

Metcash Site, Huntingwood West  
Addendum Traffic Report

10 September 2010

Prepared for  
**Metcash**

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Effect on Huntingwood Drive-Great Western Highway Intersection</b>	<b>2</b>
<b>3</b>	<b>Heavy Vehicle Movements</b>	<b>5</b>
3.1	Approved Concept Plan	5
3.2	Current Proposal	6
3.3	Comparison	8
<b>4</b>	<b>Conclusions</b>	<b>9</b>
<b>Appendix A</b>	<b>Huntingwood Dr-Great Western Hwy Intersection Count</b>	<b>A.1</b>
<b>Appendix B</b>	<b>SIDRA Analysis Results</b>	<b>B.1</b>

# Metcash Site, Huntingwood West Addendum Traffic Report

Prepared for  
**Metcash**

This report has been issued and amended as follows:

Rev	Description	Date	Prepared by	Approved by
0	Draft for internal review	10/09/10	KY	KJH
1	Issue to Client	10/09/10	KY	KJH

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# 1 Introduction

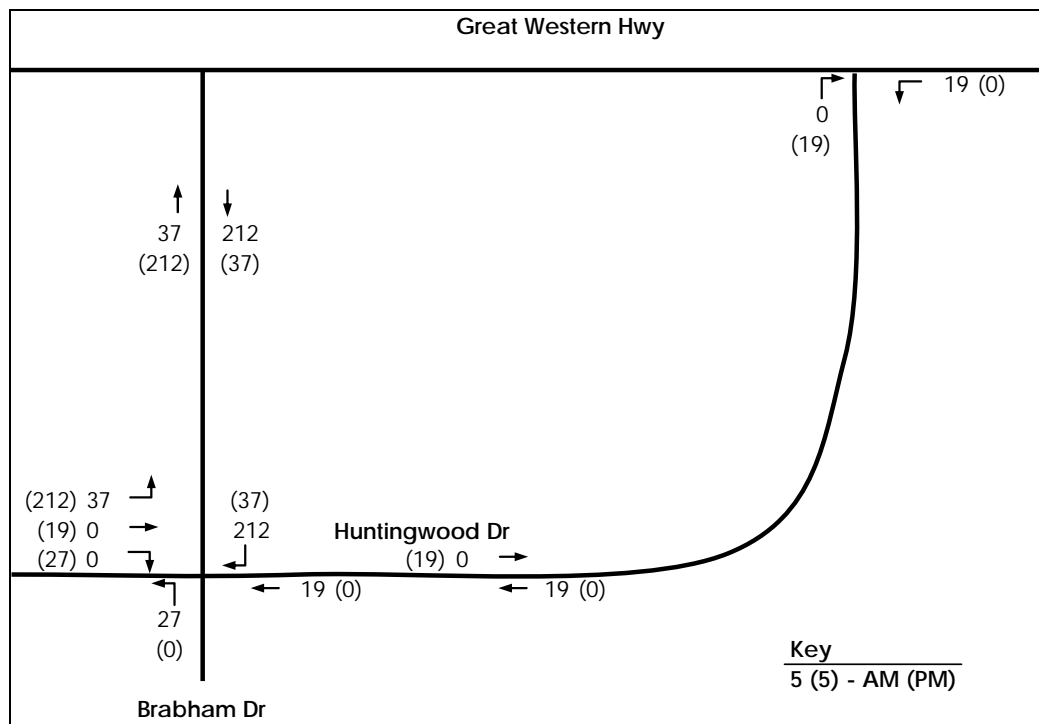
During the meeting with RTA on 3rd September 2010 regarding the proposed Metcash site at Huntingwood West, RTA has requested the following issues to be addressed:

- To examine the effect of the proposed development on the Huntingwood Drive-Great Western Highway intersection; and
- To compare number of heavy vehicle movements for the current proposal with the approved concept plan.

This addendum traffic report has been prepared to address the above RTA concerns and is to be read in conjunction with the Traffic Impact Assessment Report (September 2010, Halcrow).

## 2 Effect on Huntingwood Drive-Great Western Highway Intersection

A review of a previous traffic report prepared by GHD (2009) prepared for the infrastructure works package indicated that the proportion of development generated traffic that would use Huntingwood Drive, east of Brabham Drive to access the site. **Figure 1** below shows the estimated traffic distribution for the morning and afternoon peak hours from that report.

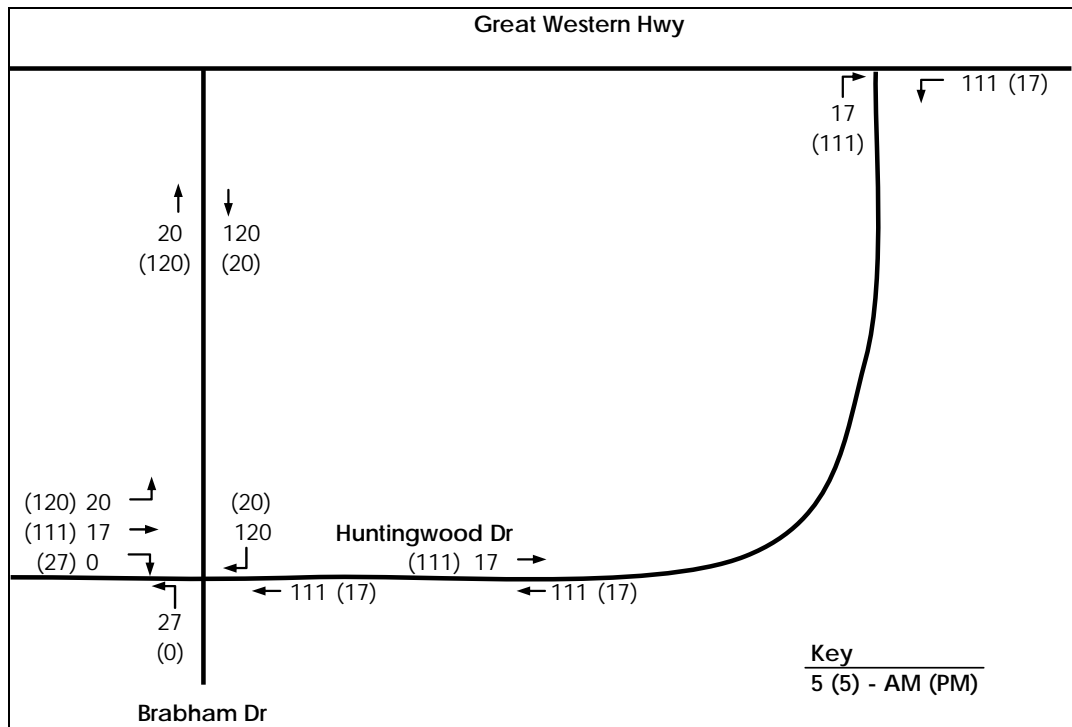


**Figure 1 – Estimated Traffic Distribution from Huntingwood West Estate (GHD, 2009)**

However, after discussions with RTA regarding the likely effects on Huntingwood Drive-Great Western Highway intersection, we have revised the trip distribution to allow some traffic to use this intersection.

We have assumed that approximately half of the traffic estimated to use the Great Western Highway to/from the east via the Brabham Drive would use the Huntingwood Drive-Great Western Highway intersection.

**Figure 2** below shows the peak hour intersection flows for the revised trip distribution.



**Figure 2 – Revised Traffic Distribution from Huntingwood West Estate**

To examine the effect of additional traffic using the Huntingwood Drive-Great Western Highway intersection, we conducted intersection surveys at this intersection on Tuesday 7<sup>th</sup> September 2010 to assess the current conditions. The intersection survey data for the morning and afternoon peak periods are also included in **Appendix A**.

The additional development generated traffic shown in **Figure 2** is superimposed onto the existing intersection flows and traffic models for the AM and PM peak with this additional traffic were undertaken.

**Table 1** summarises the results of intersection analysis for the existing and post development conditions at the Huntingwood Drive-Great Western Highway intersection. With this new traffic distribution, we have also modelled the Huntingwood Drive-Brabham Drive intersection.

**Table 1 – Intersection Performance Results**

	AM Peak Hour		PM Peak Hour	
	Ave Delay (sec)	LoS	Ave Delay (sec)	LoS
<b>Huntingwood Dr-Great Western Hwy</b>				
Existing	10	A	27	B
Existing with additional development traffic	11	A	31	C
<b>Huntingwood Dr-Brabham Dr</b>				
Existing <sup>#</sup>	8	A	10	A
Existing with revised traffic distribution*	18	B	38	C

NOTE: # - results adopted from GHD 2009 traffic report;

\* - Traffic flows in the PM peak has been estimated using the 2008 base flows and the reverse of the AM peak development generated flows.

The results shown in **Table 1** indicate that both intersections currently operate with levels of service B or better. These intersections would continue to operate satisfactorily with levels of service C or better under the post development scenario.

Detailed SIDRA results are included in **Appendix B**.

Hence, the proposed development would have negligible or only a minor effect on the operation of the Huntingwood Drive-Great Western Highway intersection. In addition, the revised traffic distribution also has no effect on the Huntingwood Drive-Brabham Drive intersection.

### 3 Heavy Vehicle Movements

The comparison of the heavy vehicle movements for the approved concept plan and the current Metcash proposal will be assessed in this Chapter.

#### 3.1 *Approved Concept Plan*

The 2009 GHD traffic report has not indicated the amount of heavy vehicle movements likely to be generated by the Bungarribee / Huntingwood West Industrial Estate.

Therefore to estimate the amount of heavy vehicle flows, we have adopted the heavy vehicle proportion of 12% over the total traffic generated by the development. This percentage is based on the RTA survey data (Table 3.4, *RTA Guide to Traffic Generating Developments*). Table 3.4 of this document indicates the industrial estates would generally have the average hourly heavy vehicle proportion of about 12% between the period of 7AM and 7PM.

**Figure 3** shows the estimated heavy vehicle flows for the Approved Concept Plan.

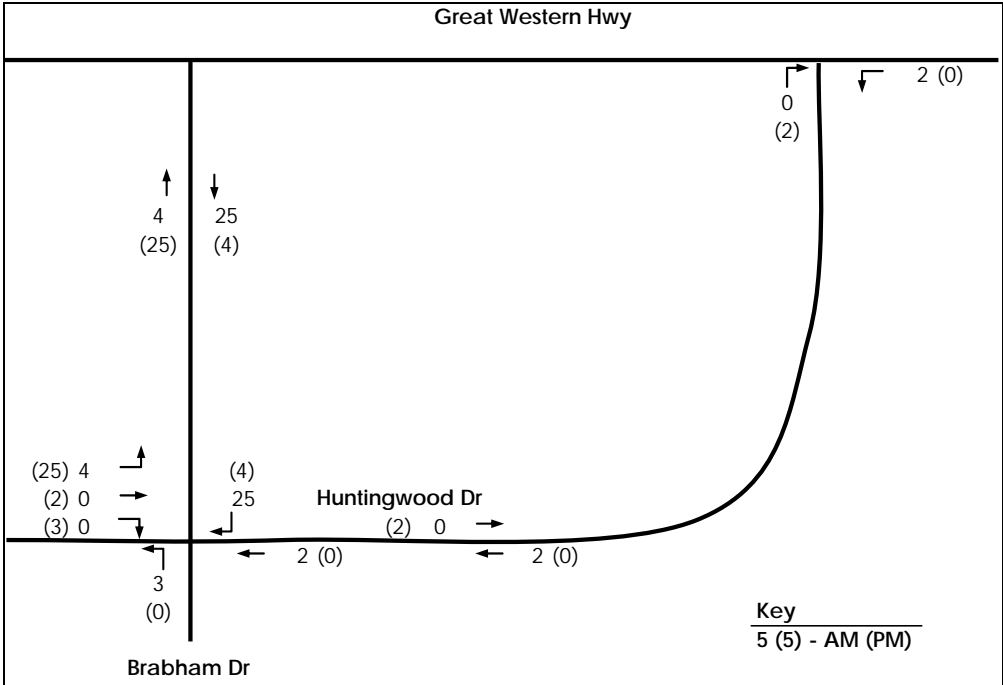


Figure 3 – Estimated Heavy Vehicle Flows for the Approved Concept Plan

3.2 *Current Proposal*

As part of the previous traffic impact assessment, we have conducted a survey of the existing Metcash site at Crestmead, which recorded the amount of heavy vehicle flows at the Crestmead site.

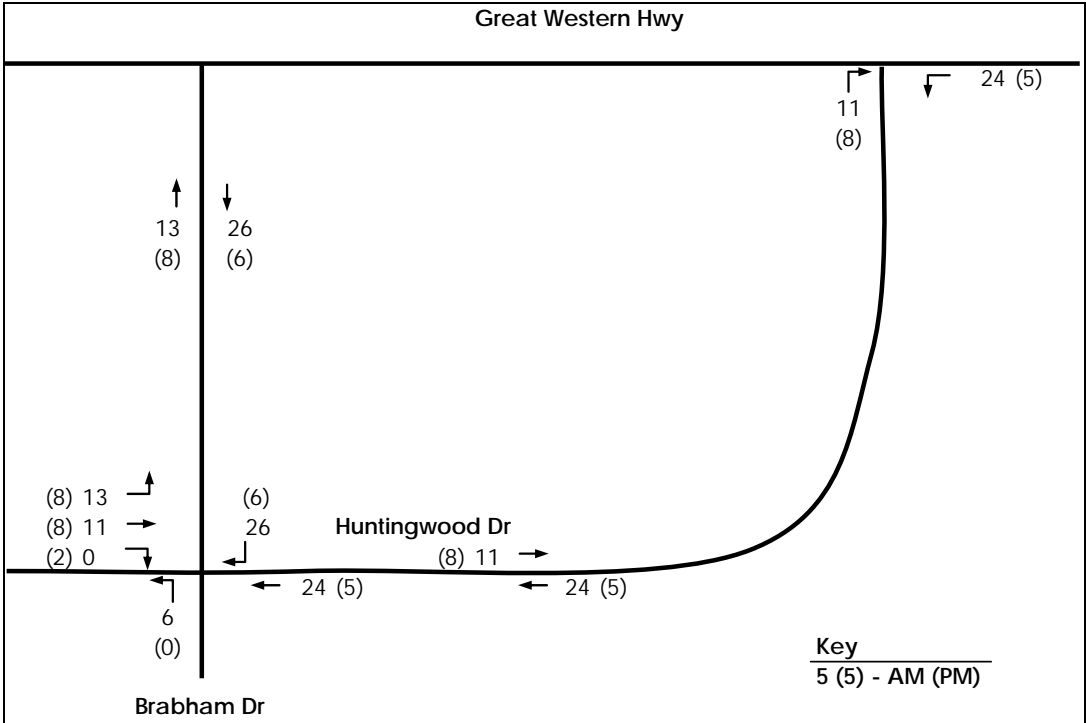
Using this survey data, we have estimated the likely heavy vehicle flows for the proposed Huntingwood site. This is presented in **Table 2**.

**Table 2 – Estimated Traffic from Proposed Huntingwood West Estate**

	Cars	Trucks	Total
<b>AM Peak Hour</b>			
Inbound	130 (78%)	36 (22%)	166 (100%)
Outbound	17 (33%)	35 (67%)	52 (100%)
Total	147 (67%)	71 (33%)	218 (100%)
<b>PM Peak Hour</b>			
Inbound	21 (68%)	10 (32%)	31 (100%)
Outbound	165 (93%)	13 (7%)	178 (100%)
Total	186 (89%)	23 (11%)	209 (100%)

NOTE: Percentages of cars and trucks are shown in parenthesis.

Using the percentage of heavy vehicles presented in **Table 2** and the revised traffic distributions shown in **Figure 2**, the estimated heavy vehicle flows for the current proposal is calculated and shown in **Figure 4**.



**Figure 4 – Estimated Heavy Vehicle Flows for the Current Proposal**

### **3.3 Comparison**

By comparing **Figure 3** and **Figure 4**, the increases in heavy vehicle volumes can be noted.

The comparison indicates that there would be an increase in both light and heavy vehicle flows on Huntingwood Drive between Brabham Drive and Great Western Highway under the revised trip distribution. However, the intersection assessment of Huntingwood Drive-Great Western Highway intersection has already indicated that this intersection would continue to operate satisfactorily with levels of service of C or better.

In addition, the analysis of Huntingwood Drive-Brabham Drive intersection has also already shown that this intersection would operate with level of service B or better for both peak periods.

At Brabham Drive-Great Western Highway intersection, it can be seen that the southbound heavy vehicle levels are similar to those likely to originate from the concept plan. However, there will be a slightly higher number of northbound heavy vehicles approaching the intersection in the morning peak period.

However, each of the additional heavy vehicles will on average arrive every 7 minutes or so. This is unlikely to significantly change the operation of this intersection, particularly as the reassignment of general traffic from Brabham Drive-Great Western Highway intersection to the Huntingwood Drive-Great Western Highway intersection will result in less general traffic using this intersection.

## 4 Conclusions

The RTA has requested that the performance of Huntingwood Drive-Great Western Highway intersection be examined.

Halcrow has undertaken traffic models of this intersection in the morning and afternoon peak hours and has shown that it operates well within its capacity.

RTA also had concerns over the number of heavy vehicles likely to be generated by the Metcash proposal when compared to the approved concept plan.

Halcrow has estimated the number of heavy vehicles likely to be generated in the peak hours and has shown that although there may be an increase in heavy vehicles at some intersections, when compared to the concept plan approval, they will not adversely affect the performance of these intersections.

# **Appendix A Huntingwood Dr-Great Western Hwy Intersection Count**



# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Halcrow

Job No/Name : 3273 Doonside Huntingwood Dr Counts

Day/Date : Tuesday 7th September 2010

### Lights

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0715	456	2	0	55	83	121	717
0715 - 0730	447	3	3	37	117	119	726
0730 - 0745	519	4	3	43	134	161	864
0745 - 0800	448	7	3	45	186	138	827
0800 - 0815	439	4	1	49	166	164	823
0815 - 0830	358	10	4	36	188	112	708
0830 - 0845	320	4	2	45	114	157	642
0845 - 0900	300	5	4	46	125	147	627
<b>Per End</b>	<b>3287</b>	<b>39</b>	<b>20</b>	<b>356</b>	<b>1113</b>	<b>1119</b>	<b>5934</b>

### Heavies

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0715	7	0	0	4	4	3	18
0715 - 0730	4	0	0	5	6	2	17
0730 - 0745	13	0	0	4	7	5	29
0745 - 0800	6	0	0	8	7	5	26
0800 - 0815	7	2	1	10	1	2	23
0815 - 0830	7	0	0	4	11	8	30
0830 - 0845	9	1	2	6	9	3	30
0845 - 0900	6	0	4	6	6	3	25
<b>Per End</b>	<b>59</b>	<b>3</b>	<b>7</b>	<b>47</b>	<b>51</b>	<b>31</b>	<b>198</b>

### Combined

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0715	463	2	0	59	87	124	735
0715 - 0730	451	3	3	42	123	121	743
0730 - 0745	532	4	3	47	141	166	893
0745 - 0800	454	7	3	53	193	143	853
0800 - 0815	446	6	2	59	167	166	846
0815 - 0830	365	10	4	40	199	120	738
0830 - 0845	329	5	4	51	123	160	672
0845 - 0900	306	5	8	52	131	150	652
<b>Per End</b>	<b>3346</b>	<b>42</b>	<b>27</b>	<b>403</b>	<b>1164</b>	<b>1150</b>	<b>6132</b>

### Lights

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0800	1870	16	9	180	520	539	3134
<b>0715 - 0815</b>	<b>1853</b>	<b>18</b>	<b>10</b>	<b>174</b>	<b>603</b>	<b>582</b>	<b>3240</b>
0730 - 0830	1764	25	11	173	674	575	3222
0745 - 0845	1565	25	10	175	654	571	3000
0800 - 0900	1417	23	11	176	593	580	2800
<b>PEAK HR</b>	<b>1853</b>	<b>18</b>	<b>10</b>	<b>174</b>	<b>603</b>	<b>582</b>	<b>3240</b>

### Heavies

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0800	30	0	0	21	24	15	90
<b>0715 - 0815</b>	<b>30</b>	<b>2</b>	<b>1</b>	<b>27</b>	<b>21</b>	<b>14</b>	<b>95</b>
0730 - 0830	33	2	1	26	26	20	108
0745 - 0845	29	3	3	28	28	18	109
0800 - 0900	29	3	7	26	27	16	108
<b>PEAK HR</b>	<b>30</b>	<b>2</b>	<b>1</b>	<b>27</b>	<b>21</b>	<b>14</b>	<b>95</b>

### Combined

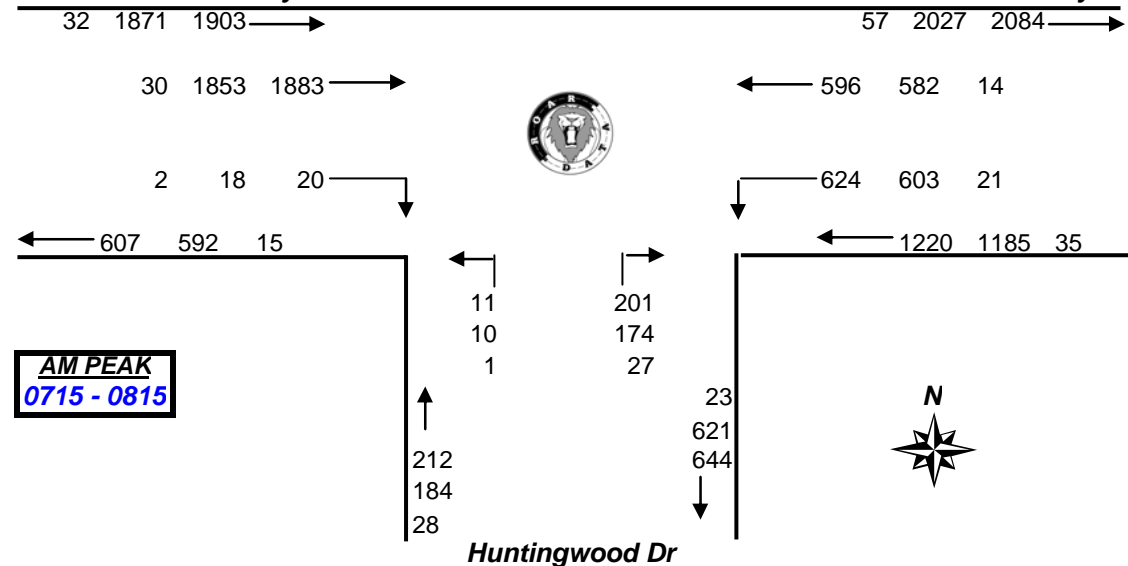
Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0800	1900	16	9	201	544	554	3224
<b>0715 - 0815</b>	<b>1883</b>	<b>20</b>	<b>11</b>	<b>201</b>	<b>624</b>	<b>596</b>	<b>3335</b>
0730 - 0830	1797	27	12	199	700	595	3330
0745 - 0845	1594	28	13	203	682	589	3109
0800 - 0900	1446	26	18	202	620	596	2908
<b>PEAK HR</b>	<b>1883</b>	<b>20</b>	<b>11</b>	<b>201</b>	<b>624</b>	<b>596</b>	<b>3335</b>

### Peds

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0715	0	0	0	0	0	0	0
0715 - 0730	0	0	0	1	1	1	1
0730 - 0745	0	0	0	0	0	0	0
0745 - 0800	1	0	0	1	1	2	2
0800 - 0815	0	0	0	0	0	0	0
0815 - 0830	1	0	0	0	0	1	1
0830 - 0845	0	0	0	0	0	0	0
0845 - 0900	1	0	0	0	0	1	1
<b>Per End</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	I	R	L	R	L	I	
0700 - 0800	1	0	0	2	2	3	3
<b>0715 - 0815</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>
0730 - 0830	2	0	0	1	1	3	3
0745 - 0845	2	0	0	1	1	3	3
0800 - 0900	2	0	0	0	0	2	2
<b>PEAK HR</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>

### Great Western Hwy





R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

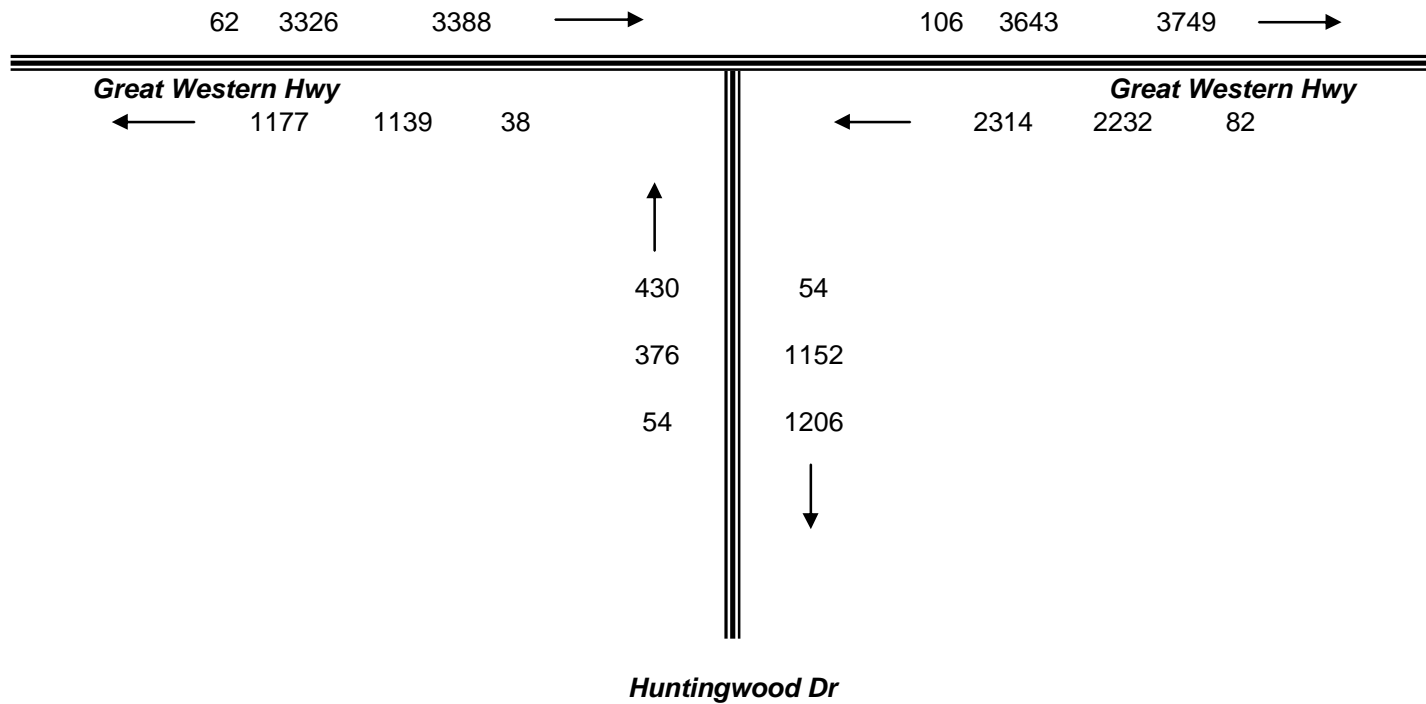
Client : Halcrow

Job No/Name : 3273 Doonside Huntingwood Dr Counts

Day/Date : Tuesday 7th September 2010

AM

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**





R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

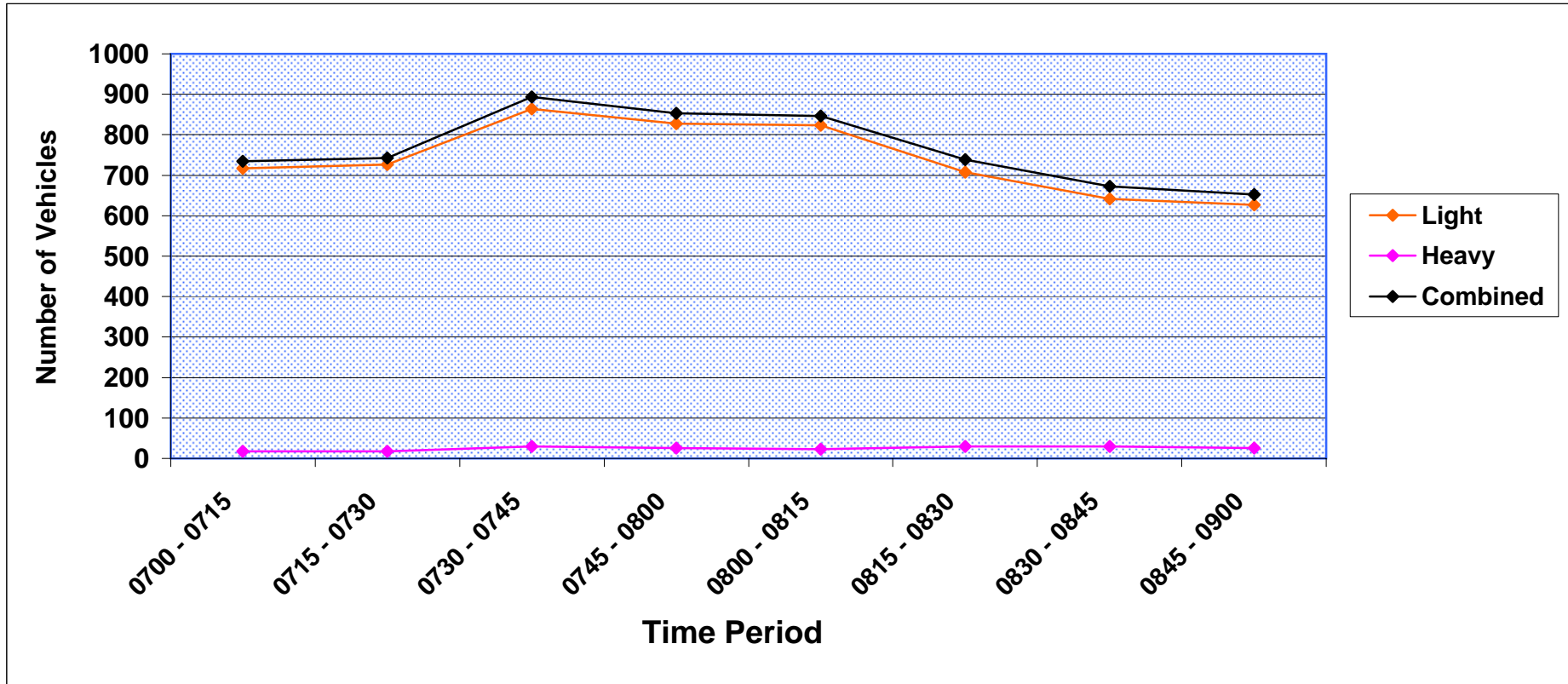
Client : Halcrow

Job No/Name : 3273 Doonside Huntingwood Dr Counts

Day/Date : Tuesday 7th September 2010

AM

Great Western Hwy & Huntingwood Dr





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Halcrow

Job No/Name : 3273 Doonside Huntingwood Dr Counts

Day/Date : Tuesday 7th September 2010

### Lights

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1615	164	3	9	104	47	320	647
1615 - 1630	191	6	12	164	59	352	784
1630 - 1645	189	2	10	111	42	294	648
1645 - 1700	167	0	29	157	50	363	766
1700 - 1715	182	1	17	149	40	393	782
1715 - 1730	178	1	23	187	33	316	738
1730 - 1745	207	1	6	147	48	405	814
1745 - 1800	182	0	8	160	39	404	793
<b>Per End</b>	<b>1460</b>	<b>14</b>	<b>114</b>	<b>1179</b>	<b>358</b>	<b>2847</b>	<b>5972</b>

### Heavies

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1615	5	1	1	4	20	3	34
1615 - 1630	7	1	3	10	9	6	36
1630 - 1645	2	0	0	3	6	1	12
1645 - 1700	7	0	0	5	8	1	21
1700 - 1715	1	1	2	2	5	5	16
1715 - 1730	4	0	3	6	6	3	22
1730 - 1745	4	0	0	4	3	4	15
1745 - 1800	7	1	0	4	8	2	22
<b>Per End</b>	<b>37</b>	<b>4</b>	<b>9</b>	<b>38</b>	<b>65</b>	<b>25</b>	<b>178</b>

### Combined

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1615	169	4	10	108	67	323	681
1615 - 1630	198	7	15	174	68	358	820
1630 - 1645	191	2	10	114	48	295	660
1645 - 1700	174	0	29	162	58	364	787
1700 - 1715	183	2	19	151	45	398	798
1715 - 1730	182	1	26	193	39	319	760
1730 - 1745	211	1	6	151	51	409	829
1745 - 1800	189	1	8	164	47	406	815
<b>Per End</b>	<b>1497</b>	<b>18</b>	<b>123</b>	<b>1217</b>	<b>423</b>	<b>2872</b>	<b>6150</b>

### Lights

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1700	711	11	60	536	198	1329	2845
1615 - 1715	729	9	68	581	191	1402	2980
1630 - 1730	716	4	79	604	165	1366	2934
1645 - 1745	734	3	75	640	171	1477	3100
<b>1700 - 1800</b>	<b>749</b>	<b>3</b>	<b>54</b>	<b>643</b>	<b>160</b>	<b>1518</b>	<b>3127</b>

### Heavies

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1700	21	2	4	22	43	11	103
1615 - 1715	17	2	5	20	28	13	85
1630 - 1730	14	1	5	16	25	10	71
1645 - 1745	16	1	5	17	22	13	74
<b>1700 - 1800</b>	<b>16</b>	<b>2</b>	<b>5</b>	<b>16</b>	<b>22</b>	<b>14</b>	<b>75</b>

### Combined

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1700	732	13	64	558	241	1340	2948
1615 - 1715	746	11	73	601	219	1415	3065
1630 - 1730	730	5	84	620	190	1376	3005
1645 - 1745	750	4	80	657	193	1490	3174
<b>1700 - 1800</b>	<b>765</b>	<b>5</b>	<b>59</b>	<b>659</b>	<b>182</b>	<b>1532</b>	<b>3202</b>

<b>PEAK HR</b>	<b>749</b>	<b>3</b>	<b>54</b>	<b>643</b>	<b>160</b>	<b>1518</b>	<b>3127</b>
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<b>PEAK HR</b>	<b>16</b>	<b>2</b>	<b>2</b>	<b>16</b>	<b>22</b>	<b>14</b>	<b>75</b>
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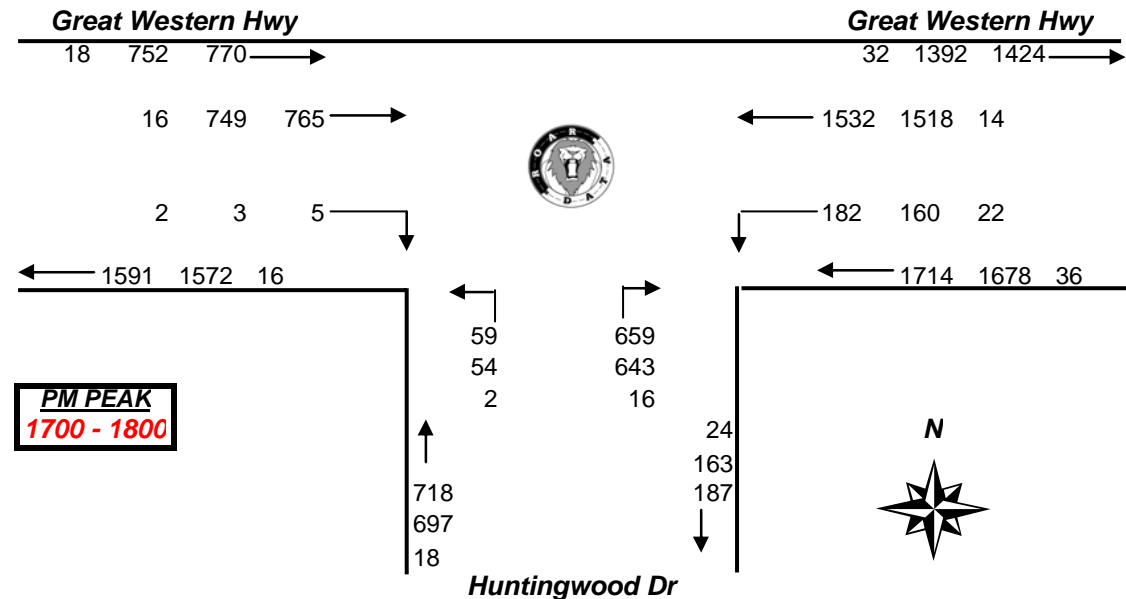
<b>PEAK HR</b>	<b>765</b>	<b>5</b>	<b>59</b>	<b>659</b>	<b>182</b>	<b>1532</b>	<b>3202</b>
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### Peds

Time Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1615	0	0	0	0	0	0	0
1615 - 1630	0	0	0	0	0	0	0
1630 - 1645	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0
1730 - 1745	1	0	0	0	0	1	1
1745 - 1800	0	0	0	0	0	0	0
<b>Per End</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>

Peak Per	WEST Great		SOUTH Huntingwoo		EAST Great		TOT
	T	R	L	R	L	T	
1600 - 1700	0	0	0	0	0	0	0
1615 - 1715	0	0	0	0	0	0	0
1630 - 1730	0	0	0	0	0	0	0
1645 - 1745	1	0	0	0	0	1	1
<b>1700 - 1800</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>

<b>PEAK HR</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
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R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

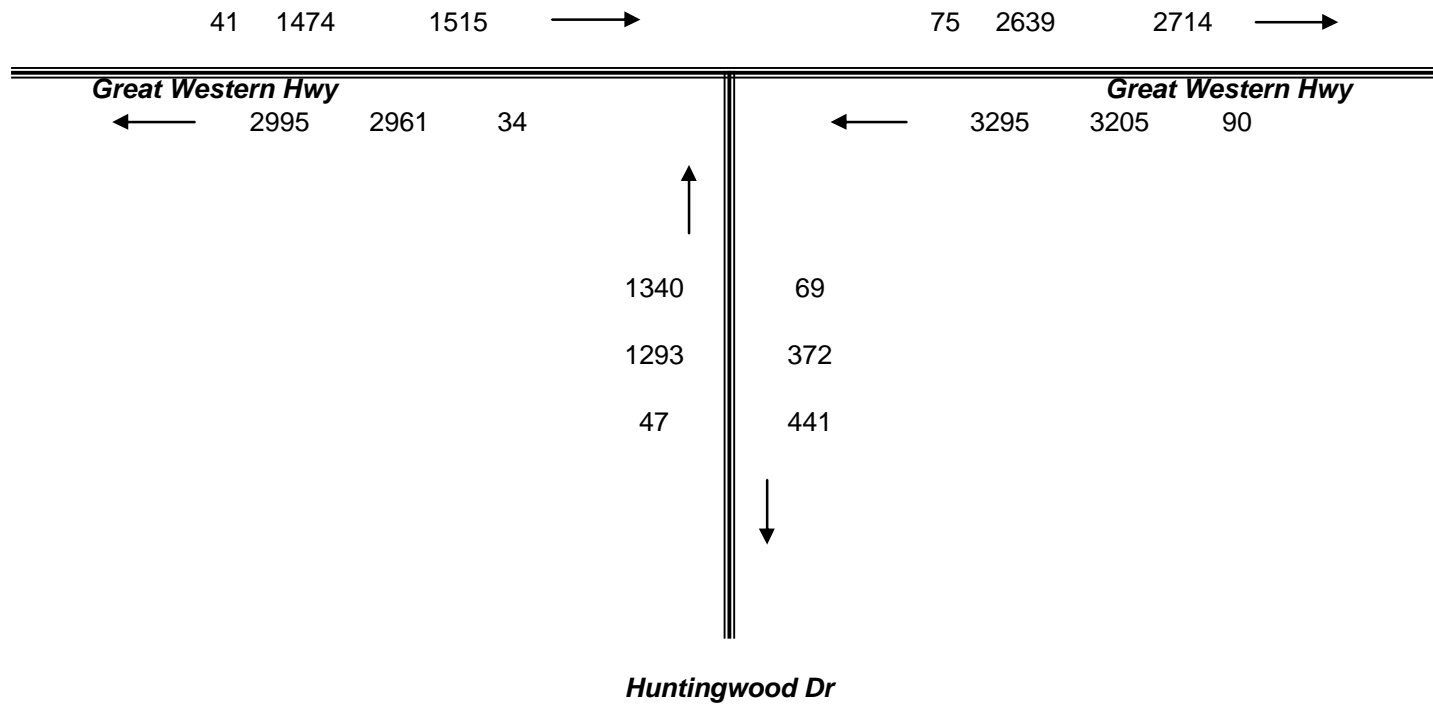
Client : Halcrow

Job No/Name : 3273 Doonside Huntingwood Dr Counts

Day/Date : Tuesday 7th September 2010

PM

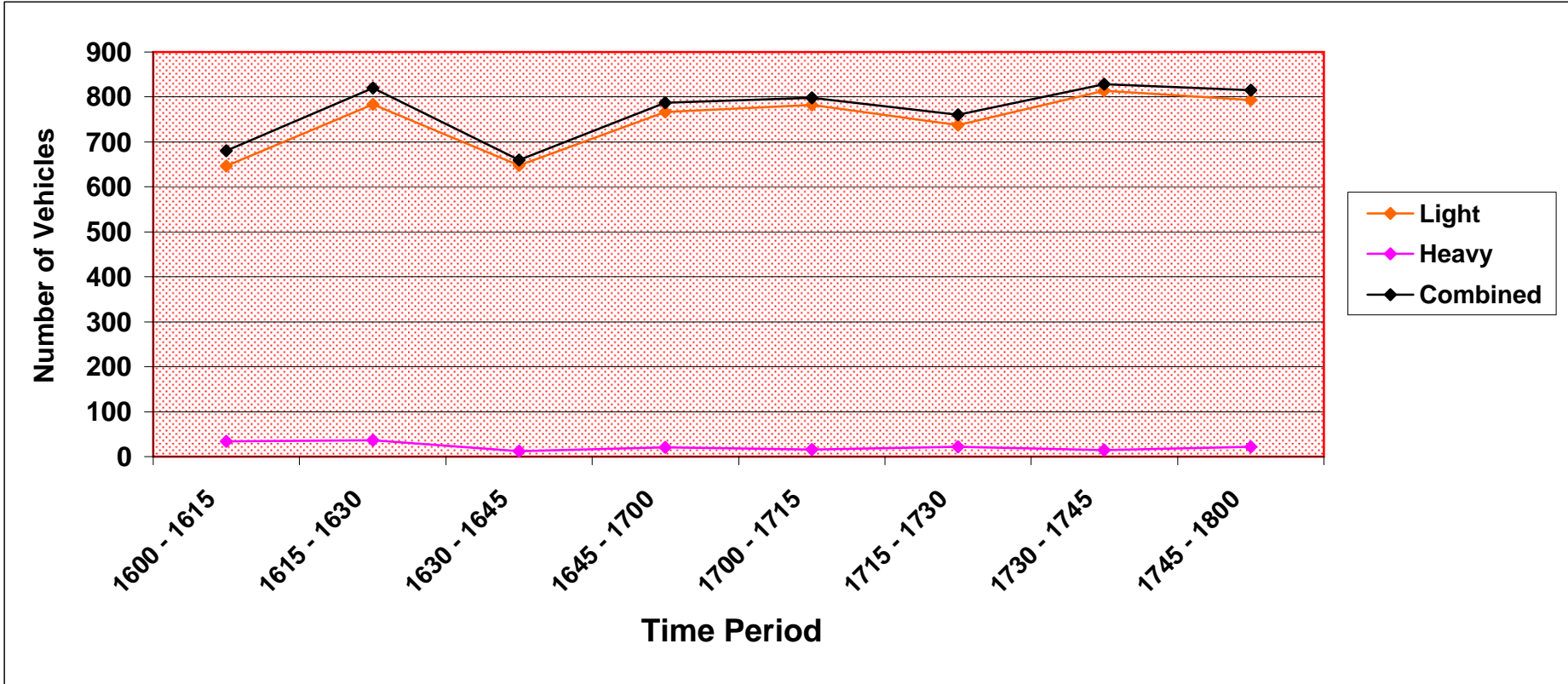
TOTAL VOLUMES  
FOR COUNT  
PERIOD





**PM**

**Great Western Hwy & Huntingwood Dr**





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

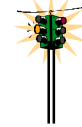
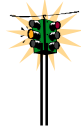
Client : Halcrow  
Job No/Name : 3273 Doonside Huntingwood Dr Counts  
Day/Date : Tuesday 7th September 2010

### Intersection Details

Obtained via satellite  
May be incorrect

**AM PEAK HOUR**  
**0715 - 0815**

Combined Figures only



Great Western Hwy

1883	765	T
AM	PM	
20	5	R

1532	596	T
PM	AM	
182	624	L

PM	59	659
AM	11	201
	L	R

Great Western Hwy

**PM PEAK HOUR**  
**1700 - 1800**

Weather >>>



Huntingwood Dr

## **Appendix B SIDRA Analysis Results**

## Huntingwood Dr-Great Western Hwy Intersection

# MOVEMENT SUMMARY

Site: Existing AM

CTLRRLC Metcash  
Existing AM  
Great Western Hwy-Huntingwood Dr

Signals - Fixed Time Cycle Time = 70 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Huntingwood Dr (S)											
1	L	12	10.0	0.021	10.9	LOS A	0.1	0.8	0.27	0.66	49.9
3	R	212	10.0	0.712	47.8	LOS D	5.4	40.9	1.00	0.86	28.4
Approach		223	10.0	0.712	45.9	LOS D	5.4	40.9	0.96	0.85	29.1
East: GWH (E)											
4	L	657	10.0	0.379	11.7	NA <sup>9</sup>	NA <sup>9</sup>	NA <sup>9</sup>	0.00	0.69	58.8
5	T	627	10.0	0.300	8.3	LOS A	7.2	54.4	0.55	0.47	59.2
Approach		1284	10.0	0.379	10.0	LOS A	7.2	54.4	0.27	0.58	59.0
West: GWH (W)											
11	T	1982	10.0	0.729	5.4	LOS A	19.9	151.2	0.61	0.56	62.3
12	R	21	10.0	0.142	44.6	LOS D	1.1	8.4	0.96	0.71	30.2
Approach		2003	10.0	0.729	5.8	LOS A	19.9	151.2	0.61	0.57	61.7
All Vehicles		3511	10.0	0.729	9.9	LOS A	19.9	151.2	0.51	0.59	56.8

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

<sup>9</sup> Continuous movement

# MOVEMENT SUMMARY

Site: Existing PM

CTLRRLC Metcash  
Existing PM  
Great Western Hwy-Huntingwood Dr

Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Huntingwood Dr (S)											
1	L	62	10.0	0.314	21.2	LOS B	2.4	18.5	0.51	0.72	41.2
3	R	694	10.0	0.800	59.7	LOS E	21.3	161.7	1.00	0.91	25.0
Approach		756	10.0	0.800	56.5	LOS E	21.3	161.7	0.96	0.89	25.8
East: GWH (E)											
4	L	192	10.0	0.111	11.6	NA <sup>9</sup>	NA <sup>9</sup>	NA <sup>9</sup>	0.00	0.69	58.9
5	T	1613	10.0	0.801	23.1	LOS B	37.7	286.4	0.87	0.80	42.7
Approach		1804	10.0	0.801	21.9	LOS B	37.7	286.4	0.78	0.79	44.0
West: GWH (W)											
11	T	805	10.0	0.338	9.9	LOS A	12.0	91.1	0.48	0.43	57.5
12	R	5	10.0	0.061	72.0	LOS F	0.5	3.7	0.98	0.65	21.9
Approach		811	10.0	0.338	10.3	LOS A	12.0	91.1	0.49	0.43	56.9
All Vehicles		3371	10.0	0.801	26.9	LOS B	37.7	286.4	0.75	0.73	40.0

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

<sup>9</sup> Continuous movement

# MOVEMENT SUMMARY

Site: Post Development AM

CTRLRLC Metcash  
Post Development AM  
Great Western Hwy-Huntingwood Dr

Signals - Fixed Time Cycle Time = 70 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Huntingwood Dr (S)											
1	L	12	10.0	0.021	10.9	LOS A	0.1	0.8	0.27	0.66	49.9
3	R	229	10.0	0.662	46.0	LOS D	5.6	42.8	1.00	0.84	29.0
Approach		241	10.0	0.662	44.3	LOS D	5.6	42.8	0.96	0.83	29.6
East: GWH (E)											
4	L	774	10.0	0.446	11.7	NA <sup>9</sup>	NA <sup>9</sup>	NA <sup>9</sup>	0.00	0.69	58.8
5	T	627	10.0	0.307	8.9	LOS A	7.4	56.0	0.57	0.49	58.3
Approach		1401	10.0	0.446	10.4	LOS A	7.4	56.0	0.26	0.60	58.6
West: GWH (W)											
11	T	1982	10.0	0.743	6.0	LOS A	20.9	158.7	0.64	0.59	61.5
12	R	21	10.0	0.142	44.6	LOS D	1.1	8.4	0.96	0.71	30.2
Approach		2003	10.0	0.743	6.4	LOS A	20.9	158.7	0.65	0.60	61.0
All Vehicles		3645	10.0	0.743	10.5	LOS A	20.9	158.7	0.52	0.61	56.2

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

<sup>9</sup> Continuous movement

# MOVEMENT SUMMARY

Site: Post Development PM

CTLRRC Metcash  
Post Development PM  
Great Western Hwy-Huntingwood Dr

Signals - Fixed Time Cycle Time = 130 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Huntingwood Dr (S)											
1	L	62	10.0	0.337	23.1	LOS B	2.7	20.5	0.52	0.72	40.0
3	R	811	10.0	0.821	61.6	LOS E	26.3	200.0	1.00	0.92	24.5
Approach		873	10.0	0.821	58.9	LOS E	26.3	200.0	0.96	0.90	25.2
East: GWH (E)											
4	L	209	10.0	0.121	11.6	NA <sup>9</sup>	NA <sup>9</sup>	NA <sup>9</sup>	0.00	0.69	58.9
5	T	1613	10.0	0.830	28.3	LOS B	43.2	328.7	0.91	0.85	39.1
Approach		1822	10.0	0.830	26.4	LOS B	43.2	328.7	0.81	0.83	40.7
West: GWH (W)											
11	T	805	10.0	0.353	12.5	LOS A	13.6	103.3	0.52	0.46	54.1
12	R	5	10.0	0.066	77.7	LOS F	0.5	4.0	0.98	0.65	20.7
Approach		811	10.0	0.353	12.9	LOS A	13.6	103.3	0.52	0.46	53.6
All Vehicles		3505	10.0	0.830	31.3	LOS C	43.2	328.7	0.78	0.76	37.2

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

<sup>9</sup> Continuous movement

## Huntingwood Drive-Brabham Drive Intersection

# MOVEMENT SUMMARY

Site: Post Development AM (revised)

CTLRRC Metcash  
Post Development AM  
Brabham Dr-Huntingwood Dr  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brabham Dr (S)											
1	L	29	10.0	0.373	7.6	LOS A	2.9	21.7	0.57	0.65	48.9
2	T	399	10.0	0.375	6.4	LOS A	2.9	21.7	0.57	0.55	49.0
3	R	355	10.0	0.375	13.5	LOS A	2.8	20.9	0.58	0.76	44.4
Approach		783	10.0	0.375	9.6	LOS A	2.9	21.7	0.57	0.65	46.7
East: Huntingwood Dr (E)											
4	L	136	10.0	0.590	12.4	LOS A	5.2	39.3	0.85	1.00	44.9
5	T	116	10.0	0.588	11.4	LOS A	5.2	39.3	0.85	0.99	45.1
6	R	118	10.0	0.589	18.3	LOS B	5.2	39.3	0.85	1.06	42.0
Approach		369	10.0	0.589	14.0	LOS B	5.2	39.3	0.85	1.02	43.9
North: Brabham Dr (N)											
7	L	615	10.0	0.703	10.2	LOS A	9.1	69.1	0.79	0.84	47.1
8	T	723	10.0	0.703	9.5	LOS A	9.1	69.1	0.80	0.85	47.0
9	R	126	10.0	0.702	16.5	LOS B	8.9	67.4	0.80	0.97	43.7
Approach		1464	10.0	0.703	10.4	LOS B	9.1	69.1	0.80	0.86	46.7
West: Huntingwood Dr (W)											
10	L	21	10.0	0.063	8.5	LOS A	0.3	2.5	0.60	0.72	48.3
11	T	18	10.0	0.063	7.4	LOS A	0.3	2.5	0.60	0.65	48.4
12	R	5	10.0	0.063	14.3	LOS A	0.3	2.5	0.60	0.89	45.1
Approach		44	10.0	0.064	8.7	LOS A	0.3	2.5	0.60	0.71	47.9
All Vehicles		2661	10.0	0.703	10.6	LOS A	9.1	69.1	0.74	0.82	46.3

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout Capacity Model: SIDRA Standard.

# MOVEMENT SUMMARY

Site: Post Development PM (revised)

CTLRRC Metcash  
Post Development PM  
Brabham Dr-Huntingwood Dr  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Brabham Dr (S)											
1	L	5	10.0	0.526	10.6	LOS A	6.0	45.6	0.88	0.92	47.5
2	T	698	10.0	0.553	9.6	LOS A	6.0	45.6	0.88	0.90	46.7
3	R	147	10.0	0.552	17.0	LOS B	5.7	43.0	0.87	1.00	43.1
Approach		851	10.0	0.553	10.9	LOS B	6.0	45.6	0.87	0.92	46.0
East: Huntingwood Dr (E)											
4	L	301	10.0	0.981	31.9	LOS C	29.1	220.8	1.00	1.74	31.8
5	T	18	10.0	0.994	30.8	LOS C	29.1	220.8	1.00	1.74	31.9
6	R	557	10.0	0.980	37.7	LOS C	29.1	220.8	1.00	1.74	31.0
Approach		876	10.0	0.981	35.6	LOS C	29.1	220.8	1.00	1.74	31.3
North: Brabham Dr (N)											
7	L	105	10.0	0.254	7.1	LOS A	1.7	12.9	0.46	0.61	49.3
8	T	438	10.0	0.254	5.9	LOS A	1.7	12.9	0.46	0.51	49.8
9	R	21	10.0	0.254	12.9	LOS A	1.7	12.6	0.47	0.86	46.4
Approach		564	10.0	0.254	6.4	LOS A	1.7	12.9	0.46	0.54	49.5
West: Huntingwood Dr (W)											
10	L	126	10.0	0.638	21.5	LOS B	5.9	44.6	0.93	1.12	38.1
11	T	116	10.0	0.640	20.5	LOS B	5.9	44.6	0.93	1.12	38.2
12	R	29	10.0	0.641	27.4	LOS B	5.9	44.6	0.93	1.15	36.4
Approach		272	10.0	0.639	21.7	LOS B	5.9	44.6	0.93	1.12	38.0
All Vehicles		2562	10.0	0.994	19.5	LOS B	29.1	220.8	0.83	1.14	39.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout Capacity Model: SIDRA Standard.