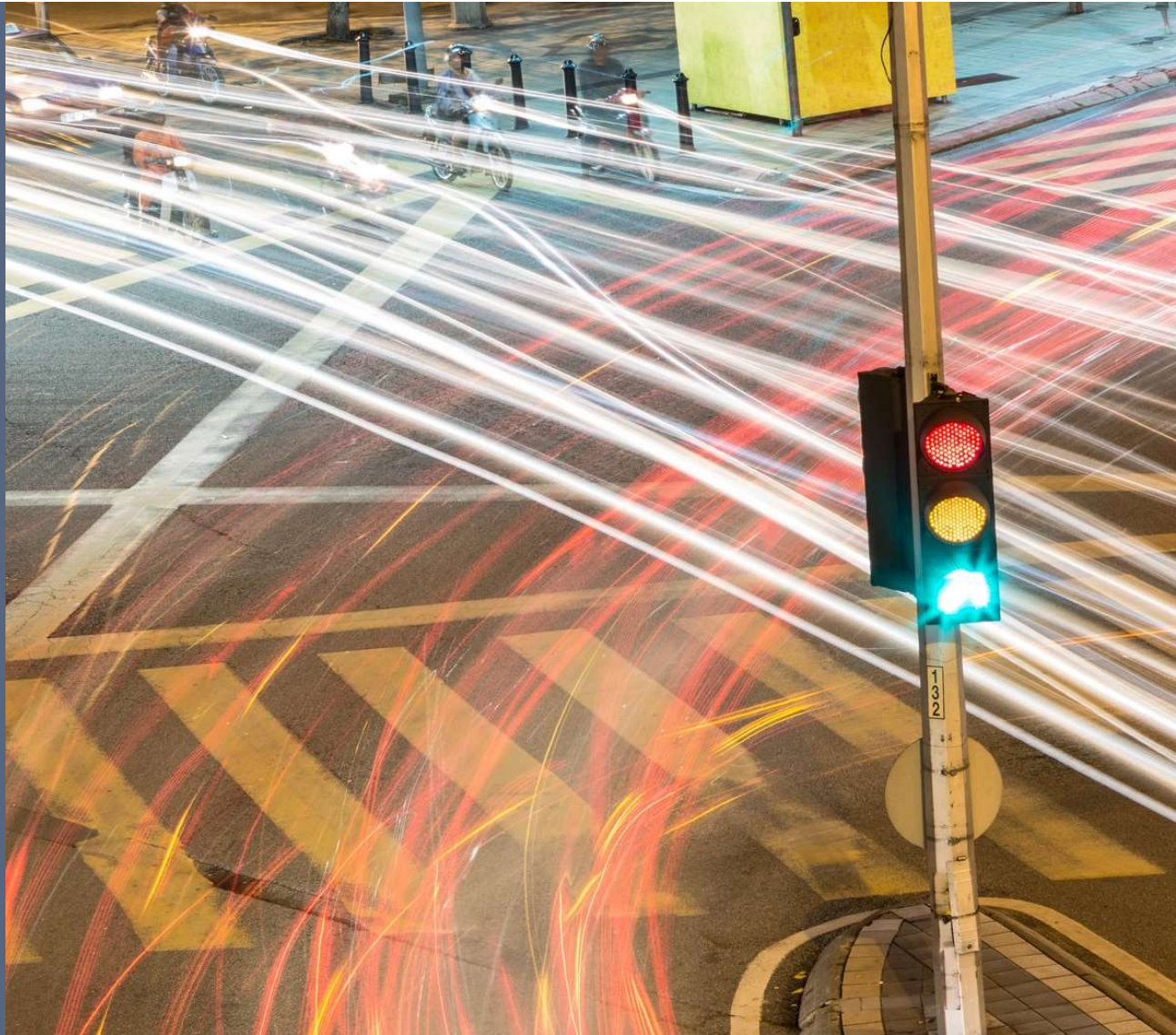


# GTASIDRA

A process integrator with the new SIDRA Version 8 API



01  
WHY

02  
HOW

03  
WHAT

04  
OUTCOMES

GTASIDRA

# WHY

## WHY

GTA undertakes analysis of a large number of intersections using SIDRA every week across all our offices.

An integrated and standardised workflow allows GTA to:

- Increase working performances
- Minimise the risk of errors in data input and SIDRA model development
- Performs automatic consistency checks along the pipeline
- Increase the quality of outputs and simplifies the generation of results for reports

GTASIDRA

# HOW

## HOW

GTASidra is one part of the GTAnalytics platform which has been designed to assist in the evaluation of intersection performance and optimisation

GTA has expanded on the SIDRA Volumes API to do the following:

1. Link to GTAnalytics to automatically obtain integrated traffic volume and travel time information
2. Introduced new functionality to allow processing of multiple site at the one time
3. Developed the processing of networks through GTASidra
4. Created a reporting dashboard ready to be integrated with the standard GTA project reports

GTASIDRA

# WHAT

## WHAT

## Control sheet

Excel spreadsheet interface for GTASidra CONTROL.

**GTAC consultants**

**GTASidra CONTROL**

*Ensure that macros are enabled in this Excel file.*

**SIDRA project selector**

Open SIDRA INTERSECTION Project File | Save SIDRA INTERSECTION Project File

**Sidra Project used**

\\gta.com.au\projectfiles\ProjectFiles\Syd\N15900-15999\N159123 410 Concord Road, Rhodes\Modelling\Sidra\2018\_Existing\181116-N159123 Rh

**Single Site optimisations**

Site selector: 3935 Base AM

Generate selected site inputs | Load volumes and generate selected site res | Generate selected site only output

Generate all sites inputs | Load volumes and generate all sites results | Generate all sites only outputs

**Network optimisation**

Network selector: Base AM

Generate Network inputs | Load volumes and Generate Network results | Generate only Network results

**Reset GTASidra**

Clear all | Clear output sheets

**Outputs**

- ☒ Generate Movement Summary (MO)
- ☒ Generate Volume Summary (VO)
- ☐ Generate Lane Summary (LO)
- ☐ Generate Intersection Summary (IO)
- ☐ Generate Pedestrian Summary (PO)

## CONTROL SHEET – 1) OPEN SIDRA PROJECT AND SELECT THE ANALYSIS OUTPUTS

1) Select the Sidra V8 file to use

GTASidra CONTROL

Ensure that macros are enabled in this Excel file.

SIDRA project selector

Open SIDRA INTERSECTION Project File

Save SIDRA INTERSECTION Project File

Sidra Project used

1) Select the Output to produce

Outputs

☒ Generate Movement Summary (MO)

☒ Generate Volume Summary (VO)

☐ Generate Lane Summary (LO)

☐ Generate Intersection Summary (IO)

☐ Generate Pedestrian Summary (PO)

## CONTROL SHEET – 2) GENERATE THE VOLUMES INPUT SHEETS

Site selector contain the list of all the SIDRA project sites. It is used for selecting a specific site to analyse

Input volumes sheet generation – selected site or all sites

*Sidra Project used*  
C:\Users\Luca.Rosati\Documents\sidra\_integration\181119-N159123 Rhodes Existing.sip8

Single Site optimisations

Site selector

3935 Base AM

Generate selected site inputs

Generate all sites inputs

Generate Intersection Summary (IO)

Generate Pedestrian Summary (PO)

Load volumes and generate selected site res

Generate selected site only output

Load volumes and generate all sites results

Generate all sites only outputs

Network optimisation

Network selector

Base AM

Generate Network inputs

Load volumes and Generate Network results

Generate only Network results

Network selector contain the list of all the SIDRA networks sites. It is used for selecting a specific network to analyse

Input volumes sheet generation – selected Network

## 3) VOLUME INPUT SHEETS - GTAVOLS INPUT 1/3

Heavy vehicle composition (only for GTAVols data)

Area where paste GTAVols detector input data for the signal (15 mins statistics for each detectors)

3935 Base AM  
Heavy vehicle composition  
Local Street

☐ Use GTAVols volume

Fix hour calculation  
☐ Fix target hour  
Starting time (one hour from this time)  
00:00

OUTPUT  
Peak hour considered  
Total Demand

Insert GTAVols data in 15 mins interval for the time period you want to analyse  
(For instance: AM peak from 6 to 10 oclock)  
GTASidra will find the peak hour into the interval and will use its volume for the optimization

Select to use GTAVols input data instead of manual input data

Select volumes from a fixed target hour or leave to GTASidra to find the peak hour in the GTAVols period

GTAVols detectors to Signal manoeuvre (Light rail if present)								
		Destination (TO) Leg						
		S	SE	E	NE	N	NW	W
Origin (FROM) Leg	S							
	SE							
	E							
	NE							
	N							
	NW							
	W							
	SW							

## 3) VOLUME INPUT SHEETS - GTAVOLS INPUT 2/3

uid: Ascer	Detector	Time	Average 15 mins volume	OUTPUT
				Peak hour considered
				Total Demand

Insert GTAVols data in 15 mins interval for the time period you want to analyse  
(For instance: AM peak from 6 to 10 oclock)  
GTASidra will find the peak hour into the interval and will use its volume for the optimization

**GTAVols detectors to signal movements matching for vehicles**

Local Street

☐ Use GTAVols volume

**Instruction for filling the GTAVols detectors to Signal manoeuvre**  
For each manoeuvre (for instance S/N) fill with one or more, delimited by comma, detector numbers followed, if needed, by a percentage of detector volume between brackets.  
For instance:

- 1 - means that detector 1 volume is set to the manoeuvre;
- 1,2,3 - means that the sum of detector 1,2 and 3 volumes are set to the manoeuvre;
- 2(0.5) - means that the 50% of the detector 2 volume is set for the manoeuvre;
- 1,2(0.7),3(0.3),4 - mean that the sum of 100% of detector 1 volume, 70% of detector 2 volume, 30% of detector 3 volume and 100% of detector 4 volume is set for the manoeuvre.

**GTAVols detectors to signal movements matching for light rail and trams**

GTAVols detectors to Signal manoeuvre (Private vehicles)									
		Destination (TO) Leg							
		S	SE	E	NE	N	NW	W	SW
Origin (FROM) Leg	S								
	SE								
	E								
	NE								
	N								
	NW								
	W								
	SW								

GTAVols detectors to Signal manoeuvre (Light rail if present)									
		Destination (TO) Leg							
		S	SE	E	NE	N	NW	W	SW
Origin (FROM) Leg	S								
	SE								
	E								
	NE								
	N								
	NW								
	W								
	SW								

## 3) VOLUME INPUT SHEETS - GTAVOLS INPUT 3/3 – EXAMPLE OF GTAVOLS INPUT DATA

uid: Asce Detector	Time	Average 15 mins volume	OUTPUT	No errors found	Insert GTAVols data in 15 mins interval for the time period you want to analyse (For instance: AM peak from 6 to 10 o'clock) GTASidra will find the peak hour into the interval and will use its volume for the optimization	Instruction for filling the GTAVols detectors to Signal manoeuvre For each manoeuvre (for instance S/N) fill with one or more, delimited by comma, detector numbers followed, if needed, by a percentage of detector volume between brackets. For instance: <ul style="list-style-type: none"> <li>1 - means that detector 1 volume is set to the manoeuvre;</li> <li>1,2,3 - means that the sum of detector 1,2 and 3 volumes are set to the manoeuvre;</li> <li>2(0.5) - means that the 50% of the detector 2 volume is set for the manoeuvre;</li> <li>1,2(0.7),3(0.3),4 - mean that the sum of 100% of detector 1 volume, 70% of detector 2 volume, 30% of detector 3 volume and 100% of detector 4 volume is set for the manoeuvre.</li> </ul>
4561	1	00:00	12			
4561	2	00:00	31			
4561	3	00:00	52			
4561	4	00:00	29			
4561	5	00:00	39			
4561	6	00:00	0			
4561	7	00:00	0			
4561	8	00:00	18			
4561	9	00:00	26			
4561	10	00:00	43			
4561	11	00:00	46			
4561	12	00:00	66			
4561	13	00:00	29			
4561	14	00:00	68			
4561	15	00:00	0			
4561	16	00:00	1			
4561	17	00:00	0			
4561	18	00:00	2			
4561	19	00:00	0			
4561	20	00:00	0			
4561	21	00:00	0			
4561	22	00:00	0			
4561	23	00:00	0			
4561	24	00:00	0			
4561	1	00:15	5			
4561	2	00:15	25			
4561	3	00:15	39			
4561	4	00:15	30			
4561	5	00:15	22			
4561	6	00:15	1			
4561	7	00:15	0			
4561	8	00:15	8			
4561	9	00:15	19			
4561	10	00:15	34			
4561	11	00:15	23			
4561	12	00:15	58			
4561	13	00:15	25			
4561	14	00:15	34			
4561	15	00:15	0			
4561	16	00:15	0			
4561	17	00:15	0			
4561	18	00:15	6			
4561	19	00:15	0			
4561	20	00:15	0			
4561	21	00:15	0			
4561	22	00:15	0			
4561	23	00:15	0			
4561	24	00:15	0			
4561	1	00:30	9			

AM2Finders\_Russell  
heavy vehicle composition

Local Street

☒ Use GTAVols volume

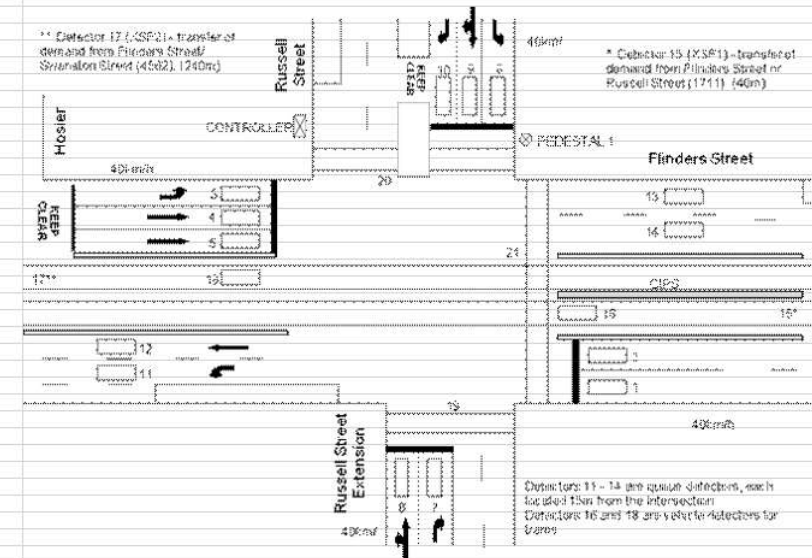
☒ Fix target hour

Starting time (one hour from this time):  
10:30

GTAVols detectors to Signal manoeuvre (Private vehicles)								
Origin (FROM) Leg	Destination (TO) Leg							
	S	SE	E	NE	N	NW	W	SW
S			10,3(3)		3(7)			8
SE								
E	3(5)				3(5)		4,5	
NE								
N	8(5)		8(5)					7
NW								
W			2,1(8)		1(2)			
SW								

GTAVols detectors to Signal manoeuvre (Light rail if present)								
Origin (FROM) Leg	Destination (TO) Leg							
	S	SE	E	NE	N	NW	W	SW
S								
SE								
E								18
NE								
N								
NW								
W			16					
SW								

Put GTAVols detector schema picture below for helping to fill the matrix GTAVols detectors to Signal manoeuvre



### 3) VOLUME INPUT SHEETS - VOLUMES INPUT MOVEMENTS MATRICES

This sheet contains the volumes input as a movement matrices for each type of vehicles;

- If GTAVols input are used these matrices will be filled up automatically by GTASidra starting from the input provided in the GTAVols sheet. They summarise the volumes analysis that will be used in the SIDRA analysis
- If GTAVols is not used to provide input volume data, these matrices have to be filled manually with the required input data from the user

**VOLUMES**
SIDRA INTERSECTION 8  
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#### VOLUME INPUT

*For detailed information, refer to the Introduction sheet.*

*When a SIDRA INTERSECTION Project is opened and a Site selected in the 'Control sheet', tables for the selected Movement Classes will be displayed below for entering volumes and related data. Vehicle volumes must be given as **Separate** values for Individual **Movement Classes** (Light Vehicles, Heavy Vehicles, etc). When **"All Movement Classes"** is selected, tables for all Movement Classes included in the selected Site will be visible.*

3933 BASE

Unit Time for Volumes (minutes)

60

Peak Flow Period (minutes)

15

Light Vehicles

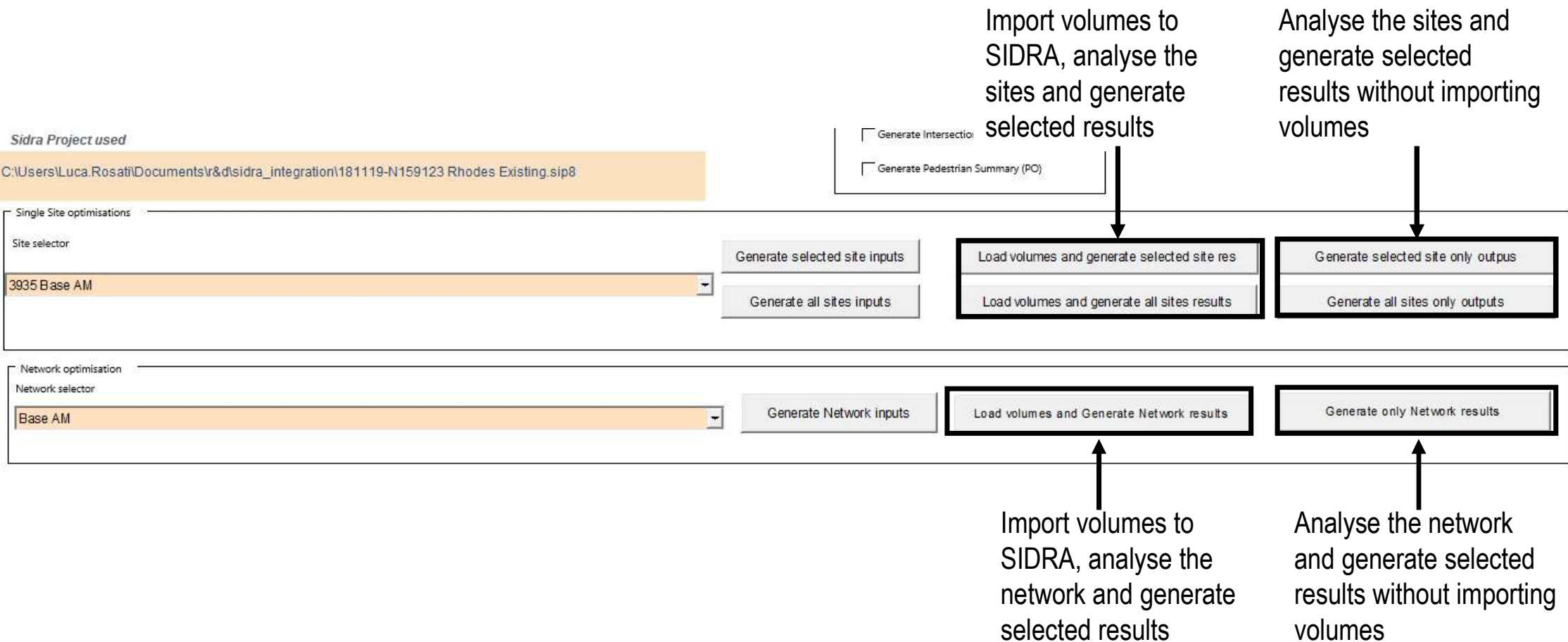
Volumes - Light Vehicles

		Destination (TO) Leg							
		S	SE	E	NE	N	NW	W	SW
Origin (FROM) Leg	S	0	0	0	0	2705	0	5	0
	SE	0	0	0	0	0	0	0	0
	E	0	0	0	0	0	0	0	0
	NE	0	0	0	0	0	0	0	0
	N	3371	0	0	0	0	0	231	0
	NW	0	0	0	0	0	0	0	0
	W	0	0	0	0	272	0	0	0
	SW	0	0	0	0	0	0	0	0

Peak Flow Factor - Light Vehicles

		Destination (TO) Leg							
		S	SE	E	NE	N	NW	W	SW
Origin (FROM) Leg	S			95		95		95	
	SE								
	E	95				95		95	
	NE								

## 4) CONTROL SHEET – PERFORM SIDRA ANALYSIS



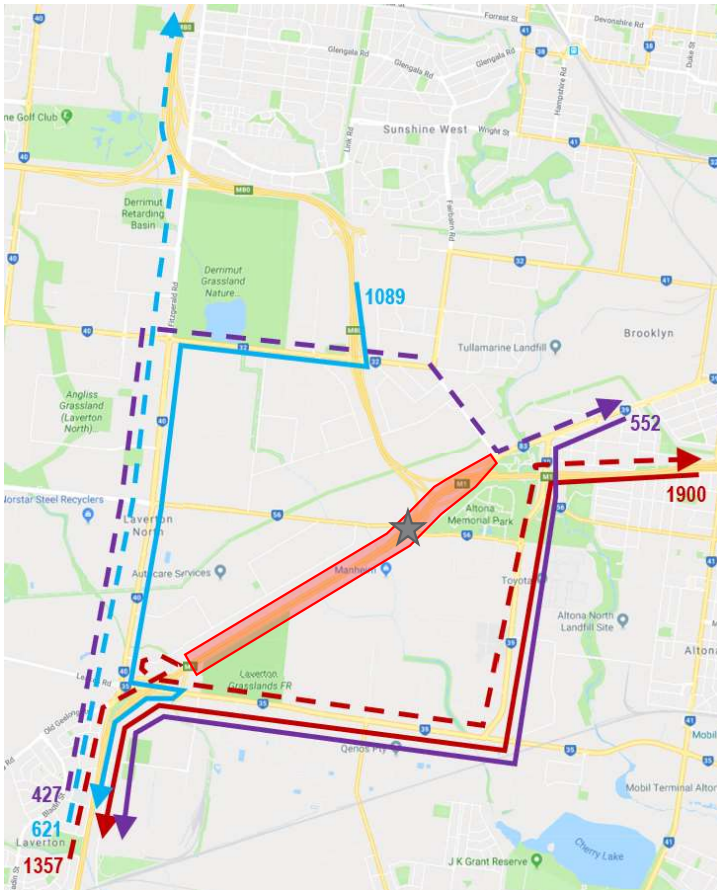
GTASIDRA

# OUTCOMES

## BENEFITS

- It allows our consultants to save at least 15 mins of working time on each SIDRA site evaluation project
- If used in synergy with GTAVols the time saved could increase to hours per project
- Increase the working quality avoiding input errors
- Easy to implement updates
- Allow to prepare standard report tables formatted and ready to use

## PRINCES FREEWAY CLOSURE AT DOHERTYS ROAD

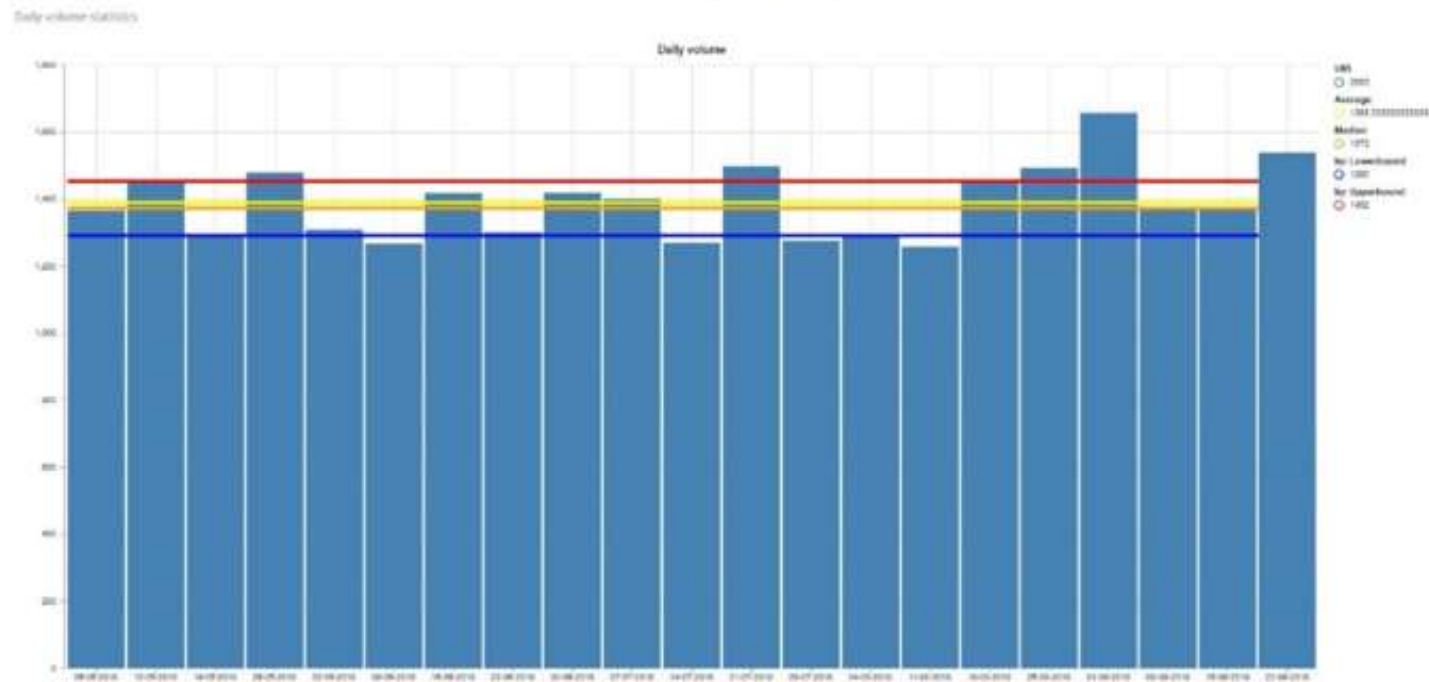


- Assess the impacts of a 12-hour freeway closure to facilitate construction works associated with duplication of Dohertys Road bridge.
- Princess Freeway between Kororoit Creek Road and Grieve Parade
- Inbound: 9pm on a Saturday to 9am on a Sunday
- Outbound: 11pm on a Saturday and 9am on a Sunday
- SIDRA modelling of 7 intersections
- Advise on the suitability of the proposed detour plan (6000vph on detour)
- Recommend alternate detours
- Development of temporary mitigation measures

## PRINCES FREEWAY CLOSURE AT DOHERTYS ROAD

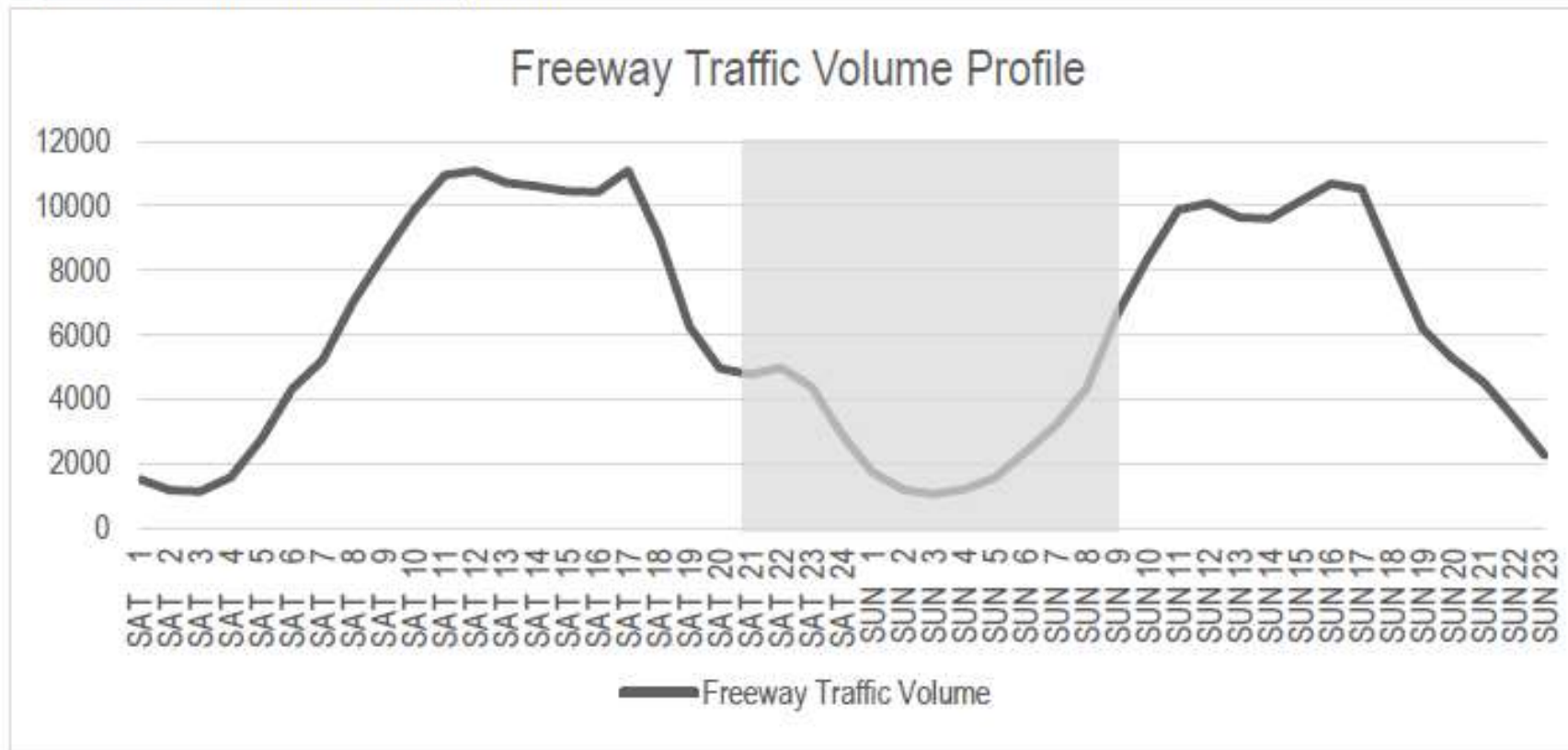
SCATS detector analysis of the intersections which fed the freeway. All Saturday nights and Sunday mornings for a 4 month period

**Figure 2.1: Princes Freeway / Grieve Parade – Saturday evening total detector counts.**



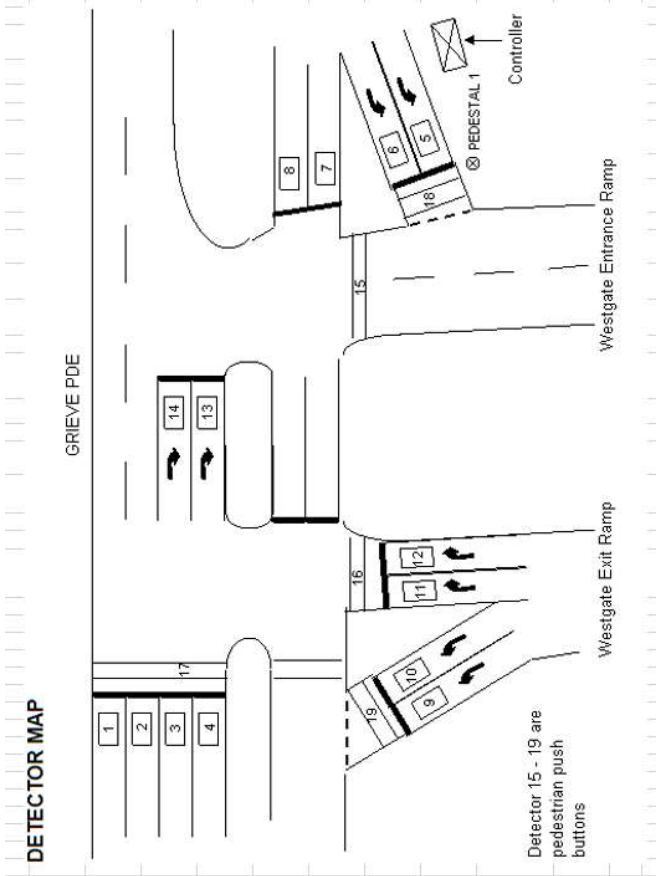
## PRINCES FREEWAY CLOSURE AT DOHERTYS ROAD

Figure 2.3: Detour traffic volume profile



# PRINCES FREEWAY CLOSURE AT DOHERTYS ROAD

Put GTAVols detector schema picture below for helping to fill the matrix GTAVols detectors to Signal manoeuvre

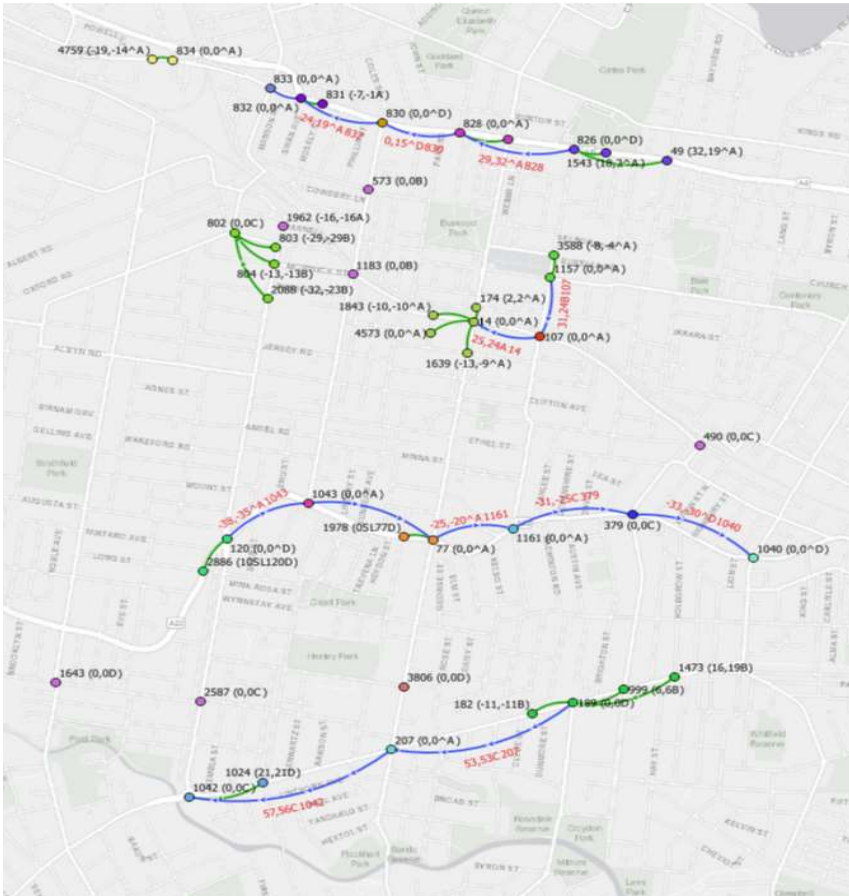


GTAVols detectors to Signal manoeuvre								
Origin (FROM) Leg	Destination (TO) Leg							
	S	SE	E	NE	N	NW	W	SW
	S		14,13		1,2			
	SE							
	E							
	NE							
	N	8,7	5,6					
	NW							
	W							
	SW							

uid: Ascer	Detector	Time	Average 15 mins volume		
2883	1	21:00	7		
2883	1	21:15	6		
2883	1	21:30	8		
2883	1	21:45	11		
2883	2	21:00	8		
2883	2	21:15	6		
2883	2	21:30	9		
2883	2	21:45	10		
2883	3	21:00	9		
2883	3	21:15	5		
2883	3	21:30	10		

**OUTPUT**  
 Peak hour considered  
 21:00:00 22:00:00  
 Total Demand  
 368

## TRAFFIC & TRANSPORT STUDY (NSW)

























### Project Scope

- SIDRA modelling of 41 sites including 5 networks
- Existing Conditions: AM, PM Peak, Saturday (123 vol inputs)
- Future Conditions: 2024, 2029, 2039 (369 vol inputs)
- Future Layouts: 3 options (up to 1107 vol inputs)

Potential number of SIDRAs: 492 – 1476 vol inputs

## TRAFFIC & TRANSPORT STUDY (NSW)

	inputs	Demand	DoS	Delay	Los	Max Queue (veh)
check	all	all	all		all	all
5%	615	647	 0.250	4	LOS A	3
0%	2428	2439	 0.582	20	LOS C	12
5%	2477	2607	 0.500	19	LOS B	10
5%	1205	1268	 0.653	5	LOS A	7
5%	2044	2152	 0.814	45	LOS D	23
5%	1256	1322	 0.550	4	LOS A	4
5%	3186	3354	 0.592	27	LOS B	23
5%	3618	<b>3808</b>	 <b>0.832</b>	<b>44</b>	<b>LOS D</b>	<b>40</b>
5%	1738	1829	 0.805	11	LOS A	12
5%	1136	1196	 0.356	3	LOS NA	1
5%	1286	1354	 0.475	21	LOS C	7
5%	1753	1845	 0.702	30	LOS C	10
5%	1058	1114	 0.425	8	LOS A	3
5%	1008	1061	 0.665	14	LOS NA	4
5%	1249	1315	 0.447	6	LOS A	3
5%	755	795	 0.246	3	LOS NA	1
5%	1205	1268	 0.675	18	LOS B	6
5%	689	725	 0.296	6	LOS A	2
5%	3031	3191	 0.722	30	LOS C	33
5%	1251	1317	 0.328	1	LOS NA	0
5%	1439	1515	 0.582	5	LOS A	2
5%	387	407	 0.107	1	LOS NA	0

# TABLE BUILDER

TableBuilder for SIDRA INTERSECTION

Type

☐ Intersection

☒ Approach

☐ Lane

☐ Movement

Output

☒ Degree of Saturation ☐ HV% (as non-LV%)

☐ Level of Service ☒ 95th Percentile Queue (m)

☒ Average Delay (s) ☐ Average Queue (m)

☐ Total Delay (veh-hr) ☐ Lane Length (m)

Add Site

☐ Single Site

☒ Network Site

Open Project

Network Sites

Add Site(s)

Available Sites

12 West - 1819

12 East - 1819

Table Properties

1 Column Group

1 West - 1819 Network

1 East - 1819 Network

☒ Allow Duplicates

↑ ↓ Edit Site Remove

Create Cancel

Location	Arm	DOS	Avg Delay	95th %ile Q
1 West - 1819	NB Offload	0.01	11s	0m
	Overbridge	0.32	8s	0m
	NB Onload	0.00	0s	0m
	Overbridge	0.00	7s	0m
	Intersection	0.32	8s	0m
1 East - 1819	Sb Onload	0.00	0s	0m
	Jervis Bay Rd	0.33	4s	6m
	Sb Offload	0.18	4s	3m
	Overbridge	0.01	4s	0m
	Intersection	0.33	4s	6m

# Thank you



VIC NSW QLD SA ACT SA WA

Level 25, 55 Collins Street, MELBOURNE VIC 3000