Kings Park Waste Metal Recovery, Processing and Recycling Facility Transport Impact Assessment

transportation planning, design and delivery

14S1269000 13/03/14

GTAconsultants

Kings Park Waste Metal Recovery, Processing and Recycling Facility

Transport Impact Assessment

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1. Introduction

1.1 Background

Sell and Parker seek to lodge a State Significant Development (SSD) application (SSD-5041) with the Department of Planning and Infrastructure (DoPI) to increase the handling capacity of the existing Sell and Parker waste metal recovery, processing and recycling facility currently operating from 45 Tattersall Road. The proposed development seeks to increase the capacity of the operation by expanding onto the adjoining site to the east at 23-43 Tattersall Road and increase capacity at the site from its current approved 90,000 tonnes per annum to 350,000 tonnes per annum.

The Director General environmental assessment requirements (DGRs) for the preparation of an Environmental Impact Statement (EIS) for the development were issued by DoPI on 22 December 2011. BBC Planning Consultants on behalf of Sell and Parker applied to DoPI on 25 November 2013 to modify the proposed development and in particular to expand the development site to include the adjacent site at 23-43 Tattersall Road which immediately adjoins 45 Tattersall Road. In association with this, BBC Planning Consultants has requested revised DGRs from DoPI.

The revised DGRs were issued by DoPI on 23 December 2013. The revised DGRs related to Transport, Access and Parking were largely unchanged from those initially issued by DoPI in December 2011.

GTA Consultants was commissioned by ERM Australia in January 2014 to undertake a Transport Impact Assessment for the proposed development to include in the EIS and in particular to address the DGRs related to Transport, Access and Parking. Table 1.1 lists the DGR's and the corresponding sections of the report where these are addressed.

Table 1.1: DGR's and Relevant Report Sections

Transport, Access and Parking	Addressed in
Predictions of the traffic volumes likely to be generated during construction and operation;	Section 6.1 Section 6.4
An assessment of the impacts of this traffic on the safety, capacity and efficiency of the surrounding road network;	Section 6.3
Modelling of key intersections (including any nearby existing or proposed developments) and details of truck routes;	Section 2.5 Section 0 Section 6.3
An assessment of the need for upgrading or road improvement works;	Section 6.5
Details of the availability of non-car travel modes and measures to encourage greater use of these travel modes; and	Section 2.7 Section 2.8 Section 2.9
Access and parking.	Section 3.1.1 Section 4

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

i existing traffic and parking conditions surrounding the site
ii suitability of the proposed parking in terms of supply (quantum) and layout
iii the traffic generating characteristics of the proposed development
iv suitability of the proposed access arrangements for the site

v the transport impact of the development proposal on the surrounding road network.

1.3 References

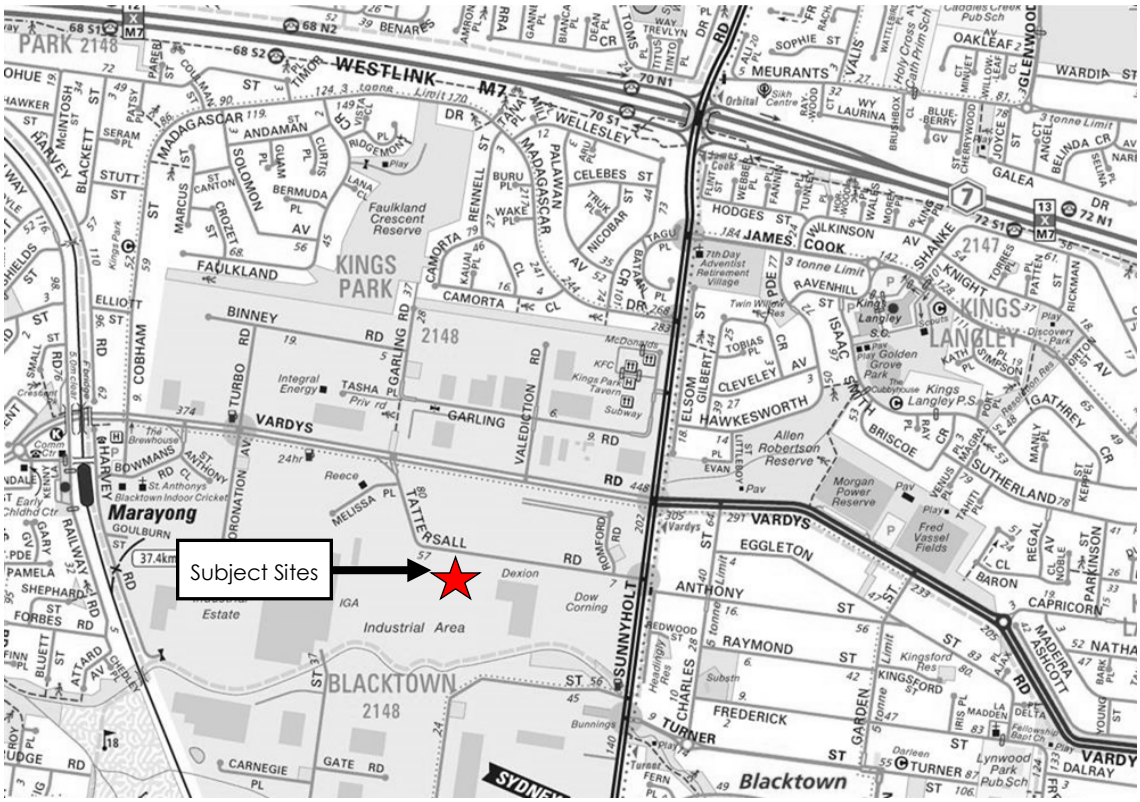
In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- Blacktown City Council Development Control Plan (DCP) Part E, 2006
- traffic and car parking surveys undertaken by Skyhigh Traffic as referenced in the context of this report
- Correspondence from BBC Planning Consultants to DoPI requesting revised DGRs dated 25 November 2013
- plans for the proposed development prepared by Algorry Zappia and Associates Pty Ltd, dated February 2014, issue A, sheet numbers A101, A102, A201, A301, A302
- RMS Guide to Traffic Generating Developments, 2002
- other documents and data as referenced in this report.

2. Existing Conditions

The subject sites are located on Tattersall Road, Kings Park, approximately 12 kilometres north-west of Parramatta CBD and 2 kilometres north of Blacktown. The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs



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The proposed development comprises two sites with a combined total area of 5.9 hectares as summarised in Table 2.1. The location of the two sites is shown in Figure 2.2.

Table 2.1: Development Sites

Address	Lot / DP	Land Zoning	Area
45 Tattersall Road	Lot 5, DP 7089	B7 Business Park	5.9 hectares
23-43 Tattersall Road	Lot 2, DP 550522	B7 Business Park	

Figure 2.2: Location of Development Sites

Image Source: http://maps.six.nsw.gov.au/

The site at 45 Tattersall Road is occupied by the Sell and Parker waste metal recovery, processing and recycling facility which has a frontage of 100m to Tattersall Road. The site currently has 64 on-site employees and operates from 6:30am to 4:30pm Monday to Friday and 6:30am to 12:00pm on Saturdays.

The neighbouring site at 23-43 Tattersall Road is currently leased and operated by Dexion Australia Pty Ltd and is used for general industrial uses for the manufacture of shelving, racking and storage products. The site has a frontage of 145 metres to Tattersall Road and currently has 140 on-site employees.

The properties surrounding the subject sites are predominantly general industrial uses.

2.1 Road Network

Tattersall Road

Tattersall Road is a Local Road aligned in an east-west direction. It is a two-way, 12.8 metre wide road configured with one lane in each direction set within a 26 metre wide road reserve (approx). Unrestricted kerbside parking is permitted on both sides of Tattersall Road.

Tattersall Road is shown in Figure 2.3 and Figure 2.4 and carries approximately 6,000 vehicles per day[1].

1 Based on peak hour traffic counts undertaken by Skyhigh Traffic in December 2013 and assuming a peak-to-daily ratio of 10% for local roads.

Figure 2.3: Tattersall Road (looking east)

Figure 2.4: Tattersall Road (looking west)

Sunnyholt Road

Sunnyholt Road is a State Road (MR642) aligned in a north-south direction. It is a two-way, 20 metre wide, dual carriageway configured with two lanes in each direction, set within a 40 metre wide road reserve (approx). Kerbside parking is not permitted on Sunnyholt Road.

Sunnyholt Road functions as a key connection between Blacktown and the Westlink M7 Motorway. The Sunnyholt Road Motorway Interchange is located 1.2km north of Tattersall Road.

A two-way, bus priority T-Way is located along the eastern side of Sunnyholt Road adjacent to Tattersall Road. The T-Way extends for approximately 6.5 kilometres from Old Windsor Road to Blacktown town centre.

Sunnyholt Road is shown in Figure 2.5 and Figure 2.6 and carries approximately 36,000 vehicles per day[2].

Figure 2.5: Sunnyholt Road (looking north)

Figure 2.6: Sunnyholt Road (looking south)

Vardys Road

Vardys Road is a classified Regional Road (RR 7152) aligned in an east-west direction. It is a two-way, 22 metre wide, dual carriageway configured with two lanes in each direction, set within a 55 metre wide road reserve (approx). Kerbside parking is not permitted on Vardys Road.

2 Based on peak hour traffic counts undertaken by Skyhigh Traffic in December 2013 and assuming a peak-to-daily ratio of 8% for arterial roads.

Vardys Road is shown in Figure 2.7 and Figure 2.8 and carries approximately 18,000 vehicles per day[2].

Figure 2.7: Vardys Road (looking east)

Figure 2.8: Vardys Road (looking west)

2.1.1 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- Tattersall Road/ Sunnyholt Road (signalised)
- Tattersall Road/ Vardys Road (unsignalised)
- Sunnyholt Road/ Vardys Road (signalised).

2.2 Vehicle Access and Circulation

Vehicle access to the two sites is summarised in Table 2.2 and shown in Figure 2.9.

Table 2.2: Vehicle Accesses

Site / Address	Figure 2.9 Driveway Reference Number	Permitted Vehicle Movements	Width (approx.)
45 Tattersall Road	1	One-way (entry only)	7.50 metres
	2	One-way (exit only)	7.50 metres
23-43 Tattersall Road	3	Two-way	7.50 metres
	4	Two-way	7.50 metres

There is currently limited space available within the existing Sell and Parker site for trucks to layover between unloading unprocessed material and loading processed material. The existing access/ circulation of heavy vehicles loading and unloading at 45 Tattersall Road was observed by GTA Consultants during a site inspection and confirmed by the operator to be as follows.

Unloading

i Laden vehicles enter the site via driveway 1, are weighed at the weighbridge and then proceed to unload metal for processing
ii Unladen vehicles exit the site via driveway 2 and return to Tattersall Road
iii Unladen vehicles re-enter the site via driveway 1 and are weighed at the weighbridge
iv Unladen vehicles exit the site via driveway 2.

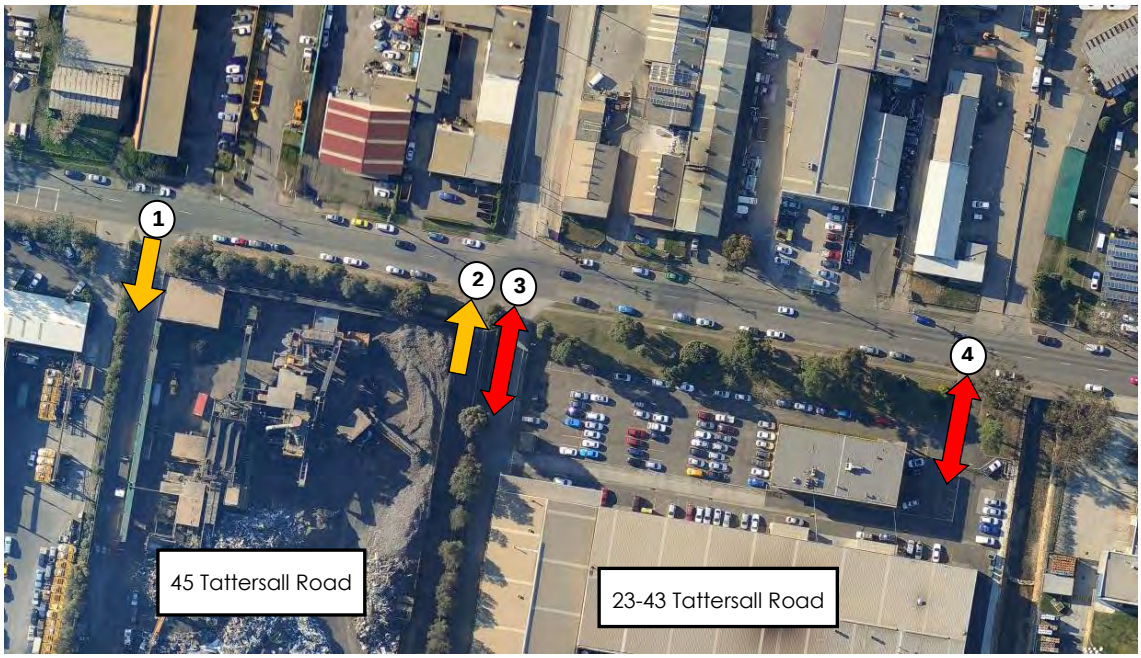
Loading

i Unladen vehicles enter the site via driveway 1, are weighed at the weighbridge and then proceed to load processed metal

ii Laden vehicles exit the site via driveway 2 and return to Tattersall Road
iii Laden vehicles re-enter the site via driveway 1 and are weighed at the weighbridge
iv Laden vehicles exit the site via driveway 2.

As a result of the current access/ circulation arrangements at the site, each heavy vehicle that loads and unloads at the site effectively undertakes two entry and exit movements at the site accesses.

Figure 2.9: Existing Vehicle Accesses



Background Image Source: Near Map

2.2.1 Truck Routes

Heavy vehicles travelling to and from the two sites currently access Tattersall Road via the Sunnyholt Road signalised intersection. The vast majority of heavy vehicles accessing the two sites travel via the M7 Motorway, 1.5 kilometres north of Tattersall Road.

2.3 Traffic Volumes

2.3.1 Surrounding Intersections

GTA Consultants commissioned 7 day, 24 hour traffic movement counts at key intersections in the vicinity of the site for the week commencing 16 December 2013 during the following peak periods:

- 7:00am and 10:00am
- 4:00pm and 6:00pm.

The AM and PM peak hour traffic volumes are summarised in Figure 2.10, with full results contained in Appendix A.

Figure 2.10: Existing AM Peak Hour Traffic Volumes

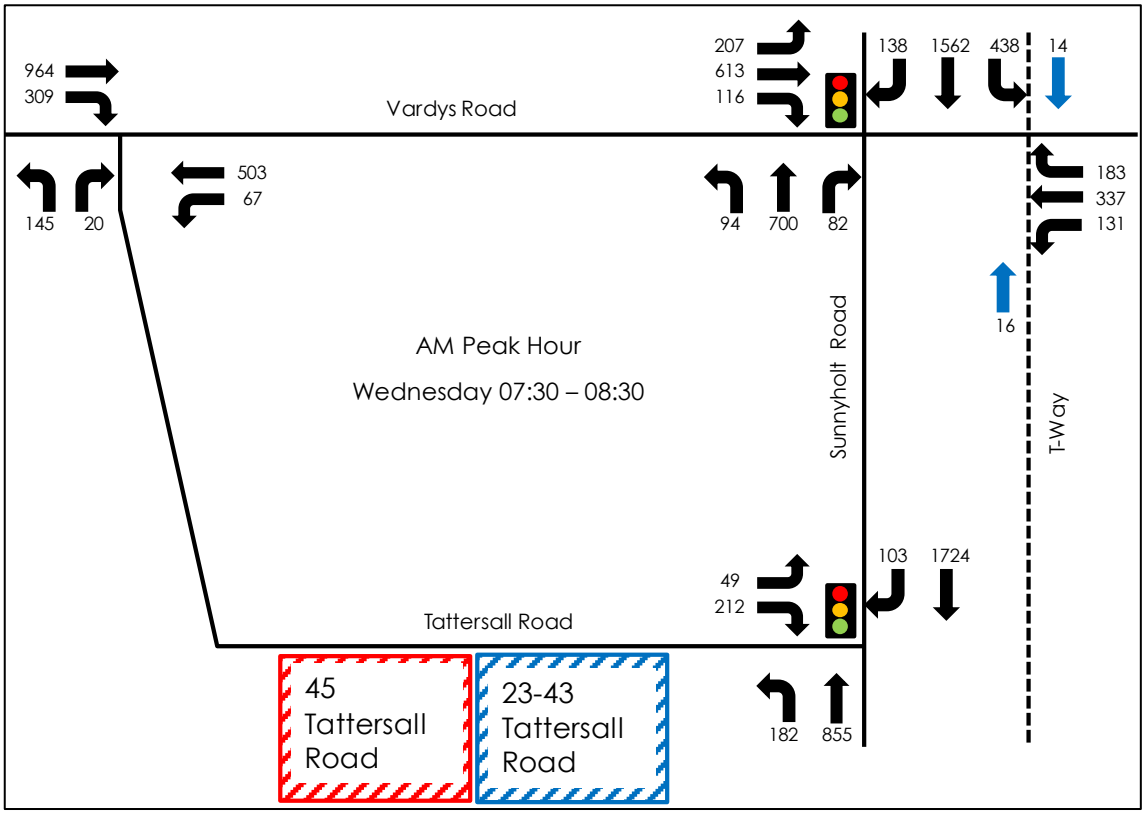
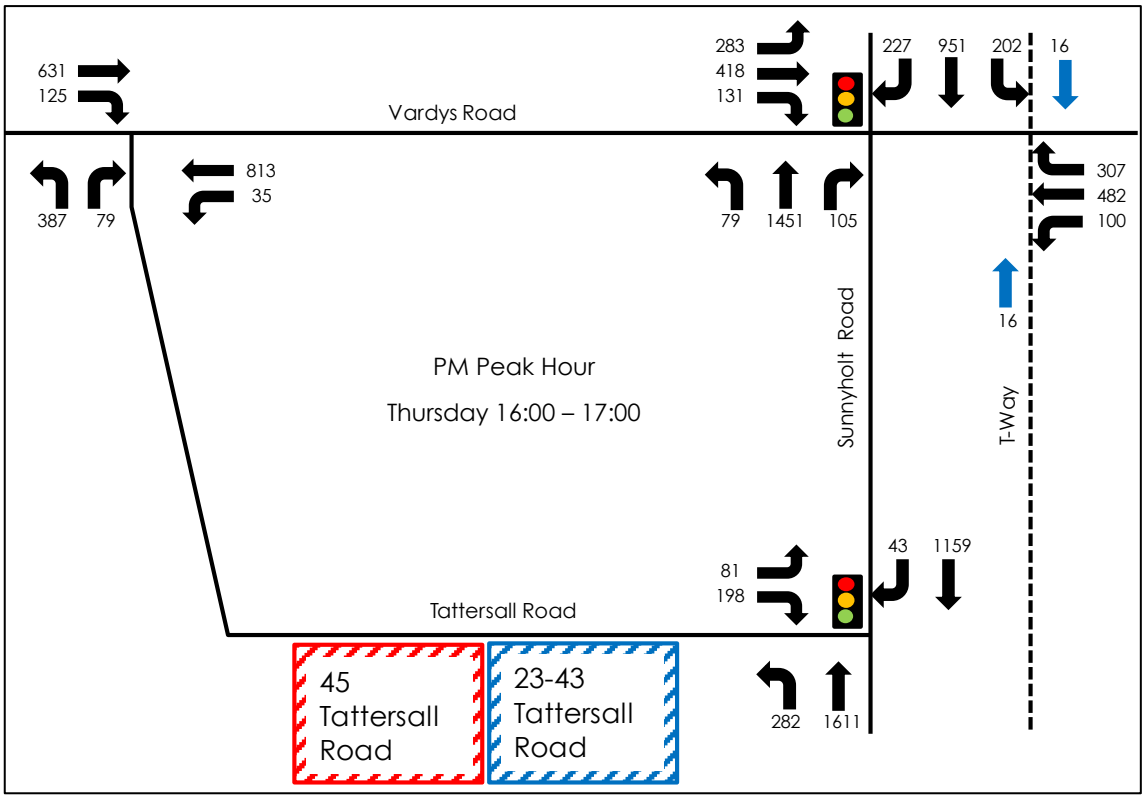


Figure 2.11: Existing PM Peak Hour Traffic Volumes



2.3.2 Site Traffic

Traffic is currently generated by the existing Sell and Parker site at 45 Tattersall Road as well as the Dexion Australia Pty Ltd site at 23-43 Tattersall Road. It is anticipated that Dexion site will cease manufacturing operations in December 2014.

Sell and Parker has a fleet of eight heavy vehicles used for the transportation of metal to and from the site, the largest of which is a 19 metre semi-trailer. The site is also served by non-fleet heavy vehicles.

GTA Consultants commissioned 7 day, 24 hour vehicle volume counts using automatic tube counts at the four vehicle accesses to the two sites shown in Figure 2.9 for the week commencing 14 December 2013. The tubes at driveways 1 and 2 (entry and exit to 45 Tattersall Road) were damaged during the course of the week and as a result did not yield reliable data. Following this, video camera surveys of these accesses was attempted, however the video cameras were vandalised and the associated data loggers were stolen. As a result no data was able to be obtained from the video surveys.

Following this, manual traffic volume counts of driveways 1 and 2 were undertaken on 29 January 2014 from 5:00am to 5:00pm, the results of which are shown graphically in Figure 2.12. The results of the traffic volume surveys are summarised in Table 2.3 with full results of the traffic surveys contained in Appendix A.

Given the existing circulation of heavy vehicles entering and exiting the Sell and Parker Site twice (described in Section 2.2), the heavy vehicle volumes recorded at driveways 1 and 2 shown in Table 2.3 are considered to represent double the number of heavy vehicles accessing the site.

Table 2.3: Existing Daily Site Traffic Volumes

Site/Address	Figure 2.9 Driveway Reference Number	Permitted Vehicle Movements	Traffic Volumes (vehicles per day) [1]			% Heavy Vehicles
			Light Vehicles [2]	Heavy Vehicles	Total Vehicles	
45 Tattersall Road	1	One-way (entry only)	15	311 [3]	326	95%
	2	One-way (exit only)	24	330 [3]	354	93%
23-43 Tattersall Road	3	Two-way	223	38	261	15%
	4	Two-way	422	11	433	3%

[1] Traffic volume data sources:
  a. 45 Tattersall Road - manual traffic counts -29 January 2014
  b. 23-43 Tattersall Road - recorded average weekday vehicle movements (two-way)-December 2013
[2] Cars and motorcycles only
[3] Represents double the number of heavy vehicles accessing the site due to current access/circulation arrangements (Section 2.2)

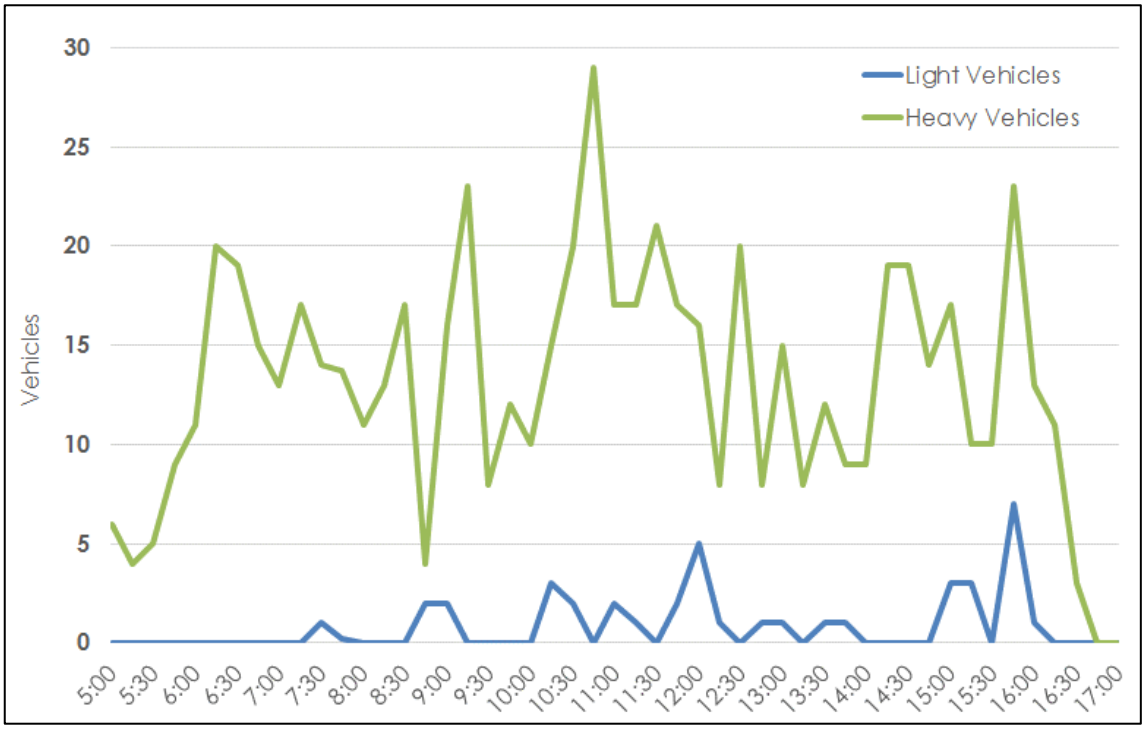
The directional split of traffic (i.e. the proportion of entry and exit movements) recorded at driveways 3 and 4 (23-43 Tattersall Road) is summarised in Table 2.4.

Table 2.4: Existing Daily Site Traffic Volumes (23-43 Tattersall Road) – Directional Split

Figure 2.9 Driveway Reference Number	Entry (southbound)		Exit (northbound)		Total Traffic Volume (vehicles per day)
	Volume	% Heavy Vehicles	Volume	% Heavy Vehicles	
3	131	14%	130	15%	261 [1]
4	216	5%	217	1%	433 [1]

[1] Recorded average weekday vehicle movements (two-way) – December 2013

Figure 2.12: Total Recorded Vehicle Volumes (Combined Entry and Exit Movements) – 45 Tattersall Road



As shown in Figure 2.12, the highest number of heavy vehicle movements recorded at the existing Sell and Parker site over a 15 minute period was between 10:45am and 11:00am. This peak in heavy vehicle movements occurred outside the recorded road network peak periods.

Peak Hour Traffic Volumes

The recorded traffic volumes at the two sites during the AM and PM road network peak hours are summarised in Table 2.5.

Table 2.5: Existing Peak Hour Site Traffic Volumes

Site Address	Traffic Volumes [1]					
	AM Peak Hour			PM Peak Hour		
	Light Vehicles [1]	Heavy Vehicles	Total Vehicles	Light Vehicles [1]	Heavy Vehicles	Total Vehicles
45 Tattersall Road	1	52	53	1	27	28
23-43 Tattersall Road	72	6	78	42	1	43
Total	**73 (56%)**	**58 (44%)**	**131**	**43 (60%)**	**28 (40%)**	**71**

[1] Traffic volume data sources:

a. 45 Tattersall Road - manual traffic counts – 2 9 January 2014

b. 23-43 Tattersall Road - recorded average weekday vehicle movements (two-way)-December 2013

[2] Cars and motorcycles only

The proportion of daily heavy vehicle movements generated by the Sell and Parker site during the road network peak hours is as follows:

- AM peak hour – 8%
- PM peak hour – 4%.

This suggests that the operation of the site is not very 'peaky' with heavy vehicle movements to/ from the site consistent throughout the day, albeit slightly higher in the morning.

2.4 Existing Site Traffic Generation

2.4.1 Daily Site Traffic Generation

Given the existing circulation of heavy vehicles entering and exiting the Sell and Parker Site twice (described in Section 2.2), the heavy vehicle volumes recorded at driveways 1 and 2 are considered to represent double the number of heavy vehicles accessing the site. Given this, Table 2.6 has been prepared to summarise the existing traffic generating characteristics of the subject sites.

Table 2.6: Existing Daily Site Traffic Generation

Site/Address	Figure 2.9 Driveway Reference Number	Traffic Volume (vehicles per day) [1]			Existing Site Traffic Generation
		Light Vehicles [2]	Heavy Vehicles	Total Vehicles	
45 Tattersall Road	1	15	311 [3]	326	204 vehicle movements per day
	2	24	330 [3]	354	
23-43 Tattersall Road	3	223	38	261	694 vehicle movements per day
	4	422	11	433	
				TOTAL	**898 vehicle movements per day**

[1] Traffic volume data sources:
  a. 45 Tattersall Road - manual traffic counts -29 January 2014
  b. 23-43 Tattersall Road - recorded average weekday vehicle movements (two-way)-December 2013
[2] Cars and motorcycles only
[3] Represents double the number of heavy vehicles accessing the site due to current access/circulation arrangements (Section 2.2)

As shown in Table 2.6, based on the recorded traffic volume counts undertaken in December 2013 and January 2014, and the circulation of heavy vehicles at 45 Tattersall Road:

- The existing Sell and Parker Site generates a total 204 vehicle movements (two-way) per day (including 165 heavy vehicle movements).
- The neighbouring site at 23-43 Tattersall Road generates 694 vehicle movements (two-way) per day (including 49 heavy vehicle movements).
- The two sites have a combined total traffic generation of 898 vehicle movements (two-way) per day.

2.4.2 Peak Hour Site Traffic Generation

The existing traffic generated by the subject sites during the road network AM and PM peak hours is summarised in Table 2.7 and Table 2.10.

Table 2.7: Existing AM Peak Hour Site Traffic Generation

Site Address	AM Peak Traffic Volumes [1]			Existing Site Traffic Generation
	Light Vehicles [1]	Heavy Vehicles	Total Vehicles	
45 Tattersall Road	1	52 [3]	53	27 vehicle movements
23-43 Tattersall Road	72	6	78	78 vehicle movements
Total	**73 (56%)**	**58 (44%)**	**131**	**105 vehicle movements**

Table 2.8: Existing PM Peak Hour Site Traffic Generation

Site Address	PM Peak Traffic Volumes [1]			Existing Site Traffic Generation
	Light Vehicles [1]	Heavy Vehicles	Total Vehicles	
45 Tattersall Road	1	27 [3]	28	15 vehicle movements
23-43 Tattersall Road	42	1	43	43 vehicle movements
Total	**43 (60%)**	**28 (40%)**	**71**	**58 vehicle movements**

[1] Traffic volume data sources:
  a. 45 Tattersall Road - manual traffic counts – 29 January 2014
  b. 23-43 Tattersall Road - recorded average weekday vehicle movements (two-way)-December 2013

[2] Cars and motorcycles only

[3] Represents double the number of heavy vehicles accessing the site due to current access/circulation arrangements (Section 2.2)

As shown in Table 2.5, the two sites currently generate a total of 131 vehicle movements (two-way) in the road network AM peak hour and 71 vehicle movements (two-way) during the road network PM peak hour.

On the basis of the traffic movement counts undertaken at the Sell and Parker site on 29 January 2014 and the existing processing capacity of the Sell and Parker site (90,000 tonnes per annum), the AM peak hour traffic generation rate of the metal handling/ processing facility is as follows:

- 1.7 vehicle movements in the AM peak hour per 1,000 tonnes of metal processed per annum.

2.5 Intersection Operation – Existing Conditions

The operation of the key intersections within the study area have been assessed using SIDRA INTERSECTION[3], a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the RMS, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.9 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

[3] Program used under license from Akcelik & Associates Pty Ltd.

Table 2.9: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
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	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 2.10 presents a summary of the existing operation of the intersection, with full results presented in Appendix B of this report.

Table 2.10: Existing Operating Conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Tattersall Road/ Sunnyholt Road	AM	0.694	10.4	103	A
	PM	0.794	10.2	170	A
Tattersall Road/ Vardys Road	AM	0.403	4.2	15	N/A
	PM	0.975	13.5	122	N/A
Sunnyholt Road/ Vardys Road	AM	0.930	42.4	300	C
	PM	0.890	46.2	295	D

On the basis of the above assessment:

- The Tattersall Road/ Sunnyholt Road intersection currently operates well with minimal queues and delays on all approaches.
- The Tattersall Road/ Vardys Road intersection currently operates well with minimal queues and delays on all approaches.
- The Sunnyholt Road/ Vardys Road intersection is currently operating close to capacity with moderate queuing occurring for the through movements on the northern approach in the AM peak hour and on the southern approach in the PM peak hour. Minor delays are currently experienced by the right turn movements on all approaches during both the AM and PM peak hours.

2.6 Car Parking

2.6.1 Off-Street

The existing Sell and Parker site at 45 Tattersall Road does not provide any on-site car parking for staff or customers. Off-street parking for Sell and Parker staff is currently provided at 46 Tattersall Road.

The neighbouring site at 23-43 Tattersall Road currently provides a total of 158 on-site car parking spaces as follows:

- 84 spaces at the northern end of the site adjacent to the administration building

- 74 spaces at the southern end of the site, located behind the warehouse buildings.

2.6.2 On-Street

There are approximately 35 publicly available unrestricted car parking spaces on Tattersall Road immediately adjacent to the frontages of the subject sites. Car parking demand spot-check surveys undertaken by GTA Consultants on Wednesday 15 January 2014 between 9:00am and 10:00am found there was ample spare on-street parking capacity in the vicinity of the subject sites.

2.7 Public Transport

The site is serviced by public buses with six stops located within 600 metres of the site. Six bus routes operate on the Sunnyholt Road T-Way and provide high frequency services to Blacktown Town Centre and Blacktown Railway Station (approximately 3 kilometres south of the site). Vardys T-Way stop is located on the eastern side of Sunnyholt Road, 50 metres north of Tattersall Road (400 metres from the site). In addition to this the route 743 bus utilises Vardys Road.

As well as regular connections via bus to Blacktown Railway Station, the site is located approximately 1.2km east of Marayong Railway Station.

Blacktown and Marayong Railway Stations are located on the T1 North Shore, Northern and Western Line, T5 Cumberland Line and the Blue Mountains Line of the Sydney Trains network and are served by high frequency rail services to Penrith, Richmond Parramatta and Sydney CBD.

2.8 Pedestrian Infrastructure

2.8.1 Off-Site

The pedestrian network in the vicinity of the sites is well established with a pedestrian path located on the northern side of Tattersall Road, adjacent to the sites. This path connects with Sunnyholt Road where pedestrian paths are located on both sides of the road. A section of pedestrian path is also located on the southern side of Tattersall Road along the frontage of 23-43 Tattersall Road.

Safe crossing points in vicinity of the site include the following pedestrian crossings:

- Northern and western legs of the Tattersall Road/ Sunnyholt Road intersection
- Eastern, southern and western legs of the Sunnyholt Road/ Vardys Road intersection.

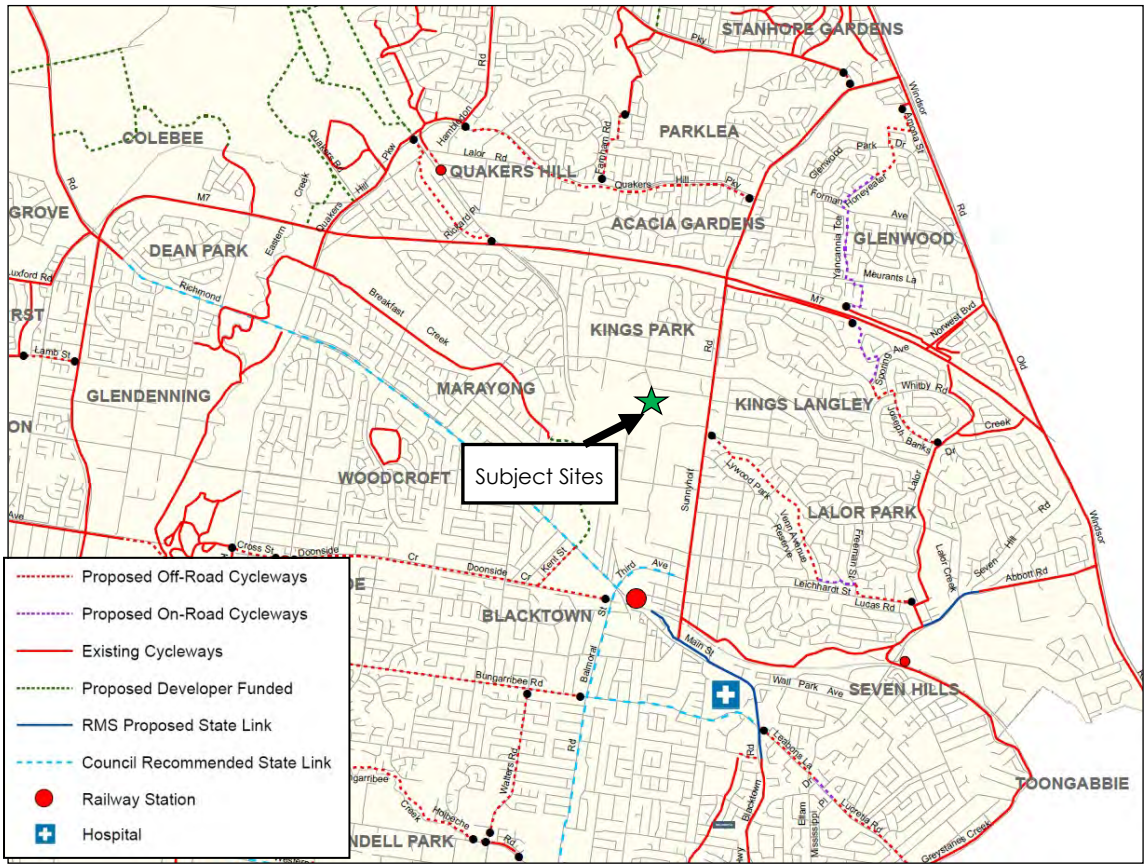
2.8.2 On-Site

There is currently no dedicated pedestrian access to the existing Sell and Parker site at 45 Tattersall Road. All pedestrian access to the site is via the separate vehicle entry and exit driveways located at the eastern and western extremities of the site.

2.9 Cycle Infrastructure

The bicycle network surrounding the sites is shown in Figure 2.13. The nearest dedicated bicycle facility is a 3.0 metre wide shared pedestrian and bicycle path located on the eastern side of Sunnyholt Road. This path is located approx. 300 metres from the development sites and provides a critical north-south connection between Blacktown and the M7 Motorway shared path.

Figure 2.13: Existing and Future Proposed Cycle Routes



Background Image Source: Blacktown City Council website

The M7 shared path is a high quality bicycle facility which consists of 40 kilometres of uninterrupted shared path from Baulkham Hills in the north to Dean Park in the west and south to Prestons. An extract of the route map is shown in Figure 2.14. There with 60 entry/exit points to the path, the nearest of which to the site is located 1.5 kilometres north of Tattersall Road at the Sunnyholt Road Interchange of the M7 Motorway.

Figure 2.14: M7 Motorway Shared Path Route Map

Image Source: RMS website

3. Development Proposal

The development proposal includes the expansion of the existing Sell and Parker site at 45 Tattersall Road by consolidating the neighbouring property at 23-43 Tattersall Road, which is anticipated to cease manufacturing operations in December 2014. The expanded site will encompass a total area of 5.9 hectares and would increase the processing capacity from the existing 90,000 tonnes per annum to 350,000 tonnes per annum. The expanded site would have a total of 84 on-site employees.

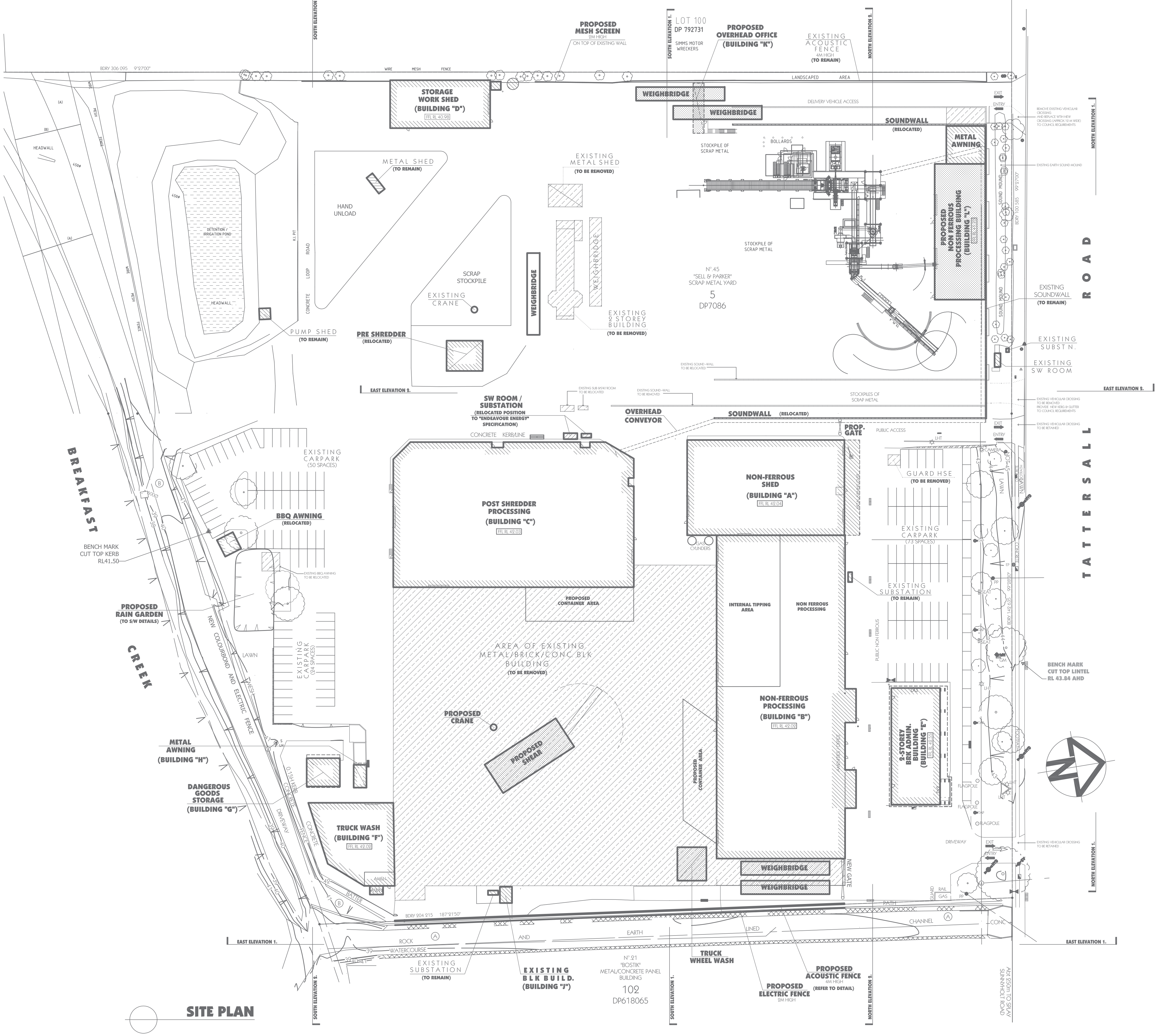
The proposed development would incorporate the following:

- Demolition of the existing administration office at 45 Tattersall Road and relocation of all office functions to the existing administration building located at the northern end of the site at 23-43 Tattersall Road.
- New on-site vehicle weighbridges.
- Provision of on-site truck layover facilities.
- Expansion of metal separation and recycling infrastructure such as shredders, conveyors and storage areas.
- Extended operating times: 6:00am to 9:00pm, Monday to Saturday.

The proposed site layout plan is shown in Figure 3.1 with the development area schedule summarised in Table 3.1.

Table 3.1: Development Schedule

Building	Description/Use	Gross Floor Area (GFA, m²)		
		Processing/ Shedding Area	Office/ Administration	Total
A	Non-Ferrous Shed (including office)	1,278	24	1,302
B	Non-Ferrous Processing (including office)	3,162	438	3,600
C	Post Shredder Processing	2,981	0	2,981
D	Storage Work Shed	415	0	415
E	Administration Building	0	984	984
F	Truck Wash	494	0	494
G	Dangerous Goods Storage	81	0	81
H	Metal Awning	25	0	25
J	Existing Blk Building	17	0	17
K	Overhead Office (Weighbridge)	47	0	47
L	Non-Ferrous Processing	593	0	593
	Total	**9,093**	**1,446**	**10,539**



SITE PLAN

DEVELOPMENT DATA

SITE AREA	59 475 M2 approx.	
	FLOOR AREAS	
	W/HOUSE	OFFICE /AMEN
BUILD "A"	1278 M2	24 M2
BUILD "B"	3162 M2	438 M2
BUILD "C"	2981 M2	---------
BUILD "D"	415 M2	---------
BUILD "E"	984 M2	---------
BUILD "F"	494 M2	---------
BUILD "G"	81 M2	---------
BUILD "H"	25 M2	---------
BUILD "J"	17 M2	---------
BUILD "K"	47 M2	---------
BUILD "L"	593 M2	---------
TOTAL	10 077 M2	462 M2

CARPARKING REQUIRED

TOTAL GR FLR AREA / 75 = 10077 / 75 = 134

TOTAL OFFICE AREA / 40 = 462 / 40 = 11

TOTAL = 145

PROVDED = 147

LEGEND

- EXISTING STRUCTURE TO REMAIN
- EXISTING STRUCTURE TO BE REMOVED
- PROPOSED NEW STRUCTURE
- EXISTING STRUCTURE TO BE FOR REUSE OR TO BE RELOCATED

Issue	By	Description	Date
A	CZ	FOR DA	5/03/14

GENERAL NOTES

1) All dimensions and floor areas are to be verified by the Builder prior to the commencement of any building work. Any discrepancies are to be brought to the attention of the designer.
2) Levels shown are approximate unless accompanied by reduced levels.
3) Figured dimensions must be taken in preference to scaling.
4) All boundary clearances must be verified by the surveyor prior to the commencement of any building works.
5) Where engineering drawings are required such must take preference to this drawing.
6) Stormwater to be discharged to Councils' requirements and AS 3500.3–1990.
7) All services to be located and verified by the Builder with relevant authorities before any building work commences.

Consultants

Date	FEBRUARY 2014
Scale	1:500 UNO
Drawn	J.LARIA
Checked	C.ZAPPIA
Certified	

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Project: PORPOSED ALTERATIONS TO EXISTING RECYCLING CENTRE LOT 2 DP550522 & LOT 5 DP7086 , No 23 & 45 TATTERSALL RD, KINGS PARK

Client: SELL & PARKER METAL

Project No.: P4144

Title: DEVELOPMENT APPLICATION SITE PLAN

Activity Type:	Job No.:	Sheet No.:	Issue
DA	1049-13	A101	A

B1 SHEET

3.1 Vehicle Access and Circulation

The expanded site will serve two broad customer types:

- Ferrous customers – largest vehicle is a 19 metre long semi-trailer
- Non-ferrous customers – predominantly light vehicles (utes, car trailers etc.) with the largest vehicle being a 12.5 metre long Large Rigid Vehicle (LRV).

The proposed vehicle access arrangements at the expanded site are shown in Figure 3.2 and summarised in Table 3.2 below. All vehicle movements to/ from the site are proposed to be in a forward direction.

Figure 3.2: Proposed Vehicle Access Arrangements

Background Image Source: Near Map

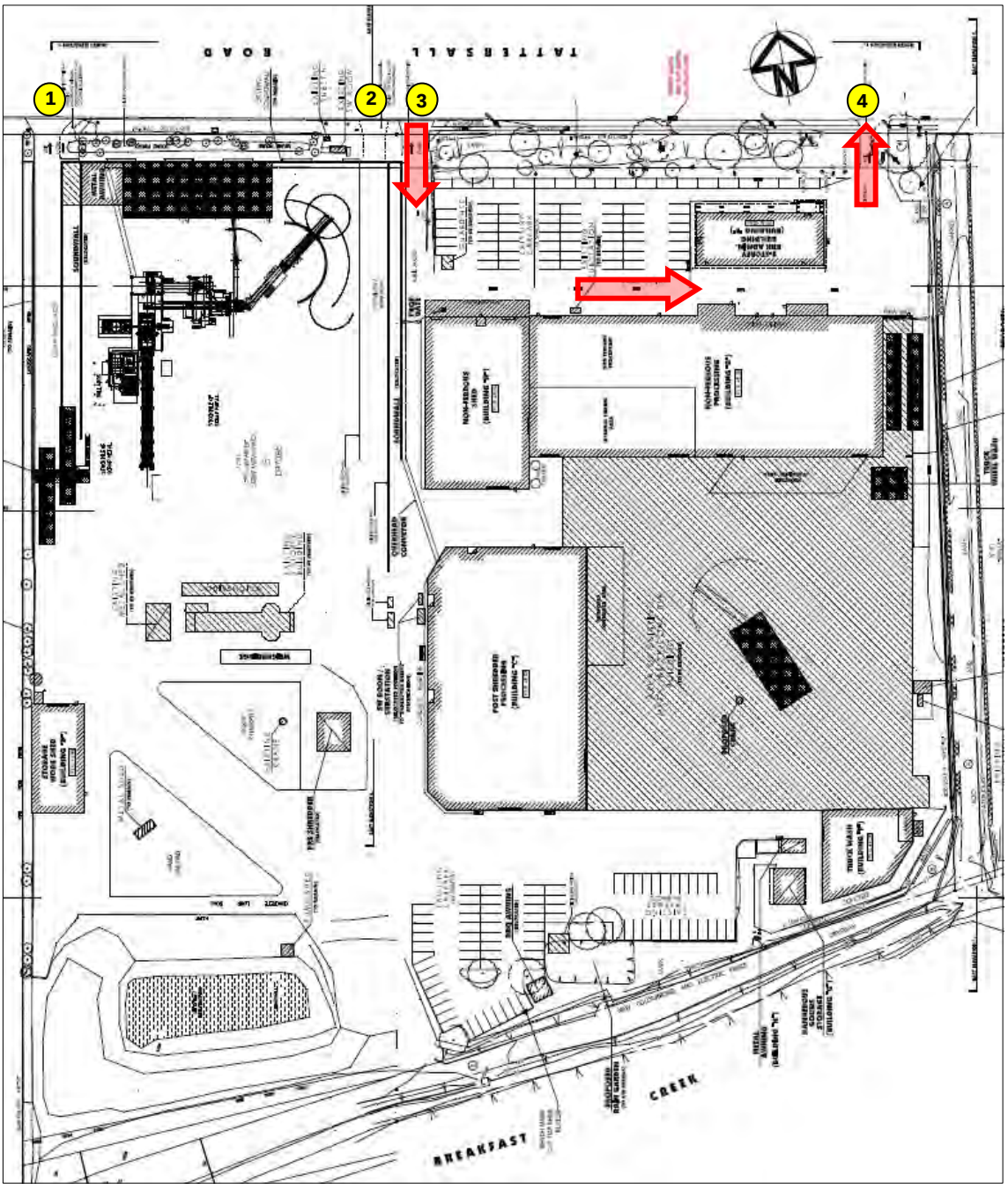
Table 3.2: Proposed Vehicle Access Arrangements

Figure 3.2 Driveway Reference Number	Existing Vehicle Movements	Proposed Access Arrangements
1	One-way (entry only)	Access to be widened and continue to be used as a one-way entry for trucks (ferrous customers) and non-ferrous vehicles which are too large to use driveway 3
2	One-way (exit only)	Closed
3	Two-way	• Entry for non-ferrous customers • Entry and exit for on-site car parks
4	One-way (exit only)	Exit for trucks (ferrous customers) and non-ferrous vehicles

As part of the amalgamation of the two sites, the physical barrier between the two sites will be largely removed, permitting the movement of operational vehicles between the two sites. The increase in operational area at the expanded site will permit heavy vehicles to layover on-site.

An indicative site layout plan showing the circulation of non-ferrous customer vehicles is shown in Figure 3.3.

Figure 3.3: Indicative Site Layout and Non-Ferrous Customer Vehicle Circulation



Background Image Source: Algorry, Zapia and Associates Pty Ltd, sheet no. A101, issue A (February 2014)

Further discussion on the proposed vehicle access and circulation is contained in Section 4 of this report.

3.1.1 Truck Routes

Truck routes to and from the expanded site are proposed to continue as per the existing arrangements with all heavy vehicles entering and exiting Tattersall Road via the Sunnyholt Road signalised intersection. The vast majority of heavy vehicles accessing the expanded site are anticipated to travel via the M7 Motorway, 1.5 kilometres north of Tattersall Road.

3.2 Car Parking

The proposed development will provide 147 on site car parking spaces for staff and visitors in the two existing on-site car parks located at the northern and southern ends of the neighbouring site at 23-43 Tattersall Road. It is proposed to remove the 11 car parking spaces located west of the administration building from the car park at the northern end of the site to improve internal vehicle circulation and access to driveway 4.

The suitability of the car parking provision and layout is discussed in Section 5 of this report.

3.3 Pedestrian Facilities

All pedestrian access to the expanded site is proposed via the administration building located at the northern end of the neighbouring site at 23-43 Tattersall Road. The development does not propose any changes to the existing pedestrian access arrangements to this building which is currently used as an office/administration building. All visitors to the expanded site will be required to first report to the administration building.

The development does not propose to provide any dedicated pedestrian access to the existing Sell and Parker site, nor any direct pedestrian access to operational areas of the expanded site.

The suitability of the proposed pedestrian facilities is discussed in Section 4 of this report.

4. Access and Circulation

4.1 Vehicle Access and Circulation

Part E of Blacktown Council Development Control Plan (DCP) 2006 sets out the vehicle access and circulation requirements for developments in industrial zones. Part E, Section 4.6 of DCP 2006 requires all internal roadways to be a minimum of 7 metres wide. The existing vehicle accesses to the two sites are all wider than 7 metres.

As part of the amalgamation of the two sites, the physical barrier between the two sites will be largely removed, permitting the movement of operational vehicles between the two sites. The increase in operational area at the expanded site will permit heavy vehicles to layover on-site, removing the need for these vehicles to return to Tattersall Road between loading and unloading of metal. This change will significantly reduce the movement of heavy vehicles on Tattersall Road adjacent to the site, improving the movement of vehicles along Tattersall Road. The proposed widening of driveway 1 will also improve circulation on Tattersall Road by increasing the on-site queuing capacity of heavy vehicles entering the site.

The proposed development will see non-ferrous customers separated from the operational areas of the expanded site. Non-ferrous customer vehicles will be predominantly light vehicles (utes, car trailers etc.) with the largest vehicle being a 12.5 metre LRV. The development proposes one-way circulation of non-ferrous customer vehicles on-site with these vehicles entering via driveway 3 and exiting via driveway 4. In the unlikely event of a non-ferrous customer accessing the site in a vehicle larger than a 12.5 metre LRV, they will be required to follow the same access arrangements of ferrous customers, i.e. enter via driveway 1 and exit via driveway 4.

The proposed separation of ferrous and non-ferrous customers will improve the circulation of vehicles on-site and also improve the safety of non-ferrous customers by preventing them from entering operational areas.

The proposed access arrangements will see driveway 3 continue to operate as a two-way access. This driveway will be used for the entry and exit of all staff and visitor vehicles to the on-site car parks as well as the entry for non-ferrous customers. It is anticipated that the car park at the northern end of the site will function as the primary car park for staff at the site. The car park at the southern end of the site will function as a secondary car park with all access to this car park via driveway 2.

Driveway 4 currently operates as a two-way access. It is proposed for this driveway to be used as a one-way exit for all ferrous and non-ferrous customers from the expanded site. The proposed access arrangements will confine staff and visitor vehicle movements to driveway 3 thereby reducing the potential for conflict with heavy vehicles which will enter via driveway 1 and exit via driveway 4.

While the combination of non-ferrous vehicle entry movements with access to the car park at driveway 3 is not ideal, the proposed access arrangements are expected to operate satisfactorily. The peak times for the movement of staff vehicles to/from the on-site car park are not expected to coincide with non-ferrous vehicle entry movements to the site and are therefore considered to be complimentary uses.

4.2 Pedestrian Access

The relocation of all administration functions to the existing administration building at 23-43 Tattersall Road will greatly improve pedestrian safety at the expanded site by separating pedestrians from the operational activities of the site. The proposed pedestrian access arrangements to the administration building will be unchanged from the existing arrangements to this building with pedestrians accessing the building from the on-site car park.

5. Car Parking

5.1 Car Parking Requirements

The car parking provision requirements for industrial developments are set out in Part E of Blacktown City Council's DCP 2006 as summarised in Table 5.1

Table 5.1: DCP 2006 Car Parking Requirements

Description / Use	Gross Floor Area (GFA)	DCP 2006 Car Parking Rate
Factory, Warehouse and Bulk Storage	≤ 7,500m²	One space per 75m² GFA.
	> 7,500m²	One space per 200m² GFA only for the area in excess of 7,500sqm where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for.

Section 5.3 (pg. 23) of DCP 2006 defines GFA as follows:

The sum of the areas of each floor of a building where the area of each floor is taken to be the area within the outer face of the external enclosing walls as measured at a height of 1400 millimetres above each floor level excluding:

a) columns, fin walls, sun control devices and any elements, projections or works outside the general lines of the outer face of the external wall;

b) lift towers, cooling towers, machinery and plant rooms, ancillary storage space and vertical air-conditioning ducts;

c) car parking needed to meet any requirements of Council and any internal access thereto; and

d) space for the loading and unloading of goods.

As summarised in Table 3.1, the total area of the development is 10,539m². Given this, Table 5.2 has been prepared to summarise the car parking requirements of the development.

Table 5.2: Development Car Parking Requirements

Development Area	DCP 2006 Car Parking Rate	DCP 2006 Car Parking Requirements
10,539m²	One space per 75m² GFA for the area ≤ 7,500m²	100
	One space per 200m² GFA only for the area in excess of 7,500sqm	16
	Total	**116**

As shown in Table 5.2, the proposed development is required to provide a minimum of 116 on-site car parking spaces. The proposed supply of 147 on-site car parking spaces for 84 on-site staff therefore meets the minimum car parking requirements outlined in DCP 2006 and is considered to be appropriate.

It is anticipated that the car park at the northern end of the site will function as the primary car park for staff at the site. The car park at the southern end of the site will function as a secondary car park with all access to this car park via driveway 2.

6. Traffic Impact Assessment

6.1 Traffic Generation

6.1.1 Design Rates

Traffic generation estimates for different development types/ land uses are generally sourced from the RMS *Guide to Traffic Generating Developments* (2002). 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 acknowledges that peak period traffic generation of industrial land uses varies significantly depending based on the specific industrial development type.

Section 3.10 of the RMS guide contains traffic generation rates for four industrial development types: factories, warehouses, plant nurseries and business parks. The traffic generation rates for factories and warehouses are summarised in Table 6.1 below.

Table 6.1: Traffic Generation Rates – Factories and Warehouses

Development Type	Traffic Generation Rate (RMS Guide to Traffic Generating Developments)	
	Daily Vehicle Trips	Peak Hour Vehicle Trips
Factories	5 per 100m^2 GFA	1 per 100m^2 GFA
Warehouses	4 per 100m^2 GFA	0.5 per 100m^2 GFA

GFA = Gross Floor Area

As shown in Table 6.1, the traffic generation rates for factories and warehouses are based on the GFA of the development. The increase in vehicle movements associated with the proposed development is not considered to be directly affected by changes in GFA and thus application of the rates contained in the RMS guide is not considered to be appropriate. Furthermore, much of the data used to calculate the traffic generation rates contained in the RMS guide is based on surveys undertaken over 20 years ago. Indeed Section 3.10.1 of the guide refers to RTA surveys of average gross floor space per employees of factory developments undertaken in 1978.

RMS in the process of updating the guide to traffic generating developments and has recently undertaken detailed traffic generation surveys/ studies of specific land uses to provided updated traffic generation rates. It is understood that no specific surveys/ studies have been undertaken for industrial land uses similar to that proposed by the development which could be used as empirical traffic generation rates.

6.1.2 Site Traffic Generation Characteristics

The traffic generating characteristics of the proposed development is considered to be directly related to three key parameters:

- Number of on-site employees
- Handling/ processing capacity
- Extended operating hours.

Employees

The net change in on-site employees at the subject site is summarised in Table 6.2.

Table 6.2: Existing and Proposed On-Site Employees

Site / Address	Existing On-Site Employees	Proposed On-Site Employees (post-development)	Net Change
45 Tattersall Road	64	84	-120
23-43 Tattersall Road	140		
Total	204		

As shown in Table 6.2, the two sites currently have a combined total of 204 on-site employees. The expanded Sell and Parker site proposes a total of 84 on-site employees. The amalgamation of the two sites as part of the proposed development will therefore result in a reduction of 120 employees.

Processing Capacity

The development proposes to increase the processing capacity at the expanded site from the current 90,000 tonnes per annum to 350,000 tonnes per annum. This represents an increase of 388% on the existing processing capacity of the site.

As detailed in Section 2.2.1, the Sell and Parker site at 45 Tattersall Road currently generates 204 vehicle movements per day at its current processing capacity of 90,000 tonnes per annum.

Operating Hours

The development proposes to extend the operating hours of the facility. The existing and proposed operating hours are as follows:

- **Existing** – 6:30am to 4:30pm Monday to Friday, 6:30am to 12:00pm Saturdays
- **Proposed** – 6:00am to 9:00pm, Monday to Saturday.

The development is proposing to extend the operating hours of the facility by five hours each weekday and nine and a half hours on Saturdays. The proposed development would increase the operating hours of the facility by 34.5 hours per week.

The extension of operating hours associated with the development would result in the temporal dispersal of vehicle movements to/ from the site.

6.1.3 Estimated Traffic Generation

The following key assumptions have been made in estimating the future traffic generated by the proposed development:

- Light vehicle movements are based on the 82 car parking spaces to be provided on-site and assuming 100% occupancy and 100% turnover of on-site car parking.
- Heavy vehicle movements are assumed to increase by 389% in line with the proposed increase in on-site processing capacity (90,000 tonnes per annum to 350,000 tonnes per annum).

On this basis, Table 6.3 has been prepared to compare the existing and future daily traffic generation of the development.

Table 6.3: Existing and Future Daily Traffic Generation

Site/Address	Existing Daily Traffic Generation			Estimated Daily Future Traffic Generation		
	Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles
45 Tattersall Road	39	165	204	164 (20%)	642 (80%)	806
23-43 Tattersall Road	645	49	694			
TOTAL	684 (76%)	214 (24%)	898			

As shown in Table 6.3, the expanded facility is estimated to generate a total of 806 vehicle movements (two-way) on a typical weekday. The amalgamation of the two sites will therefore result in a net decrease of 92 vehicle movements per day from the existing use of the sites. However, the proposed development will result in a significant increase in the proportion of heavy vehicle movements to/from the site.

The following key assumptions have been made with respect to calculating future traffic generated by the development in a typical weekday peak hour:

- 50% of daily light vehicle movements will occur in a typical peak hour (this is considered to be conservative, i.e. in excess of what could reasonably be expected to occur).
- 8% of daily heavy vehicle movements will occur in a typical AM peak hour with 4% of daily heavy vehicle movements will occur in a typical PM peak hour. This is based on the recorded peak to daily ratio recorded at the site (Section 2.3.2) and is considered to be reasonable given the proposed extension of operating hours associated with the development.

On the basis of the above, Table 6.4 has been prepared to summarise the net increase in peak hour traffic generation associated with the development.

Table 6.4: Net Increase in Peak Hour Traffic Generation

Weekday Peak Hour	Existing Traffic Generation			Estimated Future Traffic Generation			Net Increase		
	Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles
AM	73	32	**105**	82	52	**134**	9	20	**29**
PM	43	15	**58**	82	26	**108**	39	11	**50**

As shown in Table 6.4, it is estimated that the development will generate a total 134 vehicle movements (two-way) in a typical weekday AM peak hour and 108 vehicle movements (two-way) in a typical weekday PM peak hour.

Based on the existing peak hour traffic generation of the two sites, this represents a net increase of 29 vehicle movements (two-way) in the AM peak hour and 50 vehicle movements (two-way) in a typical weekday PM peak hour.

It is noted that while the development is anticipated to result in a net increase in daily traffic, a marginal increase in peak hour traffic volumes is expected.

6.2 Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

i configuration of the arterial road network in the immediate vicinity of the site

ii existing operation of intersections providing access between the local and arterial road network
iii likely distribution of employee's residences in relation to the site
iv configuration of access points to the site.

Having consideration to the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- Sunnyholt Road (north) 60%
- Sunnyholt Road (south) 20%
- Vardys Road (west) 20%.

In addition, the assumptions made with respect to the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) in the AM peak period is as follows:

- Light vehicles – 80% inbound, 20% outbound
- Heavy vehicles – 60% inbound, 40% outbound.

A corresponding reversal of the AM peak period directional split has been assumed for the PM peak period. This results in a directional split during the AM and PM peak periods as shown in Table 6.5.

Table 6.5: Net Increase in Traffic Generation

Weekday Peak Hour	Vehicle Type	Inbound	Outbound
AM	Light	80% (7 vehicles)	20% (2 vehicles)
	Heavy	60% (12 vehicles)	40% (8 vehicles)
	Total	**19 vehicles**	**10 vehicles**
PM	Light	20% (8 vehicles)	80% (31 vehicles)
	Heavy	40% (4 vehicles)	60% (7 vehicles)
	Total	**12 vehicles**	**38 vehicles**

Based on the above, Figure 6.1 and Figure 6.2 have been prepared to show the estimated marginal increase in turning movements in the vicinity of the site following full site development, together with the existing traffic volumes in the vicinity of the site. The increases in traffic over the existing situation are shown in brackets.

Figure 6.1: Existing Weekday AM Peak Hour Traffic plus Development Traffic

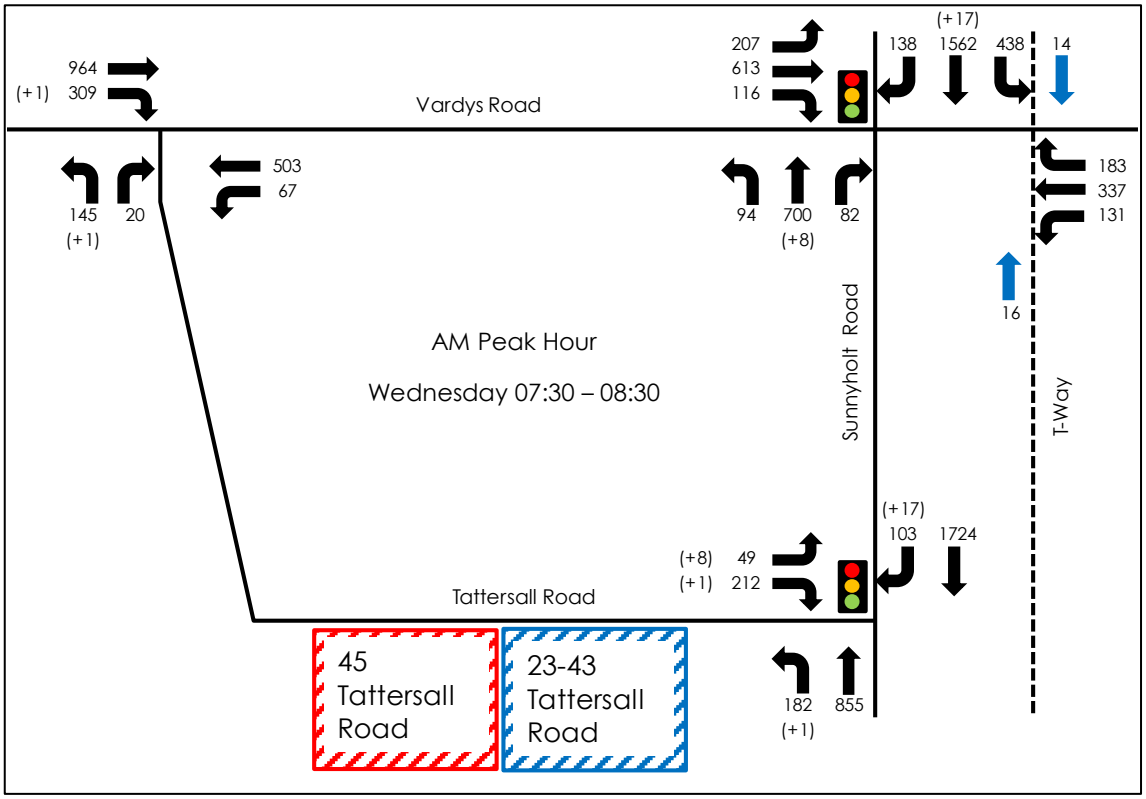
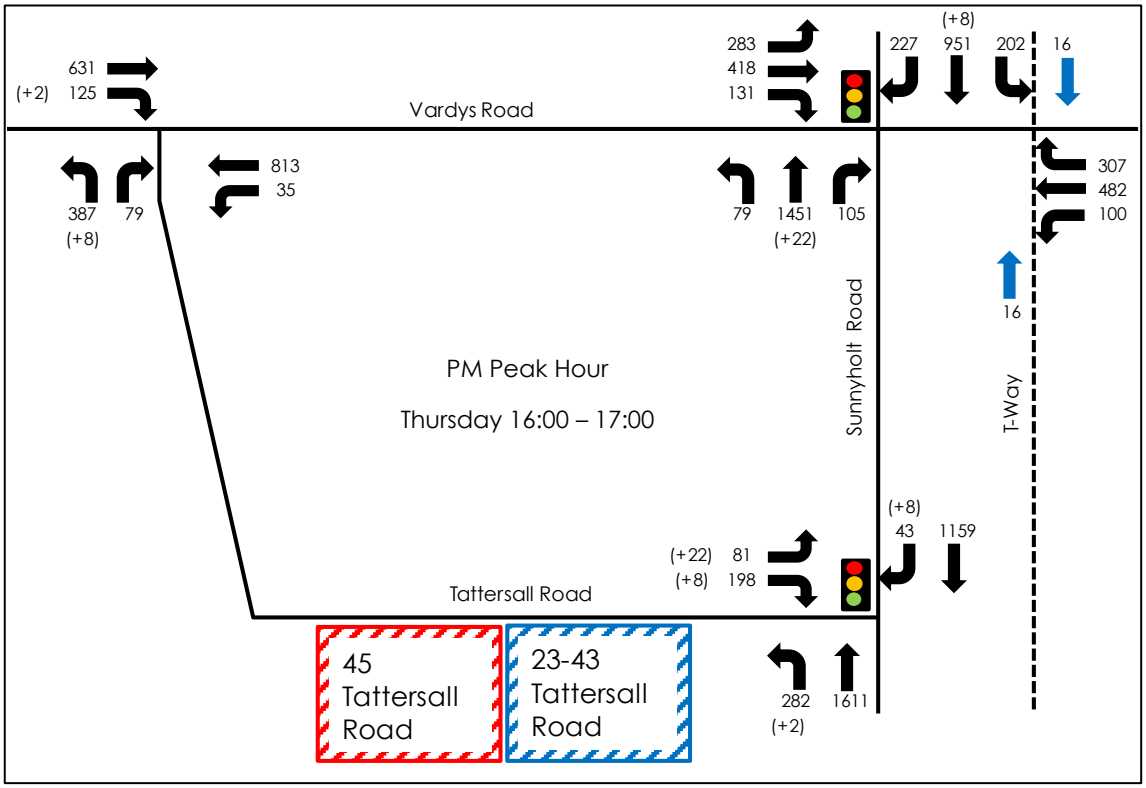


Figure 6.2: Existing Weekday PM Peak Hour Traffic plus Development Traffic



6.3 Operational Traffic Impact

An assessment of the impacts that the anticipated development traffic would have on the surrounding road network can be made by comparing intersection performance prior to and following full site development.

The proposed development is anticipated to generate an additional 29 vehicle movements (two-way) in a typical weekday AM peak hour and 50 vehicle movements (two-way) in a typical weekday PM peak hour. In comparison to the existing traffic flows on the road network surrounding the site, this represents a negligible increase in traffic volumes.

In addition, the impact of this additional traffic on the intersections in the vicinity of the site has been assessed using SIDRA INTERSECTION. Table 6.6 presents a summary of the anticipated future operation of the intersections following the full development of the site, with full results included in Appendix B.

Table 6.6: Future Operating Conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Tattersall Road/ Sunnyholt Road	AM	0.809	11.9	103	A
	PM	0.868	11.2	171	A
Tattersall Road/ Vardys Road	AM	0.405	4.2	15	N/A
	PM	0.999	15.7	148	N/A
Sunnyholt Road/ Vardys Road	AM	0.930	42.4	310	C
	PM	0.890	46.3	308	D

A comparison of the existing and future operating conditions of the key intersections surrounding the site shows that the impact of traffic generated by the development is negligible. Furthermore the comparison shows no change in Level of Service at the three intersections during either the AM or PM peak hours.

6.4 Construction Traffic Impact

Construction activities associated with the proposed development are anticipated to primarily involve demolition of existing buildings and modifying the remaining existing buildings. There will be minimal excavation, but there will be a need to remove demolition material and bring in construction materials, fittings and equipment. The construction activities are anticipated to involve the following:

- demolition of the existing office and maintenance shed at 45 Tattersall Road
- demolition of some of the existing storage and processing sheds at 23-43 Tattersall Road
- modifying and fit-out of the remaining buildings, storage and processing sheds at 23-43 Tattersall Road
- relocation of the shear from 45 Tattersall Road to 23-43 Tattersall Road
- relocation of the pre-shredder within 45 Tattersall Road
- construction of an enclosed conveyor
- construction of a truck wash facility.

All construction activities associated with the proposed development will be undertaken following the ceasing of manufacturing operations at the Dexion Australia Pty Ltd site at 23-43 Tattersall Road. Manufacturing operations are anticipated to cease at this site in December 2014

which is estimated to result in a reduction of 694 vehicle movements per day on the road network (see Section 2.4 for further details).

At this stage it is not possible to accurately quantify the traffic volumes likely to be generated during construction as a contractor is yet to be appointed. However, construction activities associated with the proposed development are anticipated to generate only a small proportion of the daily vehicle movements currently generated by the Dexion site. Given this, the construction activities would result in a net decrease in traffic generation when compared with the existing traffic generated by the operation of the two sites. Thus construction traffic is not expected to compromise the safety and function of the road network surrounding the site.

It is anticipated that trucks associated with construction will access the site via the same routes as operational vehicles i.e. via the Tattersall Road/ Sunnyholt Road signalised intersection with the vast majority of these travelling on the M7 Motorway, 1.5 kilometres north of the site.

Once the contractor has been appointed, a site-specific construction traffic management plan (CTMP) should be prepared prior to works commencing on-site detailing construction traffic volumes, truck routes, access arrangements and construction worker parking arrangements.

6.5 Mitigating Measures and Intersection Works

Compared against the existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development is negligible and could not be expected to compromise the safety or function of the surrounding road network. Given this, the proposed development in its own right would not warrant any upgrades to existing road infrastructure in the vicinity of the site.

7. Conclusion

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

i The proposed development involves the expansion of the existing Sell and Parker metal recycling facility at 45 Tattersall Road by consolidating the neighbouring property at 23-43 Tattersall Road.

ii The proposed development seeks to increase the handling/ processing capacity from the existing 90,000 tonnes per annum to 350,000 tonnes per annum.

iii The site is well served by public transport with the closest railway station located 1.2 kilometres east of the site and six bus stops located within 600 metres of the site.

iv On the basis of traffic surveys undertaken in December 2013 and January 2014 the two sites currently generate 898 vehicle movements (two-way) per day including:

- 105 vehicle movements (two-way) in the AM peak hour
- 58 vehicle movements (two-way) in the PM peak hour.

v The relocation of all administration functions from 45 Tattersall Road to the existing administration building at 23-43 Tattersall Road will separate pedestrians from the operational activities of the site, greatly improving pedestrian safety.

vi The proposed supply of 147 on-site car parking spaces meets the minimum car parking requirements outlined in Blacktown DCP 2006.

vii The proposed development is anticipated to generate an additional 29 vehicle movements (two-way) in a typical weekday AM peak hour and 50 vehicle movements (two-way) in a typical weekday PM peak hour.

viii Compared against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development is negligible and could not be expected to compromise the safety or function of the surrounding road network.

ix A comparison of the existing and future intersection operating conditions shows that the impact of traffic generated by the development would not result in a significant change to the existing intersection Level of Service.

x The proposed development in its own right would not warrant any upgrades to existing road infrastructure in the vicinity of the site.

Appendix A

Survey Results

Client	GTA
Location	**Kings Park**
Survey Time	Wed, 29th January 2014 5am - 5pm
Description	IN/OUT Movement Survey

Site 1: Entry

TIME PERIOD			SHORT up to 5.5m	MEDIUM 5.5m to 14.5m	LONG 11.5m to 19.0m	MEDIUM COMBINATION 17.5m to 36.5m	LARGE COMBINATION Over 33.0m
5:00	to	5:15	0	1	2	0	0
5:15	to	5:30	0	0	1	0	0
5:30	to	5:45	0	0	3	1	0
5:45	to	6:00	0	0	4	0	0
6:00	to	6:15	0	1	6	0	0
6:15	to	6:30	0	6	5	0	0
6:30	to	6:45	0	3	6	0	0
6:45	to	7:00	0	1	6	0	0
7:00	to	7:15	0	2	4	0	0
7:15	to	7:30	0	3	3	0	0
7:30	to	7:45	1	5	3	0	0
7:45	to	8:00	0	3	4	0	0
8:00	to	8:15	0	2	4	0	0
8:15	to	8:30	0	2	5	0	0
8:30	to	8:45	0	1	5	0	0
8:45	to	9:00	1	0	1	0	0
9:00	to	9:15	0	5	5	0	0
9:15	to	9:30	0	6	6	0	0
9:30	to	9:45	0	2	1	0	0
9:45	to	10:00	0	3	5	0	0
10:00	to	10:15	0	2	4	0	0
10:15	to	10:30	2	2	6	0	0
10:30	to	10:45	1	5	4	0	0
10:45	to	11:00	0	7	5	0	0
11:00	to	11:15	0	7	2	0	0
11:15	to	11:30	1	4	4	0	0
11:30	to	11:45	0	6	5	0	0
11:45	to	12:00	1	3	4	0	0
12:00	to	12:15	1	5	3	0	0
12:15	to	12:30	1	1	2	0	0
12:30	to	12:45	0	8	3	0	0
12:45	to	13:00	1	2	1	0	0
13:00	to	13:15	0	3	6	0	0
13:15	to	13:30	0	1	2	0	0
13:30	to	13:45	0	3	5	0	0
13:45	to	14:00	0	2	3	0	0
14:00	to	14:15	0	3	2	0	0
14:15	to	14:30	0	5	5	0	0
14:30	to	14:45	0	4	5	0	0
14:45	to	15:00	0	4	2	0	0
15:00	to	15:15	1	3	2	0	0
15:15	to	15:30	2	1	3	0	0
15:30	to	15:45	0	0	5	0	0
15:45	to	16:00	2	7	6	0	0
16:00	to	16:15	0	1	3	0	0
16:15	to	16:30	0	3	1	0	0
16:30	to	16:45	0	0	0	0	0
16:45	to	17:00	0	0	0	0	0
Total			15	138	172	1	0

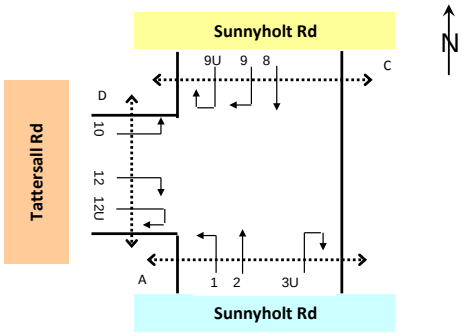
Client	GTA
Location	**Kings Park**
Survey Time	Wed, 29th January 2014 5am - 5pm
Description	IN/OUT Movement Survey

Site 2: Exit

TIME PERIOD			SHORT up to 5.5m	MEDIUM 5.5m to 14.5m	LONG 11.5m to 19.0m	MEDIUM COMBINATION 17.5m to 36.5m	LARGE COMBINATION Over 33.0m
5:00	to	5:15	0	2	1	0	0
5:15	to	5:30	0	3	0	0	0
5:30	to	5:45	0	0	1	0	0
5:45	to	6:00	0	1	4	0	0
6:00	to	6:15	0	0	4	0	0
6:15	to	6:30	0	3	6	0	0
6:30	to	6:45	0	5	5	0	0
6:45	to	7:00	0	2	6	0	0
7:00	to	7:15	0	1	6	0	0
7:15	to	7:30	0	6	5	0	0
7:30	to	7:45	0	2	4	0	0
7:45	to	8:00	0	3	4	0	0
8:00	to	8:15	0	2	2	1	0
8:15	to	8:30	0	2	4	0	0
8:30	to	8:45	0	3	8	0	0
8:45	to	9:00	1	1	2	0	0
9:00	to	9:15	2	2	4	0	0
9:15	to	9:30	0	5	6	0	0
9:30	to	9:45	0	2	3	0	0
9:45	to	10:00	0	2	2	0	0
10:00	to	10:15	0	1	3	0	0
10:15	to	10:30	1	2	5	0	0
10:30	to	10:45	1	3	8	0	0
10:45	to	11:00	0	10	7	0	0
11:00	to	11:15	2	4	3	1	0
11:15	to	11:30	0	6	3	0	0
11:30	to	11:45	0	6	4	0	0
11:45	to	12:00	1	4	6	0	0
12:00	to	12:15	4	5	3	0	0
12:15	to	12:30	0	2	3	0	0
12:30	to	12:45	0	6	3	0	0
12:45	to	13:00	0	3	2	0	0
13:00	to	13:15	1	3	3	0	0
13:15	to	13:30	0	2	3	0	0
13:30	to	13:45	1	1	3	0	0
13:45	to	14:00	1	2	2	0	0
14:00	to	14:15	0	3	1	0	0
14:15	to	14:30	0	4	5	0	0
14:30	to	14:45	0	5	5	0	0
14:45	to	15:00	0	3	5	0	0
15:00	to	15:15	2	9	3	0	0
15:15	to	15:30	1	0	6	0	0
15:30	to	15:45	0	0	5	0	0
15:45	to	16:00	5	5	5	0	0
16:00	to	16:15	1	5	4	0	0
16:15	to	16:30	0	4	3	0	0
16:30	to	16:45	0	1	2	0	0
16:45	to	17:00	0	0	0	0	0
Total			24	146	182	2	0

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 1. Tattersall Rd / Sunnyholt Rd

Day/Date : Fri, 20th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

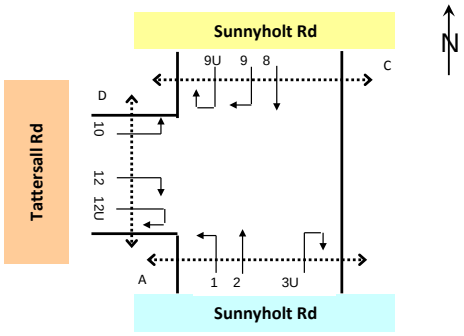


	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	913	113	12	**1,038**		1,700	91	16	**1,807**	222	30	0	**252**	**3,097**
PM	16:00 to 17:00	1,779	55	16	**1,850**		1,094	66	20	**1,180**	222	12	0	**234**	**3,264**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	845	95	17	**957**		1,524	75	18	**1,617**	176	32	0	**208**	**2,782**
7:15 to 8:15	879	93	16	**988**		1,684	79	18	**1,781**	194	34	0	**228**	**2,997**
7:30 to 8:30	880	102	14	**996**		1,711	90	18	**1,819**	233	31	0	**264**	**3,079**
7:45 to 8:45	913	113	12	**1,038**		1,700	91	16	**1,807**	222	30	0	**252**	**3,097**
8:00 to 9:00	939	109	11	**1,059**		1,640	93	15	**1,748**	198	35	0	**233**	**3,040**
8:15 to 9:15	944	104	11	**1,059**		1,517	95	18	**1,630**	199	33	0	**232**	**2,921**
8:30 to 9:30	992	110	11	**1,113**		1,461	92	16	**1,569**	169	37	0	**206**	**2,888**
8:45 to 9:45	1,033	95	11	**1,139**		1,363	93	17	**1,473**	199	43	0	**242**	**2,854**
9:00 to 10:00	1,068	111	14	**1,193**		1,394	90	19	**1,503**	211	41	0	**252**	**2,948**
AM Totals	**2,852**	**315**	**42**	**3,209**		**4,558**	**258**	**52**	**4,868**	**585**	**108**	**0**	**693**	**8,770**
16:00 to 17:00	1,779	55	16	**1,850**		1,094	66	20	**1,180**	222	12	0	**234**	**3,264**
16:15 to 17:15	1,762	50	16	**1,828**		1,036	48	18	**1,102**	206	9	0	**215**	**3,145**
16:30 to 17:30	1,717	42	15	**1,774**		949	37	18	**1,004**	180	7	0	**187**	**2,965**
16:45 to 17:45	1,638	36	15	**1,689**		888	34	21	**943**	159	6	0	**165**	**2,797**
17:00 to 18:00	1,577	25	18	**1,620**		855	28	18	**901**	138	4	0	**142**	**2,663**
PM Totals	**3,356**	**80**	**34**	**3,470**		**1,949**	**94**	**38**	**2,081**	**360**	**16**	**0**	**376**	**5,927**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 1. Tattersall Rd / Sunnyholt Rd

Day/Date : Mon, 16th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

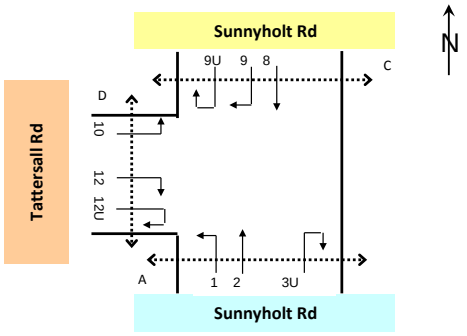


	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	906	105	15	**1,026**		1,651	84	23	**1,758**	213	36	0	**249**	**3,033**
PM	16:15 to 17:15	1,791	59	14	**1,864**		1,011	61	21	**1,093**	252	18	0	**270**	**3,227**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	785	101	21	**907**		1,496	71	17	**1,584**	155	33	0	**188**	**2,679**
7:15 to 8:15	874	101	21	**996**		1,630	79	19	**1,728**	177	36	0	**213**	**2,937**
7:30 to 8:30	895	106	17	**1,018**		1,638	87	22	**1,747**	217	37	0	**254**	**3,019**
7:45 to 8:45	906	105	15	**1,026**		1,651	84	23	**1,758**	213	36	0	**249**	**3,033**
8:00 to 9:00	924	103	13	**1,040**		1,602	86	21	**1,709**	209	34	0	**243**	**2,992**
8:15 to 9:15	904	104	15	**1,023**		1,563	77	23	**1,663**	204	38	0	**242**	**2,928**
8:30 to 9:30	947	107	16	**1,070**		1,540	76	22	**1,638**	194	36	0	**230**	**2,938**
8:45 to 9:45	945	111	16	**1,072**		1,388	85	18	**1,491**	224	43	0	**267**	**2,830**
9:00 to 10:00	990	119	17	**1,126**		1,292	87	21	**1,400**	216	46	0	**262**	**2,788**
AM Totals	**2,699**	**323**	**51**	**3,073**		**4,390**	**244**	**59**	**4,693**	**580**	**113**	**0**	**693**	**8,459**
16:00 to 17:00	1,763	67	14	**1,844**		1,021	69	16	**1,106**	237	26	0	**263**	**3,213**
16:15 to 17:15	1,791	59	14	**1,864**		1,011	61	21	**1,093**	252	18	0	**270**	**3,227**
16:30 to 17:30	1,757	54	14	**1,825**		944	56	17	**1,017**	234	10	0	**244**	**3,086**
16:45 to 17:45	1,663	50	15	**1,728**		885	46	18	**949**	201	6	0	**207**	**2,884**
17:00 to 18:00	1,663	46	16	**1,725**		846	38	18	**902**	180	3	0	**183**	**2,810**
PM Totals	**3,426**	**113**	**30**	**3,569**		**1,867**	**107**	**34**	**2,008**	**417**	**29**	**0**	**446**	**6,023**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 1. Tattersall Rd / Sunnyholt Rd

Day/Date : Thu, 19th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

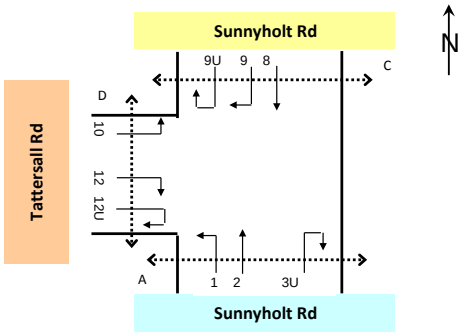


	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	886	101	15	**1,002**		1,658	79	17	**1,754**	197	39	0	**236**	**2,992**
PM	16:00 to 17:00	1,814	61	18	**1,893**		1,105	81	16	**1,202**	259	20	0	**279**	**3,374**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	848	99	18	**965**		1,532	84	21	**1,637**	176	29	1	**206**	**2,808**
7:15 to 8:15	883	95	18	**996**		1,619	85	18	**1,722**	179	36	1	**216**	**2,934**
7:30 to 8:30	886	101	15	**1,002**		1,658	79	17	**1,754**	197	39	0	**236**	**2,992**
7:45 to 8:45	905	106	13	**1,024**		1,633	79	15	**1,727**	198	40	0	**238**	**2,989**
8:00 to 9:00	901	102	13	**1,016**		1,586	79	13	**1,678**	185	37	0	**222**	**2,916**
8:15 to 9:15	835	105	11	**951**		1,497	76	15	**1,588**	199	34	0	**233**	**2,772**
8:30 to 9:30	899	114	12	**1,025**		1,418	74	13	**1,505**	207	28	0	**235**	**2,765**
8:45 to 9:45	897	120	12	**1,029**		1,347	80	16	**1,443**	202	33	0	**235**	**2,707**
9:00 to 10:00	945	125	12	**1,082**		1,287	86	18	**1,391**	197	40	0	**237**	**2,710**
AM Totals	**2,694**	**326**	**43**	**3,063**		**4,405**	**249**	**52**	**4,706**	**558**	**106**	**1**	**665**	**8,434**
16:00 to 17:00	1,814	61	18	**1,893**		1,105	81	16	**1,202**	259	20	0	**279**	**3,374**
16:15 to 17:15	1,809	64	16	**1,889**		1,105	71	17	**1,193**	229	19	0	**248**	**3,330**
16:30 to 17:30	1,756	66	17	**1,839**		1,042	63	16	**1,121**	215	18	0	**233**	**3,193**
16:45 to 17:45	1,742	60	19	**1,821**		999	51	17	**1,067**	181	13	0	**194**	**3,082**
17:00 to 18:00	1,713	57	19	**1,789**		945	40	16	**1,001**	156	9	0	**165**	**2,955**
PM Totals	**3,527**	**118**	**37**	**3,682**		**2,050**	**121**	**32**	**2,203**	**415**	**29**	**0**	**444**	**6,329**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 1. Tattersall Rd / Sunnyholt Rd

Day/Date : Wed, 18th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

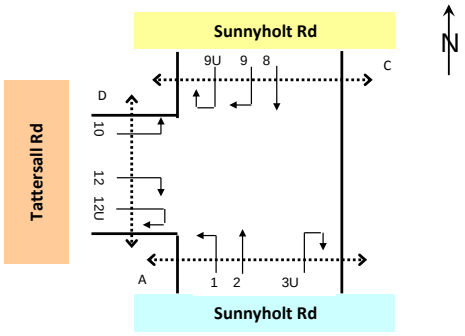


	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	918	102	17	**1,037**		1,721	85	21	**1,827**	228	33	0	**261**	**3,125**
PM	16:00 to 17:00	1,698	85	19	**1,802**		1,054	78	19	**1,151**	256	21	0	**277**	**3,230**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	815	88	22	**925**		1,494	87	16	**1,597**	188	28	0	**216**	**2,738**
7:15 to 8:15	860	100	21	**981**		1,710	88	19	**1,817**	220	28	0	**248**	**3,046**
7:30 to 8:30	918	102	17	**1,037**		1,721	85	21	**1,827**	228	33	0	**261**	**3,125**
7:45 to 8:45	908	108	13	**1,029**		1,692	85	24	**1,801**	233	33	0	**266**	**3,096**
8:00 to 9:00	924	111	13	**1,048**		1,666	85	22	**1,773**	207	39	0	**246**	**3,067**
8:15 to 9:15	928	111	13	**1,052**		1,506	92	22	**1,620**	188	41	0	**229**	**2,901**
8:30 to 9:30	930	117	14	**1,061**		1,458	100	20	**1,578**	189	41	0	**230**	**2,869**
8:45 to 9:45	937	120	14	**1,071**		1,380	106	16	**1,502**	182	43	0	**225**	**2,798**
9:00 to 10:00	978	130	11	**1,119**		1,277	104	22	**1,403**	188	38	0	**226**	**2,748**
AM Totals	**2,717**	**329**	**46**	**3,092**		**4,437**	**276**	**60**	**4,773**	**583**	**105**	**0**	**688**	**8,553**
16:00 to 17:00	1,698	85	19	**1,802**		1,054	78	19	**1,151**	256	21	0	**277**	**3,230**
16:15 to 17:15	1,747	77	16	**1,840**		1,028	64	17	**1,109**	240	21	0	**261**	**3,210**
16:30 to 17:30	1,750	65	19	**1,834**		958	50	15	**1,023**	224	20	0	**244**	**3,101**
16:45 to 17:45	1,668	51	17	**1,736**		924	38	19	**981**	208	17	0	**225**	**2,942**
17:00 to 18:00	1,689	41	16	**1,746**		906	37	17	**960**	184	12	0	**196**	**2,902**
PM Totals	**3,387**	**126**	**35**	**3,548**		**1,960**	**115**	**36**	**2,111**	**440**	**33**	**0**	**473**	**6,132**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 1. Tattersall Rd / Sunnyholt Rd

Day/Date : Tue, 17th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

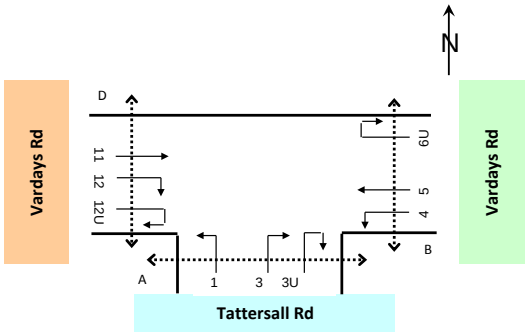


	Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	924	98	17	**1,039**		1,688	76	21	**1,785**	211	39	0	**250**	**3,074**
PM	16:00 to 17:00	1,677	60	14	**1,751**		1,006	64	19	**1,089**	249	24	0	**273**	**3,113**

Approach	Sunnyholt Rd					Sunnyholt Rd				Tattersall Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	842	89	25	**956**		1,490	52	17	**1,559**	174	28	0	**202**	**2,717**
7:15 to 8:15	872	94	23	**989**		1,620	61	19	**1,700**	185	36	0	**221**	**2,910**
7:30 to 8:30	900	94	21	**1,015**		1,663	71	22	**1,756**	210	39	0	**249**	**3,020**
7:45 to 8:45	924	98	17	**1,039**		1,688	76	21	**1,785**	211	39	0	**250**	**3,074**
8:00 to 9:00	895	102	12	**1,009**		1,656	80	23	**1,759**	210	42	0	**252**	**3,020**
8:15 to 9:15	865	102	14	**981**		1,574	84	24	**1,682**	215	40	0	**255**	**2,918**
8:30 to 9:30	921	102	13	**1,036**		1,496	82	20	**1,598**	197	38	0	**235**	**2,869**
8:45 to 9:45	921	104	15	**1,040**		1,371	79	19	**1,469**	191	36	0	**227**	**2,736**
9:00 to 10:00	973	110	13	**1,096**		1,268	79	20	**1,367**	179	39	0	**218**	**2,681**
AM Totals	**2,710**	**301**	**50**	**3,061**		**4,414**	**211**	**60**	**4,685**	**563**	**109**	**0**	**672**	**8,418**
16:00 to 17:00	1,677	60	14	**1,751**		1,006	64	19	**1,089**	249	24	0	**273**	**3,113**
16:15 to 17:15	1,706	47	13	**1,766**		957	47	19	**1,023**	260	23	0	**283**	**3,072**
16:30 to 17:30	1,694	42	14	**1,750**		969	42	18	**1,029**	236	24	0	**260**	**3,039**
16:45 to 17:45	1,655	40	15	**1,710**		935	34	19	**988**	213	15	0	**228**	**2,926**
17:00 to 18:00	1,699	38	16	**1,753**		995	34	18	**1,047**	180	12	0	**192**	**2,992**
PM Totals	**3,376**	**98**	**30**	**3,504**		**2,001**	**98**	**37**	**2,136**	**429**	**36**	**0**	**465**	**6,105**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 2. Tattersall Rd / Vardays Rd

Day/Date : Fri, 20th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

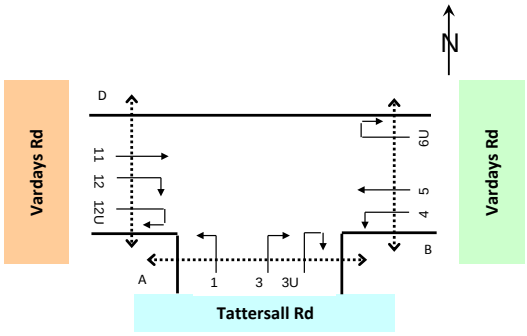


	Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	121	27	0	**148**	440	55	3	**498**		1,105	72	2	**1,179**	**1,825**
PM	16:15 to 17:15	303	13	0	**316**	746	29	3	**778**		624	27	2	**653**	**1,747**

Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
7:00 to 8:00	103	26	0	**129**	361	55	3	**419**		1,032	63	2	**1,097**	**1,645**
7:15 to 8:15	108	25	0	**133**	395	52	2	**449**		1,071	70	2	**1,143**	**1,725**
7:30 to 8:30	121	27	0	**148**	440	55	3	**498**		1,105	72	2	**1,179**	**1,825**
7:45 to 8:45	141	23	0	**164**	465	55	3	**523**		1,032	74	2	**1,108**	**1,795**
8:00 to 9:00	157	25	0	**182**	497	52	3	**552**		924	86	2	**1,012**	**1,746**
8:15 to 9:15	177	33	0	**210**	488	53	3	**544**		866	86	2	**954**	**1,708**
8:30 to 9:30	180	38	0	**218**	473	52	2	**527**		780	75	1	**856**	**1,601**
8:45 to 9:45	181	38	0	**219**	467	55	1	**523**		745	78	1	**824**	**1,566**
9:00 to 10:00	184	36	0	**220**	443	57	1	**501**		717	66	1	**784**	**1,505**
AM Totals	**444**	**87**	**0**	**531**	**1,301**	**164**	**7**	**1,472**		**2,673**	**215**	**5**	**2,893**	**4,896**
16:00 to 17:00	316	19	0	**335**	714	32	3	**749**		610	31	2	**643**	**1,727**
16:15 to 17:15	303	13	0	**316**	746	29	3	**778**		624	27	2	**653**	**1,747**
16:30 to 17:30	275	14	0	**289**	732	25	3	**760**		647	24	2	**673**	**1,722**
16:45 to 17:45	261	10	0	**271**	759	21	3	**783**		656	24	2	**682**	**1,736**
17:00 to 18:00	231	7	0	**238**	715	13	3	**731**		627	21	2	**650**	**1,619**
PM Totals	**547**	**26**	**0**	**573**	**1,429**	**45**	**6**	**1,480**		**1,237**	**52**	**4**	**1,293**	**3,346**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 2. Tattersall Rd / Vardays Rd

Day/Date : Mon, 16th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

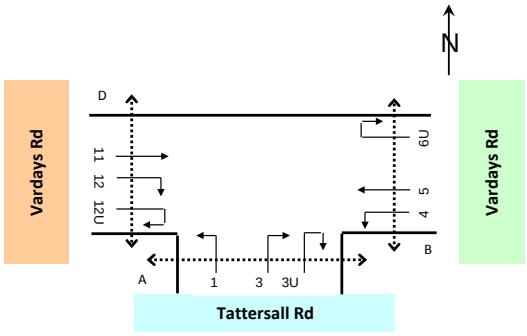


	Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	124	39	0	**163**	518	43	3	**564**		1,189	75	3	**1,267**	**1,994**
PM	16:30 to 17:30	426	20	1	**447**	902	23	2	**927**		761	27	3	**791**	**2,165**

Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
7:00 to 8:00	104	41	0	**145**	430	44	2	**476**		1,096	69	3	**1,168**	**1,789**
7:15 to 8:15	111	39	0	**150**	469	47	1	**517**		1,174	75	3	**1,252**	**1,919**
7:30 to 8:30	124	39	0	**163**	518	43	3	**564**		1,189	75	3	**1,267**	**1,994**
7:45 to 8:45	129	40	0	**169**	545	38	3	**586**		1,144	71	4	**1,219**	**1,974**
8:00 to 9:00	141	38	0	**179**	572	44	4	**620**		1,076	65	4	**1,145**	**1,944**
8:15 to 9:15	137	34	0	**171**	637	47	5	**689**		939	54	4	**997**	**1,857**
8:30 to 9:30	141	33	0	**174**	622	52	4	**678**		843	48	3	**894**	**1,746**
8:45 to 9:45	169	30	0	**199**	577	54	3	**634**		766	48	1	**815**	**1,648**
9:00 to 10:00	178	24	0	**202**	523	53	2	**578**		663	50	2	**715**	**1,495**
AM Totals	**423**	**103**	**0**	**526**	**1,525**	**141**	**8**	**1,674**		**2,835**	**184**	**9**	**3,028**	**5,228**
16:00 to 17:00	424	26	0	**450**	842	43	3	**888**		701	37	3	**741**	**2,079**
16:15 to 17:15	457	25	0	**482**	860	32	2	**894**		741	30	2	**773**	**2,149**
16:30 to 17:30	426	20	1	**447**	902	23	2	**927**		761	27	3	**791**	**2,165**
16:45 to 17:45	375	15	1	**391**	937	15	2	**954**		760	23	3	**786**	**2,131**
17:00 to 18:00	358	15	1	**374**	910	17	2	**929**		733	20	2	**755**	**2,058**
PM Totals	**782**	**41**	**1**	**824**	**1,752**	**60**	**5**	**1,817**		**1,434**	**57**	**5**	**1,496**	**4,137**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 2. Tattersall Rd / Vardays Rd

Day/Date : Thu, 19th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

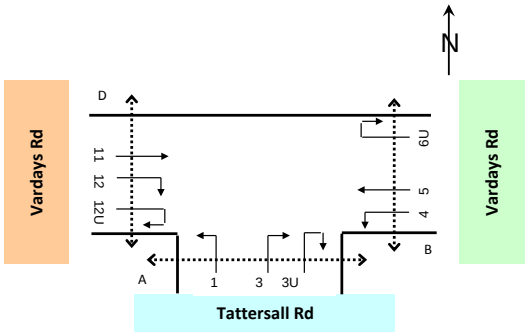


	Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	123	27	0	**150**	498	57	1	**556**		1,138	57	2	**1,197**	**1,903**
PM	16:00 to 17:00	443	23	0	**466**	792	54	2	**848**		715	40	1	**756**	**2,070**

Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
7:00 to 8:00	119	25	0	**144**	418	57	2	**477**		1,113	71	2	**1,186**	**1,807**
7:15 to 8:15	108	24	0	**132**	466	54	1	**521**		1,149	68	2	**1,219**	**1,872**
7:30 to 8:30	123	27	0	**150**	498	57	1	**556**		1,138	57	2	**1,197**	**1,903**
7:45 to 8:45	133	30	0	**163**	506	57	1	**564**		1,042	56	3	**1,101**	**1,828**
8:00 to 9:00	145	33	0	**178**	529	40	2	**571**		941	51	2	**994**	**1,743**
8:15 to 9:15	161	34	0	**195**	522	44	2	**568**		831	54	2	**887**	**1,650**
8:30 to 9:30	146	35	0	**181**	469	50	2	**521**		741	60	1	**802**	**1,504**
8:45 to 9:45	145	34	0	**179**	442	57	1	**500**		687	69	0	**756**	**1,435**
9:00 to 10:00	153	30	0	**183**	412	65	1	**478**		658	71	2	**731**	**1,392**
AM Totals	**417**	**88**	**0**	**505**	**1,359**	**162**	**5**	**1,526**		**2,712**	**193**	**6**	**2,911**	**4,942**
16:00 to 17:00	443	23	0	**466**	792	54	2	**848**		715	40	1	**756**	**2,070**
16:15 to 17:15	462	16	0	**478**	772	50	2	**824**		715	33	1	**749**	**2,051**
16:30 to 17:30	464	15	0	**479**	805	39	2	**846**		692	37	2	**731**	**2,056**
16:45 to 17:45	396	14	0	**410**	831	36	2	**869**		662	30	2	**694**	**1,973**
17:00 to 18:00	353	10	0	**363**	817	34	3	**854**		648	25	2	**675**	**1,892**
PM Totals	**796**	**33**	**0**	**829**	**1,609**	**88**	**5**	**1,702**		**1,363**	**65**	**3**	**1,431**	**3,962**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 2. Tattersall Rd / Vardays Rd

Day/Date : Tue, 17th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

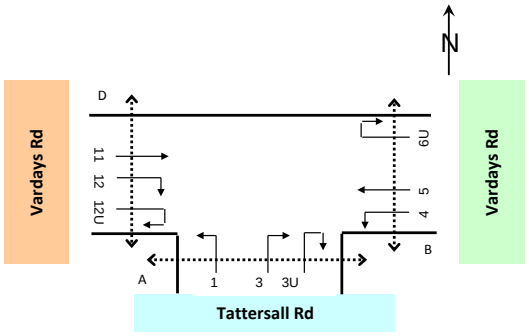


	Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
AM	8:00 to 9:00	149	31	0	**180**	601	58	3	**662**		1,102	72	4	**1,178**	**2,020**
PM	16:15 to 17:15	478	24	0	**502**	816	38	2	**856**		729	34	1	**764**	**2,122**

Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
7:00 to 8:00	110	31	0	**141**	414	40	2	**456**		1,084	62	3	**1,149**	**1,746**
7:15 to 8:15	104	29	0	**133**	455	53	1	**509**		1,136	72	4	**1,212**	**1,854**
7:30 to 8:30	124	24	0	**148**	518	51	2	**571**		1,174	70	4	**1,248**	**1,967**
7:45 to 8:45	139	30	0	**169**	562	51	2	**615**		1,127	70	4	**1,201**	**1,985**
8:00 to 9:00	149	31	0	**180**	601	58	3	**662**		1,102	72	4	**1,178**	**2,020**
8:15 to 9:15	151	31	0	**182**	601	52	4	**657**		973	64	3	**1,040**	**1,879**
8:30 to 9:30	149	40	0	**189**	575	52	3	**630**		888	68	2	**958**	**1,777**
8:45 to 9:45	170	32	0	**202**	511	59	2	**572**		799	62	1	**862**	**1,636**
9:00 to 10:00	171	28	0	**199**	448	54	1	**503**		672	59	1	**732**	**1,434**
AM Totals	**430**	**90**	**0**	**520**	**1,463**	**152**	**6**	**1,621**		**2,858**	**193**	**8**	**3,059**	**5,200**
16:00 to 17:00	420	30	0	**450**	819	41	4	**864**		714	37	2	**753**	**2,067**
16:15 to 17:15	478	24	0	**502**	816	38	2	**856**		729	34	1	**764**	**2,122**
16:30 to 17:30	460	21	0	**481**	819	34	2	**855**		719	32	2	**753**	**2,089**
16:45 to 17:45	411	10	0	**421**	810	31	3	**844**		693	29	2	**724**	**1,989**
17:00 to 18:00	366	6	0	**372**	838	22	3	**863**		661	27	2	**690**	**1,925**
PM Totals	**786**	**36**	**0**	**822**	**1,657**	**63**	**7**	**1,727**		**1,375**	**64**	**4**	**1,443**	**3,992**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 2. Tattersall Rd / Vardays Rd

Day/Date : Wed, 18th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

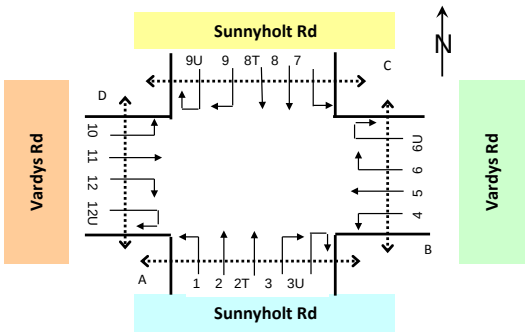


	Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	137	34	0	**171**	542	57	4	**603**		1,166	81	3	**1,250**	**2,024**
PM	16:15 to 17:15	463	33	0	**496**	873	45	2	**920**		766	38	1	**805**	**2,221**

Approach	Tattersall Rd				Vardays Rd					Vardays Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total		Cars	Trucks	Buses	Total	
7:00 to 8:00	102	41	0	**143**	417	44	2	**463**		1,146	85	3	**1,234**	**1,840**
7:15 to 8:15	104	36	0	**140**	483	49	1	**533**		1,191	88	3	**1,282**	**1,955**
7:30 to 8:30	132	33	0	**165**	515	51	4	**570**		1,196	82	3	**1,281**	**2,016**
7:45 to 8:45	137	34	0	**171**	542	57	4	**603**		1,166	81	3	**1,250**	**2,024**
8:00 to 9:00	162	36	0	**198**	562	55	5	**622**		1,070	88	3	**1,161**	**1,981**
8:15 to 9:15	169	41	0	**210**	572	54	6	**632**		949	88	5	**1,042**	**1,884**
8:30 to 9:30	169	43	0	**212**	540	56	4	**600**		834	86	3	**923**	**1,735**
8:45 to 9:45	178	49	0	**227**	526	49	3	**578**		746	84	3	**833**	**1,638**
9:00 to 10:00	181	47	0	**228**	488	55	2	**545**		700	67	3	**770**	**1,543**
AM Totals	**445**	**124**	**0**	569	**1,467**	**154**	**9**	**1,630**		**2,916**	**240**	**9**	**3,165**	**5,364**
16:00 to 17:00	413	40	0	**453**	849	44	3	**896**		748	40	3	**791**	**2,140**
16:15 to 17:15	463	33	0	**496**	873	45	2	**920**		766	38	1	**805**	**2,221**
16:30 to 17:30	431	24	0	**455**	873	26	2	**901**		776	32	2	**810**	**2,166**
16:45 to 17:45	393	13	0	**406**	890	25	2	**917**		728	23	2	**753**	**2,076**
17:00 to 18:00	335	9	0	**344**	912	25	2	**939**		686	18	2	**706**	**1,989**
PM Totals	**748**	**49**	**0**	797	**1,761**	**69**	**5**	**1,835**		**1,434**	**58**	**5**	**1,497**	**4,129**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 3. Vardys Rd / Sunnyholt Rd

Day/Date : Fri, 20th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

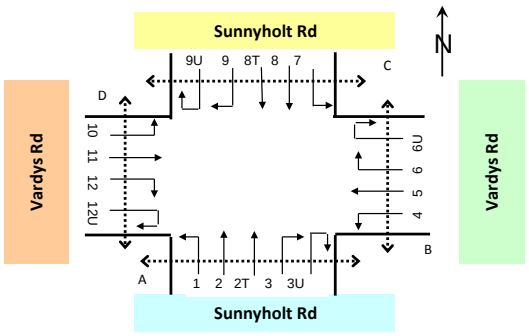


	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	739	94	26	**859**	560	34	4	**598**	2,006	108	35	**2,149**	828	65	2	**895**	**4,501**
PM	16:00 to 17:00	1,605	45	32	**1,682**	775	20	2	**797**	1,268	68	39	**1,375**	652	38	2	**692**	**4,546**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	705	87	33	**825**	468	29	3	**500**	1,845	103	37	**1,985**	745	56	2	**803**	**4,113**
7:15 to 8:15	731	84	30	**845**	518	31	2	**551**	2,002	102	36	**2,140**	786	63	2	**851**	**4,387**
7:30 to 8:30	739	94	26	**859**	560	34	4	**598**	2,006	108	35	**2,149**	828	65	2	**895**	**4,501**
7:45 to 8:45	750	101	27	**878**	537	30	4	**571**	1,960	103	31	**2,094**	819	71	2	**892**	**4,435**
8:00 to 9:00	785	101	22	**908**	544	25	4	**573**	1,909	98	28	**2,035**	739	74	2	**815**	**4,331**
8:15 to 9:15	780	91	23	**894**	532	23	4	**559**	1,736	101	34	**1,871**	704	73	2	**779**	**4,103**
8:30 to 9:30	815	96	23	**934**	499	19	2	**520**	1,638	103	31	**1,772**	645	66	1	**712**	**3,938**
8:45 to 9:45	877	90	22	**989**	498	27	1	**526**	1,520	96	32	**1,648**	597	69	1	**667**	**3,830**
9:00 to 10:00	913	104	26	**1,043**	478	39	2	**519**	1,487	95	36	**1,618**	587	59	1	**647**	**3,827**
AM Totals	**2,403**	**292**	**81**	2,776	**1,490**	**93**	**9**	1,592	**5,241**	**296**	**101**	5,638	**2,071**	**189**	**5**	2,265	**12,271**
16:00 to 17:00	1,605	45	32	**1,682**	775	20	2	**797**	1,268	68	39	**1,375**	652	38	2	**692**	**4,546**
16:15 to 17:15	1,592	41	31	**1,664**	768	11	2	**781**	1,242	58	35	**1,335**	662	32	1	**695**	**4,475**
16:30 to 17:30	1,557	38	30	**1,625**	782	6	2	**790**	1,144	46	33	**1,223**	668	30	2	**700**	**4,338**
16:45 to 17:45	1,511	34	29	**1,574**	766	2	3	**771**	1,121	42	39	**1,202**	681	28	3	**712**	**4,259**
17:00 to 18:00	1,456	25	34	**1,515**	760	3	3	**766**	1,092	34	34	**1,160**	641	24	3	**668**	**4,109**
PM Totals	**3,061**	**70**	**66**	3,197	**1,535**	**23**	**5**	1,563	**2,360**	**102**	**73**	2,535	**1,293**	**62**	**5**	1,360	**8,655**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 3. Vardys Rd / Sunnyholt Rd

Day/Date : Mon, 16th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

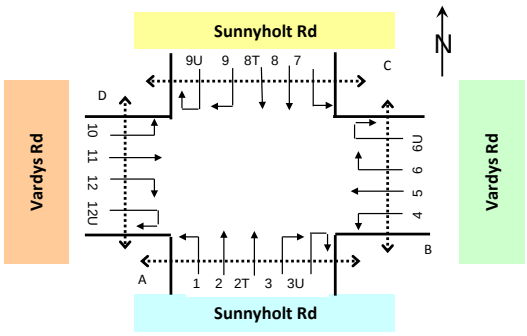


	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	774	96	30	**900**	581	36	3	**620**	1,940	91	38	**2,069**	855	73	14	**942**	**4,531**
PM	16:15 to 17:15	1,560	52	28	**1,640**	835	22	1	**858**	1,183	73	41	**1,297**	797	46	1	**844**	**4,639**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	666	102	40	**808**	495	29	2	**526**	1,820	89	33	**1,942**	769	77	2	**848**	**4,124**
7:15 to 8:15	744	102	38	**884**	549	29	1	**579**	1,949	92	37	**2,078**	833	80	2	**915**	**4,456**
7:30 to 8:30	763	101	33	**897**	592	29	3	**624**	1,930	95	45	**2,070**	856	74	3	**933**	**4,524**
7:45 to 8:45	774	96	30	**900**	581	36	3	**620**	1,940	91	38	**2,069**	855	73	14	**942**	**4,531**
8:00 to 9:00	786	97	24	**907**	603	33	5	**641**	1,889	95	31	**2,015**	791	74	14	**879**	**4,442**
8:15 to 9:15	766	103	28	**897**	586	41	6	**633**	1,806	89	35	**1,930**	705	60	14	**779**	**4,239**
8:30 to 9:30	798	105	28	**931**	526	36	5	**567**	1,744	95	32	**1,871**	622	59	12	**693**	**4,062**
8:45 to 9:45	792	114	29	**935**	492	36	4	**532**	1,539	99	32	**1,670**	592	60	1	**653**	**3,790**
9:00 to 10:00	830	119	29	**978**	430	41	3	**474**	1,393	96	38	**1,527**	555	49	2	**606**	**3,585**
AM Totals	**2,282**	**318**	**93**	2,693	**1,528**	**103**	**10**	1,641	**5,102**	**280**	**102**	5,484	**2,115**	**200**	**18**	2,333	**12,151**
16:00 to 17:00	1,541	57	30	**1,628**	848	28	2	**878**	1,192	81	33	**1,306**	769	47	2	**818**	**4,630**
16:15 to 17:15	1,560	52	28	**1,640**	835	22	1	**858**	1,183	73	41	**1,297**	797	46	1	**844**	**4,639**
16:30 to 17:30	1,549	42	28	**1,619**	857	16	1	**874**	1,145	65	34	**1,244**	804	33	2	**839**	**4,576**
16:45 to 17:45	1,460	37	30	**1,527**	861	13	1	**875**	1,124	54	36	**1,214**	826	28	2	**856**	**4,472**
17:00 to 18:00	1,464	33	32	**1,529**	841	14	2	**857**	1,068	49	36	**1,153**	763	22	2	**787**	**4,326**
PM Totals	**3,005**	**90**	**62**	3,157	**1,689**	**42**	**4**	1,735	**2,260**	**130**	**69**	2,459	**1,532**	**69**	**4**	1,605	**8,956**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 3. Vardys Rd / Sunnyholt Rd

Day/Date : Thu, 19th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

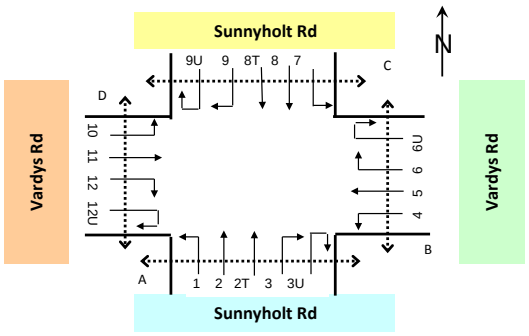


	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	741	101	30	**872**	562	45	2	**609**	1,997	105	35	**2,137**	879	71	2	**952**	**4,570**
PM	16:00 to 17:00	1,577	56	34	**1,667**	849	38	2	**889**	1,285	95	32	**1,412**	787	44	1	**832**	**4,800**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	683	91	35	**809**	445	32	3	**480**	1,976	106	41	**2,123**	819	82	2	**903**	**4,315**
7:15 to 8:15	725	95	35	**855**	511	38	2	**551**	2,031	104	36	**2,171**	863	82	2	**947**	**4,524**
7:30 to 8:30	741	101	30	**872**	562	45	2	**609**	1,997	105	35	**2,137**	879	71	2	**952**	**4,570**
7:45 to 8:45	741	101	26	**868**	563	39	1	**603**	1,967	99	32	**2,098**	800	70	2	**872**	**4,441**
8:00 to 9:00	778	97	24	**899**	560	43	2	**605**	1,892	86	27	**2,005**	747	61	2	**810**	**4,319**
8:15 to 9:15	714	91	21	**826**	564	44	2	**610**	1,745	88	31	**1,864**	679	56	2	**737**	**4,037**
8:30 to 9:30	757	98	22	**877**	506	34	2	**542**	1,632	83	26	**1,741**	563	58	1	**622**	**3,782**
8:45 to 9:45	753	108	23	**884**	499	43	1	**543**	1,475	90	32	**1,597**	583	61	1	**645**	**3,669**
9:00 to 10:00	790	111	25	**926**	447	42	1	**490**	1,405	99	36	**1,540**	560	65	2	**627**	**3,583**
AM Totals	**2,251**	**299**	**84**	2,634	**1,452**	**117**	**6**	1,575	**5,273**	**291**	**104**	5,668	**2,126**	**208**	**6**	2,340	**12,217**
16:00 to 17:00	1,577	56	34	**1,667**	849	38	2	**889**	1,285	95	32	**1,412**	787	44	1	**832**	**4,800**
16:15 to 17:15	1,585	59	30	**1,674**	857	30	2	**889**	1,269	86	33	**1,388**	799	34	0	**833**	**4,784**
16:30 to 17:30	1,571	63	31	**1,665**	889	22	2	**913**	1,218	72	32	**1,322**	816	39	1	**856**	**4,756**
16:45 to 17:45	1,574	54	35	**1,663**	875	17	2	**894**	1,200	60	34	**1,294**	755	34	1	**790**	**4,641**
17:00 to 18:00	1,564	52	33	**1,649**	874	13	3	**890**	1,171	51	32	**1,254**	757	28	2	**787**	**4,580**
PM Totals	**3,141**	**108**	**67**	3,316	**1,723**	**51**	**5**	1,779	**2,456**	**146**	**64**	2,666	**1,544**	**72**	**3**	1,619	**9,380**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 3. Vardys Rd / Sunnyholt Rd

Day/Date : Tue, 17th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

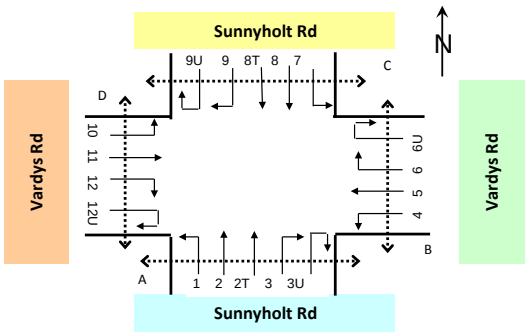


	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:45 to 8:45	766	92	31	**889**	662	34	1	**697**	1,974	85	40	**2,099**	838	72	4	**914**	**4,599**
PM	17:00 to 18:00	1,528	35	32	**1,595**	884	21	4	**909**	1,211	43	36	**1,290**	742	30	2	**774**	**4,568**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	691	77	45	**813**	510	33	3	**546**	1,854	77	37	**1,968**	789	59	2	**850**	**4,177**
7:15 to 8:15	728	85	41	**854**	586	33	2	**621**	1,947	82	38	**2,067**	832	71	2	**905**	**4,447**
7:30 to 8:30	752	87	37	**876**	627	28	1	**656**	1,989	85	43	**2,117**	867	74	3	**944**	**4,593**
7:45 to 8:45	766	92	31	**889**	662	34	1	**697**	1,974	85	40	**2,099**	838	72	4	**914**	**4,599**
8:00 to 9:00	749	97	21	**867**	666	36	2	**704**	1,938	79	41	**2,058**	840	79	4	**923**	**4,552**
8:15 to 9:15	708	97	26	**831**	627	33	3	**663**	1,846	86	45	**1,977**	746	75	4	**825**	**4,296**
8:30 to 9:30	770	97	25	**892**	599	32	6	**637**	1,697	80	38	**1,815**	695	74	2	**771**	**4,115**
8:45 to 9:45	780	97	29	**906**	528	30	5	**563**	1,533	84	36	**1,653**	630	69	1	**700**	**3,822**
9:00 to 10:00	829	109	26	**964**	463	30	4	**497**	1,374	95	38	**1,507**	559	55	2	**616**	**3,584**
AM Totals	**2,269**	**283**	**92**	2,644	**1,639**	**99**	**9**	1,747	**5,166**	**251**	**116**	5,533	**2,188**	**193**	**8**	2,389	**12,313**
16:00 to 17:00	1,477	54	29	**1,560**	809	24	4	**837**	1,181	82	36	**1,299**	746	43	3	**792**	**4,488**
16:15 to 17:15	1,488	42	26	**1,556**	829	21	2	**852**	1,107	71	38	**1,216**	781	42	2	**825**	**4,449**
16:30 to 17:30	1,489	39	28	**1,556**	846	23	3	**872**	1,131	62	35	**1,228**	769	42	3	**814**	**4,470**
16:45 to 17:45	1,466	37	30	**1,533**	887	22	4	**913**	1,102	51	37	**1,190**	755	35	3	**793**	**4,429**
17:00 to 18:00	1,528	35	32	**1,595**	884	21	4	**909**	1,211	43	36	**1,290**	742	30	2	**774**	**4,568**
PM Totals	**3,005**	**89**	**61**	3,155	**1,693**	**45**	**8**	1,746	**2,392**	**125**	**72**	2,589	**1,488**	**73**	**5**	1,566	**9,056**

Job No. : N1287
Client : GTA
Suburb : Kings Park
Location : 3. Vardys Rd / Sunnyholt Rd

Day/Date : Wed, 18th December 2013
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



	Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
	Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
AM	7:30 to 8:30	776	99	33	**908**	609	40	2	**651**	2,039	92	42	**2,173**	855	77	4	**936**	**4,668**
PM	16:00 to 17:00	1,489	72	35	**1,596**	889	24	3	**916**	1,183	90	34	**1,307**	789	52	3	**844**	**4,663**

Approach	Sunnyholt Rd				Vardys Rd				Sunnyholt Rd				Vardys Rd				Grand Total
Time Period	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	Cars	Trucks	Buses	Total	
7:00 to 8:00	687	90	41	**818**	524	34	2	**560**	1,868	95	34	**1,997**	793	69	2	**864**	**4,239**
7:15 to 8:15	727	99	40	**866**	569	41	1	**611**	2,062	92	37	**2,191**	845	83	3	**931**	**4,599**
7:30 to 8:30	776	99	33	**908**	609	40	2	**651**	2,039	92	42	**2,173**	855	77	4	**936**	**4,668**
7:45 to 8:45	771	102	27	**900**	636	37	2	**675**	1,984	95	48	**2,127**	847	72	4	**923**	**4,625**
8:00 to 9:00	785	105	25	**915**	634	39	3	**676**	1,942	98	44	**2,084**	796	79	4	**879**	**4,554**
8:15 to 9:15	786	105	24	**915**	642	38	4	**684**	1,740	106	47	**1,893**	747	71	3	**821**	**4,313**
8:30 to 9:30	791	108	26	**925**	580	35	4	**619**	1,664	110	39	**1,813**	630	71	3	**704**	**4,061**
8:45 to 9:45	788	110	26	**924**	568	28	4	**600**	1,531	112	32	**1,675**	603	82	3	**688**	**3,887**
9:00 to 10:00	829	118	22	**969**	498	28	6	**532**	1,406	114	41	**1,561**	580	66	3	**649**	**3,711**
AM Totals	**2,301**	**313**	**88**	**2,702**	**1,656**	**101**	**11**	**1,768**	**5,216**	**307**	**119**	**5,642**	**2,169**	**214**	**9**	**2,392**	**12,504**
16:00 to 17:00	1,489	72	35	**1,596**	889	24	3	**916**	1,183	90	34	**1,307**	789	52	3	**844**	**4,663**
16:15 to 17:15	1,542	64	28	**1,634**	898	23	2	**923**	1,164	77	31	**1,272**	783	45	1	**829**	**4,658**
16:30 to 17:30	1,552	51	34	**1,637**	916	14	2	**932**	1,124	56	28	**1,208**	806	37	3	**846**	**4,623**
16:45 to 17:45	1,504	42	32	**1,578**	905	11	2	**918**	1,111	44	36	**1,191**	762	26	4	**792**	**4,479**
17:00 to 18:00	1,541	31	32	**1,604**	945	12	3	**960**	1,111	42	32	**1,185**	712	21	4	**737**	**4,486**
PM Totals	**3,030**	**103**	**67**	**3,200**	**1,834**	**36**	**6**	**1,876**	**2,294**	**132**	**66**	**2,492**	**1,501**	**73**	**7**	**1,581**	**9,149**

Appendix B

SIDRA INTERSECTION Results

MOVEMENT SUMMARY

Site: Sunnyholt Rd / Tattersall Rd (Ex-AM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Tattersall Road
Existing AM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	192	12.1	0.433	14.4	LOS A	8.9	68.1	0.27	0.90	43.9
2	T	883	9.7	0.433	4.2	LOS A	8.9	68.1	0.20	0.18	52.6
Approach		1075	10.1	0.433	6.1	LOS A	8.9	68.1	0.21	0.31	50.8
North: Sunnyholt Road - N											
8	T	1798	4.9	0.694	4.4	LOS A	14.1	102.8	0.26	0.24	52.4
9	R	108	6.8	0.572	31.2	LOS C	5.1	37.5	0.69	0.81	32.4
Approach		1906	5.0	0.694	5.9	LOS A	14.1	102.8	0.28	0.27	50.6
West: Tattersal Road - W											
10	L	52	38.8	0.692	60.9	LOS E	5.5	46.3	0.86	0.82	22.7
12	R	223	6.6	0.692	58.7	LOS E	10.8	79.5	0.90	0.82	23.0
Approach		275	12.6	0.692	59.2	LOS E	10.8	79.5	0.89	0.82	22.9
All Vehicles		3256	7.3	0.694	10.4	LOS A	14.1	102.8	0.31	0.33	46.0

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P5	Across N approach	53	53.2	LOS E	0.2	0.2	0.87	0.87
P7	Across W approach	53	9.3	LOS A	0.1	0.1	0.36	0.36
All Pedestrians		106	31.2	LOS D			0.62	0.62

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: Tattersall Rd / Vardys Rd (Ex-AM)

14S1107000 Kings Park Metal Recycling Facility
Tattersall Road / Vardys Road
Existing AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Tattersall Rd - S											
1	L	153	15.9	0.287	13.8	LOS A	1.2	9.7	0.60	0.87	44.1
3	R	21	50.0	0.273	63.2	LOS E	0.9	9.1	0.91	1.00	22.3
Approach		174	20.0	0.287	19.8	LOS B	1.2	9.7	0.64	0.88	39.5
East: Vardys Rd - E											
4	L	71	31.3	0.188	11.8	LOS A	1.5	11.7	0.52	0.99	48.9
5	T	529	6.8	0.188	1.0	LOS A	1.5	11.7	0.17	0.00	56.4
Approach		600	9.6	0.188	2.3	NA	1.5	11.7	0.21	0.12	55.4
West: Vardys Rd - W											
11	T	1023	6.3	0.273	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	325	7.8	0.403	12.5	LOS A	2.1	15.3	0.55	0.89	45.0
Approach		1348	6.6	0.403	3.0	NA	2.1	15.3	0.13	0.21	55.5
All Vehicles		2122	8.6	0.403	4.2	NA	2.1	15.3	0.20	0.24	53.7

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

MOVEMENT SUMMARY

Site: Sunnyholt Rd / Vardys Rd (Ex-AM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Vardys Road
Existing AM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	99	13.8	0.502	32.6	LOS C	16.5	126.1	0.63	0.91	32.8
2	T	737	10.1	0.502	23.7	LOS B	16.5	126.1	0.62	0.54	34.9
3	R	86	19.5	0.530	83.4	LOS F	3.1	25.3	1.00	0.75	18.4
Approach		922	11.4	0.530	30.2	LOS C	16.5	126.1	0.65	0.60	32.0
East: Vardys Rd - E											
4	L	138	6.9	0.408	48.2	LOS D	7.1	52.6	0.80	0.78	25.8
5	T	355	6.5	0.474	53.6	LOS D	10.8	79.6	0.93	0.77	23.4
6	R	193	6.0	0.688	79.9	LOS F	6.8	50.1	1.00	0.83	18.9
Approach		685	6.5	0.688	59.9	LOS E	10.8	79.6	0.93	0.79	22.3
North: Sunnyholt Road - N											
7	L	461	2.5	0.920	38.5	LOS C	11.4	81.6	0.91	0.87	29.1
8	T	1644	4.0	0.789	28.2	LOS B	41.5	300.3	0.81	0.74	32.3
9	R	145	20.3	0.896	94.4	LOS F	5.7	47.0	1.00	0.97	16.9
Approach		2251	4.8	0.920	34.6	LOS C	41.5	300.3	0.85	0.78	29.9
West: Vardys Rd - W											
10	L	218	14.5	0.410	49.2	LOS D	11.4	89.9	0.82	0.80	25.6
11	T	645	5.4	0.659	55.5	LOS D	20.3	148.5	0.98	0.83	22.9
12	R	122	15.5	0.930	97.1	LOS F	9.9	78.6	1.00	1.04	16.5
Approach		985	8.7	0.930	59.2	LOS E	20.3	148.5	0.95	0.85	22.3
All Vehicles		4843	7.1	0.930	42.4	LOS C	41.5	300.3	0.84	0.76	27.1

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P1	Across S approach	53	57.6	LOS E	0.2	0.2	0.91	0.91
P3	Across E approach	53	33.6	LOS D	0.1	0.1	0.69	0.69
P7	Across W approach	53	32.9	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		159	41.4	LOS E			0.76	0.76

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: Sunnyholt Rd / Tattersall Rd (Ex-PM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Tattersall Road
Existing PM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	297	4.6	0.794	15.7	LOS B	23.5	169.5	0.39	0.92	43.0
2	T	1678	3.1	0.794	4.6	LOS A	23.5	169.5	0.29	0.27	51.7
Approach		1975	3.4	0.794	6.2	LOS A	23.5	169.5	0.31	0.37	50.2
North: Sunnyholt Road - N											
8	T	1203	6.8	0.434	1.6	LOS A	3.4	25.2	0.09	0.08	57.0
9	R	45	7.0	0.316	50.0	LOS D	2.7	20.1	0.87	0.80	25.3
Approach		1248	6.8	0.434	3.4	LOS A	3.4	25.2	0.12	0.11	54.5
West: Tattersal Road - W											
10	L	85	9.9	0.751	64.2	LOS E	6.9	51.7	0.88	0.85	21.7
12	R	208	6.1	0.751	66.5	LOS E	11.7	86.5	0.97	0.82	21.2
Approach		294	7.2	0.751	65.9	LOS E	11.7	86.5	0.94	0.83	21.4
All Vehicles		3517	4.9	0.794	10.2	LOS A	23.5	169.5	0.29	0.32	46.3

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P5	Across N approach	53	60.4	LOS F	0.2	0.2	0.93	0.93
P7	Across W approach	53	10.8	LOS B	0.1	0.1	0.39	0.39
All Pedestrians		106	35.6	LOS D			0.66	0.66

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: Tattersall Rd / Vardys Rd (Ex-PM)

14S1107000 Kings Park Metal Recycling Facility
Tattersall Road / Vardys Road
Existing PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Tattersall Rd - S											
1	L	407	3.4	0.975	55.5	LOS D	17.1	122.9	0.99	2.16	24.0
3	R	83	12.7	0.582	48.9	LOS D	2.6	20.0	0.92	1.11	25.7
Approach		491	4.9	0.975	54.4	LOS D	17.1	122.9	0.98	1.98	24.3
East: Vardys Rd - E											
4	L	37	40.0	0.247	10.4	LOS A	2.4	17.7	0.39	1.28	50.5
5	T	856	5.2	0.247	0.6	LOS A	2.4	17.7	0.18	0.00	56.6
Approach		893	6.6	0.247	1.0	NA	2.4	17.7	0.18	0.05	56.3
West: Vardys Rd - W											
11	T	664	5.1	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	132	7.2	0.243	14.5	LOS A	0.9	6.4	0.68	0.90	43.2
Approach		796	5.4	0.243	2.4	NA	0.9	6.4	0.11	0.15	56.4
All Vehicles		2179	5.8	0.975	13.5	NA	17.1	122.9	0.34	0.52	43.3

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

MOVEMENT SUMMARY

Site: Sunnyholt Rd / Vardys Rd (Ex-PM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Vardys Road
Existing PM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	83	12.7	0.783	37.4	LOS C	40.7	294.5	0.82	0.93	31.1
2	T	1527	2.9	0.783	28.8	LOS C	40.9	294.5	0.82	0.74	32.0
3	R	111	5.7	0.394	76.7	LOS F	3.7	27.5	0.99	0.75	19.5
Approach		1721	3.5	0.783	32.3	LOS C	40.9	294.5	0.83	0.75	30.6
East: Vardys Rd - E											
4	L	105	7.0	0.317	49.0	LOS D	5.4	40.2	0.80	0.77	25.6
5	T	507	4.8	0.854	70.2	LOS E	18.6	135.3	1.00	0.97	19.8
6	R	323	3.3	0.890	87.8	LOS F	12.4	89.5	1.00	0.98	17.7
Approach		936	4.5	0.890	73.9	LOS F	18.6	135.3	0.98	0.95	19.5
North: Sunnyholt Road - N											
7	L	213	4.5	0.383	17.6	LOS B	3.4	24.5	0.30	0.72	40.5
8	T	1001	6.5	0.595	25.7	LOS B	21.0	155.0	0.67	0.60	33.9
9	R	239	10.6	0.881	89.3	LOS F	9.2	70.1	1.00	0.97	17.5
Approach		1453	6.9	0.881	35.0	LOS C	21.0	155.0	0.67	0.68	30.0
West: Vardys Rd - W											
10	L	298	8.8	0.597	54.8	LOS D	17.5	131.9	0.92	0.84	24.0
11	T	440	1.9	0.727	62.7	LOS E	14.8	105.2	1.00	0.86	21.3
12	R	138	9.2	0.791	80.7	LOS F	10.0	75.1	1.00	0.89	18.8
Approach		876	5.4	0.791	62.8	LOS E	17.5	131.9	0.97	0.86	21.6
All Vehicles		4985	5.0	0.890	46.2	LOS D	40.9	294.5	0.84	0.79	25.8

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P1	Across S approach	53	64.1	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	33.6	LOS D	0.1	0.1	0.69	0.69
P7	Across W approach	53	32.2	LOS D	0.1	0.1	0.68	0.68
All Pedestrians		159	43.3	LOS E			0.78	0.78

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: Sunnyholt Rd / Tattersall Rd (FUTURE-AM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Tattersall Road
Future AM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	193	12.0	0.433	14.5	LOS A	9.0	68.3	0.27	0.89	43.9
2	T	883	9.7	0.433	4.2	LOS A	9.0	68.3	0.20	0.18	52.6
Approach		1076	10.1	0.433	6.1	LOS A	9.0	68.3	0.21	0.31	50.8
North: Sunnyholt Road - N											
8	T	1798	4.9	0.694	4.4	LOS A	14.1	102.8	0.26	0.24	52.4
9	R	126	15.8	0.809	61.4	LOS E	9.6	76.2	0.86	0.99	22.4
Approach		1924	5.6	0.809	8.1	LOS A	14.1	102.8	0.30	0.29	48.2
West: Tattersal Road - W											
10	L	60	45.6	0.729	63.4	LOS E	5.6	50.0	0.86	0.85	22.2
12	R	224	6.6	0.729	59.3	LOS E	11.4	84.2	0.91	0.82	22.8
Approach		284	14.8	0.729	60.2	LOS E	11.4	84.2	0.90	0.83	22.7
All Vehicles		3284	7.9	0.809	11.9	LOS A	14.1	102.8	0.32	0.34	44.6

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P5	Across N approach	53	53.2	LOS E	0.2	0.2	0.87	0.87
P7	Across W approach	53	9.3	LOS A	0.1	0.1	0.36	0.36
All Pedestrians		106	31.2	LOS D			0.62	0.62

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: Tattersall Rd / Vardys Rd (FUTURE-AM)

14S1107000 Kings Park Metal Recycling Facility
Tattersall Road / Vardys Road
Future AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Tattersall Rd - S											
1	L	154	16.4	0.292	13.9	LOS A	1.3	10.0	0.61	0.87	44.0
3	R	21	50.0	0.273	63.4	LOS E	0.9	9.1	0.91	1.00	22.3
Approach		175	20.5	0.292	19.9	LOS B	1.3	10.0	0.64	0.89	39.4
East: Vardys Rd - E											
4	L	71	31.3	0.188	11.8	LOS A	1.5	11.7	0.52	0.99	48.9
5	T	529	6.8	0.188	1.0	LOS A	1.5	11.7	0.17	0.00	56.4
Approach		600	9.6	0.188	2.3	NA	1.5	11.7	0.21	0.12	55.4
West: Vardys Rd - W											
11	T	1023	6.3	0.273	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	326	7.7	0.405	12.5	LOS A	2.1	15.4	0.55	0.89	45.0
Approach		1349	6.6	0.405	3.0	NA	2.1	15.4	0.13	0.21	55.5
All Vehicles		2124	8.6	0.405	4.2	NA	2.1	15.4	0.20	0.24	53.7

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

MOVEMENT SUMMARY

Site: Sunnyholt Rd / Vardys Rd (FUTURE-AM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Vardys Road
Future AM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	99	13.8	0.510	32.7	LOS C	16.8	129.2	0.64	0.91	32.8
2	T	746	11.1	0.510	23.8	LOS B	16.8	129.2	0.62	0.55	34.8
3	R	86	19.5	0.530	83.4	LOS F	3.1	25.3	1.00	0.75	18.4
Approach		932	12.2	0.530	30.3	LOS C	16.8	129.2	0.66	0.61	31.9
East: Vardys Rd - E											
4	L	138	6.9	0.408	48.2	LOS D	7.1	52.6	0.80	0.78	25.8
5	T	355	6.5	0.474	53.6	LOS D	10.8	79.6	0.93	0.77	23.4
6	R	193	6.0	0.688	79.9	LOS F	6.8	50.1	1.00	0.83	18.9
Approach		685	6.5	0.688	59.9	LOS E	10.8	79.6	0.93	0.79	22.3
North: Sunnyholt Road - N											
7	L	461	2.5	0.920	38.5	LOS C	11.4	81.6	0.91	0.87	29.1
8	T	1662	4.7	0.801	28.5	LOS B	42.5	309.9	0.83	0.75	32.2
9	R	145	20.3	0.896	94.4	LOS F	5.7	47.0	1.00	0.97	16.9
Approach		2268	5.3	0.920	34.7	LOS C	42.5	309.9	0.86	0.79	29.8
West: Vardys Rd - W											
10	L	218	14.5	0.410	49.2	LOS D	11.4	89.9	0.82	0.80	25.6
11	T	645	5.4	0.659	55.5	LOS D	20.3	148.5	0.98	0.83	22.9
12	R	122	15.5	0.930	97.1	LOS F	9.9	78.6	1.00	1.04	16.5
Approach		985	8.7	0.930	59.2	LOS E	20.3	148.5	0.95	0.85	22.3
All Vehicles		4871	7.5	0.930	42.4	LOS C	42.5	309.9	0.85	0.77	27.1

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P1	Across S approach	53	57.6	LOS E	0.2	0.2	0.91	0.91
P3	Across E approach	53	33.6	LOS D	0.1	0.1	0.69	0.69
P7	Across W approach	53	32.9	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		159	41.4	LOS E			0.76	0.76

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: Sunnyholt Rd / Tattersall Rd (FUTURE-PM)

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Tattersall Road
Future PM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	299	4.9	0.795	15.8	LOS B	23.6	170.7	0.39	0.92	42.9
2	T	1678	3.1	0.795	4.6	LOS A	23.6	170.7	0.29	0.27	51.7
Approach		1977	3.4	0.795	6.3	LOS A	23.6	170.7	0.31	0.37	50.2
North: Sunnyholt Road - N											
8	T	1203	6.8	0.434	1.6	LOS A	3.4	25.2	0.09	0.08	57.0
9	R	54	17.6	0.398	53.3	LOS D	3.4	27.7	0.92	0.82	24.5
Approach		1257	7.3	0.434	3.8	LOS A	3.4	27.7	0.13	0.12	53.9
West: Tattersal Road - W											
10	L	108	26.2	0.868	70.6	LOS F	7.7	65.3	0.86	0.90	20.6
12	R	217	8.7	0.868	68.9	LOS E	13.7	103.3	0.99	0.84	20.8
Approach		325	14.6	0.868	69.4	LOS E	13.7	103.3	0.95	0.86	20.7
All Vehicles		3559	5.8	0.868	11.2	LOS A	23.6	170.7	0.30	0.33	45.4

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P5	Across N approach	53	60.4	LOS F	0.2	0.2	0.93	0.93
P7	Across W approach	53	10.8	LOS B	0.1	0.1	0.39	0.39
All Pedestrians		106	35.6	LOS D			0.66	0.66

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: Tattersall Rd / Vardys Rd (FUTURE-PM)

14S1107000 Kings Park Metal Recycling Facility
Tattersall Road / Vardys Road
Future PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Tattersall Rd - S											
1	L	416	4.8	0.999	66.1	LOS E	20.3	148.3	1.00	2.37	21.5
3	R	83	12.7	0.585	49.3	LOS D	2.6	20.2	0.92	1.11	25.6
Approach		499	6.1	0.999	63.3	LOS E	20.3	148.3	0.99	2.16	22.1
East: Vardys Rd - E											
4	L	37	40.0	0.247	10.4	LOS A	2.4	17.8	0.39	1.28	50.5
5	T	856	5.2	0.247	0.6	LOS A	2.4	17.8	0.18	0.00	56.5
Approach		893	6.6	0.247	1.0	NA	2.4	17.8	0.19	0.05	56.3
West: Vardys Rd - W											
11	T	664	5.1	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	134	7.9	0.250	14.7	LOS B	0.9	6.7	0.68	0.90	43.0
Approach		798	5.5	0.250	2.5	NA	0.9	6.7	0.11	0.15	56.3
All Vehicles		2189	6.1	0.999	15.7	NA	20.3	148.3	0.34	0.57	41.5

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

MOVEMENT SUMMARY

14S1107000 Kings Park Metal Recycling Facility
Sunnyholt Road / Vardys Road
Future PM
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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 per veh	Average Speed km/h
South: Sunnyholt Road - S											
1	L	83	12.7	0.800	37.7	LOS C	42.1	307.6	0.84	0.93	31.0
2	T	1551	4.1	0.800	29.2	LOS C	42.3	307.6	0.83	0.76	31.8
3	R	111	5.7	0.394	76.7	LOS F	3.7	27.5	0.99	0.75	19.5
Approach		1744	4.6	0.800	32.6	LOS C	42.3	307.6	0.84	0.77	30.5
East: Vardys Rd - E											
4	L	105	7.0	0.317	49.0	LOS D	5.4	40.2	0.80	0.77	25.6
5	T	507	4.8	0.854	70.2	LOS E	18.6	135.3	1.00	0.97	19.8
6	R	323	3.3	0.890	87.8	LOS F	12.4	89.5	1.00	0.98	17.7
Approach		936	4.5	0.890	73.9	LOS F	18.6	135.3	0.98	0.95	19.5
North: Sunnyholt Road - N											
7	L	213	4.5	0.383	17.6	LOS B	3.4	24.5	0.30	0.72	40.5
8	T	1009	7.1	0.602	25.8	LOS B	21.3	158.1	0.67	0.60	33.8
9	R	239	10.6	0.881	89.3	LOS F	9.2	70.1	1.00	0.97	17.5
Approach		1461	7.3	0.881	35.0	LOS C	21.3	158.1	0.67	0.68	29.9
West: Vardys Rd - W											
10	L	298	8.8	0.597	54.8	LOS D	17.5	131.9	0.92	0.84	24.0
11	T	440	1.9	0.727	62.7	LOS E	14.8	105.2	1.00	0.86	21.3
12	R	138	9.2	0.791	80.7	LOS F	10.0	75.1	1.00	0.89	18.8
Approach		876	5.4	0.791	62.8	LOS E	17.5	131.9	0.97	0.86	21.6
All Vehicles		5017	5.5	0.890	46.3	LOS D	42.3	307.6	0.84	0.79	25.8

Level of Service (LOS) Method: Delay (RTA NSW).
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 used.

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 per ped
P1	Across S approach	53	64.1	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	33.6	LOS D	0.1	0.1	0.69	0.69
P7	Across W approach	53	32.2	LOS D	0.1	0.1	0.68	0.68
All Pedestrians		159	43.3	LOS E			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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