23-43 & 45 Tattersall Road, Kings Park
Traffic Impact Assessment

Prepared for:

Arcadis Australia

5 August 2020

The Transport Planning Partnership

23-43 & 45 Tattersall Road, Kings Park
Traffic Impact Assessment

Client: Arcadis Australia

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Executive Summary

Sell and Parker (the Applicant) is seeking to increase the operational capacity of the existing resource recovery facility (RRF) located at 23-43 and 45 Tattersall Road, Kings Park in Sydney. The RRF processes ferrous and non-ferrous metal material received by customers and other Sell and Parker facilities.

The Proposal would be considered a state significant development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the State Environmental Planning Policy (State and Regional Developments) 2011. Accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This traffic impact assessment has been prepared by The Transport Planning Partnership Pty Ltd (TTPP) to support the preparation of the EIS and assess the Proposal's impact on the surrounding traffic and transport networks.

Proposal Overview

Sell and Parker is seeking to increase the operational capacity of the currently approved material throughput capacity of 350,000 tpa to 600,000 tpa. Material that would continue to be processed at the RRF would comprise ferrous and non-ferrous metals.

Purpose of this Assessment

This traffic impact assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) as they relate to traffic and transport including:

- Details of all traffic types and volumes likely to be generated during operation, including description of haul routes.
- Plans demonstrating how all vehicles likely to be generated during site operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.
- An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model.
- Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site.
- Plans of any proposed road upgrades, infrastructure works or new roads required for the development.

Findings of Traffic Impact Assessment

SIDRA network modelling results show that the surrounding road network would operate similarly with and without the Proposal. Across the scenarios in each peak period there is minimal variation in the level of service.

In light of this, it is noted that the signalised intersections Sunnyholt Road with Vardys Road and Sunnyholt Road with Tattersall Road currently operate at over capacity (LoS E and F) which is causing operational limitations in the current setting. Separate to this Proposal, it is expected that TfNSW would review the current road network operation to address existing operational issues and in future years to manage the impact of background traffic growth on the wider road network.

1 Introduction

1.1 Proposal Overview

Sell and Parker (the Applicant) currently own and operate a resource recovery facility (RRF) at 23-43 and 45 Tattersall Road, Kings Park (the Proposal site). The RRF currently operates under approval SSD 5041 and three associated modifications (the Original Approval).

The Applicant is seeking approval to increase the throughput limit of the RRF from 350,000 to 600,000 tonnes per annum (tpa) (the Proposal). Approval for the Proposal is sought as a State Significant Development (SSD-10396) under Part 4, Division 4.7 of the Environmental Planning and Assessment 1979 (EP&A Act).

The increase in throughput limit would allow the Applicant to recycle up to 600,000 tpa of scrap metal (from both on-site and external sources). The Proposal would assist in achieving the higher recycling contamination standards prescribed by China's National Sword Policy as well as further reducing the volume of scrap metal that goes to landfill.

The existing infrastructure at the Proposal site has the capacity to accommodate the increased throughput and the Proposal would not require any physical works or change to the nature of operations. However, some adjustments to site management practices such as internal traffic flows and scheduling would be required.

The Transport Planning Partnership (TTPP) has prepared this Traffic Impact Assessment (TIA) report as part of the Environmental Impact Statement (EIS) for the Proposal.

1.2 Purpose of this Report

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) for the SSD, issued by NSW Department of Planning, Industry and Environment (DoPIE) on 19 December 2019.

Table 1.1 lists the SEARs requirements and the corresponding sections of the report where these are addressed.

Table 1.1: SEARs Requirements and Relevant Report Sections

Traffic and Transport	Section
• Details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes. Traffic flows are to be shown diagrammatically to a level of detail sufficient for easy interpretation.	Chapter 5
• Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.	Section 4.2 & Appendix A
• An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model.	Chapter 5
• Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site.	Appendix A
• Plans of any proposed road upgrades, infrastructure works or new roads required for the development.	Not applicable
• An assessment of potential impacts on local road pavement lifespan.	Separate dilapidation report

Further to the above, Transport for NSW (TfNSW) require further details on specific requirements relating to their authority. These requirements are discussed throughout the report as indicated in Table 1.2.

Table 1.2: TfNSW Requirements and Relevant Report Sections

Traffic and Transport	Section
• details all daily and peak traffic and transport movements likely to be generated (light and heavy vehicle, public transport, pedestrian and cycle trips) during construction and operation of the development	Chapter 5
• details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic and transport facilities provided on the road network located adjacent to the proposed development	Chapter 3
• an assessment of the operation of existing and future transport networks including public transport, pedestrian and bicycle provisions and their ability to accommodate the forecast number of trips to and from the development;	Section 3.7, 3.8 and 7.4
• details the type of heavy vehicles likely to be used (e.g. B-doubles) during the operation of the development and the impacts of heavy vehicles on nearby intersections;	Section 5.1
• details of access to, from and within the site to/from the local road and strategic (motorway) network including intersection location, design and sight distance (i.e. turning lanes, swept paths, sight distance requirements);	Section 4.5
• impact of the proposed development on existing and future public transport, walking and cycling infrastructure within and surrounding the site	Chapter 5 and Section 7.4
• an assessment of the existing and future performance of key intersections providing access to the site (Sunnyholt Road with Vardys Road and Sunnyholt Road with Tattersall Road) and any upgrades (road/ intersections) required as a result of the development;	Section 5.5, 5.6 and 5.7
• an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the development;	Section 5.7 and 5.8

• demonstrate the measures to be implemented to encourage employees of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing	Chapter 7
• appropriate provision, design and location of on-site bicycle parking, and how bicycle provision will be integrated with the existing bicycle network;	Chapter 7.4
• details of the proposed number of car parking spaces and compliance with appropriate parking codes and justify the level of car parking provided on the site;	Section 6.1
• details of access and parking arrangements for emergency vehicles;	Section 4.5.2
• detailed plans of the proposed layout of the internal road network and parking provision onsite in accordance with the relevant Australian Standards;	Appendix A
• the existing and proposed pedestrian and bicycle routes and end of trip facilities within the vicinity of and surrounding the site and to public transport facilities as well as measures to maintain road and personal safety in line with CPTED principles; and	Section 3.8
• preparation of a draft Construction Traffic Management Plan which includes: - details of vehicle routes, number of trucks, hours of operation, access management and traffic control measures for all stages of construction; - assessment of cumulative impacts associated with other construction activities; - an assessment of road safety at key intersections; - details of anticipated peak hour and daily truck movements to and from the site; - details of access arrangements for workers to/from the site, emergency vehicles and service vehicle movements; - details of temporary cycling and pedestrian access during constructions; - an assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrians, cyclists and public transport operations.	Section 4.4
• To ensure that the above requirements are fully addressed, any study must consider the cumulative traffic impacts associated with the development (and any other known proposed developments in the area). This provides an opportunity to identify a package of traffic and transport infrastructure measures required to support future development (if any). The timing and estimated cost of any infrastructure works should also be identified.	Section 5.9

2 Assessment Approach

This section outlines the traffic assessment approach and methodology for the Proposal.

2.1 Assessment Methodology

Baseline Conditions

In order to determine the traffic impacts associated with the Proposal, a review of the existing road network and transport network has been undertaken which form the baseline data to compare with future conditions.

In obtaining baseline traffic data an inspection of the surrounding road network was carried out by TTPP staff, a desktop review of nearby transport infrastructure and services was completed, weekday peak hourly traffic turning movements were surveyed at nearby intersections and daily traffic flows were captured along Tattersall Road.

Traffic turning movement surveys were undertaken on Thursday 13 February 2020 and Saturday 15 February 2020 during the weekday AM and PM and Saturday midday peak periods at the following key intersections:

- Sunnyholt Road – Vardys Road
- Sunnyholt Road – Tattersall Road
- Vardys Road – Tattersall Road
- Tattersall Road – Eastern Site Access Driveway
- Tattersall Road – Central Site Access Driveway
- Tattersall Road – Western Site Access Driveway

In addition, an automatic tube count (ATC) was undertaken on Tattersall Road to capture traffic flows across a 24-hour, seven-day period as part of a road capacity analysis.

Assessment of Traffic Impacts

The operation of key intersections nearby the Proposal site have been assessed using SIDRA Network version 8.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 5.4 (refer to Section 5.6).

Under the State Environmental Planning Policy (Infrastructure) 2007, the Proposal site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the RRF.

The, then, Roads and Maritime's *Guide to Traffic Generating Developments* 2002 (the Guide) is used as a tool in determining the future traffic generation rates for different developments types and land uses. The Guide states that peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution. The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for three industrial development types, namely, factories, warehouses and business parks. Of these development types, factories and warehouses are most similar to that of the Proposal. However, traffic generation rates as per the Guide are based on the gross floor area (GFA) of a development while vehicle movements associated with the Proposal site are not directly impacted by changes in the GFA as the Proposal will maintain the existing gross floor area. Rather, vehicle movements are influenced by the material throughput capacity.

Hence, application of traffic generation rates as per the Guide is not considered to be appropriate. As such, the traffic generation analysis of the Proposal has been undertaken on a 'first principles' approach using weighbridge data from the Proposal site.

Site-generated traffic has been projected for the proposed 600,000 tpa to be processed at the RRF. Traffic volume estimates consider the type of material being transported, the size and load capacity of transportation vehicles as assumed in the above. Site-generated traffic is added to future scenarios to determine the impact of the Proposal.

Background traffic growth has been adopted in future modelling scenarios based on the Sydney Strategic Traffic Forecasting Model (STFM) traffic volumes obtained from Transport for NSW (TfNSW, formerly RMS). From the STFM traffic volumes, the background growth rates (per cent per annum) from 2020 to 2030 can be determined and are based on approved developments in Sydney. STFM growth plots have been used to increase background traffic flows for SIDRA modelling of future scenarios for the Proposal.

The weekday AM and PM and Saturday midday road network peak periods have been modelled in the following scenarios:

- Scenario 0 – Existing conditions ("base case")
- Scenario 1 – Future conditions with development traffic in the opening year of the Proposal (i.e. Year 2020)
- Scenario 2 – Future conditions with background traffic growth 10 years post-opening of the Proposal (i.e. Year 2030 and no development traffic)
- Scenario 3 – Future conditions with background traffic growth and development traffic 10 years post-opening of the Proposal (i.e. Year 2030).

Furthermore, the operational capacity of Tattersall Road has also been reviewed in-line with RMS' typical traffic lane capacity. The operational capacity of a road is the number of vehicles that a road can physically accommodate. It is generally accepted that on a two-way divided road, the operational capacity can be as high as 1,000 passenger car units (pcu) per hour per lane (refer to Figure 3.8 in Section 3.6.

To assess operational capacity, the number of light vehicles and heavy vehicles have been converted to a uniform unit of measure; passenger car units (pcu). To convert the volume of heavy vehicles into pcu, a multiplication factor has been applied based on the type of vehicle recorded by the traffic tube counts. These factors are specified in Figure 3.9 (refer to Section 3.6).

Analysis of On-site Parking Provision

Parking provision for the Proposal site has been assessed using a 'first principles' approach. The first principles method of calculation considers parking demand based on the number of employees at the Proposal site and the floor area.

The Proposal would maintain the current number of employees and the floor area of the site. In addition, the hours of operation would be maintained and hence the parking demand for the Proposal site would remain unchanged.

Analysis of the site access and circulation route on-site has been undertaken to determine whether heavy vehicles proposed to access the site can adequately manoeuvre through the Proposal site and carry-out material unloading and loading activities

Furthermore, a study of on-site vehicle storage (referred to as stacking capacity) has been undertaken to determine whether the Proposal site can sufficiently accommodate delivery and collection vehicles during the site's peak operation.

2.2 Report Structure

The remainder of the report is set out as follows:

- Chapter 3 discusses the existing conditions including a description of the local road, transport, pedestrian and cycling networks
- Chapter 4 provides a description of the proposed development
- Chapter 5 assesses the proposed on-site parking provision and heavy vehicle stacking capacity on-site during operation
- Chapter 6 examines the operational traffic generation and its impact
- Chapter 7 presents an employee transport plan and measures for encouraging sustainable transport choices
- Chapter 8 summarises and concludes the findings of the assessment.

2.3 References

In preparing this report, reference has been made to the following:

- An inspection of the site and its surrounds
- Blacktown City Council's Local Environmental Plan 2015
- Blacktown City Council's Development Control Plan 2015
- Transport for NSW (formerly Roads and Maritime Services) Guide to Traffic Generating Developments, 2002
- Swept path assessments undertaken by TTPP, and
- Other documents and data as referenced in this report.

3 Existing Conditions

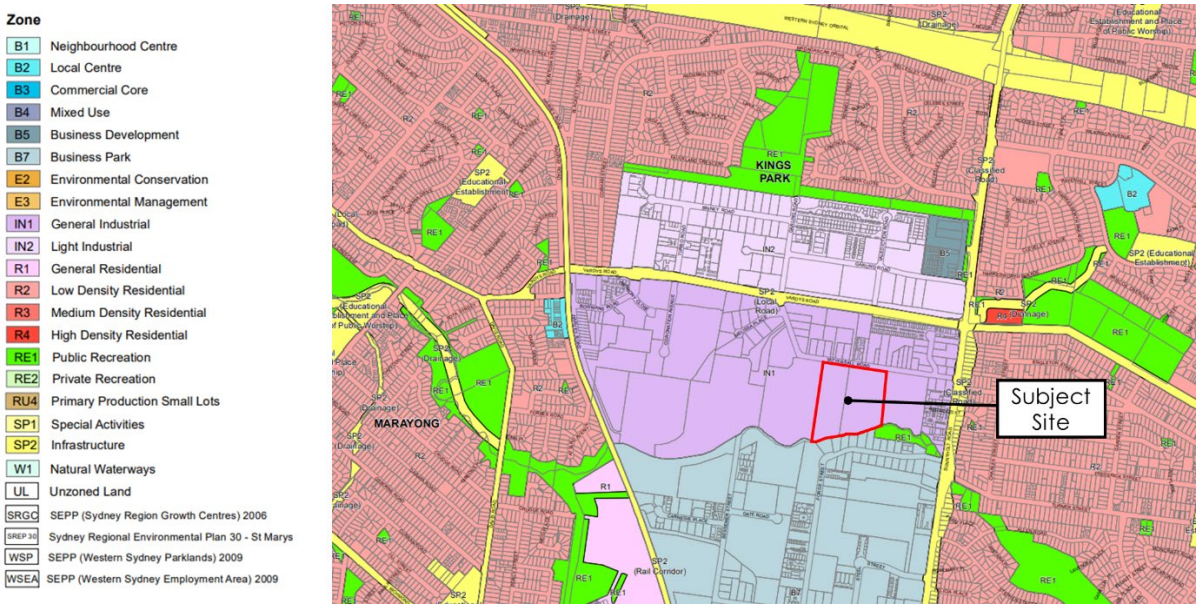
3.1 Site Location

The Proposal site is located at 23-43 and 45 Tattersall Road, Kings Park within the industrial district of the Blacktown local government area. The site is zoned as IN1 General Industrial under Blacktown City Council's Local Environmental Plan (LEP) 2015.

Land uses surrounding the Proposal site include light industrial, business park, public recreational and low-density residential classifications. Nearby industries include motor vehicle dealerships, vehicle repair workshops, vehicle tow yard and adhesive manufacturers.

The location of the site and its surrounding land use zones are shown in Figure 3.1.

Figure 3.1: Subject Site and Surrounding Land Use Zones



Source: Blacktown Local Environmental Plan 2015

3.2 Existing Resource Recovery Facility

3.2.1 Site Access and Layout

The Proposal site is accessed via three vehicular driveways off Tattersall Road. The driveways are generally positioned equidistant along the northern site boundary. Each driveway serves a unique purpose for the Proposal site, namely:

- The western driveway is an ingress driveway for heavy vehicles which deliver material to the RRF.
- The central driveway is an ingress driveway for light vehicles (staff and visitors) accessing on-site car park or delivering non-ferrous material to the RRF which is undertaken in medium rigid vehicle or smaller. Heavy vehicles picking up floc or shred material and delivering to other Sell and Parker facilities also access the site via this driveway.
- The eastern driveway is an egress driveway for all vehicles exiting the Proposal site.

The largest heavy vehicle to be delivering material to the Proposal site is a 19 m semi-trailer. This vehicle uses the western driveway to enter the site and the eastern driveway to exit the site.

All inbound and outbound vehicle movements at the Proposal site occur in a forward direction only. Reversing into and out of the site is not permitted under any circumstance.

Vehicle circulation routes within the site occur in a forward direction. While on-site some heavy vehicles are required to reverse a short distance to back-up towards the tip floor to offload material. Reversing manoeuvres are undertaken in areas where pedestrian access is prohibited.

The location of access driveways to the Proposal site are shown in Figure 3.2.

Figure 3.2: Proposal Site Access Arrangement

Source: Kings Park Metal Recovery and Recycling Facility Expansion SSD Scoping Report, Arcadis, dated 21 November 2019

3.2.2 Existing Material Processing

During the annual licence period (for the year up to 19 April 2020), Sell and Parker did not breach its annual limit, with throughput figures of;

- Received material (in) 342,664 tonnes;
- Processed (out) 346,056 tonnes.

Notwithstanding this, the current permissible limit for material throughput is 350,000 tpa. Thus, the site-generated traffic volumes have been assessed at the permissible limit which forms the "base case" for the assessment presented herein.

Depending on the type of metal, materials are processed differently and across various locations within the site. The key material processes and their location on-site are shown in Figure 3.3. The volume of material that is proposed in each location and the number of vehicles generated by each process is summarised in Table 3.1.

Materials are received via external customers and internal transfers from other Sell and Parker sites. The split of external and internal material throughputs is shown in Table 3.1.

At an annual throughput limit of 350,000 tpa, the RRF is estimated to generate 19 vehicles per hour and 298 vehicles per day. A summary of the number of heavy vehicles and light vehicles generated on an hourly, daily, monthly and annual basis is presented in Table 3.1.

Figure 3.3: Location of Material Processing Facilities On-Site

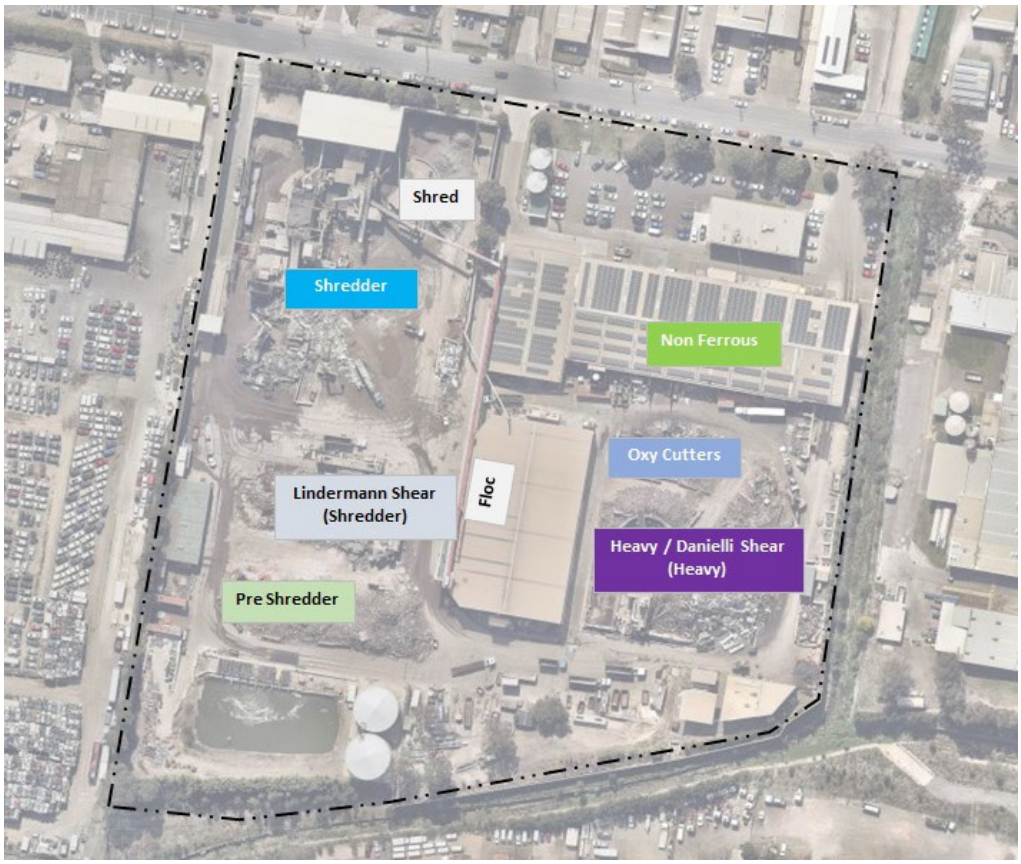


Table 3.1: Materials and Processing Throughput – 350,000 tpa

	Processing Type	Total Material Delivered from Customers (tonnes)	Total Material Delivered from Internal Transfers (tonnes)	No. of Vehicles		
				Light Vehicles	Heavy Vehicles	Total
Hourly	Non Ferrous	0.9	0.2	3	1	4
	Pre Shredder	8.0	2.1	0	1	1
	Shredder	42.5	11.1	0	10	10
	Lindemann Shear	0.0	0.0	0	0	0
	Heavy / Danielli Shear (Heavy)	8.1	2.1	0	1	1
	Oxy Cutters	5.3	1.4	0	0	0
	Floc and Shred	N/A	N/A	0	3-4	3-4
Daily	Non Ferrous	14.2	3.7	46	14	60
	Pre Shredder	120.0	31.2	0	14	14
	Shredder	637.5	165.9	5	152	157
	Lindemann Shear	0.6	0.2	0	0	0
	Heavy / Danielli Shear (Heavy)	121.7	31.7	0	11	11
	Oxy Cutters	31.7	8.3	0	2	2
	Floc and Shred	N/A	N/A	0	54	54
Monthly	Non Ferrous	355.7	92.5	1,161	342	1,503
	Pre Shredder	3,000.1	780.6	5	355	360
	Shredder	15,937.7	4,146.9	126	3,811	3,937
	Lindemann Shear	16.2	4.2	0	3	3
	Heavy / Danielli Shear (Heavy)	3,041.3	791.3	4	282	286
	Oxy Cutters	793.7	206.5	0	58	58
	Floc and Shred	N/A	N/A	0	1,338	1,338
	Total (Hourly)	**62**	**16**	**3**	**16**	**19**
	Total (Daily)	**926**	**241**	**51**	**247**	**298**
	Total (Monthly)	**23,145**	**6,022**	**1,296**	**6,189**	**7,485**
	Total (Annually)	**277,736**	**72,265**	**15,552**	**74,268**	**89,820**
	Total	**350,000**				

3.3 Road Network

Tattersall Road is a local road primarily serving access to industrial land uses including the Proposal site. It is configured as a two-lane two-way road running in an east-west direction. Near the Proposal site the road is linemarked with broken centreline marking to separate traffic lanes. The road carriageway width is approximately 13 m with unrestricted parking available on both sides of the road.

Tattersall Road adjoins Sunnyholt Road in the east at a signalised intersection. To the west, Tattersall Road intersects with Vardys Road at a priority-controlled (seagull) junction. The marked speed limit on Tattersall Road is 50 km/h.

Sunnyholt Road is a state road providing a direct link between Blacktown town centre, the M7 Motorway and Old Windsor Road. In the near vicinity of the Proposal site, it is configured as a four-lane two-way road separated by a central median.

A bus transitway (T-way) corridor is established on the eastern side of Sunnyholt Road, parallel the roadway. Parking is prohibited along both sides of the Sunnyholt Road.

The marked speed limit on Sunnyholt Road in the near vicinity of the Proposal site is 70 km/h.

Vardys Road is a regional road aligned in the east-west direction parallel to the M7 Motorway. It is configured with two lanes in each direction separated by a central median. Parking is prohibited on both sides of the road. The posted speed limit on Vardys Road is 60 km/h.

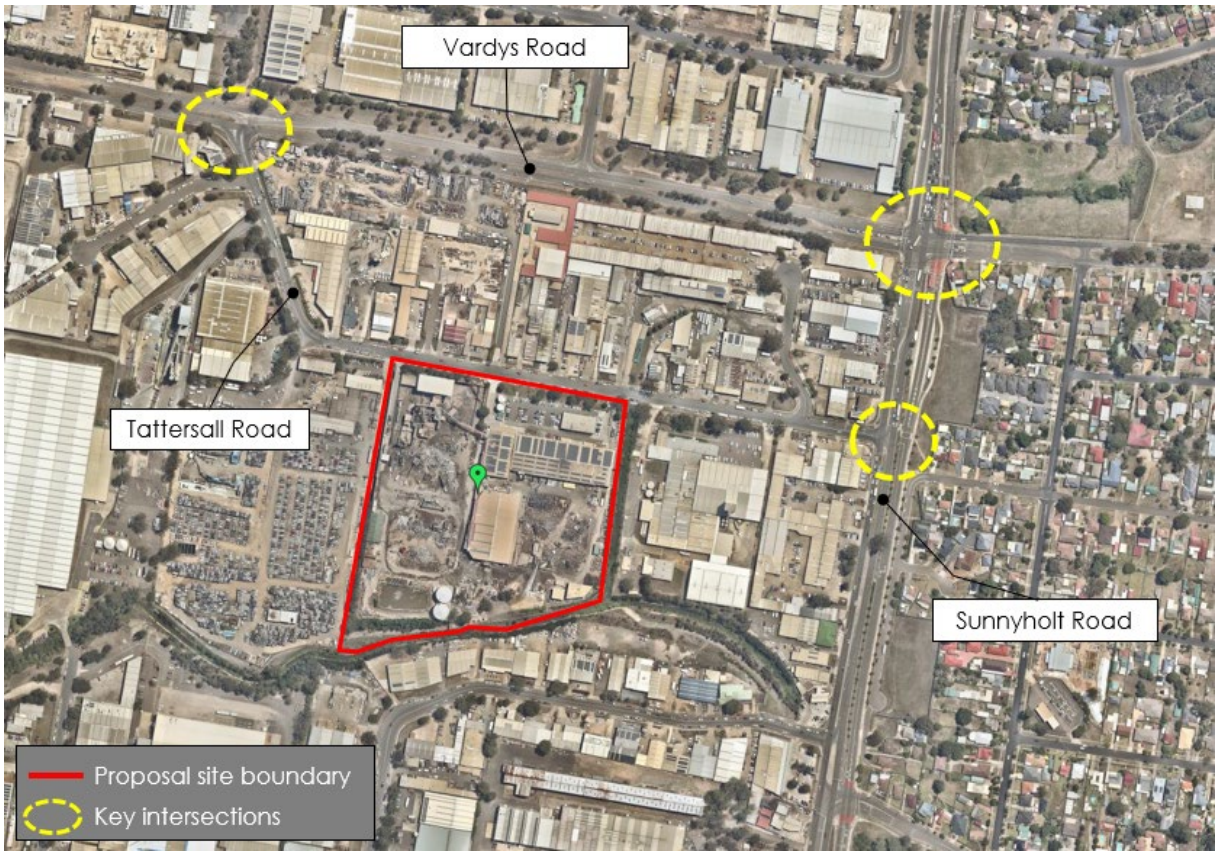
3.4 Surrounding Intersections

The following key intersections currently exist within the vicinity of the subject site:

- Sunnyholt Road – Vardys Road (signalised intersection)
- Sunnyholt Road – Tattersall Road (signalised intersection)
- Vardys Road – Tattersall Road (priority-controlled intersection).

The road network and key intersections surrounding the Proposal site are shown in Figure 3.4

Figure 3.4: Surrounding Road Network



Source: Nearmap, aerial image dated 22 January 2020

3.5 Traffic Volumes

Traffic movement surveys were undertaken at key nearby intersections and the three Proposal site access driveways on Tattersall Road. Surveys were commissioned on Thursday 13 February and Saturday 15 February 2020 during the following road network peak periods:

- Thursday AM survey period: 7:00am – 10:00am
- Thursday PM survey period: 4:00pm – 7:00pm
- Saturday Midday survey period: 10:00am – 1:00pm.

The following intersections were surveyed to collect existing traffic movement counts:

- Sunnyholt Road – Vardys Road
- Sunnyholt Road – Tattersall Road
- Vardys Road – Tattersall Road
- Tattersall Road – Eastern Site Access Driveway
- Tattersall Road – Central Site Access Driveway
- Tattersall Road – Western Site Access Driveway.

From the traffic movement counts, weekday morning and evening peak hours and Saturday midday peak hour have been identified as follows:

- Thursday AM peak hour: 7:45am – 8:45am
- Thursday PM peak hour: 4:00pm – 5:00pm
- Saturday peak hour: 11:45am – 12:45pm.

The existing traffic volumes on the local road network during the above-mentioned peak periods are shown in Figure 3.5, Figure 3.6 and Figure 3.7.

Figure 3.5: Traffic Turning Movements - Thursday AM Peak

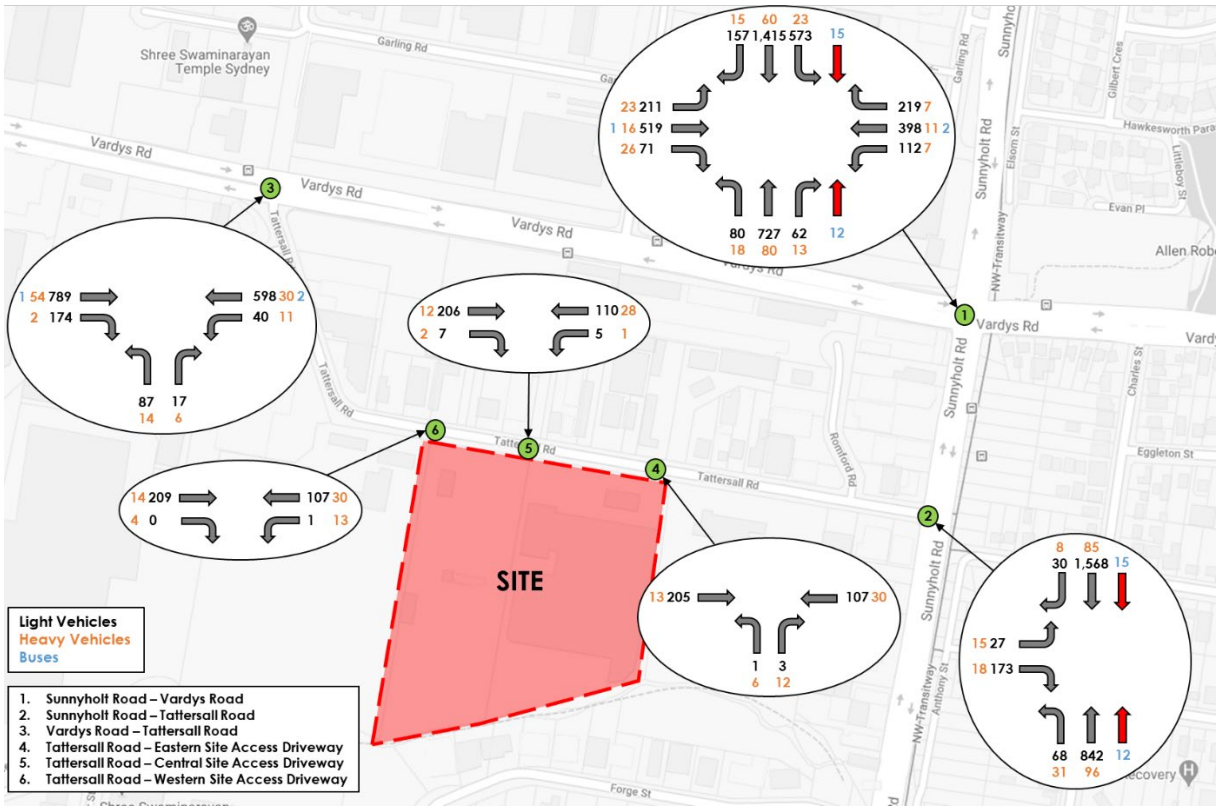


Figure 3.6: Traffic Turning Movements - Thursday PM Peak

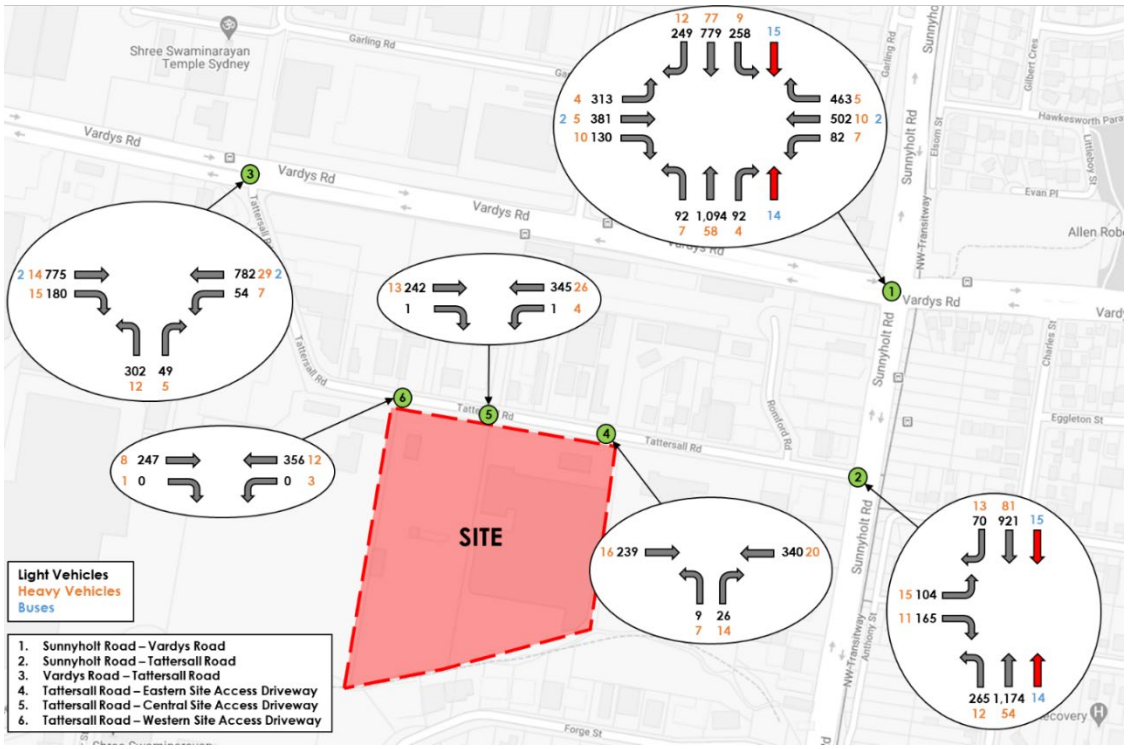
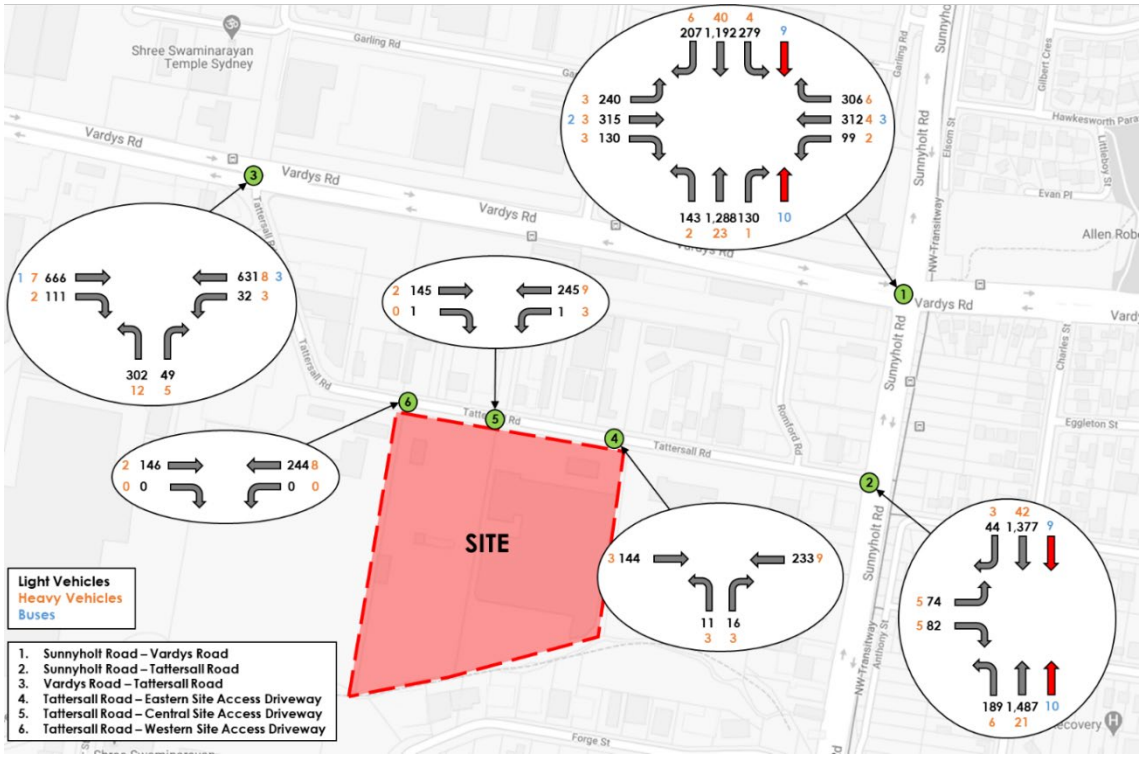


Figure 3.7: Traffic Turning Movements – Saturday Midday Peak



3.6 Roadway Capacity for Two-Way Urban Road

To determine the operational capacity for urban roads, the *Guide to Traffic Generating Developments'* typical mid-block capacities have been applied to the surrounding road network as shown in Figure 3.8. The operational capacity of a road is the number of vehicles that a road can physically accommodate. It is generally accepted that on a two-way divided road, the operational capacity can be as high as 1,000 passenger car units (pcu) per hour per lane.

It is noted that traffic delay and congestion along the roadway would be experienced when the traffic volumes exceed the operational capacity.

Figure 3.8: Operational Capacity for Urban Roads

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Source: Guide to Traffic Generating Developments (2002)

Within the vicinity of the Proposal site, Tattersall Road is a two-way divided urban road with one lane per direction. In February 2020, traffic movements across a 24-hour, seven-day period were captured on Tattersall Road.

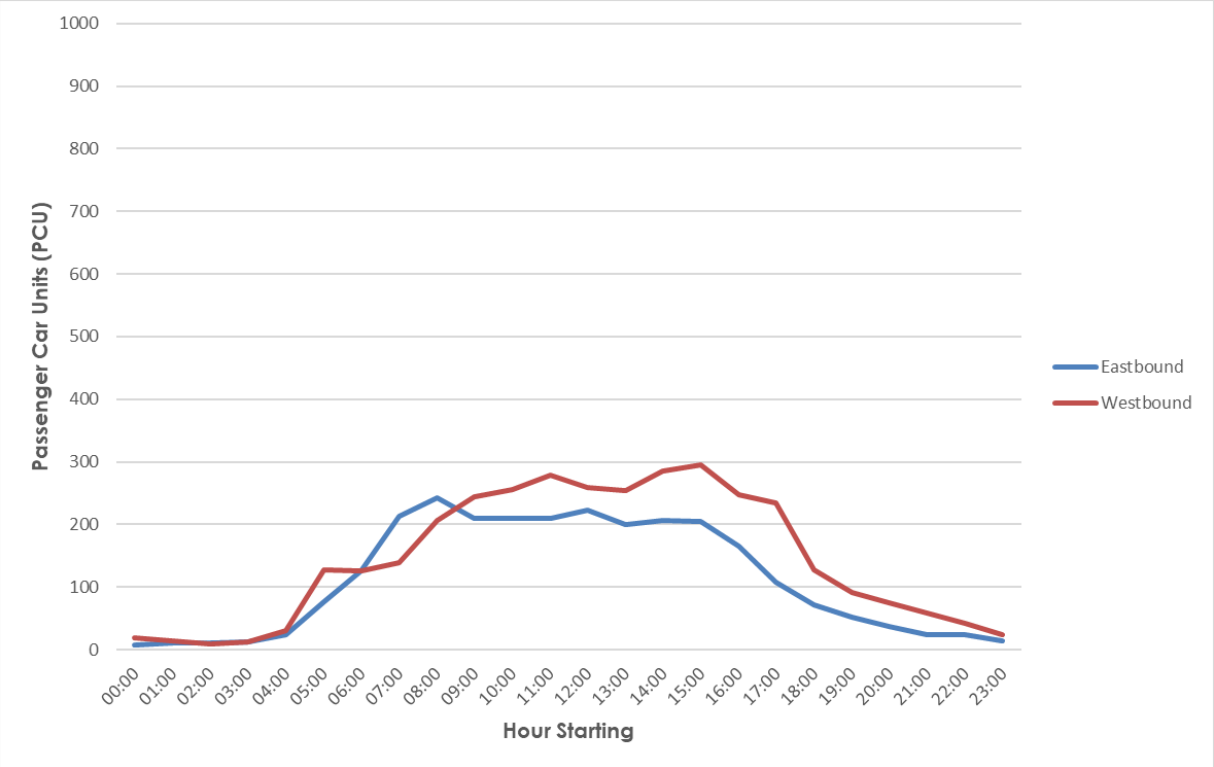
In order to assess the operational capacity of these roads, the number of light vehicles and heavy vehicles were converted to a uniform unit of measure; passenger car units (pcu). To convert the volume of heavy vehicles into pcu, a multiplication factor has been applied based on the type of vehicle recorded by the traffic tube counts. These factors are specified in Figure 3.9.

Figure 3.9: Passenger Car Unit Equivalencies

Vehicle type	PCU factor
Passenger car	1.0
Light commercial vehicle (LCV)	1.0
Rigid heavy	2.0
Bus	2.0
Articulated heavy	4.0

Source: Guide to Traffic Generating Developments (2002)

Figure 3.10: Tattersall Road Two-Way Flows (February 2020)



From Figure 3.10, the maximum number of pcu per hour is just below 300 pcu in the westbound direction between 2:00pm and 3:00pm. This is well below the typical capacity of 1,000 pcu per lane per hour as stated in the Guide. Having regard to this, Tattersall Road operates with traffic volumes less than the typical capacity of 1,000 pcu.

3.7 Public Transport

Bus services are available along the Northwest T-way on Sunnyholt Road and Vardys Road. The nearest bus stop to the Proposal site is located on Sunnyholt Road within 450 m walking distance which is approximately a 6-minute walk. There are frequent bus services to key neighbouring suburbs including Blacktown, Parramatta, Glenwood and Norwest.

It is noted that Marayong train station is located approximately 1.4 km walking distance west of the Proposal site which is approximately a 17-minute walk. Marayong station provides rail services via the T1 Western Line and the T5 Cumberland Line providing connectivity to key transport nodes in Blacktown and Parramatta.

A summary of the public transport services and frequencies is presented in Table 3.2.

Table 3.2: Public Transport Services

Public Transport	Route No.	Route Description	Typical Weekday Frequency	
			Peak Periods	Off-Peak Periods
Rail	T1	Emu Plains or Richmond to City	4-10 minutes	15 minutes
	T5	Leppington to Richmond	30 minutes	30 minutes
Bus	661	Blacktown to Parramatta via Kings Langley & North West T-way	20 minutes	60 minutes
	706	Blacktown to Parramatta via Winston Hills	60 minutes	60 minutes
	730	Blacktown to Castle Hill via Glenwood & Norwest	10-20 minutes	30 minutes
	731	Blacktown to Rouse Hill via Stanhope Gardens	15-20 minutes	30 minutes
	732	Blacktown to Rouse Hill via The Ponds	30 minutes	30 minutes
	734	Blacktown to Riverstone via Schofields	30 minutes	30 minutes
	735	Rouse Hill to Blacktown	30 minutes	30 minutes
	743	Blacktown to Kings Langley	30 minutes	30-60 minutes

Source: Transport for NSW, data accessed 26 February 2020

3.8 Pedestrian and Cyclist Infrastructure

Well established footpaths are provided on both sides of Tattersall Road and Sunnyholt Road. On Vardys Road, west of Tattersall Road, there is an established footpath on the south side of the road which extends in the general direction towards Marayong train station.

An off-road shared path is available along the east side of Sunnyholt Road which connects to the broader cycle network within the Blacktown LGA. A future cycle link is proposed by Council between the existing cycle routes on Sunnyholt Road and Lalor Creek via Lynwood Park, as shown in Figure 3.11.

Figure 3.11: Cycling Network

Source: Blacktown City Council 2016 Bike Plan

4 Description of the Proposal

4.1 Proposal Description

The Proposal seeks to increase the material processing throughput limit at the Proposal site from 350,000 tpa to 600,000 tpa.

The existing infrastructure at the Proposal site has the capacity to accommodate the increased throughput. The Proposal would not require any construction works and would not change the mix of materials currently received at the RRF. However, adjustments to site management practices would be required in terms of internal vehicle movements and stacking locations to enable the increased throughput.

The Proposal would utilise existing road infrastructure, other utility installations and stormwater discharge points.

4.2 Hours of Operation

The Proposal would not impact the current approved hours of operation at the Proposal site. Hours of operation will be maintained as follows:

- Oxy-acetylene torch cutting: 9:00am – 3:00pm Monday to Saturday, and no works on Sunday and public holidays.
- Maintenance and cleaning: 9:00pm – 6:00am Monday to Saturday, 24 hours on Sunday.
- All other activities: 6:00am – 9:00pm Monday to Saturday, and no works on Sunday and public holidays.

4.3 Workforce

The Proposal would utilise the current workforce and shift arrangements at the Proposal site. These will be maintained as follows:

- Day: 6:00am – 4.30pm, 70 staff
- Afternoon: 12:00pm – 10:30pm, 12 staff
- Night: 7:00pm – 5:30am, 11 staff.

The maximum number of staff on-site at any one time will be 79 person due to an overlap of some staff during the shift change over between the day and afternoon shifts.

The Proposal site currently employs a total of 119 staff which will not change as a result of the Proposal.

4.4 Construction

The Proposal would utilise existing approved infrastructure. Therefore, no construction activities would be required as part of the Proposal.

4.5 Site Access and Circulation

4.5.1 Material Delivery and Collection Vehicles

Blacktown City Council's Development Control Plan (DCP) 2015 outlines the design controls for accessing industrial developments. It states that a development shall be designed to meet the following objectives:

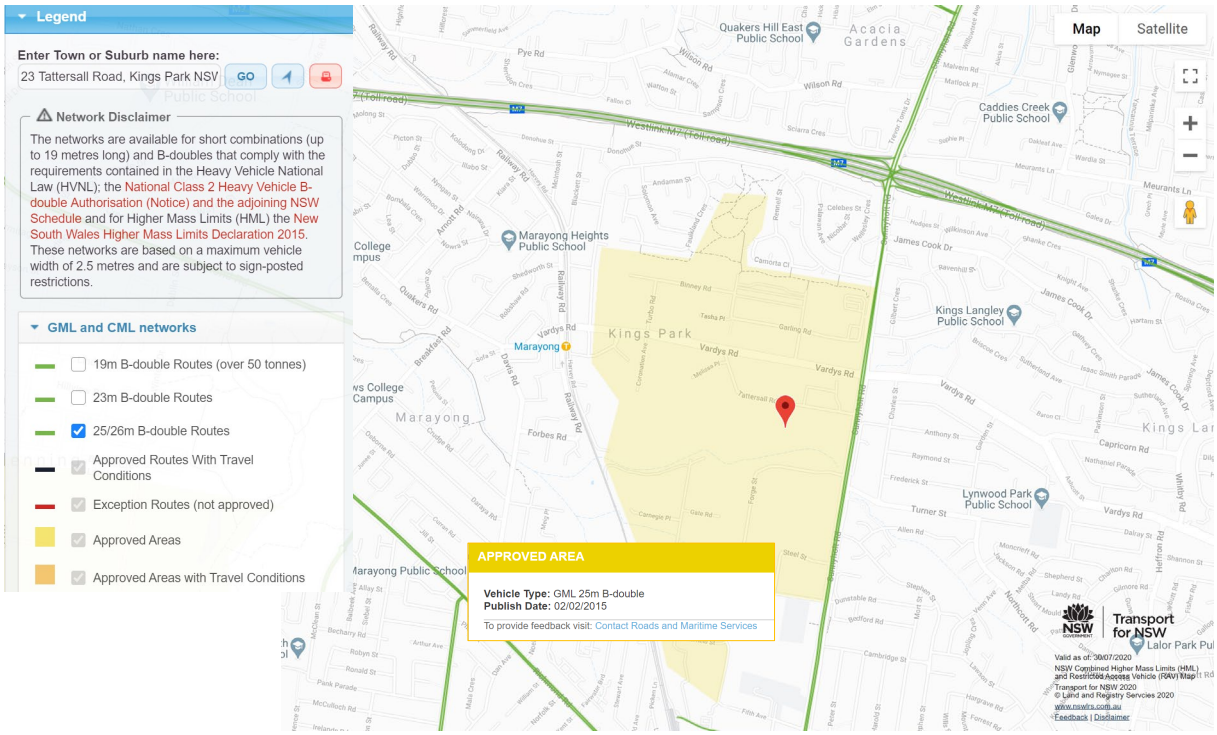
- *To ensure that vehicular circulation is safe and efficient and minimises potential vehicular and pedestrian conflict by encouraging the grouping of like activities.*
- *To ensure that adequate areas are set aside to allow for the safe and efficient manoeuvring of vehicles on site by compliance with Austroads Guide to Traffic Management and Austroads Guide to Road Design.*
- *To ensure traffic circulation arrangements are compatible with the local road system by implementing controls on ingress/egress to sites.*

The Proposal would retain the existing site access arrangements having separate ingress driveways for heavy vehicles and light vehicles, therefore grouping like vehicles and activities.

The Proposal site comprises a large land area which accommodates all internal circulation routes used by heavy vehicles to manoeuvre through the Proposal site. All movements occur in a forward direction, with the exception of a short reverse manoeuvre undertaken when a truck must back-up towards the tip floor to offload material. Reversing manoeuvres are undertaken in areas where pedestrian access is prohibited.

Internal circulation routes are a minimum of 3 m in width and can accommodate the largest vehicle to access the site. A swept path analysis has been undertaken to confirm adequate manoeuvrability through the Proposal site for a 19m semi-trailer. The swept path analysis is contained in Appendix A of this report. It is noted that occasionally a customer delivering material may access the site with a 25m B-double (on average one truck a day). According to TfNSW's Restricted Access Vehicle (RAV) map online, the surrounding arterial road network and the industrial district in which the site resides is approved for travel by 25m B-double trucks as shown in Figure 4.1.

Figure 4.1: Approved Routes for 25m B-Doubles



Directional signage is located at the site entry driveways indicating where heavy vehicle drivers and visitors must enter the site. Upon exiting the site, all vehicles must give-way to traffic on Tattersall Road.

Overall, the current site access arrangement and on-site circulation accord with the objectives of the DCP as outlined above. Therefore, it is deemed satisfactory for the Proposal site to maintain use of the existing site access and on-site circulation arrangement.

4.5.2 Emergency Vehicles

Emergency vehicles are currently permitted to access the Proposal site via any one of the site access driveways. It is proposed to maintain the current emergency vehicle access arrangement in the future.

4.5.3 Pedestrians

Machine operators would travel along designated pedestrian pathways to reach each material processing area within the site. The pedestrian paths would be line marked and associated signage would be installed to inform pedestrians and truck drivers of the permitted pedestrian movements.

Some areas within the site would be shared between vehicles and pedestrians and additional signs would be installed in these areas to notify drivers and pedestrians and be aware of the potential conflict.

A Pedestrian Access Management Plan is provided in Appendix C which shows the designated pedestrian walking routes on-site as well as the restricted areas permitting authorised personnel only to enter.

The location of the various material processing areas and corresponding vehicle stacking spaces are described in Section 6.2.

5 Traffic Assessment

5.1 Traffic Generation

Under the State Environmental Planning Policy (Infrastructure) 2007, the Proposal site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal site.

The, then, Roads and Maritime's *Guide to Traffic Generating Developments* (the Guide) states that peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution. The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for three industrial development types, namely, factories, warehouses and business parks. Of these development types, factories and warehouses are most similar to that of the Proposal. The traffic generation rates for factories and warehouses are summarised in Table 5.1.

Table 5.1: Roads and Maritime Traffic Generation Rates – Factories and Warehouses

Development Type	Traffic Generation Rates	
	Peak Hour Vehicle Trips	Daily Vehicle Trips
Factories	1 per 100m² GFA	5 per 100m² GFA
Warehouses	0.5 per 100m² GFA	4 per 100m² GFA

Source: Guide to Traffic Generating Developments, 2002

The traffic generation rates as per the Guide are based on the gross floor area (GFA) of the development. Vehicle movements associated with the Proposal site are not directly impacted by changes in the GFA as the Proposal will maintain the existing gross floor area. Rather, vehicle movements are influenced by the material throughput capacity. Hence, application of Roads and Maritime's traffic generation rates is not considered to be appropriate.

As such, the traffic generation analysis of the Proposal has been undertaken on a first principles approach using weighbridge data from the Proposal site. Weighbridge data has been extracted for the period of June 2019 during which site reflected typical/ standard operation. When annualised, the data is reflective of the site operating at around 340,000 tpa, close to the current approved throughput limit of 350,000 tpa.

5.1.1 Types of Vehicles and Deliveries

In order to determine the future traffic generation of the Proposal, the following assumptions regarding vehicle classification, site access and site operations have been considered:

- Vehicle Types
  - Vehicles with a tare weight of up to 3 tonne (t) are considered to be 'light vehicles' (LV) (i.e. passenger cars, utes and vans).
  - Vehicles with a tare weight greater than 3 t are considered to be 'heavy vehicles' (HV) (i.e. SRVs, MRVs, HRVs and Semi-trailers).
  - Vehicles used for internal operations (i.e. non-customer deliveries). The majority of these comprise semi-trailers with occasional HRVs.
- Site Access
  - Vehicles delivering non-ferrous material with a tare weight less than 10 t (i.e. up to and including MRVs) will enter the site via the central site access driveway.
  - Vehicles delivering non-ferrous and/or other material with a tare weight greater than 10 t (i.e. HRVs, semi-trailers) will enter the site via the western site access driveway.
  - Vehicles arriving to the site for floc and shred material will enter via the central site access driveway after having weighed-in upon entry to the site at the start of each day.
  - All vehicles will leave the site via the eastern site access driveway.
- Site Operation
  - Days of operation in June 2019 = 25 days
  - Operating hours for scrap metal recycling activities are based on current development consent conditions for SSD 5041 as follows:
    - 9:00am – 3:00pm Monday to Saturday (6-hour work day) for oxy-cutting, and
    - 6:00am – 9:00pm Monday to Saturday (15-hour work day) for all other activities.

5.1.2 Materials Processing

The volume of material that is processed in each area of the site and the number of vehicles generated by each process is estimated utilising the weighbridge entry and exit data.

The waste processing operation at 600,000 tpa is estimated to generate 34 vehicles per hour and 513 vehicles per day. It is noted that the oxy cutters and the Lindemann Shear process a low volume of material, and hence, a low volume of vehicle which is less frequent than one vehicle per hour.

A summary of the number of heavy vehicles and light vehicles on an hourly, daily, monthly and annual basis is presented in Table 5.2.

Table 5.2: Proposal Site Materials and Processing Throughput

	Processing Type	Total Material Delivered from Customers (tonnes)	Total Material Delivered from Internal Transfers (tonnes)	No. of Vehicles		
				Light Vehicles	Heavy Vehicles	Total
Hourly	Non Ferrous	1.6	0.4	6	2	7
	Pre Shredder	13.7	3.6	0	2	2
	Shredder	72.9	19.0	0	17	17
	Lindemann Shear	0.1	0.0	0	0	0
	Heavy / Danielli Shear (Heavy)	13.9	3.6	0	1	1
	Oxy Cutters	3.6	0.9	0	0	0
	Floc and Shred	N/A	N/A	0	6	6
Daily	Non Ferrous	24.4	6.3	80	23	103
	Pre Shredder	205.7	53.5	0	24	24
	Shredder	1092.9	284.4	9	261	270
	Lindemann Shear	1.1	0.3	0	0	0
	Heavy / Danielli Shear (Heavy)	208.5	54.3	0	19	19
	Oxy Cutters	54.4	14.2	0	4	4
	Floc and Shred	N/A	N/A	0	92	92
Monthly	Non Ferrous	609.7	158.6	1990	586	2,576
	Pre Shredder	5143.0	1338.2	9	609	618
	Shredder	27321.7	7108.9	217	6533	6,750
	Lindemann Shear	27.8	7.2	0	5	5
	Heavy / Danielli Shear (Heavy)	5213.6	1356.5	6	483	489
	Oxy Cutters	1360.6	354.0	0	99	99
	Floc and Shred	N/A	N/A	0	2294	2,294
	Total (Hourly)	**106**	**28**	**6**	**28**	**34**
	Total (Daily)	**1,587**	**413**	**89**	**424**	**513**
	Total (Monthly)	**39,676**	**10,324**	**2,221**	**10,608**	**12,829**
	Total (Annually)	**476,117**	**123,882**	**26,654**	**127,298**	**153,948**
	Total	**600,000**				

5.1.3 Staff Vehicles

As outlined in Section 4.3, the Proposal would utilise the current workforce and shift arrangements as follows:

- Day: 6:00am – 4.30pm, 70 staff
- Afternoon: 12:00pm – 10:30pm, 12 staff
- Night: 7:00pm – 5:30am, 11 staff.

On the basis that there would be no change in staffing and shift times, there would also be no increase in the number of staff car trips generated by the Proposal site.

As discussed in Chapter 7, the Site Operator would consider the development and implementation of an Employee Transport Plan which would provide a strategy for encouraging greater sustainable travel amongst staff. The Plan would encourage use of transport modes with a low environmental impact such as public transport, carpooling, and active travel.

5.2 Net Change in Traffic Generation

The existing traffic movements correspond with a material throughput that is less than 350,000 tpa (i.e. the current approved throughput limit for the site). Therefore, these traffic volumes have been extrapolated to reflect the 350,000 tpa material throughput base case. The resultant traffic movements are presented in Table 5.3.

Traffic generation associated with a material processing at 600,000 tpa has been estimated based on current material delivery/ collection patterns as outlined in Section 5.1.1. A summary of the net change in traffic movements between 350,000 tpa and 600,00 tpa scenarios is given in Table 5.3. The net change in traffic generation is denoted in brackets.

Table 5.3: Traffic Generation Net Change

Peak Period	Inbound Movements		Outbound Movements	
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles
Weekday AM Peak	13[a] (+3)	27 (+12)	4 (+3)	25 (+12)
Weekday PM Peak	2 (+3)	12 (+12)	35[a] (+3)	28 (+12)
Saturday Midday Peak	2 (+3)	5 (+12)	27[a] (+3)	8 (+12)

It is noted that there would be no change to staffing numbers and shift times. Hence, the arrival and departure patterns of staff cars would remain unchanged from the current scenario.

5.3 Background Traffic Growth

Background traffic growth has been adopted based on the Sydney Strategic Traffic Forecasting Model (STFM) traffic volumes obtained from RMS. From the STFM traffic volumes, the background growth rates (per cent per annum) from 2020 to 2030 can be determined and are based on approved developments in Sydney. STFM growth plots have been used to increase background traffic flows for SIDRA modelling of future scenarios for the development.

Future traffic associated with the Proposal has been distributed through the local road network proportionally based on the traffic distribution detailed in Section 5.4.

5.4 Traffic Distribution

The directional split of vehicles traveling to/ from the Proposal site is based on the current split, namely:

- 60 % of development traffic would travel via Sunnyholt Road, north of the site,
- 20 % of development traffic would travel via Sunnyholt Road, south of the site, and
- 20 % of development traffic would travel via Vardys Road, west of the site.

5.5 Intersection Assessment

To assess the traffic implication arising from the Proposal, intersection capacity analysis has been undertaken for the key nearby intersections including:

- Sunnyholt Road – Vardys Road
- Sunnyholt Road – Tattersall Road
- Vardys Road – Tattersall Road
- Tattersall Road – Eastern Site Access Driveway
- Tattersall Road – Central Site Access Driveway
- Tattersall Road – Western Site Access Driveway.

Using SIDRA Intersection modelling software, the following scenarios have been assessed:

- Scenario 0 – Existing conditions ("base case").
- Scenario 1 – Future conditions with development traffic in the opening year of the Proposal (i.e. Year 2020)
- Scenario 2 – Future conditions with background traffic growth 10 years post-opening of the Proposal (i.e. Year 2030)
- Scenario 3 – Future conditions with background traffic growth and development traffic 10 years post-opening of the Proposal (i.e. Year 2030).

The SIDRA model for Scenario 0 (existing conditions) has been calibrated in-line with observations of the traffic operation and signal phase timing during a site visit in the road network peak periods.

Signalised intersections in SIDRA models of future scenarios (Scenarios 1 to 3) adopt *optimum* phase times. This approach is consistent with advice from TfNSW (formerly RMS) in other recent projects.

5.6 Intersection Modelling Criteria

The existing operation of the nearby intersections to the site have been assessed using SIDRA Intersection version 8.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 5.4.

Table 5.4: Level of Service Criteria for Intersection Operation

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and 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	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: Guide to Traffic Generating Developments, 2002

5.7 Intersection Modelling Results

The intersection operational performance in each scenario during the weekday AM and PM peak periods and Saturday peak period are summarised in Table 5.5, Table 5.6 and Table 5.7, respectively.

The SIDRA output results are provided in Appendix B.

Table 5.5: Intersection Performance – Weekday AM Peak

Intersections	Intersection Type	Existing Conditions		Development Opening Year (2020)		Future Base (2030)		Future Base + Development (2030)	
		Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS
Sunnyholt Road – Vardys Road	Signalised	>100 s	F	>100 s	F	>100 s	F	>100 s	F
Sunnyholt Road – Tattersall Road	Signalised	9 s	A	11 s	A	10 s	A	11 s	A
Vardys Road – Tattersall Road	Priority (Give Way)	12 s	A	12 s	A	14 s	A	14 s	A
Tattersall Road – Eastern Site Access Driveway	Priority (Give Way)	11 s	A	11 s	A	11 s	A	11 s	A
Tattersall Road – Central Site Access Driveway	Priority (Give Way)	5 s	A	6 s	A	5 s	A	6 s	A
Tattersall Road – Western Site Access Driveway	Priority (Give Way)	6 s	A	6 s	A	6 s	A	6 s	A

Table 5.6: Intersection Performance –Weekday PM Peak

Intersections	Intersection Type	Existing Conditions		Development Opening Year (2020)		Future Base (2030)		Future Base + Development (2030)	
		Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS
Sunnyholt Road – Vardys Road	Signalised	61 s	E	59 s [(a)]	E	65 s	E	75 s	F
Sunnyholt Road – Tattersall Road	Signalised	65 s	E	53 s [(a)]	D	74 s	F	94 s	F
Vardys Road – Tattersall Road	Priority (Give Way)	16 s	A	17 s	B	20 s	B	20 s	B
Tattersall Road – Eastern Site Access Driveway	Priority (Give Way)	13 s	A	15 s	B	12 s	A	13 s	A
Tattersall Road – Central Site Access Driveway	Priority (Give Way)	6 s	A	7 s	A	6 s	A	6 s	A
Tattersall Road – Western Site Access Driveway	Priority (Give Way)	9 s	A	10 s	A	9 s	A	9 s	A

Notes:
(a) Improved average delay at intersections is the result of optimised phase times in SIDRA Intersection. As intersections operate in reality using SCATS system, SIDRA software will adjust phase times to optimise the intersection operation when a marginal increase of traffic movements is added to the network therefore producing a reduction in degree of saturation and average delay.

Table 5.7: Intersection Performance – Saturday Peak

Intersections	Intersection Type	Existing Conditions		Development Opening Year (2020)		Future Base (2030)		Future Base + Development (2030)	
		Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS
Sunnyholt Road – Vardys Road	Signalised	88 s	F	88 s	F	>100 s	F	94 s [a]	F
Sunnyholt Road – Tattersall Road	Signalised	67 s	E	81 s	F	>100 s	F	>100 s	F
Vardys Road – Tattersall Road	Priority (Give Way)	9 s	A	9 s	A	9 s	A	10 s	A
Tattersall Road – Eastern Site Access Driveway	Priority (Give Way)	8 s	A	11 s	A	8 s	A	10 s	A
Tattersall Road – Central Site Access Driveway	Priority (Give Way)	6 s	A	6 s	A	6 s	A	6 s	A
Tattersall Road – Western Site Access Driveway	Priority (Give Way)	7 s	A	8 s	A	7 s	A	8 s	A

Notes:
(a) Improved average delay at intersections is the result of optimised phase times in SIDRA Intersection. As intersections operate in reality using SCATS system, SIDRA software will adjust phase times to optimise the intersection operation when a marginal increase of traffic movements is added to the network therefore producing a reduction in degree of saturation and average delay.

2020 Scenarios

- **Scenario 0 – Existing Conditions ("base case")**

  Currently, the signalised intersection of Sunnyholt Road and Vardys Road is operating at over capacity during the weekday AM and PM peak periods and Saturday peak period (LoS F). The signalised intersection of Sunnyholt Road and Tattersall Road is operating at good level of service in the weekday AM peak period (LoS A) but is at over capacity in the weekday PM peak and Saturday peak periods (LoS E).

  The intersection of Vardys Road with Tattersall Road , and the site access driveways on Tattersall Road operate with minimal average delay and a good level of service (LoS A).

- **Scenario 1 – Future conditions with development traffic in the opening year of the Proposal**

  Additional development traffic on the road network would result in a similar intersection level of performance at Sunnyholt Road with Vardys Road in all peak periods, with minimal change to the average delay. It is noted that there would be a marginal improvement in average delay for the intersection of Sunnyholt Road with Vardys Road (by two seconds) in the weekday PM peak period. However, the intersection would continue to operate at over capacity.

  The intersection of Sunnyholt Road with Tattersall Road would continue to operate at a good level of service in the weekday AM peak period. There would be an improvement in average delay (by 12 seconds) in the weekday PM peak period.

  Improved average delay at intersections is the result of optimised phase times in SIDRA Intersection. As intersections operate in reality using SCATS system, SIDRA software will adjust phase times to optimise the intersection operation when a marginal increase of traffic movements is added to the network therefore producing a reduction in degree of saturation and average delay per vehicle for traffic passing through the intersection.

  The intersection of Vardys Road and Tattersall Road would continue to operate at a good level of service in all peak periods (LoS A and B). The average delay would remain unchanged in the weekday AM peak and Saturday peak periods, while the PM peak period would experience an increase of one second which would have a negligible impact to the intersection performance.

  The site access driveways on Tattersall Road would experience an increase of up to three seconds in average delay (this occurs at the eastern driveway in the Saturday peak period). This would result in an unnoticeable impact to the network performance, and therefore these intersections would maintain a satisfactory level of service.

2030 Scenarios

- **Scenario 2 – Future conditions with background traffic growth 10 years post-opening of the Proposal**

  Compared to existing conditions, additional traffic generation associated with background traffic growth over a 10-year period would result in an increase in the average delay to the overall network in all peak periods. Most noticeably, the signalised intersection of Sunnyholt Road with Tattersall Road would reduce in level of service from LoS E to F in the Thursday PM peak and Saturday peak periods.

  The exception to this would be the intersection of Sunnyholt Road and Tattersall Road which would have no change to average delay and would continue to operate at an acceptable level of service (LoS A).

  In the weekday PM peak period, the intersection of Vardys Road and Tattersall Road would operate at an acceptable level of service (LoS B) with minimal change to the average delay.

  The site access driveways on Tattersall Road would experience an increase of up to three seconds in average delay which would have an unnoticeable impact on the road network performance.

- **Scenario 3 – Future conditions with background traffic growth and development traffic 10 years post-opening of the Proposal**

  Compared with future conditions with background traffic growth (i.e. no development), the intersections would operate at a similar level of service in the weekday AM peak period with no changes to LoS and minimal changes to intersection average delay.

  In the weekday PM peak period, the intersection of Sunnyholt Road with Vardys Road would increase in average delay by 10 seconds and the intersection of Sunnyholt Road with Tattersall Road would increase by 20 seconds. It is noted that in SIDRA modelling, as an intersection's level of service depletes (from A to F) the intersection becomes more sensitive to changes as it has less capacity to absorb minor impacts. Therefore, this can result in a greater impact to average delay which is demonstrated at both of these intersections. If the intersection level of service was at an acceptable level (LoS D or better) before the development traffic is added, the intersections would be able to cope with changes resulting in a lesser impact.

  The intersection of Vardys Road with Tattersall Road and the site access driveways with Tattersall Road would experience an increase of up to two seconds in average delay. This would result in an unnoticeable impact to the network performance, and these intersections would continue to operate at a satisfactory level of service.

Overall, future scenarios which have been assessed show that the surrounding road network would operate similarly with and without the proposed development. Across the scenarios in each peak period there is minimal variation in the level of service.

In light of this, it is noted that the signalised intersections Sunnyholt Road with Vardys Road and Sunnyholt Road with Tattersall Road currently operate at over capacity (LoS E and F) which is causing operational limitations in the current setting. Separate to this Proposal, it is expected that TfNSW would review the current road network operation to address existing operational issues and in future years to manage the impact of background traffic growth on the wider road network.

5.8 Roadway Capacity and Safety

As mentioned in Section 3.6 Tattersall Roads carries traffic flows less than the 1,000 pcu typical capacity as specified in Figure 3.8. The maximum number of pcu per hour is just below 300 pcu in the westbound direction between 2:00pm and 3:00pm .

In the weekday peak periods, the Proposal is estimated to generate up to an additional three light vehicles and 12 heavy vehicles (as presented in Section 5.2) which would equate to approximately 39 pcu. In the future cases, Tattersall Road is estimated to carry approximately 339 pcu in the busiest hour which is well below the 1,000 pcu typical capacity. Therefore, Tattersall Road would continue to operate with an acceptable roadway capacity.

Given that there would be no discernible effect to the operational capacity of Tattersall Road, safety would not be expected to reduce in the future.

5.9 Nearby Developments

Council's Development Register has been reviewed for approved Development Applications within the vicinity of the Proposal Site. A review of the website has identified a Development Application (DA) for 46-50 Tattersall Road Kings Park. The DA seeks approval for a total processing capacity of 28,000 tonnes per year at the existing Resource Recovery Facility.

The findings of the Environmental Impact Statement for 46-50 Tattersall Road Kings Park identified that the existing traffic generation of the facility is eight truck movements per day (i.e. 4 in/4 out). The Proposal would generate an additional four trucks per day resulting in a total traffic generation of 36 trips per day (i.e. 18 in/18 out). No road upgrades are proposed as part of the Proposal.

The DA, which was lodged with Council on the 28 May 2019, has a status decision "in progress". Therefore, approval for this DA has not been granted. In light of this, a cumulative assessment of this SSDA at the Proposal site and the DA has not been carried out. Notwithstanding this, the addition of four vehicles per day (generated by the DA) have been captured in modelled future scenarios (Section 5.5) as background traffic growth within the surrounding road network.

The DPI&E NSW Planning Portal for Major Projects has been reviewed for approved State Significant Development Applications. A review of the website has identified a SSDA for 57-69 Tattersall Road Kings Park (Pick n' Payless Recycling Facility). The SSDA seeks approval for a total processing capacity of 130,000 tonnes per year at the existing facility. The current status of the Application is at the Response to Submissions stage, however responses by the Proponent are not yet available publicly online. Therefore, the EIS and Traffic and Parking Impact Assessment have been reviewed for traffic information associated with this SSDA.

The EIS and TIA appear to lack critical information required to develop a cumulative impact assessment with the proposal for the subject site. In particular, the information excludes:

- a breakdown of light vehicles and heavy vehicles. This is a key input into the SIDRA model to determine intersection average delay, degree of saturation and level of service as these elements are impacted by the type of vehicle.
- haul routes and directional splits for their development traffic, which is required in order spread their site-generated traffic across the intersection movements correctly.

Furthermore, a discrepancy has been identified in the TIA in relation to the PM peak traffic volumes generated by the Pick n' Payless operation. Namely, the traffic volumes reported in the body of the text do not correlate with the traffic flows shown diagrammatically. Therefore, it is unclear what the site traffic generation will be in the future.

It is noted that all of the above deficiencies have been raised by the agencies in the Response to Submissions Request Letter for the SSDA. In the absence of relevant traffic information, the cumulative impacts with the future Pick n' Payless traffic generation would have been considered in the future background growth traffic scenarios as assessed in this report.

6 Parking and Stacking Assessment

6.1 Car Parking

The Proposal would utilise the current workforce and shift arrangements at the Proposal site. Therefore, there would be no change to the car parking demand generated by the Proposal site.

Currently, the Proposal site provides 83 car parking spaces, including 79 employee parking spaces and four visitor parking spaces.

As mentioned in Section 4.3, the maximum number of staff on-site at any one time will be 79 persons which occurs during the shift change over between day and afternoon shifts. This parking demand is adequately met by provision of 79 employee car parking spaces.

The parking provision at the existing RRF satisfactorily accommodates the parking demand generated by the site. Therefore, with no changes to workforce and visitation at the Proposal site the future car parking provision of 83 car parking spaces would be satisfactory.

Notwithstanding this, due regard has been given to the parking rates as stipulated by City Council's DCP. The DCP provides parking rates for land uses including light industry, general industry, and warehouse or distribution centres.

According to Blacktown LEP 2015, a "resource recovery facility" does not fall under the "industrial" land use classification. This would be related to the varying nature of activities of each land use; that is, a resource recovery facility encompasses separating, sorting, processing or waste treating activities whereas industrial/ warehousing/ distribution involves the manufacturing, storage or distribution of goods.

As has been the case with other SSD applications for resource recovery facility developments in Sydney, on-site car parking provision is more appropriately determined by 'first principles'. First principles is a method of estimating on-site parking demand based on the size of the workforce employed at the site to run the operations. This method generates a more realistic and practical on-site parking provision for staff and visitors associated with the Proposal site which does not categorically fit the class of an industrial development as stipulated in Council's DCP.

Adopting a first principles approach, the Proposal site would require 79 staff car parking spaces which is currently accommodated at the site. On this basis, the future parking demand at the Proposal site would be satisfied by the existing parking provision.

6.2 Heavy Vehicle Stacking Capacity

On-site stacking capacity has been assessed on the basis of a 25-minute turnaround time per vehicle within each processing area. This duration is calculated as the current average duration spent on-site based on inbound and outbound weighbridge data. The stacking analysis also considers accommodation for up to a 19 m semi-trailer.

The available stacking spaces on-site are shown in Figure 6.1 and summarised in Table 6.1.

Figure 6.1: On-Site Stacking Availability

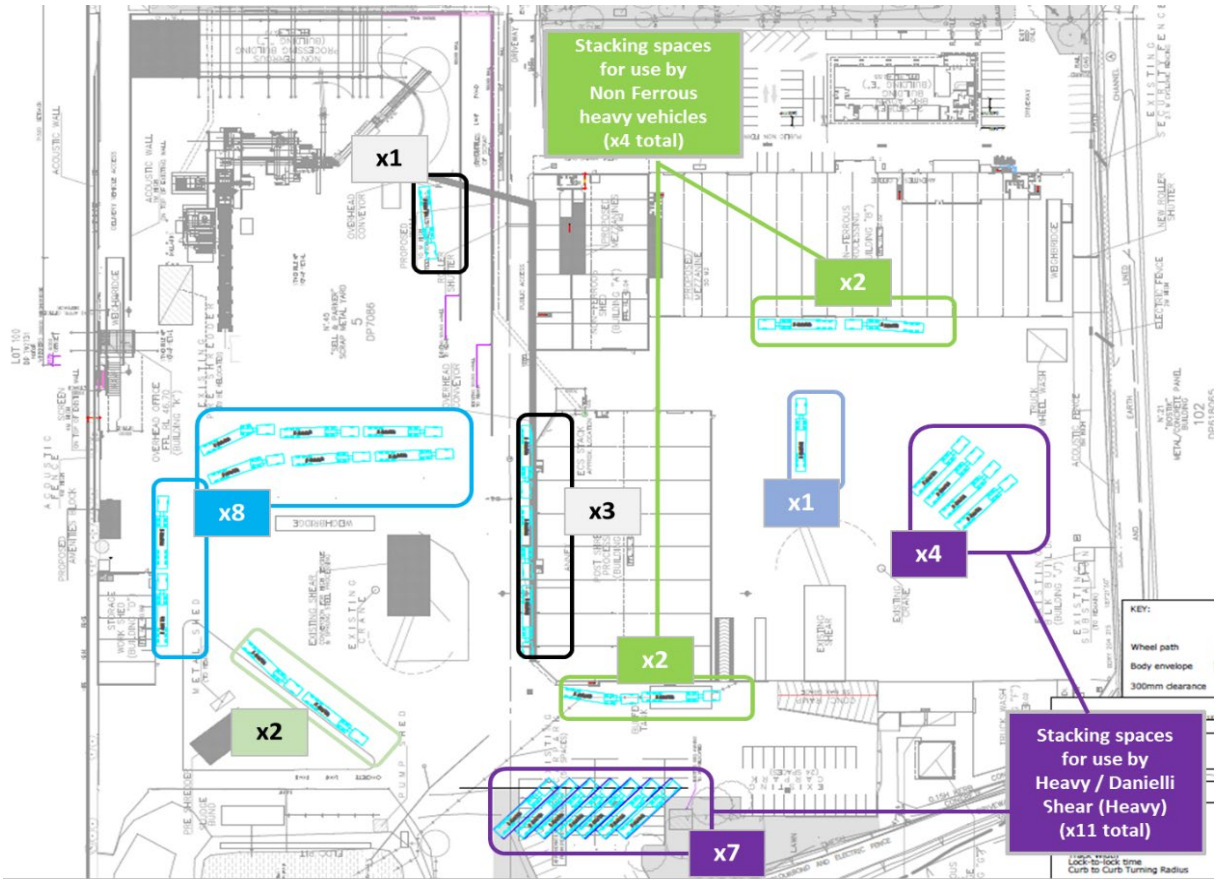


Table 6.1: Stacking Capacity

Processing Type	Available Stacking Spaces
Non Ferrous (External)	4
Non Ferrous (Internal)	>5
Pre Shredder	2
Shredder	8
Lindemann Shear	Not applicable [a]
Heavy / Danielli Shear (Heavy)	11
Oxy Cutters	1
Floc and Shred	4

Notes:
(a) The Lindemann Shear does not require nominated stacking space as the facility is infrequently accessed by trucks (i.e. existing 3 trucks per month, as shown in Table 3.1) and will continue to be accessed infrequently (i.e. future 5 trucks per month as shown in Table 5.2).

Light vehicles are able to enter the non-ferrous shed when delivering scrap metal. Whilst not shown on Figure 6.1, there is sufficient space to accommodate more than five light vehicles within the non-ferrous shed. To be conservative, five stacking spaces have been considered for the stacking capacity assessment as such.

The Proposal seeks to increase the operational throughput limit to 600,000 tpa. As detailed in Chapter 5, when operating at this throughput the site is estimated to generate 34 vehicles per hour or 513 vehicles per day. This has been estimated using current weighbridge data trends.

On-site stacking capacity has been assessed on the basis of a 25-minute turnaround period per vehicle. This duration is calculated as the average duration spent on-site per vehicle according to historic inbound and outbound weighbridge data. The stacking analysis considers the largest vehicle which would access the site; that is, a 19m semi-trailer.

In one hour, each stacking space can accommodate 2.4 vehicles (60 minutes / 25 minutes). The number of vehicles which can be accommodated at each material processing location on-site is a function of:

- the number of available stacking spaces, and
- the stacking space turnover rate (i.e. 2.4 vehicles per space per hour).

For example, in Figure 6.1, there are four stacking spaces in the non-ferrous (external) processing location. By applying the stacking space turnover rate of 2.4 vehicles per space per hour, a total of 10 vehicles can be accommodated in one hour across the four stacking spaces.

To determine whether the number of vehicles can be satisfactorily accommodated within the available stacking spaces, a comparison is made between:

- the number vehicles accessing the site per hour, and
- the stacking space threshold.

Using the same example as above, non-ferrous (external) processing activities are estimated to generate two vehicles arriving to the site per hour. The number of vehicles which can be accommodated at this location is 10 vehicles. Therefore, there is satisfactory stacking space on-site to accommodate vehicles generated by this activity.

The analysis of the on-site stacking capacity at an annual processing throughput of 600,000 tpa is provided in Table 6.2. It assesses the stacking capacity at each material processing location on-site.

Table 6.2: Stacking Capacity Assessment – 600,000 tpa

Processing Type	Available Stacking Spaces	Stacking Space Threshold [a]	No. of Vehicles Accessing Site per Hour	Accommodation per Hourly Basis (Satisfactory/ Unsatisfactory)
Non Ferrous – external (heavy vehicles)	4	10	2	2 < 10, Satisfactory
Non Ferrous – internal (light vehicles)	> 5	> 12	6	6 < 12, Satisfactory
Pre Shredder	2	5	2	2 < 5, Satisfactory
Shredder	8	19	17	17 < 19, Satisfactory
Lindemann Shear	N/A	N/A	0	N/A
Heavy / Danielli Shear (Heavy)	11	26	1	1 < 26, Satisfactory
Oxy Cutters	1	2	Average of 0 per hour, however, 2 per day	0 < 2, Satisfactory
Floc and Shred	4	10	6	6 < 10, Satisfactory

Notes:
(a) The number of vehicles which can be accommodated across the stacking spaces, rounded to the nearest whole number.

As shown in the last column in Table 6.2, the number of vehicles expected to be generated by the Proposal site at 600,000 tpa would be less than the stacking space thresholds at each material processing location. Hence, future site-generated traffic would be satisfactorily accommodated within the Proposal site.

7 Employee Transport Plan

7.1 Role of the Transport Plan

The Site Operator would consider the development and implementation of an Employee Transport Plan which would provide a strategy for encouraging greater sustainable travel amongst staff.

In its simplest form, the Employee Transport Plan will encourage use of transport modes with a low environmental impact such as public transport, carpooling, walking and cycling.

7.2 Transport Context

Bus services are available along the Northwest T-way on Sunnyholt Road and Vardys Road. The nearest bus stop to the Proposal site is located on Sunnyholt Road within 450 m walking distance which is approximately a 6-minute walk. There are frequent bus services to key neighbouring suburbs including Blacktown, Parramatta, Glenwood and Norwest.

Marayong train station is located approximately 1.4 km walking distance west of the Proposal site which is approximately a 17-minute walk. Marayong station provides rail services via the T1 Western Line and the T5 Cumberland Line providing connectivity to key transport nodes in Blacktown and Parramatta.

7.3 Pedestrian and Cycling Infrastructure

Well established footpaths are provided on both sides of Tattersall Road and Sunnyholt Road. On Vardys Road, west of Tattersall Road, there is an established footpath on the south side of the road which extends in the general direction towards Marayong train station.

An off-road shared path is available along the east side of Sunnyholt Road which connects to the broader cycle network within the Blacktown LGA.

7.4 Methods of Encouraging Modal Shift

The following may be implemented by the Site Operator to encourage more sustainable travel to work:

- Public transport: provide service timetable and route map for T-way bus services on noticeboards in the workplace where they will be visible to all employees (e.g. staff lunch room).
- Carpooling: Senior Management can help match employees living in the same area to travel together to/from work. It may be acceptable to display a map of the general travel routes which staff use on the way to/from work to encourage carpooling.

- Walking: Implement a '10,000 steps per day initiative'. Employees who have achieved the 10,000 step goal over a set period could be rewarded.
- Cycling: provide secure bike storage facilities and end-of-trip facilities for staff use. As there is an uptake of cycling, secure bicycle storage racks, lockers and shower/change rooms would be provided at the site.

Through application of the above measures, the site may be able to achieve a mode shift of 3-5% away from car usage by staff traveling to work. In the busiest work shift (day time shift), there would be 70 employees which would equate to a few more employees travelling by public transport and walking to work. The surrounding public transport network would be able to cope with a few additional people using existing train and bus services for travelling to work before 6am and after 4:30pm daily.

7.5 Monitoring the Plan

Monitoring of the Employee Transport Plan should be undertaken to ensure staff are continually informed of sustainable transport options for travelling to/ from work and encouraged to adopt more sustainable methods of travel.

Monitoring of the Plan should include a travel survey of staff to be undertaken with a focus to establish travel patterns and mode share of trips to and from the site.

In order for the Plan to be effective, it would be necessary to investigate feedback from employees to ensure that the Employee Transport Plan is achievable.

For the Plan to be successful, it is key to establish the following:

- Communication – good communication is necessary to promote health, environmental and economic benefits of sustainable transport and provide information about the alternatives to driving alone.
- Commitment – the Plan would involve changing established habits or providing the motivation for people to choose a travel mode other than private car use. To achieve cooperation, incentives or rewards for changing travel behaviour may be necessary.
- Building consensus – it would be necessary to obtain broad support for the introduction of the Plan from employees.

A Travel Plan Coordinator or member of staff would be responsible for the management of the Plan, and ensuring interest amongst employees is maintained.

Any changes to mode shifts and staff achievements should be rewarded and recognised company-wide, and communicated with employees on a reoccurring basis, for example at quarterly workplace meetings.

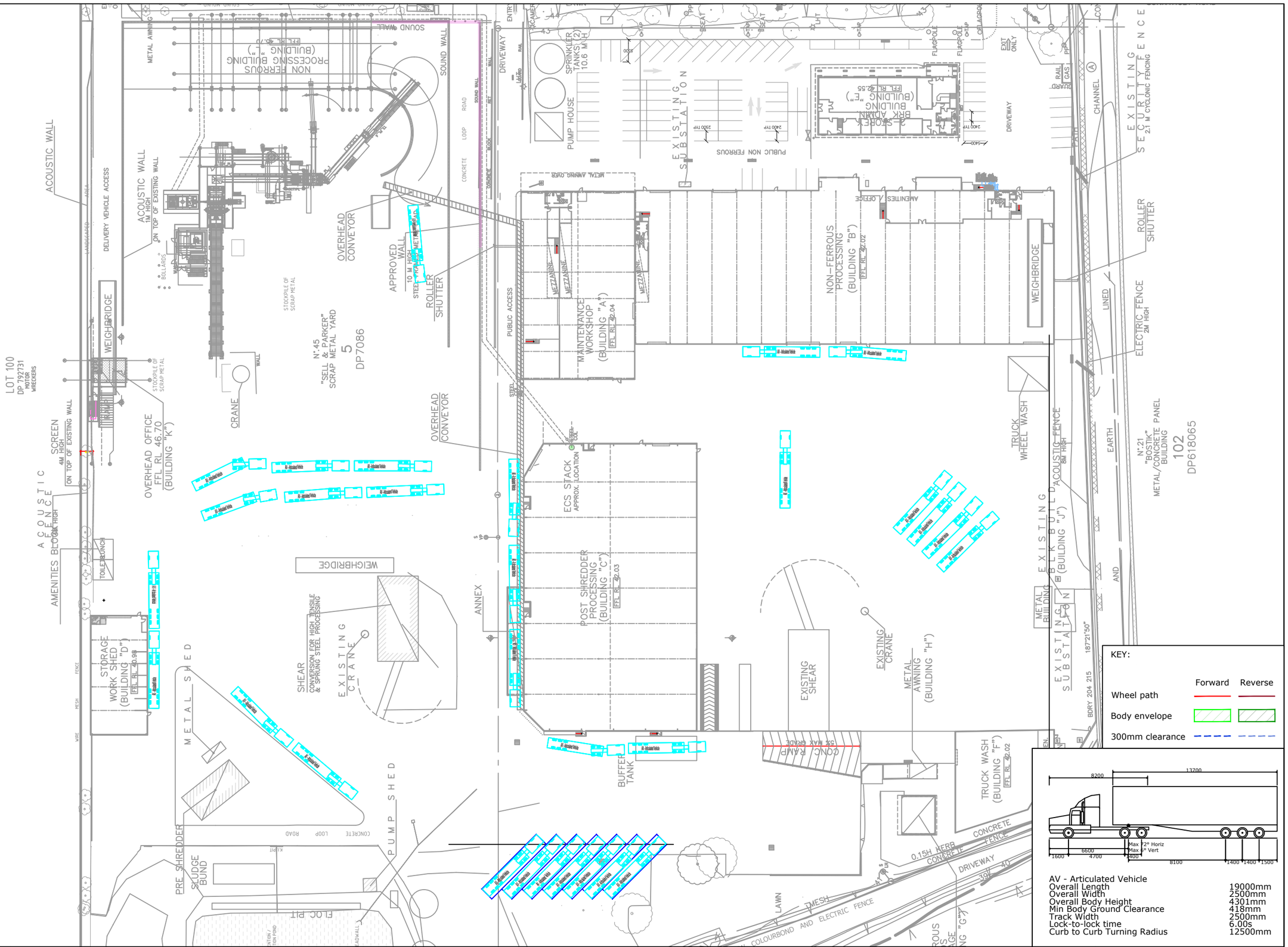
8 Summary and Conclusion

Based on the analysis and discussions presented within this report, the following summary and conclusions are made:

- Sell and Parker is seeking to increase the operational capacity of the existing resource recovery facility at 23-43 and 45 Tattersall Road, Kings Park (the Proposal). The Proposal would increase the material handling capacity of the MRF from 350,000 tpa to 600,000 tpa.
- The site access and circulation arrangements of the Proposal site accords with Blacktown City Council's DCP 2015 for industrial uses. The Proposal will maintain the current site access and circulation arrangements.
- Based on first principles, the proposed supply of 83 parking spaces would adequately accommodate the on-site car parking demand as it is proposed that there will be no changes to workforce and visitation at the Proposal site.
- Material processing operations at the Proposal site would be expected to generate an additional three light vehicle movements and 12 heavy vehicle movements during the road network peak periods.
- Assessed traffic modelling scenarios consider the road network conditions in the opening year of the development (2020) and a plus 10-year scenario (2030). In both years, additional traffic associated with the Proposal site would result in similar levels of service at nearby intersections as before the addition of development traffic. Key signalised intersections in the vicinity which are currently operating at capacity would operate in the future with some decrease in average delay while site access driveways along Tattersall Road would continue to operate at a good level of service.

Appendix A

Swept Path Analysis



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

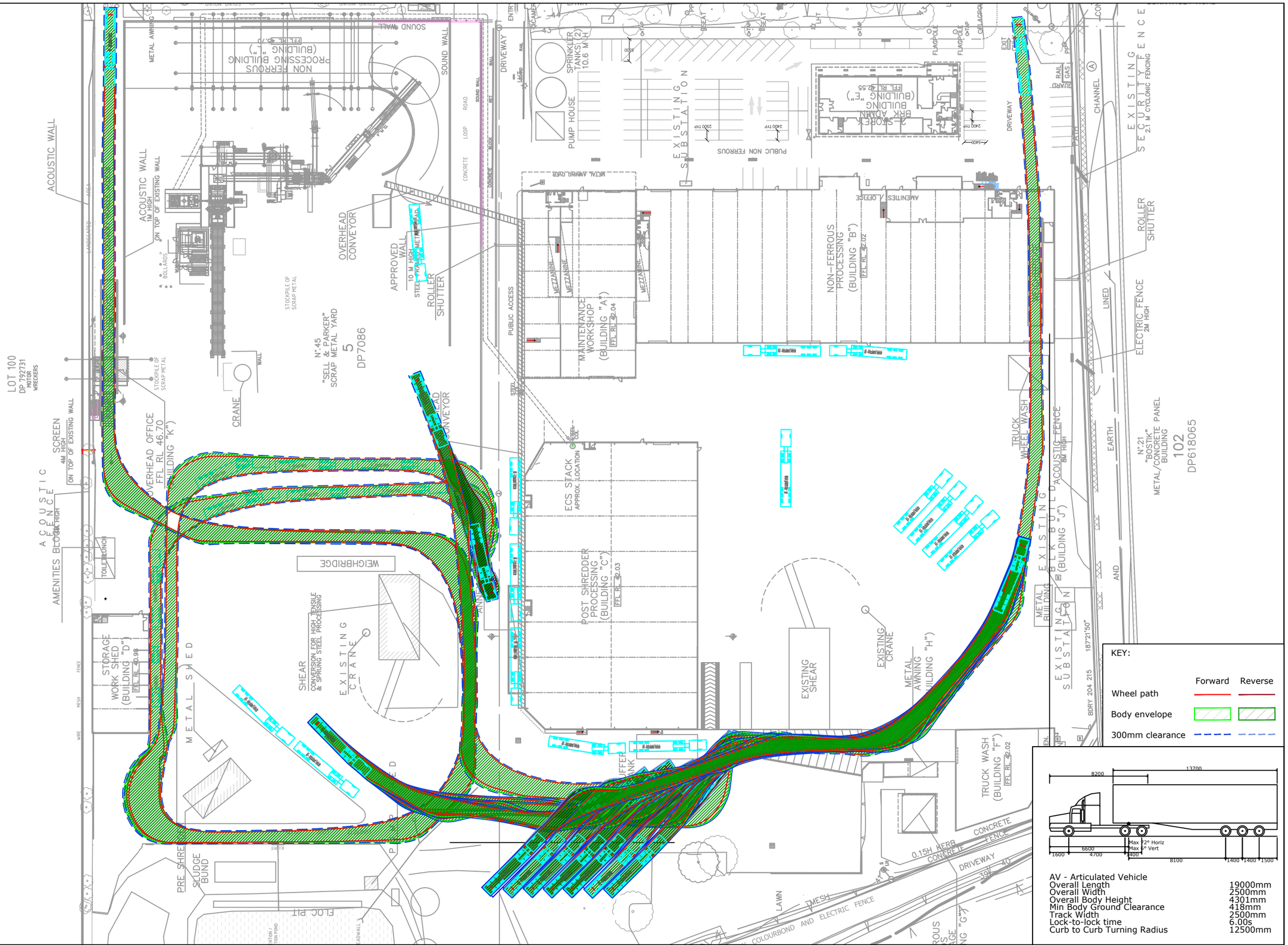
STACKING PLAN

DWG No. 19237CAD006 FIGURE 1

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl.magistrado



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

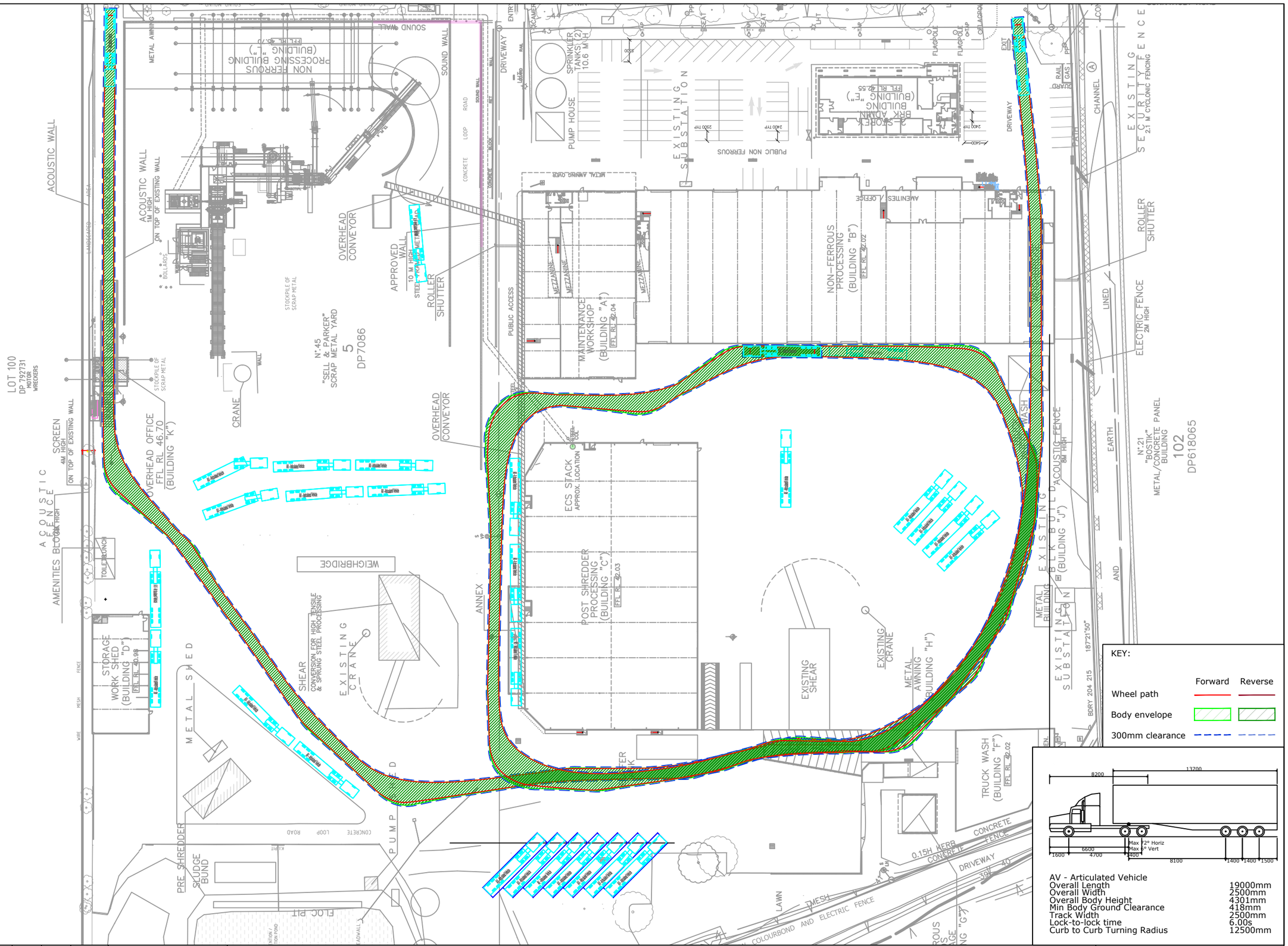
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - HEAVY / DANIELLI SHEAR

DWG No. 19237CAD006 FIGURE 2

DATE STAMP 05 AUGUST 2020

PROJECT No. 19237 | SCALE 1:900 @A3 | REV. A

Filename: 19237tCAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl magalnatio



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

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REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

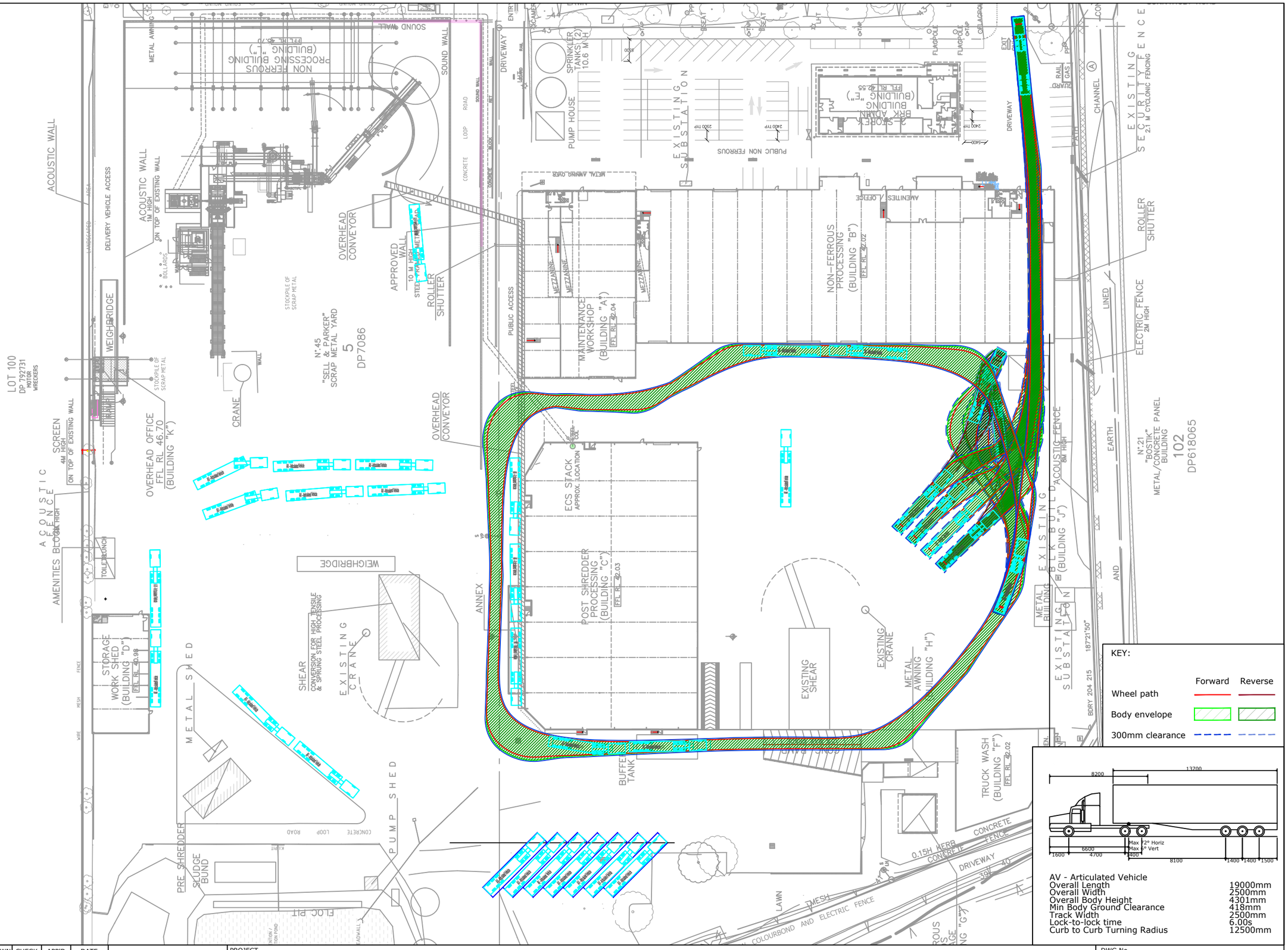
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - NON-FERROUS (REAR ACCESS)

DWG No. 19237CAD006 FIGURE 3

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl.magistrado



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

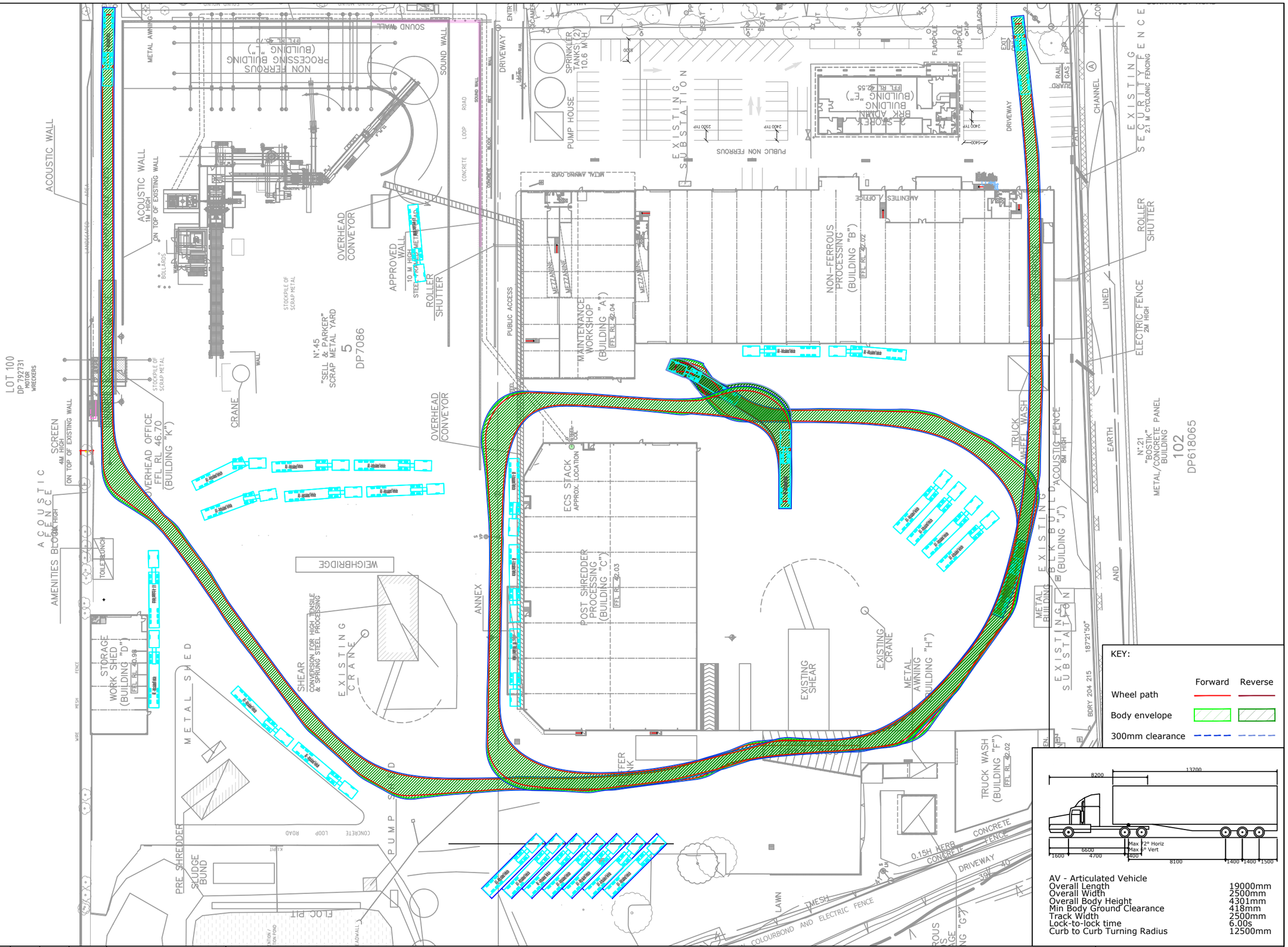
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - HEAVY / DANIELLI SHEAR

DWG No. 19237CAD006 FIGURE 4

DATE STAMP 05 AUGUST 2020

PROJECT No. 19237 | SCALE 1:900 @A3 | REV. A

Filename: 19237CAD006-SWEPT PATH-200806.dwg Date: 5 August 2020 By: Kiel magistrado



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

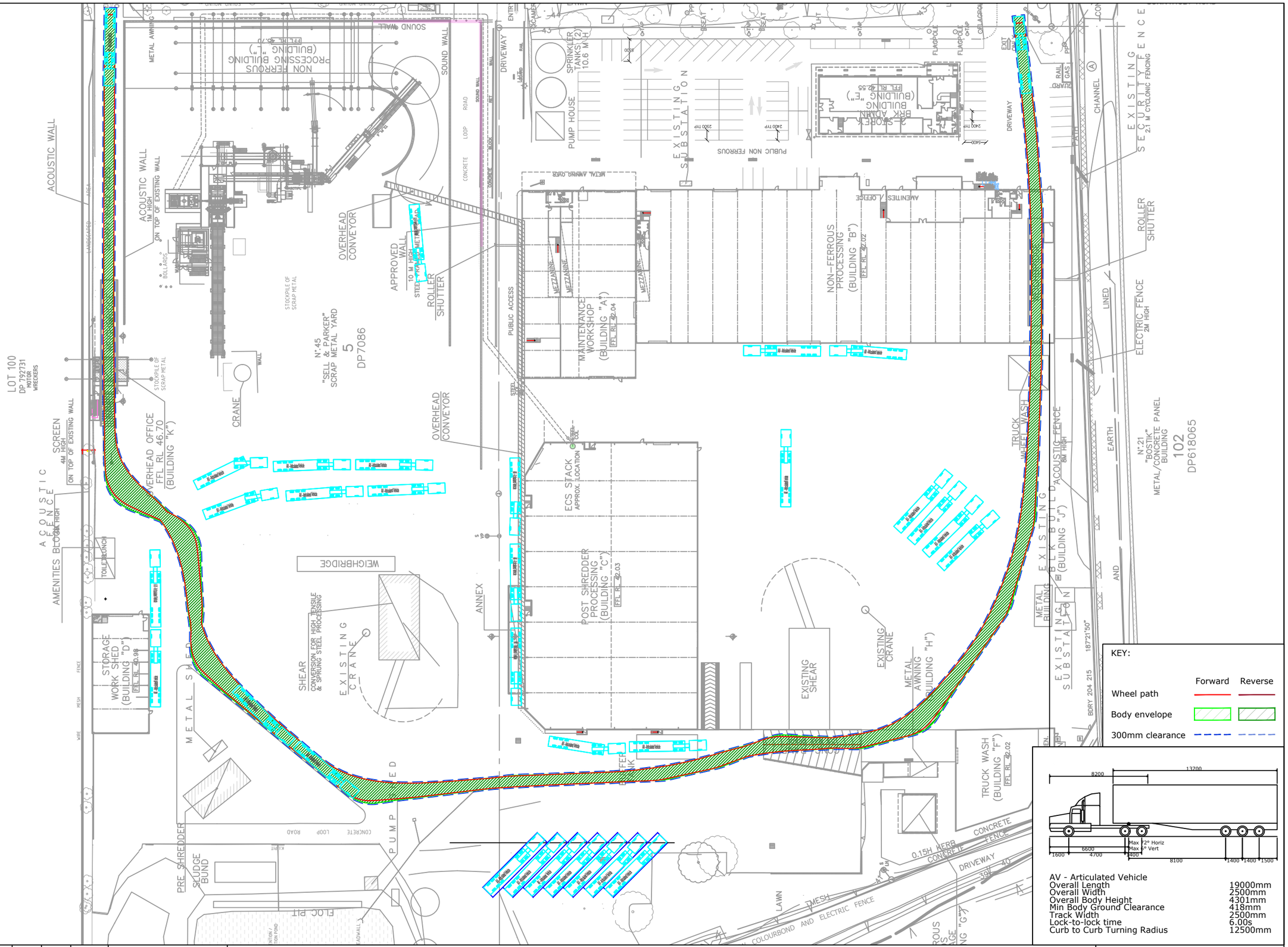
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - OXY-CUTTER

DWG No. 19237CAD006 FIGURE 5

DATE STAMP 05 AUGUST 2020

PROJECT No. 19237 | SCALE 1:900 @A3 | REV. A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl.magistrado



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

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REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

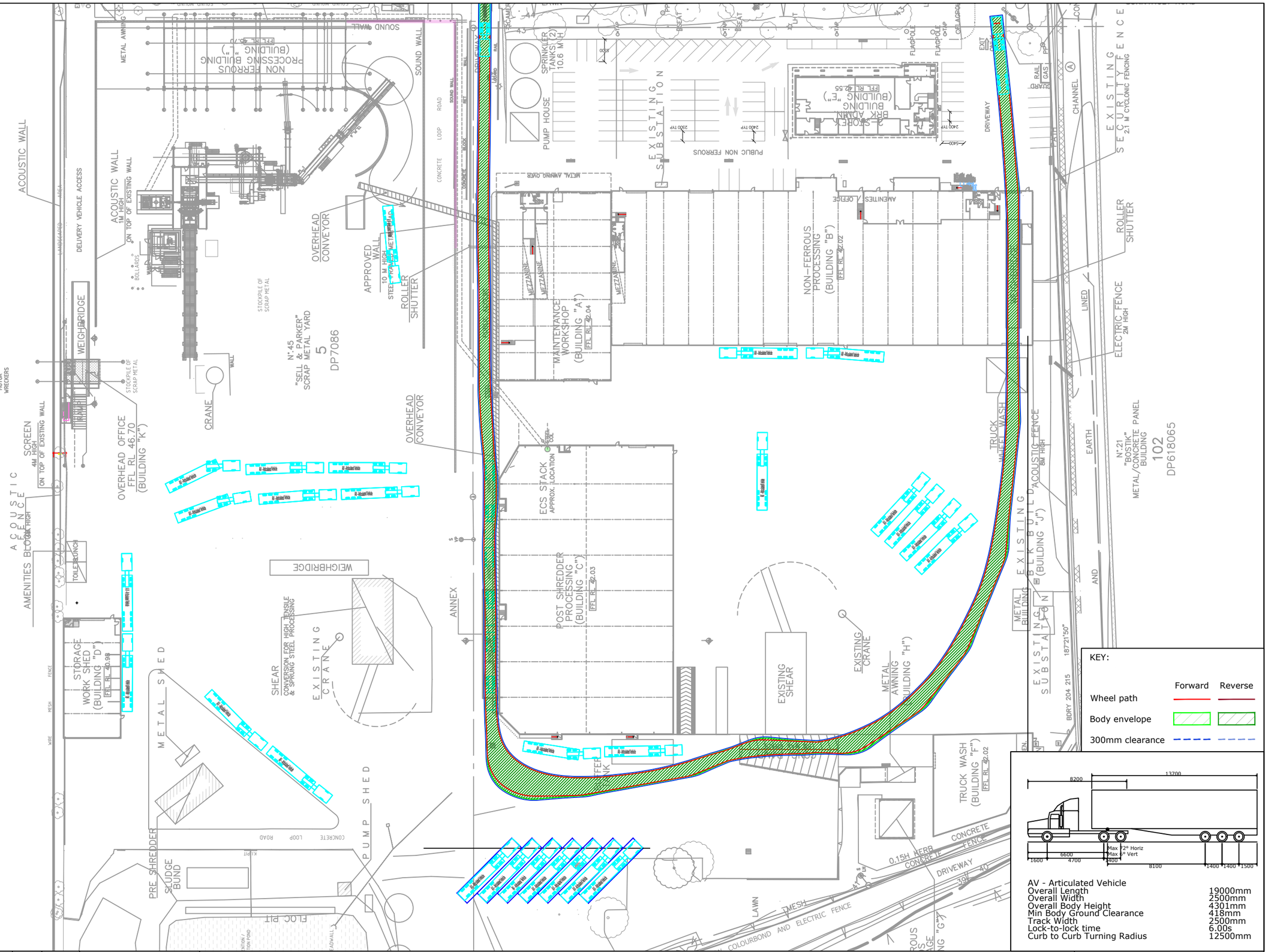
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - PRE-SHREDDER

DWG No. 19237CAD006 FIGURE 6

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl.magistrado



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

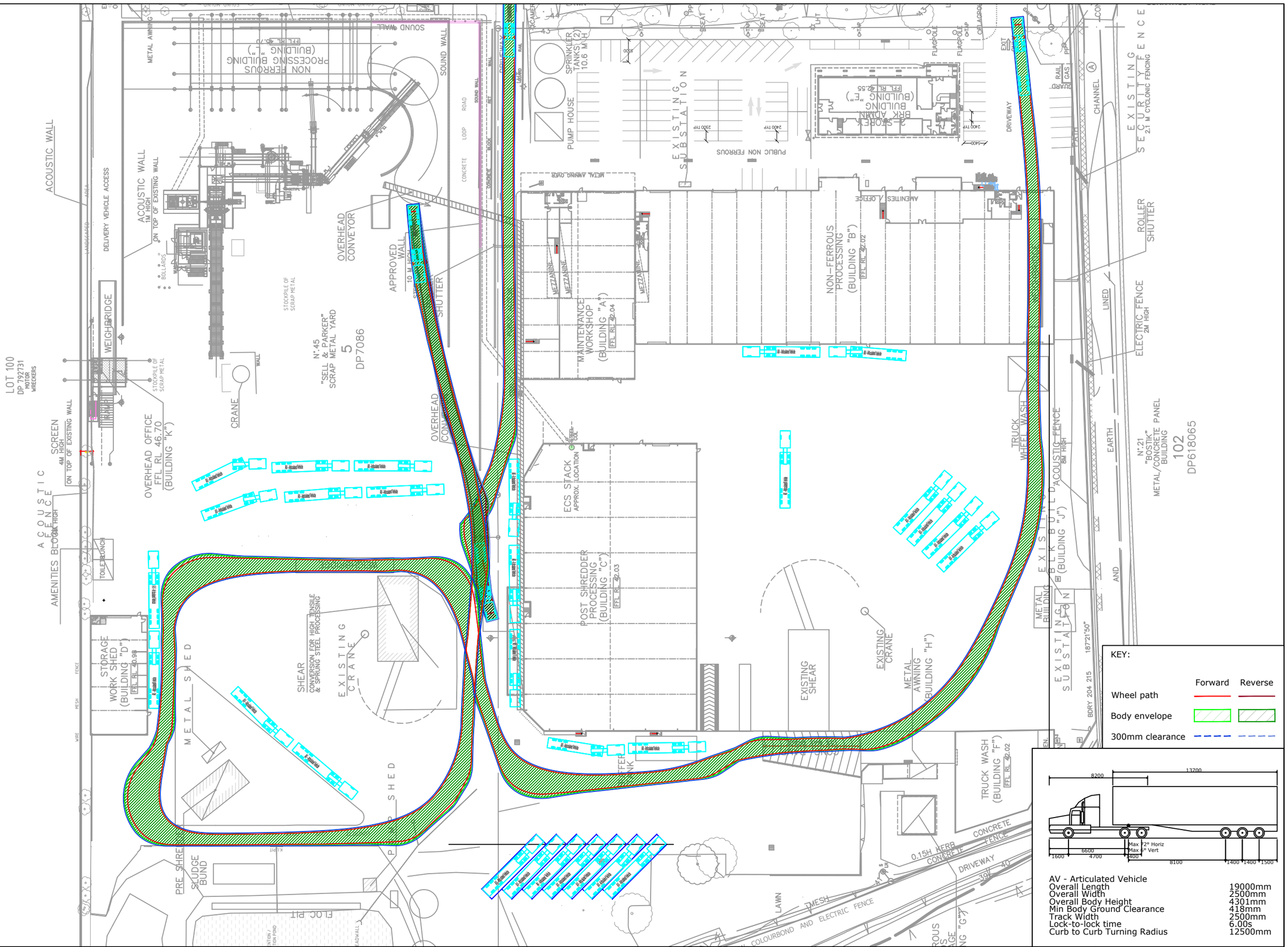
SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - FLOC + SHRED

DWG No. 19237CAD006 FIGURE 7

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl magistrado



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

SWEPT PATH ANALYSIS
19m ARTICULATED VEHICLE - SHRED

DWG No. 19237CAD006 FIGURE 8

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl magistrado

Appendix B

SIDRA Results

MOVEMENT SUMMARY

Site: TCS 1774 [Ex AM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	31.3	104	31.3	0.496	12.8	LOS A	11.3	88.9	0.41	0.44	0.41	55.4
2	T1	1000	11.4	1000	11.4	0.496	6.1	LOS A	13.1	99.4	0.42	0.41	0.42	56.1
Approach		1104	13.3	1104	13.3	0.496	6.7	LOS A	13.1	99.4	0.42	0.41	0.42	56.0
North: Sunnyholt Road														
8	T1	1756	6.0	1387	6.6	0.481	2.8	LOS A	7.8	57.4	0.19	0.17	0.19	64.7
9	R2	40	21.1	32	22.3	0.151	18.1	LOS B	0.8	7.0	0.45	0.69	0.45	24.0
Approach		1796	6.3	1419[N1]	6.9	0.481	3.2	LOS A	7.8	57.4	0.20	0.18	0.20	64.1
West: Tattersall Road														
10	L2	44	35.7	44	35.9	0.509	57.2	LOS E	6.2	50.7	0.97	0.79	0.97	13.1
12	R2	201	9.4	198	9.5	0.509	56.6	LOS E	7.2	54.8	0.97	0.79	0.97	26.2
Approach		245	14.2	242[N1]	14.2	0.509	56.7	LOS E	7.2	54.8	0.97	0.79	0.97	24.4
All Vehicles		3145	9.4	2765[N1]	10.7	0.509	9.3	LOS A	13.1	99.4	0.35	0.33	0.35	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	35.2	LOS D	0.1	0.1	0.90	0.90
P32	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	47.9	LOS E			0.94	0.94

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: TCS 2570 [Ex AM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	103	18.4	103	18.4	0.811	47.2	LOS D	26.5	204.0	0.93	0.87	0.99	12.9
2	T1	862	11.2	862	11.2	0.811	41.1	LOS C	26.5	204.0	0.92	0.86	0.98	32.1
3	R2	80	18.4	80	18.4	0.481	73.6	LOS F	2.5	20.0	1.00	0.73	1.00	21.7
Approach		1045	12.5	1045	12.5	0.811	44.2	LOS D	26.5	204.0	0.93	0.85	0.98	29.6
East: Vardys Road														
4	L2	125	5.9	125	5.9	0.350	50.6	LOS D	6.4	46.9	0.91	0.78	0.91	22.8
5	T1	433	3.2	433	3.2	1.141	197.0	LOS F	26.1	187.4	1.00	1.51	2.37	8.2
6	R2	238	3.1	238	3.1	0.204	36.9	LOS C	5.0	35.9	0.76	0.74	0.76	38.5
Approach		796	3.6	796	3.6	1.141	126.1	LOS F	26.1	187.4	0.91	1.17	1.66	14.4
North: Sunnyholt Road														
7	L2	628	4.0	628	4.0	1.348	377.0	LOS F	110.5	799.0	1.00	1.66	3.15	8.2
8	T1	1568	5.0	1568	5.0	1.321	341.3	LOS F	158.4	1147.7	1.00	2.34	2.99	5.2
9	R2	181	8.7	181	8.7	1.036	126.3	LOS F	8.1	60.7	1.00	1.11	2.04	12.1
Approach		2378	5.0	2378	5.0	1.348	334.3	LOS F	158.4	1147.7	1.00	2.07	2.96	6.2
West: Vardys Road														
10	L2	246	9.8	246	9.8	0.702	55.4	LOS D	13.9	105.2	0.99	0.85	1.02	33.4
11	T1	564	3.2	564	3.2	1.243	279.9	LOS F	41.6	298.8	1.00	1.80	2.78	11.9
12	R2	102	26.8	102	26.8	0.203	37.3	LOS C	4.3	37.1	0.76	0.74	0.76	31.9
Approach		913	7.6	913	7.6	1.243	192.2	LOS F	41.6	298.8	0.97	1.43	2.08	15.3
All Vehicles		5132	6.8	5132	6.8	1.348	217.7	LOS F	158.4	1147.7	0.97	1.57	2.20	10.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	11	54.2	LOS E	0.0	0.0	0.95	0.95
P12	South Stage 2	11	54.2	LOS E	0.0	0.0	0.95	0.95
P2	East Full Crossing	11	54.2	LOS E	0.0	0.0	0.95	0.95
P4	West Full Crossing	11	54.2	LOS E	0.0	0.0	0.95	0.95
All Pedestrians		42	54.2	LOS E			0.95	0.95

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 [Ex AM - Tattersall Rd-Central Driveway]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	6	16.7	6	17.1	0.081	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	48.5
5	T1	145	20.3	138	20.8	0.081	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	48.8
Approach		152	20.1	144[N1]	20.6	0.081	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.8
West: Tattersall Road														
11	T1	229	5.5	226	5.4	0.122	0.0	LOS A	0.1	0.6	0.03	0.02	0.03	48.2
12	R2	9	22.2	9	22.0	0.122	5.4	LOS A	0.1	0.6	0.03	0.02	0.03	47.8
Approach		239	6.2	235[N1]	6.1	0.122	0.3	NA	0.1	0.6	0.03	0.02	0.03	48.1
All Vehicles		391	11.6	379[N1]	11.9	0.122	0.2	NA	0.1	0.6	0.02	0.02	0.02	48.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex AM - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	7	85.7	7	85.7	0.009	6.4	LOS A	0.0	0.4	0.30	0.50	0.30	43.3
3	R2	16	80.0	16	80.0	0.040	10.7	LOS A	0.1	1.5	0.50	0.71	0.50	39.4
Approach		23	81.8	23	81.8	0.040	9.3	LOS A	0.1	1.5	0.43	0.64	0.43	40.5
East: Tattersall Road														
5	T1	144	21.9	136	22.4	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		144	21.9	136[N1]	22.4	0.077	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	229	6.0	226	5.9	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		229	6.0	226[N1]	5.9	0.115	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		397	16.2	385[N1]	16.7	0.115	0.6	NA	0.1	1.5	0.03	0.04	0.03	48.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex AM - Tattersall Rd-Western Driveway]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	15	92.9	14	93.1	0.078	5.4	LOS A	0.0	0.0	0.00	0.05	0.00	46.7
5	T1	131	12.1	124	12.4	0.078	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach		145	20.3	138[N1]	20.8	0.078	0.6	NA	0.0	0.0	0.00	0.05	0.00	48.4
West: Tattersall Road														
11	T1	235	6.3	231	6.2	0.123	0.0	LOS A	0.1	0.4	0.02	0.02	0.02	49.7
12	R2	4	100.0	4	100.0	0.123	6.2	LOS A	0.1	0.4	0.02	0.02	0.02	47.8
Approach		239	7.9	235[N1]	7.9	0.123	0.2	NA	0.1	0.4	0.02	0.02	0.02	49.6
All Vehicles		384	12.6	373[N1]	13.0	0.123	0.3	NA	0.1	0.4	0.01	0.03	0.01	49.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex AM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	24	26.1	24	26.1	0.064	11.9	LOS A	0.2	1.6	0.72	0.89	0.72	14.8
Approach		24	26.1	24	26.1	0.064	11.9	LOS A	0.2	1.6	0.72	0.89	0.72	14.8
West: Vardys Road														
11	T1	888	6.5	888	6.5	0.288	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
12	R2	185	1.1	185	1.1	0.288	5.5	LOS A	0.0	0.0	0.00	0.21	0.00	56.3
Approach		1074	5.6	1074	5.6	0.288	1.0	NA	0.0	0.0	0.00	0.11	0.00	58.1
All Vehicles		1098	6.0	1098	6.0	0.288	1.2	NA	0.2	1.6	0.02	0.12	0.02	57.6

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

MOVEMENT SUMMARY

Site: 101 [Ex AM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex AM]

Existing AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	106	13.9	101	14.3	0.120	6.4	LOS A	0.5	3.9	0.39	0.59	0.39	47.8
2	T1	24	26.1	23	26.8	0.045	8.2	LOS A	0.2	1.4	0.55	0.69	0.55	37.3
Approach		131	16.1	124[N1]	16.6	0.120	6.7	LOS A	0.5	3.9	0.42	0.61	0.42	46.7
East: Vardys Road														
4	L2	54	21.6	50	22.4	0.176	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	58.9
5	T1	663	5.1	608	5.3	0.176	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		717	6.3	657[N1]	6.6	0.176	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	185	1.1	185	1.1	0.306	9.3	LOS A	1.4	9.9	0.61	0.85	0.70	24.9
Approach		185	1.1	185	1.1	0.306	9.3	LOS A	1.4	9.9	0.61	0.85	0.70	24.9
All Vehicles		1033	6.6	967[N1]	7.1	0.306	3.0	NA	1.4	9.9	0.17	0.27	0.19	56.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Ex PM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	292	4.3	292	4.3	0.984	77.9	LOS F	84.6	614.5	1.00	1.18	1.35	18.5
2	T1	1307	5.5	1307	5.5	0.984	74.1	LOS F	84.6	614.5	0.99	1.21	1.36	18.6
Approach		1599	5.3	1599	5.3	0.984	74.8	LOS F	84.6	614.5	0.99	1.21	1.36	18.3
North: Sunnyholt Road														
8	T1	1071	9.4	1071	9.4	0.369	1.8	LOS A	3.9	29.1	0.11	0.10	0.11	66.5
9	R2	87	15.7	87	15.7	1.545	555.5	LOS F	19.4	153.8	1.00	1.51	3.43	1.1
Approach		1158	9.9	1158	9.9	1.545	43.6	LOS D	19.4	153.8	0.17	0.20	0.36	29.2
West: Tattersall Road														
10	L2	125	12.6	125	12.6	0.985	121.2	LOS F	12.3	95.4	1.00	1.18	1.74	7.0
12	R2	185	6.3	185	6.3	0.706	67.8	LOS E	12.5	92.0	1.00	0.85	1.05	23.9
Approach		311	8.8	311	8.8	0.985	89.4	LOS F	12.5	95.4	1.00	0.98	1.33	16.4
All Vehicles		3067	7.4	3067	7.4	1.545	64.5	LOS E	84.6	614.5	0.68	0.81	0.98	21.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	42.6	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	57.0	LOS E			0.94	0.94

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: TCS 2570 [Ex PM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	7.1	104	7.1	0.935	65.2	LOS E	35.7	261.1	1.00	1.03	1.17	9.6
2	T1	1227	6.2	1227	6.2	0.935	58.2	LOS E	35.8	261.1	0.98	1.02	1.16	26.3
3	R2	102	5.2	102	5.2	0.359	78.0	LOS F	3.5	25.5	1.00	0.75	1.00	20.8
Approach		1434	6.2	1434	6.2	0.935	60.1	LOS E	35.8	261.1	0.98	1.00	1.15	24.9
East: Vardys Road														
4	L2	94	7.9	94	7.9	0.155	39.5	LOS C	4.4	32.7	0.73	0.74	0.73	26.4
5	T1	541	2.3	541	2.3	0.602	51.4	LOS D	16.5	118.1	0.95	0.80	0.95	23.1
6	R2	493	1.1	493	1.1	0.525	53.7	LOS D	14.5	102.1	0.91	0.82	0.91	33.0
Approach		1127	2.2	1127	2.2	0.602	51.4	LOS D	16.5	118.1	0.91	0.80	0.91	28.4
North: Sunnyholt Road														
7	L2	282	3.7	282	3.7	0.938	85.3	LOS F	22.2	159.9	0.93	0.98	1.35	25.5
8	T1	917	10.6	917	10.6	0.799	41.2	LOS C	30.2	227.6	0.88	0.81	0.93	27.8
9	R2	275	4.6	275	4.6	0.972	106.6	LOS F	11.9	86.6	1.00	1.05	1.63	14.1
Approach		1474	8.1	1474	8.1	0.972	61.8	LOS E	30.2	227.6	0.92	0.89	1.14	23.5
West: Vardys Road														
10	L2	334	1.3	334	1.3	0.761	61.0	LOS E	21.8	154.3	0.99	0.87	1.03	32.6
11	T1	408	1.8	408	1.8	0.937	86.9	LOS F	16.7	118.8	1.00	1.07	1.44	27.3
12	R2	147	7.1	147	7.1	0.618	68.6	LOS E	9.7	72.3	0.99	0.81	0.99	22.8
Approach		889	2.5	889	2.5	0.937	74.2	LOS F	21.8	154.3	1.00	0.96	1.21	28.6
All Vehicles		4924	5.2	4924	5.2	0.972	61.2	LOS E	35.8	261.1	0.95	0.91	1.10	26.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Ex PM - Tattersall Rd-Central Driveway]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	5	80.0	5	80.0	0.205	5.3	LOS A	0.0	0.0	0.00	0.01	0.00	47.1
5	T1	391	7.0	391	7.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		396	8.0	396	8.0	0.205	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.7
West: Tattersall Road														
11	T1	268	5.1	268	5.1	0.137	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	49.7
12	R2	1	0.0	1	0.0	0.137	6.3	LOS A	0.0	0.1	0.01	0.00	0.01	48.6
Approach		269	5.1	269	5.1	0.137	0.0	NA	0.0	0.1	0.01	0.00	0.01	49.7
All Vehicles		665	6.8	665	6.8	0.205	0.1	NA	0.0	0.1	0.00	0.00	0.00	49.7

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

MOVEMENT SUMMARY

Site: 101 [Ex PM - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	17	43.8	17	43.8	0.022	7.3	LOS A	0.1	0.9	0.46	0.58	0.46	42.1
3	R2	42	35.0	42	35.0	0.117	12.6	LOS A	0.4	3.6	0.62	0.84	0.62	37.5
Approach		59	37.5	59	37.5	0.117	11.1	LOS A	0.4	3.6	0.57	0.76	0.57	38.7
East: Tattersall Road														
5	T1	379	5.6	374	5.4	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		379	5.6	374[N1]	5.4	0.190	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	268	6.3	268	6.3	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		268	6.3	268	6.3	0.137	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		706	8.5	701[N1]	8.6	0.190	0.9	NA	0.4	3.6	0.05	0.06	0.05	47.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex PM - Tattersall Rd-Western Driveway]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	3	100.0	3	100.0	0.198	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	47.8
5	T1	387	3.3	387	3.3	0.198	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		391	4.0	391	4.0	0.198	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.6
West: Tattersall Road														
11	T1	268	3.1	268	3.1	0.136	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	49.8
12	R2	1	100.0	1	100.0	0.136	9.2	LOS A	0.0	0.2	0.01	0.00	0.01	47.9
Approach		269	3.5	269	3.5	0.136	0.1	NA	0.0	0.2	0.01	0.00	0.01	49.8
All Vehicles		660	3.8	660	3.8	0.198	0.1	NA	0.0	0.2	0.00	0.01	0.00	49.8

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

MOVEMENT SUMMARY

Site: 101 [Ex PM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	57	9.3	57	9.3	0.119	10.1	LOS A	0.4	2.8	0.68	0.87	0.68	16.7
Approach		57	9.3	57	9.3	0.119	10.1	LOS A	0.4	2.8	0.68	0.87	0.68	16.7
West: Vardys Road														
11	T1	833	2.0	833	2.0	0.275	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	58.5
12	R2	205	7.7	205	7.7	0.275	5.6	LOS A	0.0	0.0	0.00	0.25	0.00	56.0
Approach		1038	3.1	1038	3.1	0.275	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.0
All Vehicles		1095	3.5	1095	3.5	0.275	1.6	NA	0.4	2.8	0.04	0.16	0.04	57.0

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

MOVEMENT SUMMARY

Site: 101 [Ex PM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex PM]

Existing PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	331	3.8	331	3.8	0.424	8.6	LOS A	2.7	19.5	0.57	0.81	0.72	46.5
2	T1	57	9.3	57	9.3	0.137	10.6	LOS A	0.5	3.6	0.67	0.82	0.67	34.5
Approach		387	4.6	387	4.6	0.424	8.9	LOS A	2.7	19.5	0.59	0.81	0.71	45.5
East: Vardys Road														
4	L2	64	11.5	64	11.5	0.242	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	58.9
5	T1	856	3.8	856	3.8	0.242	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		920	4.3	920	4.3	0.242	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.6
North: Median Storage Area														
8	T1	205	7.7	205	7.7	0.507	16.2	LOS B	2.7	19.8	0.79	1.03	1.21	17.4
Approach		205	7.7	205	7.7	0.507	16.2	LOS B	2.7	19.8	0.79	1.03	1.21	17.4
All Vehicles		1513	4.9	1513	4.9	0.507	4.7	NA	2.7	19.8	0.26	0.37	0.35	53.9

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

MOVEMENT SUMMARY

Site: TCS 1774 [Ex SAT - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	205	3.1	205	3.1	1.051	121.6	LOS F	115.5	820.6	1.00	1.40	1.62	12.9
2	T1	1598	2.0	1598	2.0	1.051	116.6	LOS F	115.5	820.6	0.99	1.43	1.63	13.1
Approach		1803	2.2	1803	2.2	1.051	117.2	LOS F	115.5	820.6	0.99	1.43	1.63	12.9
North: Sunnyholt Road														
8	T1	1503	3.6	1499	3.6	0.469	1.4	LOS A	5.5	39.7	0.11	0.10	0.11	67.3
9	R2	49	6.4	49	6.4	0.892	92.0	LOS F	3.8	28.2	1.00	0.87	1.53	6.4
Approach		1553	3.7	1549[N1]	3.7	0.892	4.2	LOS A	5.5	39.7	0.14	0.12	0.15	62.2
West: Tattersall Road														
10	L2	83	6.3	83	6.3	1.013	134.5	LOS F	8.5	62.5	1.00	1.20	1.91	6.4
12	R2	92	5.7	92	5.7	0.562	72.5	LOS F	6.2	45.7	1.00	0.78	1.00	23.1
Approach		175	6.0	175	6.0	1.013	102.0	LOS F	8.5	62.5	1.00	0.98	1.43	14.1
All Vehicles		3531	3.0	3527[N1]	3.0	1.051	66.8	LOS E	115.5	820.6	0.62	0.83	0.97	21.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	47.9	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	58.8	LOS E			0.94	0.94

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: TCS 2570 [Ex SAT - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex SAT]

Existing SAT Midday Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	153	1.4	153	1.4	0.995	89.5	LOS F	36.8	261.1	1.00	1.15	1.33	7.1
2	T1	1391	2.5	1391	2.5	0.995	83.1	LOS F	36.8	261.1	1.00	1.17	1.34	20.8
3	R2	139	1.5	139	1.5	0.585	81.7	LOS F	4.9	34.7	1.00	0.77	1.01	20.2
Approach		1682	2.3	1682	2.3	0.995	83.6	LOS F	36.8	261.1	1.00	1.13	1.31	19.7
East: Vardys Road														
4	L2	106	2.0	106	2.0	0.202	46.0	LOS D	5.5	38.8	0.80	0.76	0.80	24.1
5	T1	336	2.2	336	2.2	0.456	54.2	LOS D	10.2	73.0	0.93	0.77	0.93	22.4
6	R2	328	1.9	328	1.9	0.334	49.4	LOS D	8.9	63.7	0.85	0.78	0.85	34.2
Approach		771	2.0	771	2.0	0.456	51.0	LOS D	10.2	73.0	0.88	0.77	0.88	28.4
North: Sunnyholt Road														
7	L2	299	1.8	299	1.8	1.015	128.8	LOS F	31.1	220.4	1.00	1.09	1.68	19.5
8	T1	1306	3.9	1306	3.9	1.003	99.8	LOS F	71.9	517.2	1.00	1.26	1.46	15.0
9	R2	224	2.8	224	2.8	0.958	101.9	LOS F	9.4	67.4	1.00	1.02	1.61	14.6
Approach		1829	3.5	1829	3.5	1.015	104.8	LOS F	71.9	517.2	1.00	1.20	1.52	15.9
West: Vardys Road														
10	L2	256	1.2	256	1.2	0.713	63.7	LOS E	16.7	118.1	0.99	0.85	1.02	32.0
11	T1	337	1.6	337	1.6	1.029	126.3	LOS F	16.7	118.6	1.00	1.21	1.79	21.6
12	R2	140	2.3	140	2.3	0.469	63.4	LOS E	8.8	62.6	0.95	0.80	0.95	23.9
Approach		733	1.6	733	1.6	1.029	92.4	LOS F	16.7	118.6	0.99	1.00	1.36	25.0
All Vehicles		5015	2.6	5015	2.6	1.029	87.6	LOS F	71.9	517.2	0.98	1.08	1.33	20.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Ex SAT - Tattersall Rd-Central Driveway]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	4	75.0	4	75.0	0.136	5.2	LOS A	0.0	0.0	0.00	0.01	0.00	47.2
5	T1	265	2.8	265	2.8	0.136	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		269	3.9	269	3.9	0.136	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.7
West: Tattersall Road														
11	T1	155	1.4	155	1.4	0.077	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	49.6
12	R2	1	0.0	1	0.0	0.077	5.5	LOS A	0.0	0.1	0.01	0.00	0.01	48.6
Approach		156	1.4	156	1.4	0.077	0.0	NA	0.0	0.1	0.01	0.00	0.01	49.6
All Vehicles		425	3.0	425	3.0	0.136	0.1	NA	0.0	0.1	0.00	0.01	0.00	49.6

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

MOVEMENT SUMMARY

Site: 101 [Ex SAT - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	15	21.4	15	21.4	0.015	5.9	LOS A	0.1	0.5	0.36	0.52	0.36	43.0
3	R2	20	15.8	20	15.8	0.034	7.7	LOS A	0.1	0.9	0.44	0.66	0.44	41.4
Approach		35	18.2	35	18.2	0.034	7.0	LOS A	0.1	0.9	0.41	0.60	0.41	42.1
East: Tattersall Road														
5	T1	255	3.7	255	3.7	0.128	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		255	3.7	255	3.7	0.128	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	155	2.0	155	2.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		155	2.0	155	2.0	0.077	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		444	4.3	444	4.3	0.128	0.5	NA	0.1	0.9	0.03	0.05	0.03	48.4

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

MOVEMENT SUMMARY

Site: 101 [Ex SAT - Tattersall Rd-Western Driveway]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	1	0.0	1	0.0	0.134	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.1
5	T1	265	3.2	265	3.2	0.134	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		266	3.2	266	3.2	0.134	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
West: Tattersall Road														
11	T1	156	1.4	156	1.4	0.079	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	49.8
12	R2	1	100.0	1	100.0	0.079	7.3	LOS A	0.0	0.1	0.01	0.01	0.01	47.9
Approach		157	2.0	157	2.0	0.079	0.1	NA	0.0	0.1	0.01	0.01	0.01	49.8
All Vehicles		423	2.7	423	2.7	0.134	0.0	NA	0.0	0.1	0.00	0.00	0.00	49.8

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

MOVEMENT SUMMARY

Site: 101 [Ex SAT - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	23	4.5	23	4.5	0.035	7.7	LOS A	0.1	0.8	0.54	0.77	0.54	20.2
Approach		23	4.5	23	4.5	0.035	7.7	LOS A	0.1	0.8	0.54	0.77	0.54	20.2
West: Vardys Road														
11	T1	709	1.2	709	1.2	0.216	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
12	R2	119	1.8	119	1.8	0.216	5.5	LOS A	0.0	0.0	0.00	0.18	0.00	57.0
Approach		828	1.3	828	1.3	0.216	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.5
All Vehicles		852	1.4	852	1.4	0.216	1.0	NA	0.1	0.8	0.01	0.11	0.01	58.1

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

MOVEMENT SUMMARY

Site: 101 [Ex SAT - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex SAT]

Existing PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	242	1.3	242	1.3	0.279	6.7	LOS A	1.3	9.1	0.46	0.65	0.46	48.0
2	T1	23	4.5	23	4.5	0.041	7.5	LOS A	0.1	1.0	0.55	0.68	0.55	38.0
Approach		265	1.6	265	1.6	0.279	6.8	LOS A	1.3	9.1	0.47	0.65	0.47	47.6
East: Vardys Road														
4	L2	37	8.6	37	8.6	0.185	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	59.2
5	T1	676	1.7	676	1.7	0.185	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach		713	2.1	713	2.1	0.185	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
North: Median Storage Area														
8	T1	119	1.8	119	1.8	0.209	9.0	LOS A	0.8	5.7	0.59	0.81	0.59	25.4
Approach		119	1.8	119	1.8	0.209	9.0	LOS A	0.8	5.7	0.59	0.81	0.59	25.4
All Vehicles		1097	1.9	1097	1.9	0.279	2.8	NA	1.3	9.1	0.18	0.26	0.18	56.0

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

MOVEMENT SUMMARY

Site: TCS 1774 [Ex+Dev AM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	105	32.0	105	32.0	0.548	14.0	LOS A	14.0	110.5	0.45	0.48	0.45	53.4
2	T1	1000	11.4	1000	11.4	0.548	7.1	LOS A	15.6	118.9	0.44	0.43	0.44	54.4
Approach		1105	13.3	1105	13.3	0.548	7.8	LOS A	15.6	118.9	0.44	0.44	0.44	54.3
North: Sunnyholt Road														
8	T1	1756	6.0	1392	6.5	0.477	3.2	LOS A	9.3	68.3	0.20	0.18	0.20	64.0
9	R2	45	30.2	36	31.6	0.199	21.5	LOS B	1.3	11.2	0.52	0.71	0.52	21.4
Approach		1801	6.6	1429 N1	7.2	0.477	3.7	LOS A	9.3	68.3	0.20	0.19	0.20	63.2
West: Tattersall Road														
10	L2	53	42.0	52	42.3	0.546	64.6	LOS E	6.9	58.6	0.97	0.80	0.97	11.9
12	R2	203	10.4	198	10.5	0.546	63.7	LOS E	9.0	68.5	0.97	0.80	0.97	24.5
Approach		256	16.9	250 N1	17.0	0.546	63.9	LOS E	9.0	68.5	0.97	0.80	0.97	22.5
All Vehicles		3162	9.8	2784 N1	11.1	0.548	10.7	LOS A	15.6	118.9	0.37	0.35	0.37	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	41.2	LOS E	0.2	0.2	0.91	0.91
P32	North Stage 2	53	62.8	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	62.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	55.6	LOS E			0.94	0.94

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: TCS 2570 [Ex+Dev AM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	103	18.4	103	18.4	0.797	49.2	LOS D	29.2	225.6	0.92	0.84	0.94	12.4
2	T1	871	11.9	871	11.9	0.797	42.5	LOS D	29.2	225.6	0.90	0.82	0.93	31.5
3	R2	80	18.4	80	18.4	0.550	83.6	LOS F	2.8	22.9	1.00	0.74	1.02	19.9
Approach		1054	13.0	1054	13.0	0.797	46.3	LOS D	29.2	225.6	0.91	0.82	0.94	28.9
East: Vardys Road														
4	L2	125	5.9	125	5.9	0.383	59.1	LOS E	7.4	54.6	0.93	0.79	0.93	20.6
5	T1	433	3.2	433	3.2	1.202	254.9	LOS F	31.6	227.1	1.00	1.58	2.45	6.5
6	R2	238	3.1	238	3.1	0.189	38.5	LOS C	5.5	39.2	0.73	0.74	0.73	37.9
Approach		796	3.6	796	3.6	1.202	159.4	LOS F	31.6	227.1	0.91	1.21	1.70	11.9
North: Sunnyholt Road														
7	L2	628	4.0	628	4.0	1.298	340.1	LOS F	109.7	793.5	1.00	1.51	2.72	9.0
8	T1	1574	5.4	1574	5.4	1.314	341.5	LOS F	168.0	1220.4	1.00	2.20	2.73	5.2
9	R2	181	8.7	181	8.7	1.182	246.1	LOS F	12.7	95.6	1.00	1.26	2.48	6.6
Approach		2383	5.3	2383	5.3	1.314	333.9	LOS F	168.0	1220.4	1.00	1.95	2.71	6.2
West: Vardys Road														
10	L2	246	9.8	246	9.8	0.770	66.6	LOS E	16.5	125.1	1.00	0.88	1.09	30.7
11	T1	564	3.2	564	3.2	1.310	343.8	LOS F	48.5	349.0	1.00	1.85	2.81	10.0
12	R2	102	26.8	102	26.8	0.188	38.9	LOS C	4.7	40.5	0.73	0.73	0.73	31.2
Approach		913	7.6	913	7.6	1.310	234.9	LOS F	48.5	349.0	0.97	1.46	2.11	13.1
All Vehicles		5145	7.0	5145	7.0	1.314	230.4	LOS F	168.0	1220.4	0.96	1.51	2.08	9.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	11	62.7	LOS F	0.0	0.0	0.96	0.96
P12	South Stage 2	11	62.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
All Pedestrians		42	62.7	LOS F			0.96	0.96

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 [Ex+Dev AM - Tattersall Rd-Central Driveway]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	8	37.5	8	37.9	0.087	4.9	LOS A	0.0	0.0	0.00	0.03	0.00	48.0
5	T1	152	23.6	144	23.9	0.087	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.8
Approach		160	24.3	152[N1]	24.7	0.087	0.3	NA	0.0	0.0	0.00	0.03	0.00	48.6
West: Tattersall Road														
11	T1	229	5.5	223	5.4	0.122	0.1	LOS A	0.1	0.7	0.04	0.02	0.04	48.0
12	R2	11	30.0	10	29.4	0.122	5.6	LOS A	0.1	0.7	0.04	0.02	0.04	47.5
Approach		240	6.6	233[N1]	6.4	0.122	0.3	NA	0.1	0.7	0.04	0.02	0.04	47.9
All Vehicles		400	13.7	385[N1]	14.2	0.122	0.3	NA	0.1	0.7	0.02	0.03	0.02	48.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev AM - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	9	88.9	9	88.9	0.012	6.5	LOS A	0.0	0.6	0.31	0.50	0.31	43.2
3	R2	26	80.0	26	80.0	0.067	10.9	LOS A	0.2	2.6	0.51	0.74	0.51	39.2
Approach		36	82.4	36	82.4	0.067	9.8	LOS A	0.2	2.6	0.45	0.68	0.45	40.2
East: Tattersall Road														
5	T1	151	25.2	142	25.4	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		151	25.2	142[N1]	25.4	0.082	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	229	6.0	223	5.8	0.113	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		229	6.0	223[N1]	5.8	0.113	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		416	19.5	401[N1]	20.2	0.113	0.9	NA	0.2	2.6	0.04	0.06	0.04	47.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev AM - Tattersall Rd-Western Driveway]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	19	94.4	18	94.5	0.083	5.4	LOS A	0.0	0.0	0.00	0.06	0.00	46.7
5	T1	133	13.5	126	13.7	0.083	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.7
Approach		152	23.6	144[N1]	23.9	0.083	0.7	NA	0.0	0.0	0.00	0.06	0.00	48.2
West: Tattersall Road														
11	T1	236	6.7	229	6.5	0.124	0.1	LOS A	0.1	0.5	0.02	0.02	0.02	49.6
12	R2	5	100.0	5	100.0	0.124	6.3	LOS A	0.1	0.5	0.02	0.02	0.02	47.8
Approach		241	8.7	234[N1]	8.5	0.124	0.3	NA	0.1	0.5	0.02	0.02	0.02	49.5
All Vehicles		393	14.5	378[N1]	15.0	0.124	0.4	NA	0.1	0.5	0.01	0.04	0.01	49.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev AM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	24	26.1	24	26.1	0.065	11.9	LOS A	0.2	1.7	0.72	0.89	0.72	14.8
Approach		24	26.1	24	26.1	0.065	11.9	LOS A	0.2	1.7	0.72	0.89	0.72	14.8
West: Vardys Road														
11	T1	888	6.5	888	6.5	0.289	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
12	R2	187	2.2	187	2.2	0.289	5.5	LOS A	0.0	0.0	0.00	0.22	0.00	56.3
Approach		1076	5.8	1076	5.8	0.289	1.0	NA	0.0	0.0	0.00	0.11	0.00	58.1
All Vehicles		1100	6.2	1100	6.2	0.289	1.2	NA	0.2	1.7	0.02	0.12	0.02	57.6

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev AM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex+Dev AM]

2020 Existing Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	108	15.5	103	15.9	0.122	6.3	LOS A	0.5	4.0	0.38	0.59	0.38	47.8
2	T1	24	26.1	23	26.6	0.043	7.7	LOS A	0.2	1.3	0.53	0.67	0.53	37.8
Approach		133	17.5	126[N1]	17.9	0.122	6.6	LOS A	0.5	4.0	0.41	0.60	0.41	46.8
East: Vardys Road														
4	L2	54	21.6	47	22.5	0.165	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	58.9
5	T1	663	5.1	570	5.3	0.165	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		717	6.3	616[N1]	6.6	0.165	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	187	2.2	187	2.2	0.298	8.9	LOS A	1.3	9.6	0.59	0.83	0.67	25.6
Approach		187	2.2	187	2.2	0.298	8.9	LOS A	1.3	9.6	0.59	0.83	0.67	25.6
All Vehicles		1037	7.0	930[N1]	7.8	0.298	3.0	NA	1.3	9.6	0.17	0.28	0.19	56.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Ex+Dev PM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	297	5.7	297	5.7	0.997	77.2	LOS F	58.4	425.9	0.50	0.83	0.90	18.7
2	T1	1307	5.5	1307	5.5	0.997	72.8	LOS F	58.4	425.9	0.45	0.77	0.87	18.8
Approach		1604	5.5	1604	5.5	0.997	73.6	LOS F	58.4	425.9	0.46	0.78	0.88	18.5
North: Sunnyholt Road														
8	T1	1071	9.4	1071	9.4	0.372	2.1	LOS A	4.3	32.6	0.12	0.11	0.12	66.1
9	R2	102	25.8	102	25.8	1.022	139.8	LOS F	13.3	113.6	1.00	1.25	1.92	4.4
Approach		1173	10.9	1173	10.9	1.022	14.0	LOS A	13.3	113.6	0.20	0.21	0.28	48.9
West: Tattersall Road														
10	L2	131	16.1	131	16.1	1.003	127.6	LOS F	13.0	103.4	1.00	1.17	1.80	6.7
12	R2	186	6.8	186	6.8	0.680	66.2	LOS E	12.3	91.5	1.00	0.84	1.02	24.2
Approach		317	10.6	317	10.6	1.003	91.5	LOS F	13.0	103.4	1.00	0.98	1.34	16.0
All Vehicles		3094	8.1	3094	8.1	1.022	52.9	LOS D	58.4	425.9	0.41	0.58	0.70	24.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	41.9	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	56.8	LOS E			0.94	0.94

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: TCS 2570 [Ex+Dev PM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	7.1	104	7.1	0.940	60.8	LOS E	35.6	261.1	1.00	1.04	1.19	10.2
2	T1	1233	6.6	1233	6.6	0.940	48.6	LOS D	35.6	261.1	0.97	1.00	1.13	29.3
3	R2	102	5.2	102	5.2	0.359	78.8	LOS F	3.5	25.6	1.00	0.75	1.00	20.7
Approach		1439	6.5	1439	6.5	0.940	51.6	LOS D	35.6	261.1	0.97	0.98	1.13	27.4
East: Vardys Road														
4	L2	94	7.9	94	7.9	0.155	39.5	LOS C	4.4	32.7	0.73	0.74	0.73	26.4
5	T1	541	2.3	541	2.3	0.602	51.4	LOS D	16.5	118.1	0.95	0.80	0.95	23.1
6	R2	493	1.1	493	1.1	0.525	53.7	LOS D	14.5	102.1	0.91	0.82	0.91	33.0
Approach		1127	2.2	1127	2.2	0.602	51.4	LOS D	16.5	118.1	0.91	0.80	0.91	28.4
North: Sunnyholt Road														
7	L2	282	3.7	282	3.7	0.945	88.0	LOS F	22.6	162.6	0.93	0.99	1.37	25.0
8	T1	932	11.8	932	11.8	0.818	43.0	LOS D	31.7	241.0	0.89	0.84	0.96	27.0
9	R2	275	4.6	275	4.6	0.972	106.6	LOS F	11.9	86.6	1.00	1.05	1.63	14.1
Approach		1488	8.9	1488	8.9	0.972	63.3	LOS E	31.7	241.0	0.92	0.90	1.16	23.1
West: Vardys Road														
10	L2	334	1.3	334	1.3	0.761	61.0	LOS E	21.8	154.3	0.99	0.87	1.03	32.6
11	T1	408	1.8	408	1.8	0.937	86.9	LOS F	16.7	118.8	1.00	1.07	1.44	27.3
12	R2	147	7.1	147	7.1	0.618	68.6	LOS E	9.7	72.3	0.99	0.81	0.99	22.8
Approach		889	2.5	889	2.5	0.937	74.2	LOS F	21.8	154.3	1.00	0.96	1.21	28.6
All Vehicles		4944	5.5	4944	5.5	0.972	59.1	LOS E	35.6	261.1	0.95	0.91	1.10	26.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Ex+Dev PM - Tattersall Rd-Central Driveway]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	9	66.7	9	66.7	0.222	5.2	LOS A	0.0	0.0	0.00	0.01	0.00	47.4
5	T1	407	10.6	407	10.6	0.222	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		417	11.9	417	11.9	0.222	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.5
West: Tattersall Road														
11	T1	268	5.1	268	5.1	0.138	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	49.4
12	R2	2	0.0	2	0.0	0.138	6.5	LOS A	0.0	0.2	0.01	0.00	0.01	48.6
Approach		271	5.1	271	5.1	0.138	0.1	NA	0.0	0.2	0.01	0.00	0.01	49.4
All Vehicles		687	9.2	687	9.2	0.222	0.1	NA	0.0	0.2	0.00	0.01	0.00	49.4

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev PM - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	18	47.1	18	47.1	0.026	7.9	LOS A	0.1	1.0	0.49	0.62	0.49	41.6
3	R2	48	43.5	48	43.5	0.165	15.2	LOS B	0.5	5.2	0.69	0.87	0.69	35.6
Approach		66	44.4	66	44.4	0.165	13.3	LOS A	0.5	5.2	0.64	0.80	0.64	37.1
East: Tattersall Road														
5	T1	399	9.5	399	9.5	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		399	9.5	399	9.5	0.209	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	268	6.3	268	6.3	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		268	6.3	268	6.3	0.137	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		734	11.5	734	11.5	0.209	1.2	NA	0.5	5.2	0.06	0.07	0.06	46.8

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev PM - Tattersall Rd-Western Driveway]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	19	94.4	19	94.4	0.212	5.4	LOS A	0.0	0.0	0.00	0.02	0.00	46.7
5	T1	388	3.5	388	3.5	0.212	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		407	7.8	407	7.8	0.212	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.1
West: Tattersall Road														
11	T1	269	3.1	269	3.1	0.145	0.2	LOS A	0.1	1.0	0.04	0.02	0.04	49.2
12	R2	5	100.0	5	100.0	0.145	9.6	LOS A	0.1	1.0	0.04	0.02	0.04	47.6
Approach		275	5.0	275	5.0	0.145	0.5	NA	0.1	1.0	0.04	0.02	0.04	49.1
All Vehicles		682	6.6	682	6.6	0.212	0.3	NA	0.1	1.0	0.02	0.02	0.02	49.1

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev PM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	57	9.3	57	9.3	0.120	10.2	LOS A	0.4	2.8	0.68	0.88	0.68	16.6
Approach		57	9.3	57	9.3	0.120	10.2	LOS A	0.4	2.8	0.68	0.88	0.68	16.6
West: Vardys Road														
11	T1	833	2.0	833	2.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	58.5
12	R2	211	9.5	211	9.5	0.278	5.6	LOS A	0.0	0.0	0.00	0.26	0.00	56.0
Approach		1043	3.5	1043	3.5	0.278	1.2	NA	0.0	0.0	0.00	0.12	0.00	58.0
All Vehicles		1100	3.8	1100	3.8	0.278	1.6	NA	0.4	2.8	0.04	0.16	0.04	57.0

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev PM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex+Dev PM]

2020 Existing Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	332	4.1	332	4.1	0.426	8.6	LOS A	2.7	19.8	0.57	0.81	0.72	46.5
2	T1	57	9.3	57	9.3	0.137	10.6	LOS A	0.5	3.6	0.67	0.82	0.67	34.5
Approach		388	4.9	388	4.9	0.426	8.9	LOS A	2.7	19.8	0.59	0.81	0.71	45.5
East: Vardys Road														
4	L2	64	11.5	64	11.5	0.242	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	58.9
5	T1	856	3.8	856	3.8	0.242	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		920	4.3	920	4.3	0.242	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.6
North: Median Storage Area														
8	T1	211	9.5	211	9.5	0.530	16.9	LOS B	2.8	21.5	0.80	1.04	1.27	16.9
Approach		211	9.5	211	9.5	0.530	16.9	LOS B	2.8	21.5	0.80	1.04	1.27	16.9
All Vehicles		1519	5.2	1519	5.2	0.530	4.9	NA	2.8	21.5	0.26	0.38	0.36	53.8

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

MOVEMENT SUMMARY

Site: TCS 1774 [Ex+Dev SAT - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Ex+Dev SAT]

Existing Base with Development Base PM Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	212	5.5	212	5.5	1.084	148.2	LOS F	123.7	882.7	1.00	1.47	1.77	10.9
2	T1	1598	2.0	1598	2.0	1.084	142.8	LOS F	123.7	882.7	0.99	1.50	1.77	11.1
Approach		1809	2.4	1809	2.4	1.084	143.5	LOS F	123.7	882.7	0.99	1.50	1.77	10.9
North: Sunnyholt Road														
8	T1	1503	3.6	1496	3.6	0.456	0.9	LOS A	4.3	30.6	0.08	0.08	0.08	68.1
9	R2	67	28.1	67	28.1	0.780	86.5	LOS F	5.0	43.0	1.00	0.80	1.14	6.8
Approach		1571	4.6	1564 N1	4.6	0.780	4.6	LOS A	5.0	43.0	0.12	0.11	0.13	61.6
West: Tattersall Road														
10	L2	98	20.4	98	20.5	1.059	159.7	LOS F	10.9	89.3	1.00	1.28	2.05	5.4
12	R2	96	9.9	95	9.9	0.782	80.4	LOS F	7.0	53.1	1.00	0.90	1.22	21.5
Approach		194	15.2	193 N1	15.3	1.059	120.5	LOS F	10.9	89.3	1.00	1.09	1.64	12.0
All Vehicles		3574	4.1	3566 N1	4.1	1.084	81.3	LOS F	123.7	882.7	0.61	0.87	1.05	18.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	45.8	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	58.1	LOS E			0.94	0.94

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: TCS 2570 [Ex+Dev SAT - Sunnyholt Rd-Vardys Rd]

Network: N101 [Ex+Dev SAT]

Existing Base with Development SAT Midday Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	153	1.4	153	1.4	0.978	79.9	LOS F	36.8	261.1	1.00	1.11	1.27	7.9
2	T1	1391	2.5	1390	2.5	0.978	73.5	LOS F	36.8	261.1	1.00	1.12	1.28	22.6
3	R2	139	1.5	139	1.5	0.658	83.7	LOS F	5.0	35.2	1.00	0.78	1.05	19.9
Approach		1682	2.3	1682	2.3	0.978	74.9	LOS F	36.8	261.1	1.00	1.09	1.26	21.3
East: Vardys Road														
4	L2	106	2.0	106	2.0	0.207	46.8	LOS D	5.5	39.3	0.81	0.76	0.81	23.9
5	T1	336	2.2	336	2.2	0.456	54.2	LOS D	10.2	73.0	0.93	0.77	0.93	22.4
6	R2	328	1.9	328	1.9	0.334	49.4	LOS D	8.9	63.7	0.85	0.78	0.85	34.2
Approach		771	2.0	771	2.0	0.456	51.1	LOS D	10.2	73.0	0.88	0.77	0.88	28.3
North: Sunnyholt Road														
7	L2	299	1.8	299	1.8	1.021	132.2	LOS F	31.5	223.5	1.00	1.10	1.70	19.1
8	T1	1324	5.1	1324	5.1	1.005	100.8	LOS F	73.3	532.5	1.00	1.27	1.47	14.9
9	R2	224	2.8	224	2.8	1.078	165.5	LOS F	12.5	89.7	1.00	1.17	2.04	9.5
Approach		1847	4.3	1847	4.3	1.078	113.7	LOS F	73.3	532.5	1.00	1.23	1.58	14.8
West: Vardys Road														
10	L2	256	1.2	256	1.2	0.740	65.6	LOS E	17.0	120.5	1.00	0.86	1.05	31.5
11	T1	337	1.6	337	1.6	1.029	126.3	LOS F	16.7	118.6	1.00	1.21	1.79	21.6
12	R2	140	2.3	140	2.3	0.469	63.4	LOS E	8.8	62.6	0.95	0.80	0.95	23.9
Approach		733	1.6	733	1.6	1.029	93.1	LOS F	17.0	120.5	0.99	1.01	1.37	24.8
All Vehicles		5033	2.9	5032[N1]	2.9	1.078	88.2	LOS F	73.3	532.5	0.98	1.08	1.33	20.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Ex+Dev SAT - Tattersall Rd-Central Driveway]

Network: N101 [Ex+Dev SAT]

Existing Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	8	62.5	8	62.5	0.158	5.1	LOS A	0.0	0.0	0.00	0.01	0.00	47.5
5	T1	289	10.5	289	10.5	0.158	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		298	12.0	298	12.0	0.158	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.4
West: Tattersall Road														
11	T1	155	1.4	154	1.4	0.079	0.1	LOS A	0.0	0.3	0.02	0.01	0.02	48.9
12	R2	3	33.3	3	33.2	0.079	6.4	LOS A	0.0	0.3	0.02	0.01	0.02	47.6
Approach		158	2.0	157[N1]	2.0	0.079	0.2	NA	0.0	0.3	0.02	0.01	0.02	48.7
All Vehicles		456	8.5	455[N1]	8.6	0.158	0.2	NA	0.0	0.3	0.01	0.01	0.01	49.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev SAT - Tattersall Rd-Eastern Driveway]

Network: N101 [Ex+Dev SAT]

Existing Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	19	38.9	19	38.9	0.022	6.6	LOS A	0.1	0.8	0.40	0.56	0.40	42.8
3	R2	39	56.8	39	56.8	0.096	10.9	LOS A	0.3	3.3	0.53	0.77	0.53	39.0
Approach		58	50.9	58	50.9	0.096	9.5	LOS A	0.3	3.3	0.49	0.70	0.49	40.2
East: Tattersall Road														
5	T1	279	10.9	279	10.9	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		279	10.9	279	10.9	0.147	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	155	2.0	154	2.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		155	2.0	154[N1]	2.0	0.076	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		492	12.8	491[N1]	12.9	0.147	1.1	NA	0.3	3.3	0.06	0.08	0.06	47.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev SAT - Tattersall Rd-Western Driveway]

Network: N101 [Ex+Dev SAT]

Existing Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	20	94.7	20	94.7	0.154	5.4	LOS A	0.0	0.0	0.00	0.04	0.00	46.7
5	T1	269	4.7	269	4.7	0.154	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.9
Approach		289	10.9	289	10.9	0.154	0.4	NA	0.0	0.0	0.00	0.04	0.00	48.8
West: Tattersall Road														
11	T1	158	2.0	157	2.0	0.085	0.2	LOS A	0.1	0.6	0.04	0.03	0.04	49.3
12	R2	4	100.0	4	100.0	0.085	7.7	LOS A	0.1	0.6	0.04	0.03	0.04	47.7
Approach		162	4.5	161[N1]	4.5	0.085	0.5	NA	0.1	0.6	0.04	0.03	0.04	49.2
All Vehicles		452	8.6	450[N1]	8.6	0.154	0.4	NA	0.1	0.6	0.01	0.03	0.01	49.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Ex+Dev SAT - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Ex+Dev SAT]

Existing Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	23	4.5	23	4.5	0.036	7.8	LOS A	0.1	0.8	0.55	0.78	0.55	20.1
Approach		23	4.5	23	4.5	0.036	7.8	LOS A	0.1	0.8	0.55	0.78	0.55	20.1
West: Vardys Road														
11	T1	709	1.2	709	1.2	0.219	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.7
12	R2	125	5.9	125	5.9	0.219	5.5	LOS A	0.0	0.0	0.00	0.19	0.00	57.0
Approach		835	1.9	835	1.9	0.219	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.5
All Vehicles		858	2.0	858	2.0	0.219	1.0	NA	0.1	0.8	0.01	0.11	0.01	58.1

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

MOVEMENT SUMMARY

Site: 101 [Ex+Dev SAT - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Ex+Dev SAT]

Existing Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	246	3.0	246	3.0	0.284	6.7	LOS A	1.3	9.5	0.46	0.64	0.46	48.0
2	T1	23	4.5	23	4.5	0.040	7.3	LOS A	0.1	1.0	0.54	0.67	0.54	38.1
Approach		269	3.1	269	3.1	0.284	6.7	LOS A	1.3	9.5	0.47	0.65	0.47	47.5
East: Vardys Road														
4	L2	37	8.6	36	8.5	0.181	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	59.2
5	T1	676	1.7	661	1.7	0.181	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach		713	2.1	696[N1]	2.1	0.181	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
North: Median Storage Area														
8	T1	125	5.9	125	5.9	0.223	9.2	LOS A	0.9	6.4	0.59	0.81	0.60	25.2
Approach		125	5.9	125	5.9	0.223	9.2	LOS A	0.9	6.4	0.59	0.81	0.60	25.2
All Vehicles		1107	2.8	1091[N1]	2.8	0.284	2.9	NA	1.3	9.5	0.18	0.27	0.18	55.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Fu AM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	31.3	104	31.3	0.701	13.7	LOS A	17.2	134.9	0.50	0.53	0.50	54.0
2	T1	1094	11.3	1094	11.3	0.701	6.8	LOS A	19.1	145.6	0.50	0.49	0.50	54.9
Approach		1198	13.0	1198	13.0	0.701	7.4	LOS A	19.1	145.6	0.50	0.49	0.50	54.9
North: Sunnyholt Road														
8	T1	1819	6.0	1430	6.6	0.467	1.7	LOS A	6.0	43.6	0.12	0.11	0.12	66.7
9	R2	40	21.1	32	22.3	0.192	28.8	LOS C	1.4	12.0	0.68	0.74	0.68	17.2
Approach		1859	6.3	1461 N1	6.9	0.467	2.3	LOS A	6.0	43.6	0.14	0.13	0.14	65.6
West: Tattersall Road														
10	L2	44	35.7	43	35.7	0.714	73.4	LOS F	6.9	56.7	1.00	0.87	1.14	10.8
12	R2	201	9.4	198	9.4	0.714	71.6	LOS F	9.7	73.4	1.00	0.86	1.10	23.0
Approach		245	14.2	241 N1	14.2	0.714	71.9	LOS F	9.7	73.4	1.00	0.86	1.11	21.3
All Vehicles		3302	9.3	2901 N1	10.6	0.714	10.2	LOS A	19.1	145.6	0.36	0.34	0.37	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	44.4	LOS E	0.2	0.2	0.91	0.91
P32	North Stage 2	53	62.8	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	62.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	56.6	LOS E			0.94	0.94

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: TCS 2570 [Fu AM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	103	18.4	103	18.4	0.847	55.5	LOS D	34.0	260.7	0.96	0.91	1.03	11.1
2	T1	938	10.7	938	10.7	0.847	48.9	LOS D	34.0	260.7	0.95	0.90	1.02	29.2
3	R2	80	18.4	80	18.4	0.550	83.6	LOS F	2.8	22.9	1.00	0.74	1.02	19.9
Approach		1121	11.9	1121	11.9	0.847	52.0	LOS D	34.0	260.7	0.96	0.89	1.02	27.0
East: Vardys Road														
4	L2	125	5.9	125	5.9	0.355	57.1	LOS E	7.3	53.5	0.91	0.79	0.91	21.1
5	T1	455	3.2	455	3.2	1.096	170.4	LOS F	26.6	191.2	1.00	1.40	2.03	9.3
6	R2	238	3.1	238	3.1	0.197	40.1	LOS C	5.6	40.2	0.75	0.74	0.75	37.3
Approach		818	3.6	818	3.6	1.096	115.1	LOS F	26.6	191.2	0.91	1.11	1.48	15.4
North: Sunnyholt Road														
7	L2	628	4.0	628	4.0	1.353	387.3	LOS F	117.0	845.9	1.00	1.57	2.91	8.0
8	T1	1605	5.0	1605	5.0	1.333	358.1	LOS F	175.2	1268.6	1.00	2.25	2.80	5.0
9	R2	181	8.7	181	8.7	1.182	246.1	LOS F	12.7	95.6	1.00	1.26	2.48	6.6
Approach		2415	5.0	2415	5.0	1.353	357.3	LOS F	175.2	1268.6	1.00	2.00	2.80	5.8
West: Vardys Road														
10	L2	246	9.8	246	9.8	0.713	62.5	LOS E	15.8	119.7	0.99	0.85	1.02	31.6
11	T1	652	3.1	652	3.1	1.311	343.9	LOS F	56.1	403.3	1.00	1.92	2.80	10.0
12	R2	102	26.8	102	26.8	0.196	40.5	LOS C	4.8	41.5	0.75	0.74	0.75	30.6
Approach		1000	7.2	1000	7.2	1.311	243.6	LOS F	56.1	403.3	0.97	1.53	2.15	12.8
All Vehicles		5354	6.6	5354	6.6	1.353	235.1	LOS F	175.2	1268.6	0.97	1.54	2.11	9.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	11	62.7	LOS F	0.0	0.0	0.96	0.96
P12	South Stage 2	11	62.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
All Pedestrians		42	62.7	LOS F			0.96	0.96

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 [Fu AM - Tattersall Rd-Central Driveway]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	6	16.7	6	17.1	0.081	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	48.5
5	T1	145	20.3	138	20.8	0.081	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	48.8
Approach		152	20.1	144[N1]	20.6	0.081	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.8
West: Tattersall Road														
11	T1	229	5.5	225	5.3	0.122	0.0	LOS A	0.1	0.6	0.03	0.02	0.03	48.2
12	R2	9	22.2	9	21.7	0.122	5.4	LOS A	0.1	0.6	0.03	0.02	0.03	47.8
Approach		239	6.2	235[N1]	6.0	0.122	0.3	NA	0.1	0.6	0.03	0.02	0.03	48.1
All Vehicles		391	11.6	378[N1]	12.0	0.122	0.2	NA	0.1	0.6	0.02	0.02	0.02	48.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu AM - Tattersall Rd-Eastern Driveway]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	7	85.7	7	85.7	0.009	6.4	LOS A	0.0	0.4	0.30	0.50	0.30	43.3
3	R2	16	80.0	16	80.0	0.040	10.7	LOS A	0.1	1.5	0.50	0.71	0.50	39.4
Approach		23	81.8	23	81.8	0.040	9.3	LOS A	0.1	1.5	0.43	0.64	0.43	40.5
East: Tattersall Road														
5	T1	144	21.9	136	22.4	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		144	21.9	136[N1]	22.4	0.077	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	229	6.0	225	5.8	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		229	6.0	225[N1]	5.8	0.115	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		397	16.2	385[N1]	16.7	0.115	0.6	NA	0.1	1.5	0.03	0.04	0.03	48.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu AM - Tattersall Rd-Western Driveway]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	15	92.9	14	93.1	0.078	5.4	LOS A	0.0	0.0	0.00	0.05	0.00	46.7
5	T1	131	12.1	124	12.4	0.078	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach		145	20.3	138[N1]	20.8	0.078	0.6	NA	0.0	0.0	0.00	0.05	0.00	48.4
West: Tattersall Road														
11	T1	235	6.3	230	6.1	0.123	0.0	LOS A	0.1	0.4	0.02	0.02	0.02	49.7
12	R2	4	100.0	4	100.0	0.123	6.2	LOS A	0.1	0.4	0.02	0.02	0.02	47.8
Approach		239	7.9	234[N1]	7.7	0.123	0.2	NA	0.1	0.4	0.02	0.02	0.02	49.6
All Vehicles		384	12.6	372[N1]	13.0	0.123	0.3	NA	0.1	0.4	0.01	0.03	0.01	49.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu AM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	24	26.1	24	26.1	0.080	14.3	LOS A	0.2	2.0	0.78	0.91	0.78	12.8
Approach		24	26.1	24	26.1	0.080	14.3	LOS A	0.2	2.0	0.78	0.91	0.78	12.8
West: Vardys Road														
11	T1	1026	6.5	1026	6.5	0.325	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
12	R2	185	1.1	185	1.1	0.325	5.5	LOS A	0.0	0.0	0.00	0.19	0.00	56.7
Approach		1212	5.6	1212	5.6	0.325	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.3
All Vehicles		1236	6.0	1236	6.0	0.325	1.1	NA	0.2	2.0	0.02	0.11	0.02	57.8

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

MOVEMENT SUMMARY

Site: 101 [Fu AM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Fu AM]

2030 Future Base AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	106	13.9	101	14.3	0.123	6.6	LOS A	0.5	3.9	0.41	0.60	0.41	47.7
2	T1	24	26.1	23	26.8	0.048	8.6	LOS A	0.2	1.4	0.56	0.71	0.56	36.8
Approach		131	16.1	124[N1]	16.7	0.123	7.0	LOS A	0.5	3.9	0.43	0.62	0.43	46.5
East: Vardys Road														
4	L2	54	21.6	49	21.8	0.185	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	59.0
5	T1	706	5.1	643	5.1	0.185	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		760	6.2	692[N1]	6.3	0.185	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	185	1.1	185	1.1	0.320	9.9	LOS A	1.5	10.4	0.62	0.86	0.74	24.1
Approach		185	1.1	185	1.1	0.320	9.9	LOS A	1.5	10.4	0.62	0.86	0.74	24.1
All Vehicles		1076	6.6	1002[N1]	7.0	0.320	3.0	NA	1.5	10.4	0.17	0.27	0.19	56.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Fu PM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	292	4.3	292	4.3	1.005	91.8	LOS F	95.1	690.5	1.00	1.24	1.43	16.3
2	T1	1353	5.4	1353	5.4	1.005	87.8	LOS F	95.1	690.5	0.99	1.27	1.44	16.4
Approach		1644	5.2	1644	5.2	1.005	88.5	LOS F	95.1	690.5	0.99	1.27	1.44	16.1
North: Sunnyholt Road														
8	T1	1105	9.4	1105	9.4	0.377	1.5	LOS A	3.4	25.5	0.09	0.08	0.09	67.1
9	R2	87	15.7	87	15.7	1.626	624.6	LOS F	20.4	162.2	1.00	1.54	3.71	1.0
Approach		1193	9.9	1193	9.9	1.626	47.1	LOS D	20.4	162.2	0.16	0.19	0.36	28.0
West: Tattersall Road														
10	L2	125	12.6	125	12.6	1.035	147.4	LOS F	13.7	106.3	1.00	1.26	1.92	5.9
12	R2	185	6.3	185	6.3	0.741	69.9	LOS E	12.7	93.9	1.00	0.87	1.09	23.5
Approach		311	8.8	311	8.8	1.035	101.2	LOS F	13.7	106.3	1.00	1.03	1.42	14.9
All Vehicles		3147	7.4	3147	7.4	1.626	74.0	LOS F	95.1	690.5	0.68	0.83	1.03	19.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	43.2	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	57.2	LOS E			0.94	0.94

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: TCS 2570 [Fu PM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	7.1	104	7.1	0.964	76.3	LOS F	35.7	261.1	1.00	1.09	1.25	8.3
2	T1	1269	6.1	1269	6.1	0.964	69.3	LOS E	35.8	261.1	1.00	1.09	1.25	23.6
3	R2	102	5.2	102	5.2	0.359	75.0	LOS F	3.5	25.4	1.00	0.75	1.00	21.4
Approach		1476	6.1	1476	6.1	0.964	70.2	LOS E	35.8	261.1	1.00	1.07	1.23	22.5
East: Vardys Road														
4	L2	94	7.9	94	7.9	0.151	38.8	LOS C	4.3	32.3	0.72	0.74	0.72	26.7
5	T1	581	2.4	581	2.4	0.628	51.0	LOS D	17.8	127.1	0.95	0.81	0.95	23.2
6	R2	493	1.1	493	1.1	0.540	54.7	LOS D	14.6	103.2	0.92	0.82	0.92	32.7
Approach		1167	2.3	1167	2.3	0.628	51.6	LOS D	17.8	127.1	0.92	0.81	0.92	28.2
North: Sunnyholt Road														
7	L2	282	3.7	282	3.7	0.957	93.2	LOS F	23.3	167.8	0.94	1.00	1.42	24.2
8	T1	917	10.6	917	10.6	0.800	41.3	LOS C	30.3	228.2	0.88	0.81	0.93	27.7
9	R2	275	4.6	275	4.6	0.972	106.6	LOS F	11.9	86.6	1.00	1.05	1.63	14.1
Approach		1474	8.1	1474	8.1	0.972	63.4	LOS E	30.3	228.2	0.92	0.89	1.15	23.1
West: Vardys Road														
10	L2	334	1.3	334	1.3	0.739	59.1	LOS E	21.3	151.0	0.98	0.86	1.00	33.1
11	T1	447	1.6	447	1.6	0.965	95.1	LOS F	19.3	137.1	1.00	1.13	1.51	25.9
12	R2	147	7.1	147	7.1	0.652	70.2	LOS E	9.9	73.4	1.00	0.82	1.02	22.5
Approach		928	2.4	928	2.4	0.965	78.2	LOS F	21.3	151.0	0.99	0.98	1.25	27.8
All Vehicles		5045	5.1	5045	5.1	0.972	65.4	LOS E	35.8	261.1	0.96	0.94	1.14	25.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Fu PM - Tattersall Rd-Central Driveway]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	5	80.0	5	79.8	0.202	5.3	LOS A	0.0	0.0	0.00	0.01	0.00	47.1
5	T1	391	7.0	384	6.9	0.202	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		396	8.0	389[N1]	7.9	0.202	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.7
West: Tattersall Road														
11	T1	268	5.1	268	5.1	0.137	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	49.7
12	R2	1	0.0	1	0.0	0.137	6.2	LOS A	0.0	0.1	0.01	0.00	0.01	48.6
Approach		269	5.1	269	5.1	0.137	0.0	NA	0.0	0.1	0.01	0.00	0.01	49.7
All Vehicles		665	6.8	659[N1]	6.9	0.202	0.1	NA	0.0	0.1	0.00	0.00	0.00	49.7

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu PM - Tattersall Rd-Eastern Driveway]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	17	43.8	17	43.8	0.022	7.3	LOS A	0.1	0.9	0.45	0.58	0.45	42.2
3	R2	42	35.0	42	35.0	0.116	12.4	LOS A	0.4	3.5	0.61	0.83	0.61	37.6
Approach		59	37.5	59	37.5	0.116	11.0	LOS A	0.4	3.5	0.57	0.76	0.57	38.8
East: Tattersall Road														
5	T1	379	5.6	368	5.3	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		379	5.6	368[N1]	5.3	0.188	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	268	6.3	268	6.3	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		268	6.3	268	6.3	0.137	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		706	8.5	696[N1]	8.6	0.188	0.9	NA	0.4	3.5	0.05	0.06	0.05	47.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu PM - Tattersall Rd-Western Driveway]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	3	100.0	3	100.0	0.196	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	47.8
5	T1	387	3.3	385	3.2	0.196	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		391	4.0	388[N1]	4.0	0.196	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.6
West: Tattersall Road														
11	T1	268	3.1	268	3.1	0.136	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	49.8
12	R2	1	100.0	1	100.0	0.136	9.2	LOS A	0.0	0.2	0.01	0.00	0.01	47.9
Approach		269	3.5	269	3.5	0.136	0.1	NA	0.0	0.2	0.01	0.00	0.01	49.8
All Vehicles		660	3.8	658[N1]	3.8	0.196	0.1	NA	0.0	0.2	0.00	0.01	0.00	49.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu PM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	57	9.3	57	9.3	0.132	11.1	LOS A	0.4	3.1	0.72	0.89	0.72	15.6
Approach		57	9.3	57	9.3	0.132	11.1	LOS A	0.4	3.1	0.72	0.89	0.72	15.6
West: Vardys Road														
11	T1	913	2.0	913	2.0	0.296	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	58.5
12	R2	205	7.7	205	7.7	0.296	5.6	LOS A	0.0	0.0	0.00	0.23	0.00	56.3
Approach		1118	3.0	1118	3.0	0.296	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.1
All Vehicles		1175	3.3	1175	3.3	0.296	1.5	NA	0.4	3.1	0.03	0.15	0.03	57.1

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

MOVEMENT SUMMARY

Site: 101 [Fu PM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Fu PM]

2030 Future Base PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	331	3.8	331	3.8	0.447	9.3	LOS A	2.9	21.1	0.60	0.87	0.80	46.0
2	T1	57	9.3	57	9.3	0.155	12.0	LOS A	0.5	4.1	0.72	0.85	0.72	33.1
Approach		387	4.6	387	4.6	0.447	9.7	LOS A	2.9	21.1	0.62	0.86	0.79	44.9
East: Vardys Road														
4	L2	64	11.5	64	11.5	0.264	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	59.0
5	T1	937	3.8	937	3.8	0.264	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		1001	4.3	1001	4.3	0.264	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	205	7.7	205	7.7	0.576	19.5	LOS B	3.1	23.1	0.84	1.08	1.40	15.2
Approach		205	7.7	205	7.7	0.576	19.5	LOS B	3.1	23.1	0.84	1.08	1.40	15.2
All Vehicles		1594	4.8	1594	4.8	0.576	5.1	NA	3.1	23.1	0.26	0.37	0.37	53.7

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

MOVEMENT SUMMARY

Site: TCS 1774 [FB SAT - Sunnyholt Rd-Tattersall Rd]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	205	3.1	205	3.1	1.144	196.7	LOS F	150.9	1071.7	1.00	1.67	2.03	8.5
2	T1	1748	2.0	1748	2.0	1.144	190.9	LOS F	150.9	1071.7	0.99	1.71	2.03	8.7
Approach		1954	2.1	1954	2.1	1.144	191.5	LOS F	150.9	1071.7	1.00	1.70	2.03	8.5
North: Sunnyholt Road														
8	T1	1558	3.6	1528	3.6	0.466	0.9	LOS A	4.0	29.0	0.08	0.07	0.08	68.3
9	R2	49	6.4	49	6.4	0.877	91.3	LOS F	3.7	27.6	1.00	0.86	1.49	6.5
Approach		1607	3.7	1577 N1	3.7	0.877	3.6	LOS A	4.0	29.0	0.11	0.10	0.12	63.2
West: Tattersall Road														
10	L2	83	6.3	83	6.3	1.008	128.1	LOS F	8.0	59.1	1.00	1.16	1.89	6.7
12	R2	92	5.7	91	5.7	0.726	78.5	LOS F	6.6	48.1	1.00	0.86	1.15	22.0
Approach		175	6.0	174 N1	6.0	1.008	102.1	LOS F	8.0	59.1	1.00	1.00	1.50	14.1
All Vehicles		3736	3.0	3704 N1	3.0	1.144	107.3	LOS F	150.9	1071.7	0.62	0.99	1.19	15.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	47.9	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	58.8	LOS E			0.94	0.94

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: TCS 2570 [FB SAT - Sunnyholt Rd-Vardys Rd]

Network: N101 [FB SAT]

Future Base SAT Midday Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	153	1.4	152	1.4	1.019	111.0	LOS F	36.8	261.1	1.00	1.26	1.48	5.7
2	T1	1439	2.5	1430	2.5	1.019	105.4	LOS F	36.8	261.1	1.00	1.28	1.49	17.5
3	R2	139	1.5	138	1.5	0.654	81.0	LOS F	4.9	34.3	1.00	0.79	1.07	20.3
Approach		1731	2.3	1720[N1]	2.3	1.019	103.9	LOS F	36.8	261.1	1.00	1.24	1.45	16.7
East: Vardys Road														
4	L2	106	2.0	106	2.0	0.202	46.0	LOS D	5.5	38.8	0.80	0.76	0.80	24.1
5	T1	352	2.1	352	2.1	0.460	53.4	LOS D	10.7	76.0	0.93	0.77	0.93	22.6
6	R2	328	1.9	328	1.9	0.343	50.3	LOS D	9.0	64.4	0.86	0.78	0.86	33.9
Approach		786	2.0	786	2.0	0.460	51.1	LOS D	10.7	76.0	0.88	0.77	0.88	28.2
North: Sunnyholt Road														
7	L2	299	1.8	299	1.8	1.038	142.5	LOS F	32.8	232.1	1.00	1.12	1.77	18.1
8	T1	1338	3.9	1338	3.9	1.024	112.0	LOS F	77.6	558.2	1.00	1.32	1.54	13.6
9	R2	224	2.8	224	2.8	1.078	165.5	LOS F	12.5	89.7	1.00	1.17	2.04	9.5
Approach		1861	3.5	1861	3.5	1.078	123.4	LOS F	77.6	558.2	1.00	1.27	1.64	13.8
West: Vardys Road														
10	L2	256	1.2	256	1.2	0.688	62.1	LOS E	16.4	115.8	0.98	0.84	0.99	32.4
11	T1	388	1.4	388	1.4	1.015	118.9	LOS F	18.7	132.7	1.00	1.20	1.72	22.6
12	R2	140	2.3	140	2.3	0.469	63.4	LOS E	8.8	62.6	0.95	0.80	0.95	23.9
Approach		784	1.5	784	1.5	1.015	90.4	LOS F	18.7	132.7	0.99	1.01	1.34	25.4
All Vehicles		5162	2.5	5152[N1]	2.6	1.078	100.8	LOS F	77.6	558.2	0.98	1.15	1.42	18.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [FB SAT - Tattersall Rd-Central Driveway]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	4	75.0	4	75.0	0.136	5.2	LOS A	0.0	0.0	0.00	0.01	0.00	47.2
5	T1	265	2.8	264	2.8	0.136	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		269	3.9	269	3.9	0.136	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.7
West: Tattersall Road														
11	T1	155	1.4	154	1.3	0.077	0.0	LOS A	0.0	0.1	0.01	0.00	0.01	49.6
12	R2	1	0.0	1	0.0	0.077	5.5	LOS A	0.0	0.1	0.01	0.00	0.01	48.6
Approach		156	1.4	155[N1]	1.3	0.077	0.0	NA	0.0	0.1	0.01	0.00	0.01	49.6
All Vehicles		425	3.0	423[N1]	3.0	0.136	0.1	NA	0.0	0.1	0.00	0.01	0.00	49.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB SAT - Tattersall Rd-Eastern Driveway]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	15	21.4	15	21.4	0.014	5.9	LOS A	0.1	0.5	0.35	0.51	0.35	43.0
3	R2	20	15.8	20	15.8	0.033	7.6	LOS A	0.1	0.9	0.44	0.65	0.44	41.6
Approach		35	18.2	35	18.2	0.033	6.9	LOS A	0.1	0.9	0.40	0.59	0.40	42.2
East: Tattersall Road														
5	T1	255	3.7	253	3.7	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		255	3.7	253[N1]	3.7	0.127	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	155	2.0	154	2.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		155	2.0	154[N1]	2.0	0.076	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		444	4.3	441[N1]	4.3	0.127	0.5	NA	0.1	0.9	0.03	0.05	0.03	48.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB SAT - Tattersall Rd-Western Driveway]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	1	0.0	1	0.0	0.133	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.1
5	T1	265	3.2	264	3.2	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		266	3.2	265[N1]	3.2	0.133	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
West: Tattersall Road														
11	T1	156	1.4	155	1.3	0.078	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	49.8
12	R2	1	100.0	1	100.0	0.078	7.3	LOS A	0.0	0.1	0.01	0.01	0.01	47.9
Approach		157	2.0	156[N1]	2.0	0.078	0.1	NA	0.0	0.1	0.01	0.01	0.01	49.8
All Vehicles		423	2.7	421[N1]	2.7	0.133	0.0	NA	0.0	0.1	0.00	0.00	0.00	49.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB SAT - Vardys Rd-Tattersall Rd (North)]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	23	4.5	23	4.5	0.040	8.5	LOS A	0.1	0.9	0.60	0.82	0.60	18.8
Approach		23	4.5	23	4.5	0.040	8.5	LOS A	0.1	0.9	0.60	0.82	0.60	18.8
West: Vardys Road														
11	T1	820	1.2	820	1.2	0.245	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.8
12	R2	119	1.8	119	1.8	0.245	5.5	LOS A	0.0	0.0	0.00	0.16	0.00	57.3
Approach		939	1.2	939	1.2	0.245	0.7	NA	0.0	0.0	0.00	0.08	0.00	58.6
All Vehicles		962	1.3	962	1.3	0.245	0.9	NA	0.1	0.9	0.01	0.10	0.01	58.3

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

MOVEMENT SUMMARY

Site: 101 [FB SAT - Vardys Rd-Tattersall Rd (South)]

Network: N101 [FB SAT]

Future Base PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	242	1.3	241	1.3	0.283	6.8	LOS A	1.3	9.2	0.47	0.66	0.47	47.9
2	T1	23	4.5	23	4.5	0.042	7.8	LOS A	0.1	1.1	0.56	0.70	0.56	37.6
Approach		265	1.6	264[N1]	1.6	0.283	6.9	LOS A	1.3	9.2	0.48	0.66	0.48	47.5
East: Vardys Road														
4	L2	37	8.6	36	8.5	0.191	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	59.2
5	T1	721	1.8	702	1.7	0.191	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach		758	2.1	738[N1]	2.1	0.191	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
North: Median Storage Area														
8	T1	119	1.8	119	1.8	0.217	9.4	LOS A	0.8	5.9	0.60	0.81	0.61	24.8
Approach		119	1.8	119	1.8	0.217	9.4	LOS A	0.8	5.9	0.60	0.81	0.61	24.8
All Vehicles		1142	1.9	1121[N1]	2.0	0.283	2.8	NA	1.3	9.2	0.18	0.26	0.18	56.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Fu+Dev AM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	105	32.0	105	32.0	0.727	14.5	LOS B	18.8	148.0	0.54	0.55	0.54	52.8
2	T1	1094	11.3	1094	11.3	0.727	7.6	LOS A	20.2	153.5	0.53	0.52	0.53	53.7
Approach		1199	13.1	1199	13.1	0.727	8.2	LOS A	20.2	153.5	0.53	0.52	0.53	53.6
North: Sunnyholt Road														
8	T1	1819	6.0	1424	6.5	0.470	2.0	LOS A	6.6	48.3	0.14	0.13	0.14	66.2
9	R2	45	30.2	36	31.7	0.248	32.7	LOS C	1.8	15.8	0.74	0.76	0.74	15.7
Approach		1864	6.5	1460 N1	7.2	0.470	2.7	LOS A	6.6	48.3	0.15	0.14	0.15	64.8
West: Tattersall Road														
10	L2	53	42.0	52	42.1	0.736	74.1	LOS F	6.8	59.0	1.00	0.89	1.17	10.7
12	R2	203	10.4	200	10.4	0.736	71.5	LOS F	10.6	80.8	1.00	0.87	1.12	23.0
Approach		256	16.9	252 N1	16.9	0.736	72.0	LOS F	10.6	80.8	1.00	0.88	1.13	21.0
All Vehicles		3319	9.7	2911 N1	11.1	0.736	11.0	LOS A	20.2	153.5	0.38	0.36	0.39	50.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian Back of Queue ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	43.7	LOS E	0.2	0.2	0.91	0.91
P32	North Stage 2	53	62.8	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	62.8	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	56.4	LOS E			0.94	0.94

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: TCS 2570 [Fu+Dev AM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 137 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	103	18.4	103	18.4	0.856	56.5	LOS D	33.9	261.1	0.97	0.92	1.05	11.0
2	T1	946	11.2	946	11.2	0.856	49.9	LOS D	33.9	261.1	0.96	0.91	1.04	28.8
3	R2	80	18.4	80	18.4	0.550	83.6	LOS F	2.8	22.9	1.00	0.74	1.02	19.9
Approach		1129	12.4	1129	12.4	0.856	52.9	LOS D	33.9	261.1	0.96	0.90	1.04	26.7
East: Vardys Road														
4	L2	125	5.9	125	5.9	0.355	57.1	LOS E	7.3	53.5	0.91	0.79	0.91	21.1
5	T1	455	3.2	455	3.2	1.096	170.4	LOS F	26.6	191.2	1.00	1.40	2.03	9.3
6	R2	238	3.1	238	3.1	0.197	40.1	LOS C	5.6	40.2	0.75	0.74	0.75	37.3
Approach		818	3.6	818	3.6	1.096	115.1	LOS F	26.6	191.2	0.91	1.11	1.48	15.4
North: Sunnyholt Road														
7	L2	628	4.0	628	4.0	1.356	389.5	LOS F	117.3	848.4	1.00	1.58	2.91	8.0
8	T1	1611	5.3	1611	5.3	1.339	363.2	LOS F	176.9	1284.6	1.00	2.27	2.82	4.9
9	R2	181	8.7	181	8.7	1.182	246.1	LOS F	12.7	95.6	1.00	1.26	2.48	6.6
Approach		2420	5.2	2420	5.2	1.356	361.3	LOS F	176.9	1284.6	1.00	2.01	2.82	5.7
West: Vardys Road														
10	L2	246	9.8	246	9.8	0.713	62.5	LOS E	15.8	119.7	0.99	0.85	1.02	31.6
11	T1	652	3.1	652	3.1	1.311	343.9	LOS F	56.1	403.3	1.00	1.92	2.80	10.0
12	R2	102	26.8	102	26.8	0.196	40.5	LOS C	4.8	41.5	0.75	0.74	0.75	30.6
Approach		1000	7.2	1000	7.2	1.311	243.6	LOS F	56.1	403.3	0.97	1.53	2.15	12.8
All Vehicles		5367	6.8	5367	6.8	1.356	237.0	LOS F	176.9	1284.6	0.97	1.55	2.12	9.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	11	62.7	LOS F	0.0	0.0	0.96	0.96
P12	South Stage 2	11	62.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	62.7	LOS F	0.0	0.0	0.96	0.96
All Pedestrians		42	62.7	LOS F			0.96	0.96

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 [Fu+Dev AM - Tattersall Rd-Central Driveway]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	8	37.5	8	38.0	0.087	4.9	LOS A	0.0	0.0	0.00	0.03	0.00	48.0
5	T1	152	23.6	143	24.0	0.087	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.8
Approach		160	24.3	151[N1]	24.7	0.087	0.3	NA	0.0	0.0	0.00	0.03	0.00	48.6
West: Tattersall Road														
11	T1	229	5.5	225	5.4	0.123	0.1	LOS A	0.1	0.7	0.04	0.02	0.04	48.0
12	R2	11	30.0	10	29.5	0.123	5.6	LOS A	0.1	0.7	0.04	0.02	0.04	47.5
Approach		240	6.6	236[N1]	6.4	0.123	0.3	NA	0.1	0.7	0.04	0.02	0.04	47.9
All Vehicles		400	13.7	387[N1]	14.1	0.123	0.3	NA	0.1	0.7	0.02	0.03	0.02	48.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev AM - Tattersall Rd-Eastern Driveway]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	9	88.9	9	88.9	0.012	6.5	LOS A	0.0	0.6	0.31	0.50	0.31	43.2
3	R2	26	80.0	26	80.0	0.068	11.0	LOS A	0.2	2.6	0.51	0.74	0.51	39.1
Approach		36	82.4	36	82.4	0.068	9.8	LOS A	0.2	2.6	0.46	0.68	0.46	40.1
East: Tattersall Road														
5	T1	151	25.2	142	25.5	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		151	25.2	142[N1]	25.5	0.081	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	229	6.0	225	5.8	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		229	6.0	225[N1]	5.8	0.115	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		416	19.5	403[N1]	20.1	0.115	0.9	NA	0.2	2.6	0.04	0.06	0.04	47.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev AM - Tattersall Rd-Western Driveway]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	19	94.4	18	94.5	0.083	5.4	LOS A	0.0	0.0	0.00	0.07	0.00	46.7
5	T1	133	13.5	125	13.7	0.083	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.7
Approach		152	23.6	143[N1]	24.0	0.083	0.7	NA	0.0	0.0	0.00	0.07	0.00	48.2
West: Tattersall Road														
11	T1	236	6.7	231	6.5	0.125	0.1	LOS A	0.1	0.6	0.02	0.02	0.02	49.6
12	R2	5	100.0	5	100.0	0.125	6.3	LOS A	0.1	0.6	0.02	0.02	0.02	47.8
Approach		241	8.7	236[N1]	8.5	0.125	0.3	NA	0.1	0.6	0.02	0.02	0.02	49.5
All Vehicles		393	14.5	380[N1]	15.0	0.125	0.4	NA	0.1	0.6	0.01	0.04	0.01	49.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev AM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	24	26.1	24	26.1	0.081	14.4	LOS A	0.2	2.0	0.78	0.91	0.78	12.8
Approach		24	26.1	24	26.1	0.081	14.4	LOS A	0.2	2.0	0.78	0.91	0.78	12.8
West: Vardys Road														
11	T1	1026	6.5	1026	6.5	0.326	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
12	R2	187	2.2	187	2.2	0.326	5.5	LOS A	0.0	0.0	0.00	0.19	0.00	56.7
Approach		1214	5.8	1214	5.8	0.326	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.3
All Vehicles		1238	6.2	1238	6.2	0.326	1.1	NA	0.2	2.0	0.02	0.11	0.02	57.8

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

MOVEMENT SUMMARY

Site: 101 [Fu+Dev AM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Fu+Dev AM]

2030 Future Base with Development AM Case
7:45am - 8:45am
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	108	15.5	103	15.9	0.126	6.6	LOS A	0.5	4.1	0.41	0.61	0.41	47.6
2	T1	24	26.1	23	26.6	0.048	8.6	LOS A	0.2	1.4	0.56	0.71	0.56	36.8
Approach		133	17.5	126[N1]	17.9	0.126	7.0	LOS A	0.5	4.1	0.44	0.63	0.44	46.5
East: Vardys Road														
4	L2	54	21.6	49	21.8	0.185	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	59.0
5	T1	706	5.1	643	5.1	0.185	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		760	6.2	692[N1]	6.3	0.185	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	187	2.2	187	2.2	0.327	10.0	LOS A	1.5	10.9	0.62	0.87	0.76	23.9
Approach		187	2.2	187	2.2	0.327	10.0	LOS A	1.5	10.9	0.62	0.87	0.76	23.9
All Vehicles		1080	6.9	1005[N1]	7.4	0.327	3.0	NA	1.5	10.9	0.17	0.27	0.20	56.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [Fu+Dev PM - Sunnyholt Rd-Tattersall Rd]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	297	5.7	297	5.7	1.028	108.3	LOS F	101.2	737.6	1.00	1.30	1.53	14.2
2	T1	1353	5.4	1353	5.4	1.028	103.9	LOS F	101.2	737.6	0.99	1.34	1.54	14.5
Approach		1649	5.5	1649	5.5	1.028	104.7	LOS F	101.2	737.6	0.99	1.34	1.54	14.1
North: Sunnyholt Road														
8	T1	1105	9.4	1105	9.4	0.384	2.2	LOS A	4.8	35.8	0.13	0.12	0.13	65.8
9	R2	102	25.8	102	25.8	1.957	914.4	LOS F	28.2	241.0	1.00	1.75	4.33	0.7
Approach		1207	10.8	1207	10.8	1.957	79.4	LOS F	28.2	241.0	0.20	0.25	0.48	19.8
West: Tattersall Road														
10	L2	131	16.1	131	16.1	1.003	130.6	LOS F	13.4	106.7	1.00	1.21	1.80	6.6
12	R2	186	6.8	186	6.8	0.680	66.2	LOS E	12.3	91.5	1.00	0.84	1.02	24.2
Approach		317	10.6	317	10.6	1.003	92.8	LOS F	13.4	106.7	1.00	0.99	1.34	15.8
All Vehicles		3174	8.0	3173[N1]	8.0	1.957	93.9	LOS F	101.2	737.6	0.69	0.89	1.12	16.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	41.9	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	56.8	LOS E			0.94	0.94

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: TCS 2570 [Fu+Dev PM - Sunnyholt Rd-Vardys Rd]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	104	7.1	104	7.1	0.982	85.9	LOS F	35.7	261.1	1.00	1.13	1.31	7.4
2	T1	1269	6.1	1269	6.1	0.982	78.8	LOS F	35.8	261.1	1.00	1.14	1.31	21.6
3	R2	102	5.2	102	5.2	0.359	78.1	LOS F	3.5	25.4	1.00	0.75	1.00	20.8
Approach		1476	6.1	1476	6.1	0.982	79.2	LOS F	35.8	261.1	1.00	1.11	1.29	20.7
East: Vardys Road														
4	L2	94	7.9	94	7.9	0.186	40.8	LOS C	4.5	33.6	0.75	0.75	0.75	25.9
5	T1	581	2.4	581	2.4	0.667	53.1	LOS D	18.2	129.8	0.97	0.82	0.97	22.6
6	R2	493	1.1	493	1.1	0.525	53.7	LOS D	14.5	102.1	0.91	0.82	0.91	33.0
Approach		1167	2.3	1167	2.3	0.667	52.4	LOS D	18.2	129.8	0.93	0.82	0.93	28.0
North: Sunnyholt Road														
7	L2	282	3.7	282	3.7	0.975	101.2	LOS F	24.3	175.1	0.93	1.02	1.48	22.9
8	T1	932	11.8	932	11.8	0.950	76.0	LOS F	39.8	302.9	0.95	1.09	1.30	18.5
9	R2	275	4.6	275	4.6	0.972	106.6	LOS F	11.9	86.6	1.00	1.05	1.63	14.1
Approach		1488	8.9	1488	8.9	0.975	86.4	LOS F	39.8	302.9	0.95	1.07	1.39	18.6
West: Vardys Road														
10	L2	334	1.3	333	1.2	0.738	59.1	LOS E	21.3	150.7	0.98	0.86	1.00	33.1
11	T1	447	1.6	447	1.6	0.963	94.5	LOS F	19.2	136.5	1.00	1.13	1.51	26.0
12	R2	147	7.1	147	7.1	0.658	68.4	LOS E	9.8	72.9	0.99	0.83	1.02	22.8
Approach		928	2.4	927[N1]	2.4	0.963	77.6	LOS F	21.3	150.7	0.99	0.98	1.25	27.9
All Vehicles		5060	5.4	5059[N1]	5.4	0.982	74.9	LOS F	39.8	302.9	0.97	1.01	1.23	23.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [Fu+Dev PM - Tattersall Rd-Central Driveway]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	9	66.7	8	64.7	0.205	5.1	LOS A	0.0	0.0	0.00	0.01	0.00	47.5
5	T1	407	10.6	379	9.8	0.205	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		417	11.9	388[N1]	11.0	0.205	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.5
West: Tattersall Road														
11	T1	268	5.1	268	5.1	0.138	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	49.5
12	R2	2	0.0	2	0.0	0.138	6.3	LOS A	0.0	0.2	0.01	0.00	0.01	48.6
Approach		271	5.1	271	5.1	0.138	0.1	NA	0.0	0.2	0.01	0.00	0.01	49.4
All Vehicles		687	9.2	658[N1]	9.6	0.205	0.1	NA	0.0	0.2	0.00	0.01	0.00	49.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev PM - Tattersall Rd-Eastern Driveway]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	18	47.1	18	47.1	0.024	7.4	LOS A	0.1	1.0	0.46	0.58	0.46	42.1
3	R2	48	43.5	48	43.5	0.143	13.3	LOS A	0.5	4.6	0.64	0.84	0.64	37.0
Approach		66	44.4	66	44.4	0.143	11.7	LOS A	0.5	4.6	0.59	0.77	0.59	38.2
East: Tattersall Road														
5	T1	399	9.5	366	8.3	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		399	9.5	366[N1]	8.3	0.190	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	268	6.3	268	6.3	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		268	6.3	268	6.3	0.137	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		734	11.5	701[N1]	12.0	0.190	1.1	NA	0.5	4.6	0.06	0.07	0.06	47.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev PM - Tattersall Rd-Western Driveway]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	19	94.4	17	94.0	0.199	5.4	LOS A	0.0	0.0	0.00	0.02	0.00	46.7
5	T1	388	3.5	368	3.3	0.199	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		407	7.8	384[N1]	7.2	0.199	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.2
West: Tattersall Road														
11	T1	269	3.1	269	3.1	0.145	0.2	LOS A	0.1	0.9	0.04	0.02	0.04	49.2
12	R2	5	100.0	5	100.0	0.145	9.2	LOS A	0.1	0.9	0.04	0.02	0.04	47.6
Approach		275	5.0	275	5.0	0.145	0.5	NA	0.1	0.9	0.04	0.02	0.04	49.1
All Vehicles		682	6.6	659[N1]	6.9	0.199	0.3	NA	0.1	0.9	0.02	0.02	0.02	49.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev PM - Vardys Rd-Tattersall Rd (North)]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	57	9.3	55	9.0	0.128	11.2	LOS A	0.4	3.0	0.72	0.89	0.72	15.5
Approach		57	9.3	55[N1]	9.0	0.128	11.2	LOS A	0.4	3.0	0.72	0.89	0.72	15.5
West: Vardys Road														
11	T1	913	2.0	913	2.0	0.298	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	58.5
12	R2	211	9.5	211	9.5	0.298	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	56.3
Approach		1123	3.4	1123	3.4	0.298	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.1
All Vehicles		1180	3.7	1178[N1]	3.7	0.298	1.5	NA	0.4	3.0	0.03	0.15	0.03	57.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [Fu+Dev PM - Vardys Rd-Tattersall Rd (South)]

Network: N101 [Fu+Dev PM]

2030 Future Base with Development PM Case
4:00pm - 5:00pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	332	4.1	317	4.0	0.429	9.1	LOS A	2.7	19.5	0.59	0.85	0.77	46.1
2	T1	57	9.3	54	9.0	0.147	11.9	LOS A	0.5	3.8	0.71	0.85	0.71	33.2
Approach		388	4.9	371[N1]	4.7	0.429	9.5	LOS A	2.7	19.5	0.61	0.85	0.76	45.0
East: Vardys Road														
4	L2	64	11.5	64	11.5	0.264	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	59.0
5	T1	937	3.8	937	3.8	0.264	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach		1001	4.3	1001	4.3	0.264	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.7
North: Median Storage Area														
8	T1	211	9.5	211	9.5	0.601	20.4	LOS B	3.3	25.1	0.85	1.11	1.46	14.7
Approach		211	9.5	211	9.5	0.601	20.4	LOS B	3.3	25.1	0.85	1.11	1.46	14.7
All Vehicles		1600	5.1	1582[N1]	5.2	0.601	5.2	NA	3.3	25.1	0.26	0.37	0.37	53.7

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1774 [FB+Dev SAT - Sunnyholt Rd-Tattersall Rd]

Network: N101 [FB+Dev SAT]

Future with Development Base PM Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	212	5.5	212	5.5	1.179	227.9	LOS F	160.8	1147.3	1.00	1.77	2.18	7.4
2	T1	1748	2.0	1748	2.0	1.179	221.7	LOS F	160.8	1147.3	0.99	1.82	2.18	7.7
Approach		1960	2.4	1960	2.4	1.179	222.3	LOS F	160.8	1147.3	1.00	1.81	2.18	7.4
North: Sunnyholt Road														
8	T1	1558	3.6	1526	3.6	0.465	1.0	LOS A	4.6	32.7	0.09	0.08	0.09	68.1
9	R2	67	28.1	66	28.1	0.767	86.3	LOS F	4.9	42.2	1.00	0.80	1.13	6.8
Approach		1625	4.6	1591 N1	4.6	0.767	4.5	LOS A	4.9	42.2	0.13	0.11	0.13	61.7
West: Tattersall Road														
10	L2	98	20.4	98	20.5	1.059	159.6	LOS F	10.9	89.3	1.00	1.28	2.05	5.4
12	R2	96	9.9	95	9.9	0.782	80.4	LOS F	7.0	53.1	1.00	0.90	1.22	21.5
Approach		194	15.2	193 N1	15.3	1.059	120.5	LOS F	10.9	89.3	1.00	1.09	1.64	12.0
All Vehicles		3779	4.0	3744 N1	4.0	1.179	124.5	LOS F	160.8	1147.3	0.63	1.05	1.28	13.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P31	North Stage 1	53	45.8	LOS E	0.2	0.2	0.92	0.92
P32	North Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	58.1	LOS E			0.94	0.94

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: TCS 2570 [FB+Dev SAT - Sunnyholt Rd-Vardys Rd]

Network: N101 [FB+Dev SAT]

Future Base with Development SAT Midday Case
11:45am - 12:45pm
Site Category: Signalised
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	153	1.4	147	1.4	0.974	83.3	LOS F	36.8	261.1	1.00	1.14	1.31	7.6
2	T1	1439	2.5	1390	2.5	0.974	77.1	LOS F	36.8	261.1	1.00	1.15	1.31	21.9
3	R2	139	1.5	134	1.6	0.636	81.0	LOS F	4.8	33.7	1.00	0.79	1.08	20.3
Approach		1731	2.3	1672[N1]	2.4	0.974	78.0	LOS F	36.8	261.1	1.00	1.12	1.29	20.7
East: Vardys Road														
4	L2	106	2.0	106	2.0	0.207	46.8	LOS D	5.5	39.3	0.81	0.76	0.81	23.9
5	T1	352	2.1	352	2.1	0.478	54.4	LOS D	10.8	76.8	0.94	0.77	0.94	22.3
6	R2	328	1.9	328	1.9	0.352	51.2	LOS D	9.1	65.0	0.86	0.79	0.86	33.6
Approach		786	2.0	786	2.0	0.478	52.1	LOS D	10.8	76.8	0.89	0.78	0.89	28.0
North: Sunnyholt Road														
7	L2	299	1.8	299	1.8	1.060	157.0	LOS F	34.4	243.8	1.00	1.15	1.85	16.8
8	T1	1356	5.0	1356	5.0	1.026	113.0	LOS F	79.0	573.9	1.00	1.33	1.55	13.5
9	R2	224	2.8	224	2.8	1.078	165.5	LOS F	12.5	89.7	1.00	1.17	2.04	9.5
Approach		1879	4.3	1879	4.3	1.078	126.3	LOS F	79.0	573.9	1.00	1.28	1.66	13.6
West: Vardys Road														
10	L2	256	1.2	256	1.2	0.687	62.1	LOS E	16.4	115.8	0.98	0.84	0.99	32.4
11	T1	388	1.4	388	1.4	1.015	118.8	LOS F	18.7	132.7	1.00	1.20	1.72	22.6
12	R2	140	2.3	140	2.3	0.469	63.4	LOS E	8.8	62.6	0.95	0.80	0.95	23.9
Approach		784	1.5	784	1.5	1.015	90.4	LOS F	18.7	132.7	0.99	1.01	1.34	25.4
All Vehicles		5180	2.8	5121[N1]	2.9	1.078	93.6	LOS F	79.0	573.9	0.98	1.11	1.37	19.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P11	South Stage 1	53	64.3	LOS F	0.2	0.2	0.96	0.96
P12	South Stage 2	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

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 [FB+Dev SAT - Tattersall Rd-Central Driveway]

Network: N101 [FB+Dev SAT]

Future Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	8	62.5	8	62.3	0.158	5.1	LOS A	0.0	0.0	0.00	0.01	0.00	47.5
5	T1	289	10.5	288	10.5	0.158	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		298	12.0	296[N1]	11.9	0.158	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.4
West: Tattersall Road														
11	T1	155	1.4	154	1.4	0.079	0.1	LOS A	0.0	0.3	0.02	0.01	0.02	48.9
12	R2	3	33.3	3	33.2	0.079	6.4	LOS A	0.0	0.3	0.02	0.01	0.02	47.6
Approach		158	2.0	157[N1]	2.0	0.079	0.2	NA	0.0	0.3	0.02	0.01	0.02	48.7
All Vehicles		456	8.5	454[N1]	8.6	0.158	0.2	NA	0.0	0.3	0.01	0.01	0.01	49.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB+Dev SAT - Tattersall Rd-Eastern Driveway]

Network: N101 [FB+Dev SAT]

Future Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Eastern Driveway														
1	L2	19	38.9	19	38.9	0.021	6.5	LOS A	0.1	0.9	0.39	0.53	0.39	42.9
3	R2	39	56.8	39	56.8	0.087	9.9	LOS A	0.3	3.1	0.50	0.73	0.50	39.8
Approach		58	50.9	58	50.9	0.087	8.8	LOS A	0.3	3.1	0.46	0.67	0.46	40.8
East: Tattersall Road														
5	T1	279	10.9	270	11.0	0.142	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		279	10.9	270[N1]	11.0	0.142	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Tattersall Road														
11	T1	155	2.0	154	2.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		155	2.0	154[N1]	2.0	0.076	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		492	12.8	482[N1]	13.1	0.142	1.1	NA	0.3	3.1	0.06	0.08	0.06	47.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB+Dev SAT - Tattersall Rd-Western Driveway]

Network: N101 [FB+Dev SAT]

Future Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Tattersall Road														
4	L2	20	94.7	20	94.7	0.153	5.4	LOS A	0.0	0.0	0.00	0.04	0.00	46.7
5	T1	269	4.7	268	4.7	0.153	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.9
Approach		289	10.9	288[N1]	10.8	0.153	0.4	NA	0.0	0.0	0.00	0.04	0.00	48.8
West: Tattersall Road														
11	T1	158	2.0	157	2.0	0.085	0.2	LOS A	0.1	0.6	0.04	0.03	0.04	49.3
12	R2	4	100.0	4	100.0	0.085	7.7	LOS A	0.1	0.6	0.04	0.03	0.04	47.7
Approach		162	4.5	161[N1]	4.5	0.085	0.5	NA	0.1	0.6	0.04	0.03	0.04	49.2
All Vehicles		452	8.6	449[N1]	8.7	0.153	0.4	NA	0.1	0.6	0.01	0.03	0.01	49.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [FB+Dev SAT - Vardys Rd-Tattersall Rd (North)]

Network: N101 [FB+Dev SAT]

Future Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Median Storage Area														
3	R2	23	4.5	23	4.5	0.040	8.6	LOS A	0.1	0.9	0.60	0.83	0.60	18.7
Approach		23	4.5	23	4.5	0.040	8.6	LOS A	0.1	0.9	0.60	0.83	0.60	18.7
West: Vardys Road														
11	T1	820	1.2	820	1.2	0.248	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.8
12	R2	125	5.9	125	5.9	0.248	5.5	LOS A	0.0	0.0	0.00	0.17	0.00	57.3
Approach		945	1.8	945	1.8	0.248	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.6
All Vehicles		968	1.8	968	1.8	0.248	0.9	NA	0.1	0.9	0.01	0.10	0.01	58.2

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

MOVEMENT SUMMARY

Site: 101 [FB+Dev SAT - Vardys Rd-Tattersall Rd (South)]

Network: N101 [FB+Dev SAT]

Future Base with Development PM Case
11:45am - 12:45pm
Site Category: Give Way
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Tattersall Road														
1	L2	246	3.0	245	3.0	0.291	6.9	LOS A	1.3	9.6	0.48	0.66	0.48	47.8
2	T1	23	4.5	23	4.5	0.042	7.8	LOS A	0.1	1.1	0.56	0.70	0.56	37.6
Approach		269	3.1	268[N1]	3.1	0.291	7.0	LOS A	1.3	9.6	0.48	0.66	0.48	47.4
East: Vardys Road														
4	L2	37	8.6	36	8.4	0.192	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	59.2
5	T1	721	1.8	705	1.7	0.192	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach		758	2.1	741[N1]	2.1	0.192	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.7
North: Median Storage Area														
8	T1	125	5.9	125	5.9	0.237	9.8	LOS A	0.9	6.9	0.61	0.83	0.65	24.1
Approach		125	5.9	125	5.9	0.237	9.8	LOS A	0.9	6.9	0.61	0.83	0.65	24.1
All Vehicles		1153	2.7	1134[N1]	2.8	0.291	2.9	NA	1.3	9.6	0.18	0.27	0.19	55.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Appendix C

Pedestrian Access Management Plan

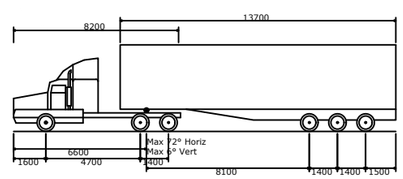
LEGEND:

AUTHORIZED PERSONNEL ONLY AREA

MARKED PEDESTRIAN FOOTPATH

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		



AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	WJ	05/08/20

ttpp transport planning

PROJECT

METAL RECOVERY FACILITY, KINGS PARK

TITLE

PEDESTRIAN ACCESS AND MANAGEMENT PLAN

DWG No. 19237CAD006 FIGURE 1

DATE STAMP 05 AUGUST 2020

PROJECT No.	SCALE	REV.
19237	1:900 @A3	A

Filename: 19237CAD006-SWEPT PATH-200805.dwg Date: 5 August 2020 By: Karl.magistrado

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