



SKYHIGH

THE TRAFFIC SURVEY COMPANY

Horsham Traffic Survey

AECOM
May 2012



Horsham Traffic Survey

AECOM

Prepared By
Skyhigh Traffic Data Australia Pty Ltd
Unit 12, 661 Oxley Road
Corinda, QLD 4075
PH : 1300 782 623
FX : 1300 782 624
ABN 56 112 563 201

FINAL REPORT

May 2012

Table of Contents

1. INTRODUCTION	3
2. ORIGIN DESTINATION SURVEYS	3
2.1 OD SURVEY BACKGROUND	3
2.2 OD SURVEY METHODOLOGY	3
2.3 OD SURVEY DATA COLLECTION	5
2.4 OD OBSERVATIONS	5
2.5 OD DATA PROCESSING	4
2.6 EXPANSION FACTORS	4
2.7 SUMMARY REPORTING	8
2.8 CAPTURE RATES	15
2.9 DETAILED REPORTING	16
3. CLASSIFIED TRAFFIC COUNTS	17
3.1 SURVEY METHODOLOGY	17
3.2 ISSUES WITH CLASSIFIED COUNTS	18
3.3 CLASSIFIED COUNT SUMMARY	18
4. TRAVEL TIME SURVEYS	20
4.1 TRAVEL TIME SURVEY BACKGROUND	20
4.2 TRAVEL TIME SURVEY METHODOLOGY	20
4.3 TRAVEL TIME SURVEY PROBLEMS & ISSUES	20
4.4 TRAVEL TIME SURVEY RESULTS	21

1. Introduction

In April 2012, AECOM engaged Skyhigh Traffic Data to undertake a traffic surveys in the Horsham area. The surveys included;

- Origin-Destination Surveys;
- Automatic Traffic Counts (Tube Surveys); and
- Travel Time Surveys.

2. Origin Destination Surveys

2.1 OD Survey Background

On Wednesday 18 April 2012 Skyhigh Traffic Data conducted an origin-destination survey of traffic movements through Horsham. The survey hours were from 0:00am to midnight.

The field method involved the recording of vehicles and their number plates using video techniques and then transcribing number plates in a controlled office environment. This was undertaken at 6 two-way stations on an external cordon, yielding 12 observed traffic streams.

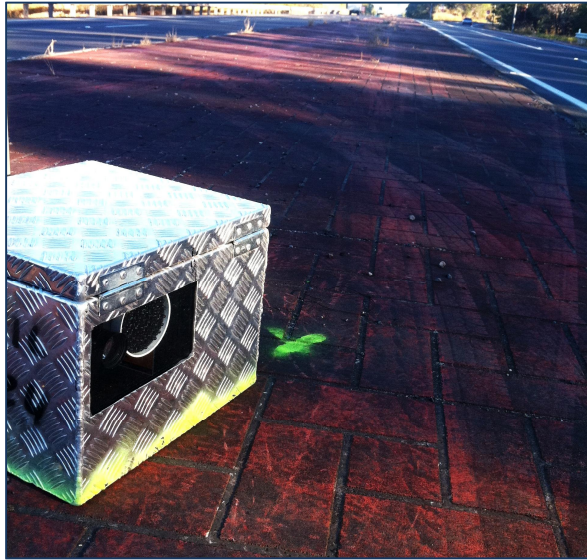
Vehicle classifications were:

- Light vehicles (motorcycles, cars, vans),
- heavy vehicles (trucks, buses)

This report describes the approach used in the processing and matching analysis of the data collected in April 2012.

2.2 OD Survey Methodology

Skyhigh Traffic Data installed roadside video survey units at each location, one camera for each direction of travel. In some instances, additional roadside units were installed to capture additional traffic lanes. The roadside capture units were installed at ground level, with video framing set to capture number plates with enough clarity to enable the identification of number plate data when post-capture processing is conducted. Infra-red lighting units were incorporated into the roadside capture unit to enable capture of number plates during times of low light and at night time.



Roadside Capture Unit in situ

The roadside capture unit incorporates a stand-alone power supply and Digital Video Recorder that capture video to removable media cards. Internal timeclocks were synchronised using a common time source. In order to ensure maximum data quality, all units were installed in locations where they could be chained to existing roadside furniture, and the bases marked to indicate the correct orientation for accurate capture.



Roadside unit showing orientation markings and security chain

Throughout the survey period, field staff undertook regular inspections of each site, checking battery levels, media storage capacity and overall site operation

On completion of the survey period, all removable media was recovered from the roadside units and backed up to a local storage point. Once returned to Skyhigh's Brisbane office, further back-ups were performed to ensure data security. Video footage

was then reviewed by in-house survey staff, and number plate data recorded. This data was then used to calculate origin-destination volumes between all survey points for the duration of the survey period. In conjunction with the number plate data, surveyors also recorded vehicle classification types, in accordance with the following classifications:

- Light vehicles (motorcycles, cars, vans),
- heavy vehicles (trucks, buses)

A workbook accompanies this report containing tabulations discussed and referenced in the report, where the tabulations are too large to comfortably fit within the report.

2.3OD Survey Data Collection

There were 12 individual traffic streams observed within the study area. The station numbers, road locations and station indices are tabulated below.

Table 2-1: Observation station locations and indices

Site	Road	Description	HRA index	Station Label	Type
1	Western Hwy	South of Dahlen Quarry Rd	1	1NB	Out
1	Western Hwy	South of Dahlen Quarry Rd	2	1SB	In
2	Henty Hwy	South of Gatehouse Rd	3	2NB	Out
2	Henty Hwy	South of Gatehouse Rd	4	2SB	In
3	Horsham-Lubeck Rd	East of Rokeskys Rd	5	3EB	Out
3	Horsham-Lubeck Rd	East of Rokeskys Rd	6	3WB	In
4	Western Hwy	South of West Rd	7	4EB	Out
4	Western Hwy	South of West Rd	8	4WB	In
5	Henty Hwy	South of Mackies Rd	9	5SB	Out
5	Henty Hwy	South of Mackies Rd	10	5NB	In
6	Wimmera Hwy	East of Remlaw Station Rd	11	6WB	Out
6	Wimmera Hwy	East of Remlaw Station Rd	12	6EB	In

2.4OD Observations

Number plates were recorded at each station, with all character positions recorded by Skyhigh during office-based post-processing along with the time in HHMMSS format and the vehicle class (1=all light vehicles and 2=all heavy vehicles). Where any plate character position was not entirely clear, then its number plate had a '-' recorded in that position(s).

The survey period covered a single 24-hour period on 18 April 2012.

2.5 OD Data Processing

Raw data was processed by:

- Examining records for invalid characters and duplicates.
- Identifying travel time cut offs between stations.
- Identifying feasible station pairs for trips.
- Extracting trips.

Invalid characters were translated to valid characters where possible – this translation almost entirely consisted of changing lower case letters to upper case, and where a non-alpha and non-numeric character was recorded, converting this to '-'. The most common edit was to change a plate of all '-' (but less than six dashes) to all six positions with dashes.

Further processing removed duplicate records except where records had plates of all dashes '-'. Duplicate records have identical information in them (i.e., same station, plate, time, class). There were twelve duplicate records.

Plates for matching were processed using all the characters from the recorded plate.

Travel time cut offs applied were based on examination of empirical travel time frequency distributions for feasible station to station matches (with replacement). This was undertaken to identify the travel time distribution between stations. Judgements are applied based on distance between the stations and the shape of the inter-station travel time frequency distribution to identify reasonable minimum and maximum travel times. These travel time cut offs were applied, with an additional margin of a minute at each end of the range¹ to identify travel between stations that did not entail intermediate activities, such as stopping at a shop and, hence, reasonably resemble a trip for transport planning/modelling purposes.

The full empirical travel time distributions for station to station matching as described above are in workbook *HORRepBook2.xlsx* in worksheet *TT_CO*. The travel time cut offs selected (sub-set of the full empirical travel time cut offs) for application in the matching process are shown in Table 2.2 on the following page.

¹ That is, a minute was deducted from minimum cut-off times and a minute was added to maximum cut-off times.

Table 2.2: Travel time cut-offs based on empirical travel time distributions

Cut offs (mins)		O stat	D stat	Travel times (mins)																				
min	max			-15	-13	5	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
9	14	1SB	6WB						2	1				2					1		1			
10	16	1SB	2NB							6	3	1	1			2	1	3		1	2	1	1	
14	14	1SB	3EB											1							1			1
13	21	1SB	4EB										2	44	88	105	80	41	26	9	12	13	17	10
15	23	1SB	5SB												1	3	7	3			2	1	1	2
9	16	2SB	1NB						1	1	6	4	1		1	2			3			2	1	
9	18	2SB	6WB						1	4	9	3	4	3	1	1	3	2		2		1	4	
5	6	2SB	3EB	1			3	1									1							
10	17	2SB	4EB							2	2	1	3	1						1	2			
8	19	2SB	5SB					1	2	7	7	6	1	1	2		1	2	2	1	1	1		1
19	19	3WB	1NB																1					
20	22	3WB	6WB																	1		1		
5	5	3WB	2NB				2																1	
5	8	3WB	4EB		1																			
8	11	3WB	5SB							1														
13	21	4WB	1NB										1	41	143	162	121	46	20	17	16	16	10	13
13	19	4WB	6WB										5	11	8	1	2	3	3		1	1	3	3
10	18	4WB	2NB							2	1	1	1		2			1		2		1	1	
5	8	4WB	3EB	1	2																	1		
8	9	4WB	5SB					1	1															
15	23	5NB	1NB												1	3	3	1	1	1	1	2		1
10	14	5NB	6WB																				1	
9	17	5NB	2NB						4	9	10	1	3			1	1		2	3	1	1	2	1
10	12	5NB	3EB							2														
8	13	5NB	4EB					2					1			1	1	1						
8	10	6EB	1NB					1	3	2								1			1			1
10	19	6EB	2NB							4	10	20	5	5	3	3	2	2	2		2		2	1
14	18	6EB	3EB											1			1							
13	21	6EB	4EB										1	8	8	9	4	1	1	1	2	3	1	2
10	14	6EB	5SB																1				1	

For full travel time distributions, refer to HORRepBook1.xlsx in worksheet TT_CO
Yellow in the above table indicates accepted travel time range for matching analysis

The feasible routes were between inbound stations and outbound stations, yielding 30 feasible station match pairs.

The number plate observations were sorted into alphabetical order and a trip or set of trip(s) was extracted for each number plate. This was undertaken by building trips for each number plate that satisfied the above route matches and travel time cut offs. The result of this process is a series of matrices which are based on the first station (an inbound station on the cordon) at which a vehicle was observed and the last station (an outbound station on the cordon) at which it was observed on each identified trip. The matrices that report this information have origin stations which are:

- Inbound cordon stations

These matrices also have destination stations which are:

- Outbound cordon stations

2.6 Expansion Factors

To improve the estimates of the volume of vehicles travelling between observation stations, we have explored and applied several expansion factors. As noted in the brief, numberplate surveys tend to understate matches and, in this case, this would tend to reduce the estimate of through traffic. Most of the measurement errors associated with numberplate surveys tend to reduce the matches. The following are specific measurement issues that are commonly encountered:

- *During extraction of the field recorded data if the survey staff cannot clearly read one or more of the number plate characters:* this could be for a range of reasons, from dirty number plates to environmental factors to occasional tailgating of vehicles. This is addressed through the application of 'missed plate expansion factors' – see below in section 2.6.1.
- *During extraction of the field recorded data if the survey staff see the number plate but subsequently then write down the wrong plate, such as switching two characters or mis-reading a character for another, e.g., seeing an "8" but noting down a "B":* this problem is partly addressed by the field method which uses video to record number plates with subsequent reduction in a controlled office environment; it is also addressed by running character substitution in the number plate matching process, which is discussed below in section 4.3.
- *Survey start up and survey end periods result in the loss of some observations.* During the initial part of the first hour of survey the destination stations are recording vehicles that would have passed through origin stations prior to commencement of data recording at the inbound cordon stations. The scale of this issue is partly addressed by the survey design, with 22 hours of data completely unaffected by this issue and the start and end hours, at most losing possibly a third of matching (based on maximum station to station travel times of up to 23 minutes); as well as commencing and concluding the survey around

midnight when traffic volumes are relatively low. In data processing, travel time expansion factors have been applied in the end hours (i.e., the hour of commencement and the last hour) and this process is discussed in section 4.4 below.

- *The application of travel time cut-offs in the matching endeavours to screen out vehicles that are calling within the town centre.* If the maximum travel time cut-offs are too low, then some through traffic will be excluded; if they are too high, the proportion of through traffic will be over-stated. The approach used to determine travel time cut-offs is described in Section 3 above, which reports the observed station to station travel time distributions and identifies the travel time cut-offs – this provides the reader with an indication of how many possible trips might be excluded for each station pair. In matching, a small margin is deducted from the minimum cut-offs and a small margin is added to the maximum cut-offs.

2.6.1 Missed plate expansion factors

Where a character position or positions were not clear to the data recorder, then a dash ('-') was inserted in the recorded number plate. If at least one dash was in the recorded plate, then it was precluded from further matching analysis. In order to account for this in the results, a process of expansion was applied.

Expansion factors for each station were calculated using the following approach:

$$\text{Expansion factor} = \text{total plates (including those with a '-') / good plates} \quad [1]$$

This was undertaken by class and by 15-minute period.

These expansion factors were applied multiplicatively for the first and last station observed. That is, for an observation I, passing from Station O to Station D, the expansion factor is computed using the following:

$$\text{ExpFactorObservation I} = \text{Expansion Factor Station O} * \text{Expansion Factor Station D} \quad [2] \quad \frac{2}{\text{Where:}}$$

- *Expansion Factor Station O is the expansion factor calculated for origin station using [1] above*

² This expansion approach for erroneous data is discussed in general terms in Schaefer, MC, *Licence Plate Matching Surveys: Practical Issues and Statistical Considerations*, pp37-42 ITE Journal July 1988. The above equation [2] follows Schaefer's equation (5).

The assumption is that incomplete plates will be randomly distributed at the observation stations, i.e., there would be no systematic relationship between incomplete plates and the trip distribution at any particular station. Hence, if x% of plates were incomplete at origin station 1, then x% of vehicles going to each of the subsequent destination stations would have had incomplete plates recorded at Station 1. Similarly if y% of plates were incomplete at destination station 2, then y% of plates from all sources feeding traffic to station 2 would have incomplete plates. If M complete plates were matched between stations 1 and 2, then applying 1/(1- % of missed/incomplete plates at station 1) would expand the number of complete and matched plates, M, to account for incomplete plates at Station 1 – to give M1. Then applying 1/(1-% of missed/incomplete plates at station 2) to M1 would account for incomplete plates at Station 2, yielding an estimate of the volume of traffic going from Station1 to Station 2, M2.

- *Expansion Factor Station D is the expansion factor calculated for destination station using [1] above*

Note that unexpanded matrices (*count of matched vehicles*) and missed plate expansion matrices (*missed plate expansion factors*) are both reported to permit an assessment of the impact of the expansion process by the data analyst.

2.6.2 Character substitution in matching

A set of character substitution matches was undertaken to determine the extent of mis-recorded number plate characters in the dataset. The character substitutions used are listed below.

Table 2.3: Character substitutions

B for 8	E for F	O for D	N for H
O for 0	U for V	O fo Q	V for Y
S for 5	D for P	D for Q	
Z for 2	T for Y	D for 0	
I for 1	K for X	Q for 0	
M for N	R for K	M for H	

Substitution is tested in both directions, e.g., B for 8 and 8 for B.

The effect of this was to increase the number of matched records across the 24-hour survey period from 1,301 to 1,346, an increase of 45 trips.

2.6.3 Start up and end time expansion

Consideration was given to applying a travel time expansion factors to the data. This would account for the time taken at start up and end of survey period for vehicles to complete their trips. Due to the relatively long travel times for some of the station pairs, accounting for this element of the survey is considered appropriate. The following table summarises the station to station minimum and maximum travel time cut-offs and the expansion weights.

Table 2-4: Travel time expansion weights

O Station	D Station	min	max	ttExpWgt
1SB	6WB	9	14	1.304
1SB	2NB	10	16	1.364
1SB	3EB	14	14	1.304
1SB	4EB	13	21	1.538
1SB	5SB	15	23	1.622
2SB	1NB	9	16	1.364
2SB	6WB	9	18	1.429
2SB	3EB	5	6	1.111
2SB	4EB	10	17	1.395
2SB	5SB	8	19	1.463
3WB	1NB	19	19	1.463
3WB	6WB	20	22	1.579
3WB	2NB	5	5	1.091
3WB	4EB	5	8	1.154
3WB	5SB	8	11	1.224
4WB	1NB	13	21	1.538
4WB	6WB	13	19	1.463
4WB	2NB	10	18	1.429
4WB	3EB	5	8	1.154
4WB	5SB	8	9	1.176
5NB	1NB	15	23	1.622
5NB	6WB	10	14	1.604
5NB	2NB	9	17	1.395
5NB	3EB	10	12	1.25
5NB	4EB	8	13	1.277
6EB	1NB	8	10	1.200
6EB	2NB	10	19	1.463
6EB	3EB	14	18	1.429
6EB	4EB	13	21	1.538
6EB	5SB	10	14	1.304

Note – the min and max travel times are from Table 2-1

These weights are calculated by Station OD pair using the centre point of the minimum and maximum travel time using the following formula:

$$\text{TravelTimeExpansionWgt(O-D)} = 60 / (60 - ([\text{ttODmin} + \text{ttODmax}] / 2)) \quad [3]$$

These weights are applied in the hour commencing midnight and in the hour concluding midnight only.

2.6.4 Reporting of expansion factors' effects

The output is provided for unexpanded matched records without character substitution. Subsequent reporting shows the combined effects of character substitution and expansion weights. This permits the data analyst to gain an understanding of the effect on the data of procedures that have been implemented to adjust for potential understatement of matched through trips. The outputs are listed in the next section.

2.7 Summary Reporting

This section contains a set of light vehicle and heavy vehicle matrices, unexpanded and expanded for the following time periods:

- AM – 7am to 9am
- IP – 9am to 4pm
- PM – 4pm to 6pm
- OP – 6pm to 7am
- Daily – 24 hour

Legend:

n

 Through count

n

 Traffic Count

n

 Internal Traffic

n

 % through traffic

Table 2-5: AM period, light vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		149	215	30	177	58	94		723	
1SB	191	0	1	0	12	0	0	178	13	7%
2SB	248	3	0	0	0	1	2	242	6	2%
3WB	42	0	1	0	0	1	0	40	2	5%
4WB	173	11	0	0	0	0	3	159	14	8%
5NB	93	1	3	0	1	0	0	88	5	5%
6EB	309	0	6	0	2	0	0	301	8	3%
Total	1056	15	11	0	15	2	5	1008	48	5%
% through		10%	5%	0%	8%	3%	5%		7%	

Table 2-6: AM period, heavy vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		52	44	3	39	12	18		168	
1SB	29	0	0	0	13	1	0	15	14	48%
2SB	26	0	0	0	0	2	2	22	4	15%
3WB	3	0	0	0	0	0	0	3	0	0%
4WB	55	14	0	0	0	0	1	40	15	27%
5NB	10	1	2	0	0	0	0	7	3	30%
6EB	14	0	1	0	1	0	0	12	2	14%
Total	137	15	3	0	14	3	3	99	38	28%
% through		29%	7%	0%	36%	25%	17%		23%	

Table 2-7: IP period, light vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		806	769	103	790	225	517		3210	
1SB	732	0	5	0	86	3	1	637	95	13%
2SB	838	9	0	1	3	8	8	809	29	3%
3WB	107	0	0	0	0	0	1	106	1	1%
4WB	878	153	4	0	0	1	8	712	166	19%
5NB	291	4	6	2	2	0	0	277	14	5%
6EB	549	1	17	1	8	0	0	522	27	5%
Total	3395	167	32	4	99	12	18	3063	332	10%
% through		21%	4%	4%	13%	5%	3%		10%	

Table 2-8: IP period, heavy vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		168	127	4	176	56	50		581	
1SB	189	0	1	0	50	11	2	125	64	34%
2SB	122	3	0	0	0	6	8	105	17	14%
3WB	9	0	0	0	0	0	0	9	0	0%
4WB	212	92	0	0	0	0	3	117	95	45%
5NB	34	5	7	0	0	0	0	22	12	35%
6EB	53	2	14	0	6	0	0	31	22	42%
Total	619	102	22	0	56	17	13	409	210	34%
% through		61%	17%	0%	32%	30%	26%		36%	

Table 2-9: PM period, light vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		286	307	75	259	81	331		1339	
1SB	251	0	2	0	25	2	1	221	30	12%
2SB	284	0	0	2	2	2	1	277	7	2%
3WB	56	0	0	0	0	0	1	55	1	2%
4WB	232	23	1	0	0	0	1	207	25	11%
5NB	68	3	3	0	0	0	0	62	6	9%
6EB	179	2	5	0	3	0	0	169	10	6%
Total	1070	28	11	2	30	4	4	991	79	7%
% through		10%	4%	3%	12%	5%	1%		6%	

Table 2-10: PM period, heavy vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		86	21	4	71	11	10		203	
1SB	71	0	0	0	10	1	0	60	11	15%
2SB	25	0	0	0	1	3	1	20	5	20%
3WB	2	0	0	0	0	0	0	2	0	0%
4WB	85	52	0	0	0	0	0	33	52	61%
5NB	14	0	3	0	0	0	0	11	3	21%
6EB	18	1	3	1	4	0	0	9	9	50%
Total	215	53	6	1	15	4	1	135	80	37%
% through		62%	29%	25%	21%	36%	10%		39%	

Table 2-11: OP period, light vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		370	352	36	309	95	285		1447	
1SB	252	0	3	0	24	1	1	223	29	12%
2SB	325	0	0	1	3	6	6	309	16	5%
3WB	37	1	1	0	0	0	0	35	2	5%
4WB	320	28	2	0	0	1	12	277	43	13%
5NB	81	0	3	0	0	0	0	78	3	4%
6EB	204	0	5	0	7	0	0	192	12	6%
Total	1219	29	14	1	34	8	19	1114	105	9%
% through		8%	4%	3%	11%	8%	7%		7%	

Table 2-12: OP period, heavy vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		279	28	2	307	14	18		648	
1SB	310	0	2	0	14	0	0	294	16	5%
2SB	28	1	0	0	0	5	2	20	8	29%
3WB	3	0	0	0	0	0	0	3	0	0%
4WB	364	200	0	0	0	0	5	159	205	56%
5NB	15	0	1	0	0	0	0	14	1	7%
6EB	22	0	5	0	4	0	0	13	9	41%
Total	742	201	8	0	188	5	7	503	409	55%
% through		72%	29%	0%	61%	36%	39%		63%	

Table 2-13: Daily period, light vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		1611	1643	244	1535	459	1227		6719	
1SB	1426	0	11	0	147	6	3	1259	167	12%
2SB	1695	12	0	4	8	17	17	1637	58	3%
3WB	242	1	2	0	0	1	2	236	6	2%
4WB	1603	215	7	0	0	2	24	1355	248	15%
5NB	533	8	15	2	3	0	0	505	28	5%
6EB	1241	3	33	1	20	0	0	1184	57	5%
Total	6740	239	68	7	178	26	46	6176	564	8%
% through		15%	4%	3%	12%	6%	4%		8%	

Table 2-14: Daily period, heavy vehicles, unexpanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		585	220	13	593	93	96		1600	
1SB	599	0	3	0	257	13	2	324	275	46%
2SB	201	4	0	0	1	16	13	167	34	17%
3WB	17	0	0	0	0	0	0	17	0	0%
4WB	716	358	0	0	0	0	9	349	367	51%
5NB	73	6	13	0	0	0	0	54	19	26%
6EB	107	3	23	1	15	0	0	65	42	39%
Total	1713	371	39	1	273	29	24	976	737	43%
% through		63%	18%	8%	46%	31%	25%		46%	

Table 2-15: AM period, light vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		149	215	30	177	58	94		723	
1SB	191	0	1	0	12	0	0	178	13	7%
2SB	248	3	0	0	0	1	2	242	6	2%
3WB	42	0	1	0	0	1	0	40	2	5%
4WB	173	16	0	0	0	0	4	153	20	12%
5NB	93	1	3	0	1	0	0	88	5	5%
6EB	309	0	7	0	2	0	0	300	9	3%
Total	1056	20	13	0	15	2	6	1001	56	5%
% through		13%	6%	0%	8%	3%	6%		8%	

Table 2-16: AM period, heavy vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		52	44	3	39	12	18		168	
1SB	29	0	0	0	15	1	0	12	17	59%
2SB	26	0	0	0	0	2	2	22	4	15%
3WB	3	0	0	0	0	0	0	3	0	0%
4WB	55	26	0	0	0	0	2	27	28	51%
5NB	10	1	2	0	0	0	0	7	3	30%
6EB	14	0	1	0	1	0	0	12	2	14%
Total	137	27	3	0	17	3	4	83	54	39%
% through		52%	7%	0%	44%	25%	22%		32%	

Table 2-17: IP period, light vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		806	769	103	790	225	517		3210	
1SB	732	0	5	0	103	3	1	619	113	15%
2SB	838	10	0	1	3	11	11	803	35	4%
3WB	107	0	0	0	0	0	1	106	1	1%
4WB	878	169	5	0	0	1	11	692	186	21%
5NB	291	4	6	2	2	0	0	276	15	5%
6EB	549	1	20	1	9	0	0	518	31	6%
Total	3395	184	37	4	117	15	24	3014	381	11%
% through		23%	5%	4%	15%	7%	5%		12%	

Table 2-18: IP period, heavy vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		168	127	4	176	56	50		581	
1SB	189	0	1	0	90	12	3	83	106	56%
2SB	122	3	0	0	0	7	10	102	20	16%
3WB	9	0	0	0	0	0	0	9	0	0%
4WB	212	127	1	0	0	0	4	80	132	62%
5NB	34	6	8	0	0	0	0	21	13	38%
6EB	53	2	17	0	7	0	0	27	26	49%
Total	619	138	27	0	97	19	16	322	297	48%
% through		82%	21%	0%	55%	34%	32%		51%	

Table 2-19: PM period, light vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		286	307	75	259	81	331		1339	
1SB	251	0	2	0	34	4	1	210	41	16%
2SB	284	0	0	2	2	2	1	276	8	3%
3WB	56	0	0	0	0	0	1	55	1	2%
4WB	232	25	1	0	0	0	2	204	28	12%
5NB	68	3	3	0	0	0	0	61	7	10%
6EB	179	2	5	0	5	0	0	167	12	7%
Total	1070	30	12	2	41	6	6	973	97	9%
% through		10%	4%	3%	16%	7%	2%		7%	

Table 2-20: PM period, heavy vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		86	21	4	71	11	10		203	
1SB	71	0	0	0	39	3	0	29	42	59%
2SB	25	0	0	0	1	3	1	19	6	24%
3WB	2	0	0	0	0	0	0	2	0	0%
4WB	85	57	0	0	0	0	0	28	57	67%
5NB	14	0	4	0	0	0	0	10	4	29%
6EB	18	1	3	1	5	0	0	8	10	58%
Total	215	58	7	1	45	7	1	96	119	55%
% through		67%	33%	25%	63%	64%	10%		59%	

Table 2-21: OP period, light vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		370	352	36	309	95	285		1447	
1SB	252	0	3	1	32	2	1	213	39	15%
2SB	325	0	0	1	3	6	7	307	18	6%
3WB	37	2	1	0	0	1	0	33	4	11%
4WB	320	38	2	0	0	1	13	266	54	17%
5NB	81	0	3	0	0	0	0	78	3	4%
6EB	204	0	6	0	9	0	0	189	15	7%
Total	1219	40	16	2	44	10	20	1086	132	11%
% through		11%	5%	6%	14%	11%	7%		9%	

Table 2-22: OP period, heavy vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		279	28	2	307	14	18		648	
1SB	310	0	2	0	251	0	0	57	253	82%
2SB	28	1	0	0	0	6	2	19	9	32%
3WB	3	0	0	0	0	0	0	3	0	0%
4WB	364	246	0	0	0	0	5	113	251	69%
5NB	15	0	1	0	0	0	0	14	1	7%
6EB	22	0	9	0	6	0	0	8	14	64%
Total	742	247	12	0	257	6	8	214	529	71%
% through		89%	43%	0%	84%	43%	44%		82%	

Table 2-23: Daily period, light vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		1611	1643	244	1535	459	1227		6719	
1SB	1426	0	12	1	181	9	3	1220	206	14%
2SB	1695	13	0	5	9	20	21	1627	68	4%
3WB	242	2	2	0	0	2	2	233	9	4%
4WB	1603	247	9	0	0	2	30	1316	287	18%
5NB	533	9	16	2	3	0	0	503	30	6%
6EB	1241	3	39	1	24	0	0	1174	67	5%
Total	6740	274	78	9	217	33	56	6073	666	10%
% through		17%	5%	4%	14%	7%	5%		10%	

Table 2-24: Daily period, heavy vehicles, expanded

	To	1NB	2NB	3EB	4EB	5SB	6WB		Total	% through
From		585	220	13	593	93	96		1600	
1SB	599	0	4	0	396	16	3	181	418	70%
2SB	201	5	0	0	1	18	15	162	39	19%
3WB	17	0	0	0	0	0	0	17	0	0%
4WB	716	456	1	0	0	0	11	248	468	65%
5NB	73	7	15	0	0	0	0	51	22	30%
6EB	107	3	29	1	18	0	0	56	51	48%
Total	1713	470	49	1	415	35	29	715	998	58%
% through		80%	22%	8%	70%	38%	30%		62%	

2.8 Capture rates

The table below shows the volume of plates captured at each station, by direction, and the overall volume of traffic identified as passing that station. This effectively details the number of missed plates as a percentage of the overall plates that passed each station.

Site Number	Identified Plates	Unidentified Plates	Total plates	% identified	Classified Count Total *
1NB	2196	164	2360	93%	2369
1SB	2037	217	2254	90%	2116
2NB	1863	73	1936	96%	1836
2SB	1896	72	1968	96%	1857
3EB	257	11	268	96%	269
3WB	259	19	278	93%	288
4EB	2128	131	2259	94%	2120
4WB	2319	116	2435	95%	2128
5NB	606	17	623	97%	584
5SB	552	20	572	97%	585
6EB	1348	44	1392	97%	1355
6WB	1324	52	1376	96%	1354

* Classified Count Total uses Weekday Averages – refer section 3 for further information on classified counts.

Data in Table 2-25 above indicates that there was a relatively low percentage of plates unidentified. The table also indicates that the volumes of plates captured at each site are consistent with the weekday average traffic volumes captured by the classified counts.

2.9 Detailed Reporting

Reporting output is provided in a series of workbooks.

HORRepBook2.xlsx

This workbook contains travel time distributions and cut-offs:

- TT_CO – provides empirical travel time distributions between stations, as described in Chapter 3
- TT_COSubset_Table3.1 – is a subset of the information in TT_CO and is the same information as reported in Table 3.1

HOR_REPCountV2.xlsx

This workbook contains 29 worksheets – one for each of the 24 hours of survey plus a 24 hr total sheet, and a sheet for each of the time periods (AM, IP, PM, OP). Each sheet has three matrices – the top one being all vehicles, the middle one being light vehicles and the lower one being heavy vehicles. The frequencies are counts of clean matches for each station pair in the matrices without expansion and with no character substitution.

HOR_REP_ExpandedV2.xlsx

This workbook contains 25 worksheets – one for each of the 24 hours of survey plus a 24 hr total sheet, and a sheet for each of the time periods (AM, IP, PM, OP). Each sheet has three matrices – the top one being all vehicles, the middle one being light vehicles and the lower one being heavy vehicles. The frequencies are expanded for missed number plates and travel times (hours 0 and 23 only) as well as taking account of character substitution in the matching process.

3. Classified Traffic Counts

Automatic traffic counts were carried out at the same time as the Origin Destination Surveys. The Surveys were carried out across 10 stations on the inner cordon of the defined study area. The actual surveys were undertaken for a 14 day period that started on the 1st August 2011 and ended on the 14th August 2011. The ATC's record data for 24 hours per day for the full 14 days.

<i>Site No.</i>	<i>Road</i>	<i>Location</i>
CC1	Western Highway (south of Dahlen Quarry Rd)	PIMPINIO
CC2	Blue Ribbon Road (south of Gatehouse Rd)	DOOEN
CC3	Henty Highway (south west of Gatehouse Rd)	DOOEN
CC4	Riverside Road (west of Heards Rd)	DOOEN
CC5	Horsham-Lubeck Rd (east of Rokeskys Rd)	DRUNG
CC6	Western Highway (south-east of West Rd)	DRUNG
CC7	Laharum Road (south of Mackies Rd)	HAVEN
CC8	Grahams Bridge Road (south of Mackies Rd)	HAVEN
CC9	Old Hamilton Road (south of Mackies Rd)	HAVEN
CC10	Henty Highway (south of Mackies Rd)	HAVEN
CC11	Three Bridges Road (north east of Wards Rd)	HAVEN
CC12	Wimmera Highway (east of Remlaw Station Rd)	VECTIS
CC13	Obrees Road (east of Remlaw Station Rd)	VECTIS
CC14	Polkemmet Road (east of Remlaw Station Rd)	VECTIS
CC15	Western Highway (b/w Hazel St & O'Connor St)	HORSHAM
CC16	Western Highway (b/w Roberts Ave & McLachlan St)	HORSHAM
CC17	Wimmera Highway (b/w Gardenia St & Rose St)	HORSHAM
CC18	Western Highway (b/w Horsham-Lubeck Rd & river crossing)	HORSHAM

3.1 Survey Methodology

Metrocount 5600 Series Automatic Traffic Counters (ATCs) were used to record the 14 day data. Automatic traffic Counters (ATCs) use two sensors (pneumatic tubes) placed a set distance apart on the roadway to determine vehicle speed and classification. Speed is determined by the time difference between the front axle hitting the first and second tubes. As the distance between the sensors is known, the time difference can then be used to calculate vehicle speed.

Once this speed is known, the timing of the next set of axle "hits" can be used to calculate the distance between axles, and from this the vehicle can be classified. A set of tables built into the ATC software classify the known distance parameters between axle sets on a variety of vehicles. The Austroads Vehicle Classification system defines these vehicle categories, by number of axles and number of axle groups.

For example, a passenger vehicle has 2 axles, with the distance between the axles being <3.2m, whereas a three-axle truck or bus has 1 front axle and 2 axles grouped at the rear. An articulated long vehicle ("semi-trailer"), on the other hand, will have 6 axles and 3 groups. Figure 3-1 illustrates this point.

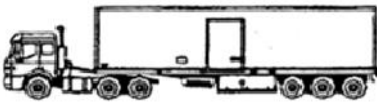
Car / 4WD / Ute: 2 axles, distance between axles <3.2m	
3-axles truck or bus: 3 axles in 2 groups	
Articulated long vehicle: 6 axles in 3 groups	

Figure 3-1

The data from these surveys is included in the Excel files provided. Note that Sites 15, 17 and 18 have separate files for each direction, as these sites are divided roadways.

3.2 Issues with Classified Counts

In the process of conducting the surveys, problems were encountered at two sites, CC3 and CC15 Eastbound. Due to damage to the pneumatic tubes, data was lost at these sites for a portion of the survey period (16/4 to 23/4). However, as these sites had been installed before the survey start date, and data loss occurred towards the end of the survey period, Skyhigh was able to utilise pre-survey period data to provide a full 7 day data set at both sites. Table 3-1 identifies the substitution periods.

Table 3-1 Data Substitutions

Site	Missing Data period	Substitute Data period
CC3	23:00 21/4 to 00:00 23/4	23:00 13/4 to 00:00 16/4
CC15 (eastbound)	23:00 20/4 to 00:00 23/4	23:00 14/4 to 00:00 16/4

3.3 Classified Count Summary

The reports provided classify vehicles into five main groups using Austroads Standard Vehicle Classifications

Classes 1-2: cars / motorbikes

Classes 3-5: rigid trucks / buses

Classes 6-9: semi-trailers

Classes 10-11: B-doubles

Class 12: Road trains

The table 3-2 on the following page summarises this data by site, direction and classification. Data used is the Weekday Average data derived from the total 7 days of data collected.

Table 3-2 Weekday Averages for Classified Counts

Site	Direction	Motorbike / Car	Rigid truck/bus	Semi Trailer	B-Double	Road Train	TOTAL
1	NB	1702	149	242	275	0	2369
2	NB	362	31	23	9	0	424
3	NB	1538	145	101	52	0	1836
4	EB	246	14	3	0	0	263
5	EB	253	25	7	2	0	288
6	WB	1427	129	275	297	0	2128
7	NB	118	8	2	0	0	129
8	NB	21	0	0	0	0	22
9	NB	107	10	1	0	0	118
10	NB	477	47	33	28	0	584
11	NB	374	46	20	3	0	444
12	EB	1205	54	37	39	0	1335
13	EB	55	8	3	1	0	67
14	EB	54	5	1	0	0	60
15	EB	4337	318	239	249	0	5143
16	NB	4098	359	411	421	2	5290
17	EB	5560	167	35	34	0	5796
18	NB	9939	905	393	328	1	11565
1	SB	1488	129	237	261	0	2116
2	SB	332	34	23	10	0	399
3	SB	1593	136	91	37	0	1857
4	WB	256	11	2	0	0	269
5	WB	243	19	7	1	0	269
6	EB	1436	157	262	262	0	2120
7	SB	115	11	2	0	0	128
8	SB	21	0	0	0	0	21
9	SB	108	10	1	0	0	119
10	SB	474	46	34	30	0	585
11	SB	356	39	13	3	0	411
12	WB	1210	77	39	28	0	1354
13	WB	78	9	4	0	0	91
14	WB	52	7	2	0	0	61
15	EB	4450	322	107	107	0	4986
16	SB	3977	330	265	244	1	4817
17	WB	5567	221	42	22	0	5852
18	SB	9675	865	381	276	0	11197

4. Travel Time Surveys

4.1 Travel Time Survey Background

Travel time surveys were carried out in conjunction with the Origin destination survey. The travel time surveys were conducted along 2 routes, one north/south and the other east/west. The north-south route was along the Western Highway between Dahlen Quarry Road in the north and West Rd in the south. The east-west route was along the Wimmera/Henty Highways, between Remlaw Station Road in the west, and Gatehouse Road in the east. The surveys were conducted on two separate weekdays, for three defined survey periods; AM (7am-10am), PM (3pm to 6pm) and Night (9pm to 1am).

4.2 Travel Time Survey Methodology

The floating car methodology was used to record the travel time data. To achieve this, surveyors travelled in vehicles along the specified route while carrying a GPS recording logger. Vehicles were driven at an average speed (that is, consistent with the flow of traffic at the time), and within nominated speed limits, obeying the traffic regulations. The GPS loggers recorded the time at specified waypoints (usually street intersections), providing overall travel time and travel times for intermediate legs between waypoints. The data from these surveys is included in the Excel files provided (one file per route per day, four files in total).

4.3 Travel Time Survey Problems & Issues

The travel time surveys were completed without issues. Data from the GPS loggers was downloaded at the end of each run and backed up to a hard drive. These data files were then used to extract the GPS co-ordinates and timestamps for each waypoint along the route.

It should be understood that these surveys only reflect travel times conducted at or below speed limits. Where normal traffic flows (other vehicles) are travelling beyond the legal speed limit, their travel times will obviously be shorter, but this will not be reflected in the travel time survey data. Skyhigh staff are required to obey all traffic regulations at all times.

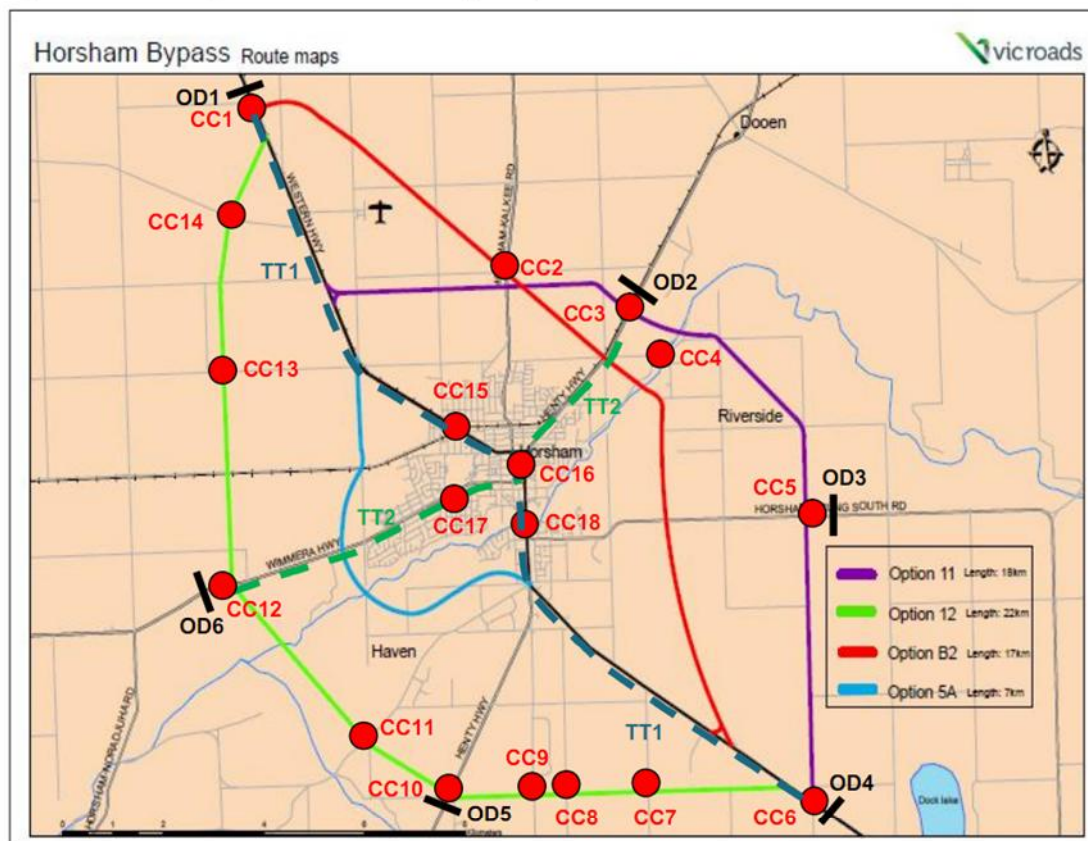
4.4 Travel Time Survey Results

Results from the Travel Time surveys are shown in the table 4-1 below.

Table 4-1 Travel Time Summary

ROUTE	DIRECTION	DAY	TIME PERIOD	AVG TIME	AVG SPEED	No. of RUNS
1	Southbound	Weds 18/4/2012	7AM-10AM	0:15:38	76	3
1	Northbound	Weds 18/4/2012	7AM-10AM	0:14:58	80	3
1	Southbound	Weds 18/4/2012	3PM-6PM	0:16:33	72	3
1	Northbound	Weds 18/4/2012	3PM-6PM	0:15:38	76	3
1	Southbound	Weds 18/4/2012	9PM-1AM	0:15:25	77	3
1	Northbound	Weds 18/4/2012	9PM-1AM	0:15:06	79	3
2	Eastbound	Weds 18/4/2012	7AM-10AM	0:11:54	66	3
2	Westbound	Weds 18/4/2012	7AM-10AM	0:12:35	63	3
2	Eastbound	Weds 18/4/2012	3PM-6PM	0:12:56	61	3
2	Westbound	Weds 18/4/2012	3PM-6PM	0:14:05	56	3
2	Eastbound	Weds 18/4/2012	9PM-1AM	0:11:14	70	3
2	Westbound	Weds 18/4/2012	9PM-1AM	0:11:05	71	3
1	Southbound	Thu 19/4/2012	7AM-10AM	0:15:48	76	3
1	Northbound	Thu 19/4/2012	7AM-10AM	0:16:22	73	3
1	Southbound	Thu 19/4/2012	3PM-6PM	0:16:36	72	3
1	Northbound	Thu 19/4/2012	3PM-6PM	0:15:48	76	3
1	Southbound	Thu 19/4/2012	9PM-1AM	0:15:09	79	3
1	Northbound	Thu 19/4/2012	9PM-1AM	0:14:52	80	3
2	Eastbound	Thu 19/4/2012	7AM-10AM	0:11:54	67	3
2	Westbound	Thu 19/4/2012	7AM-10AM	0:12:05	65	3
2	Eastbound	Thu 19/4/2012	3PM-6PM	0:12:23	64	3
2	Westbound	Thu 19/4/2012	3PM-6PM	0:14:31	55	3
2	Eastbound	Thu 19/4/2012	9PM-1AM	0:11:15	70	3
2	Westbound	Thu 19/4/2012	9PM-1AM	0:10:59	72	3

APPENDIX 1 – SITE MAP



APPENDIX 2 – OD Survey Expanded Daily Flow Diagrams

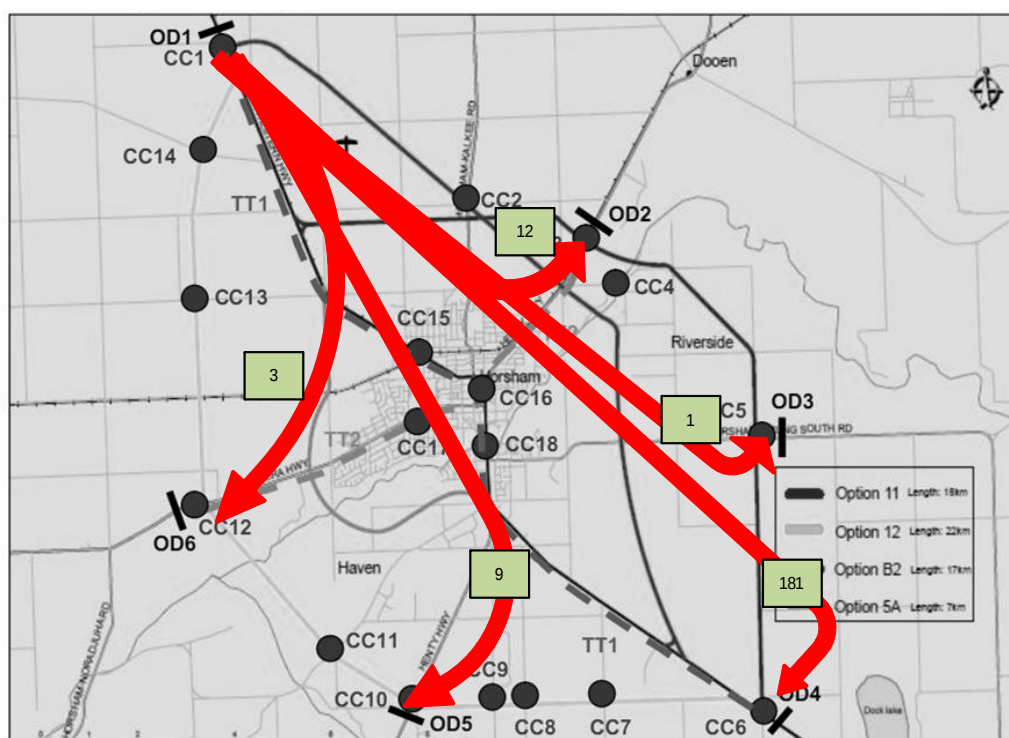


Figure A2-1: Station 1 to other stations – Light Vehicles, 24hr survey period

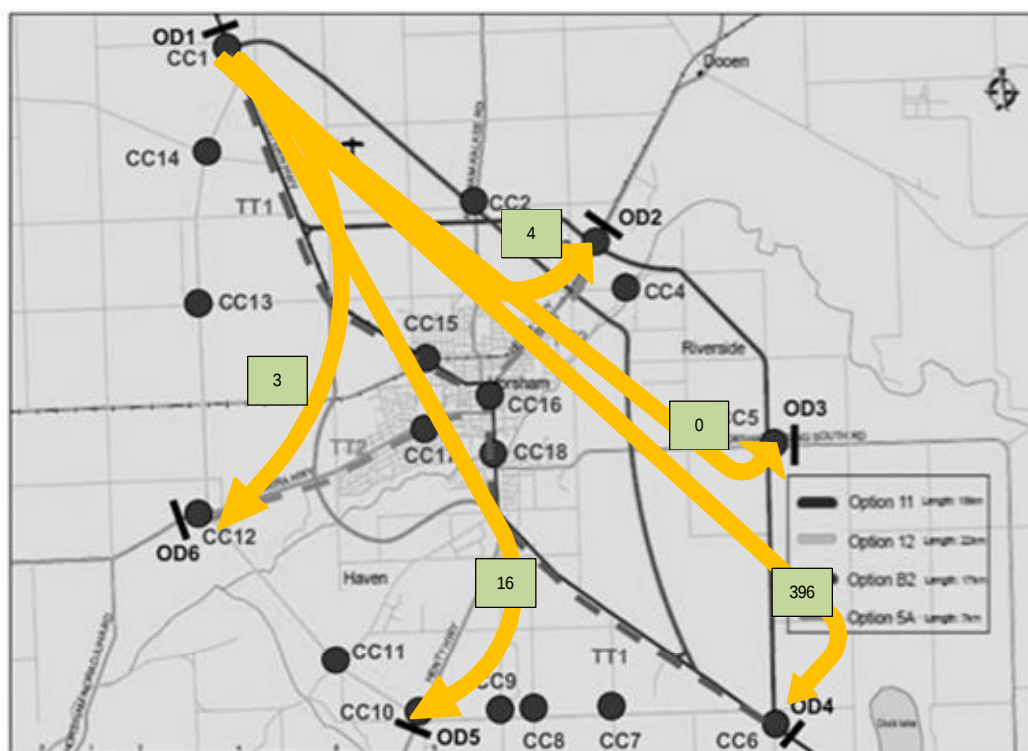


Figure A2-2: Station 1 to other stations – Heavy Vehicles, 24hr survey period

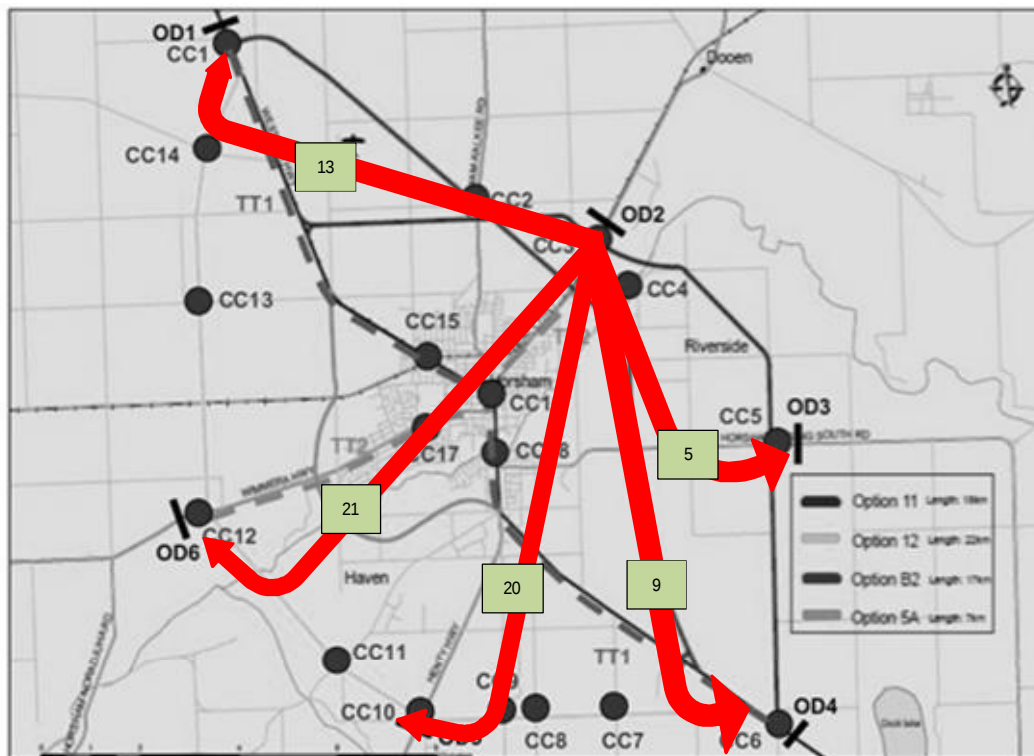


Figure A2-3: Station 2 to other stations – Light Vehicles, 24hr survey period

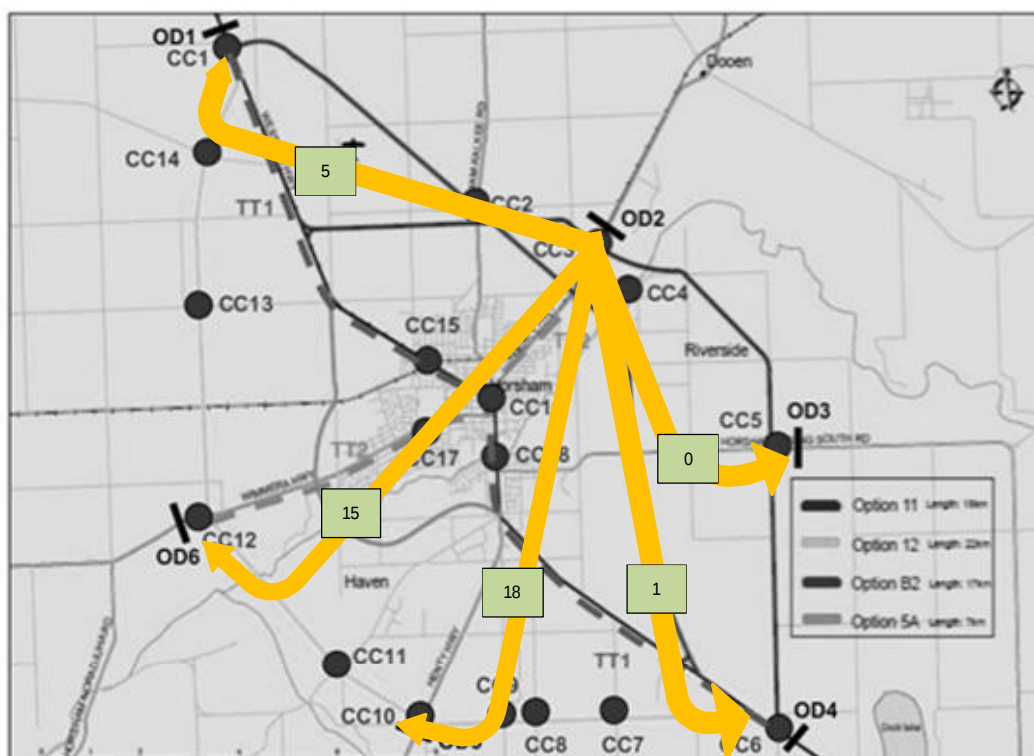


Figure A2-4: Station 2 to other stations – Heavy Vehicles, 24hr survey period

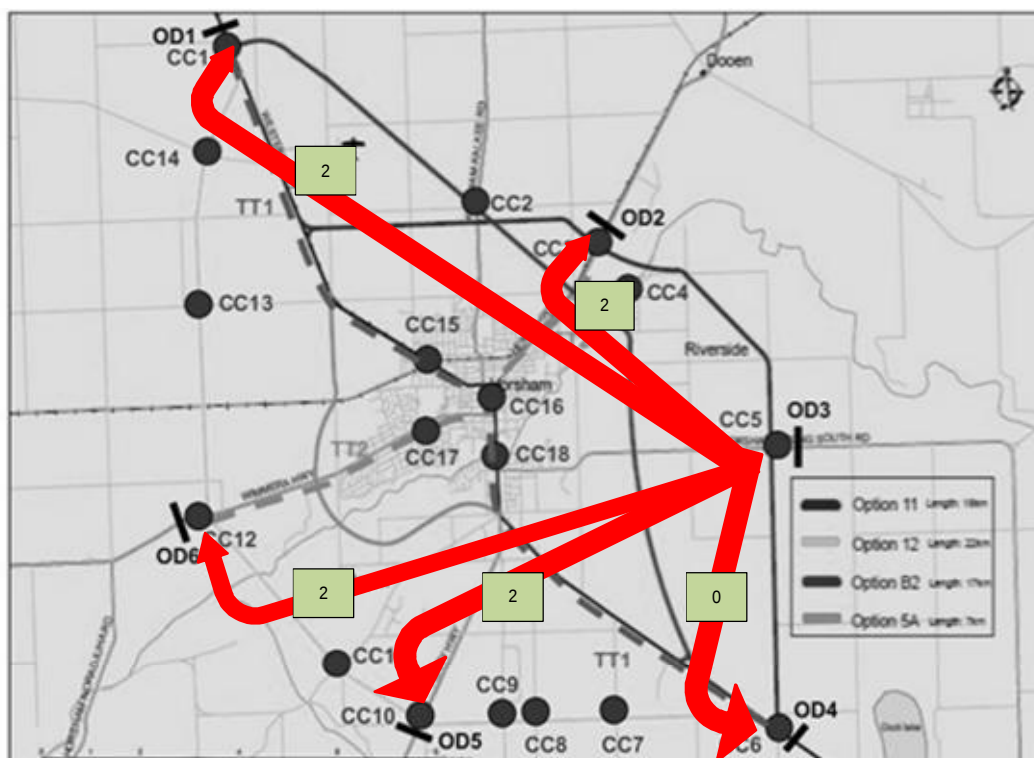


Figure A2-5: Station 3 to other stations – Light Vehicles, 24hr survey period

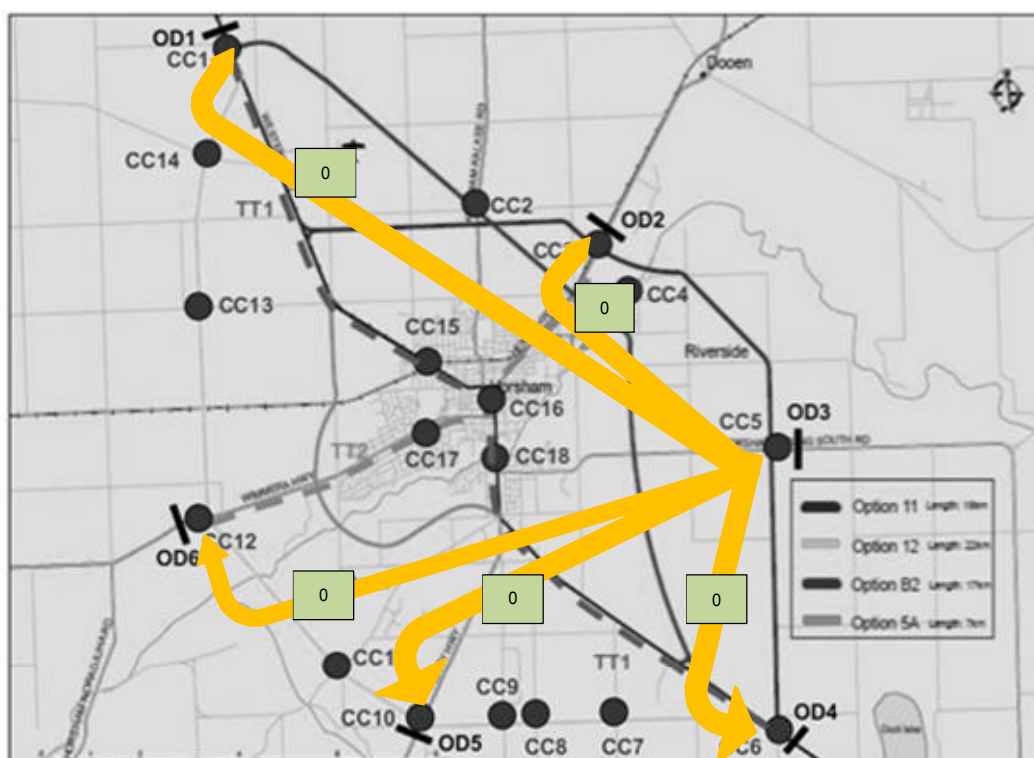


Figure A2-6: Station 3 to other stations – Heavy Vehicles, 24hr survey period

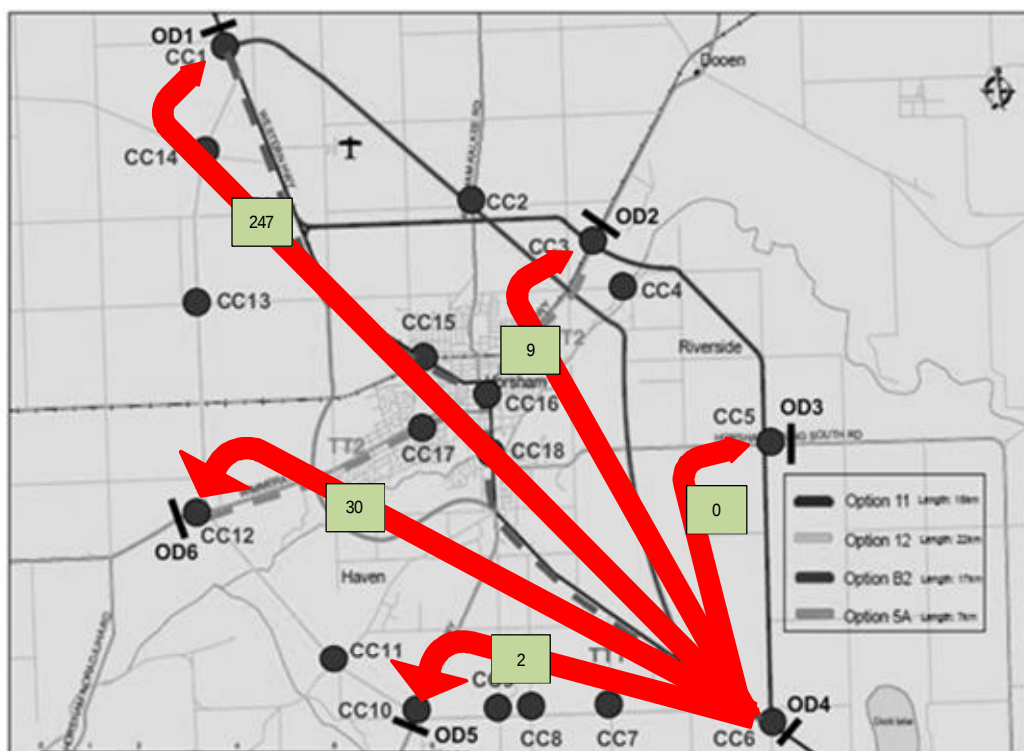


Figure A2-7: Station 4 to other stations – Light Vehicles, 24hr survey period

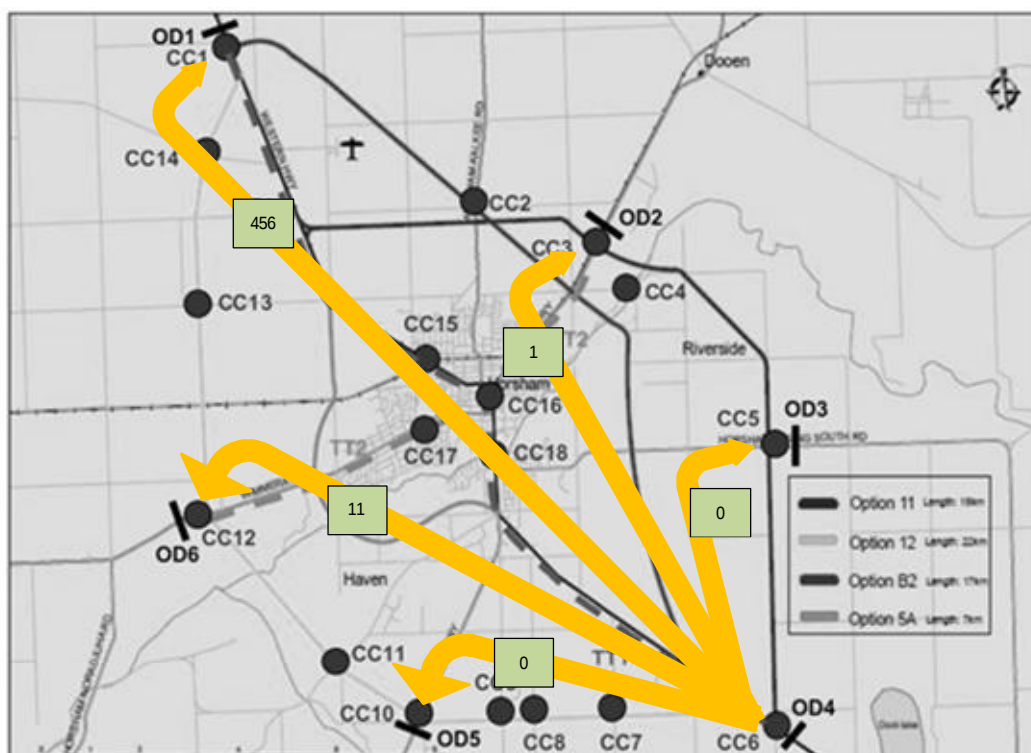


Figure A2-8: Station 4 to other stations – Heavy Vehicles, 24hr survey period

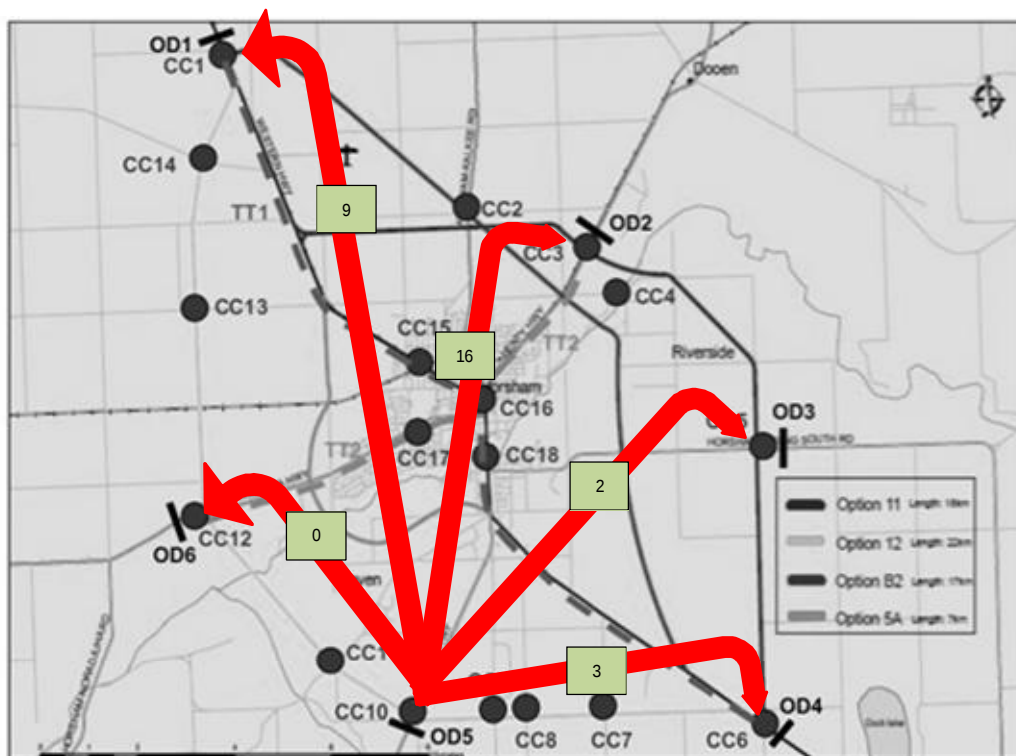


Figure A2-9: Station 5 to other stations – Light Vehicles, 24hr survey period

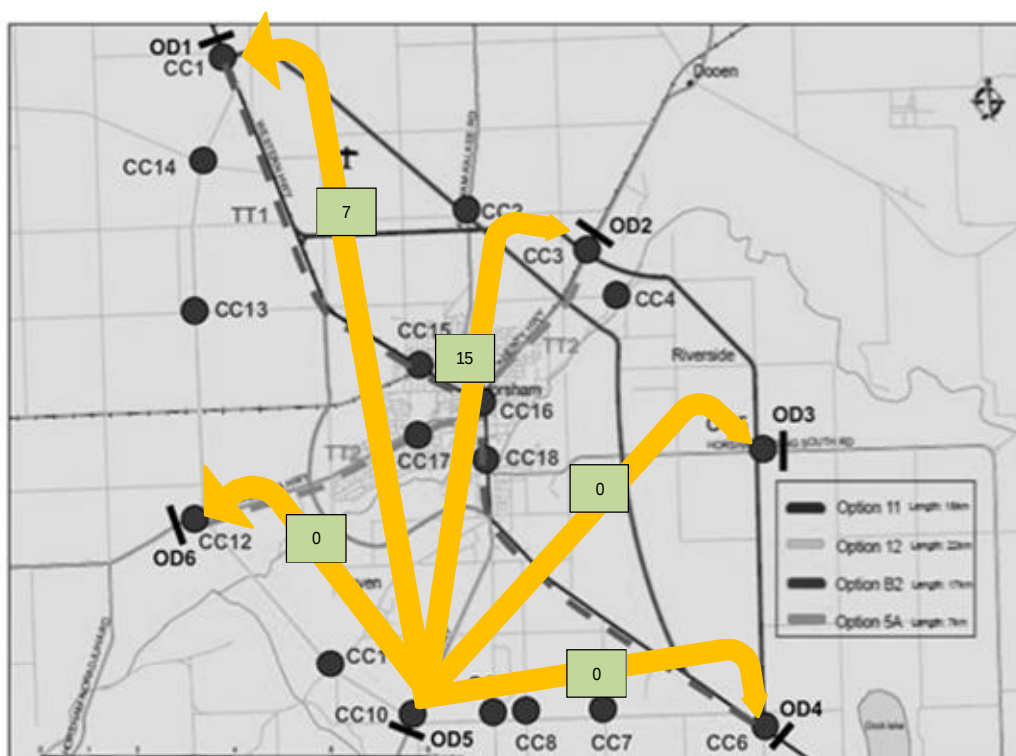


Figure A2-10: Station 5 to other stations – Heavy Vehicles, 24hr survey period

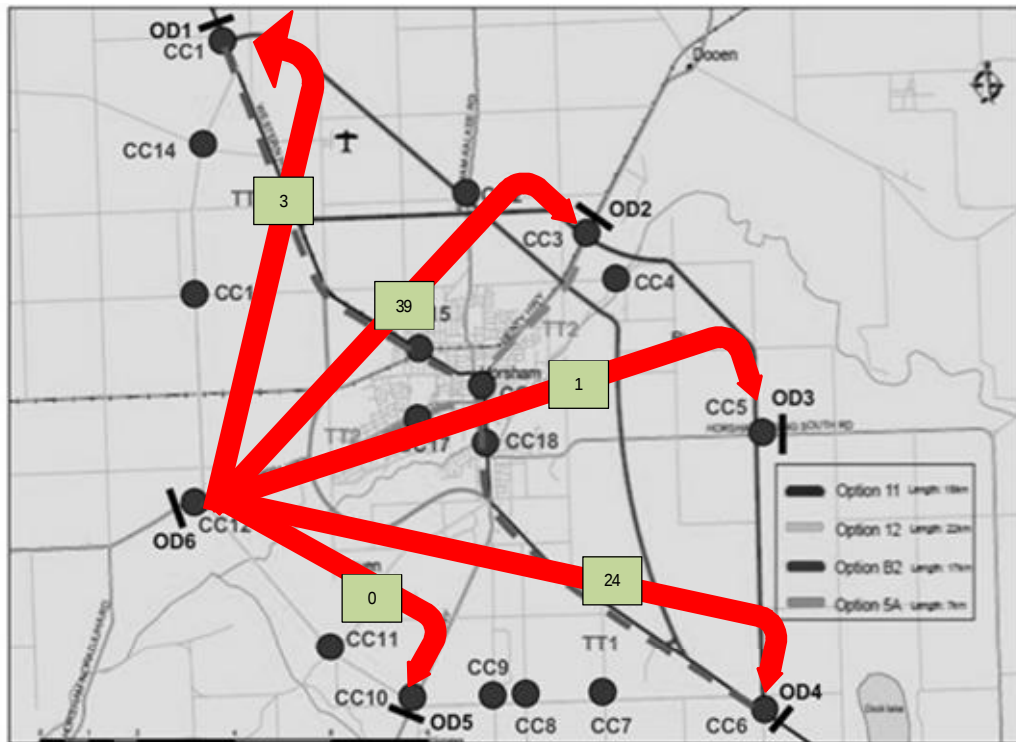


Figure A2-11: Station 6 to other stations – Light Vehicles, 24hr survey period

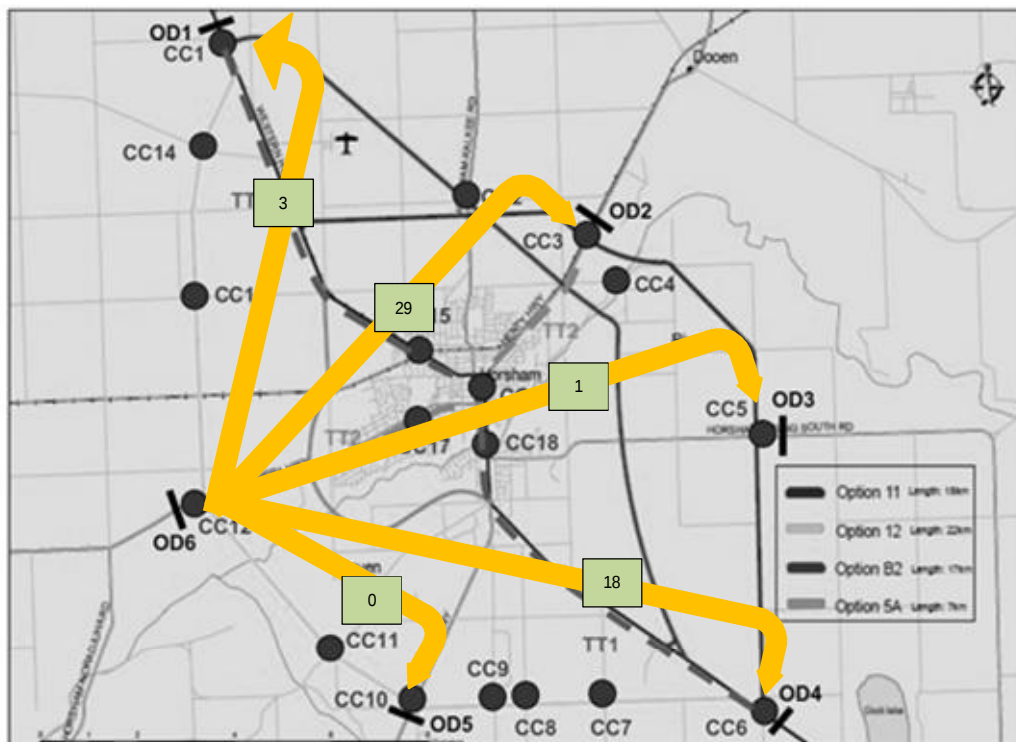


Figure A2-12: Station 6 to other stations – Heavy Vehicles, 24hr survey period

APPENDIX 3 – TRAVEL TIME RUN DATA

Date : Wednesday, 18th April 2012

Route1 - to South			Average all Runs		Run 1			Run 2			Run 3		
Node No Distance (Metres)			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
Western Hwy - 7AM - 10AM													
START	Western Hwy	Dahlen Quarry Road			6:59:08			8:09:28			9:35:47		
4,200	Western Hwy	Polkemmet Road	99	0:02:33	7:01:41	0:02:33	99	8:12:01	0:02:33	99	9:38:21	0:02:34	98
2,700	Western Hwy	Riley Road	102	0:01:35	7:03:17	0:01:36	101	8:13:36	0:01:35	102	9:39:56	0:01:35	102
2,900	Western Hwy	Wawunna Road	68	0:02:34	7:05:53	0:02:36	67	8:16:12	0:02:36	67	9:42:25	0:02:29	70
347	Western Hwy	Firebrace Street	45	0:00:28	7:06:17	0:00:24	52	8:16:46	0:00:34	37	9:42:50	0:00:25	50
226	Western Hwy	Urquhart Street	22	0:00:36	7:06:31	0:00:14	58	8:17:28	0:00:42	19	9:43:43	0:00:53	15
234	Western Hwy	McPherson Street	35	0:00:24	7:06:57	0:00:26	32	8:17:53	0:00:25	34	9:44:05	0:00:22	38
540	Western Hwy	Wilson Street	44	0:00:44	7:07:32	0:00:35	56	8:18:57	0:01:04	30	9:44:39	0:00:34	57
1,058	Western Hwy	Williams Road	45	0:01:25	7:08:35	0:01:03	60	8:20:43	0:01:46	36	9:46:05	0:01:26	44
2,000	Western Hwy	Osborne Road	65	0:01:51	7:10:17	0:01:42	71	8:22:43	0:02:00	60	9:47:55	0:01:50	65
5,700	Western Hwy	West Road	99	0:03:27	7:13:47	0:03:30	98	8:26:09	0:03:26	100	9:51:21	0:03:26	100
19,905			76	0:15:38		0:14:39	82		0:16:41	72		0:15:34	77

Route1 - to North			Average all Runs		Run 1			Run 2			Run 3		
Node No Distance (Metres)			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
Western Hwy - 7AM - 10AM													
START	Western Hwy	West Road			7:14:09			8:26:51			9:52:21		
5,700	Western Hwy	Osborne Road	94	0:03:37	7:17:42	0:03:33	96	8:30:38	0:03:47	90	9:55:53	0:03:32	97
2,000	Western Hwy	Williams Road	64	0:01:53	7:19:29	0:01:47	67	8:32:41	0:02:03	59	9:57:41	0:01:48	67
1,058	Western Hwy	Wilson Street	49	0:01:18	7:20:36	0:01:07	57	8:34:26	0:01:45	36	9:58:44	0:01:03	60
540	Western Hwy	McPherson Street	53	0:00:37	7:21:11	0:00:35	56	8:35:09	0:00:43	45	9:59:17	0:00:33	59
234	Western Hwy	Urquhart Street	48	0:00:18	7:21:31	0:00:20	42	8:35:25	0:00:16	53	9:59:34	0:00:17	50
226	Western Hwy	Firebrace Street	54	0:00:15	7:21:47	0:00:16	51	8:35:41	0:00:16	51	9:59:47	0:00:13	63
347	Western Hwy	Wawunna Road	48	0:00:26	7:22:08	0:00:21	59	8:36:18	0:00:37	34	10:00:07	0:00:20	62
2,900	Western Hwy	Riley Road	70	0:02:30	7:24:33	0:02:25	72	8:39:03	0:02:45	63	10:02:27	0:02:20	75
2,700	Western Hwy	Polkemmet Road	103	0:01:34	7:26:08	0:01:35	102	8:40:37	0:01:34	103	10:04:00	0:01:33	105
4,200	Western Hwy	Dahlen Quarry Road	101	0:02:30	7:28:39	0:02:31	100	8:43:07	0:02:30	101	10:06:29	0:02:29	101
19,905			80	0:14:58		0:14:30	82		0:16:16	73		0:14:08	85

Route1 - to South			Average all Runs		Run 1			Run 2			Run 3		
Node No Distance (Metres)			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
Western Hwy - 3PM - 6PM													
START	Western Hwy	Dahlen Quarry Road			3:03:15			4:13:27			5:18:45		
4,200	Western Hwy	Polkemmet Road	100	0:02:31	3:05:45	0:02:30	101	4:15:58	0:02:31	100	5:21:17	0:02:32	99
2,700	Western Hwy	Riley Road	103	0:01:35	3:07:20	0:01:35	102	4:17:33	0:01:35	102	5:22:51	0:01:34	103
2,900	Western Hwy	Wawunna Road	66	0:02:37	3:09:53	0:02:33	68	4:19:59	0:02:26	72	5:25:43	0:02:52	61
347	Western Hwy	Firebrace Street	51	0:00:24	3:10:15	0:00:22	57	4:20:24	0:00:25	50	5:26:09	0:00:26	48
226	Western Hwy	Urquhart Street	21	0:00:38	3:11:07	0:00:52	16	4:20:57	0:00:33	25	5:26:39	0:00:30	27
234	Western Hwy	McPherson Street	12	0:01:11	3:11:39	0:00:32	26	4:22:15	0:01:18	11	5:28:21	0:01:42	8
540	Western Hwy	Wilson Street	46	0:00:42	3:12:19	0:00:40	49	4:22:53	0:00:38	51	5:29:09	0:00:48	41
1,058	Western Hwy	Williams Road	37	0:01:43	3:13:59	0:01:40	38	4:24:49	0:01:56	33	5:30:43	0:01:34	41
2,000	Western Hwy	Osborne Road	69	0:01:44	3:15:43	0:01:44	69	4:26:32	0:01:43	70	5:32:27	0:01:44	69
5,700	Western Hwy	West Road	98	0:03:28	3:19:15	0:03:32	97	4:29:59	0:03:27	99	5:35:53	0:03:26	100
19,905			72	0:16:33		0:16:00	75		0:16:32	72		0:17:08	70

Route1 - to North			Average all Runs		Run 1			Run 2			Run 3		
Node No Distance (Metres)			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
Western Hwy - 3PM - 6PM													
START	Western Hwy	West Road			3:19:51			4:30:59			5:36:41		
5,700	Western Hwy	Osborne Road	98	0:03:29	3:23:21	0:03:30	98	4:34:31	0:03:32	97	5:40:07	0:03:26	100
2,000	Western Hwy	Williams Road	64	0:01:53	3:25:07	0:01:46	68	4:36:31	0:02:00	60	5:42:01	0:01:54	63
1,058	Western Hwy	Wilson Street	45	0:01:25	3:26:39	0:01:32	41	4:38:07	0:01:36	40	5:43:07	0:01:06	58
540	Western Hwy	McPherson Street	54	0:00:36	3:27:19	0:00:40	49	4:38:41	0:00:34	57	5:43:41	0:00:34	57
234	Western Hwy	Urquhart Street	37	0:00:23	3:27:46	0:00:27	31	4:39:03	0:00:22	38	5:44:01	0:00:20	42
226	Western Hwy	Firebrace Street	31	0:00:26	3:28:04	0:00:18	45	4:39:26	0:00:23	35	5:44:38	0:00:37	22
347	Western Hwy	Wawunna Road	26	0:00:47	3:28:54	0:00:50	25	4:40:03	0:00:37	34	5:45:33	0:00:55	23
2,900	Western Hwy	Riley Road	71	0:02:28	3:31:26	0:02:32	69	4:42:39	0:02:36	67	5:47:49	0:02:16	77
2,700	Western Hwy	Polkemmet Road	102	0:01:35	3:33:00	0:01:34	103	4:44:17	0:01:38	99	5:49:23	0:01:34	103
4,200	Western Hwy	Dahlen Quarry Road	98	0:02:35	3:35:31	0:02:31	100	4:46:59	0:02:42	93	5:51:54	0:02:31	100
19,905			76	0:15:38		0:15:40	76		0:16:00	75		0:15:13	78

Route1 - to South			Average all Runs		Run 1			Run 2			Run 3		
Node No Distance (Metres)			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
Western Hwy - 9PM - 1AM													
START	Western Hwy	Dahlen Quarry Road			9:00:23			10:15:17			11:35:12		
4,200	Western Hwy	Polkemmet Road	100	0:02:31	9:02:54	0:02:31	100	10:17:48	0:02:31	100	11:37:43	0:02:31	100
2,700	Western Hwy	Riley Road	103	0:01:34	9:04:28	0:01:34	103	10:19:23	0:01:35	102	11:39:17	0:01:34	103
2,900	Western Hwy	Wawunna Road	68	0:02:33	9:07:01	0:02:33	68	10:21:55	0:02:32	69	11:41:50	0:02:33	68
347	Western Hwy	Firebrace Street	40	0:00:31	9:07:27	0:00:26	48	10:22:31	0:00:36	35	11:42:22	0:00:32	39
226	Western Hwy	Urquhart Street	30	0:00:27	9:07:50	0:00:23	35	10:23:01	0:00:30	27	11:42:50	0:00:28	29
234	Western Hwy	McPherson Street	38	0:00:22	9:08:23	0:00:33	26	10:23:17	0:00:16	53	11:43:08	0:00:18	47
540	Western Hwy	Wilson Street	54	0:00:36	9:09:00	0:00:37	53	10:23:53	0:00:36	54	11:43:44	0:00:36	54
1,058	Western Hwy	Williams Road	38	0:01:40	9:10:43	0:01:43	37	10:25:33	0:01:40	38	11:45:20	0:01:36	40
2,000	Western Hwy	Osborne Road	70	0:01:43	9:12:25	0:01:42	71	10:27:18	0:01:45	69	11:47:02	0:01:42	71
5,700	Western Hwy	West Road	99	0:03:27	9:15:55	0:03:30	98	10:30:43	0:03:25	100	11:50:28	0:03:26	100
19,905			77	0:15:25		0:15:32	77		0:15:26	77		0:15:16	78

Route1 - to North			Average all Runs		Run 1			Run 2		Run 3			
Node No Distance (Metres)		Speed			Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time
Western Hwy - 9PM - 1AM													
START	Western Hwy	West Road			9:16:32			10:31:23			11:51:48		
5,700	Western Hwy	Osborne Road	96	0:03:33	9:20:09	0:03:37	95	10:34:54	0:03:31	97	11:55:19	0:03:31	97
2,000	Western Hwy	Williams Road	56	0:02:09	9:22:35	0:02:26	49	10:36:55	0:02:01	60	11:57:20	0:02:01	60
1,058	Western Hwy	Wilson Street	56	0:01:08	9:23:45	0:01:10	54	10:38:02	0:01:07	57	11:58:26	0:01:06	58
540	Western Hwy	McPherson Street	57	0:00:34	9:24:19	0:00:34	57	10:38:36	0:00:34	57	11:59:00	0:00:34	57
234	Western Hwy	Urquhart Street	52	0:00:16	9:24:35	0:00:16	53	10:38:53	0:00:17	50	11:59:16	0:00:16	53
226	Western Hwy	Firebrace Street	45	0:00:18	9:24:55	0:00:20	41	10:39:09	0:00:16	51	11:59:34	0:00:18	45
347	Western Hwy	Wawunna Road	31	0:00:40	9:25:35	0:00:40	31	10:39:48	0:00:39	32	12:00:14	0:00:40	31
2,900	Western Hwy	Riley Road	73	0:02:23	9:28:01	0:02:26	72	10:42:10	0:02:22	74	12:02:34	0:02:20	75
2,700	Western Hwy	Polkemmet Road	103	0:01:35	9:29:35	0:01:34	103	10:43:44	0:01:34	103	12:04:10	0:01:36	101
4,200	Western Hwy	Dahlen Quarry Road	100	0:02:31	9:32:05	0:02:30	101	10:46:14	0:02:30	101	12:06:42	0:02:32	99
19,905			79	0:15:06		0:15:33	77		0:14:51	80		0:14:54	80

Date : Thursday, 19th April 2012

Route1 - to South

Node No
Distance
(Metres)

Western Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Western Hwy	Dahlen Quarry Road			7:03:13			8:04:26			9:30:29		
4,200	Western Hwy	Polkemmet Road	100	0:02:31	7:05:45	0:02:32	99	8:06:56	0:02:30	101	9:33:00	0:02:31	100
2,700	Western Hwy	Riley Road	101	0:01:37	7:07:19	0:01:34	103	8:08:31	0:01:35	102	9:34:41	0:01:41	96
2,900	Western Hwy	Wawunna Road	68	0:02:33	7:09:41	0:02:22	74	8:11:23	0:02:52	61	9:37:07	0:02:26	72
347	Western Hwy	Firebrace Street	55	0:00:23	7:10:03	0:00:22	57	8:11:47	0:00:24	52	9:37:29	0:00:22	57
226	Western Hwy	Urquhart Street	54	0:00:15	7:10:17	0:00:14	58	8:12:02	0:00:15	54	9:37:45	0:00:16	51
234	Western Hwy	McPherson Street	15	0:00:56	7:10:53	0:00:36	23	8:12:47	0:00:45	19	9:39:11	0:01:26	10
540	Western Hwy	Wilson Street	44	0:00:45	7:11:45	0:00:52	37	8:13:35	0:00:48	41	9:39:45	0:00:34	57
1,058	Western Hwy	Williams Road	40	0:01:36	7:13:37	0:01:52	34	8:15:23	0:01:48	35	9:40:52	0:01:07	57
2,000	Western Hwy	Osborne Road	69	0:01:45	7:15:19	0:01:42	71	8:17:07	0:01:44	69	9:42:40	0:01:48	67
5,700	Western Hwy	West Road	98	0:03:29	7:18:49	0:03:30	98	8:20:37	0:03:30	98	9:46:07	0:03:27	99
19,905			76	0:15:48		0:15:36	77		0:16:11	74		0:15:38	76

Route1 - to North

Node No
Distance
(Metres)

Western Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Western Hwy	West Road			7:19:27			8:21:15			9:46:43		
5,700	Western Hwy	Osborne Road	96	0:03:33	7:22:58	0:03:31	97	8:24:49	0:03:34	96	9:50:18	0:03:35	95
2,000	Western Hwy	Williams Road	52	0:02:19	7:25:11	0:02:13	54	8:27:27	0:02:38	46	9:52:23	0:02:05	58
1,058	Western Hwy	Wilson Street	55	0:01:10	7:26:03	0:00:52	73	8:28:48	0:01:21	47	9:53:39	0:01:16	50
540	Western Hwy	McPherson Street	42	0:00:47	7:27:11	0:01:08	29	8:29:30	0:00:42	46	9:54:09	0:00:30	65
234	Western Hwy	Urquhart Street	23	0:00:36	7:27:27	0:00:16	53	8:30:15	0:00:45	19	9:54:57	0:00:48	18
226	Western Hwy	Firebrace Street	48	0:00:17	7:27:41	0:00:14	58	8:30:31	0:00:16	51	9:55:18	0:00:21	39
347	Western Hwy	Wawunna Road	26	0:00:48	7:28:01	0:00:20	62	8:31:31	0:01:00	21	9:56:23	0:01:05	19
2,900	Western Hwy	Riley Road	71	0:02:27	7:30:21	0:02:20	75	8:34:04	0:02:33	68	9:58:51	0:02:28	71
2,700	Western Hwy	Polkemmet Road	100	0:01:38	7:31:57	0:01:36	101	8:35:43	0:01:39	98	10:00:29	0:01:38	99
4,200	Western Hwy	Dahlen Quarry Road	91	0:02:47	7:34:29	0:02:32	99	8:38:54	0:03:11	79	10:03:07	0:02:38	96
19,905			73	0:16:22		0:15:02	79		0:17:39	68		0:16:24	73

Route1 - to South

Node No
Distance
(Metres)

Western Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Western Hwy	Dahlen Quarry Road			3:06:15			4:16:19			5:31:11		
4,200	Western Hwy	Polkemmet Road	100	0:02:32	3:08:46	0:02:31	100	4:18:49	0:02:30	101	5:33:45	0:02:34	98
2,700	Western Hwy	Riley Road	102	0:01:36	3:10:22	0:01:36	101	4:20:25	0:01:36	101	5:35:20	0:01:35	102
2,900	Western Hwy	Wawunna Road	65	0:02:40	3:13:25	0:03:03	57	4:23:01	0:02:36	67	5:37:41	0:02:21	74
347	Western Hwy	Firebrace Street	45	0:00:28	3:13:48	0:00:23	54	4:23:26	0:00:25	50	5:38:17	0:00:36	35
226	Western Hwy	Urquhart Street	16	0:00:51	3:14:05	0:00:17	48	4:24:43	0:01:17	11	5:39:17	0:01:00	14
234	Western Hwy	McPherson Street	12	0:01:11	3:15:41	0:01:36	9	4:25:55	0:01:12	12	5:40:01	0:00:44	19
540	Western Hwy	Wilson Street	42	0:00:46	3:16:41	0:01:00	32	4:26:39	0:00:44	44	5:40:35	0:00:34	57
1,058	Western Hwy	Williams Road	47	0:01:21	3:18:09	0:01:28	43	4:28:09	0:01:30	42	5:41:39	0:01:04	60
2,000	Western Hwy	Osborne Road	69	0:01:44	3:19:53	0:01:44	69	4:29:57	0:01:48	67	5:43:19	0:01:40	72
5,700	Western Hwy	West Road	99	0:03:28	3:23:21	0:03:28	99	4:33:25	0:03:28	99	5:46:46	0:03:27	99
19,905			72	0:16:36		0:17:06	70		0:17:06	70		0:15:35	77

Route1 - to North

Node No
Distance
(Metres)

Western Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Western Hwy	West Road			3:24:07			4:34:00			5:47:27		
5,700	Western Hwy	Osborne Road	98	0:03:29	3:27:36	0:03:29	98	4:37:27	0:03:27	99	5:50:57	0:03:30	98
2,000	Western Hwy	Williams Road	54	0:02:14	3:30:05	0:02:29	48	4:39:37	0:02:10	55	5:53:01	0:02:04	58
1,058	Western Hwy	Wilson Street	51	0:01:15	3:31:21	0:01:16	50	4:40:45	0:01:08	56	5:54:23	0:01:22	46
540	Western Hwy	McPherson Street	49	0:00:39	3:32:03	0:00:42	46	4:41:19	0:00:34	57	5:55:05	0:00:42	46
234	Western Hwy	Urquhart Street	24	0:00:35	3:32:44	0:00:41	21	4:41:49	0:00:30	28	5:55:39	0:00:34	25
226	Western Hwy	Firebrace Street	35	0:00:23	3:33:21	0:00:37	22	4:42:05	0:00:16	51	5:55:55	0:00:16	51
347	Western Hwy	Wawunna Road	34	0:00:37	3:34:25	0:01:04	20	4:42:27	0:00:22	57	5:56:19	0:00:24	52
2,900	Western Hwy	Riley Road	70	0:02:29	3:37:04	0:02:39	66	4:44:45	0:02:18	76	5:58:50	0:02:31	69
2,700	Western Hwy	Polkemmet Road	102	0:01:35	3:38:38	0:01:34	103	4:46:19	0:01:34	103	6:00:28	0:01:38	99
4,200	Western Hwy	Dahlen Quarry Road	100	0:02:31	3:41:07	0:02:29	101	4:48:49	0:02:30	101	6:03:01	0:02:33	99
19,905			76	0:15:48		0:17:00	70		0:14:49	81		0:15:34	77

Route1 - to South

Node No
Distance
(Metres)

Western Hwy - 9PM - 1AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Western Hwy	Dahlen Quarry Road			9:08:05			10:10:37			11:32:13		
4,200	Western Hwy	Polkemmet Road	99	0:02:32	9:10:38	0:02:33	99	10:13:09	0:02:32	99	11:34:44	0:02:31	100
2,700	Western Hwy	Riley Road	101	0:01:36	9:12:14	0:01:36	101	10:14:44	0:01:35	102	11:36:21	0:01:37	100
2,900	Western Hwy	Wawunna Road	67	0:02:36	9:15:10	0:02:56	59	10:17:09	0:02:25	72	11:38:49	0:02:28	71
347	Western Hwy	Firebrace Street	51	0:00:25	9:15:36	0:00:26	48	10:17:33	0:00:24	52	11:39:13	0:00:24	52
226	Western Hwy	Urquhart Street	36	0:00:22	9:15:51	0:00:15	54	10:18:05	0:00:32	25	11:39:33	0:00:20	41
234	Western Hwy	McPherson Street	33	0:00:25	9:16:09	0:00:18	47	10:18:39	0:00:34	25	11:39:57	0:00:24	35
540	Western Hwy	Wilson Street	51	0:00:38	9:16:47	0:00:38	51	10:19:17	0:00:38	51	11:40:35	0:00:38	51
1,058	Western Hwy	Williams Road	51	0:01:14	9:17:54	0:01:07	57	10:20:39	0:01:22	46	11:41:49	0:01:14	51
2,000	Western Hwy	Osborne Road	65	0:01:51	9:19:48	0:01:54	63	10:22:23	0:01:44	69	11:43:44	0:01:55	63
5,700	Western Hwy	West Road	98	0:03:29	9:23:21	0:03:33	96	10:25:51	0:03:28	99	11:47:11	0:03:27	99
19,905			79	0:15:09		0:15:16	78		0:15:14	78		0:14:58	80

Route1 - to North

Node No
Distance
(Metres)

Western Hwy - 9PM - 1AM

START	Western Hwy	West Road			9:23:57			10:26:36			11:48:32		
5,700	Western Hwy	Osborne Road	99	0:03:28	9:27:27	0:03:30	98	10:30:01	0:03:25	100	11:52:00	0:03:28	99
2,000	Western Hwy	Williams Road	63	0:01:54	9:29:31	0:02:04	58	10:31:45	0:01:44	69	11:53:55	0:01:55	63
1,058	Western Hwy	Wilson Street	54	0:01:11	9:30:45	0:01:14	51	10:32:53	0:01:08	56	11:55:05	0:01:10	54
540	Western Hwy	McPherson Street	52	0:00:38	9:31:22	0:00:37	53	10:33:32	0:00:39	50	11:55:42	0:00:37	53
234	Western Hwy	Urquhart Street	37	0:00:23	9:31:41	0:00:19	44	10:33:59	0:00:27	31	11:56:04	0:00:22	38
226	Western Hwy	Firebrace Street	51	0:00:16	9:31:57	0:00:16	51	10:34:15	0:00:16	51	11:56:20	0:00:16	51
347	Western Hwy	Wawunna Road	37	0:00:34	9:32:31	0:00:34	37	10:34:49	0:00:34	37	11:56:54	0:00:34	37
2,900	Western Hwy	Riley Road	74	0:02:21	9:34:58	0:02:27	71	10:37:05	0:02:16	77	11:59:14	0:02:20	75
2,700	Western Hwy	Polkemmet Road	101	0:01:36	9:36:36	0:01:38	99	10:38:39	0:01:34	103	12:00:51	0:01:37	100
4,200	Western Hwy	Dahlen Quarry Road	99	0:02:32	9:39:12	0:02:36	97	10:41:07	0:02:28	102	12:03:23	0:02:32	99
19,905			80	0:14:52		0:15:15	78		0:14:31	82		0:14:51	80

Date : Wednesday, 18th April 2012

Route 2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			7:43:29			8:22:05			9:09:47		
4,900	Wimmera Hwy	Curran Road	102	0:02:53	7:46:23	0:02:54	101	8:25:01	0:02:56	100	9:12:37	0:02:50	104
1,800	Wimmera Hwy	Bennett Road	62	0:01:45	7:48:09	0:01:46	61	8:26:45	0:01:44	62	9:14:21	0:01:44	62
932	Wimmera Hwy	Darlot Street	47	0:01:12	7:49:09	0:01:00	56	8:28:15	0:01:30	37	9:15:27	0:01:06	51
714	Wimmera Hwy	McPherson Street	27	0:01:36	7:50:35	0:01:26	30	8:30:01	0:01:46	24	9:17:03	0:01:36	27
540	Wimmera Hwy	Dooen Road (Intersection)	33	0:00:59	7:51:17	0:00:42	46	8:31:15	0:01:14	26	9:18:05	0:01:02	31
837	Wimmera Hwy	Carroll Street	52	0:00:58	7:52:09	0:00:52	58	8:32:22	0:01:07	45	9:19:01	0:00:56	54
1,100	Wimmera Hwy	Peppertree Lane	72	0:00:55	7:53:05	0:00:56	71	8:33:18	0:00:56	71	9:19:55	0:00:54	73
2,369	Wimmera Hwy	Gatehouse Road	89	0:01:35	7:54:35	0:01:30	95	8:34:58	0:01:40	85	9:21:31	0:01:36	89
13,192			66	0:11:54		0:11:06	71		0:12:53	61		0:11:44	67

Route 2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			7:31:27			8:08:02			8:56:27		
2,369	Wimmera Hwy	Peppertree Lane	91	0:01:33	7:32:57	0:01:30	95	8:09:38	0:01:36	89	8:58:01	0:01:34	91
1,100	Wimmera Hwy	Carroll Street	62	0:01:04	7:33:56	0:00:59	67	8:10:46	0:01:08	58	8:59:07	0:01:06	60
837	Wimmera Hwy	McPherson Street (Intersection)	35	0:01:27	7:35:11	0:01:15	40	8:12:27	0:01:41	30	9:00:33	0:01:26	35
540	Wimmera Hwy	Wilson Street	31	0:01:03	7:36:03	0:00:52	37	8:13:41	0:01:14	26	9:01:37	0:01:04	30
714	Wimmera Hwy	Darlot Street	26	0:01:39	7:37:17	0:01:14	35	8:15:43	0:02:02	21	9:03:18	0:01:41	25
932	Wimmera Hwy	Bennett Road	51	0:01:06	7:38:17	0:01:00	56	8:16:53	0:01:10	48	9:04:25	0:01:07	50
1,800	Wimmera Hwy	Curran Road	62	0:01:45	7:39:59	0:01:42	64	8:18:44	0:01:51	58	9:06:07	0:01:42	64
4,900	Wimmera Hwy	Remlaw Station Road	99	0:02:57	7:42:55	0:02:56	100	8:21:44	0:03:00	98	9:09:03	0:02:56	100
13,192			63	0:12:35		0:11:28	69		0:13:42	58		0:12:36	63

Route 2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			3:44:48			4:21:03			5:13:09		
4,900	Wimmera Hwy	Curran Road	101	0:02:54	3:47:43	0:02:55	101	4:23:57	0:02:54	101	5:16:03	0:02:54	101
1,800	Wimmera Hwy	Bennett Road	53	0:02:02	3:49:49	0:02:06	51	4:26:07	0:02:10	50	5:17:52	0:01:49	59
932	Wimmera Hwy	Darlot Street	41	0:01:22	3:51:19	0:01:30	37	4:27:33	0:01:26	39	5:19:03	0:01:11	47
714	Wimmera Hwy	McPherson Street	29	0:01:28	3:52:41	0:01:22	31	4:29:08	0:01:35	27	5:20:31	0:01:28	29
540	Wimmera Hwy	Dooen Road (Intersection)	19	0:01:43	3:54:33	0:01:52	17	4:31:10	0:02:02	16	5:21:47	0:01:16	26
837	Wimmera Hwy	Carroll Street	54	0:00:55	3:55:25	0:00:52	58	4:32:07	0:00:57	53	5:22:44	0:00:57	53
1,100	Wimmera Hwy	Peppertree Lane	66	0:01:00	3:56:23	0:00:58	68	4:33:09	0:01:02	64	5:23:44	0:01:00	66
2,369	Wimmera Hwy	Gatehouse Road	94	0:01:30	3:57:53	0:01:30	95	4:34:39	0:01:30	95	5:25:15	0:01:31	94
13,192			61	0:12:56		0:13:05	60		0:13:36	58		0:12:06	65

Route 2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			3:29:41			4:05:20			4:59:39		
2,369	Wimmera Hwy	Peppertree Lane	93	0:01:31	3:31:13	0:01:32	93	4:06:52	0:01:32	93	5:01:09	0:01:30	95
1,100	Wimmera Hwy	Carroll Street	61	0:01:05	3:32:17	0:01:04	62	4:08:02	0:01:10	57	5:02:09	0:01:00	66
837	Wimmera Hwy	McPherson Street (Intersection)	23	0:02:13	3:34:33	0:02:16	22	4:10:28	0:02:26	21	5:04:07	0:01:58	26
540	Wimmera Hwy	McPherson Street	23	0:01:23	3:36:13	0:01:40	19	4:12:19	0:01:51	18	5:04:45	0:00:38	51
714	Wimmera Hwy	Darlot Street	20	0:02:08	3:38:16	0:02:03	21	4:14:30	0:02:11	20	5:06:55	0:02:10	20
932	Wimmera Hwy	Bennett Road	51	0:01:06	3:39:25	0:01:09	49	4:15:37	0:01:07	50	5:07:58	0:01:03	53
1,800	Wimmera Hwy	Curran Road	62	0:01:44	3:41:12	0:01:47	61	4:17:20	0:01:43	63	5:09:41	0:01:43	63
4,900	Wimmera Hwy	Remlaw Station Road	101	0:02:54	3:44:05	0:02:53	102	4:20:16	0:02:56	100	5:12:35	0:02:54	101
13,192			56	0:14:05		0:14:24	55		0:14:56	53		0:12:56	61

Route 2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 9PM - 1AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			9:46:33			11:13:05			12:15:05		
4,900	Wimmera Hwy	Curran Road	101	0:02:55	9:49:28	0:02:55	101	11:16:01	0:02:56	100	12:18:00	0:02:55	101
1,800	Wimmera Hwy	Bennett Road	61	0:01:47	9:51:15	0:01:47	61	11:17:49	0:01:48	60	12:19:46	0:01:46	61
932	Wimmera Hwy	Darlot Street	55	0:01:01	9:52:16	0:01:01	55	11:18:51	0:01:02	54	12:20:45	0:00:59	57
714	Wimmera Hwy	McPherson Street	35	0:01:14	9:53:21	0:01:05	40	11:20:09	0:01:18	33	12:22:04	0:01:19	33
540	Wimmera Hwy	Dooen Road (Intersection)	34	0:00:58	9:54:47	0:01:26	23	11:20:55	0:00:46	42	12:22:45	0:00:41	47
837	Wimmera Hwy	Carroll Street	58	0:00:52	9:55:41	0:00:54	56	11:21:47	0:00:52	58	12:23:36	0:00:51	59
1,100	Wimmera Hwy	Peppertree Lane	69	0:00:58	9:56:38	0:00:57	69	11:22:45	0:00:58	68	12:24:34	0:00:58	68
2,369	Wimmera Hwy	Gatehouse Road	95	0:01:29	9:58:07	0:01:29	96	11:24:14	0:01:29	96	12:26:04	0:01:30	95
13,192			70	0:11:14		0:11:34	68		0:11:09	71		0:10:59	72

Route 2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 9PM - 1AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			9:34:30			10:58:22			12:03:02		
2,369	Wimmera Hwy	Peppertree Lane	94	0:01:31	9:36:02	0:01:32	93	10:59:52	0:01:30	95	12:04:32	0:01:30	95
1,100	Wimmera Hwy	Carroll Street	68	0:00:59	9:36:59	0:00:57	69	11:00:53	0:01:01	65	12:05:30	0:00:58	68
837	Wimmera Hwy	McPherson Street (Intersection)	40	0:01:15	9:38:37	0:01:38	31	11:02:03	0:01:10	43	12:06:28	0:00:58	52
540	Wimmera Hwy	Wilson Street	51	0:00:38	9:39:15	0:00:38	51	11:02:41	0:00:38	51	12:07:06	0:00:38	51
714	Wimmera Hwy	Darlot Street	37	0:01:09	9:40:25	0:01:10	37	11:03:49	0:01:08	38	12:08:16	0:01:10	37
932	Wimmera Hwy	Bennett Road	58	0:00:58	9:41:23	0:00:58	58	11:04:47	0:00:58	58	12:09:14	0:00:58	58
1,800	Wimmera Hwy	Curran Road	64	0:01:41	9:43:05	0:01:42	64	11:06:27	0:01:40	65	12:10:54	0:01:40	65
4,900	Wimmera Hwy	Remlaw Station Road	101	0:02:54	9:45:59	0:02:54	101	11:09:22	0:02:55	101	12:13:48	0:02:54	101
13,192			71	0:11:05		0:11:29	69		0:11:00	72		0:10:46	74

Date : Thursday, 19th April 2012

Route2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			7:39:02			8:17:43			9:06:11		
4,900	Wimmera Hwy	Curran Road	101	0:02:55	7:41:57	0:02:55	101	8:20:38	0:02:55	101	9:09:05	0:02:54	101
1,800	Wimmera Hwy	Bennett Road	56	0:01:55	7:43:57	0:02:00	54	8:22:38	0:02:00	54	9:10:51	0:01:46	61
932	Wimmera Hwy	Darlot Street	45	0:01:14	7:44:57	0:01:00	56	8:24:03	0:01:25	39	9:12:09	0:01:18	43
714	Wimmera Hwy	McPherson Street	28	0:01:32	7:46:13	0:01:16	34	8:25:49	0:01:46	24	9:13:43	0:01:34	27
540	Wimmera Hwy	Dooen Road (Intersection)	37	0:00:53	7:47:07	0:00:54	36	8:26:51	0:01:02	31	9:14:25	0:00:42	46
837	Wimmera Hwy	Carroll Street	53	0:00:57	7:47:59	0:00:52	58	8:27:53	0:01:02	49	9:15:22	0:00:57	53
1,100	Wimmera Hwy	Peppertree Lane	68	0:00:58	7:48:57	0:00:58	68	8:28:51	0:00:58	68	9:16:21	0:00:59	67
2,369	Wimmera Hwy	Gatehouse Road	95	0:01:30	7:50:27	0:01:30	95	8:30:21	0:01:30	95	9:17:50	0:01:29	96
13,192			67	0:11:54		0:11:25	69		0:12:38	63		0:11:39	68

Route2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 7AM - 10AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			7:27:31			8:03:12			8:52:59		
2,369	Wimmera Hwy	Peppertree Lane	94	0:01:31	7:29:02	0:01:31	94	8:04:43	0:01:31	94	8:54:29	0:01:30	95
1,100	Wimmera Hwy	Carroll Street	60	0:01:06	7:30:03	0:01:01	65	8:05:55	0:01:12	55	8:55:34	0:01:05	61
837	Wimmera Hwy	Dooen Road (Intersection)	29	0:01:44	7:30:57	0:00:54	56	8:08:10	0:02:15	22	8:57:37	0:02:03	24
540	Wimmera Hwy	McPherson Street	36	0:00:54	7:31:31	0:00:34	57	8:09:11	0:01:01	32	8:58:45	0:01:08	29
714	Wimmera Hwy	Darlot Street	39	0:01:07	7:32:39	0:01:08	38	8:10:19	0:01:08	38	8:59:49	0:01:04	40
932	Wimmera Hwy	Bennett Road	52	0:01:04	7:33:38	0:00:59	57	8:11:29	0:01:10	48	9:00:53	0:01:04	52
1,800	Wimmera Hwy	Curran Road	62	0:01:44	7:35:21	0:01:43	63	8:13:13	0:01:44	62	9:02:39	0:01:46	61
4,900	Wimmera Hwy	Remlaw Station Road	101	0:02:55	7:38:15	0:02:54	101	8:16:10	0:02:57	100	9:05:33	0:02:54	101
13,192			65	0:12:05		0:10:44	74		0:12:58	61		0:12:34	63

Route2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			3:49:19			4:25:06			5:15:39		
4,900	Wimmera Hwy	Curran Road	101	0:02:55	3:52:11	0:02:52	103	4:28:01	0:02:55	101	5:18:37	0:02:58	99
1,800	Wimmera Hwy	Bennett Road	59	0:01:51	3:53:53	0:01:42	64	4:30:06	0:02:05	52	5:20:22	0:01:45	62
932	Wimmera Hwy	Darlot Street	52	0:01:05	3:54:55	0:01:02	54	4:31:11	0:01:05	52	5:21:29	0:01:07	50
714	Wimmera Hwy	McPherson Street	28	0:01:30	3:56:15	0:01:20	32	4:32:46	0:01:35	27	5:23:05	0:01:36	27
540	Wimmera Hwy	Dooen Road (Intersection)	23	0:01:25	3:57:35	0:01:20	24	4:34:22	0:01:36	20	5:24:25	0:01:20	24
837	Wimmera Hwy	Carroll Street	50	0:01:00	3:58:41	0:01:06	46	4:35:22	0:01:00	50	5:25:19	0:00:54	56
1,100	Wimmera Hwy	Peppertree Lane	65	0:01:01	3:59:47	0:01:06	60	4:36:20	0:00:58	68	5:26:17	0:00:58	68
2,369	Wimmera Hwy	Gatehouse Road	89	0:01:36	4:01:28	0:01:41	84	4:37:52	0:01:32	93	5:27:53	0:01:36	89
13,192			64	0:12:23		0:12:09	65		0:12:46	62		0:12:14	65

Route2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 3PM - 6PM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			3:34:11			4:08:31			5:01:13		
2,369	Wimmera Hwy	Peppertree Lane	93	0:01:32	3:35:45	0:01:34	91	4:10:02	0:01:31	94	5:02:43	0:01:30	95
1,100	Wimmera Hwy	Carroll Street	62	0:01:04	3:36:48	0:01:03	63	4:11:12	0:01:10	57	5:03:41	0:00:58	68
837	Wimmera Hwy	Dooen Road (Intersection)	25	0:02:02	3:38:29	0:01:41	30	4:13:34	0:02:22	21	5:05:43	0:02:02	25
540	Wimmera Hwy	McPherson Street	33	0:00:59	3:39:31	0:01:02	31	4:14:50	0:01:16	26	5:06:22	0:00:39	50
714	Wimmera Hwy	Darlot Street	15	0:02:46	3:42:25	0:02:54	15	4:17:40	0:02:50	15	5:08:57	0:02:35	17
932	Wimmera Hwy	Bennett Road	47	0:01:11	3:43:41	0:01:16	44	4:18:50	0:01:10	48	5:10:05	0:01:08	49
1,800	Wimmera Hwy	Curran Road	56	0:01:55	3:45:40	0:01:59	54	4:20:46	0:01:56	56	5:11:55	0:01:50	59
4,900	Wimmera Hwy	Remlaw Station Road	97	0:03:03	3:48:37	0:02:57	100	4:23:53	0:03:07	94	5:14:59	0:03:04	96
13,192			55	0:14:31		0:14:26	55		0:15:22	52		0:13:46	57

Route2 - to East

Node No
Distance
(Metres)

Wimmera Hwy - 9PM - 1AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Remlaw Station Road			9:46:03			11:04:39			11:44:10		
4,900	Wimmera Hwy	Curran Road	101	0:02:54	9:48:57	0:02:54	101	11:07:34	0:02:55	101	11:47:04	0:02:54	101
1,800	Wimmera Hwy	Bennett Road	61	0:01:46	9:50:44	0:01:47	61	11:09:20	0:01:46	61	11:48:50	0:01:46	61
932	Wimmera Hwy	Darlot Street	55	0:01:01	9:51:47	0:01:03	53	11:10:19	0:00:59	57	11:49:51	0:01:01	55
714	Wimmera Hwy	McPherson Street	32	0:01:21	9:53:07	0:01:20	32	11:11:40	0:01:21	32	11:51:12	0:01:21	32
540	Wimmera Hwy	Dooen Road (Intersection)	37	0:00:53	9:54:31	0:01:24	23	11:12:17	0:00:37	53	11:51:50	0:00:38	51
837	Wimmera Hwy	Carroll Street	59	0:00:51	9:55:23	0:00:52	58	11:13:08	0:00:51	59	11:52:41	0:00:51	59
1,100	Wimmera Hwy	Peppertree Lane	68	0:00:58	9:56:21	0:00:58	68	11:14:07	0:00:59	67	11:53:39	0:00:58	68
2,369	Wimmera Hwy	Gatehouse Road	95	0:01:30	9:57:50	0:01:29	96	11:15:37	0:01:30	95	11:55:09	0:01:30	95
13,192			70	0:11:15		0:11:47	67		0:10:58	72		0:10:59	72

Route2 - to West

Node No
Distance
(Metres)

Wimmera Hwy - 9PM - 1AM

			Average all Runs		Run 1			Run 2			Run 3		
			Speed	Section Time	Node Time	Section Time	Speed	Node Time	Section Time	Speed	Node Time	Section Time	Speed
START	Wimmera Hwy	Gatehouse Road			9:34:08			10:53:15			11:32:05		
2,369	Wimmera Hwy	Peppertree Lane	93	0:01:31	9:35:41	0:01:33	92	10:54:46	0:01:31	94	11:33:35	0:01:30	95
1,100	Wimmera Hwy	Carroll Street	66	0:01:00	9:36:40	0:00:59	67	10:55:47	0:01:01	65	11:34:35	0:01:00	66
837	Wimmera Hwy	Dooen Road (Intersection)	52	0:00:58	9:37:37	0:00:57	53	10:56:46	0:00:59	51	11:35:33	0:00:58	52
540	Wimmera Hwy	McPherson Street	50	0:00:39	9:38:15	0:00:38	51	10:57:25	0:00:39	50	11:36:12	0:00:39	50
714	Wimmera Hwy	Darlot Street	36	0:01:11	9:39:29	0:01:14	35	10:58:33	0:01:08	38	11:37:22	0:01:10	37
932	Wimmera Hwy	Bennett Road	56	0:01:00	9:40:33	0:01:04	52	10:59:32	0:00:59	57	11:38:20	0:00:58	58
1,800	Wimmera Hwy	Curran Road	62	0:01:45	9:42:29	0:01:56	56	11:01:12	0:01:40	65	11:40:00	0:01:40	65
4,900	Wimmera Hwy	Remlaw Station Road	101	0:02:54	9:45:22	0:02:53	102	11:04:07	0:02:55	101	11:42:55	0:02:55	101
13,192			72	0:10:59		0:11:14	70		0:10:52	73		0:10:50	73