BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

Autorecyclers Pty Ltd

Traffic and Parking Impact Assessment Report

57 Tattersall Road, Kings Park, Blacktown

CC160136
October 2019

ENGINEERING
PLANNING
PROJECT MANAGEMENT
SURVEYING
CERTIFICATION

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5	SEAR's Issue	17/05/19	
6	SEAR's Issue	16/10/19	

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1 Introduction

Barker Ryan Stewart have been engaged by Autorecyclers Pty Ltd to prepare a Traffic and Parking Impact Assessment in accordance with the requirements of the Blacktown DCP and the Road and Maritime Service's (RMS's) *'Guide to Traffic Generating Developments'* (RMS Guide) to accompany a State Significant Development Application to the Department of Planning for amendments to the site's scrap metal services, at 57 Tattersall Road, Kings Park. The development is expected to operate a copper wire granulator and increase its intake of scrapped metal from 30,000 tonnes per annum to 130,000 tonnes per annum.

The purpose of this report is to assess and address traffic, access, car parking and pedestrian issues generated by the proposed development. This can be briefly outlined as follows:

- The expected traffic generation to/from the proposed development.
- The impact of the proposed development on the road network.
- Vehicle parking provisions.
- Access design requirements.

This Traffic and Parking Impact Assessment Report concludes that the subject site is suitable for the proposed development in relation to traffic impact, access, parking and safety considerations

2 Existing Conditions

2.1 Site Location

The site address is 57 Tattersall Road, Kings Park, and is situated on lot 100 DP 792731. The lot is an irregular shape with an area of approximately 6ha.

Both ends of Tattersall Road terminate on arterial roads: Vardys Road to the north, and Sunnyholt Road to the east, which connects to the M7 north of the site.

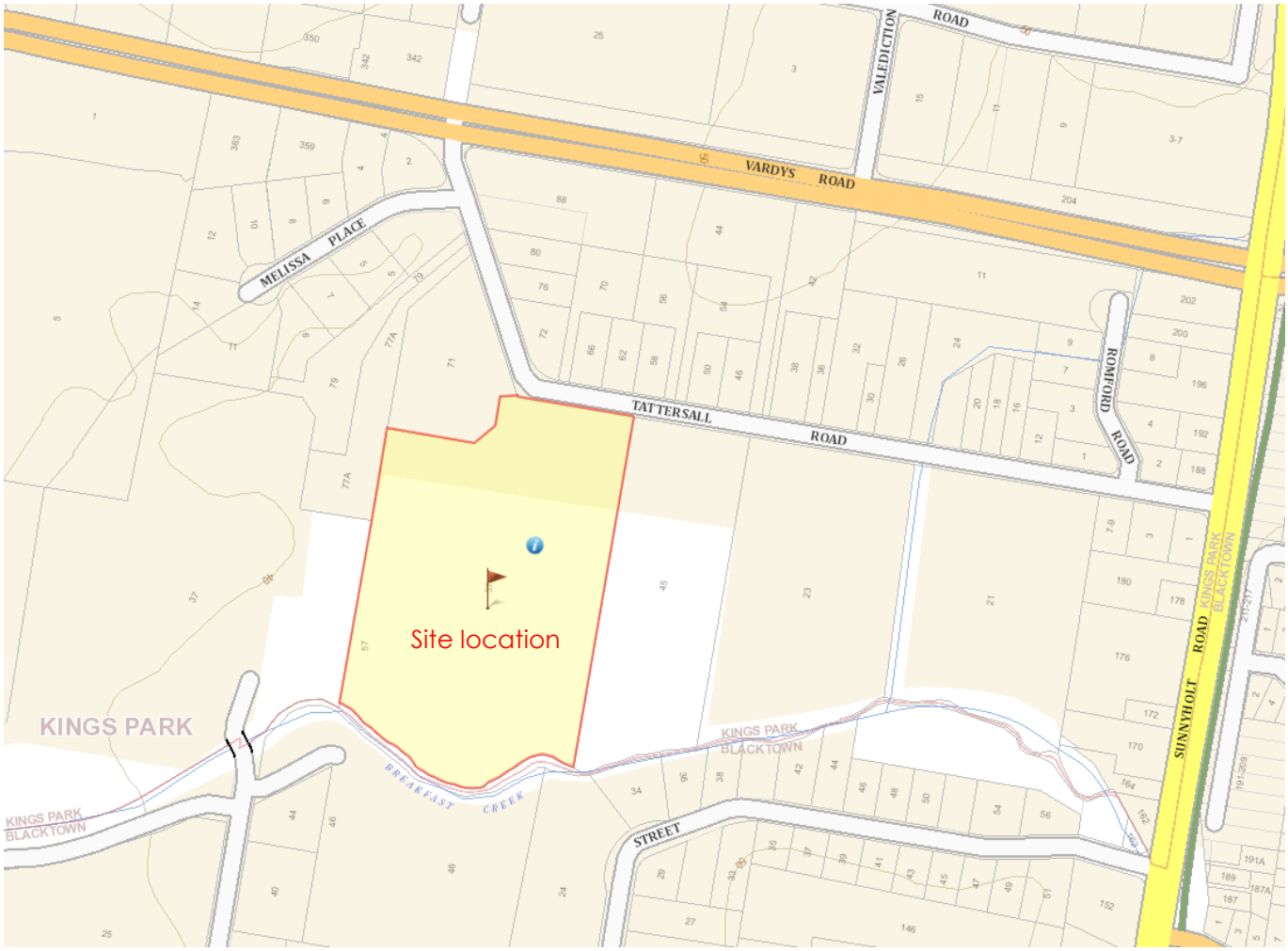


Figure 1: Site location (maps.six.nsw.gov.au)

2.2 Existing Development

The site is currently developed and occupied by the Pick 'n' Pay Less Self-Serve Auto Parts. There are three existing driveways serving vehicle access to the site. The western driveway serves two-way access to the "Pick n Payless" car park, while the eastern access serves two-way access to the rear of the site. An overflow light vehicle parking is located along the northern site boundary with entry provided by the eastern driveway and exit provided by an exit only driveway located between the eastern and western driveways.

Figure 2: Aerial photo (nearmap.com, May 2017 imagery)

2.3 Existing Road Conditions

Tattersall Road is a two-lane, two-way local road under the management of Blacktown City Council. It has a default 50km/h speed zone with a sealed width of approximately 12m. There is kerb and gutter on both sides of the road and no paved pedestrian footpath.

As stated above, Tattersall Road connects to arterial roads Vardy Road to the north and Sunnyholt Road to the east. The intersection at Vardy Road is a seagull intersection, whereas Sunnyholt Road is signalised.

2.4 Existing Traffic Flows and Volumes

2.4.1 Intersection Counts

Traffic counts were undertaken by Matrix Traffic and Transport Data on Thursday 6th December 2018 at the intersections of Vardy Road and Tattersall Road with Sunnyholt Road. The survey counted the morning period between 7am-9am, and the afternoon period between 4pm-6pm.

The peak hours at both intersections are summarised below. The full survey is attached in Appendix A.

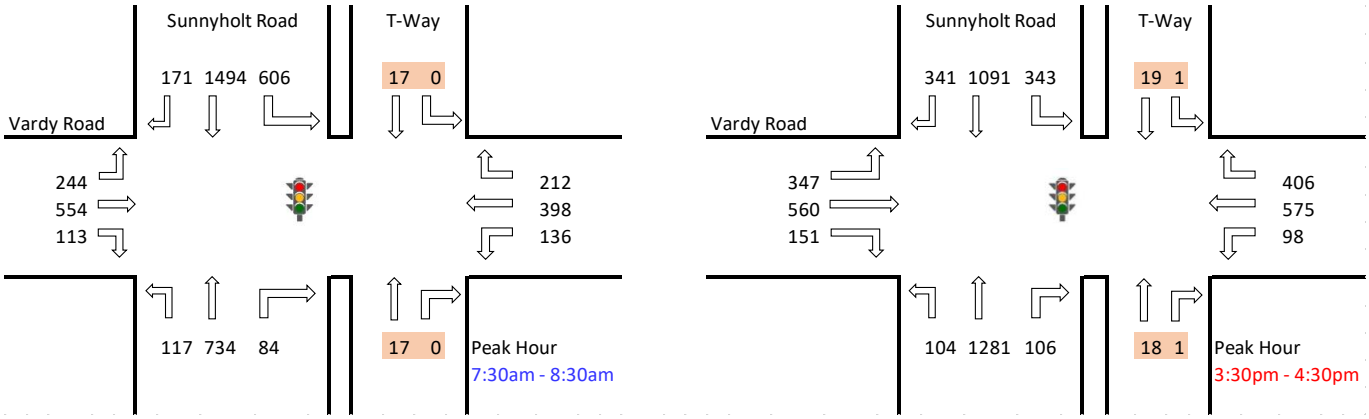


Figure 3: Traffic counts – Sunnyholt Road / Vardys Road

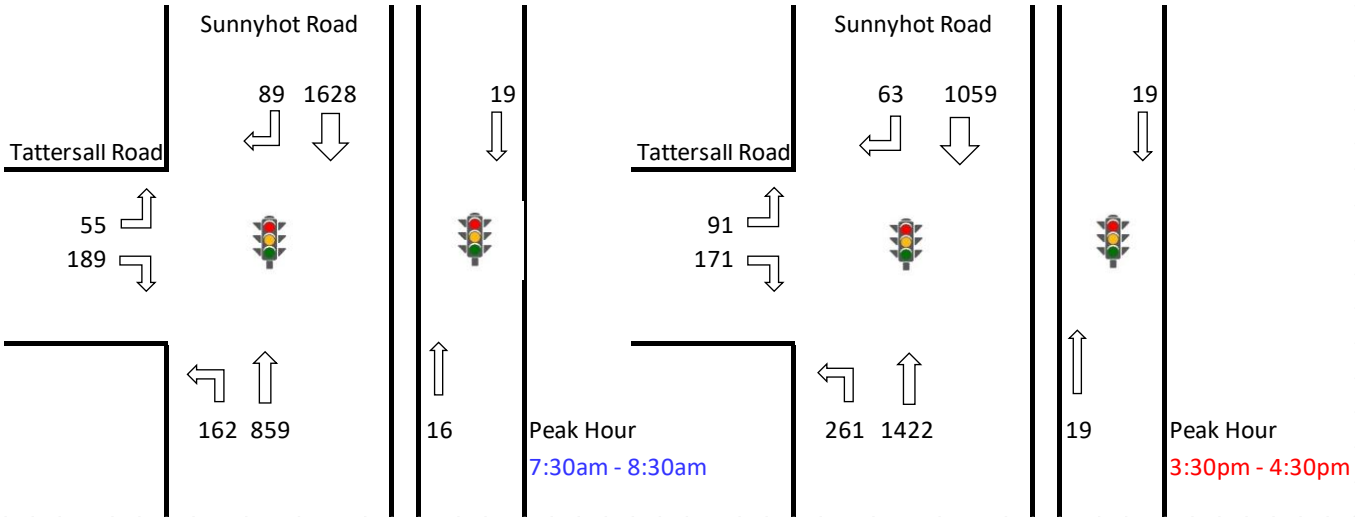


Figure 4: Traffic counts –Sunnyholt Road / Tattersall Road

2.4.2 Driveway Counts

Driveway counts were undertaken on Tuesday 11th December 2018 between 7am-9am and 4pm-6pm to identify the existing traffic generation of the development.

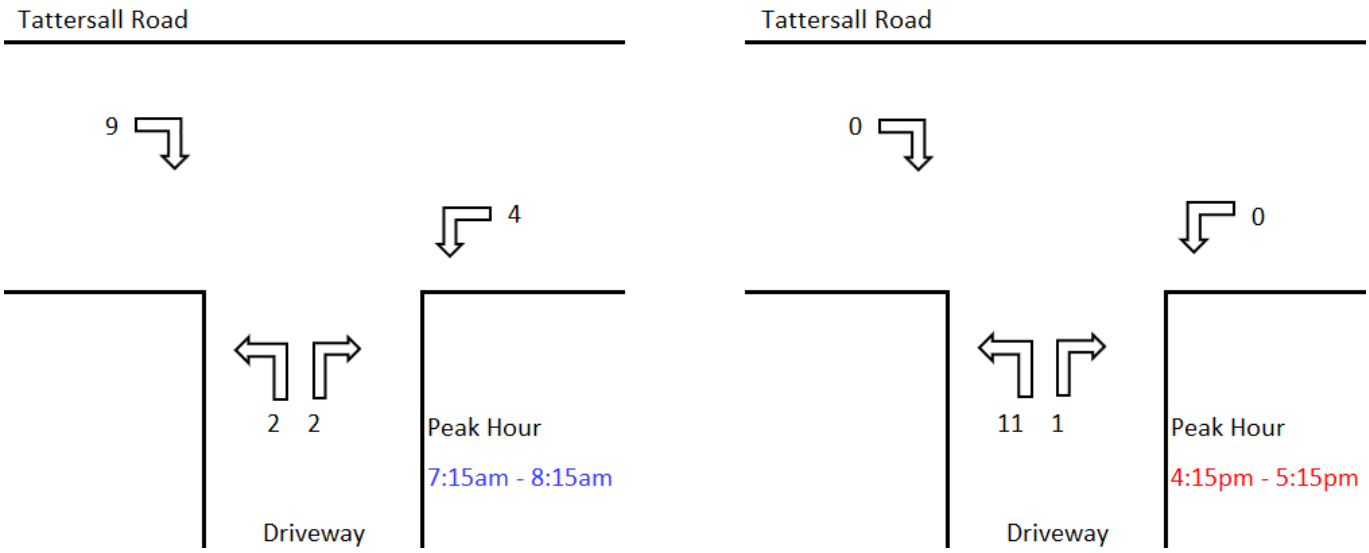


Figure 5: Existing Driveway Survey Results

In addition, the existing development generates approximately 100 vehicles per day (or 200 vehicle movements per day) and the following stipulates the daily heavy vehicle traffic volumes for each truck load carried to the site:

- 50 vehicles per day for trucks less than 15 tonnes Gross Vehicle Mass (GVM)
- 10 vehicles per day for trucks less than 25 tonnes GVM
- 10 vehicles per day for trucks less than 30 tonnes GVM
- 30 vehicles per day for trucks less than 43 tonnes GVM

It should be noted that under the existing operation trucks are not loaded to full capacity, and therefore there is capacity for trucks to load additional scrap metal in order to reduce heavy vehicle volumes. It is expected that heave vehicle movements are distributed evenly throughout the day.

As such, the existing development processes 100 tonnes of scrap metal per day on average.

3 Proposed Development

Currently, the site processes 30,000 tonnes per annum of scrap metal, and it is proposed to increase to 130,000 tonnes per annum. As such, this Development Application seeks approval for processing up to 130,000 tonnes of scrap metal per annum, and to include processing and recycling of metal from sources such as motor vehicle. The main scrap metal processing facility will be located on the north western corner of the site, with weighbridges directly opposite on the eastern side of the site.

Trucks up to 19m AV's are expected to deliver the materials that will be processed within the metal processing facility. Similarly, processed material will be transported to receiving facilities using trucks up to 19m AV's. Trucks are expected to arrive / depart the development at irregular intervals throughout the day.

The existing "Pick n Payless" will be reduced in size and fenced off from the scrap metal processing facility. No changes are proposed for the western vehicle crossing and the existing car park that will service the "Pick n Payless" component of the proposed development, and it will be open to the public and operate as is.

This DA also seeks approval for the operation for a copper wire granulator, which will require the use of 8.8m MRV's for delivering the copper materials.

3.1 Access

There will be no proposed changes to the existing western access to the site, which provides access for "Pick n Payless" customer parking (light vehicles).

Heavy vehicle access for receiving and delivery of scrap metal will be provided via the eastern vehicle crossing. The swept path analysis attached at Appendix B indicates a 11m wide vehicle crossing is required at the property boundary, and a 6.5m wide carriageway width is required for two-way flow between the property boundary and the weighbridges. Currently, the driveway width is approximately 8.5m wide, however it is expected that a separate application will be submitted to Council for the extension of the driveway width.

Heavy vehicles delivering the copper wire will enter the eastern driveway to "weigh in" then u-turn and enter the western driveway via Tattersall Road to unload / load material. The delivery vehicles will then travel to the western driveway via Tattersall Road to "weigh out". Once "weighed out" truck then u-turn to exit the site to Tattersall Road. The swept path analysis at Appendix B shows spatial requirements for an MRV to access the loading / unloading area, four parking spaces are expected to be removed to facilitate access for the delivery trucks.

Sightline assessment at Appendix C confirms sightline requirement comply with AS2890.2 and pedestrian sightline requirement comply with Figure 3.4 of AS2890.2 (note there are no footpaths on either side of Tattersall Road for the length of the site frontage).

There is plenty of queuing area available (approximately 125m between the property boundary and weighbridges) for vehicles within the property boundary to ensure there is no queuing back into Tattersall Road.

As such, the entry/exit access ways generally comply with the Australian Standards.

3.2 Car Park

On-site inspection indicates there are approximately 94 parking spaces available on-site (73 spaces available via the western driveway and 21 spaces available via the eastern driveway), and the proposal will anticipate a decrease of four spaces from the western car park and two spaces from the eastern car

park therefore a total of 88 spaces are expected for the proposal. A copy of the existing parking plans are provided is Appendix D.

3.3 State Environmental Planning Policy (Infrastructure)

From '*State Environmental Planning Policy (Infrastructure) 2007, Schedule 3 – Traffic Generating Development'*, referral to the RMS of the proposed development is required as Clause 104 of the Infrastructure SEPP requires the RMS to be notified of an application for traffic generating development, which includes waste or resource management facilities of any size or capacity.

4 Traffic Assessment

The impact of the proposed development on the surrounding road network was assessed using SIDRA Intersection modelling software. The traffic counts outlined in Section 2.4 and traffic generation estimated below in Section 4.1 were used to determine an overall traffic level for the area post-development. Section 4.2 describes how these additional trips were distributed amongst the critical intersections chosen for study.

As requested by SEAR's, the intersections of Sunnyholt Road / Vardys Road and Sunnyholt Road / Tattersall Road are to be assessed as part of the SIDRA intersection modelling. The location of these intersections and the layout of the surrounding traffic network are shown in the figure below.

Figure 6: Site and critical intersections locations *(source: Six Maps July 2018)*

4.1 Traffic Generation

As discussed earlier, trucks are not loaded to full capacity and therefore the proposed traffic generation has been determined based on first principals. Accordingly, to process 130,000 tonnes of scrap metal the development would be required to process 356 tonnes per day, compared to the existing 100 tonnes of scrap metal processed. This correlates to a traffic generation of:

- AM peak hour — Proposed Traffic generation of 31 vehicles per hour (or 62 trips per hour)
  Net traffic generation of 22-23 vehicles per hour (or 45 trips per hour)
- PM peak hour — Proposed Traffic generation of 32 vehicles per hour (or 64 trips per hour)
  Net traffic generation of 26 vehicles per hour (or 52 trips per hour)

Given the even distribution of trips and 12-hour operating hours (6am-6pm), the proposed development is expected to generate approximately 378 vehicle per day (or 756 vehicle movements per day).

The trips distribution for the existing driveway survey has been adopted for the proposed traffic volumes. As such, Figure 7 below illustrates the proposed driveway traffic volumes.

Please note, the copper wire granulator is expected to generate up to 3 vehicle per day, however this has been excluded from the traffic generation calculations as the SIDRA analysis was undertaken before the addition of the copper wire granulator proposal. It is not expected that the traffic from the copper wire granulator will exasperate the results of the scrap metal processing facility.

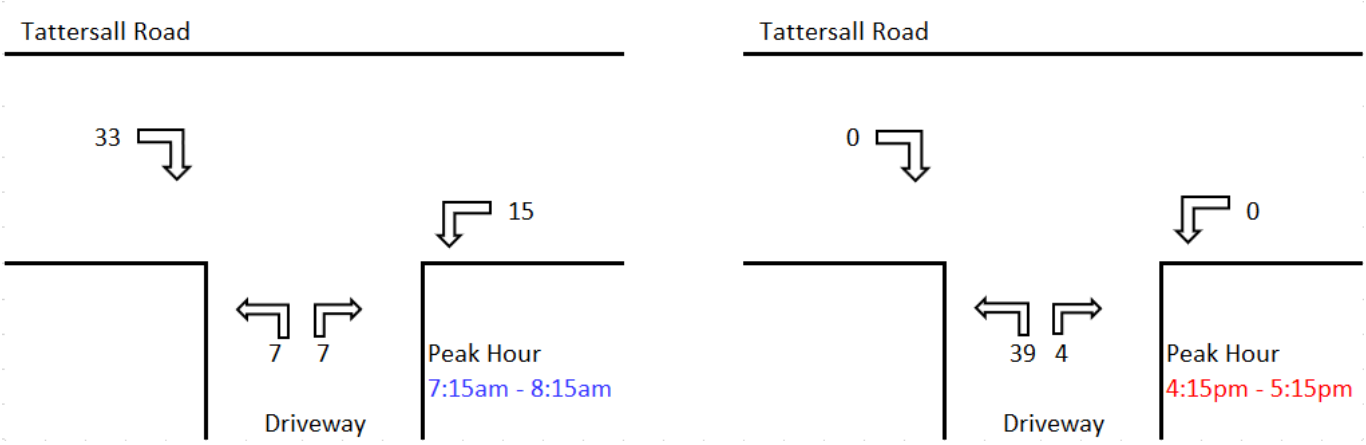


Figure 7: Proposed Development Traffic Generation

4.2 Trip Distribution

This section outlines the methodology used to distribute the trips generated by the proposed development onto the external traffic network. Given that the M7 motorway is located approximately 1km to the north, it is expected that trucks would access the site from the north.

Figure 8: AM Trip Distribution *(source: NearMap July 2018)*

Figure 9: PM Trip Distribution *(source: NearMap July 2018)*

4.3 SIDRA Analysis and Impact of Generated Traffic

Intersection performance has been assessed using the SIDRA modelling software which uses the level of service (delay) model adopted by the Roads and Maritime Services (RMS) in NSW to assess intersection performance. Average delay is used to determine the level of service (LOS), which ranges from 'A' which is excellent service to 'F', with a LOS of 'D' being the minimum ideal performance. The intersections outlined at the start of Section 2.4.1 have been assessed as a network for the existing and 10-year growth traffic volumes for AM and PM peak periods. A growth rate of 2% per annum was applied to the surveyed intersection to obtain the 10-year growth volumes.

The differences in performance between these two scenarios are summarised in the tables below. Calibration notes and more detailed SIDRA output is available in Appendix E.

Table 1: Sunnyholt Road / Vardy Road SIDRA Modelling Summary

Sunnyholt Road / Vardy Road		Existing Scenario		10-year growth scenario	
		Existing Conditions	Post Development Condition	Existing Conditions	Post Development Condition
AM	Delay (s)	129.6	133.5	280.9	286.5
	LOS	F	F	F	F
PM	Delay (s)	70.7	71.4	113.8	114.7
	LOS	F	F	F	F

Table 2: Sunnyholt Road / Tattersall Road SIDRA Modelling Summary

Sunnyholt Road / Tattersall Road		Existing Scenario		10-year growth scenario	
		Existing Conditions	Post Development Condition	Existing Conditions	Post Development Condition
AM	Delay (s)	16.1	17.1	46.8	53.4
	LOS	B	B	D	D
PM	Delay (s)	172.5	172.3	297.5	297.3
	LOS	F	F	F	F

As shown in the tables above, the proposed development traffic is expected to increase delays by less than 6 seconds at both intersections during the AM peak hour and less than 1 second at both intersections during the PM peak hour. As such, the additional development traffic is expected to have only a minor impact on the delays experienced by motorists at these intersections in the existing scenarios.

In addition, it is important to note traffic networks only operate as well as the worst performing intersection. Accordingly, the 10-year growth scenario shows that Sunnyholt Road / Vardy Road performs the worst during the AM peak hour and Sunnyholt Road / Tattersall Road performs the worst during the PM peak hour. The SIDRA movement summary shows that during the AM peak hour, the northern approach of Sunnyholt Road / Vardy Road intersection could have 600m queues and up to 360 second delays. In comparison, during the PM peak hour the southern approach of Sunnyholt Road / Tattersall Road intersection could have 750m queues and approximately 300 second delays. It is expected that Blacktown Council and RMS would intervene to prevent this level of congestion occurring on Sunnyholt Road road network through infrastructure upgrades and / or travel demand management.

In summary, the development traffic will not have any significant impact on the delays currently experienced within the existing road network and any future background growth will be addressed through changes in travel patterns and transport modes and intervention by the road authorities to

upgrade infrastructure and /or introduce travel demand measures. Consequently, the development can be supported based on traffic grounds

5 Car Parking Assessment

5.1 Parking Requirements

The proposed car parking provision has been assessed against Blacktown DCP (Section 6 – Car Parking). Accordingly, Blacktown DCP requires 1 standard parking space to be provided per 75m^2 GFA for light industry developments and 1 space per 40m^2 for the office component. The copper wire granulator is not expected to generate parking demand, hence it has been excluded from the parking assessment calculations.

The light vehicle parking demand will only be generated by the existing "Pick n Payless" development. Application of the existing development yield (1,645m^2 existing office GFA and 1,670m^2 existing warehouse GFA) to Blacktown DCP parking rate requires the existing development to provide 65 parking spaces.

In response, the development provides 88 parking spaces, in compliance with the Blacktown Council DCP. Accordingly, the proposed development is considered acceptable under transport planning grounds.

6 Conclusion

As requested by SEAR's, this Traffic and Parking Impact Assessment has been prepared to accompany a DA to Blacktown City Council for the proposed scrap metal processing facility at 57 Tattersall Road, Kings Park. The proposal will include increasing the scrap metal processing intake from 10,000 tonnes per annum to 130,000 tonnes per annum, with the existing "Pick n Payless" component of the development being reduced in size. This proposal also seeks approval for the operation of a copper wire granulator.

The traffic assessment indicates the increased truck volume generated by the proposal will not have detrimental effects to the nearby intersections. SIDRA intersection analysis indicates traffic generated by the development would cause minor increase to the existing delays (less than 6 seconds) at the signalised intersection of Sunnyholt Road / Vardy road and Sunnyholt Road / Tattersall Road. As such, the proposed development does not warrant infrastructure upgrade.

The eastern driveway has been designed for access for 19m AV's to be able to enter and leave the site in a forward direction. Accordingly, the increased traffic volume would require the development to increase the width of its eastern access to 11m in order to permit two-way truck flow at the access driveway. The western driveway serving access to the car park will remain unchanged.

Currently, the eastern vehicle crossing is 8.5m wide however due to increased traffic volume at this driveway, a 11m wide driveway width is required to permit two-way flow at the eastern driveway. It is expected that a separate application would be submitted to Council for the extension of this driveway width. Otherwise, the development design generally complies with the requirement of the Australian Standards for commercial vehicle facilities.

Blacktown DCP requires the development to provide 65 parking spaces, and in response the development provides 88 parking spaces. Accordingly, the proposed development parking provision is considered acceptable under transport planning grounds.

The Traffic and Parking Impact Assessment concludes that the subject site is suitable for the proposal in relation to the impact of traffic, vehicle access, parking and safety considerations. The development is considered to have negligible effect on the operating outcome and the Level of Service of the surrounding transport network and no reliance is expected on the external road network.

7 References

Australian Standards, *'AS/NZS 2890.1:2004 Off-Street Car Parking'*.

Australian Standards, '*AS/NZS 2890.2 Parking Facilities* – Off Street Commercial Vehicle Facilities

Roads and Maritime Services, *'Technical Direction – Guide to Traffic Generating Developments – Updated Traffic Surveys',* Version TDT 2013/04a dated August 2013.

NSW Department of Planning, *'SEPP (Infrastructure) 2007'*.

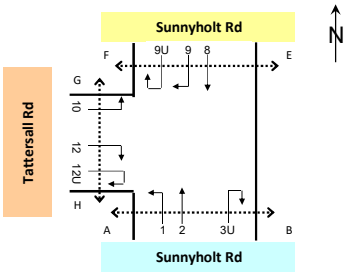
Blacktown DCP

Appendix A

Traffic Counts

Job No. : N4678
Client : Barker Ryan Stewart
Suburb : Tattersall Road
Location : 1. Sunnyholt Rd / Tattersall Rd

Day/Date : Thu, 6th Dec 2018
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



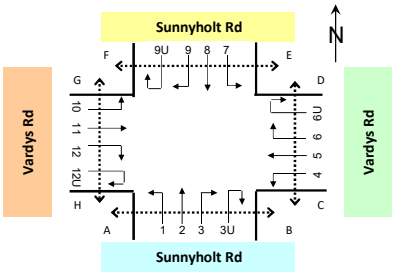
MATRIX Traffic and Transport Data

	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Lights	Heavies	Buses	Total		Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	
AM	7:30 to 8:30	901	120	16	**1,037**		1,629	88	19	**1,736**	207	37	0	**244**	**3,017**
PM	15:30 to 16:30	1,615	68	19	**1,702**		1,034	88	19	**1,141**	238	24	0	**262**	**3,105**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Lights	Heavies	Buses	Total		Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	
6:00 to 7:00	712	112	17	**841**		1,000	82	12	**1,094**	100	16	0	**116**	**2,051**
6:15 to 7:15	787	127	17	**931**		1,105	81	15	**1,201**	117	23	0	**140**	**2,272**
6:30 to 7:30	823	140	20	**983**		1,223	89	13	**1,325**	128	30	0	**158**	**2,466**
6:45 to 7:45	839	151	24	**1,014**		1,367	83	19	**1,469**	145	34	0	**179**	**2,662**
7:00 to 8:00	874	144	20	**1,038**		1,453	81	19	**1,553**	171	37	0	**208**	**2,799**
7:15 to 8:15	892	128	21	**1,041**		1,569	86	18	**1,673**	188	35	0	**223**	**2,937**
7:30 to 8:30	901	120	16	**1,037**		1,629	88	19	**1,736**	207	37	0	**244**	**3,017**
7:45 to 8:45	905	109	13	**1,027**		1,595	89	15	**1,699**	223	38	0	**261**	**2,987**
8:00 to 9:00	905	114	11	**1,030**		1,579	99	17	**1,695**	200	36	0	**236**	**2,961**
AM Totals	**2,491**	**370**	**48**	**2,909**		**4,032**	**262**	**48**	**4,342**	**471**	**89**	**0**	**560**	**7,811**
15:00 to 16:00	1,572	84	23	**1,679**		1,004	88	15	**1,107**	223	36	0	**259**	**3,045**
15:15 to 16:15	1,598	75	20	**1,693**		1,053	89	19	**1,161**	220	24	0	**244**	**3,098**
15:30 to 16:30	1,615	68	19	**1,702**		1,034	88	19	**1,141**	238	24	0	**262**	**3,105**
15:45 to 16:45	1,575	60	19	**1,654**		1,050	88	24	**1,162**	259	25	0	**284**	**3,100**
16:00 to 17:00	1,606	48	16	**1,670**		1,021	82	22	**1,125**	257	21	1	**279**	**3,074**
16:15 to 17:15	1,598	46	16	**1,660**		962	81	22	**1,065**	255	23	1	**279**	**3,004**
16:30 to 17:30	1,589	49	18	**1,656**		975	74	20	**1,069**	233	24	1	**258**	**2,983**
16:45 to 17:45	1,531	44	17	**1,592**		923	67	15	**1,005**	193	19	1	**213**	**2,810**
17:00 to 18:00	1,539	43	18	**1,600**		950	67	18	**1,035**	161	17	0	**178**	**2,813**
PM Totals	**4,717**	**175**	**57**	**4,949**		**2,975**	**237**	**55**	**3,267**	**641**	**74**	**1**	**716**	**8,932**

Job No. : N4678
Client : Barker Ryan Stewart
Suburb : Tattersall Road
Location : 2. Sunnyholt Rd / Vardys Rd

Day/Date : Thu, 6th Dec 2018
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



MATRIX Traffic and Transport Data

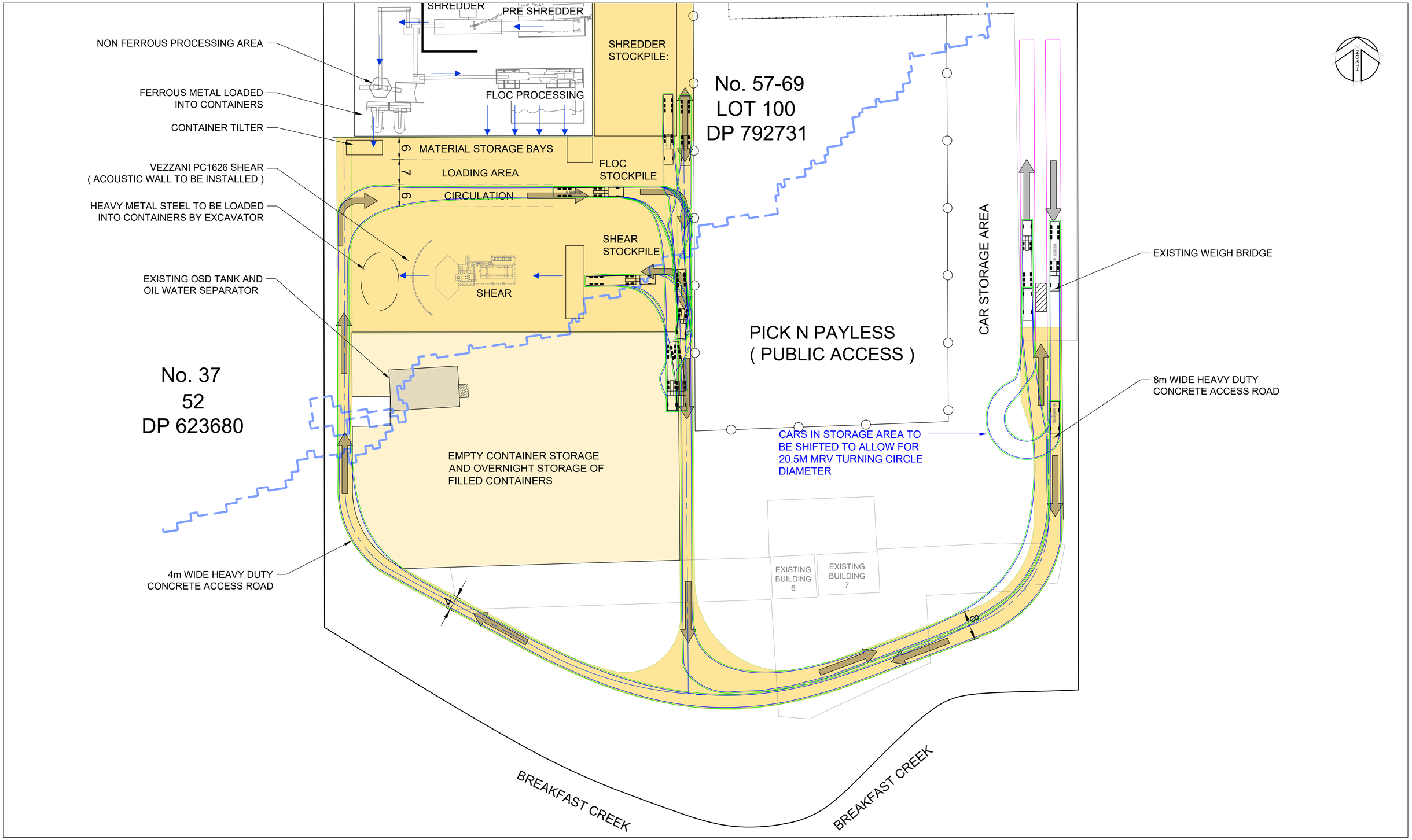
	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	
AM	7:30 to 8:30	809	126	17	**952**	709	34	3	**746**	2,174	97	17	**2,288**	844	64	3	**911**	**4,897**
PM	15:30 to 16:30	1,432	59	19	**1,510**	1,020	57	2	**1,079**	1,382	97	21	**1,500**	859	46	2	**907**	**4,996**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	
6:00 to 7:00	614	103	18	**735**	490	28	2	**520**	1,352	85	14	**1,451**	844	81	6	**931**	**3,637**
6:15 to 7:15	690	121	17	**828**	539	26	3	**568**	1,524	91	14	**1,629**	860	85	6	**951**	**3,976**
6:30 to 7:30	703	143	19	**865**	602	34	4	**640**	1,732	95	15	**1,842**	910	83	6	**999**	**4,346**
6:45 to 7:45	717	161	23	**901**	618	35	4	**657**	1,897	94	17	**2,008**	925	85	2	**1,012**	**4,578**
7:00 to 8:00	761	156	21	**938**	679	29	4	**712**	2,022	97	16	**2,135**	880	72	2	**954**	**4,739**
7:15 to 8:15	783	138	20	**941**	680	29	3	**712**	2,134	100	18	**2,252**	894	70	2	**966**	**4,871**
7:30 to 8:30	809	126	17	**952**	709	34	3	**746**	2,174	97	17	**2,288**	844	64	3	**911**	**4,897**
7:45 to 8:45	830	112	12	**954**	736	38	3	**777**	2,126	107	18	**2,251**	844	63	3	**910**	**4,892**
8:00 to 9:00	818	113	10	**941**	728	39	2	**769**	2,102	104	19	**2,225**	823	69	3	**895**	**4,830**
AM Totals	**2,193**	**372**	**49**	**2,614**	**1,897**	**96**	**8**	**2,001**	**5,476**	**286**	**49**	**5,811**	**2,547**	**222**	**11**	**2,780**	**13,206**
15:00 to 16:00	1,396	83	23	**1,502**	930	52	3	**985**	1,396	107	17	**1,520**	770	50	3	**823**	**4,830**
15:15 to 16:15	1,426	69	20	**1,515**	976	54	2	**1,032**	1,405	108	20	**1,533**	797	48	3	**848**	**4,928**
15:30 to 16:30	1,432	59	19	**1,510**	1,020	57	2	**1,079**	1,382	97	21	**1,500**	859	46	2	**907**	**4,996**
15:45 to 16:45	1,423	61	17	**1,501**	1,028	52	3	**1,083**	1,357	97	22	**1,476**	865	44	1	**910**	**4,970**
16:00 to 17:00	1,465	46	16	**1,527**	1,040	48	2	**1,090**	1,342	97	21	**1,460**	844	39	2	**885**	**4,962**
16:15 to 17:15	1,444	47	18	**1,509**	1,056	41	2	**1,099**	1,298	97	22	**1,417**	850	41	1	**892**	**4,917**
16:30 to 17:30	1,424	50	18	**1,492**	1,093	30	3	**1,126**	1,326	88	21	**1,435**	831	37	1	**869**	**4,922**
16:45 to 17:45	1,341	40	20	**1,401**	1,142	32	3	**1,177**	1,387	77	16	**1,480**	827	32	2	**861**	**4,919**
17:00 to 18:00	1,354	42	18	**1,414**	1,089	25	3	**1,117**	1,404	71	19	**1,494**	788	31	1	**820**	**4,845**
PM Totals	**4,215**	**171**	**57**	**4,443**	**3,059**	**125**	**8**	**3,192**	**4,142**	**275**	**57**	**4,474**	**2,402**	**120**	**6**	**2,528**	**14,637**

Appendix B

Swept Path Analysis

A1



DIAL BEFORE YOU DIG www.1100.com.au

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A	16/01/2019	FIRST ISSUE
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P: 02 4966 8388
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mail@brs.com.au

Client:

AUTORECYCLERS

PROPOSED SCRAP METAL PROCESSING FACILITY
57 TATTERSALL ROAD, KINGS PARK

INTERNAL SWEPT PATH ANALYSIS - 19M ARTICULATED VEHICLES & 8.8M MRV

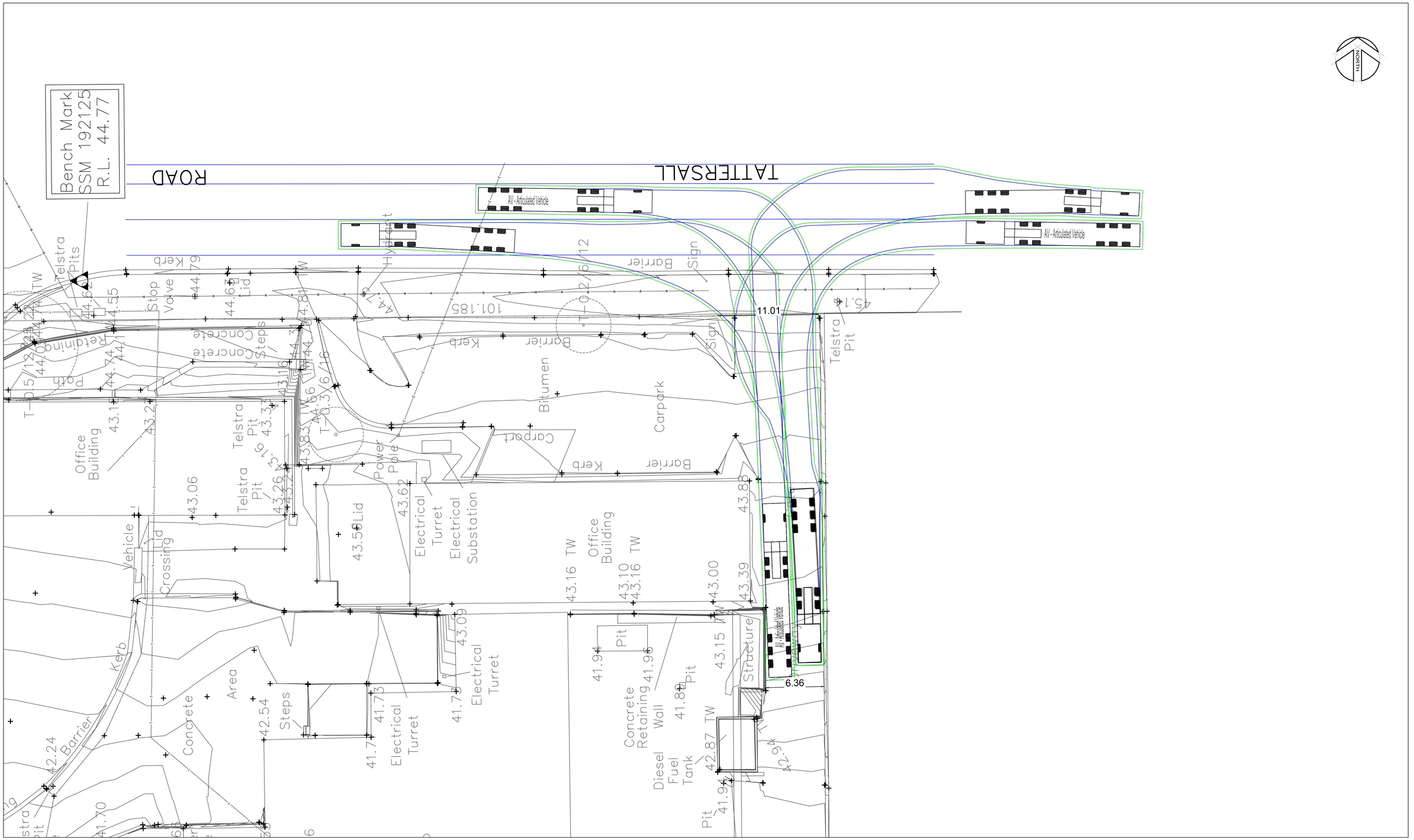
Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

Datum: A.H.D.

Plan No.
CC160136TR01
File Ref.
CC160136-D01B
REV.
B
SHEET 1 OF 4 SHEETS

A1



DIAL BEFORE YOU DIG www.1100.com.au

4 0 4 8 12 16 20
METRES
1:200

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A	16/01/2019	FIRST ISSUE
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PROPOSED SCRAP METAL PROCESSING FACILITY
57 TATTERSALL ROAD, KINGS PARK

DRIVEWAY SWEPT PATH ANALYSIS - 19M ARTICULATED VEHICLES

Designed: AAJ
Drawn: AAJ
Checked: AAJ
Scales: Plan
Horiz.
Vert.
X-Sect.
Datum: A.H.D.

Plan No.
CC160136TR02
File Ref. REV.
CC160136-D01B B
SHEET 2 OF 4 SHEETS

A1

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3 0 3 6 9 12 15
METRES
1:150

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mail@brs.com.au

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AUTORECYCLERS

PROPOSED SCRAP METAL PROCESSING FACILITY
57 TATTERSALL ROAD, KINGS PARK

COPPER WIRE DELIVERY - 8.8M MRV

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

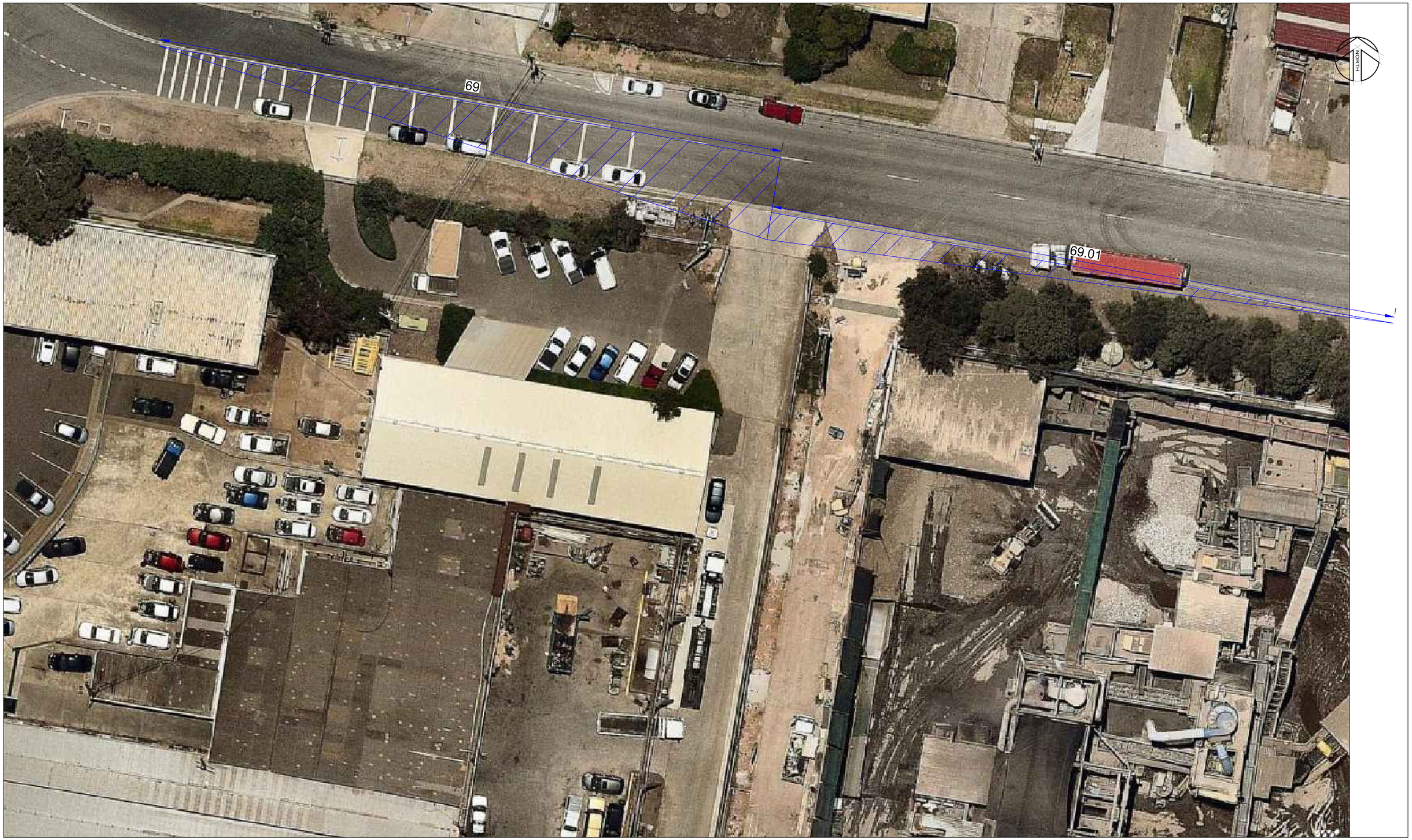
Datum: A.H.D.

Plan No.
CC160136TR03
File Ref.
CC160136-D01B
REV.
B
SHEET 3 OF 4 SHEETS

Appendix C

Sightline Assessment

A1



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4 0 4 8 12 16 20
METRES
1:200

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P: 02 4325 5255
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ABN: 26 134 067 842
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mail@brs.com.au

Client:
AUTORECYCLERS

PROPOSED SCRAP METAL PROCESSING FACILITY
57 TATTERSALL ROAD, KINGS PARK

SIGHTLINE REQUIREMENT

Designed: AAJ
Drawn: AAJ
Checked: AAJ

Scales: Plan
Horiz.
Vert.
X-Sect.

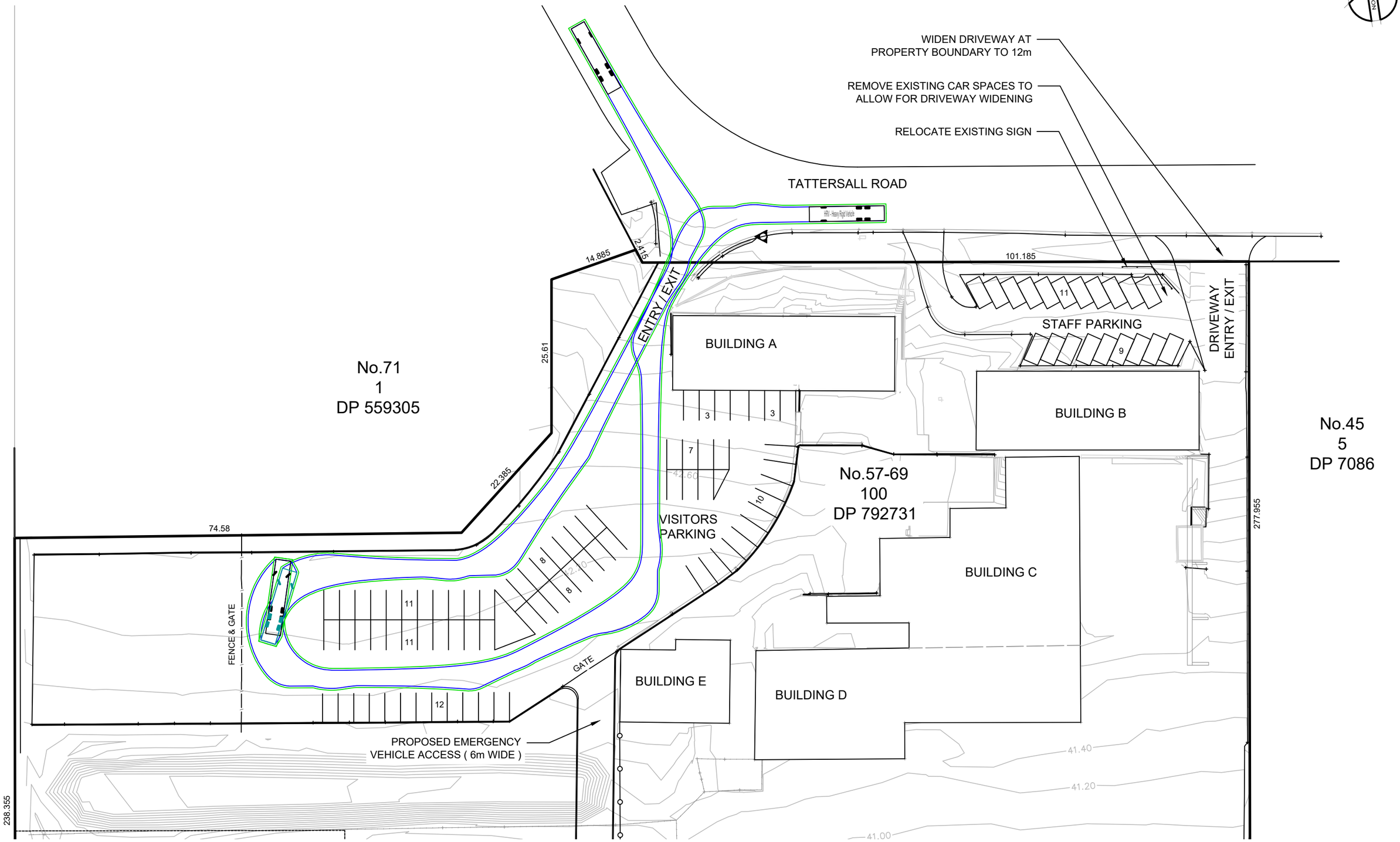
Datum: A.H.D.

Plan No.
CC160136TR04
File Ref.
CC160136-D01B
REV.
B
SHEET 4 OF 4 SHEETS

Appendix D

Existing Parking Plan

A3



TOTAL CARSPACES : 93

6 0 6 12 18 24 30 METRES 1:600

REV	AMENDMENT	ISSUED	DATE
A		AJ	13/06/19

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
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S.E. QLD P: 07 5582 6555
www.brs.com.au
mail@brs.com.au
ABN: 26 134 067 842

Client: AUTORECYCLERS PTY LTD

57-69 TATTERSALL ROAD KINGS PARK
PROPOSED METAL RECOVERY PROCESSING & RECYCLING FACILITY

CARPARKING PLAN

Designed:
Drawn: AJ
Checked: AD

Scales: Plan 1:600
Horiz.
Vert.
X-Sect.

Datum: A.H.D

Plan No. 160136TR.01
File Ref. CC160136TR.dwg
REV. A

Appendix E

SIDRA Movement Summary

Appendix E1

Existing

MOVEMENT SUMMARY

Site: 101 [Sunnyholt Road / Vardys Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	109	11.5	98	11.7	0.980	95.9	LOS F	22.6	165.0	1.00	1.14	1.33	18.4
2	T1	1367	4.5	1227	4.7	0.980	84.0	LOS F	22.9	165.0	1.00	1.15	1.32	19.8
3	R2	113	6.5	101	6.7	0.323	82.2	LOS F	2.3	16.7	1.00	0.75	1.00	19.9
Approach		1589	5.2	1426[N1]	5.4	0.980	84.7	LOS F	22.9	165.0	1.00	1.12	1.30	19.7
East: Vardys Road														
4	L2	103	13.3	103	13.3	0.185	43.5	LOS D	3.2	25.3	0.75	0.75	0.75	25.0
5	T1	605	4.3	605	4.3	0.784	63.7	LOS E	13.4	97.0	1.00	0.90	1.07	29.6
6	R2	427	5.2	427	5.2	0.999	122.8	LOS F	12.9	94.7	1.00	1.13	1.61	20.0
Approach		1136	5.5	1136	5.5	0.999	84.1	LOS F	13.4	97.0	0.98	0.98	1.24	24.7
North: Sunnyholt Road														
7	L2	302	6.3	302	6.3	0.696	40.2	LOS C	9.6	70.7	0.77	0.79	0.77	35.5
8	T1	977	7.4	977	7.4	0.786	37.2	LOS C	19.2	140.9	0.84	0.75	0.85	27.6
9	R2	299	10.6	299	10.6	1.014	131.5	LOS F	9.3	71.0	1.00	1.14	1.72	18.9
Approach		1578	7.8	1578	7.8	1.014	55.6	LOS D	19.2	140.9	0.86	0.83	1.00	25.9
West: Vardys Road														
10	L2	304	5.2	304	5.2	0.510	48.5	LOS D	10.9	79.4	0.86	0.82	0.86	32.8
11	T1	492	2.4	492	2.4	0.619	58.5	LOS E	10.1	71.9	0.97	0.81	0.97	30.9
12	R2	159	14.6	159	14.6	0.787	80.6	LOS F	7.4	58.4	1.00	0.89	1.15	16.9
Approach		955	5.3	955	5.3	0.787	59.0	LOS E	10.9	79.4	0.94	0.83	0.96	29.3
All Vehicles		5258	6.0	5094[N1]	6.2	1.014	70.7	LOS F	22.9	165.0	0.94	0.94	1.13	24.4

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.

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	275	7.3	275	7.3	1.261	306.0	LOS F	105.4	766.3	1.00	1.94	2.42	9.9
2	T1	1517	4.7	1517	4.7	1.261	298.2	LOS F	105.4	766.3	0.99	2.00	2.40	6.2
Approach		1792	5.1	1792	5.1	1.261	299.4	LOS F	105.4	766.3	0.99	1.99	2.41	6.3
North: Sunnyholt Road														
8	T1	1135	9.2	1135	9.2	0.272	2.6	LOS A	4.6	35.6	0.15	0.13	0.16	56.4
9	R2	66	12.7	66	12.7	0.874	86.7	LOS F	3.2	24.9	1.00	0.81	1.14	19.0
Approach		1201	9.4	1201	9.4	0.874	7.2	LOS A	4.6	35.6	0.19	0.17	0.21	50.9
West: Tattersall Road														
10	L2	96	11.0	96	11.0	0.590	64.9	LOS E	4.7	36.0	0.95	0.82	0.95	19.4
12	R2	180	8.2	180	8.2	0.590	69.1	LOS E	6.9	51.6	0.98	0.81	0.98	27.8
Approach		276	9.2	276	9.2	0.590	67.6	LOS E	6.9	51.6	0.97	0.82	0.97	25.5
All Vehicles		3268	7.0	3268	7.0	1.261	172.5	LOS F	105.4	766.3	0.69	1.22	1.48	10.8

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.

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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 [Sunnyholt Road / Vardys Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	123	10.3	123	10.3	0.557	44.6	LOS D	11.9	92.0	0.78	0.73	0.78	29.3
2	T1	791	15.2	791	15.2	0.557	18.3	LOS B	11.9	92.0	0.45	0.41	0.45	41.5
3	R2	89	21.2	89	21.2	0.681	90.1	LOS F	2.2	17.7	1.00	0.77	1.08	18.8
Approach		1003	15.1	1003	15.1	0.681	27.9	LOS B	11.9	92.0	0.54	0.48	0.55	35.6
East: Vardys Road														
4	L2	143	6.6	143	6.6	0.286	50.0	LOS D	5.0	36.6	0.82	0.78	0.82	23.0
5	T1	419	4.3	419	4.3	0.543	57.4	LOS E	8.4	61.1	0.95	0.79	0.95	31.2
6	R2	223	5.2	223	5.2	0.939	101.8	LOS F	5.9	43.4	1.00	1.03	1.53	22.6
Approach		785	5.0	785	5.0	0.939	68.7	LOS E	8.4	61.1	0.94	0.86	1.09	27.0
North: Sunnyholt Road														
7	L2	639	3.6	639	3.6	1.288	335.8	LOS F	71.5	515.3	1.00	1.53	2.55	9.0
8	T1	1591	5.1	1591	5.1	1.080	149.6	LOS F	77.4	560.4	1.00	1.48	1.71	10.3
9	R2	180	9.4	180	9.4	1.313	360.0	LOS F	9.9	75.2	1.00	1.43	2.78	8.3
Approach		2409	5.0	2409	5.0	1.313	214.7	LOS F	77.4	560.4	1.00	1.49	2.01	9.5
West: Vardys Road														
10	L2	257	12.3	257	12.3	0.525	53.9	LOS D	9.6	74.6	0.89	0.82	0.89	31.2
11	T1	583	3.6	583	3.6	0.750	61.6	LOS E	12.7	91.6	1.00	0.87	1.03	30.1
12	R2	119	15.0	119	15.0	1.064	161.4	LOS F	8.3	65.6	1.00	1.22	1.93	9.6
Approach		959	7.4	959	7.4	1.064	71.9	LOS F	12.7	91.6	0.97	0.90	1.11	26.6
All Vehicles		5157	7.4	5157	7.4	1.313	129.6	LOS F	77.4	560.4	0.90	1.09	1.42	15.6

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	171	11.7	171	11.7	0.499	23.5	LOS B	13.0	100.1	0.60	0.62	0.60	44.1
2	T1	921	13.4	921	13.4	0.499	17.9	LOS B	13.7	105.9	0.61	0.58	0.61	37.6
Approach		1092	13.1	1092	13.1	0.499	18.8	LOS B	13.7	105.9	0.60	0.58	0.60	39.0
North: Sunnyholt Road														
8	T1	1734	5.2	1611	5.3	0.377	3.5	LOS A	7.6	56.9	0.20	0.18	0.21	55.2
9	R2	94	23.6	87	23.7	0.490	65.1	LOS E	3.5	29.3	0.91	0.77	0.91	22.7
Approach		1827	6.2	1698[N1]	6.3	0.490	6.7	LOS A	7.6	56.9	0.23	0.21	0.25	51.4
West: Tattersall Road														
10	L2	58	45.5	58	45.5	0.467	66.3	LOS E	5.1	43.5	0.94	0.80	0.94	19.3
12	R2	199	6.3	199	6.3	0.467	67.3	LOS E	5.4	39.8	0.95	0.80	0.95	28.2
Approach		257	15.2	257	15.2	0.467	67.0	LOS E	5.4	43.5	0.95	0.80	0.95	26.6
All Vehicles		3176	9.3	3047[N1]	9.7	0.499	16.1	LOS B	13.7	105.9	0.43	0.39	0.43	42.6

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.

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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.

Appendix E2

Existing + Development

MOVEMENT SUMMARY

Site: 101 [Sunnyholt Road / Vardys Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	123	10.3	123	10.3	0.564	44.1	LOS D	12.3	95.6	0.80	0.74	0.80	29.5
2	T1	798	16.0	798	16.0	0.564	16.8	LOS B	12.3	95.6	0.41	0.37	0.41	42.5
3	R2	89	21.2	89	21.2	0.681	90.1	LOS F	2.2	17.7	1.00	0.77	1.08	18.8
Approach		1011	15.7	1011	15.7	0.681	26.6	LOS B	12.3	95.6	0.51	0.45	0.52	36.3
East: Vardys Road														
4	L2	143	6.6	143	6.6	0.286	50.0	LOS D	5.0	36.6	0.82	0.78	0.82	23.0
5	T1	419	4.3	419	4.3	0.543	57.4	LOS E	8.4	61.1	0.95	0.79	0.95	31.2
6	R2	223	5.2	223	5.2	0.939	101.8	LOS F	5.9	43.4	1.00	1.03	1.53	22.6
Approach		785	5.0	785	5.0	0.939	68.7	LOS E	8.4	61.1	0.94	0.86	1.09	27.0
North: Sunnyholt Road														
7	L2	639	3.6	639	3.6	1.297	343.8	LOS F	72.3	521.2	1.00	1.54	2.58	8.8
8	T1	1606	6.0	1606	6.0	1.094	160.2	LOS F	80.5	587.5	1.00	1.53	1.77	9.8
9	R2	180	9.4	180	9.4	1.313	360.0	LOS F	9.9	75.2	1.00	1.43	2.78	8.3
Approach		2425	5.6	2425	5.6	1.313	223.4	LOS F	80.5	587.5	1.00	1.52	2.06	9.2
West: Vardys Road														
10	L2	257	12.3	257	12.3	0.525	53.9	LOS D	9.6	74.6	0.89	0.82	0.89	31.2
11	T1	583	3.6	583	3.6	0.750	61.6	LOS E	12.7	91.6	1.00	0.87	1.03	30.1
12	R2	119	15.0	119	15.0	1.064	161.4	LOS F	8.3	65.6	1.00	1.22	1.93	9.6
Approach		959	7.4	959	7.4	1.064	71.9	LOS F	12.7	91.6	0.97	0.90	1.11	26.6
All Vehicles		5180	7.8	5180	7.8	1.313	133.5	LOS F	80.5	587.5	0.89	1.10	1.43	15.3

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.

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	171	11.7	171	11.7	0.517	25.3	LOS B	13.6	105.1	0.63	0.64	0.63	43.1
2	T1	921	13.4	921	13.4	0.517	19.8	LOS B	14.4	111.2	0.64	0.60	0.64	36.3
Approach		1092	13.1	1092	13.1	0.517	20.6	LOS B	14.4	111.2	0.63	0.61	0.63	37.7
North: Sunnyholt Road														
8	T1	1734	5.2	1595	5.3	0.373	3.5	LOS A	7.5	56.1	0.19	0.18	0.21	55.3
9	R2	109	34.6	101	34.8	0.522	62.4	LOS E	4.0	36.1	0.90	0.78	0.90	23.2
Approach		1843	7.0	1696 N1	7.1	0.522	7.0	LOS A	7.5	56.1	0.24	0.21	0.25	51.1
West: Tattersall Road														
10	L2	65	51.6	65	51.6	0.484	66.6	LOS E	5.3	46.2	0.95	0.80	0.95	19.2
12	R2	199	6.3	199	6.3	0.484	67.5	LOS E	5.6	41.3	0.96	0.80	0.96	28.2
Approach		264	17.5	264	17.5	0.484	67.3	LOS E	5.6	46.2	0.95	0.80	0.95	26.4
All Vehicles		3199	9.9	3052 N1	10.4	0.522	17.1	LOS B	14.4	111.2	0.44	0.40	0.45	41.8

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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 [Sunnyholt Road / Vardys Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	109	11.5	98	11.7	0.984	98.3	LOS F	22.6	165.0	1.00	1.15	1.35	18.1
2	T1	1372	4.8	1231	5.1	0.984	86.5	LOS F	22.9	165.0	1.00	1.16	1.33	19.4
3	R2	113	6.5	101	6.8	0.323	82.2	LOS F	2.3	16.8	1.00	0.75	1.00	19.9
Approach		1594	5.4	1430[N1]	5.6	0.984	87.0	LOS F	22.9	165.0	1.00	1.13	1.31	19.3
East: Vardys Road														
4	L2	103	13.3	103	13.3	0.185	43.5	LOS D	3.2	25.3	0.75	0.75	0.75	25.0
5	T1	605	4.3	605	4.3	0.784	63.7	LOS E	13.4	97.0	1.00	0.90	1.07	29.6
6	R2	427	5.2	427	5.2	0.999	122.8	LOS F	12.9	94.7	1.00	1.13	1.61	20.0
Approach		1136	5.5	1136	5.5	0.999	84.1	LOS F	13.4	97.0	0.98	0.98	1.24	24.7
North: Sunnyholt Road														
7	L2	302	6.3	302	6.3	0.696	40.2	LOS C	9.6	70.7	0.77	0.79	0.77	35.5
8	T1	977	7.4	977	7.4	0.786	37.2	LOS C	19.2	140.9	0.84	0.75	0.85	27.6
9	R2	299	10.6	299	10.6	1.014	131.5	LOS F	9.3	71.0	1.00	1.14	1.72	18.9
Approach		1578	7.8	1578	7.8	1.014	55.6	LOS D	19.2	140.9	0.86	0.83	1.00	25.9
West: Vardys Road														
10	L2	304	5.2	304	5.2	0.510	48.5	LOS D	10.9	79.4	0.86	0.82	0.86	32.8
11	T1	492	2.4	492	2.4	0.619	58.5	LOS E	10.1	71.9	0.97	0.81	0.97	30.9
12	R2	159	14.6	159	14.6	0.787	80.6	LOS F	7.4	58.4	1.00	0.89	1.15	16.9
Approach		955	5.3	955	5.3	0.787	59.0	LOS E	10.9	79.4	0.94	0.83	0.96	29.3
All Vehicles		5262	6.1	5098[N1]	6.3	1.014	71.4	LOS F	22.9	165.0	0.94	0.95	1.13	24.2

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	275	7.3	275	7.3	1.261	306.0	LOS F	105.4	766.3	1.00	1.94	2.42	9.9
2	T1	1517	4.7	1517	4.7	1.261	298.2	LOS F	105.4	766.3	0.99	2.00	2.40	6.2
Approach		1792	5.1	1792	5.1	1.261	299.4	LOS F	105.4	766.3	0.99	1.99	2.41	6.3
North: Sunnyholt Road														
8	T1	1135	9.2	1135	9.2	0.272	2.6	LOS A	4.6	35.6	0.15	0.13	0.16	56.4
9	R2	66	12.7	66	12.7	0.874	86.7	LOS F	3.2	24.9	1.00	0.81	1.14	19.0
Approach		1201	9.4	1201	9.4	0.874	7.2	LOS A	4.6	35.6	0.19	0.17	0.21	50.9
West: Tattersall Road														
10	L2	100	14.7	100	14.7	0.602	64.4	LOS E	4.8	37.3	0.95	0.82	0.95	19.5
12	R2	180	8.2	180	8.2	0.602	69.3	LOS E	7.0	52.8	0.98	0.82	0.98	27.8
Approach		280	10.5	280	10.5	0.602	67.6	LOS E	7.0	52.8	0.97	0.82	0.97	25.4
All Vehicles		3273	7.1	3273	7.1	1.261	172.3	LOS F	105.4	766.3	0.70	1.22	1.48	10.8

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.

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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.

Appendix E3

Existing + Growth

MOVEMENT SUMMARY

Site: 101 [Sunnyholt Road / Vardys Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	131	11.3	99	11.7	1.072	147.9	LOS F	22.6	165.0	1.00	1.35	1.63	13.0
2	T1	1641	4.6	1246	5.1	1.072	142.6	LOS F	22.9	165.0	1.00	1.40	1.65	13.3
3	R2	135	6.3	102	6.7	0.283	79.6	LOS F	2.3	16.6	1.00	0.76	1.00	20.4
Approach		1906	5.1	1447[N1]	5.7	1.072	138.5	LOS F	22.9	165.0	1.00	1.35	1.60	13.5
East: Vardys Road														
4	L2	123	12.8	123	12.8	0.212	42.4	LOS C	3.8	29.9	0.75	0.76	0.75	25.4
5	T1	726	4.3	726	4.3	0.991	107.8	LOS F	22.1	160.2	1.00	1.22	1.49	21.9
6	R2	513	5.1	513	5.1	1.079	170.3	LOS F	18.8	137.5	1.00	1.27	1.87	15.6
Approach		1362	5.4	1362	5.4	1.079	125.4	LOS F	22.1	160.2	0.98	1.20	1.57	19.0
North: Sunnyholt Road														
7	L2	362	6.1	362	6.1	0.951	84.4	LOS F	18.0	132.4	0.82	0.97	1.22	24.8
8	T1	1173	7.5	1173	7.5	1.023	117.9	LOS F	44.7	327.3	1.00	1.31	1.53	12.6
9	R2	359	10.6	359	10.6	1.056	155.7	LOS F	12.4	94.6	1.00	1.20	1.84	16.6
Approach		1894	7.8	1894	7.8	1.056	118.6	LOS F	44.7	327.3	0.97	1.23	1.53	15.7
West: Vardys Road														
10	L2	365	5.2	365	5.2	0.588	48.5	LOS D	13.3	97.4	0.88	0.84	0.88	32.8
11	T1	589	2.3	589	2.3	0.750	61.6	LOS E	12.8	91.4	1.00	0.87	1.03	30.1
12	R2	191	14.4	191	14.4	0.848	83.4	LOS F	9.2	72.4	1.00	0.94	1.23	16.5
Approach		1145	5.2	1145	5.2	0.848	61.0	LOS E	13.3	97.4	0.96	0.87	1.02	28.7
All Vehicles		6307	6.0	5848[N1]	6.5	1.079	113.8	LOS F	44.7	327.3	0.98	1.18	1.45	17.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	329	7.3	329	7.3	1.514	531.1	LOS F	161.8	1177.5	1.00	2.46	3.17	6.1
2	T1	1821	4.7	1821	4.7	1.514	520.0	LOS F	161.8	1177.5	0.99	2.56	3.13	4.0
Approach		2151	5.1	2151	5.1	1.514	521.7	LOS F	161.8	1177.5	0.99	2.54	3.14	3.8
North: Sunnyholt Road														
8	T1	1362	9.2	1338	9.3	0.321	2.8	LOS A	5.7	44.2	0.16	0.14	0.17	56.2
9	R2	80	13.2	79	13.2	1.040	132.2	LOS F	4.9	37.9	1.00	1.02	1.67	13.8
Approach		1442	9.4	1417 N1	9.5	1.040	9.9	LOS A	5.7	44.2	0.20	0.19	0.25	48.0
West: Tattersall Road														
10	L2	115	11.0	115	11.0	0.707	69.3	LOS E	6.0	45.9	0.98	0.87	1.07	18.6
12	R2	216	8.3	216	8.3	0.707	71.7	LOS F	8.5	64.1	1.00	0.85	1.04	27.3
Approach		331	9.2	331	9.2	0.707	70.9	LOS F	8.5	64.1	0.99	0.85	1.05	24.8
All Vehicles		3923	7.1	3898 N1	7.1	1.514	297.5	LOS F	161.8	1177.5	0.70	1.54	1.91	6.8

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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 [Sunnyholt Road / Vardys Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	147	10.0	147	10.0	1.497	508.7	LOS F	21.4	165.0	1.00	2.14	3.08	4.3
2	T1	947	15.1	947	15.1	1.497	487.9	LOS F	21.4	165.0	1.00	2.45	3.05	4.9
3	R2	106	20.8	106	20.8	0.810	91.1	LOS F	2.6	21.3	1.00	0.82	1.18	18.6
Approach		1201	15.0	1201	15.0	1.497	455.3	LOS F	21.4	165.0	1.00	2.26	2.89	4.8
East: Vardys Road														
4	L2	172	6.7	172	6.7	0.399	33.3	LOS C	4.0	29.6	0.88	0.79	0.88	28.9
5	T1	502	4.2	502	4.2	0.650	59.0	LOS E	10.4	75.2	0.97	0.82	0.97	30.8
6	R2	267	5.1	267	5.1	1.250	306.7	LOS F	13.5	98.5	1.00	1.48	2.55	9.6
Approach		941	4.9	941	4.9	1.250	124.7	LOS F	13.5	98.5	0.96	1.00	1.40	18.2
North: Sunnyholt Road														
7	L2	766	3.6	766	3.6	1.500	504.4	LOS F	88.5	637.8	1.00	1.77	3.15	6.1
8	T1	1908	5.1	1908	5.1	1.262	282.0	LOS F	103.2	747.1	1.00	1.92	2.40	5.7
9	R2	216	9.3	216	9.3	0.219	49.2	LOS D	3.7	27.6	0.80	0.76	0.80	32.9
Approach		2891	5.0	2891	5.0	1.500	323.6	LOS F	103.2	747.1	0.98	1.80	2.48	6.4
West: Vardys Road														
10	L2	308	12.3	308	12.3	0.732	46.8	LOS D	9.9	76.4	0.98	0.89	1.10	33.3
11	T1	700	3.6	700	3.6	0.939	85.6	LOS F	19.8	142.6	1.00	1.10	1.33	25.2
12	R2	142	14.8	142	14.8	1.410	442.3	LOS F	17.5	137.8	1.00	1.69	3.02	3.8
Approach		1151	7.3	1151	7.3	1.410	119.2	LOS F	19.8	142.6	0.99	1.12	1.48	19.3
All Vehicles		6183	7.4	6183	7.4	1.500	280.9	LOS F	103.2	747.1	0.99	1.64	2.21	8.2

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. 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	11.8	205	11.8	0.992	90.8	LOS F	41.7	321.2	0.92	1.15	1.32	24.4
2	T1	1105	13.3	1105	13.3	0.992	88.3	LOS F	41.7	321.2	0.95	1.20	1.36	16.1
Approach		1311	13.1	1311	13.1	0.992	88.6	LOS F	41.7	321.2	0.94	1.19	1.35	17.1
North: Sunnyholt Road														
8	T1	2080	5.2	1662	5.5	0.389	6.5	LOS A	9.6	69.9	0.38	0.35	0.40	51.8
9	R2	113	23.4	90	23.3	0.923	97.4	LOS F	4.5	38.1	1.00	0.92	1.32	17.5
Approach		2193	6.1	1751 N1	6.4	0.923	11.2	LOS A	9.6	69.9	0.41	0.38	0.44	47.0
West: Tattersall Road														
10	L2	69	45.5	69	45.5	0.679	71.5	LOS F	5.2	45.7	0.98	0.85	1.05	18.3
12	R2	238	6.2	238	6.2	0.679	71.0	LOS F	8.2	60.5	0.99	0.84	1.02	27.5
Approach		307	15.1	307	15.1	0.679	71.1	LOS F	8.2	60.5	0.99	0.84	1.03	25.8
All Vehicles		3811	9.3	3369 N1	10.5	0.992	46.8	LOS D	41.7	321.2	0.67	0.74	0.85	27.6

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.

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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.

Appendix E4

Existing + Growth + Development

MOVEMENT SUMMARY

Site: 101 [Sunnyholt Road / Vardys Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	147	10.0	147	10.0	1.512	514.7	LOS F	21.3	165.0	1.00	2.15	3.10	4.3
2	T1	955	15.8	955	15.8	1.512	491.1	LOS F	21.3	165.0	1.00	2.45	3.05	4.9
3	R2	106	20.8	106	20.8	0.810	91.1	LOS F	2.6	21.3	1.00	0.82	1.18	18.6
Approach		1208	15.5	1208	15.5	1.512	458.8	LOS F	21.3	165.0	1.00	2.27	2.90	4.8
East: Vardys Road														
4	L2	172	6.7	172	6.7	0.399	33.3	LOS C	4.0	29.6	0.88	0.79	0.88	28.9
5	T1	502	4.2	502	4.2	0.650	59.0	LOS E	10.4	75.2	0.97	0.82	0.97	30.8
6	R2	267	5.1	267	5.1	1.250	306.7	LOS F	13.5	98.5	1.00	1.48	2.55	9.6
Approach		941	4.9	941	4.9	1.250	124.7	LOS F	13.5	98.5	0.96	1.00	1.40	18.2
North: Sunnyholt Road														
7	L2	766	3.6	766	3.6	1.506	510.1	LOS F	89.0	641.5	1.00	1.78	3.16	6.1
8	T1	1924	5.9	1924	5.9	1.279	297.0	LOS F	106.7	777.4	1.00	1.97	2.46	5.5
9	R2	232	15.5	232	15.5	0.245	49.7	LOS D	4.0	31.4	0.81	0.76	0.81	32.7
Approach		2922	6.0	2922	6.0	1.506	333.3	LOS F	106.7	777.4	0.98	1.82	2.51	6.2
West: Vardys Road														
10	L2	308	12.3	308	12.3	0.732	46.8	LOS D	9.9	76.4	0.98	0.89	1.10	33.3
11	T1	700	3.6	700	3.6	0.939	85.6	LOS F	19.8	142.6	1.00	1.10	1.33	25.2
12	R2	142	14.8	142	14.8	1.410	442.3	LOS F	17.5	137.8	1.00	1.69	3.02	3.8
Approach		1151	7.3	1151	7.3	1.410	119.2	LOS F	19.8	142.6	0.99	1.12	1.48	19.3
All Vehicles		6222	7.9	6222	7.9	1.512	286.5	LOS F	106.7	777.4	0.99	1.66	2.23	8.0

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.

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - AM]

Network: N101 [Network AM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. 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	11.8	205	11.8	1.012	108.8	LOS F	48.8	376.1	1.00	1.27	1.48	21.7
2	T1	1105	13.3	1105	13.3	1.012	103.9	LOS F	48.8	376.1	0.98	1.29	1.47	14.3
Approach		1311	13.1	1311	13.1	1.012	104.7	LOS F	48.8	376.1	0.99	1.28	1.47	15.2
North: Sunnyholt Road														
8	T1	2080	5.2	1657	5.5	0.388	6.5	LOS A	9.6	69.8	0.38	0.35	0.39	51.8
9	R2	128	32.8	102	32.8	0.933	99.3	LOS F	5.2	46.7	1.00	0.94	1.34	17.2
Approach		2208	6.8	1759 N1	7.1	0.933	11.9	LOS A	9.6	69.8	0.42	0.38	0.45	46.3
West: Tattersall Road														
10	L2	77	50.7	77	50.7	0.704	72.3	LOS F	5.3	48.4	0.99	0.87	1.09	18.1
12	R2	238	6.2	238	6.2	0.704	71.8	LOS F	8.6	63.5	1.00	0.85	1.04	27.3
Approach		315	17.1	315	17.1	0.704	71.9	LOS F	8.6	63.5	1.00	0.85	1.05	25.5
All Vehicles		3834	9.8	3384 N1	11.1	1.012	53.4	LOS D	48.8	376.1	0.69	0.77	0.90	25.6

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.

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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 [Sunnyholt Road / Vardys Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Vardys Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	131	11.3	99	11.8	1.077	151.6	LOS F	22.6	165.0	1.00	1.36	1.65	12.7
2	T1	1645	4.8	1250	5.4	1.077	146.3	LOS F	22.9	165.0	1.00	1.42	1.67	13.1
3	R2	135	6.3	102	6.8	0.284	79.6	LOS F	2.3	16.7	1.00	0.76	1.00	20.4
Approach		1911	5.3	1452 N1	5.9	1.077	141.9	LOS F	22.9	165.0	1.00	1.37	1.62	13.3
East: Vardys Road														
4	L2	123	12.8	123	12.8	0.212	42.4	LOS C	3.8	29.9	0.75	0.76	0.75	25.4
5	T1	726	4.3	726	4.3	0.991	107.8	LOS F	22.1	160.2	1.00	1.22	1.49	21.9
6	R2	513	5.1	513	5.1	1.079	170.3	LOS F	18.8	137.5	1.00	1.27	1.87	15.6
Approach		1362	5.4	1362	5.4	1.079	125.4	LOS F	22.1	160.2	0.98	1.20	1.57	19.0
North: Sunnyholt Road														
7	L2	362	6.1	362	6.1	0.951	84.4	LOS F	18.0	132.4	0.82	0.97	1.22	24.8
8	T1	1173	7.5	1173	7.5	1.023	117.9	LOS F	44.7	327.3	1.00	1.31	1.53	12.6
9	R2	359	10.6	359	10.6	1.056	155.7	LOS F	12.4	94.6	1.00	1.20	1.84	16.6
Approach		1894	7.8	1894	7.8	1.056	118.6	LOS F	44.7	327.3	0.97	1.23	1.53	15.7
West: Vardys Road														
10	L2	365	5.2	365	5.2	0.588	48.5	LOS D	13.3	97.4	0.88	0.84	0.88	32.8
11	T1	589	2.3	589	2.3	0.750	61.6	LOS E	12.8	91.4	1.00	0.87	1.03	30.1
12	R2	191	14.4	191	14.4	0.848	83.4	LOS F	9.2	72.4	1.00	0.94	1.23	16.5
Approach		1145	5.2	1145	5.2	0.848	61.0	LOS E	13.3	97.4	0.96	0.87	1.02	28.7
All Vehicles		6312	6.1	5853 N1	6.5	1.079	114.7	LOS F	44.7	327.3	0.98	1.19	1.46	17.7

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.

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
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		158	69.3	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 [Sunnyholt Road / Tattersall Road - PM]

Network: N101 [Network PM]

Sunnyholt Road / Tattersall Road
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Network Practical 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	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sunnyholt Road														
1	L2	329	7.3	329	7.3	1.514	531.1	LOS F	161.8	1177.5	1.00	2.46	3.17	6.1
2	T1	1821	4.7	1821	4.7	1.514	520.0	LOS F	161.8	1177.5	0.99	2.56	3.13	4.0
Approach		2151	5.1	2151	5.1	1.514	521.7	LOS F	161.8	1177.5	0.99	2.54	3.14	3.8
North: Sunnyholt Road														
8	T1	1362	9.2	1338	9.3	0.321	2.8	LOS A	5.7	44.2	0.16	0.14	0.17	56.2
9	R2	80	13.2	79	13.2	1.040	132.2	LOS F	4.9	37.9	1.00	1.02	1.67	13.8
Approach		1442	9.4	1417 N1	9.5	1.040	9.9	LOS A	5.7	44.2	0.20	0.19	0.25	48.0
West: Tattersall Road														
10	L2	119	14.2	119	14.2	0.719	70.1	LOS E	6.1	47.7	0.98	0.87	1.08	18.4
12	R2	216	8.3	216	8.3	0.719	72.2	LOS F	8.7	65.5	1.00	0.85	1.05	27.2
Approach		335	10.4	335	10.4	0.719	71.4	LOS F	8.7	65.5	0.99	0.86	1.06	24.6
All Vehicles		3927	7.2	3902 N1	7.2	1.514	297.3	LOS F	161.8	1177.5	0.70	1.54	1.91	6.8

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
P3	North Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	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.