0.401	3.8	LOS A	2.1	14.5	0.42	0.64	0.44	43.3
3	R2	All MCs	291	0.0	291	0.0	0.401	7.9	LOS A	2.1	14.5	0.42	0.64	0.44	48.0
Approach			365	0.0	365	0.0	0.401	7.6	LOS A	2.1	14.5	0.42	0.64	0.44	49.0
East: George Street															
4	L2	All MCs	10	0.0	10	0.0	0.091	3.7	LOS A	0.4	2.6	0.17	0.25	0.17	44.9
5	T1	All MCs	87	0.0	87	0.0	0.091	0.2	LOS A	0.4	2.6	0.17	0.25	0.17	52.9
6	R2	All MCs	63	4.8	63	4.8	0.091	3.9	LOS A	0.4	2.6	0.17	0.25	0.17	41.0
Approach			160	1.9	160	1.9	0.091	1.9	NA	0.4	2.6	0.17	0.25	0.17	47.1
North: Keeneland Street															
7	L2	All MCs	46	2.2	46	2.2	0.033	3.7	LOS A	0.1	0.9	0.19	0.44	0.19	36.9
8	T1	All MCs	1	0.0	1	0.0	0.033	3.1	LOS A	0.1	0.9	0.19	0.44	0.19	36.9
9	R2	All MCs	1	0.0	1	0.0	0.033	7.1	LOS A	0.1	0.9	0.19	0.44	0.19	43.9
Approach			48	2.1	48	2.1	0.033	3.8	LOS A	0.1	0.9	0.19	0.44	0.19	37.2
West: RoadName															
10	L2	All MCs	1	0.0	1	0.0	0.051	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.4
11	T1	All MCs	97	1.0	97	1.0	0.051	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.7
12	R2	All MCs	1	0.0	1	0.0	0.051	5.5	LOS A	0.0	0.1	0.01	0.01	0.01	59.7
Approach			99	1.0	99	1.0	0.051	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.7
All Vehicles			672	0.7	672	0.7	0.401	4.8	NA	2.1	14.5	0.28	0.44	0.30	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [George St/Terry Rd - Roundabout (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	86	1.2	86	1.2	0.542	4.9	LOS A	5.0	35.5	0.53	0.51	0.53	36.1
2	T1	All MCs	476	1.9	476	1.9	0.542	5.1	LOS A	5.0	35.5	0.53	0.51	0.53	49.3
3	R2	All MCs	86	1.2	86	1.2	0.542	9.8	LOS A	5.0	35.5	0.53	0.51	0.53	48.2
3u	U	All MCs	47	0.0	47	0.0	0.542	11.8	LOS A	5.0	35.5	0.53	0.51	0.53	36.1
Approach			694	1.6	694	1.6	0.542	6.1	LOS A	5.0	35.5	0.53	0.51	0.53	48.1
East: George Street															
4	L2	All MCs	190	1.6	190	1.6	0.443	9.8	LOS A	3.4	24.3	0.87	0.78	0.93	44.6
5	T1	All MCs	51	2.0	51	2.0	0.443	10.0	LOS A	3.4	24.3	0.87	0.78	0.93	44.6
6	R2	All MCs	68	1.5	68	1.5	0.443	14.6	LOS B	3.4	24.3	0.87	0.78	0.93	49.3
Approach			309	1.6	309	1.6	0.443	10.9	LOS A	3.4	24.3	0.87	0.78	0.93	46.1
North: Terry Road															
7	L2	All MCs	33	3.0	33	3.0	0.610	9.7	LOS A	6.0	43.0	0.86	0.78	1.02	50.4
8	T1	All MCs	473	1.9	473	1.9	0.610	9.8	LOS A	6.0	43.0	0.86	0.78	1.02	45.7
9	R2	All MCs	22	0.0	22	0.0	0.610	14.3	LOS A	6.0	43.0	0.86	0.78	1.02	45.7
Approach			528	1.9	528	1.9	0.610	10.0	LOS A	6.0	43.0	0.86	0.78	1.02	46.2
West: George Street															
10	L2	All MCs	78	0.0	78	0.0	0.580	11.7	LOS A	5.5	38.7	0.90	0.86	1.12	46.2
11	T1	All MCs	185	1.1	185	1.1	0.580	12.0	LOS A	5.5	38.7	0.90	0.86	1.12	46.5
12	R2	All MCs	173	0.0	173	0.0	0.580	16.5	LOS B	5.5	38.7	0.90	0.86	1.12	36.7
Approach			436	0.5	436	0.5	0.580	13.7	LOS A	5.5	38.7	0.90	0.86	1.12	43.9
All Vehicles			1967	1.4	1967	1.4	0.610	9.6	LOS A	6.0	43.0	0.75	0.70	0.85	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Rd/Keeneland St - Priority Controlled (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	144	0.0	144	0.0	0.079	2.2	LOS A	0.0	0.0	0.00	0.49	0.00	24.1
2	T1	All MCs	687	1.7	687	1.7	0.353	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	42.0
Approach			831	1.4	831	1.4	0.353	0.4	NA	0.0	0.0	0.00	0.09	0.00	36.3
North: Terry Road															
8	T1	All MCs	769	1.6	769	1.6	0.394	0.1	LOS A	1.7	12.4	0.00	0.00	0.00	43.1
9	R2	All MCs	113	0.0	113	0.0	0.217	11.5	LOS A	0.8	5.8	0.69	0.88	0.73	27.4
Approach			882	1.4	882	1.4	0.394	1.5	NA	1.7	12.4	0.09	0.11	0.09	40.2
West: Keeneland Street															
10	L2	All MCs	8	0.0	8	0.0	0.014	6.0	LOS A	0.0	0.3	0.57	0.66	0.57	11.2
Approach			8	0.0	8	0.0	0.014	6.0	LOS A	0.0	0.3	0.57	0.66	0.57	11.2
All Vehicles			1721	1.4	1721	1.4	0.394	1.0	NA	1.7	12.4	0.05	0.10	0.05	39.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Keeneland St - Wombat Crossing (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Keeneland St															
8	T1	All MCs	257	0.0	257	0.0	0.172	1.9	LOS A	0.7	4.9	0.32	0.49	0.32	23.5
Approach			257	0.0	257	0.0	0.172	1.9	LOS A	0.7	4.9	0.32	0.49	0.32	23.5
West: Keeneland St															
2	T1	All MCs	8	0.0	8	0.0	0.005	4.7	LOS A	0.0	0.1	0.28	0.51	0.28	51.3
Approach			8	0.0	8	0.0	0.005	4.7	LOS A	0.0	0.1	0.28	0.51	0.28	51.3
All Vehicles			265	0.0	265	0.0	0.172	2.0	NA	0.7	4.9	0.32	0.49	0.32	30.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Terry Road - Wombat Crossing (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
2	T1	All MCs	699	1.7	699	1.7	0.516	5.5	LOS A	3.9	28.0	0.45	0.57	0.49	52.1
Approach			699	1.7	699	1.7	0.516	5.5	LOS A	3.9	28.0	0.45	0.57	0.49	52.1
North: Terry Road															
8	T1	All MCs	769	1.6	769	1.6	0.567	2.9	LOS A	3.5	24.9	0.49	0.54	0.57	17.8
Approach			769	1.6	769	1.6	0.567	2.9	LOS A	3.5	24.9	0.49	0.54	0.57	17.8
All Vehicles			1468	1.6	1468	1.6	0.567	4.1	NA	3.9	28.0	0.47	0.56	0.53	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (N)/Settlement Dr/Terry Rd - Signal (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	160	1.9	160	1.9	0.330	14.4	LOS A	4.9	35.2	0.64	0.73	0.64	39.8
2	T1	All MCs	551	1.8	551	1.8	* 0.732	32.0	LOS C	20.6	146.3	0.90	0.82	0.91	18.4
3	R2	All MCs	275	1.8	275	1.8	0.750	53.0	LOS D	13.6	96.9	1.00	0.89	1.07	26.4
Approach			986	1.8	986	1.8	0.750	35.0	LOS C	20.6	146.3	0.88	0.82	0.91	25.4
East: Mason Road North															
4	L2	All MCs	275	1.8	275	1.8	* 0.417	21.6	LOS B	7.5	53.5	0.80	0.79	0.80	35.4
5	T1	All MCs	65	1.5	65	1.5	0.187	38.0	LOS C	2.7	19.4	0.89	0.68	0.89	37.0
6	R2	All MCs	254	1.2	254	1.2	0.690	47.2	LOS D	12.0	84.6	0.98	0.85	1.02	23.8
Approach			594	1.5	594	1.5	0.690	34.3	LOS C	12.0	84.6	0.89	0.80	0.90	30.0
North: Terry Road															
7	L2	All MCs	271	1.1	271	1.1	0.755	28.8	LOS C	20.5	144.9	0.96	0.88	0.99	38.2
8	T1	All MCs	489	1.6	489	1.6	0.755	45.4	LOS D	20.5	144.9	0.98	0.89	1.05	29.4
9	R2	All MCs	59	1.7	59	1.7	* 0.538	58.7	LOS E	3.0	21.6	1.00	0.77	1.03	31.7
Approach			818	1.5	818	1.5	0.755	40.9	LOS C	20.5	144.9	0.97	0.88	1.03	33.0
West: Settlement Drive															
10	L2	All MCs	29	3.5	29	3.5	0.291	40.4	LOS C	3.8	27.2	0.92	0.74	0.92	25.4
11	T1	All MCs	58	1.7	58	1.7	0.291	43.7	LOS D	3.8	27.2	0.92	0.74	0.92	35.4
12	R2	All MCs	87	2.3	87	2.3	* 0.397	31.8	LOS C	2.8	20.0	0.96	0.76	0.96	29.7
Approach			174	2.3	174	2.3	0.397	37.2	LOS C	3.8	27.2	0.94	0.75	0.94	31.6
All Vehicles			2572	1.7	2572	1.7	0.755	36.9	LOS C	20.6	146.3	0.92	0.83	0.95	29.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Mason Road North											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Terry Road											
P3	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
P3B	Slip/ Bypass	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Settlement Drive											
P4	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		263	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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.

MOVEMENT SUMMARY

Site: 101 [Mason Rd (S)/Gardiner Dr/Terry Rd - Signal (Site Folder: Sc 4: 2036 Project Future Case (Post-Carmel)_PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Sc4: 2036 Project Opening Year_PM (Network Folder: Sc4: 2036 Project Case (Post-Carmel))]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 100 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Terry Road															
1	L2	All MCs	243	2.1	243	2.1	0.430	14.9	LOS B	12.1	86.0	0.51	0.59	0.51	48.9
2	T1	All MCs	841	2.0	841	2.0	0.430	8.0	LOS A	12.4	88.0	0.50	0.50	0.50	46.4
3	R2	All MCs	206	1.9	206	1.9	* 0.562	45.3	LOS D	9.3	65.9	0.95	0.81	0.95	33.7
Approach			1290	2.0	1290	2.0	0.562	15.3	LOS B	12.4	88.0	0.58	0.57	0.58	43.2
East: Mason Road South															
4	L2	All MCs	360	1.9	360	1.9	0.504	25.3	LOS B	11.9	84.8	0.81	0.80	0.81	41.1
5	T1	All MCs	174	1.7	174	1.7	* 0.430	37.5	LOS C	7.5	53.2	0.92	0.75	0.92	37.2
Approach			534	1.9	534	1.9	0.504	29.3	LOS C	11.9	84.8	0.84	0.78	0.84	39.7
North: Terry Road															
7	L2	All MCs	183	1.6	183	1.6	* 0.553	26.2	LOS B	13.6	96.8	0.73	0.71	0.73	38.1
8	T1	All MCs	667	1.7	667	1.7	0.553	14.9	LOS B	13.6	96.8	0.62	0.57	0.62	43.7
Approach			850	1.6	850	1.6	0.553	17.3	LOS B	13.6	96.8	0.65	0.60	0.65	42.4
West: Gardiner Drive															
10	L2	All MCs	147	2.0	147	2.0	0.423	44.8	LOS D	6.5	46.0	0.93	0.79	0.93	24.5
11	T1	All MCs	115	2.6	115	2.6	0.286	36.2	LOS C	4.8	34.2	0.88	0.70	0.88	37.7
Approach			262	2.3	262	2.3	0.423	41.0	LOS C	6.5	46.0	0.91	0.75	0.91	31.1
All Vehicles			2936	1.9	2936	1.9	0.562	20.7	LOS B	13.6	96.8	0.68	0.63	0.68	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* 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 ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Terry Road											
P1	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Mason Road South											
P2	Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

North: Terry Road										
P3 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Gardiner Drive										
P4 Full	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	211	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

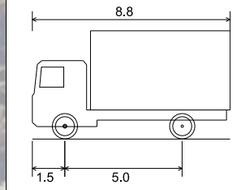
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix G. Swept Path Analysis

ENTRY

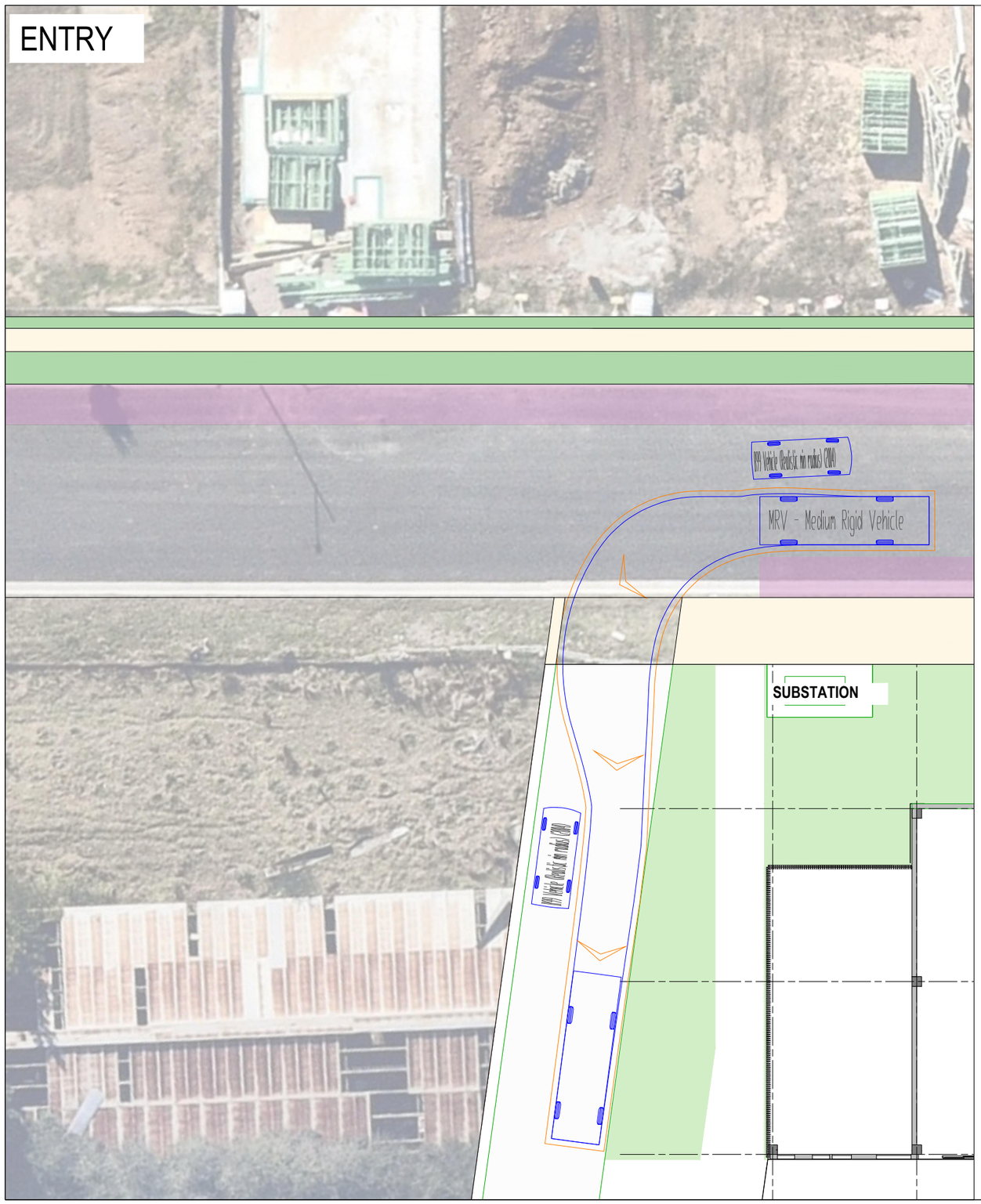
EXIT

MRV - Medium Rigid Vehicle (AS/NZS2890.2:2002)



VEHICLE ENVELOPE
300mm CLEARANCE
500mm CLEARANCE

Overall Length	8.800m
Overall Width	2.500m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m



GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by Architectus, received 2025.07.18
Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED	Kedar Ballurkar
PAPER SIZE	A3 OR A1
APPROVED BY	K. Ballurkar
DATE	31.07.2025
SCALE	1:250
	0 2.5 5

CLIENT
School Infrastructure

PROJECT
P2269
50-52 Terry Rd, Box Hill NSW 2765

DOCUMENT INFORMATION
Public School and Preschool Car Park
Access Swept Path (8.8m Medium Rigid Vehicle)

FILE NAME	SHEET
AG2269-09-v04.dwg	AG01

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

ENTRY

EXIT

PRIMARY SCHOOL GROUND

MRV - Medium Rigid Vehicle (AS/NZS2890.2:2002)

8.8

VEHICLE ENVELOPE
300mm CLEARANCE
500mm CLEARANCE

Overall Length	8.800m
Overall Width	2.500m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

1.5 5.0

MRV - Medium Rigid Vehicle

MRV - Medium Rigid Vehicle

N

GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by Architectus, received 2025.07.18
Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED: Kedar Ballurkar	PAPER SIZE: A3 OR A1
APPROVED BY: K. Ballurkar	DATE: 31.07.2025
SCALE: 1:400	0 4 8

CLIENT: School Infrastructure

PROJECT: P2269
50-52 Terry Rd, Box Hill NSW 2765

DOCUMENT INFORMATION
Public School and Preschool Car Park
Waste Truck Swept Path (8.8m Medium Rigid Vehicle)

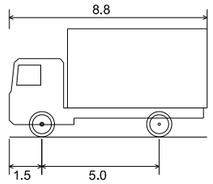
FILE NAME	SHEET
AG2269-09-v04.dwg	AG02

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

ENTRY

EXIT

MRV - Medium Rigid Vehicle (AS/NZS2890.2:2002)



VEHICLE ENVELOPE
300mm CLEARANCE
500mm CLEARANCE

Overall Length	8.800m
Overall Width	2.500m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

J K L

MRV - Medium Rigid Vehicle

SUBSTATION

SUBSTATION

GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by Architectus, received 2025.07.18
Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED	Kedar Ballurkar
PAPER SIZE	A3 OR A1
APPROVED BY	K. Ballurkar
DATE	31.07.2025
SCALE	1:250
	0 2.5 5

CLIENT
School Infrastructure

PROJECT
P2269
50-52 Terry Rd, Box Hill NSW 2765

DOCUMENT INFORMATION
High School Loading Dock
Waste Truck Swept Path (8.8m Medium Rigid Vehicle)

FILE NAME	SHEET
AG2269-09-v04.dwg	AG03

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
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