# TRAFFIC IMPACT ASSESSMENT REPORT

# FOR A PROPOSED RESOURCE RECOVERY FACILITY

# AT

# 55 MARTIN ROAD, BADGERYS CREEK

Ref. 17149r

February 2018

Prepared By



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## CONTENTS

1.0	INTRODUCTION						
2.0	THE	E SITE	1				
3.0	THE PROPOSED DEVELOPMENT						
	3.1 3.2 3.3 3.4 3.5 3.6 3.7	Proposed Use Hours of Operation Staffing Site Access and Parking Truck Volumes Truck Routes Light Vehicle Volumes	2 2 3 3 4 4				
4.0	SUF	RROUNDING ROAD NETWORK	4				
	4.1 4.2 4.3 4.4	Lawson Road Martin Road Elizabeth Drive Key Access Intersection	4 5 5 5				
5.0	TR/	AFFIC IMPACT OF DEVELOPMENT	6				
	5.1 5.2 5.3	Existing Traffic Volumes SIDRA Modelling Details SIDRA Results	6 6 7				
6.0	CO	NSTRUCTION TRAFFIC IMPACT	8				
7.0	CO	NCLUSION	8				

Figure 1	Site Location
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- Figure 2 Site Location
- Figure 3 Existing Traffic Volumes
- Figure 4 Additional Truck Traffic Distribution
- Appendix A Design Plans
- Appendix B Traffic Counts
- Appendix C SIDRA Movement Summaries

# 1.0 INTRODUCTION

Transport and Urban Planning Pty Ltd has been engaged to prepare this Traffic Impact Assessment report on behalf of AMJ Demolition and Excavation Pty Ltd, for a proposed new resource recovery facility at 55 Martin Road, Badgerys Creek.

The facility is planned to process up to 95,000 tonnes per annum (tpa) of nonputrescible construction and demolition materials, including soil and green garden waste. The development will be built on a parcel of land which contains one residential dwelling on a cleared but otherwise undeveloped property.

The site is shown on **Figures 1** and **2**.

This report provides an assessment of the site access including its key access intersection, the expected traffic generation of the development and its impact on the surrounding road network, and the proposed internal traffic circulation. The report is arranged as follows:

- Section 2 describes the site and its location;
- Section 3 details the proposed development, and identifies its traffic generation, access, parking and internal circulation;
- Section 4 identifies the surrounding road network and traffic conditions;
- Section 5 calculates the traffic impact of the proposal on the surrounding road network;
- Section 6 assesses the construction traffic impact;
- Section 7 provides conclusions.

This assessment has been prepared in accordance with the provisions of the Infrastructure SEPP, the RMS Guide to Traffic Generating Developments and Liverpool City Council DCP. It addresses the Secretary's Environmental Assessment Requirements (SEARs) for traffic impacts of the development and its construction.

# 2.0 THE SITE

The site is located on 55 Martins Road Badgerys Creek, Lot 4 DP611519. The property is rectangular with frontages to two parallel roads, Martin Road and Lawson Road. Each road frontage is 90.3m wide, and the length on each side is 281.8m. The site has an area of 2.54 hectares.

The site location is 450m south of Elizabeth Drive, west of South Creek. It is 15km west of Liverpool CBD, and is within the Liverpool City LGA.

The existing development on the site consists of one residential house on a cleared but otherwise undeveloped property. Surrounding properties contain a mix of agricultural and material stockpiling and processing activities.





# 3.0 THE PROPOSED DEVELOPMENT

The proposed development is shown on plans attached as **Appendix A** and involves modifying the existing dwelling into a site office with a car park for 11 vehicles plus 2 spaces for the disabled, with a single driveway to Martin Road; plus construction of a new Colorbond shed 20m x 78m with a concrete floor, 5 large covered material storage bays, a large vehicle manoeuvring area, with a weighbridge, wheel wash and new heavy vehicle driveway to Lawson Road.

All heavy vehicle access to and from the site will be via Lawson Road and Elizabeth Drive. Only light vehicles associated with staff and visitors will use Martin Road to access the site.

## 3.1 Proposed Use

The site will be used as a resource recovery facility, processing up to 95,000tpa of construction and demolition materials, including soil and green garden waste. The operation will involve;

- Unloading of materials into the large shed;
- Material handling and sorting;
- Crushing and screening of concrete, bricks, untreated timber and similar construction and demolition materials;
- Shredding of green garden waste;
- Storage of processed materials;
- Sale of processed materials to trade clients or transfer to an off site landscape supply outlet.

Although no retail sales will occur from the site, the site office is expected to cater for business clients and the car park has been designed to accommodate a peak day's operation.

## 3.2 Hours of Operation

The proposed facility is planned to operate:

- 7am 6pm Monday to Friday;
- 7am 5pm Saturday;
- No works Sunday or Public Holidays

## 3.3 Staffing

The peak number of staff on site is planned to be 6, plus up to 3 truck drivers who would operate from the site. The 6 staff will be made up of management, administration and material processing staff.

## 3.4 Site Access and Parking

Driveway access will be provided to both Martin Road and Lawson Road. The Martin Road driveway will be used by light vehicles only and will be 9m wide at the property boundary, leading to a 6m wide internal access road. The driveway will be located on a straight, level section of Martin Road and has excellent sight lines. The driveway design and location meets or exceeds all standard traffic design requirements.

The Martin Road driveway will lead to a car park with 11 spaces plus 2 spaces for the disabled. The car park design and space dimensions fully satisfy the requirements of AS2890 Parts 1 and 6. The total of 13 car spaces is assessed as sufficient for all potential staff and visitor parking demands.

There will be no vehicular connection from the Martin Road driveway further west than the site office, so no heavy vehicles can access the operational section of the site from Martin Road.

The Lawson Road driveway is designed for heavy vehicle use in accordance with Figure 3.1 and Section 3.4 of AS2890 Part 2, for truck access up to and including articulated vehicles. All dimensions, grades and manoeuvring space are compliant with AS2890 Part 2. The driveway will be located on a straight, level section of Lawson Road, and sight distances exceed standard traffic design requirements.

The heavy vehicle driveway leads to a 6.5m wide internal access road, a weighbridge and a wheel wash facility. The access road widens to a large operational manoeuvring area, approximately 120m x 50m, the main processing shed and storage bays. The manoeuvring area will provide generous space for all trucks to turn around onsite, with minimal reversing movements required.

A pedestrian access pathway between the site office and the facility operations area is well located at the north eastern corner of the operations area, which will be well separated from truck manoeuvres.

#### 3.5 Truck Volumes

The site operation will involve large trucks visiting the site regularly throughout each day, some operated by the site operator and some independent. A typical daily profile of truck trips is expected to be:

Incoming Materials

Total	=	312 t/day
6 AV trucks x 32 t/day	=	<u>192 t/day</u>
8 HRV trucks x 15 t/day	=	120 t/day

300 operating days x 312 t/day = 93,600 tpa

Approximately 20% of these 14 trucks will backload, so the typical additional truck trips for outgoing materials will be 11 trucks:

#### **Outgoing Materials**

#### 6 HRV trucks

#### 5 AV trucks

The total truck trips per day will typically be 14 HRV trucks and 12 AV trucks, totalling 26 truck trips per day. This equates to 26 truck movements into the site and 26 truck movements out of the site per day. Over a 10 hour day there will be an average of 2.6 trucks entering and 2.6 trucks leaving the site each hour. Because truck operations are planned to occur regularly throughout each day, the peak hour volumes are expected to be up to three trucks per hour in and out of the site.

#### 3.6 Truck Routes

All trucks to and from the site will use Lawson Road and Elizabeth Drive. The expected east/west split along Elizabeth Drive will be approximately one third west, two thirds east.

Elizabeth Drive is a classified main road well designed to carry heavy vehicles. Lawson Road is an unclassified road but it is a designated B-double route between the site and Elizabeth Drive. Full details of these roads will be provided in Section 4.

#### 3.7 Light Vehicle Volumes

During normal AM and PM road network peak hours, up to 9 staff will drive to or from the site. Staff are expected to arrive and depart at different times due to various hours of office administration and operational duties.

A peak hourly volume of up to 5 cars is expected to travel to the site along Martin Road in one AM peak hour, and also from the site in one PM peak hour. This equates to a very low average of one additional car trip every 12 minutes, in one direction only, at peak.

## 4.0 SURROUNDING ROAD NETWORK

The site will have light vehicle access to Martin Road and heavy vehicle access to Lawson Road, both of which are local roads under the control of Liverpool City Council. These roads lead to Elizabeth Drive, a classified main road, which is designated to carry heavy vehicles. It provides a link to the arterial road network across western Sydney.

Due to the very low volume of light vehicular traffic that the proposed development will generate on Martin Road, the key access intersection to the site will be Lawson Road at Elizabeth Drive.

#### 4.1 Lawson Road

Lawson Road is a local road running north/south from Elizabeth Drive, 450m north of the site, to a termination point 1.4km south of the site. It provides local access to adjacent agricultural properties.

Near the site, Lawson Road has an approximately 6.5m wide bitumen sealed surface in good condition, with unsealed narrow shoulders and grass verges. The road is straight and level and has no linemarking or street lighting. The road has no intersections between the site and Elizabeth Drive, and has local driveways approximately every 50-100m.

The road carries low vehicle volumes and traffic conditions are very good.

#### 4.2 Martin Road

Martin Road is a local road running north/south from Elizabeth Drive, 450m north of the site, to a termination point 1.6km south of the site. It provides local access to agricultural properties and also to several large commercial businesses (eg. Australian Native Landscapes).

Near the site, Martin Road has an approximate width of 7.5m of bitumen with unsealed shoulders and grass verges. The road is straight and level and has no linemarking or street lighting.

Martin Road carries low to moderate traffic volumes and traffic conditions are good, noting that volumes of heavy vehicles currently using Martin Road are significantly higher than volumes using Lawson Road.

#### 4.3 Elizabeth Drive

Elizabeth Drive is a classified main road under the control of RMS. It is designated as an arterial road and is designed to accommodate high volumes of vehicles, including trucks. It runs east/west from the M7 Motorway 8kms east of the site, to The Northern Road 6kms west of the site.

At its intersection with Lawson Road, Elizabeth Drive consists of a 15 to 17m wide bitumen carriageway, with one through traffic lane in each direction, plus a 100m long right turn lane and a 150m long left turn lane for traffic entering Lawson Road. Left turning vehicles out of Lawson Road also have a 50m acceleration lane to merge with Elizabeth Drive traffic.

At its intersection with Martin Road, Elizabeth Drive has a 17 to 20m carriageway width, with a similar lane configuration as its intersection with Lawson Road.

Elizabeth Drive has an 80km/h speed limit, is straight and level with a high standard of delineation. Sight distances at both intersections with Martin Road and Lawson Road are very good and exceed the RMS guideline requirements.

#### 4.4 Key Access Intersection

The key access intersection for the proposed development is Lawson Road at Elizabeth Drive. It is a T-junction with Lawson Road terminating at Elizabeth Drive, and traffic on Lawson Road must give way.

In addition to the details provided in Section 4.3, it should be noted that edgelines on the Lawson Road approach to Elizabeth Drive restrict its width to approximately 5.6m. While the width of Lawson Road splays widely on approach to Elizabeth Drive so that trucks can turn safely, it is recommended that widening of Lawson Road for a short distance south of the intersection be considered due to the expected increase in two way truck volumes.

The capacity of the intersection will be analysed in Section 5, however site observations show current traffic conditions at the intersection are good, with low delays, no congestion and safe operation.

# 5.0 TRAFFIC IMPACT OF DEVELOPMENT

The traffic impact of the forecast additional light and heavy vehicle volumes identified in Sections 3.5 and 3.7 will be assessed in this section.

Firstly, the additional light vehicle traffic is expected to be very low, up to five car trips per peak hour, in one direction only. At an average movement of up to one car every 12 minutes, the traffic impact on Martin Road and Elizabeth Drive will be very low and there will be no measurable change to traffic conditions on the surrounding road network.

The impact of trucks to and from the site will be more significant, and SIDRA intersection modelling will be carried out at the key access intersection to calculate this impact. SIDRA will be used to model existing operation of Lawson Road at Elizabeth Drive, and the additional development generated truck traffic will then be added to the model to calculate future operation. Comparison of the existing and future intersection operation results will identify the traffic impact of the development.

## 5.1 Existing Traffic Volumes

A traffic count was carried out at the intersection of Lawson Road and Elizabeth Drive on Thursday 31 August, 2017. The AM and PM peak hour volumes were identified and are provided in **Figure 3**. The full count data is provided in **Appendix B**.

The count shows that the peak hour two way volume on Lawson Road is currently up to 33 vehicles. This is a very low volume and verifies that Lawson Road has capacity to easily accommodate the expected additional three truck movements in each direction.

### 5.2 SIDRA Modelling Details

SIDRA was initially developed by the Australian Road and Research Board during the 1970's. It has continued to be developed and used for traffic analysis throughout Australia and internationally. SIDRA is endorsed in the RMS Guide to Traffic Generating Developments (Section 4.2.2, page 4-3) to determine measures of effectiveness of intersection operation.

SIDRA modelling calculates the intersection's operation and produces outputs to assess intersection capacity and efficiency. The key SIDRA outputs are Degree of Saturation, Average Delay and Level of Service (LoS). Degree of Saturation (DoS) is the ratio of demand flow to capacity, or volume/capacity (v/c). For intersections controlled by signals, satisfactory operation is indicated by a DoS of up to about 0.9. Full saturation is 1.

Table 3.1 shows for each Level of Service, the range of Average Delay to vehicles using the intersection and a description of operational efficiency. Levels of Service range from "A" (Good Operation) to "E" (at capacity).







## TABLE 3.1

#### LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	Average Delay (seconds/vehicle)	Stop/Give Way Signs			
А	<14	Good Operation			
В	15 to 28	Acceptable delays and spare capacity			
С	29 to 42	Satisfactory, but accident study required			
D	43 to 56	Near capacity and accident study required			
E	57 to 70	At capacity, requites other control mode			

Source: Table 4.2 RTA Guide to Traffic Generating Developments October 2002

Note that operation of unsignalised intersections is assessed by only reviewing the delays on the minor approach and the right turn into the minor approach, because delays for through movements on the major road are negligible.

## 5.3 SIDRA Results

### TABLE 3.2

#### LAWSON ROAD AT ELIZABETH DRIVE EXISTING OPERATION

		AM Peak		PM Peak			
Movement	DoS	Avg Delay (sec)	LoS	DoS	Avg Delay (sec)	LoS	
Right turn into Lawson Road	0.002	8.4	А	0.007	12.8	А	
Lawson Road Exit	0.097	20.7	В	0.053	19.5	В	

The above results show very low levels of saturation and low delays. The right turn into Lawson Road operates at Level of Service A (good operation) at all times. The Lawson Road approach operates at Level of Service B (acceptable with spare capacity).

## TABLE 3.3

#### LAWSON ROAD AT ELIZABETH DRIVE FUTURE OPERATION WITH DEVELOPMENT

		AM Peak	K	PM Peak			
Movement	DoS	Avg Delay (sec)	LoS	DoS	Avg Delay (sec)	LoS	
Right turn into Lawson Road	0.004	9.3	А	0.010	14.2	А	
Lawson Road Exit	0.117	21.6	В	0.067	21.0	В	

The above results show that during future operation, the degree of saturation remains at very low levels and there is only an increase of 0.9 second to average delay in the AM peak and up to 1.5 seconds in the PM peak. This indicates that the intersection has a large amount of spare capacity and will experience low traffic impact from the proposed development. The Level of Service will remain unchanged. The traffic impact of the development is therefore assessed as low and acceptable.

# 6.0 CONSTRUCTION TRAFFIC IMPACT

The construction of the proposed development will involve delivery to the site of construction plant and equipment that will remain on site for the duration of construction. Regular daily vehicular activity will comprise of light vehicles owned by construction workers to and from the site and material deliveries by trucks up to HRV size.

The typical daily truck volumes are expected to be less than 10, and the number of onsite workers will be 5 to 10.

This means that the daily heavy and light vehicle construction traffic will not exceed the volumes of vehicles expected during ongoing operation of the development. Because this report has identified that the traffic impact of the development when complete will be low and acceptable, the same assessment is made for the construction phase of the development.

# 7.0 CONCLUSION

Transport and Urban Planning Pty Ltd has prepared this Traffic Impact Assessment for a proposed resource recovery facility at 55 Martin Road, Badgerys Creek. The facility is planned to process up to 95,000tpa of construction and demolition materials, including green garden waste.

The traffic generation of the proposal has been identified. Light vehicle movements only will occur on Martin Road. Up to five light vehicle movements in each peak hour, in one direction only, will be generated by staff, which equates to one movement every 12 minutes. Martin Road and Elizabeth Drive have adequate capacity to accommodate this low volume of light vehicles.

All heavy vehicle traffic will access the site via Lawson Road and Elizabeth Drive. Up to three truck movements per hour in each direction will occur on Lawson Road. SIDRA analysis of the key access intersection of Lawson Road at Elizabeth Drive shows that the intersection currently operates at Level of Service B (acceptable with spare capacity). The modelling shows that with the additional truck volumes added to the intersection, its operation will continue to be Level of Service B, with only minor changes to average delays. The traffic impact of the proposed development is therefore assessed as low and acceptable.

The site access driveways are well designed and are fully in accordance with AS2890 Parts 1 and 2, for light and heavy vehicles. Sight distances at the driveways exceed the minimum requirements contained in Austroad and RMS guidelines.

The internal traffic circulation provides generous room for trucks to manoeuvre on site, and all vehicles will be able to enter and leave the site in a forward direction. The car park is designed fully in accordance with AS2890 Parts 1 and 6, and provides parking for 11 cars plus two spaces for the disabled. This amount of parking is assessed as sufficient to meet peak demand.

The traffic impact during construction of the development has been identified to be of a lower level than when the development is completed and is operating. Construction traffic impact is therefore also assessed as low and acceptable. In summary, the proposed development will be a low traffic generator and will have a low traffic impact on surrounding roads. It will have good access from both Lawson Road and Martin Road, and good access to the arterial classified road network at Elizabeth Drive. All access and internal traffic arrangements are designed fully in accordance with relevant Australian Standards. The development is assessed as acceptable in all aspects of its traffic design.

# Appendix A

# **Design Plans**





# Appendix B

# **Traffic Counts**

# Appendix B

# **Traffic Counts**



# R.O.A.R. DATA

#### Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Lights	WEST		SOUTH		EAST		
	Elizabeth Dr		izabeth Dr Lawson Rd		Elizabeth Dr		
Time Per	Ţ	<u>R</u>	L	R	LI	<u>T</u>	тот
0700 - 0715	184	1	0	2	2	52	241
0715 - 0730	211	2	1	1	2	72	289
0730 - 0745	225	0	1	2	0	73	301
0745 - 0800	229	0	3	2	0	86	320
0800 - 0815	178	0	0	4	3	64	249
0815 - 0830	147	0	1	3	3	57	211
0830 - 0845	122	1	1	0	2	73	199
0845 - 0900	100	0	0	3	2	83	188
Per End	1396	4	7	17	14	560	1998

	Day/									
<b>Heavies</b>	WEST		SO	UTH	EA	ST				
_	Elizab	eth Dr	Laws	on Rd	Elizab	eth Dr				
Time Per	Ţ	<u>R</u>	L	R	L	Ţ	тот			
0700 - 0715	14	0	0	3	1	11	29			
0715 - 0730	14	0	0	1	0	7	22			
0730 - 0745	10	0	0	2	1	15	28			
0745 - 0800	15	0	1	1	0	15	32			
0800 - 0815	18	0	0	1	1	16	36			
0815 - 0830	25	0	0	1	2	16	44			
0830 - 0845	17	0	0	1	1	22	41			
0845 - 0900	24	0	0	1	0	13	38			
Per End	137	0	1	11	6	115	270			

Combined	WE	ST	SOUTH		EAST				
	Elizab	eth Dr	Laws	on Rd	Eliza	beth			
Time Per	Ţ	<u>R</u>	L	<u>R</u>	L	<u>T</u>	TOT		
0700 - 0715	198	1	0	5	3	63	270		
0715 - 0730	225	2	1	2	2	79	311		
0730 - 0745	235	0	1	4	1	88	329		
0745 - 0800	244	0	4	3	0	101	352		
0800 - 0815	196	0	0	5	4	80	285		
0815 - 0830	172	0	1	4	5	73	255		
0830 - 0845	139	1	1	1	3	95	240		
0845 - 0900	124	0	0	4	2	96	226		
Per End	1533	4	8	28	20	675	2268		

<u>Lights</u>	WEST		SO	UTH	EA		
	Elizab	eth Dr	Laws	on Rd	Elizab		
Peak Per	Т	<u>R</u>	L	<u>R</u>	니	Ξ	тот
0700 - 0800	849	3	5	7	4	283	1151
0715 - 0815	843	2	5	9	5	295	1159
0730 - 0830	779	0	5	11	6	280	1081
0745 - 0845	676	1	5	9	8	280	979
0800 - 0900	547	1	2	10	10	277	847
PFAK HR	843	2	5	9	5	295	1159

<b>Heavies</b>	WEST		SOUTH		EAST		
	Elizab	eth Dr	Lawson Rd		Elizab		
Peak Per	Ī	<u>R</u>	L	R	L	Ţ	тот
0700 - 0800	53	0	1	7	2	48	111
0715 - 0815	57	0	1	5	2	53	118
0730 - 0830	68	0	1	5	4	62	140
0745 - 0845	75	0	1	4	4	69	153
0800 - 0900	84	0	0	4	4	67	159
PEAK HR	57	0	1	5	2	53	118

<b>Combined</b>		WE	ST	SO	UTH	EA	ST	
		Elizab	eth Dr	Laws	on Rd	Eliza	beth	
	Peak Per	Ţ	<u>R</u>	L	<u>R</u>	L	Ţ	TOT
	0700 - 0800	902	3	6	14	6	331	1262
	0715 - 0815	900	2	6	14	7	348	1277
	0730 - 0830	847	0	6	16	10	342	1221
	0745 - 0845	751	1	6	13	12	349	1132
	0800 - 0900	631	1	2	14	14	344	1006
				_				
	PEAK HR	900	2	6	14	7	348	1277

14

Peds WEST SOUTH EAST Time Per Elizabeth Dr Lawson Rd Elizabeth Dr тот 0700 - 0715 0 0715 - 0730 NOT 0 REQUIRED 0730 - 0745 0 0745 - 0800 0 0800 - 0815 0 0815 - 0830 0 0830 - 0845 0 0845 - 0900 0 Per End 0 0 0 0

	WEST	SOUTH	EAST	
Peak Per	Elizabeth Dr	Lawson Rd	Elizabeth Dr	тот
0700 - 0800	0	0	0	0
0715 - 0815	0	0	0	0
0730 - 0830	0	0	0	0
0745 - 0845	0	0	0	0
0800 - 0900	0	0	0	0
PEAK HR	0	0	0	0



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348 1277

#### Client : TUPA

Job No/Name: 6565 BADGERYS CREEK Lawson Rd

- -: Thursday 31st August 2017

# R.O.A.R. DATA

#### Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Lights	WEST		SO	UTH	EA	ST	
	Elizab	eth Dr	Laws	on Rd	Elizab	eth Dr	
Time Per	Ţ	<u>R</u>	L	<u>R</u>	L	<u>T</u>	тот
1530 - 1545	99	0	3	1	4	168	275
1545 - 1600	82	1	0	2	3	165	253
1600 - 1615	82	0	0	1	3	162	248
1615 - 1630	89	0	1	5	4	183	282
1630 - 1645	82	1	0	1	3	180	267
1645 - 1700	87	0	1	0	1	192	281
1700 - 1715	75	2	0	4	0	194	275
1715 - 1730	64	1	0	1	1	197	264
Per End	660	5	5	15	19	1441	2145

						Day	Date		
<b>Heavies</b>	WE	ST	SO	UTH	EA	ST			
	Elizab	eth Dr	h Dr Lawson Rd			Elizabeth Dr			
Time Per	Ī	<u>T R</u>		R	L	Ī	тот		
1530 - 1545	11	0	0	1	0	8	20		
1545 - 1600	11	0	0	0	1	17	29		
1600 - 1615	10	0	0	0	2	21	33		
1615 - 1630	10	0	0	1	0	18	29		
1630 - 1645	4	0	0	0	0	15	19		
1645 - 1700	7	0	0	0	0	14	21		
1700 - 1715	4	0	0	0	0	6	10		
1715 - 1730	13	0	0	0	0	9	22		
Per End	70	0	0	2	3	108	183		

Thursuay .		iyusi z	017				_
<u>Combined</u>	WE	ST	SO	UTH	EA	ST	
	Elizab	eth Dr	Laws	on Rd	Eliza	beth	
Time Per	Ţ	<u>R</u>	Ŀ	<u>R</u>	L	<u>T</u>	TOT
1530 - 1545	110	0	3	2	4	176	295
1545 - 1600	93	1	0	2	4	182	282
1600 - 1615	92	0	0	1	5	183	281
1615 - 1630	99	0	1	6	4	201	311
1630 - 1645	86	1	0	1	3	195	286
1645 - 1700	94	0	1	0	1	206	302
1700 - 1715	79	2	0	4	0	200	285
1715 - 1730	15 - 1730 77 1		0	1	1	206	286
Per End	730	5	5	17	22	1549	2328

Lights	WE	ST	SO	JTH	EA	ST	
	Elizab	eth Dr	Laws	on Rd	Elizab	eth Dr	
Peak Per	T	<u>R</u>	L	R	L	Ţ	TOT
1530 - 1630	352	1	4	9	14	678	1058
1545 - 1645	335	2	1	9	13	690	1050
1600 - 1700	340	1	2	7	11	717	1078
1615 - 1715	333	3	2	10	8	749	1105
1630 - 1730	308	4	1	6	5	763	1087
PEAK HR	333	3	2	10	8	749	1105

<u>Heavies</u>	WE	ST	SO	UTH	EA	ST	
	Elizab	eth Dr	Laws	on Rd	Elizab	eth Dr	
Peak Per	Ī	<u>R</u>	L	<u>R</u>	L	Ţ	тот
1530 - 1630	42	0	0	2	3	64	111
1545 - 1645	35	0	0	1	3	71	110
1600 - 1700	31	0	0	1	2	68	102
1615 - 1715	25	0	0	1	0	53	79
1630 - 1730	28	0	0	0	0	44	72
PEAK HR	25	0	0	1	0	53	79

9	<u>Combined</u>	WEST		SO	UTH	EA	ST		
		Elizab	Elizabeth Dr La		Lawson Rd		Elizabeth		
	Peak Per	Ī	<u>R</u>	L	<u>R</u>	L	I	TOT	
	1530 - 1630	394	1	4	11	17	742	1169	
	1545 - 1645	370	2	1	10	16	761	1160	
	1600 - 1700	371	1	2	8	13	785	1180	
	1615 - 1715	358	3	2	11	8	802	1184	
	1630 - 1730	336	4	1	6	5	807	1159	
	PEAK HR	358	3	2	11	8	802	1184	

	EAST	SOUTH	WEST	Peds
тот	Elizabeth Dr	Lawson Rd	Elizabeth Dr	Time Per
0				1530 - 1545
0		NOT		1545 - 1600
0		REQUIRED		1600 - 1615
0				1615 - 1630
0				1630 - 1645
0				1645 - 1700
0				1700 - 1715
0				1715 - 1730
0	0	0	0	Per End

	WEST	SOUTH	EAST	
Peak Per	Elizabeth Dr	Lawson Rd	Elizabeth Dr	тот
1530 - 1630	0	0	0	0
1545 - 1645	0	0	0	0
1600 - 1700	0	0	0	0
1615 - 1715	0	0	0	0
1630 - 1730	0	0	0	0
PEAK HR	0	0	0	0



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#### Client : TUPA

Job No/Name : 6565 BADGERYS CREEK Lawson Rd

Day/Date : Thursday 31st August 2017

# Appendix C

# **SIDRA Movement Summaries**

# ✓ Site: 101 [Lawson Rd at Elizabeth Dr, Badgerys Creek. AM Peak]

EXISTING OPERATION Giveway / Yield (Two-Way)

Move	Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South:	Lawson	Rd										
1	L2	6	16.7	0.005	5.7	LOS A	0.0	0.0	0.00	0.57	54.4	
3	R2	15	35.7	0.097	27.1	LOS B	0.3	2.5	0.86	0.94	38.7	
Approa	ich	21	30.0	0.097	20.7	LOS B	0.3	2.5	0.60	0.83	42.4	
East: E	lizabeth	Dr (east)										
4	L2	7	28.6	0.005	7.5	LOS A	0.0	0.0	0.00	0.63	56.8	
5	T1	366	15.2	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
Approa	ach	374	15.5	0.210	0.2	NA	0.0	0.0	0.00	0.01	79.3	
West: I	Elizabeth	n Dr (west)										
11	T1	947	6.3	0.498	0.1	LOS A	0.0	0.0	0.00	0.00	79.7	
12	R2	2	0.0	0.002	8.4	LOS A	0.0	0.1	0.38	0.59	57.4	
Approa	ach	949	6.3	0.498	0.1	NA	0.0	0.1	0.00	0.00	79.6	
All Veh	icles	1344	9.2	0.498	0.4	NA	0.3	2.5	0.01	0.02	78.5	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# $\overline{ abla}$ Site: 101 [Lawson Rd at Elizabeth Dr, Badgerys Creek. PM Peak]

EXISTING OPERATION Giveway / Yield (Two-Way)

Move	Movement Performance - Vehicles											
Mov ID	OD Mov	Demand F Total veh/h	lows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South:	Lawson	Rd										
1	L2	2	0.0	0.002	5.5	LOS A	0.0	0.0	0.00	0.58	58.7	
3	R2	12	9.1	0.053	19.5	LOS B	0.2	1.1	0.80	0.92	46.2	
Approa	ich	14	7.7	0.053	17.4	LOS B	0.2	1.1	0.68	0.87	47.8	
East: E	lizabeth	Dr (east)										
4	L2	8	0.0	0.005	6.9	LOS A	0.0	0.0	0.00	0.63	65.4	
5	T1	844	6.6	0.459	0.1	LOS A	0.0	0.0	0.00	0.00	79.7	
Approa	ich	853	6.5	0.459	0.1	NA	0.0	0.0	0.00	0.01	79.6	
West: I	Elizabeth	Dr (west)										
11	T1	377	7.0	0.199	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
12	R2	3	0.0	0.007	12.8	LOS A	0.0	0.1	0.67	0.74	53.7	
Approa	ich	380	6.9	0.199	0.1	NA	0.0	0.1	0.01	0.01	79.6	
All Veh	icles	1246	6.7	0.459	0.3	NA	0.2	1.1	0.01	0.02	79.0	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# $\overline{ abla}$ Site: 101 [Lawson Rd at Elizabeth Dr, Badgerys Creek. AM Peak]

FUTURE OPERATION Giveway / Yield (Two-Way)

Mover	Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South:	Lawson Re	d										
1	L2	7	28.6	0.006	5.9	LOS A	0.0	0.0	0.00	0.57	51.7	
3	R2	17	43.8	0.117	28.4	LOS B	0.3	3.1	0.87	0.95	37.2	
Approa	ich	24	39.1	0.117	21.6	LOS B	0.3	3.1	0.61	0.83	40.7	
East: E	lizabeth D	r (east)										
4	L2	9	44.4	0.007	7.8	LOS A	0.0	0.0	0.00	0.63	53.0	
5	T1	366	15.2	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	79.9	
Approa	ich	376	16.0	0.210	0.2	NA	0.0	0.0	0.00	0.02	78.9	
West: E	Elizabeth D	)r (west)										
11	T1	947	6.3	0.498	0.1	LOS A	0.0	0.0	0.00	0.00	79.7	
12	R2	3	33.3	0.004	9.3	LOS A	0.0	0.1	0.40	0.61	55.6	
Approa	ich	951	6.4	0.498	0.1	NA	0.0	0.1	0.00	0.00	79.6	
All Veh	icles	1351	9.7	0.498	0.5	NA	0.3	3.1	0.01	0.02	78.1	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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# $\overline{V}$ Site: 101 [Lawson Rd at Elizabeth Dr, Badgerys Creek. PM Peak]

FUTURE OPERATION Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lawson Rd											
1	L2	3	33.3	0.003	5.9	LOS A	0.0	0.0	0.00	0.57	50.7
3	R2	14	23.1	0.067	21.0	LOS B	0.2	1.6	0.82	0.92	43.2
Approach		17	25.0	0.067	18.2	LOS B	0.2	1.6	0.66	0.86	44.4
East: Elizabeth Dr (east)											
4	L2	11	20.0	0.007	7.3	LOS A	0.0	0.0	0.00	0.63	59.2
5	T1	844	6.6	0.459	0.1	LOS A	0.0	0.0	0.00	0.00	79.7
Approach		855	6.8	0.459	0.2	NA	0.0	0.0	0.00	0.01	79.4
West: Elizabeth Dr (west)											
11	T1	377	7.0	0.199	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	4	25.0	0.010	14.2	LOS A	0.0	0.3	0.69	0.78	52.0
Approa	ich	381	7.2	0.199	0.2	NA	0.0	0.3	0.01	0.01	79.5
All Veh	icles	1253	7.1	0.459	0.4	NA	0.2	1.6	0.01	0.02	78.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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