

Traffic Impact Assessment Report

710 Mount Ridley Road, Mickleham

Project Number 250270

Final 3 Report 8/05/2026

Client Glossop Town Planning

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Document control

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Executive summary

Glossop Town Planning engaged Trafficworks to undertake a traffic impact assessment (TIA) for the proposed primary and secondary school at **710 Mount Ridley Road, Mickleham**.

The table below summarises the site and the proposed development, and our conclusions and recommendations.

Address	710 Mount Ridley Road, Mickleham
Zoning	Green Wedge Zone (GWZ)
Proposed development	Primary and Secondary School (400 students)
Road network	— Mount Ridley Road — Mickleham Road
Traffic generation	The proposed school is anticipated to generate approximately: — 493 vehicles per hour (vph) during the AM peak — 413 vph during the PM peak
Car parking	Planning scheme car parking requirement of 50 car parking spaces for staff
Conclusion	We conclude there are no traffic engineering reasons that would prevent the development from proceeding, subject to implementation of our recommendations. — the proposed school (400 students, arriving / departing by car) is likely to generate morning and afternoon peak traffic volumes of 493 and 413 vph, respectively — the Mickleham Road / Mount Ridley Road intersection (including a proposed additional right turn lane on the west approach) is anticipated to operate below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions accommodating up to 400 students — the Mount Ridley Road / school access intersection is anticipated to operate well below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions, accommodating up to 400 students — the Mickleham Road / Mount Ridley Road intersection is anticipated to operate below theoretical capacity in the year 2037 (i.e. 10 years post development) — although the overall intersection is operating above the practical capacity threshold (DOS > 1.0), the school related traffic is not a contributing factor to the capacity constraint

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- the proposed school has a planning scheme car parking requirement of 50 car parking spaces for staff
 - the stopping sight distance (SSD) of 105 m is applicable to Mount Ridley Road along the subject site frontage
 - the proposed school has a planning scheme bicycle parking requirement of 3 secured spaces for staff and 50 spaces for students.
-

Recommendations

It is recommended that:

- Mount Ridley Road is widened and sealed along the site frontage of the proposed school up to the access point
 - an additional right lane is provided at the Mickleham Road / Mount Ridley Road intersection to accommodate the traffic from the proposed school
 - adequate drop-off / pick-up and car parking areas for students are provided within the site, in addition to the 50 car parking spaces for staff
 - the minimum stopping sight distance of 105 m is applicable to Mount Ridley Road along the subject site frontage
 - 3 secured bicycle spaces for staff and 50 bicycle spaces for students are provided.
-

Referenced documents

References used in the preparation of this report include the following:

- Hume City Council Planning Scheme:
 - Clause 52.06: Car parking
 - Clause 52.54: Bicycle facilities
- Transport for NSW (TfNSW) Guide to Transport Impact Assessment, November 2024
- Austroads Guide to Traffic Management
 - Part 3: Traffic study and analysis methods

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1 Introduction

Glossop Town Planning engaged Trafficworks to undertake a traffic impact assessment (TIA) for the proposed primary and secondary school at **710 Mount Ridley Road, Mickleham.**

For the detail about:

- existing site conditions – see section 2
- description of the proposed development – see section 3
- traffic impact of the proposed development – see section 4
- car parking assessment of the proposed development – see section 5
- our conclusions and recommendations – see section 8.

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2 Existing conditions

2.1 Subject site

The site is:

- located at 710 Mount Ridley Road, in Mickleham
- located west of the Lindum Vale Precinct Structure Plan (PSP)
- within a Green Wedge Zone (GWZ)
- currently used for private agricultural land.
- located west of the proposed Outer Ring Road corridor.

Vehicular access to the site is currently available from the south via Mount Ridley Road.

Figure 1 shows the location of the site and surrounding

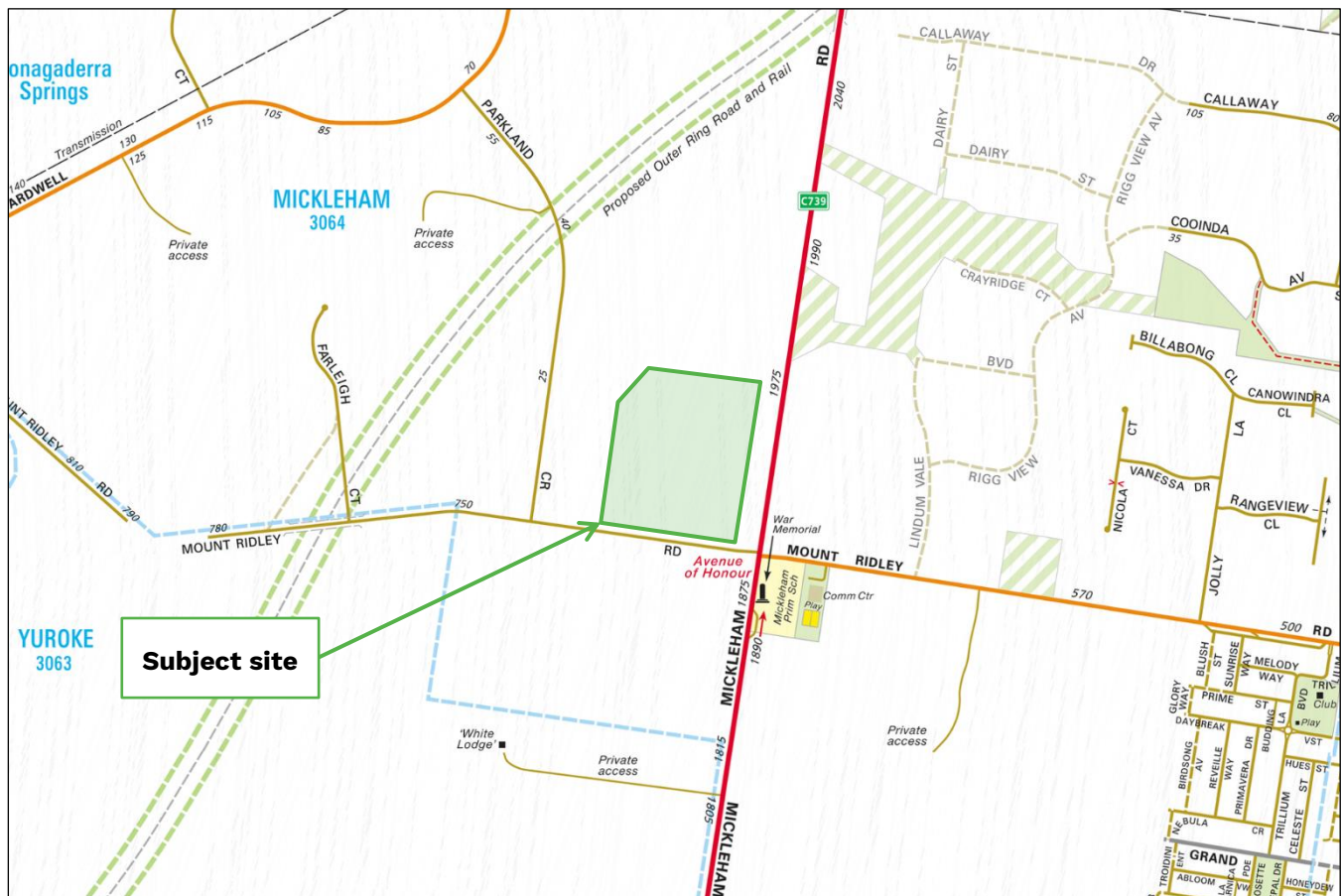


Figure 1: Location plan (reproduced with permission from Melway Publishing Pty Ltd)

Figure 2 shows the zoning for the site and surrounding area.

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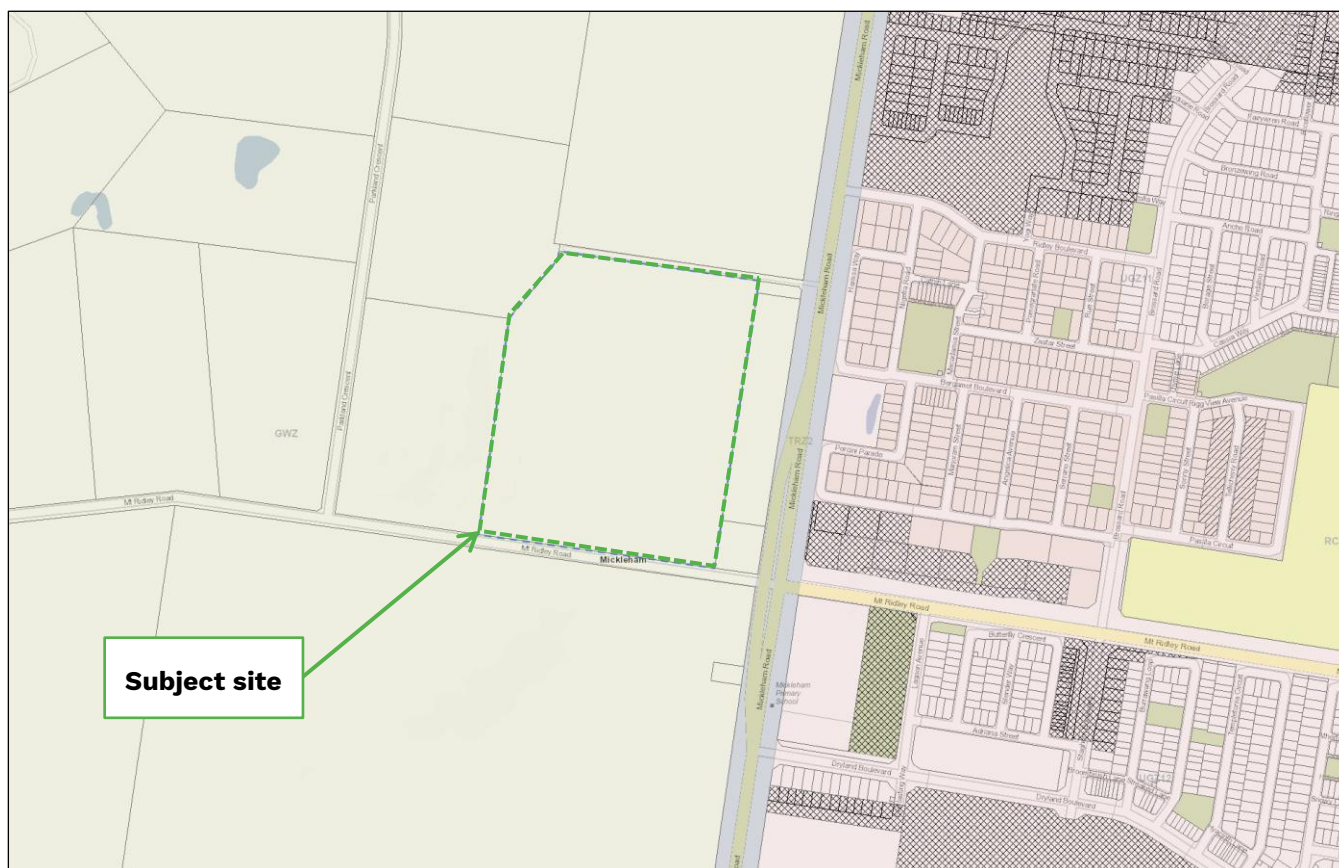


Figure 2: Zoning plan (reproduced from the Vicplan website)

2.2 Road network

The road network includes:

- Mount Ridley Road
- Mickleham Road

2.2.1 Mount Ridley Road

Table 1 describes the features of this road.

Table 1: Mount Ridley Road features

Feature	Description
Road type	Mount Ridley Road is: — A rural access street under the Hume City Council's register, to the west of Mickleham Road. — A major road under the Hume City Council's register, to the east of Mickleham Road. Ultimately, Mount Ridley Road will be a 6-lane arterial road, as per the Lindum Vale PSP

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Feature	Description
Access	Provides access between Konagaderra Road at the western end to Grand Boulevard at the southern end
Road reservation width	17.5 m wide, west of Mickleham Road
Carriageway width	4.0 m wide, west of Mickleham Road
Road cross section	— two-way rural road — narrow sealed road, with unsealed shoulders on both sides
Speed limit	100 km/h default rural speed limit

2.2.2 Mickleham Road

Table 2 describes the features of this road.

Table 2: Mickleham Road features

Feature	Description
Road type	A secondary planning road under the management of the Department of Transport and Planning (DTP).
Access	Provides access between Old Sydney Road / Donnybrook Road at the northern end to Melrose Drive at the southern end
Road reservation width	60.0 m wide
Carriageway width	7.8 m wide
Road cross section	— two-way undivided road — 3.8 m traffic lanes
Speed limit	A posted speed limit of 80 km/h, with a 40 km/h school zone near the intersection with Mount Ridley Road

2.3 Traffic volumes

The existing turning movement volumes at the intersection of Mount Ridley Road and Mickleham Road were surveyed on Thursday 24 July 2025 between 7:00 am to 9:00 am and 2:30 pm to 4:30 pm. Review of the turning movement volumes revealed the following peak periods:

- AM peak: 8:00 am to 9:00 am
- PM peak: 3:15 pm to 4:15 pm.

Figure 3 shows the morning and afternoon peak hour traffic volumes at the intersection.

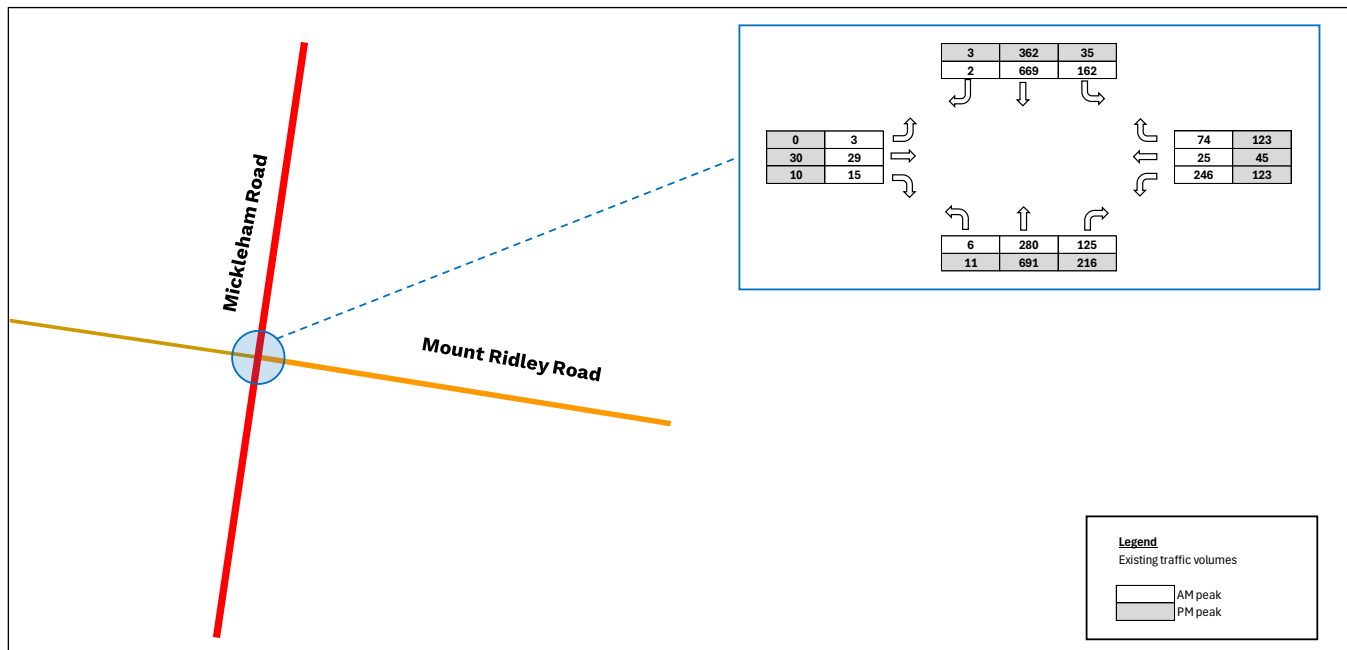


Figure 3: Existing traffic volumes – morning and afternoon peak period

2.4 Crash history

The Department of Transport and Planning (DTP) data portal, which details all reported injury crashes on roads throughout Victoria, reports that 9 casualty crashes have occurred at the Mount Ridley Road and Mickleham Road intersection in the last five-year period, i.e. 01/03/2020 – 28/02/2025:

- two ‘cross traffic (intersections only)’ type crash (DCA 110) in 2023, resulting in an ‘other injury’
- one ‘right through’ type crash (DCA 121) in 2023, resulting in a ‘serious injury’
- one ‘right near traffic (intersections only)’ type crash (DCA 113) in 2023, resulting in a ‘serious injury’
- one ‘right through’ type crash (DCA 121) in 2022, resulting in a ‘serious injury’
- one ‘right near traffic (intersections only)’ type crash (DCA 113) in 2022, resulting in a ‘serious injury’
- one ‘cross traffic (intersections only)’ type crash (DCA 110) in 2021, resulting in an ‘other injury’
- one ‘cross traffic (intersections only)’ type crash (DCA 110) in 2020, resulting in an ‘other injury’
- one ‘left rear’ type crash (DCA 131) in 2020, resulting in an ‘serious injury’.

Based on this, there is a trend in intersection type crashes at the Mount Ridley Road and Mickleham Road intersection. However, the intersection has been upgraded to a signalised intersection in 2024 and is anticipated to have addressed the crash trend above.

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3 The proposal

The proposed development includes the following:

- Primary and secondary school, accommodating up to 400 students and 50 staff
- multi-purpose hall
- oval / futsal field / soccer field / basketball court
- car parking spaces, with potential future car parking expansion along eastern property boundary (subject to a separate application)
- an internal road network, consisting of:
 - circulating accessway within the car park for drop off / pick up and buses
 - fire access road through the school site
 - service access road along eastern property boundary
 - raised wombat crossing at within the car park.

Vehicular access to the proposed development will be via access points along Mount Ridley Road.

Figure 4 shows an extract of the draft development plans.

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Figure 4: Draft development plan

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3.1 Mount Ridley Road updates

Mount Ridley Road, west of Mickleham Road, is currently a partially sealed road with unsealed shoulders on both sides. To accommodate the additional traffic from the proposed school, Mount Ridley Road is recommended to be widened and sealed along the site frontage up to the access.

The car parking layout would be set-up in a way that access is provided along the eastern boundary to minimise the need for widening of Mount Ridley Road.

In addition, at Mickleham Road and Mount Ridley Road intersection, there is currently one shared (left / through / right) lane on the west approach of Mount Ridley Road. It is recommended to provide an additional right lane at the intersection to accommodate the traffic from the proposed school, particularly traffic traveling south along Mickleham Road.

Upgrade works and site access is proposed to be carried out in two stages:

- Up until the student body reaches 200, only the eastern two crossovers (one entry / one exit) from Mt Ridley Road are required, and therefore only the eastern section of Mount Ridley Road will be upgraded.
- Once student numbers exceed 200, the whole of Mount Ridley Road in front of the site will be upgraded and the western crossover constructed. During this stage, the eastern entry would only be available for bus movements.

For more details on the proposed works along Mount Ridley Road, refer to Appendix 1 – Concept plans.

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4 Traffic assessment of the proposed development

4.1 Traffic generation

Traffic generation for new developments is typically estimated using the traffic generation rates provided in the Transport for NSW (TfNSW) Guide to Transport Impact Assessments (2024).

The TfNSW Guide trip generation rate for regional primary school was adopted for the proposed development.

It was assumed that one staff is anticipated to generate one vehicle trip to and from the school, with the following:

- 75% of staff arriving / departing the school outside of the peak periods
- remaining 25% of staff arriving / departing the school during the peak periods.

The traffic generated by the proposed primary and secondary school for 400 students is summarised in Table 3.

Table 3: Peak traffic flow for the proposed school for 400 students

Land use	Measure	Unit	Trip generation rate (per unit)		Trip generation (no. of vehicles)	
			AM peak	PM peak	AM peak	PM peak
Primary / secondary school	400	students (by car)	1.2	1.0	480	400
	50	staffs (by car)	0.25	0.25	13	13
Total					493	413

Based on Table 3, the proposed development is anticipated to generate approximately:

- 493 vehicles per hour (vph) during the AM peak
- 413 vph during the PM peak.

4.2 Traffic distribution assumptions

Our traffic distribution assumptions are that:

- peak hour flow for students (by car and bus):
 - AM peak 50% leaving, 50% entering
 - PM peak 50% leaving, 50% entering
- peak hour flow for staff:
 - AM peak 100% entering the site

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- PM peak 100% leaving the site
- All traffic will travel to and from the Mickleham Road and Mount Ridley Road intersection, with the following directional flow:
 - 40% of traffic will travel to / from the east
 - 30% of traffic will travel to / from the south
 - 25% of traffic will travel to / from the north.

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4.3 Anticipated traffic volumes

Figure 5 shows the development traffic volumes for the proposed school for 400 students.

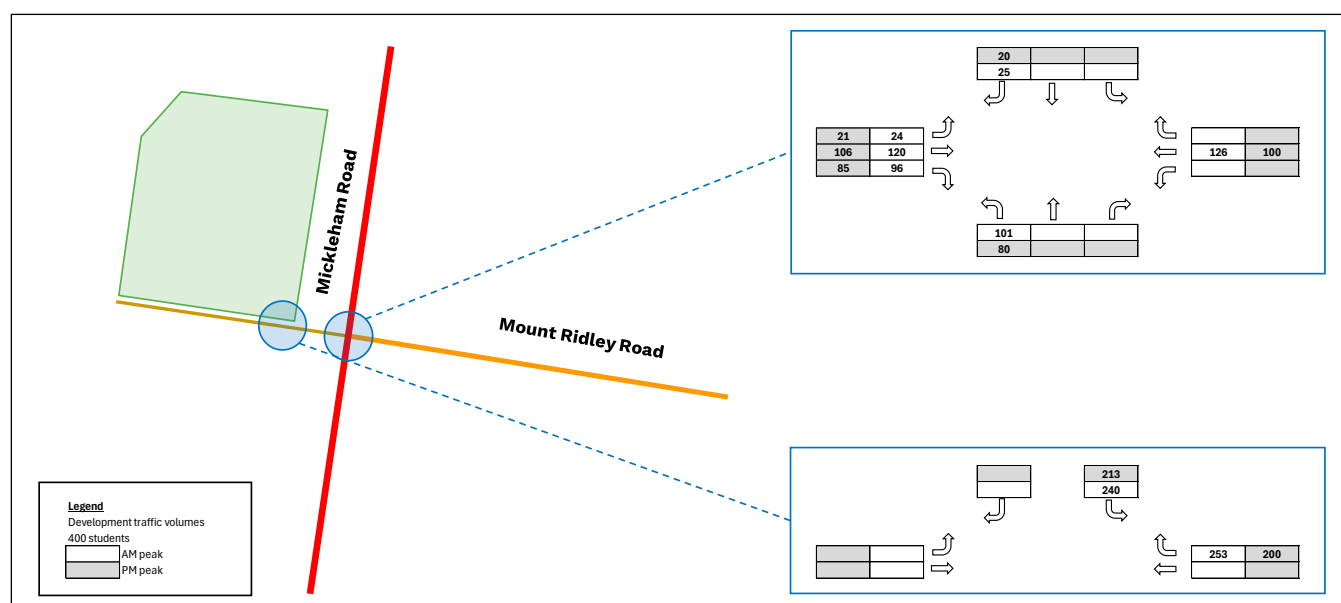


Figure 5: School peak hour traffic volumes (400 students)

The existing 2025 traffic volumes was projected to the year 2035 with the following growth rates, based on DTP's open data portal:

- 5% per annum along Mickleham Road
- 5% per annum along Mount Ridley Road

The anticipated traffic volumes were determined by adding the projected 2035 volumes and the school volumes.

Figure 6 shows the anticipated traffic volumes for the proposed school for 400 students.

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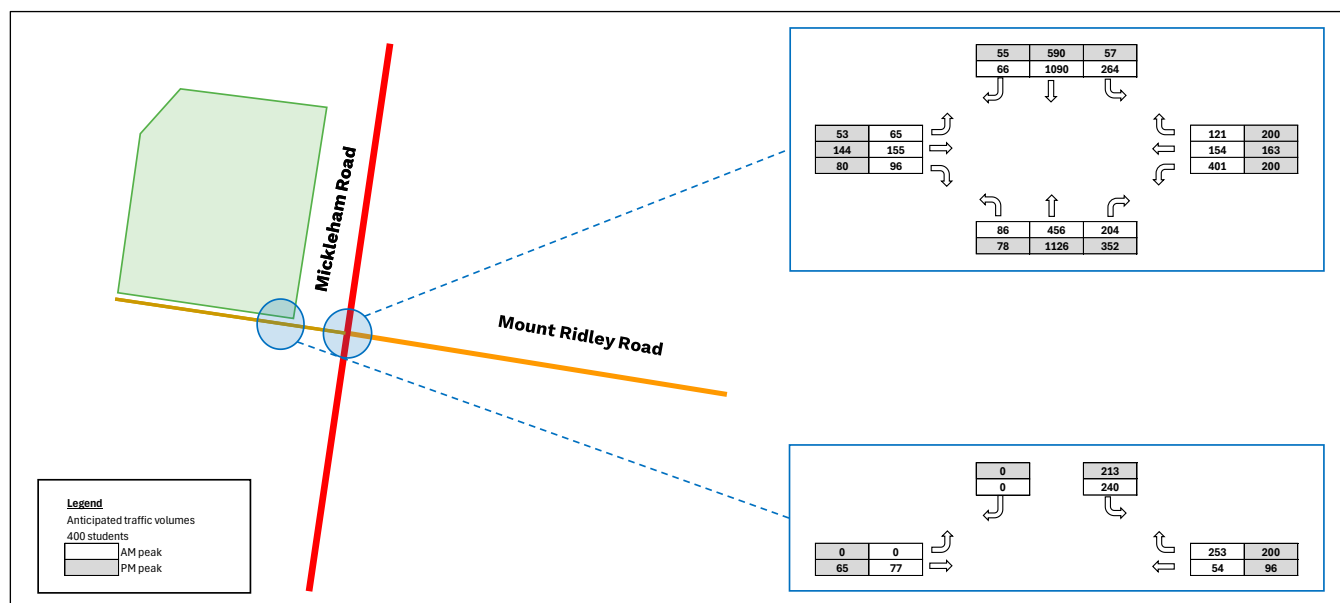


Figure 6: Anticipated 2035 peak hour traffic volumes (400 students)

4.4 Existing road network impact

SIDRA software is used to analyse the intersections and determine anticipated intersection operations for the proposed development. Typically, the main characteristics used to assess intersection operation are the:

- degree of saturation (DOS)
- 95th percentile queue lengths
- average delay.

Table 4 provides an explanation of the intersection operating characteristics.

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Table 4: Definitions of intersection operation characteristics

Degree of Saturation (DOS)			Operation
Sign control	Roundabout	Traffic signals	
< 0.6	< 0.6	< 0.6	Excellent operating conditions, minimal delays
0.6 - 0.699	0.6 - 0.699	0.6 - 0.699	Very good operating conditions, minimal delays
0.7 - 0.799	0.7 - 0.849	0.7 - 0.899	Good operating conditions, delays and queuing increasing
0.8 - 0.899	0.85 - 0.949	0.9 - 0.949	Fair operating conditions, delays and queues growing. Any interruption to flow such as minor incidents causes increasing delays
0.9 - 1.0	0.95 - 1.0	0.95 - 1.0	Poor operating conditions, flows starting to breakdown and queues and delays increase rapidly.
> 1.0	> 1.0	> 1.0	Very poor operating conditions with queues and delays increasing rapidly. Once queues develop it takes a significant time for queues to dissipate resulting in long delays to traffic movements

The DOS of an intersection is the ratio between the arrival (demand) flow and the intersection capacity during a given flow period. A degree of saturation of 1.0 is the theoretical capacity of an intersection, achievable if all parameters are optimal. Inefficiencies in driver behaviour and specific site conditions (including sight lines, gap acceptances, follow-up headways) make this unrealistic in practice.

The practical degree of saturation (or practical capacity) of an intersection is a more realistic measure of what can be achieved prior to an intersection becoming oversaturated and prior to traffic flows breaking down and queues and delays increasing rapidly.

Austrroads Guide to Traffic Management Part 3 (AGTM3) specifies the following target DOS (practical degree of saturation / practical capacity) for different intersection types:

- 0.90 for traffic signals
- 0.85 for roundabouts
- 0.80 for unsignalised intersections.

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SIDRA analysis has been undertaken at the Mickleham Road and Mount Ridley Road intersection, for the following scenarios:

- existing 2025 conditions – existing layout

- anticipated 2035 conditions:
 - proposed additional right turn lane on the west approach of Mount Ridley Road
 - primary and secondary school: 400 students + 50 staff
- design life 2037 conditions:
 - proposed additional right turn lane on the west approach of Mount Ridley Road
 - primary and secondary school: 400 students + 50 staff
 - 10 years post development from year 2027.

Figure 7 and Figure 8 shows the SIDRA layouts for the existing and anticipated conditions, respectively.

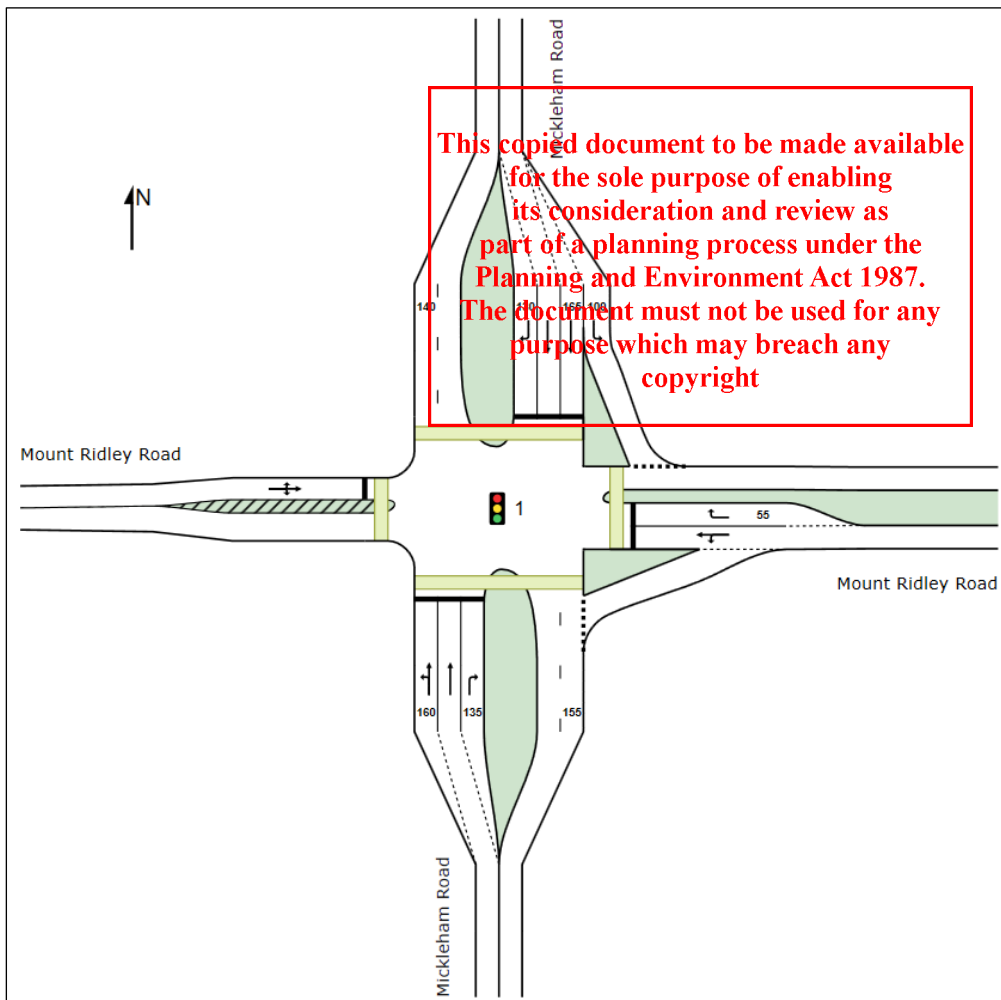


Figure 7: SIDRA existing layout

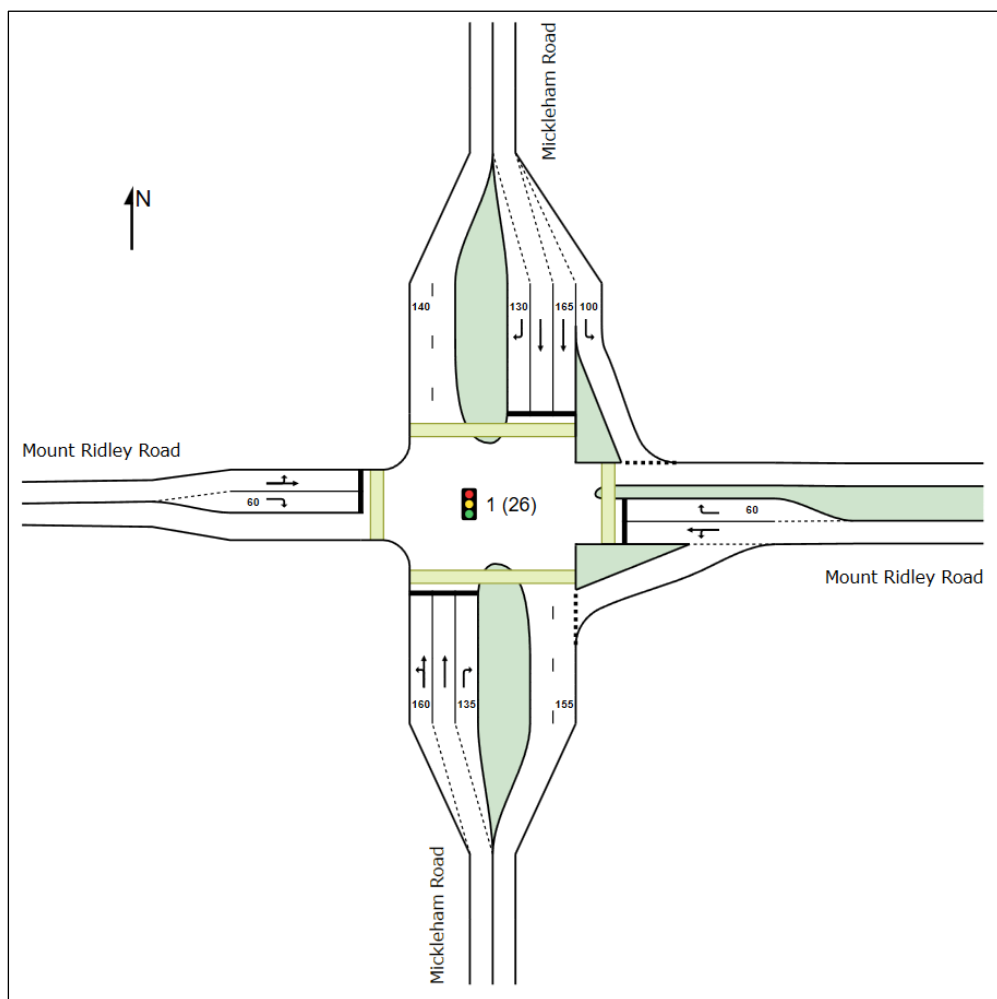


Figure 8: SIDRA anticipated layout

Table 5 provides a summary of the SIDRA assessment. For full SIDRA results, see Appendix 2 – SIDRA outputs.

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Table 5: SIDRA outputs

Movements		Existing 2025						Anticipated 2035 (8 years - below practical capacity)						Design Life 2037 (10 years - below theoretical capacity)					
		DOS		95% queue (m)		Average delay (sec)		DOS		95% queue (m)		Average delay (sec)		DOS		95% queue (m)		Average delay (sec)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Mickleham Road / Mount Ridley Road	Mickleham Road (south approach)	0.529	0.521	56.4	130.7	32.1	32.3	0.847	0.882	101.4	301.7	37.3	43.1	0.953	0.989	127.7	436.8	42.0	61.8
	Mount Ridley Road (east approach)	0.529	0.521	51.7	53.8	23.1	29.6	0.847	0.882	148.0	100.8	59.9	37.3	0.953	0.989	198.8	134.0	71.7	56.2
	Mickleham Road (north approach)	0.529	0.498	124.9	79.2	26.5	41.2	0.844	0.778	254.9	141.0	35.5	47.0	0.949	0.852	361.2	166.2	49.9	49.8
	Mount Ridley Road (west approach)	0.280	0.241	19.3	16.6	50.5	49.4	0.829	0.684	96.0	82.9	62.6	56.7	0.919	0.706	99.2	86.2	65.9	57.4
Mount Ridley Road / School access	Mount Ridley Road (east approach)							0.189	0.178	6.0	5.6	4.8	3.9	0.193	0.184	6.2	5.8	4.8	3.8
	School access (north approach)							0.167	0.146	5.2	4.5	4.2	4.1	0.168	0.147	5.3	4.6	4.2	4.2
	Mount Ridley Road (west approach)							0.043	0.036	0.0	0.0	0.1	0.1	0.047	0.040	0.0	0.0	0.1	0.1

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The SIDRA analysis revealed that:

- the Mickleham Road / Mount Ridley Road intersection (existing layout) currently operates below practical capacity for both the AM and PM peak periods, for the existing 2025 conditions
- the Mickleham Road / Mount Ridley Road intersection (with the additional right turn lane) is anticipated to operate below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions accommodating up to 400 students.
- the Mount Ridley Road / school access intersection is anticipated to operate well below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions and beyond, accommodating up to 400 students.

Based on the above, the Mickleham Road / Mount Ridley Road intersection, with the additional right turn lane on the west approach, is anticipated to accommodate 400 students arriving / departing by car, until the year 2035.

The Mickleham Road / Mount Ridley Road intersection is anticipated to operate below theoretical capacity in the year 2037 (i.e. 10 years post development). However, a review of the individual movements specifically linked to the school operations at the intersection reveals that these traffic movements are anticipated to generally operate below practical capacity, including:

- west approach – left turn, through and right turn movements
- north approach – right turn movement
- east approach – through movement
- south approach – left turn movement.

Figure 9 and Figure 10 shows the SIDRA lane display outputs for DOS for the Mickleham Road / Mount Ridley Road intersection for the AM and PM peak, respectively.

The green and blue DOS indicate good to excellent operating conditions for the movements associated with school operations. This shows that, although the overall intersection is operating above the practical capacity threshold (DOS > 0.9), the school related traffic is generally not a contributing factor to the capacity constraint.

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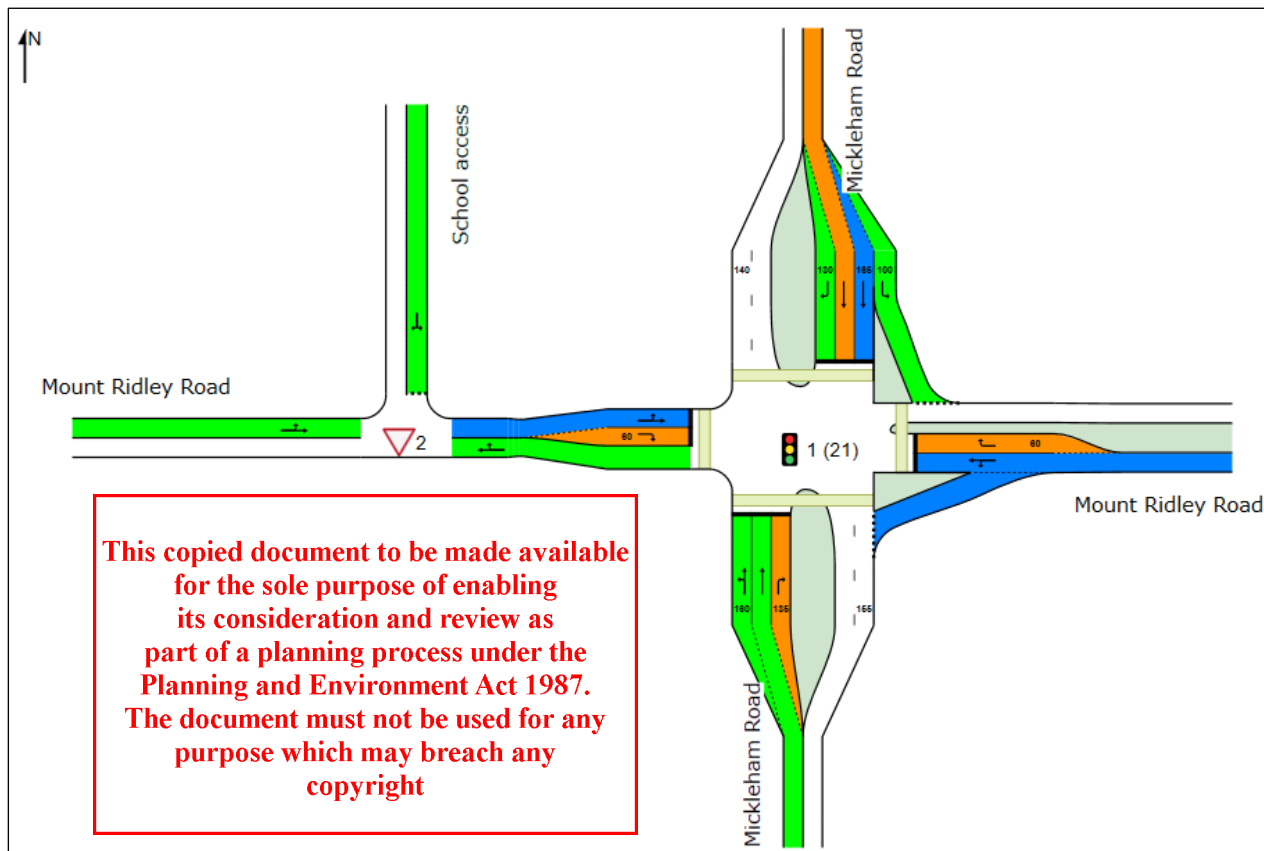


Figure 9: SIDRA DOS lane display – Design life 2037 (AM peak)

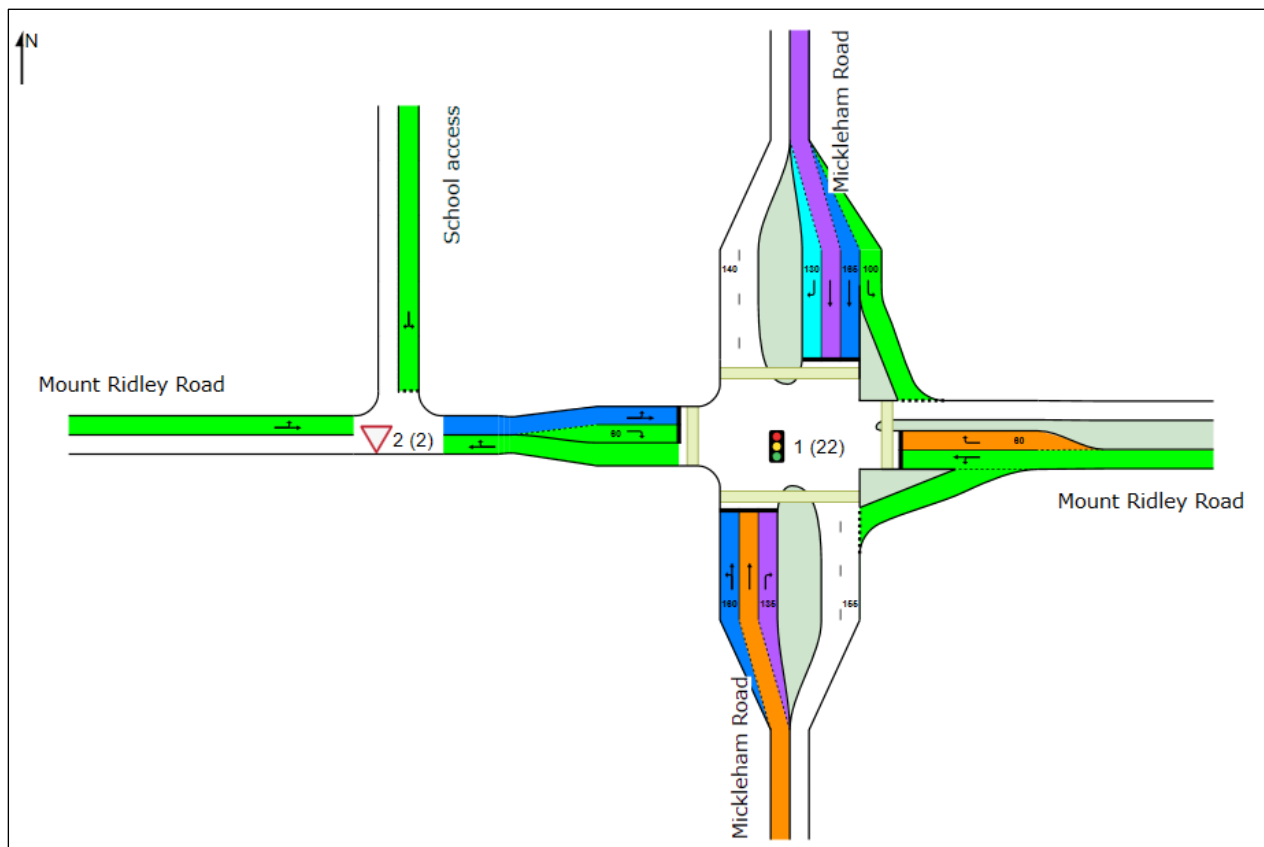


Figure 10: SIDRA DOS lane display – Design life 2037 (PM peak)

5 Parking assessment of the proposed development

5.1 Planning scheme car parking assessment

Clause 52.06 of the Planning Scheme outlines the statutory requirements for the provision and design of car parking spaces for new developments. Table 1 in Clause 52.06 sets out the amount of car parking that is required for the new or expanded use.

The site is located within a Category 1 of Public Transport Accessibility Level (PTAL) area.

Table 6 provides a statutory parking assessment of the proposed development.

Table 6: Statutory car parking requirement

Land use	Measure	Statutory car parking rate	Statutory requirement
Primary / secondary School	50 staff (400 students)	1 space to each employee that is part of the maximum number of employees on-site at any one time	50 spaces
Total			50 spaces

The proposal has a planning scheme car parking requirement of 50 car parking spaces.

In addition, the 400 students travelling by car are expected to predominantly arrive and depart via the designated drop-off and pick-up arrangements. A proportion of these students are likely to be siblings or travelling as part of a carpool, which will reduce the number of individual vehicle trips. Furthermore, parents and guardians are expected to arrive at varying times, distributing traffic activity across the broader drop-off / pick-up period.

As such, adequate drop-off / pick-up car parking areas should be provided within the site, in addition to the 50 car parking spaces.

5.1.1 Car parking layout

A plan of the car park layout was prepared which includes:

- drop-off / pick up area, with one-way operation
- raised wombat crossings
- car parking spaces and bus bays:
 - 50 car parking spaces, including one accessible space
 - 21 parallel pick-up / drop-off spaces
 - 4 bus bays

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Additional car parking spaces can be provided to the east of site, if required.

For more details on the car and bus parking, refer to Appendix 1 – Concept plans.

5.2 Adequacy of car parking dimensions

Clause 52.06 of the planning scheme / AS2890.1 outlines the dimensional requirements for the car park.

Table 7 summarises the proposed car park access and layout. Refer to Appendix 1 – Concept plans of the proposed car park layout.

Table 7: Assessment of car park access and layout

Area assessed	Complies (Y/N)	Comments
Sightline to pedestrians	Yes	A 2.0 m x 2.5 m corner splay has not been indicated on the plans. Clear sight lines as shown in Figure 3.3 of AS/NZS 2890.1 (reproduced in Figure 11) shall be provided at the property line so that adequate visibility is provided between vehicles leaving the property and pedestrians on the frontage road footpath. Figure 3.3 MINIMUM SIGHT LINES FOR PEDESTRIAN SAFETY
Width of the accessway	Yes	Accessway widths are at least 3.0 m wide.
Passing area	Yes	The access aisle and entry crossover are 6.4 m wide which satisfies this requirement.

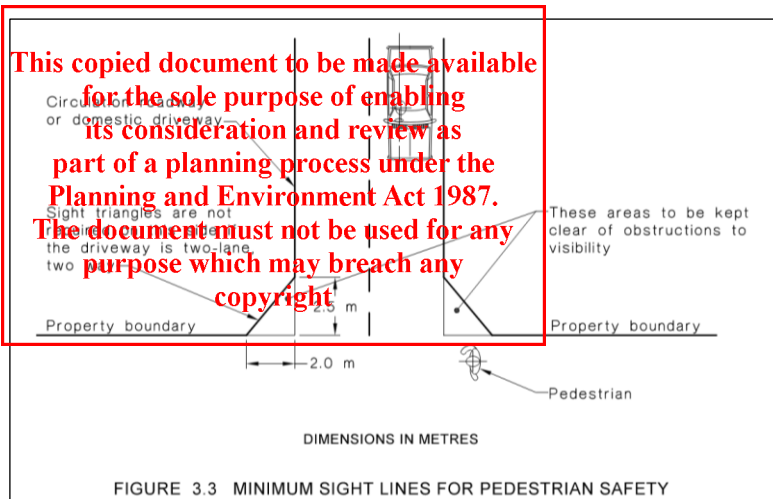


Figure 11: Minimum sight lines for pedestrian safety (Source: Figure 3.3 from AS/NZS 2890.1)

The 2.0 m by 2.5 m pedestrian sight splay is required on the exit side of the accessway and this area will be kept 50% clear and landscaping in this area will be less than 900 mm in height in accordance with Clause 52.06 of the planning scheme.

Area assessed	Complies (Y/N)	Comments
Height clearance / headroom	N/A	
All cars can enter / exit the site in a forward direction	Yes	Refer to swept path analysis.
Car parking space dimensions	Yes	Car parking spaces have been provided with at least a width of 2.6 m, a length of 4.9 m and access aisles of 6.4 m which satisfies the minimum dimensions outlined in Table 2 of Clause 52.06.
Accessible car parking provision and dimensions	Yes	Accessible spaces with a shared area and bollard can be provided in accordance with the dimensions from AS2890.6-2009.
Blind aisle extensions	N/A	
Column locations	N/A	
Car parking accessibility	Yes	Refer to swept path analysis.
Waste collection vehicle access	Yes	Swept path analysis indicates, 10.5 m waste collection vehicle or emergency vehicles can be accommodated. For more details, refer to the Waste Management Plan, prepared by Trafficworks.

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6 Access to the site

6.1 Site access – access driveway sight distance requirement

Section 3.2.4 in AS/NZS 2980.1 Parking Facilities – Part 1: Off-street car parking, sets out entering sight distance (ESD) criteria for a driver exiting an access driveway to traffic on the frontage road

Un-signalised access driveways shall be located so the intersection sight distance available to drivers leaving the driveway along the frontage road is at least that shown in Figure 3.2 of AS/NZS 2890.1 (reproduced in Figure 12).

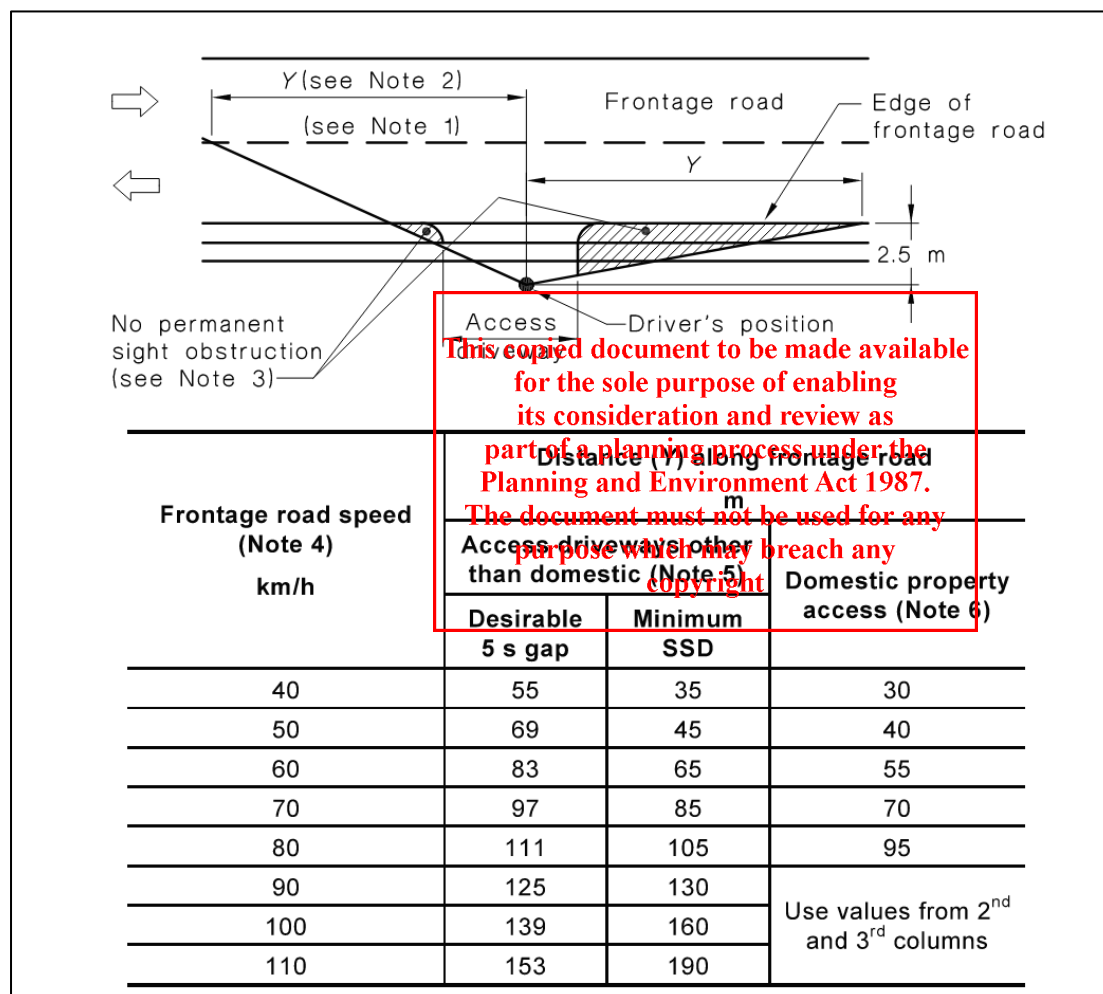


Figure 12: Sight distance requirements at driveways (Source: Figure 3.2 from AS/NZS 2890.1)

The SSD criterion, specified in Figure 3.2 of AS/NZS 2890.1, requires clear visibility for a minimum SSD of 105 m, relating to the general reaction time RT of 2.0 seconds and a frontage road speed of approx. 80 km/h (on approach to the intersection).

This sight distance is applicable to Mount Ridley Road along the subject site frontage. Detailed design of the access driveway location must achieve compliance with the minimum SSD of 105 m.

Recommendation 4: Ensure the access driveway location meets the minimum SSD of 105 m

6.2 Bicycle parking facilities

Clause 52.34 of the planning scheme sets out the requirements for the provision of bicycle parking for a variety of land uses to encourage cycling as a mode of transport.

The proposed primary and secondary school is anticipated to accommodate classes from prep to year 12. Assuming that the 400 students are distributed evenly, this result in approximately 31 students per year level / grade.

As such, the number of students over year 4 is anticipated to be approximately 248 students.

Table 8 outlines the bicycle parking requirement for the proposed land use.

Table 8: Statutory bicycle parking requirement

Land use	Measure	Clause 52.34 bicycle parking rate	Parking requirement
Staff			
Primary / secondary School	50 employees	1 to each 20 employees	3
Students			
Primary / secondary School	248 pupils (over year 4)	1 to each 5 pupils over year 4	50
Total	Staff		3
	Visitors		50

The proposal has a planning scheme bicycle parking requirement of 3 secured spaces for staff and 50 spaces for students.

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7 Response to TfV request for further information

The Transport for Victoria (TfV) have reviewed the traffic impact assessment for 710 Mount Ridley Road and provided a Request for Further Information (RFI), which includes:

1. The concept Functional Layout Plan (FLP) must include a 60-metre right-turn lane on the Mt Ridley Road approach.
2. The westbound approach lanes must provide 3.5-metre-wide traffic lanes.
3. A notation must be added to the concept FLP indicating that the signal phasing is to be remodelled, including fully controlled right-turns (FCRT) on both Mt Ridley Road approaches.
4. The proposed site access is located approximately 130 metres from the Mt Ridley Road / Mickleham Road intersection.
5. The planning report must include details confirming that once student numbers exceed 200, an additional access point (approximately 335 metres from the intersection) on Mt Ridley Road will be provided for all vehicles other than buses.

Table 9 provides responses to the RFI comments.

Table 9: Responses to DTP RFI comments

No.	DTP RFI comments	Response
1.	The concept Functional Layout Plan (FLP) must include a 60-metre right-turn lane on the Mt Ridley Road approach.	The concept plan has been updated to include a 60 m right turn lane from the west approach of Mt Ridley Road.
2.	The westbound approach lanes must provide 3.5-metre-wide traffic lanes.	The concept plan has been updated to include 3.5 m wide traffic lanes on the west approach of Mt Ridley Road.
3.	A notation must be added to the concept FLP indicating that the signal phasing is to be remodelled, including fully controlled right-turns (FCRT) on both Mt Ridley Road approaches.	The concept plan has been updated to include a notation indicating that the signal phasing is to be remodelled, including FCRT on both Mt Ridley Road approaches.
4.	The proposed site access is located approximately 130 metres from the Mt Ridley Road / Mickleham Road intersection.	The concept plan indicates that the proposed site access is located approximately 130 metres from the intersection.
5.	The planning report must include details confirming that once student numbers exceed 200, an additional access point (approximately 335 metres from the intersection) on Mt Ridley Road will be provided for all vehicles other than buses.	Noted. Additional access to be provided once student numbers exceed 200.

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8 Conclusions and recommendations

We conclude there are no traffic engineering reasons that would prevent the development from proceeding, as outlined below:

- the proposed primary and secondary school (400 students, arriving / departing by car) is likely to generate morning and afternoon peak traffic volumes of 493 and 413 vph, respectively
- the Mickleham Road / Mount Ridley Road intersection (including a proposed additional right turn lane on the west approach) is anticipated to operate below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions accommodating up to 400 students
- the Mount Ridley Road / school access intersection is anticipated to operate well below practical capacity for both the AM and PM peak periods, for the anticipated 2035 conditions, accommodating up to 400 students
- the Mickleham Road / Mount Ridley Road intersection is anticipated to operate below theoretical capacity in the year 2037 (i.e. 10 years post development)
- although the overall intersection is operating above the practical capacity threshold (DOS > 1.0), the school related traffic is not a contributing factor to the capacity constraint
- the proposed primary and secondary school has a planning scheme car parking requirement of 50 car parking spaces for staff
- the minimum SSD of 105 m is applicable to Mount Ridley Road along the subject site frontage
- the proposed primary and secondary school has a planning scheme bicycle parking requirement of 3 secured spaces for staff and 50 spaces for students.

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However, this TIA has identified a number of recommendations that need to be addressed:

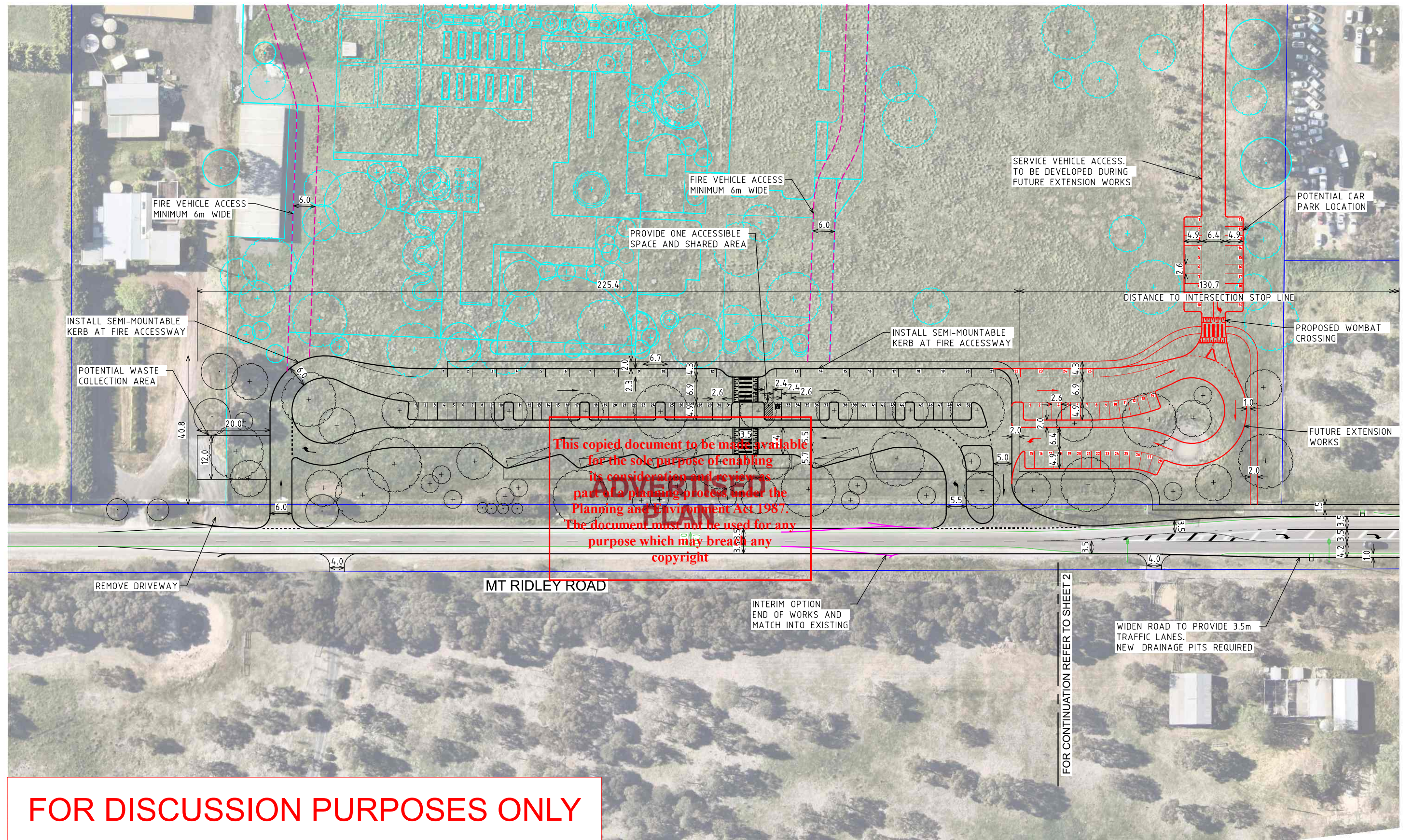
- **Recommendation 1:** widen and seal Mount Ridley Road along the site frontage of the proposed school up to the access point
- **Recommendation 2:** provide an additional right lane at the Mickleham Road / Mount Ridley Road intersection to accommodate the traffic from the proposed school
- **Recommendation 3:** ensure adequate drop-off / pick-up and car parking areas for students are provided within the site, in addition to the 50 car parking spaces for staff
- **Recommendation 4:** ensure the access driveway location meets the minimum SSD of 105 m
- **Recommendation 5:** provide 3 secured bicycle spaces for staff and 50 bicycle spaces for students.

Appendix 1 – Concept plans

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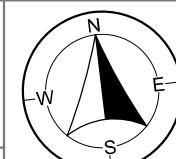
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MELWAY MAP 365 G11
MICKLEHAM

SCALE OF METRES
0 10 20

710 Mount Ridley Road, Mickleham

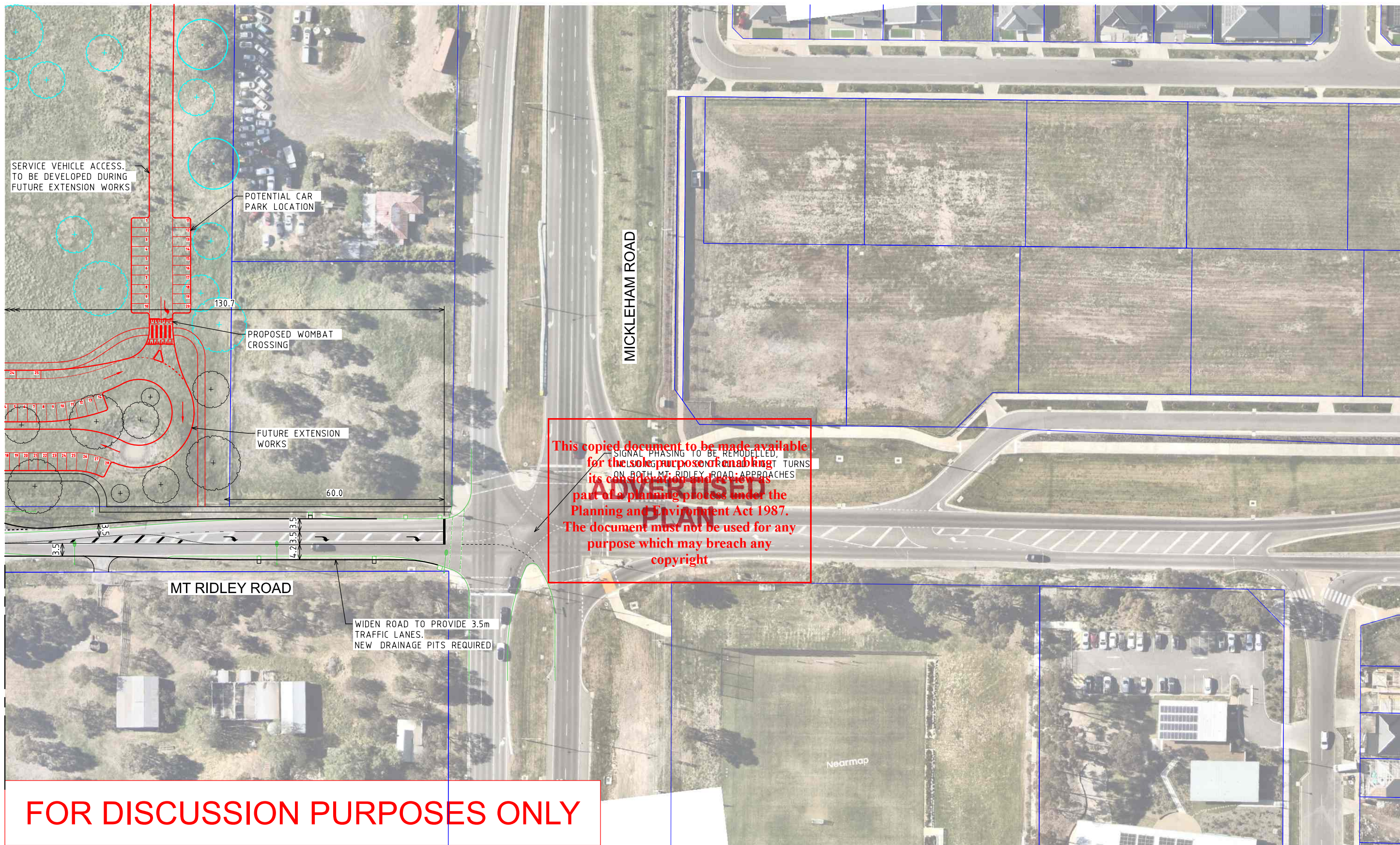
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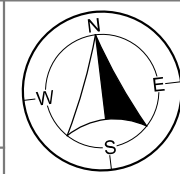
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MICKLEHAM

SCALE OF METRES
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710 Mount Ridley Road, Mickleham

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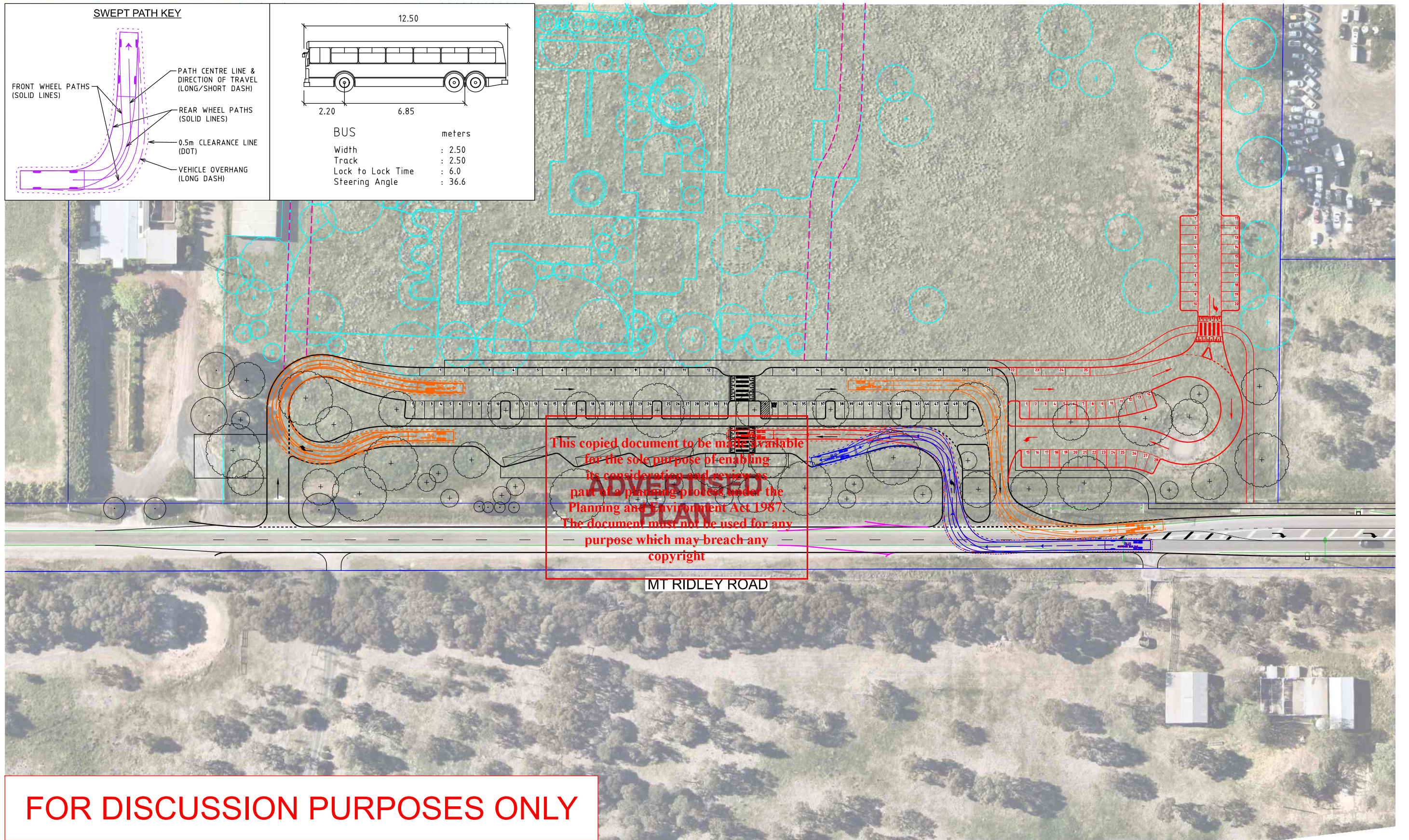
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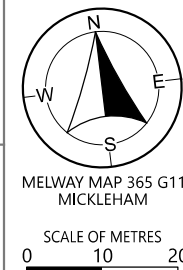
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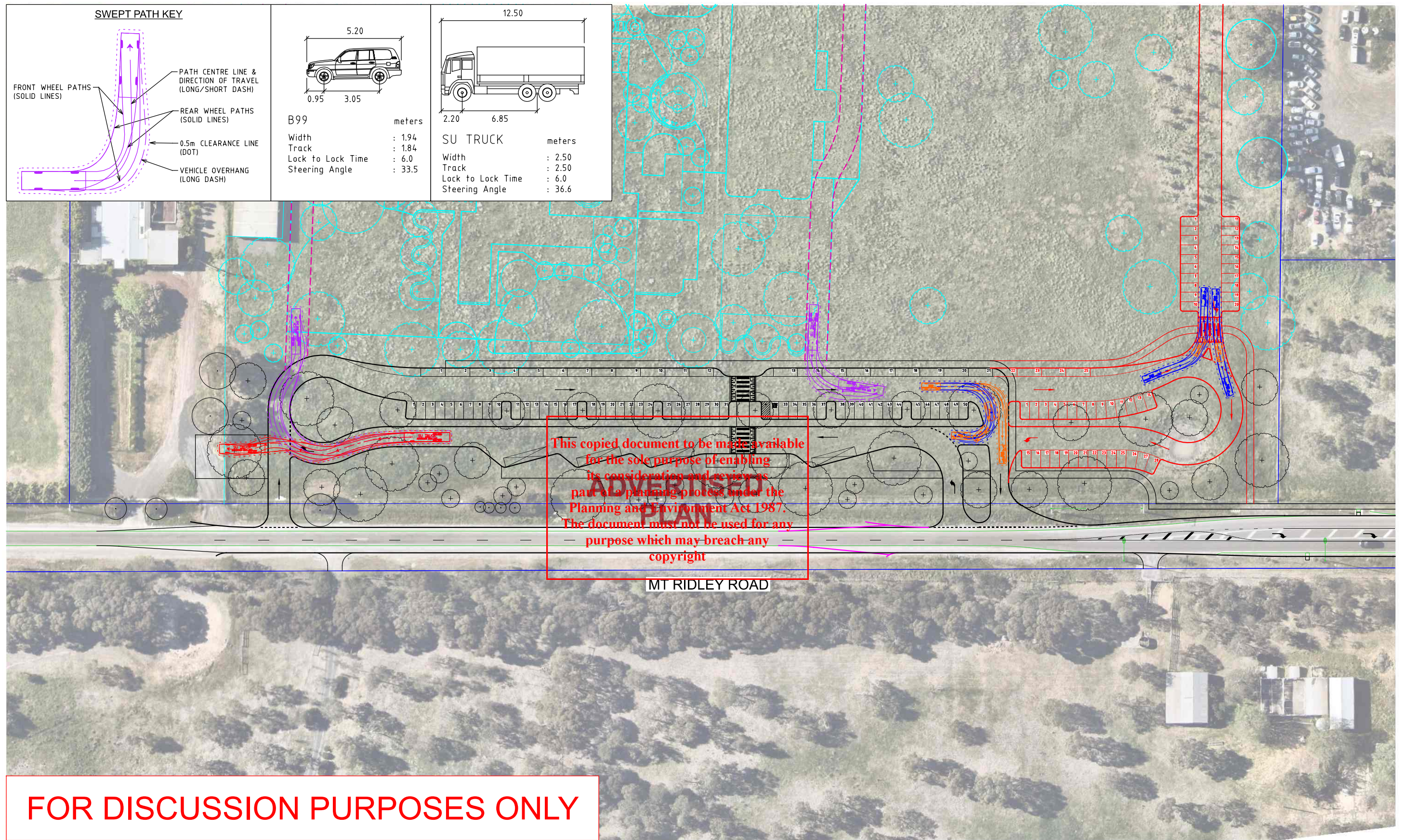
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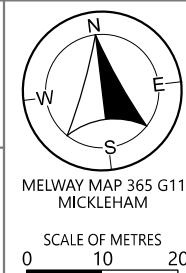
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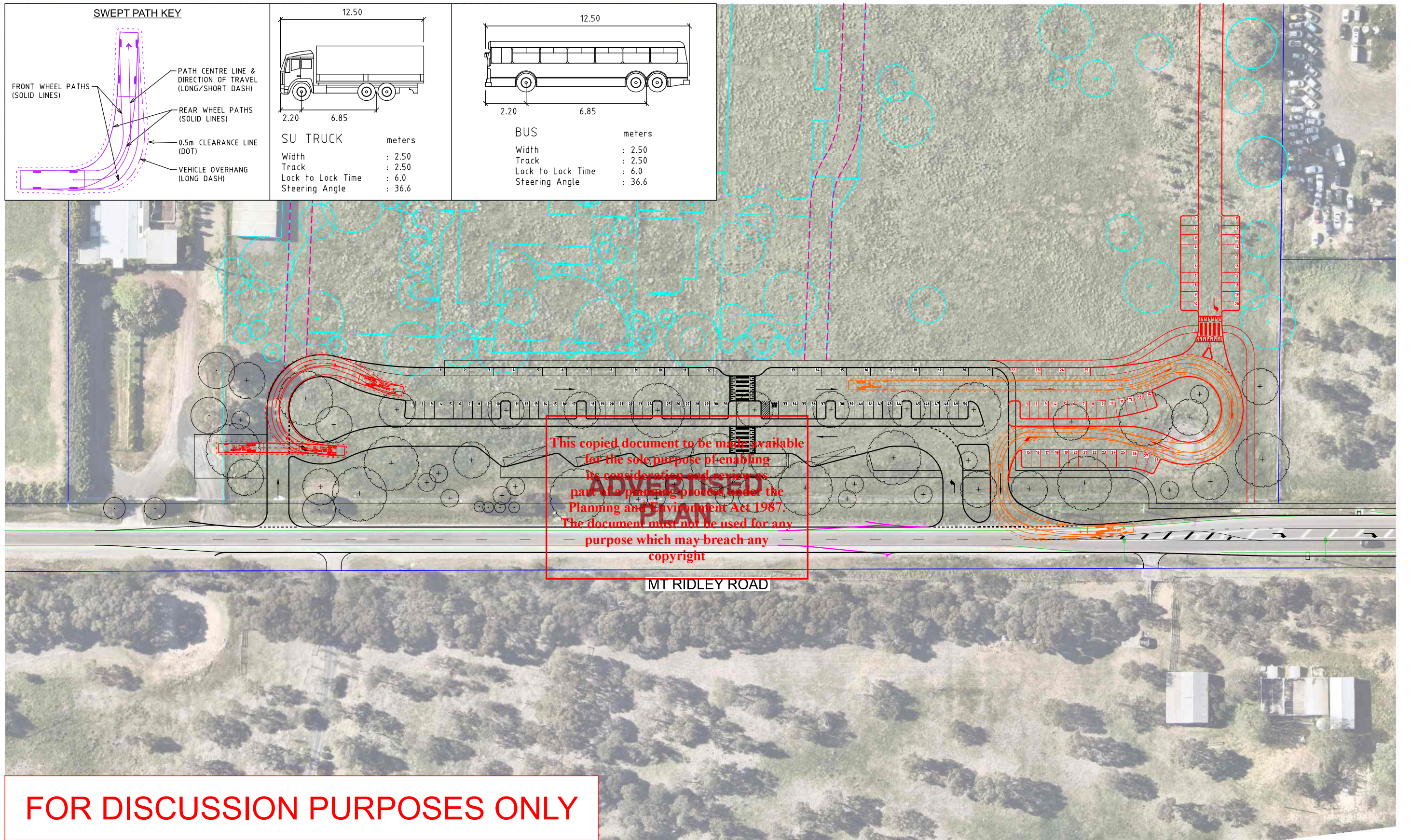
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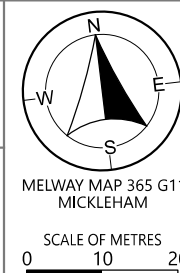
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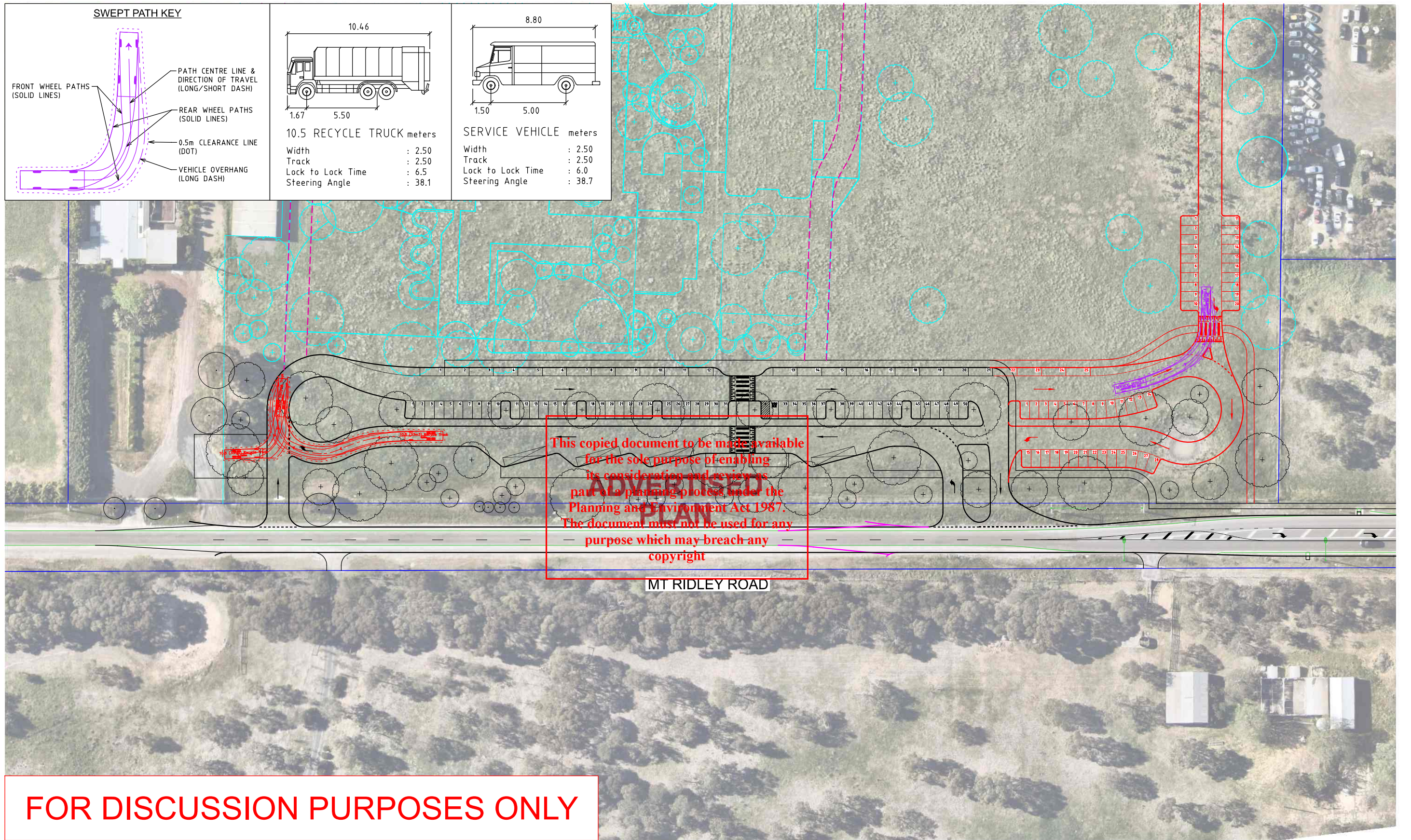
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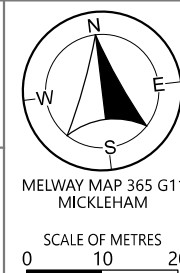
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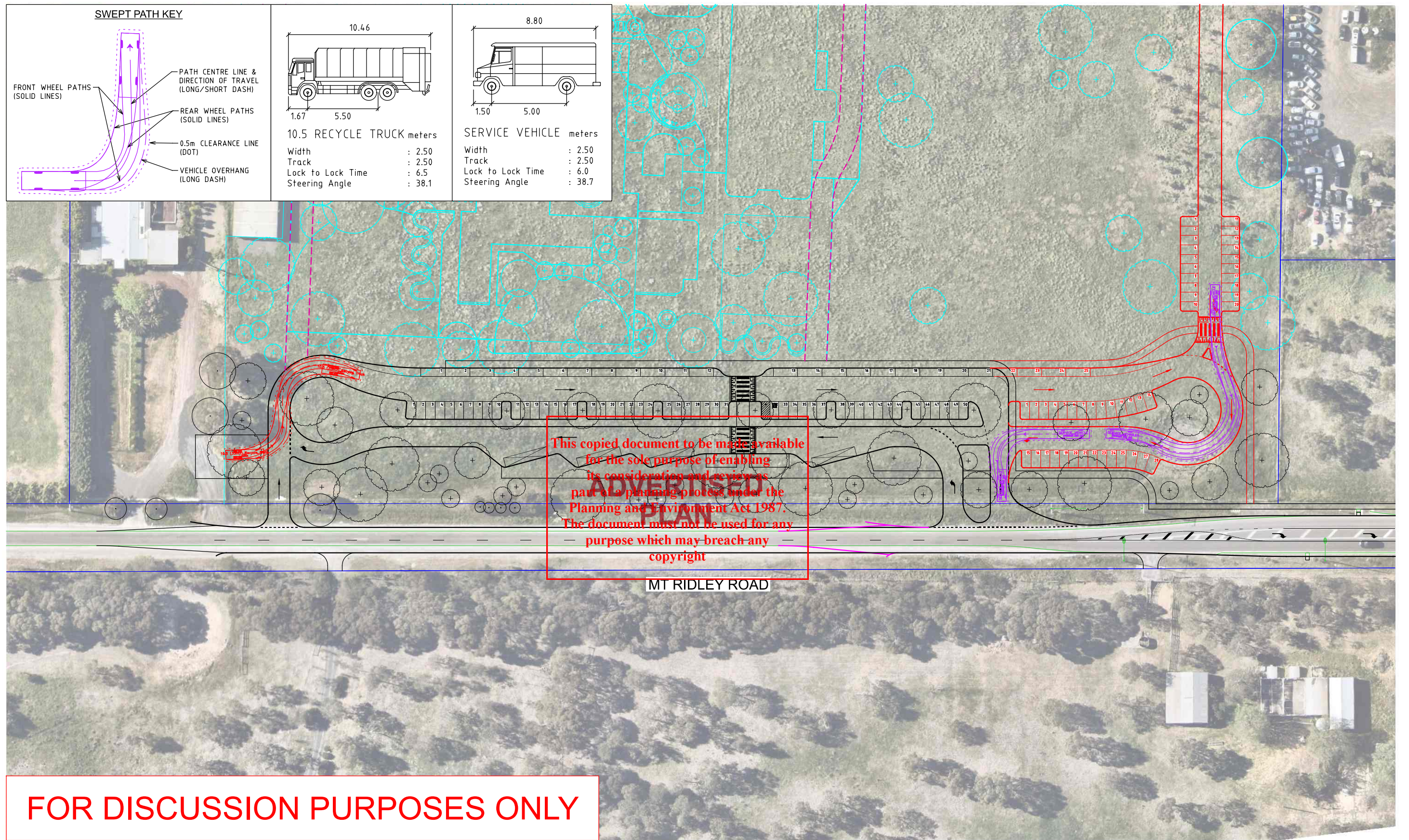
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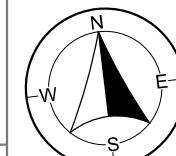
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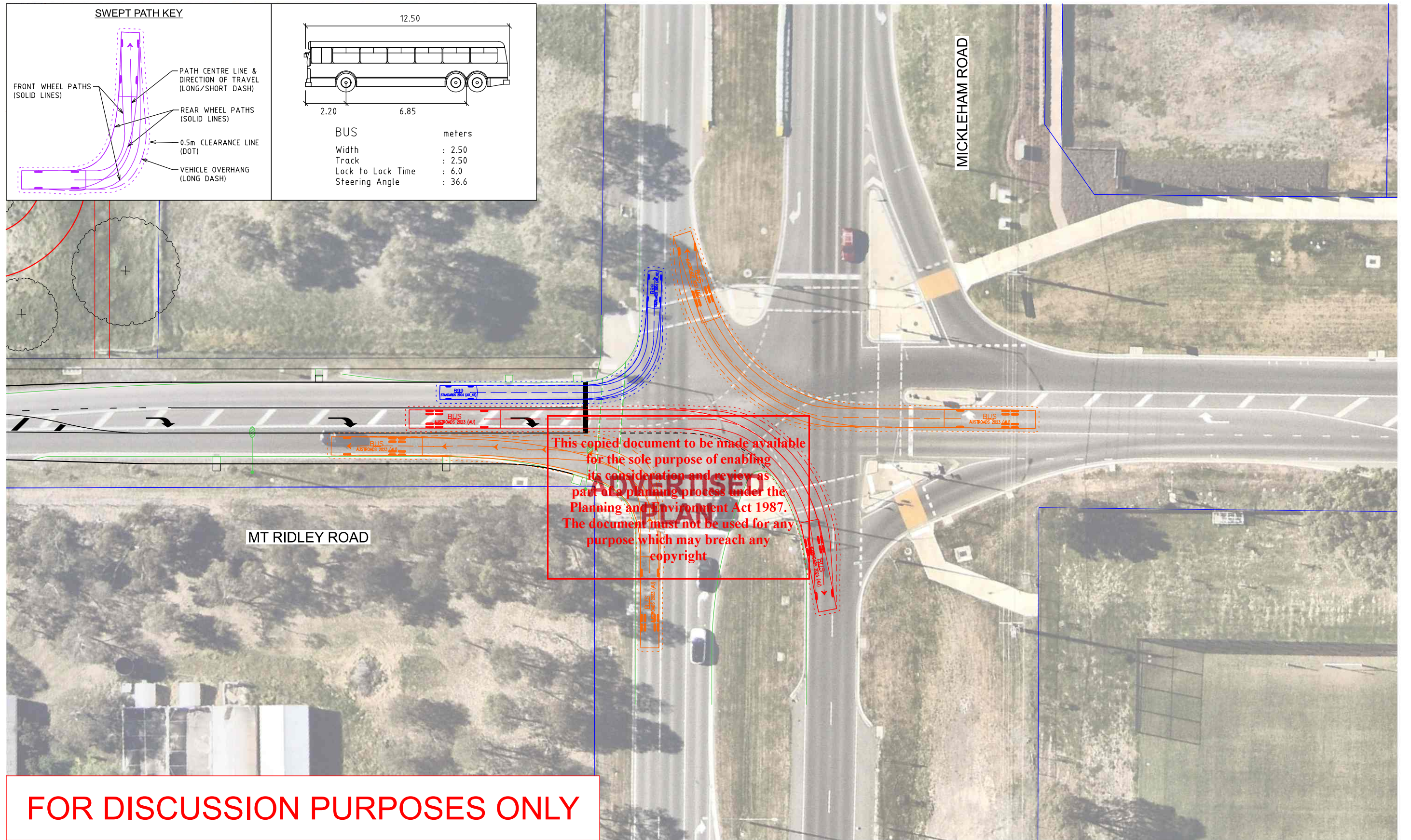
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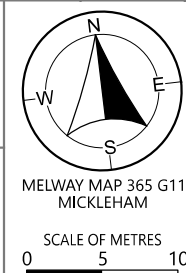
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Appendix 2 – SIDRA outputs

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USER REPORT FOR SITE

Default Site User Report

 **Site: [1] AM_2285_Mickleham Rd-Mt Ridley Rd (Existing 2025)**
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Four-Phase Leading Right Turns

Input Phase Sequence: A, D, E, F, G1, G2*, G3*

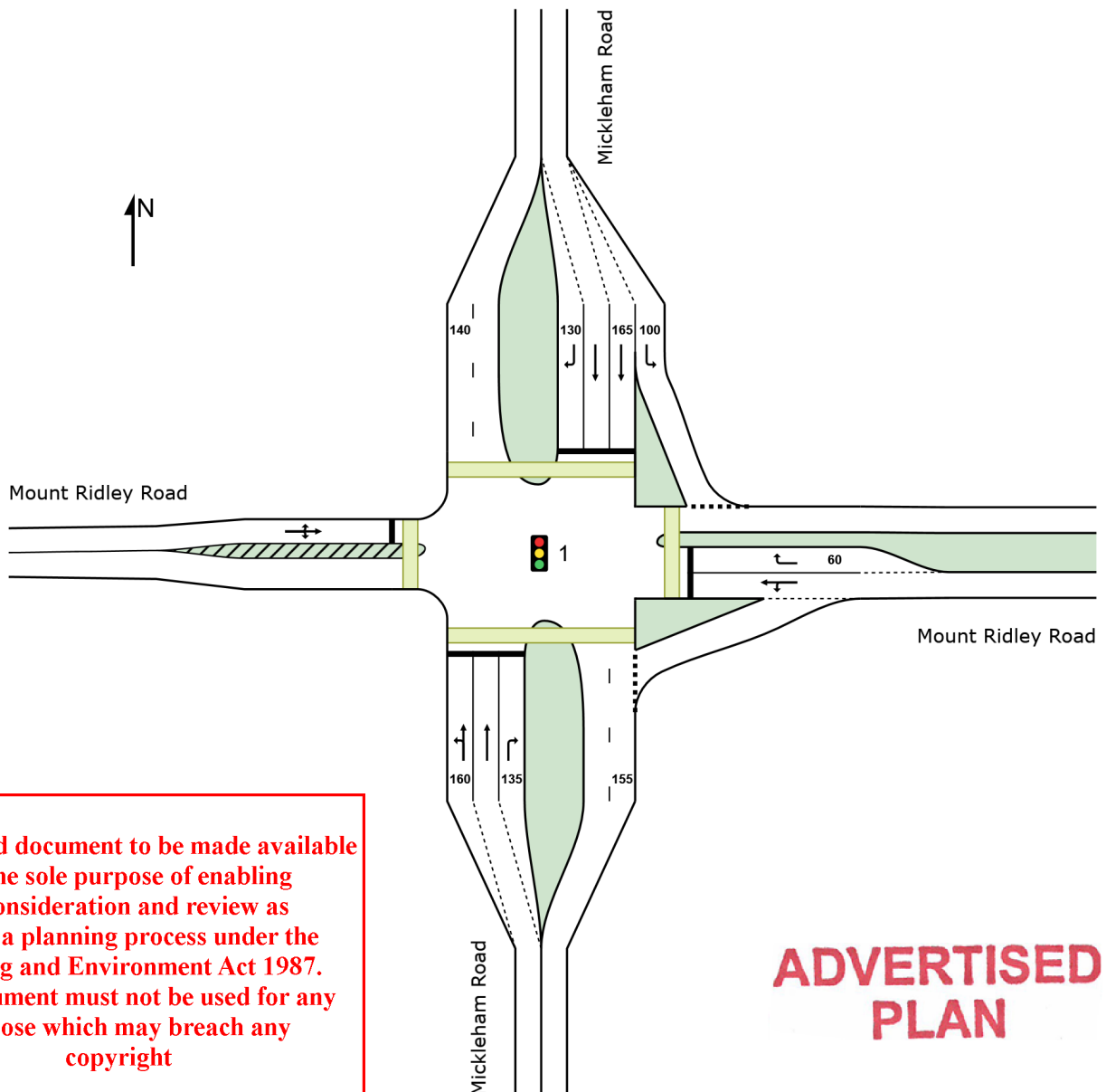
Output Phase Sequence: A, D, E, F, G1, G2*

Reference Phase: Phase A

(* Variable Phase)

Site Layout

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



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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	129	9.0	129	9.0	868	0.149	76 ⁶	19.7	LOS B	4.3	32.1	Short	160	0.0	NA
Lane 2	172	8.6	172	8.6	873	0.197	100	19.8	LOS B	5.8	43.5	Full	500	0.0	0.0
Lane 3	132	11.2	132	11.2	249	0.529	100	60.3	LOS E	7.3	56.4	Short	135	0.0	NA
Approach	433	9.5	433	9.5		0.529		32.1	LOS C	7.3	56.4				
East: Mount Ridley Road															
Lane 1	285	3.0	285	3.0	992	0.288	100	11.6	LOS B	7.2	51.7	Full	500	0.0	0.0
Lane 2	78	21.6	78	21.6	147	0.529	100	64.9	LOS E	4.6	38.1	Short	60	0.0	NA
Approach	363	7.0	363	7.0		0.529		23.1	LOS C	7.2	51.7				
North: Mickleham Road															
Lane 1	171	8.6	171	8.6	1409	0.121	100	7.8	LOS A	0.7	5.3	Short	100	0.0	NA
Lane 2	321	3.1	321	3.1	724	0.444	84 ⁶	30.2	LOS C	14.0	100.6	Short	165	0.0	NA
Lane 3	383	3.1	383	3.1	724	0.529	100	31.5	LOS C	17.4	124.9	Full	500	0.0	0.0
Lane 4	2	0.0	2	0.0	94	0.022	100	67.7	LOS E	0.1	0.8	Short	130	0.0	NA
Approach	877	4.2	877	4.2		0.529		26.5	LOS C	17.4	124.9				
West: Mount Ridley Road															
Lane 1	49	8.5	49	8.5	177	0.280	100	50.5	LOS D	2.6	19.3	Full	500	0.0	0.0
Approach	49	8.5	49	8.5		0.280		50.5	LOS D	2.6	19.3				
All Vehicles	1722	6.2	1722	6.2		0.529		27.9	LOS C	17.4	124.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

⁶ Lane under-utilisation due to downstream effects

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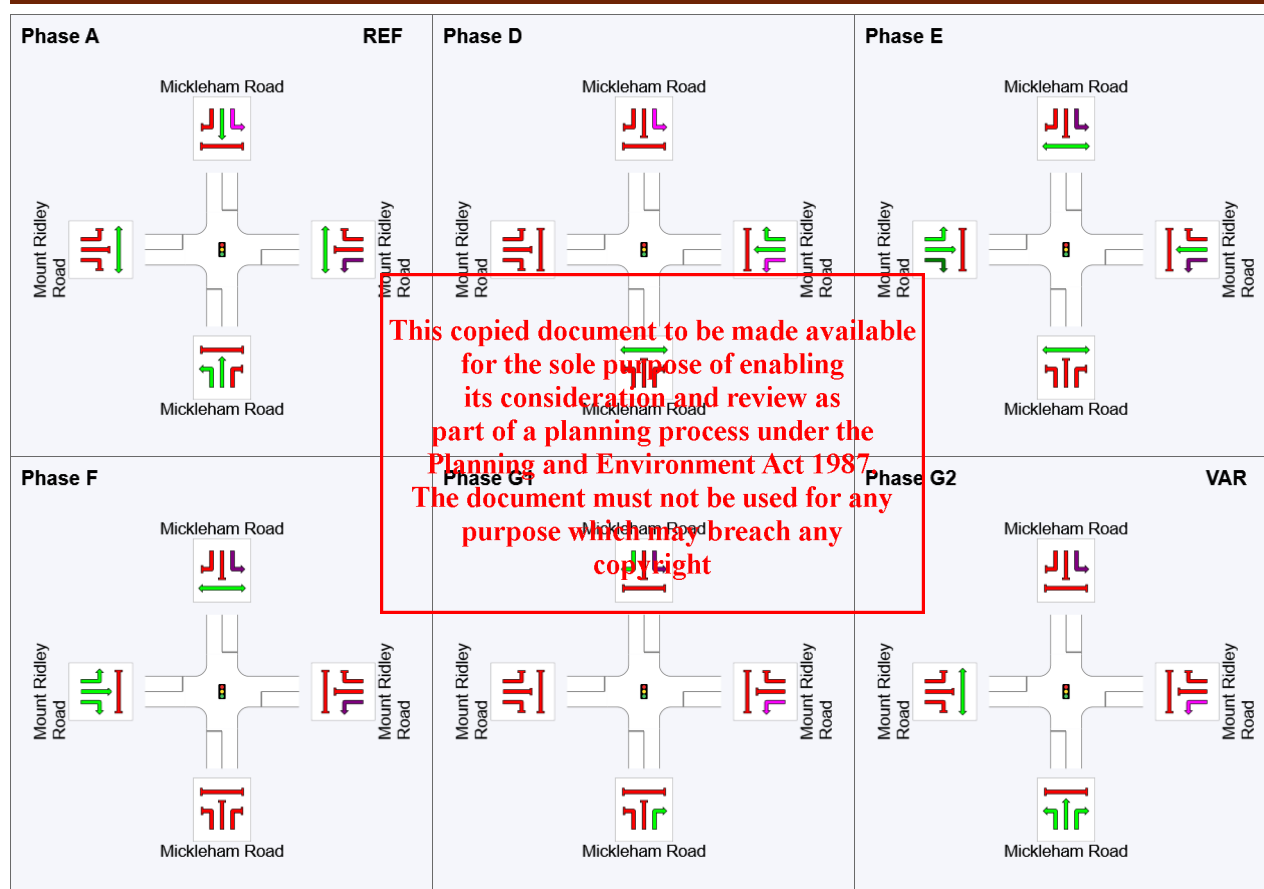
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Phase Timing Summary

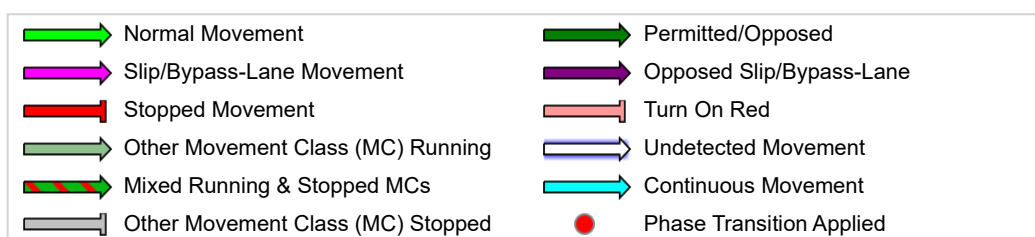
Phase	A	D	E	F	G1	G2
Phase Change Time (sec)	0.0	51.0	68.8	81.8	95.8	108.8
Green Time (sec)	45.0	10.9	6.0	6.0	6.0	5.2
Phase Time (sec)	52.0	17.9	14.0	13.0	12.0	11.2
Phase Split	43%	15%	12%	11%	10%	9%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Default Site User Report

 **Site: [1 (3)] PM_2285_Mickleham Rd-Mt Ridley Rd (Existing 2025)**

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Four-Phase Leading Right Turns

Input Phase Sequence: A, D, E, F, G1, G2*, G3*

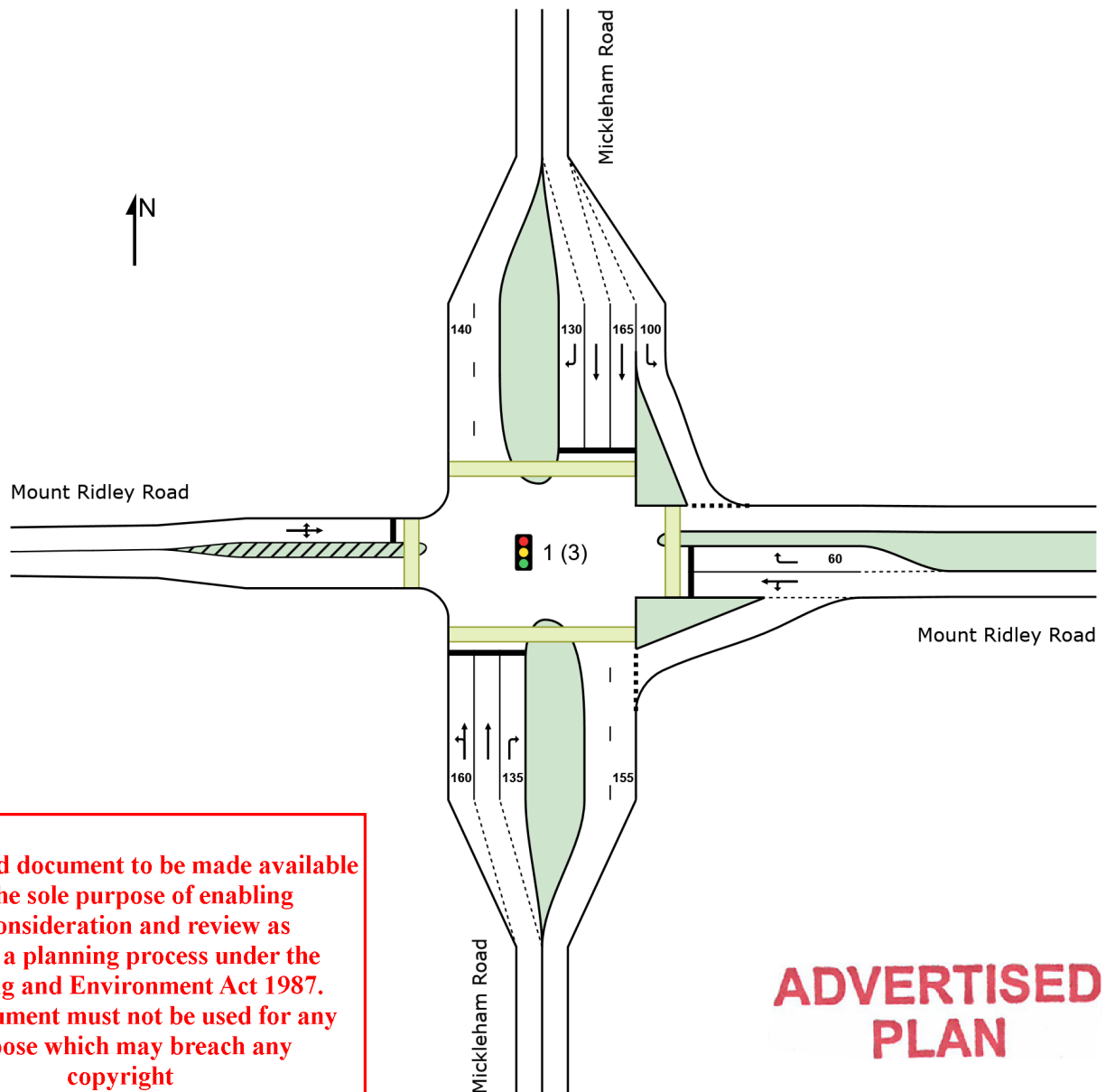
Output Phase Sequence: A, D, E, F, G1, G2*

Reference Phase: Phase A

(* Variable Phase)

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	317	3.7	317	3.7	804	0.395	76 ⁶	26.3	LOS C	12.8	92.4	Short	160	0.0	NA
Lane 2	422	3.2	422	3.2	809	0.521	100	27.7	LOS C	18.2	130.7	Full	500	0.0	0.0
Lane 3	227	3.2	227	3.2	457	0.498	100	49.2	LOS D	11.5	82.6	Short	135	0.0	NA
Approach	966	3.4	966	3.4		0.521		32.3	LOS C	18.2	130.7				
East: Mount Ridley Road															
Lane 1	177	8.9	177	8.9	1024	0.173	100	8.2	LOS A	2.5	19.2	Full	500	0.0	0.0
Lane 2	129	7.3	129	7.3	248	0.521	100	58.8	LOS E	7.2	53.8	Short	60	0.0	NA
Approach	306	8.2	306	8.2		0.521		29.6	LOS C	7.2	53.8				
North: Mickleham Road															
Lane 1	37	25.7	37	25.7	1160	0.032	100	8.2	LOS A	0.2	1.6	Short	100	0.0	NA
Lane 2	174	6.4	174	6.4	416	0.417	84 ⁶	43.6	LOS D	8.8	65.0	Short	165	0.0	NA
Lane 3	207	6.4	207	6.4	416	0.498	100	44.6	LOS D	10.7	79.2	Full	500	0.0	0.0
Lane 4	3	0.0	3	0.0	94	0.034	100	68.0	LOS E	0.2	1.3	Short	130	0.0	NA
Approach	421	8.0	421	8.0		0.498		41.2	LOS D	10.7	79.2				
West: Mount Ridley Road															
Lane 1	43	7.3	43	7.3	179	0.241	100	49.4	LOS D	2.2	16.6	Full	500	0.0	0.0
Approach	43	7.3	43	7.3		0.241		49.4	LOS D	2.2	16.6				
All Vehicles	1737	5.5	1737	5.5		0.521		34.4	LOS C	18.2	130.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

⁶ Lane under-utilisation due to downstream effects

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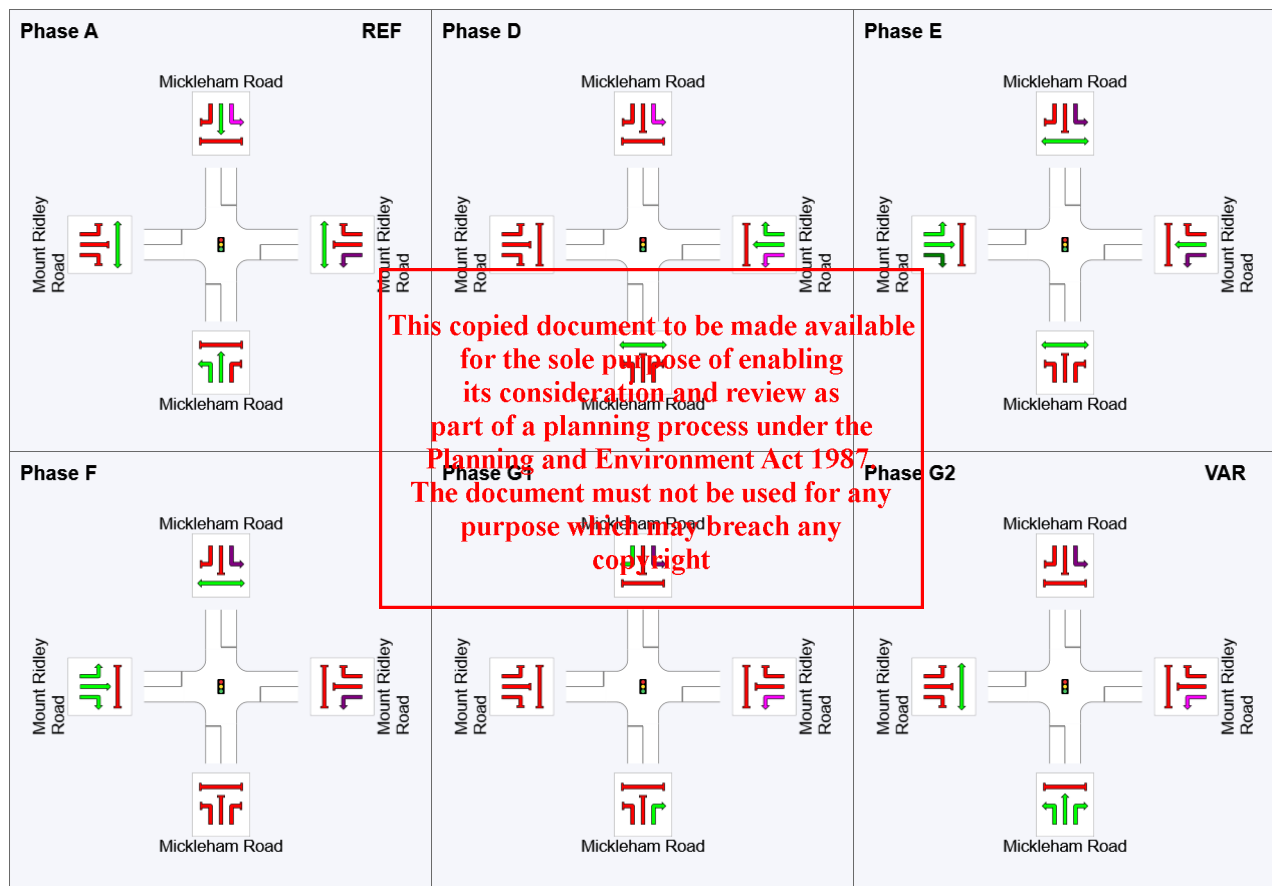
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Phase Timing Summary

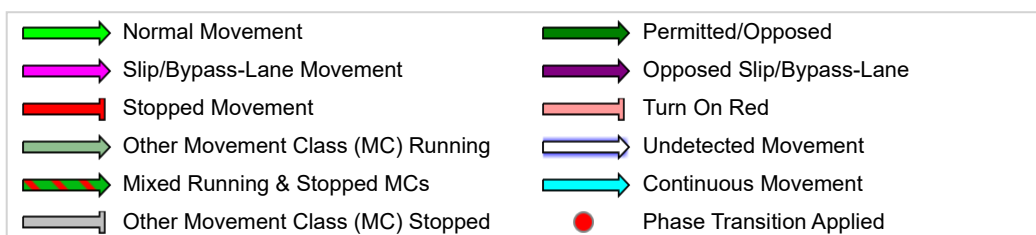
Phase	A	D	E	F	G1	G2
Phase Change Time (sec)	0.0	32.4	56.1	69.1	83.1	96.1
Green Time (sec)	26.4	16.7	6.0	6.0	6.0	17.9
Phase Time (sec)	33.4	23.7	14.0	13.0	12.0	23.9
Phase Split	28%	20%	12%	11%	10%	20%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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USER REPORT FOR NETWORK SITE

Default Site User Report

 **Site: [1 (26)] AM_2285_Mickleham Rd-Mt Ridley Rd** (Anticipated 2035 (5%) + 400 students + RT lane)

Network: [3] AM_2035 (5%) + 400 students + RT lane (Anticipated)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Downstream lane blockage effects included in determining phase times

Phase Sequence: Sequence1

Input Phase Sequence: A, D1, D2*, D3*, E, G1, G2*, G3*

Output Phase Sequence: A, D1, D2*, E, G1, G2*

Reference Phase: Phase A

Offset: NA

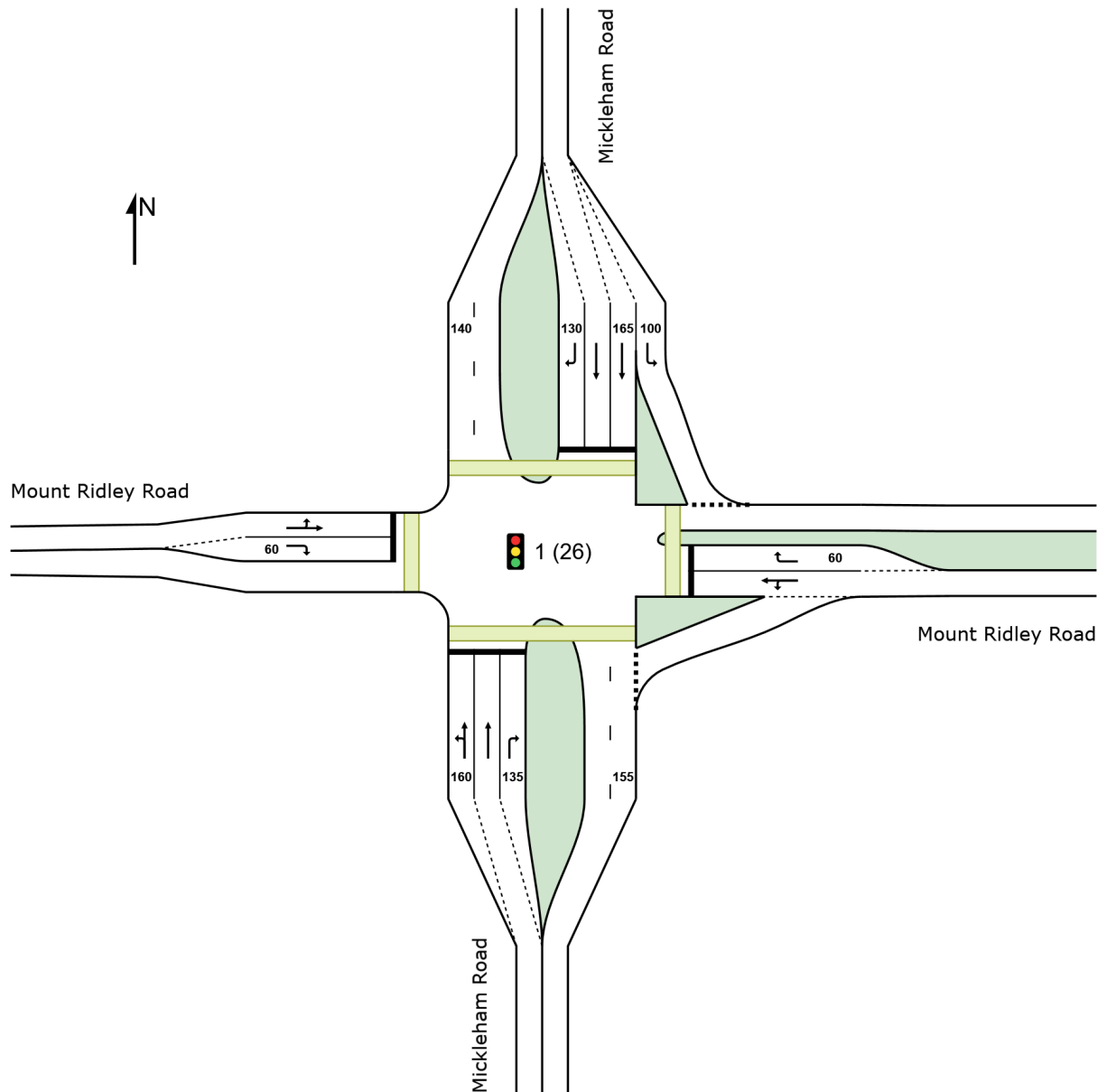
(* Variable Phase)

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	248	3.8	248	3.8	834	0.297	76 ⁶	25.5	LOS C	9.2	66.4	Short	160	0.0	NA
Lane 2	323	5.3	323	5.3	824	0.392	100	24.8	LOS C	12.8	93.4	Full	500	0.0	0.0
Lane 3	215	6.9	215	6.9	253	0.847	100	69.9	LOS E	13.7	101.4	Short	135	0.0	NA
Approach	785	5.2	785	5.2		0.847		37.3	LOS D	13.7	101.4				
East: Mount Ridley Road															
Lane 1	584	1.4	584	1.4	825	0.708	100	52.5	LOS D	20.9	148.0	Full	500	0.0	0.0
Lane 2	127	13.2	127	13.2	150	0.847	100	93.8	LOS F	8.3	64.5	Short	60	0.0	NA
Approach	712	3.6	712	3.6		0.847		59.9	LOS E	20.9	148.0				
North: Mickleham Road															
Lane 1	278	5.3	278	5.3	1238	0.224	100	9.8	LOS A	2.2	16.1	Short	100	0.0	NA
Lane 2	518	1.9	518	1.9	732 ¹	0.707	84 ⁶	35.5	LOS D	25.5	181.8	Short	165	0.0	NA
Lane 3	630	1.9	630	1.9	747 ¹	0.844	100	43.5	LOS D	35.8	254.9	Full	500	0.0	0.0
Lane 4	69	0.0	69	0.0	177	0.392	100	65.7	LOS E	4.0	27.8	Short	130	0.0	NA
Approach	1495	2.5	1495	2.5		0.844		35.5	LOS D	35.8	254.9				
West: Mount Ridley Road															
Lane 1	232	0.0	232	0.0	304	0.761	100	57.2	LOS E	13.7	96.0	Full	350	0.0	0.0
Lane 2	101	4.2	101	4.2	122	0.829	100	75.2	LOS E	6.5	47.4	Short	60	0.0	NA
Approach	333	1.3	333	1.3		0.829		62.6	LOS E	13.7	96.0				
All Vehicles	3324	3.2	3324	3.2		0.847		43.9	LOS D	35.8	254.9				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

⁶ Lane under-utilisation due to downstream effects

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Phase Timing Summary

Phase	A	D1	D2	E	G1	G2
Phase Change Time (sec)	0.0	52.3	67.4	69.8	95.0	114.3
Green Time (sec)	46.3	8.1	***	18.2	11.3	***
Phase Time (sec)	53.3	15.1	2.4	26.2	17.3	5.7
Phase Split	44%	13%	2%	22%	14%	5%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

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	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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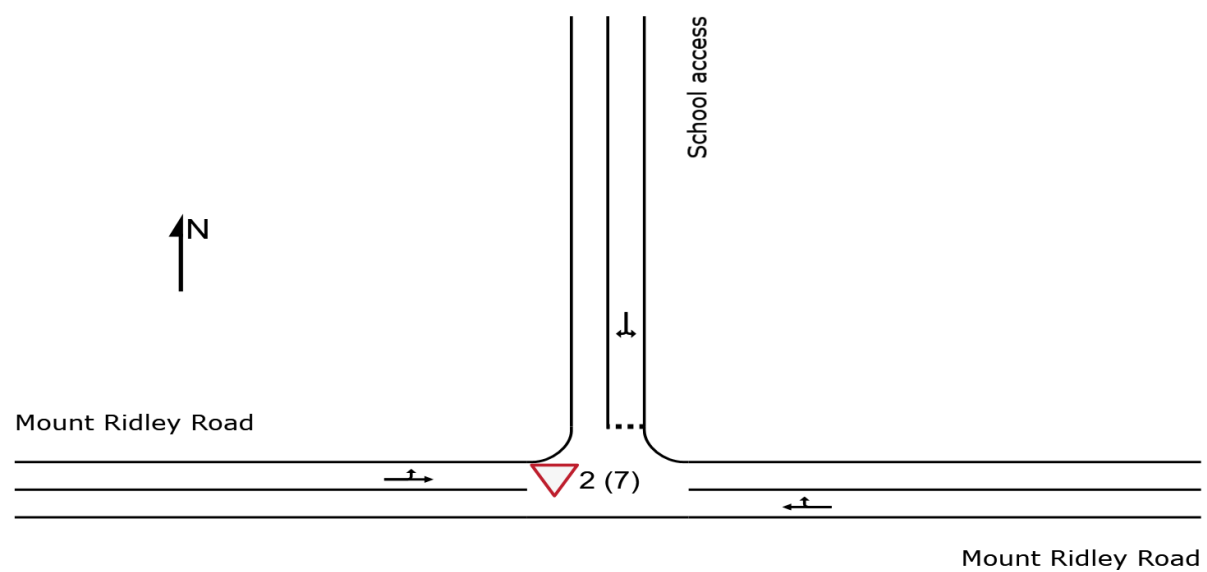
Default Site User Report

▽ Site: [2 (7)] AM_Mt Ridley Rd-School access (Anticipated 2035 (5%) + 400 students + RT lane)
Network: [3] AM_2035 (5%) + 400 students + RT lane (Anticipated)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA
Site Category: NA
Give-Way (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
East: Mount Ridley Road															
Lane 1	323	0.3	323	0.3	1708	0.189	100	4.8	LOS A	0.9	6.0	Full	350	0.0	0.0
Approach	323	0.3	323	0.3		0.189		4.8	NA	0.9	6.0				
North: School access															
Lane 1	254	0.0	254	0.0	1523	0.167	100	4.2	LOS A	0.7	5.2	Full	50	0.0	0.0
Approach	254	0.0	254	0.0		0.167		4.2	LOS A	0.7	5.2				
West: Mount Ridley Road															
Lane 1	82	5.1	82	5.1	1906	0.043	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	82	5.1	82	5.1		0.043		0.1	NA	0.0	0.0				
All Vehicles	659	0.8	659	0.8		0.189		4.0	NA	0.9	6.0				

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

Lane LOS values are based on average delay per lane.

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

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.

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USER REPORT FOR NETWORK SITE

Default Site User Report

 **Site: [1 (28)] PM_2285_Mickleham Rd-Mt Ridley Rd** (Anticipated 2035 (5%) + 400 students + RT lane)

Network: [4] PM_2035 (5%) + 400 students + RT lane (Anticipated)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Downstream lane blockage effects included in determining phase times

Phase Sequence: Sequence1

Input Phase Sequence: A, D1, D2*, D3*, E, G1, G2*, G3*

Output Phase Sequence: A, D1, D2*, E, G1, G2*

Reference Phase: Phase A

Offset: NA

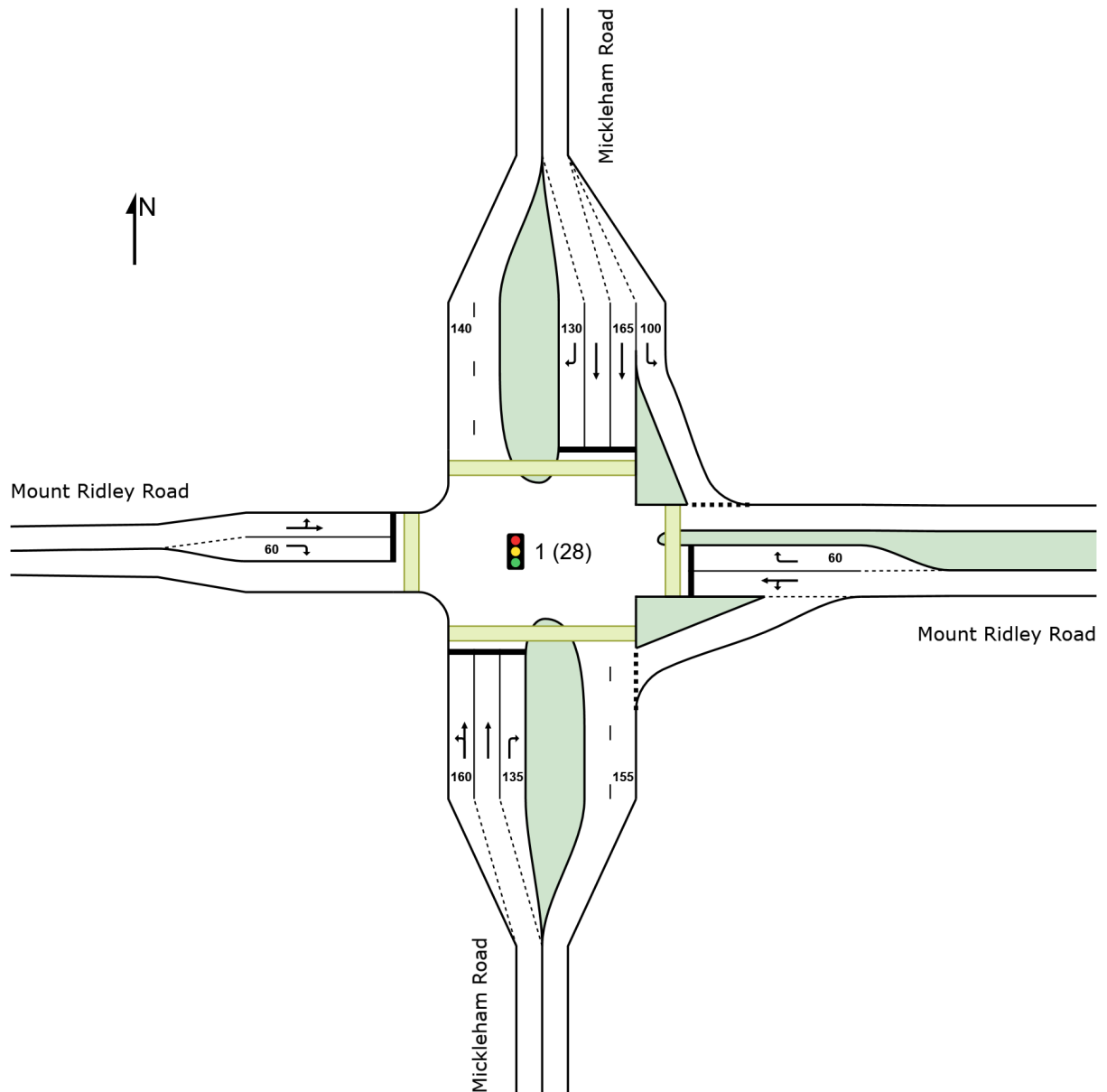
(* Variable Phase)

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	562	2.0	562	2.0	842	0.668	76 ⁶	30.7	LOS C	25.9	184.8	Short	160	0.0	NA
Lane 2	705	2.0	705	2.0	800 ¹	0.882	100	45.3	LOS D	42.4	301.7	Full	500	0.0	0.0
Lane 3	371	2.0	371	2.0	476	0.778	100	57.5	LOS E	21.1	150.0	Short	135	0.0	NA
Approach	1638	2.0	1638	2.0		0.882		43.1	LOS D	42.4	301.7				
East: Mount Ridley Road															
Lane 1	382	4.1	382	4.1	1099	0.348	100	15.7	LOS B	7.4	53.6	Full	500	0.0	0.0
Lane 2	211	4.5	211	4.5	239	0.882	100	76.5	LOS E	13.9	100.8	Short	60	0.0	NA
Approach	593	4.3	593	4.3		0.882		37.3	LOS D	13.9	100.8				
North: Mickleham Road															
Lane 1	60	15.8	60	15.8	1027	0.058	100	9.8	LOS A	0.6	4.9	Short	100	0.0	NA
Lane 2	283	3.9	283	3.9	434	0.652	84 ⁶	46.0	LOS D	15.2	109.9	Short	165	0.0	NA
Lane 3	338	3.9	338	3.9	434	0.778	100	50.1	LOS D	19.5	141.0	Full	500	0.0	0.0
Lane 4	58	0.0	58	0.0	94	0.617	100	72.6	LOS E	3.6	25.2	Short	130	0.0	NA
Approach	739	4.6	739	4.6		0.778		47.0	LOS D	19.5	141.0				
West: Mount Ridley Road															
Lane 1	207	0.0	207	0.0	303	0.684	100	54.9	LOS D	11.8	82.9	Full	350	0.0	0.0
Lane 2	84	3.8	84	3.7	201	0.419	100	61.2	LOS E	4.8	34.4	Short	60	0.0	NA
Approach	292	1.1	292	1.1		0.684		56.7	LOS E	11.8	82.9				
All Vehicles	3261	2.9	3261	2.9		0.882		44.1	LOS D	42.4	301.7				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

⁶ Lane under-utilisation due to downstream effects

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Phase Timing Summary

Phase	A	D1	D2	E	G1	G2
Phase Change Time (sec)	0.0	33.1	53.5	55.9	81.1	95.1
Green Time (sec)	27.1	13.3	***	18.2	6.0	18.9
Phase Time (sec)	34.1	20.3	2.4	26.2	12.0	24.9
Phase Split	28%	17%	2%	22%	10%	21%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

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	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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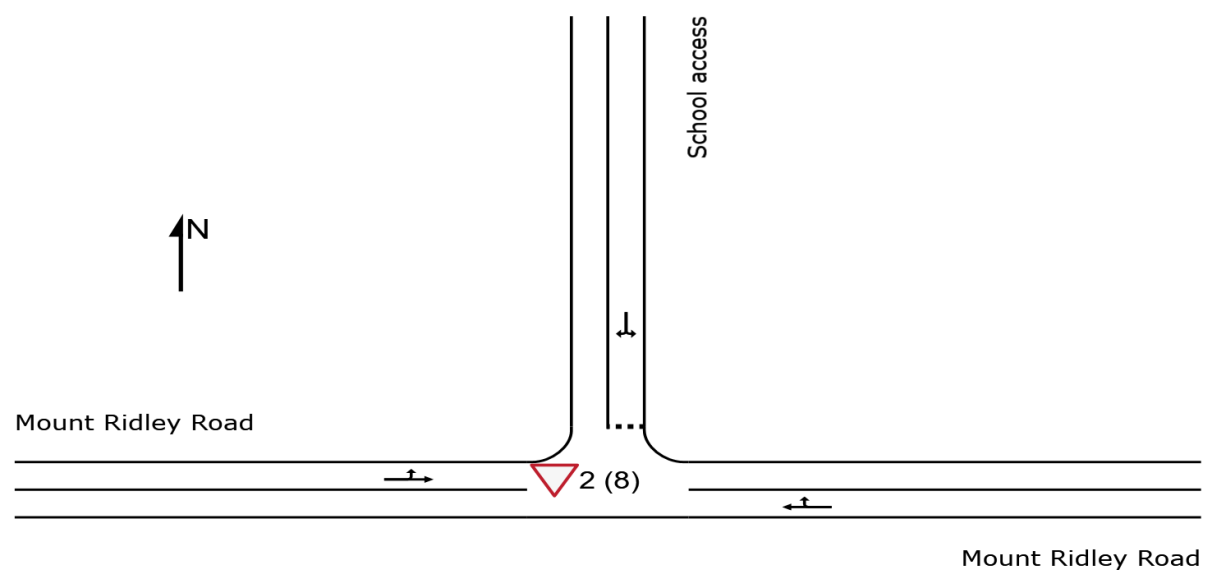
Default Site User Report

▽ Site: [2 (8)] PM_Mt Ridley Rd-School access (Anticipated 2035 (5%) + 400 students + RT lane)
Network: [4] PM_2035 (5%) + 400 students + RT lane (Anticipated)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA
Site Category: NA
Give-Way (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
East: Mount Ridley Road															
Lane 1	312	2.4	312	2.4	1750	0.178	100	3.9	LOS A	0.8	5.6	Full	350	0.0	0.0
Approach	312	2.4	312	2.4		0.178		3.9	NA	0.8	5.6				
North: School access															
Lane 1	225	0.0	225	0.0	1540	0.146	100	4.1	LOS A	0.6	4.5	Full	50	0.0	0.0
Approach	225	0.0	225	0.0		0.146		4.1	LOS A	0.6	4.5				
West: Mount Ridley Road															
Lane 1	69	4.5	69	4.5	1912	0.036	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	69	4.5	69	4.5		0.036		0.1	NA	0.0	0.0				
All Vehicles	606	1.7	606	1.7		0.178		3.6	NA	0.8	5.6				

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

Lane LOS values are based on average delay per lane.

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

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.

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USER REPORT FOR NETWORK SITE

Default Site User Report

 **Site:** [1 (21)] AM_2285_Mickleham Rd-Mt Ridley Rd (Anticipated 2037 (5%) + 400 students + RT lane)

Network: [1] AM_2037 (5%) + 400 students + RT lane (Anticipated)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Downstream lane blockage effects included in determining phase times

Phase Sequence: Sequence1

Input Phase Sequence: A, D1, D2*, D3*, E, G1, G2*, G3*

Output Phase Sequence: A, D1, D2*, E, G1, G2*

Reference Phase: Phase A

Offset: NA

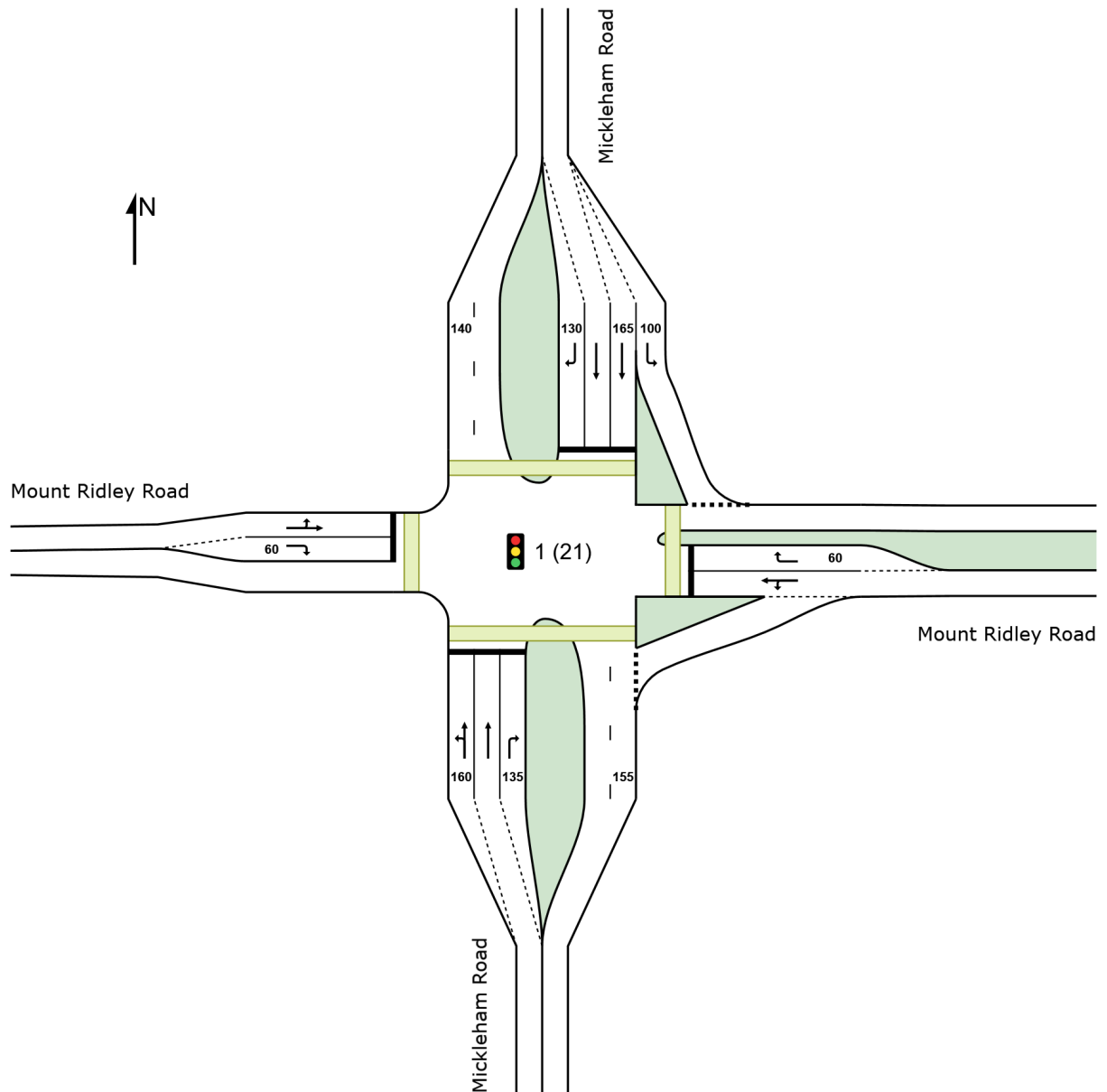
(* Variable Phase)

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	269	3.5	269	3.5	849	0.317	76 ⁶	25.1	LOS C	10.0	72.1	Short	160	0.0	NA
Lane 2	352	4.8	352	4.8	841	0.419	100	24.6	LOS C	14.0	101.9	Full	500	0.0	0.0
Lane 3	236	6.2	236	6.2	247	0.953	100	87.2	LOS F	17.3	127.7	Short	135	0.0	NA
Approach	857	4.8	857	4.8		0.953		42.0	LOS D	17.3	127.7				
East: Mount Ridley Road															
Lane 1	633	1.3	633	1.3	792	0.799	100	62.7	LOS E	28.1	198.8	Full	500	0.0	0.0
Lane 2	140	12.0	140	12.0	147	0.953	100	112.4	LOS F	10.2	78.9	Short	60	0.0	NA
Approach	773	3.3	773	3.3		0.953		71.7	LOS E	28.1	198.8				
North: Mickleham Road															
Lane 1	306	4.8	306	4.8	1248	0.245	100	12.2	LOS B	2.3	16.9	Short	100	0.0	NA
Lane 2	553	1.7	553	1.7	696 ¹	0.795	84 ⁶	41.9	LOS D	29.6	210.0	Short	165	0.0	NA
Lane 3	711	1.7	711	1.7	749 ¹	0.949	100	70.2	LOS E	50.8	361.2	Full	500	0.0	0.0
Lane 4	71	0.0	71	0.0	169	0.419	100	72.0	LOS E	4.1	28.5	Short	130	0.0	NA
Approach	1641	2.2	1641	2.2		0.949		49.9	LOS D	50.8	361.2				
West: Mount Ridley Road															
Lane 1	237	0.0	237	0.0	304	0.779	100	57.9	LOS E	14.2	99.2	Full	350	0.0	0.0
Lane 2	104	4.0	104	4.0	113	0.919	100	83.9	LOS F	7.2	52.1	Short	60	0.0	NA
Approach	341	1.2	341	1.2		0.919		65.9	LOS E	14.2	99.2				
All Vehicles	3612	3.0	3612	3.0		0.953		54.2	LOS D	50.8	361.2				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

⁶ Lane under-utilisation due to downstream effects

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Phase Timing Summary

Phase	A	D1	D2	E	G1	G2
Phase Change Time (sec)	0.0	53.0	67.6	70.2	95.5	114.2
Green Time (sec)	47.0	7.5	***	18.2	10.8	***
Phase Time (sec)	54.0	14.5	2.7	26.2	16.8	5.8
Phase Split	45%	12%	2%	22%	14%	5%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

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	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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Default Site User Report

▽ **Site: [2] AM_Mt Ridley Rd-School access** (Anticipated 2037 (5%) + 400 students + RT lane)

Network: [1] AM_2037 (5%) + 400 students + RT lane (Anticipated)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

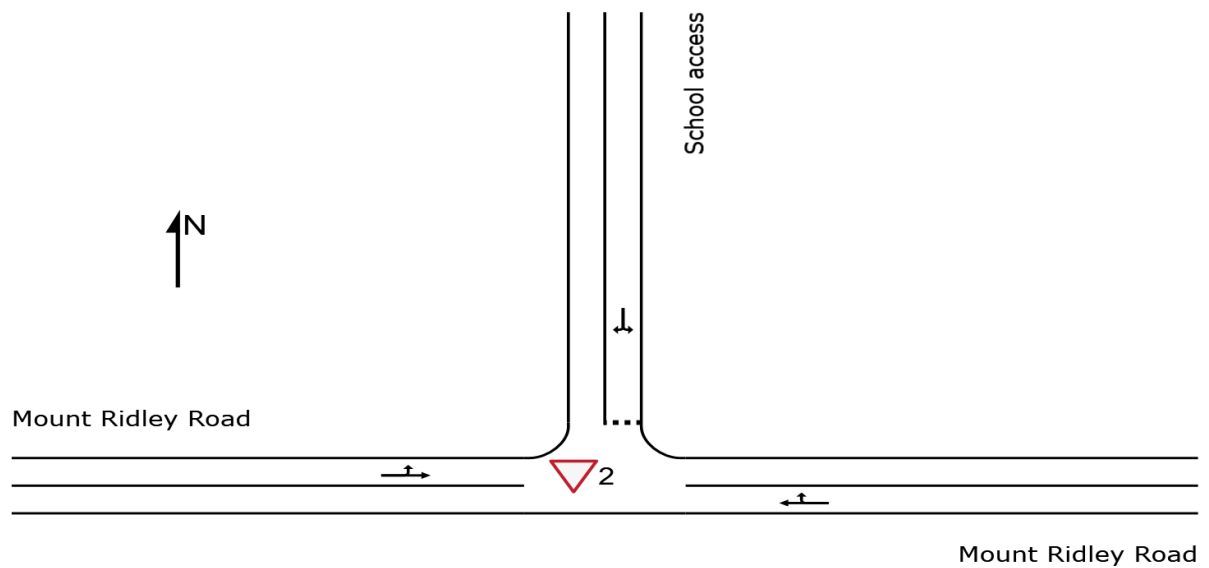
Give-Way (Two-Way)

Network Scenario: 1 | Local Volumes

Site Scenario: 1 | Local Volumes

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
East: Mount Ridley Road															
Lane 1	328	0.3	328	0.3	1702	0.193	100	4.8	LOS A	0.9	6.2	Full	350	0.0	0.0
Approach	328	0.3	328	0.3		0.193		4.8	NA	0.9	6.2				
North: School access															
Lane 1	254	0.0	254	0.0	1513	0.168	100	4.2	LOS A	0.8	5.3	Full	50	0.0	0.0
Approach	254	0.0	254	0.0		0.168		4.2	LOS A	0.8	5.3				
West: Mount Ridley Road															
Lane 1	89	4.7	89	4.7	1911	0.047	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	89	4.7	89	4.7		0.047		0.1	NA	0.0	0.0				
All Vehicles	672	0.8	672	0.8		0.193		3.9	NA	0.9	6.2				

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

Lane LOS values are based on average delay per lane.

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

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.

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USER REPORT FOR NETWORK SITE

Default Site User Report

 **Site: [1 (22)] PM_2285_Mickleham Rd-Mt Ridley Rd** (Anticipated 2037 (5%) + 400 students + RT lane)

Network: [2] PM_2037 (5%) + 400 students + RT lane (Anticipated)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA

Site Category: NA

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120.0 seconds (Site User-Given Cycle Time)

Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Downstream lane blockage effects included in determining phase times

Phase Sequence: Sequence1

Input Phase Sequence: A, D1, D2*, D3*, E, G1, G2*, G3*

Output Phase Sequence: A, D1, D2*, E, G1, G2*

Reference Phase: Phase A

Offset: NA

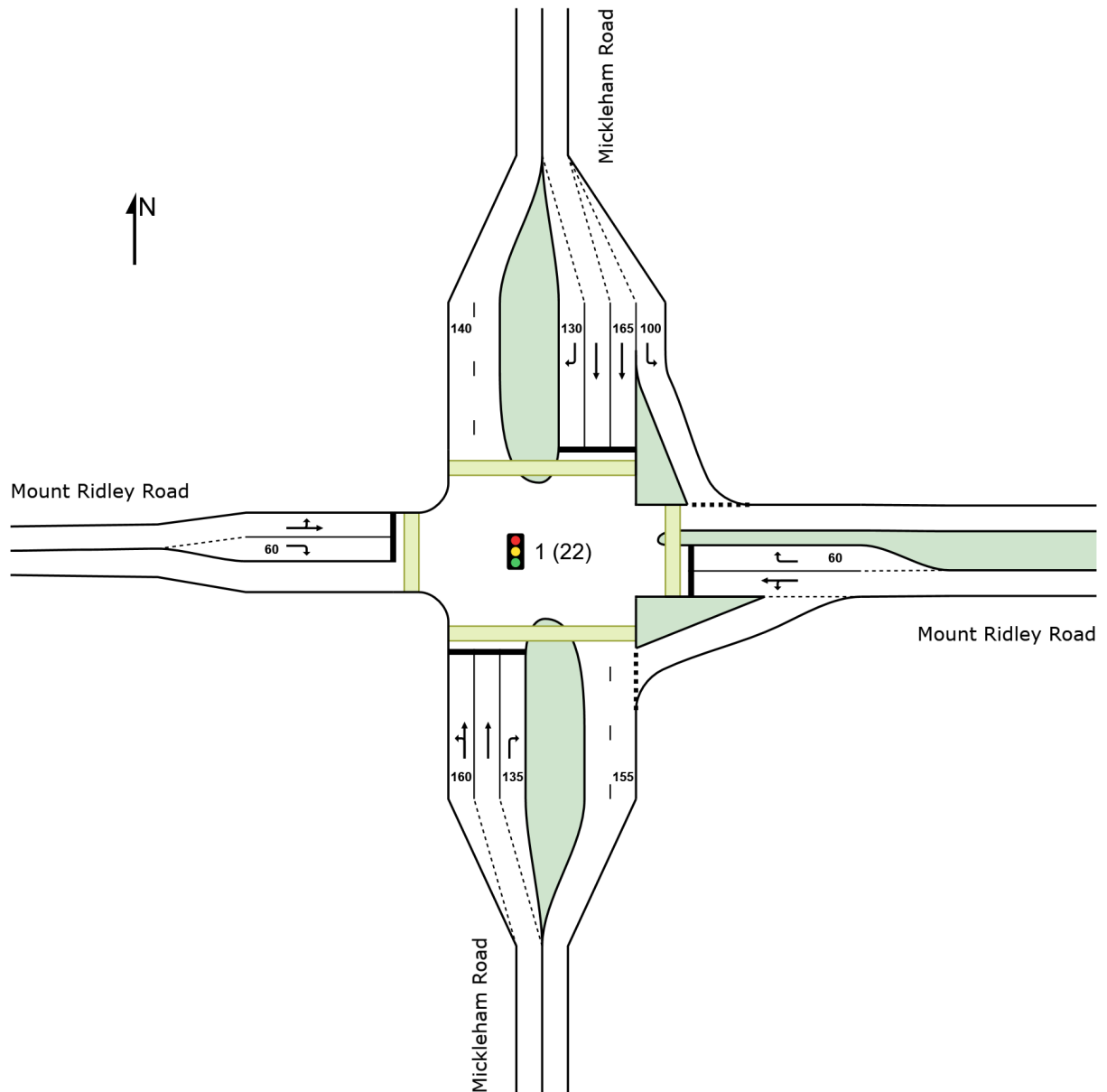
(* Variable Phase)

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Mickleham Road															
Lane 1	635	1.9	635	1.9	847	0.749	76 ⁶	33.4	LOS C	30.8	219.2	Short	160	0.0	NA
Lane 2	756	1.8	756	1.8	764 ¹	0.989	100	83.4	LOS F	61.5	436.8	Full	500	0.0	0.0
Lane 3	408	1.8	408	1.8	480	0.852	100	66.3	LOS E	25.1	178.4	Short	135	0.0	NA
Approach	1799	1.8	1799	1.8		0.989		61.8	LOS E	61.5	436.8				
East: Mount Ridley Road															
Lane 1	413	3.8	413	3.8	1099	0.376	100	25.0	LOS C	8.9	64.3	Full	500	0.0	0.0
Lane 2	233	4.1	233	4.1	235	0.989	100	111.5	LOS F	18.5	134.0	Short	60	0.0	NA
Approach	645	3.9	645	3.9		0.989		56.2	LOS E	18.5	134.0				
North: Mickleham Road															
Lane 1	66	14.3	66	14.3	1001	0.066	100	10.6	LOS B	0.8	6.5	Short	100	0.0	NA
Lane 2	312	3.5	312	3.5	437	0.714	84 ⁶	47.2	LOS D	17.2	124.0	Short	165	0.0	NA
Lane 3	372	3.5	372	3.5	437	0.852	100	55.3	LOS E	23.0	166.2	Full	500	0.0	0.0
Lane 4	58	0.0	58	0.0	94	0.617	100	72.6	LOS E	3.6	25.2	Short	130	0.0	NA
Approach	808	4.2	808	4.2		0.852		49.8	LOS D	23.0	166.2				
West: Mount Ridley Road															
Lane 1	214	0.0	214	0.0	303	0.706	100	55.6	LOS E	12.3	86.2	Full	350	0.0	0.0
Lane 2	86	3.7	86	3.7	193	0.448	100	62.0	LOS E	4.9	35.5	Short	60	0.0	NA
Approach	300	1.1	300	1.1		0.706		57.4	LOS E	12.3	86.2				
All Vehicles	3553	2.7	3553	2.7		0.989		57.7	LOS E	61.5	436.8				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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.

¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

⁶ Lane under-utilisation due to downstream effects

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Phase Timing Summary

Phase	A	D1	D2	E	G1	G2
Phase Change Time (sec)	0.0	33.2	53.0	55.7	80.9	94.9
Green Time (sec)	27.2	12.8	***	18.2	6.0	19.1
Phase Time (sec)	34.2	19.8	2.7	26.2	12.0	25.1
Phase Split	29%	16%	2%	22%	10%	21%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

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	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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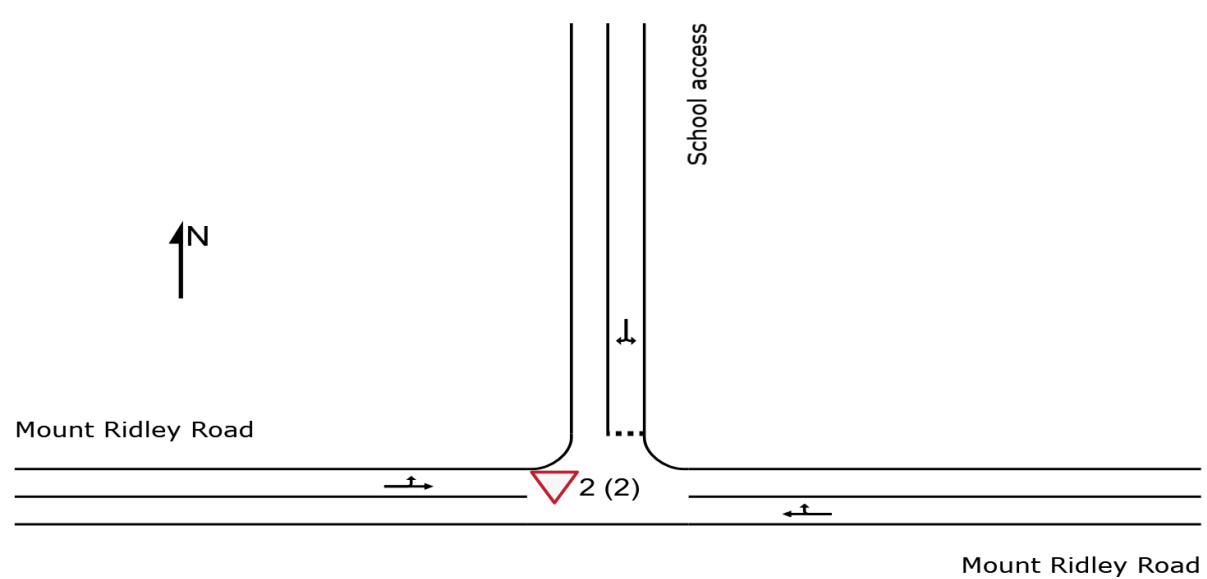
Default Site User Report

▽ **Site:** [2 (2)] PM_Mt Ridley Rd-School access (Anticipated 2037 (5%) + 400 students + RT lane)
Network: [2] PM_2037 (5%) + 400 students + RT lane (Anticipated)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

NA
Site Category: NA
Give-Way (Two-Way)
Network Scenario: 1 | Local Volumes Site Scenario: 1 | Local Volumes

Site Layout

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Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
East: Mount Ridley Road															
Lane 1	322	2.3	322	2.3	1747	0.184	100	3.8	LOS A	0.8	5.8	Full	350	0.0	0.0
Approach	322	2.3	322	2.3		0.184		3.8	NA	0.8	5.8				
North: School access															
Lane 1	225	0.0	225	0.0	1530	0.147	100	4.2	LOS A	0.7	4.6	Full	50	0.0	0.0
Approach	225	0.0	225	0.0		0.147		4.2	LOS A	0.7	4.6				
West: Mount Ridley Road															
Lane 1	77	4.1	77	4.1	1918	0.040	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	77	4.1	77	4.1		0.040		0.1	NA	0.0	0.0				
All Vehicles	624	1.7	624	1.7		0.184		3.5	NA	0.8	5.8				

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

Lane LOS values are based on average delay per lane.

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

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.

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Appendix 3 – Acronyms and terms

Acronyms / terms	Definition
AGRD4	Austroads Guide to Road Design Part 4 – Intersections and crossings
AGRD4A	Austroads Guide to Road Design Part 4A – Unsignalised and signalised intersections
AGTM6	Austroads Guide to Traffic Management Part 6 – Intersections, interchanges and crossings management
AGTM8	Austroads Guide to Traffic Management Part 8 – Local street management
AS/NZS2890.1	Australian Standard / New Zealand Standard 2890.1 Parking facilities Part 1: Off-street car parking
DTP	Department of Transport and Planning (formerly VicRoads)
ESD	Entering site distance
PSP	Precinct structure plan
SIDRA	SIDRA intersection – micro analytical traffic engineering software to model the performance of intersections
SISD	safe intersection sight distance
TIA	traffic impact assessment
vpd	vehicles per day
vph	vehicles per hour
VPA	Victorian Planning Authority