TRAFFIC SOLUTIONS PTY LTD

Reference No : 21.22.068
18 June 2022

The Secretary
NSW Department of Planning and Environment
Locked Bag 5022
Parramatta NSW 2124

Dear Sir,

Traffic and Parking Assessment – Proposed Affordable Housing and build to rent Development, 2A Gregory Place, Harris Park

Traffic Solutions Pty Ltd has been engaged by 2A Gregory Place Pty Ltd to provide a draft green Travel Plan for the Concept proposal (SSD-31179510) for an affordable housing and build to rent development comprising approximately 483 dwellings within three freestanding four to eight storey buildings. The applications is made under the State Environmental Planning Policy (Affordable Rental Housing of 2009).

The assessment requirements provided by NSW Government for the SEARs application are reproduced below:

10. Traffic, Transport and Accessibility

- Provide a transport and accessibility impact assessment, which includes:

o an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.

o details of the proposed development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.

o analysis of the impacts of the proposed development (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict) and any cumulative impact from surrounding approved developments.

o measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms of delivery (including proposed arrangements with local councils or government agencies) of any infrastructure improvements in accordance with relevant standards.

o proposals to promote sustainable travel choices for employees, residents, guests and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high quality end-of-trip facilities, and implementing a Green Travel Plan.

- Provide a draft Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.

The documentation requested included:

- Transport and Accessibility Impact Assessment
- Draft Construction Traffic Management Plan
- Draft Green Travel Plan or equivalent

This document is provided assesses the Traffic and parking impacts of the proposal. Attached as Annexure A is a draft Construction Management Plan, Annexure B is the draft Green Travel Plan, prepared by Traffic Solutions Pty Ltd.

The proposal comprises 3 separated buildings containing 186 x 1 bedroom, 258 x 2 bedroom and 39 x 3 bedroom units. Two basements are proposed with indicative parking spaces and a separate loading area. The proposed driveway locations are satisfactory and will provide good sight distance in both directions along Gregory Place. The available sight distance easily exceeds the desirable 69m distance suggested by AS/NZS 2890.1:2004 for the posted 50km/h speed limit.

This assessment has been undertaken with reference to plans prepared by Stanisic Architects, Job No 14 004, Drawing Numbers CD0001 – CD 0007, CD 1001 – CD 1007 and CD2001 – CD2009, revision B and dated 8 June 2022.

Two basement levels are proposed for passenger vehicles, the upper basement will include access for visitors, taxis, uber eats, pizza delivery, ambulance, this vehicle driveway is proposed centrally along the Gregory Place frontage of the site. A separate driveway towards the southern end of the site is provided for Garbage collection, loading and unloading which will have appropriate head clearances. FNSW will have access the site via the northern driveway which will be managed by the onsite manager. The proposed driveway locations are satisfactory and will provide very good sight distance in both directions along Gregory Place. The available sight distances from the driveways easily exceeds the desirable 69m distance suggested by AS/NZS 2890.1:2004 for 50km/h.

Conceptual pedestrian and vehicle access arrangements are provided on the Site Analysis Plan CD0003 and Contextual Linkages Plan CD0007.

TRAFFIC

An estimation of the traffic generation of the proposed development can be calculated by reference to the Roads and Maritime Services Technical Direction '*Guide to Traffic Generating Developments, Updated surveys TDT 2013/14*' of May 2013. The guide specifies the following average peak hour generation rates for High Density residential flat buildings in Sydney:

AM Peak Hour Vehicle Trips =	0.19
PM Peak Hour Vehicle Trips =	0.15

The Roads and Maritime Services defines a high density residential flat building as:

"… a building containing 20 or more dwellings. This does not include aged or disabled persons' housing. High density residential flat buildings are usually more than five levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use."

Therefore, the estimated traffic generation of the development calculates as:

AM Peak
483 Dwellings @ 0.19 trips per unit = 91.71 peak hour trips

PM Peak
483 Dwellings @ 0.15 trips per unit = 72.45 peak hour trips

Accordingly, the proposed development has the potential to generate approximately 92 and 72 vehicle trips in the morning and evening peak hours, respectively.

Data on the traffic movements in the vicinity of the subject site have been collected as part of this assessment by surveys undertaken by R.O.A.R. Data Pty Ltd on behalf of this firm from 6.30am – 9.30am and 3.00pm – 6.00pm on Thursday, 24 June 2021 (pre covid lock down) at the intersection of Hassall Street and Gregory Place. Conditions on this day were described as rainy with no unusual circumstances encountered.

The weekday peak hour at the intersection in the morning and evening was found to be between 8.15am – 9.15am and 5.00pm – 6.00pm, respectively. Detailed results of the survey are attached. The recorded peak hour flows in Gregory Place at this time are as follows:

Direction	AM Peak Hour 8.15am – 9.15am	PM Peak Hour 5.00pm – 6.00pm
Northbound	2	3
Southbound	3	4
Total	**5**	**7**

The recorded peak hour flows in Hassall Street during the peak hours are as follows

Direction	AM Peak Hour 8.15am – 9.15am	PM Peak Hour 5.00pm – 6.00pm
Eastbound	728	929
Westbound	454	446
Total	**1182**	**1375**

By comparison, this intersection was counted as part of a previous study for this site on from 6.30am – 9.30am and 3.00pm – 6.00pm on Wednesday 31st July 2013. Conditions on this day were described as cloudy with no unusual circumstances encountered. A copy of these counts are also attached. The recorded peak hour flows in Gregory Place at this time are as follows:

Direction	AM Peak Hour 8.15am – 9.15am	PM Peak Hour 5.00pm – 6.00pm
Eastbound	777	1034
Westbound	829	585
Total	**1606**	**1619**

As can be seen the traffic volumes along Hassall Street have reduced. There has been no traffic growth along Hassall Street in the 7 years between counts (1913 – 1921). This lack of growth trend is considered to continue with more people working from home as a result of Covid and the increasing housing density in the City of Parramatta. Therefore, no future 10 year forecast modelling has been undertaken.

To assess the impact of the development on the intersection of Hassall Street and Gregory Place, the estimated morning and evening peak hour approach and departure vehicle trips have been assigned proportionally to this intersection on the basis of turning flows into and out of Gregory Place existing flows.

Using SIDRA, a software program developed for the purpose of analysing signalised, roundabout and controlled intersections, the effect of the estimated traffic generation of this development on the adjacent road system has been assessed.

A comparison of intersection performance between the existing and projected traffic demands during the morning and evening peak hours upon the intersection of Hassall Street and Gregory Place has been modelled. Tabled below are the results of the intersection modelling and a copy of the SIDRA summary output file is attached for Council's information.

Indicator	**Intersection of Hassall Street and Gregory Place – Sign Control Intersection**			
	Existing		**Proposed**	
	AM	**PM**	**AM**	**PM**
Level of Service	N/a	N/a	N/a	N/a
Degree of Saturation (sec/veh)	0.199	0.251	0.204	0.264
Total Average Delay (sec/veh)	0.8s	0.9s	1.6s	1.3s
Average delay for right turn from Gregory Place (sec/veh)	16.4s (LOS B)	20.9s (LOS B)	17.9s (LOS B)	22.4s (LOS B)

The results of the SIDRA analysis reveal:

- The Level of Service at the intersection of Hassall Street and Gregory Place will not change with the estimated additional traffic generation of the proposed development.

- The additional traffic demand on the intersection of Hassall Street and Gregory Place as a consequence of the proposed development will only alter the Degree of Saturation and Total Average Delays minutely.

In addition to the intersection analysis, the Traffic related environmental effect of the proposal on Gregory Place has been examined. Gregory Place is considered to serve a Local road function in this area. The Roads and Maritime Services provides a guide to the Environmental Capacity of residential streets in the '*Guide to Traffic Generating Developments, Section 4 – Interpretation of Traffic Impacts'* of October 2002. This guide suggests a desirable and maximum environmental goal of 200 and 300 vehicles/hour for local roads, respectively.

The current peak hour traffic volumes on Gregory Place have been recorded as part of this assessment and the following table provided a comparison of the existing peak hour volumes and the RMS Environmental Capacity value.

Location	Classification	Existing Peak Hour Volumes		RMS Suggested Environmental Capacity
		AM	PM	
Gregory Place	Local Road	19	15	200 (desirable) 300 (max)

The survey results reveal that the existing traffic flows along Gregory Place are below the RMS suggested Environmental Capacity and that the potential additional 92am and 72pm and peak hour traffic flows estimated for the proposed development will not cause this value to be exceeded.

It should be noted that Environmental Capacity is not an indication of the number of vehicles that can travel along a roadway before congestion occurs but is the RMS's interpretation of when residents may raise concern over vehicle volumes.

PARKING

As this is a Masterplan of the proposal the car parking layout and basement ramps are only in a concept stage, should the Masterplan be acceptable, then full details and the geometric design requirements for car park layouts will comply with the '*Australian/New Zealand Standard, Parking Facilities Part 1; Off Street Car Parking (AS/NZS 2890.1)* of 2004 and *Australian/New Zealand Standard, Parking Facilities Part 6: Off street Parking for People with Disabilities* of 2009.

In addition, the design of the loading area will be in accordance with AS 2890.2:2002 for medium rigid vehicles to cater for garbage trucks.

Similarly, the number of parking spaces, and loading dock are indicative only at this stage. The number of parking spaces motorcycles, bicycle racks will be determined should the Masterplan be acceptable.

SERVICING

A Separate basement loading/service area is provided with an independent vehicle access separate to car access to the basements. This service area is provided for the collection of waste and for loading/unloading of tenant's furniture and delivery of goods.

CONCLUSIONS

The preceding assessment has revealed the following:

- The site is well served by public transport and will provide connections to the existing pedestrian and bicycle networks.

- The access driveways proposed to serve the development is suitably located and will provide good sight distance in both directions along Gregory Place.

- The estimated potential traffic generation increase of up to 92 vehicle movements in the peak hours will not cause the RMS suggested Environmental Capacity volume to be exceeded for Gregory Place and will not have a detrimental effect on the surrounding road network.

- The proposal has a potential net increase in estimated peak hour traffic flows in the order of 92 vehicle trips which will not have anu unacceptable traffic implications on the intersection of Hassall Street and Gregory place.

- At a concept level the proposal has resolved access arrangements by permitting all vehicles (excluding FNSW) into the basement to access each building core on basement 1. This applies to visitors, delivery drivers, taxis and ambulance services. Provision for access for FNSW has been made to each building at ground level along the northern accessway.

- As a build to rent proposition the property owner and building management will promote alternative transportation through the finalisation and implementation of the attached drat green travel plan.

Should you require any additional information or clarification of the contents of this letter please contact me on the numbers provided.

Yours sincerely

Craig Hazell
Director

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph. Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 7558 HARRIS PARK Gregory Place
Day/Date : Thursday 24th June 2021

PEDS	WEST	SOUTH	EAST	
Time Per	*Hassall St*	*Gregory Pl*	*Hassall St*	TOT
0630 - 0645	1	4	0	**5**
0645 - 0700	0	1	1	**2**
0700 - 0715	0	5	1	**6**
0715 - 0730	0	2	1	**3**
0730 - 0745	0	6	0	**6**
0745 - 0800	2	5	0	**7**
0800 - 0815	0	2	0	**2**
0815 - 0830	1	4	0	**5**
0830 - 0845	0	5	0	**5**
0845 - 0900	0	4	0	**4**
0900 - 0915	0	6	0	**6**
0915 - 0930	0	6	0	**6**
Per End	**4**	**50**	**3**	**57**

PEDS	WEST	SOUTH	EAST	
Peak Per	*Hassall St*	*Gregory Pl*	*Hassall St*	TOT
0630 - 0730	1	12	3	**16**
0645 - 0745	0	14	3	**17**
0700 - 0800	2	18	2	**22**
0715 - 0815	2	15	1	**18**
0730 - 0830	3	17	0	**20**
0745 - 0845	3	16	0	**19**
0800 - 0900	1	15	0	**16**
0815 - 0915	1	19	0	**20**
0830 - 0930	0	21	0	**21**
PEAK HR	**1**	**19**	**0**	**20**

Lights	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	147	0	0	1	0	72	**220**
0645 - 0700	149	1	1	0	1	89	**241**
0700 - 0715	154	6	0	1	0	72	**233**
0715 - 0730	171	2	1	1	0	77	**252**
0730 - 0745	193	0	0	0	0	109	**302**
0745 - 0800	167	4	3	1	3	93	**271**
0800 - 0815	140	0	0	2	4	107	**253**
0815 - 0830	197	4	2	1	3	104	**311**
0830 - 0845	167	2	0	1	2	111	**283**
0845 - 0900	200	0	0	0	1	108	**309**
0900 - 0915	158	0	0	1	2	117	**278**
0915 - 0930	171	1	0	0	1	108	**281**
Per End	**2014**	**20**	**7**	**9**	**17**	**108**	**3234**

Heavies	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	1	0	0	0	0	1	**2**
0645 - 0700	8	0	0	0	0	4	**12**
0700 - 0715	3	0	0	0	0	4	**7**
0715 - 0730	4	0	0	0	0	2	**6**
0730 - 0745	4	0	0	0	0	5	**9**
0745 - 0800	7	0	0	0	0	3	**10**
0800 - 0815	1	0	0	0	0	1	**2**
0815 - 0830	0	0	0	0	0	3	**3**
0830 - 0845	1	0	0	0	0	1	**2**
0845 - 0900	1	0	0	0	0	1	**2**
0900 - 0915	1	0	0	0	0	1	**2**
0915 - 0930	2	0	0	0	0	0	**2**
Per End	**33**	**0**	**0**	**0**	**0**	**26**	**59**

Combined	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	148	0	0	1	0	73	**222**
0645 - 0700	157	1	1	0	1	93	**253**
0700 - 0715	157	6	0	1	0	76	**240**
0715 - 0730	175	2	1	1	0	79	**258**
0730 - 0745	197	0	0	0	0	114	**311**
0745 - 0800	174	4	3	1	3	96	**281**
0800 - 0815	141	0	0	2	4	108	**255**
0815 - 0830	197	4	2	1	3	107	**314**
0830 - 0845	168	2	0	1	2	112	**285**
0845 - 0900	201	0	0	0	1	109	**311**
0900 - 0915	159	0	0	1	2	118	**280**
0915 - 0930	173	1	0	0	1	108	**283**
Per End	**2047**	**20**	**7**	**9**	**17**	**1193**	**3293**

Lights	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	621	9	2	3	1	310	**946**
0645 - 0745	667	9	2	2	1	347	**1028**
0700 - 0800	685	12	4	3	3	351	**1058**
0715 - 0815	671	6	4	4	7	386	**1078**
0730 - 0830	697	8	5	4	10	413	**1137**
0745 - 0845	671	10	5	5	12	415	**1118**
0800 - 0900	704	6	2	4	10	430	**1156**
0815 - 0915	722	6	2	3	8	440	**1181**
0830 - 0930	696	3	0	2	6	444	**1151**
PEAK HR	**722**	**6**	**2**	**3**	**8**	**440**	**1181**

Heavies	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	16	0	0	0	0	11	**27**
0645 - 0745	19	0	0	0	0	15	**34**
0700 - 0800	18	0	0	0	0	14	**32**
0715 - 0815	16	0	0	0	0	11	**27**
0730 - 0830	12	0	0	0	0	12	**24**
0745 - 0845	9	0	0	0	0	8	**17**
0800 - 0900	3	0	0	0	0	6	**9**
0815 - 0915	3	0	0	0	0	6	**9**
0830 - 0930	5	0	0	0	0	3	**8**
PEAK HR	**3**	**0**	**0**	**0**	**0**	**6**	**9**

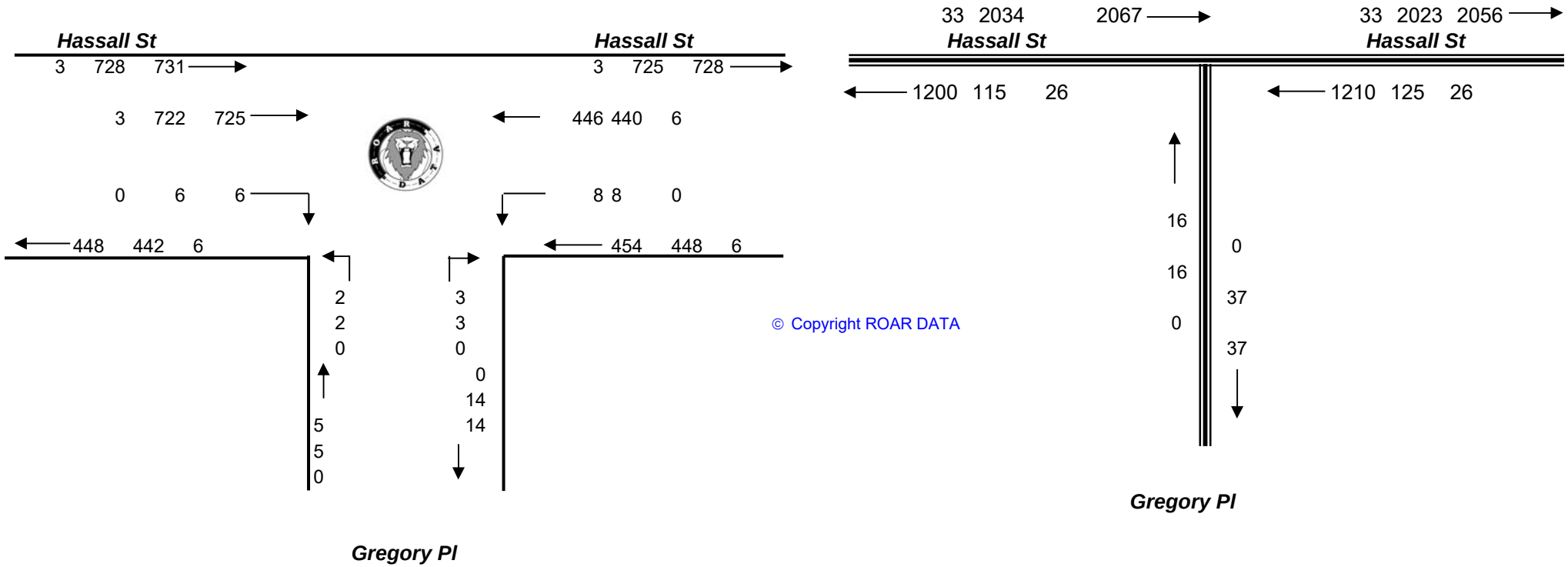
Combined	WEST		SOUTH		EAST		
	Hassall St		*Gregory Pl*		*Hassall St*		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	637	9	2	3	1	321	**973**
0645 - 0745	686	9	2	2	1	362	**1062**
0700 - 0800	703	12	4	3	3	365	**1090**
0715 - 0815	687	6	4	4	7	397	**1105**
0730 - 0830	709	8	5	4	10	425	**1161**
0745 - 0845	680	10	5	5	12	423	**1135**
0800 - 0900	707	6	2	4	10	436	**1165**
0815 - 0915	725	6	2	3	8	446	**1190**
0830 - 0930	701	3	0	2	6	447	**1159**
PEAK HR	**725**	**6**	**2**	**3**	**8**	**446**	**1190**

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph. Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 7558 HARRIS PARK Gregory Place
Day/Date : Thursday 24th June 2021

AM PEAK
0815 - 0915

TOTAL VOLUMES FOR COUNT PERIOD



R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph. Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
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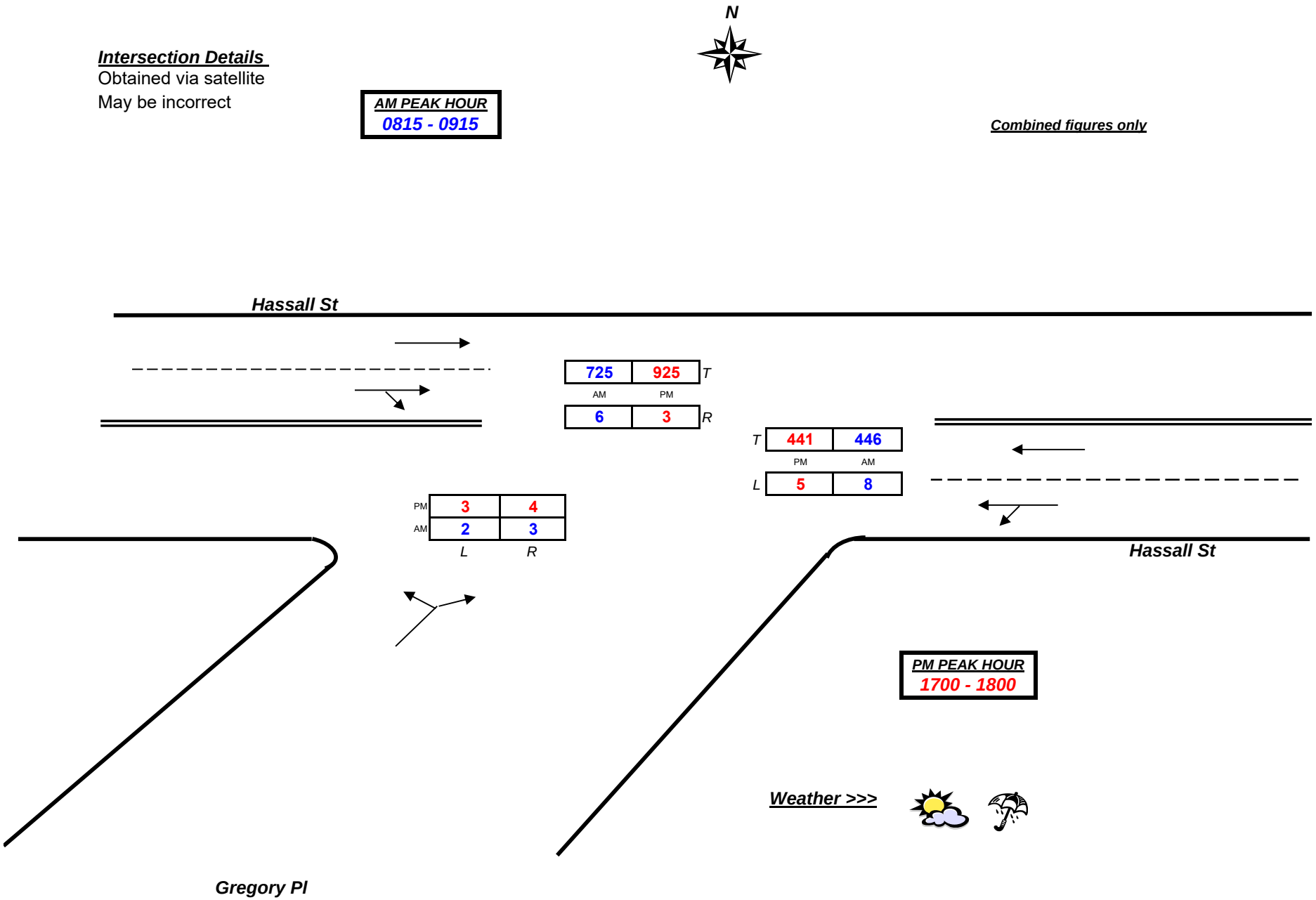
Day/Date : Thursday 24th June 2021

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0815 - 0915

Combined figures only



PM PEAK HOUR
1700 - 1800

Weather >>>

R.O.A.R. DATA

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Client : Traffic Solutions Pty. Ltd.
Job No/Name : 7558 HARRIS PARK Gregory Place
Day/Date : Thursday 24th June 2021

PEDS

Time Per	WEST Hassall St	SOUTH Gregory Pl	EAST Hassall St	TOT
1500 - 1515	0	3	0	**3**
1515 - 1530	0	8	2	**10**
1530 - 1545	0	4	0	**4**
1545 - 1600	1	1	0	**2**
1600 - 1615	0	10	0	**10**
1615 - 1630	0	6	0	**6**
1630 - 1645	0	2	0	**2**
1645 - 1700	0	4	0	**4**
1700 - 1715	0	3	0	**3**
1715 - 1730	0	2	0	**2**
1730 - 1745	0	5	0	**5**
1745 - 1800	0	3	0	**3**
Per End	**1**	**51**	**2**	**54**

PEDS

Peak Per	WEST Hassall St	SOUTH Gregory Pl	EAST Hassall St	TOT
1500 - 1600	1	16	2	**19**
1515 - 1615	1	23	2	**26**
1530 - 1630	1	21	0	**22**
1545 - 1645	1	19	0	**20**
1600 - 1700	0	22	0	**22**
1615 - 1715	0	15	0	**15**
1630 - 1730	0	11	0	**11**
1645 - 1745	0	14	0	**14**
1700 - 1800	0	13	0	**13**
PEAK HR	**0**	**13**	**0**	**13**

Lights

Time Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1515	231	1	1	0	1	128	**362**
1515 - 1530	228	0	2	0	4	150	**384**
1530 - 1545	194	1	0	0	0	116	**311**
1545 - 1600	206	0	1	0	0	105	**312**
1600 - 1615	221	5	4	2	3	128	**363**
1615 - 1630	186	0	0	5	3	95	**289**
1630 - 1645	217	0	1	0	2	96	**316**
1645 - 1700	185	0	2	1	1	92	**281**
1700 - 1715	260	0	2	0	1	116	**379**
1715 - 1730	247	1	0	0	1	104	**353**
1730 - 1745	208	1	0	2	3	107	**321**
1745 - 1800	209	1	1	2	0	114	**327**
Per End	**2592**	**10**	**14**	**12**	**19**	**1351**	**3998**

Heavies

Time Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1515	2	0	0	0	0	0	**2**
1515 - 1530	2	0	0	0	0	0	**2**
1530 - 1545	0	0	0	0	0	0	**0**
1545 - 1600	0	0	0	0	0	2	**2**
1600 - 1615	0	0	0	0	0	2	**2**
1615 - 1630	0	0	0	0	0	4	**4**
1630 - 1645	1	0	0	0	0	0	**1**
1645 - 1700	0	0	0	0	0	0	**0**
1700 - 1715	0	0	0	0	0	0	**0**
1715 - 1730	1	0	0	0	0	0	**1**
1730 - 1745	0	0	0	0	0	0	**0**
1745 - 1800	0	0	0	0	0	0	**0**
Per End	**6**	**0**	**0**	**0**	**0**	**8**	**14**

Combined

Time Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1515	233	1	1	0	1	128	**364**
1515 - 1530	230	0	2	0	4	150	**386**
1530 - 1545	194	1	0	0	0	116	**311**
1545 - 1600	206	0	1	0	0	107	**314**
1600 - 1615	221	5	4	2	3	130	**365**
1615 - 1630	186	0	0	5	3	99	**293**
1630 - 1645	218	0	1	0	2	96	**317**
1645 - 1700	185	0	2	1	1	92	**281**
1700 - 1715	260	0	2	0	1	116	**379**
1715 - 1730	248	1	0	0	1	104	**354**
1730 - 1745	208	1	0	2	3	107	**321**
1745 - 1800	209	1	1	2	0	114	**327**
Per End	**2598**	**10**	**14**	**12**	**19**	**1359**	**4012**

Lights

Peak Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1600	859	2	4	0	5	499	**1369**
1515 - 1615	849	6	7	2	7	499	**1370**
1530 - 1630	807	6	5	7	6	444	**1275**
1545 - 1645	830	5	6	7	8	424	**1280**
1600 - 1700	809	5	7	8	9	411	**1249**
1615 - 1715	848	0	5	6	7	399	**1265**
1630 - 1730	909	1	5	1	5	408	**1329**
1645 - 1745	900	2	4	3	6	419	**1334**
1700 - 1800	924	3	3	4	5	441	**1380**

Heavies

Peak Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1600	4	0	0	0	0	2	**6**
1515 - 1615	2	0	0	0	0	4	**6**
1530 - 1630	0	0	0	0	0	8	**8**
1545 - 1645	1	0	0	0	0	8	**9**
1600 - 1700	1	0	0	0	0	6	**7**
1615 - 1715	1	0	0	0	0	4	**5**
1630 - 1730	2	0	0	0	0	0	**2**
1645 - 1745	1	0	0	0	0	0	**1**
1700 - 1800	1	0	0	0	0	0	**1**

Combined

Peak Per	WEST Hassall St T	WEST Hassall St R	SOUTH Gregory Pl L	SOUTH Gregory Pl R	EAST Hassall St L	EAST Hassall St T	TOT
1500 - 1600	863	2	4	0	5	501	**1375**
1515 - 1615	851	6	7	2	7	503	**1376**
1530 - 1630	807	6	5	7	6	452	**1283**
1545 - 1645	831	5	6	7	8	432	**1289**
1600 - 1700	810	5	7	8	9	417	**1256**
1615 - 1715	849	0	5	6	7	403	**1270**
1630 - 1730	911	1	5	1	5	408	**1331**
1645 - 1745	901	2	4	3	6	419	**1335**
1700 - 1800	925	3	3	4	5	441	**1381**

PEAK HR	924	3	3	4	5	441	1380

PEAK HR	1	0	0	0	0	0	1

PEAK HR	925	3	3	4	5	441	1381

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph. Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.

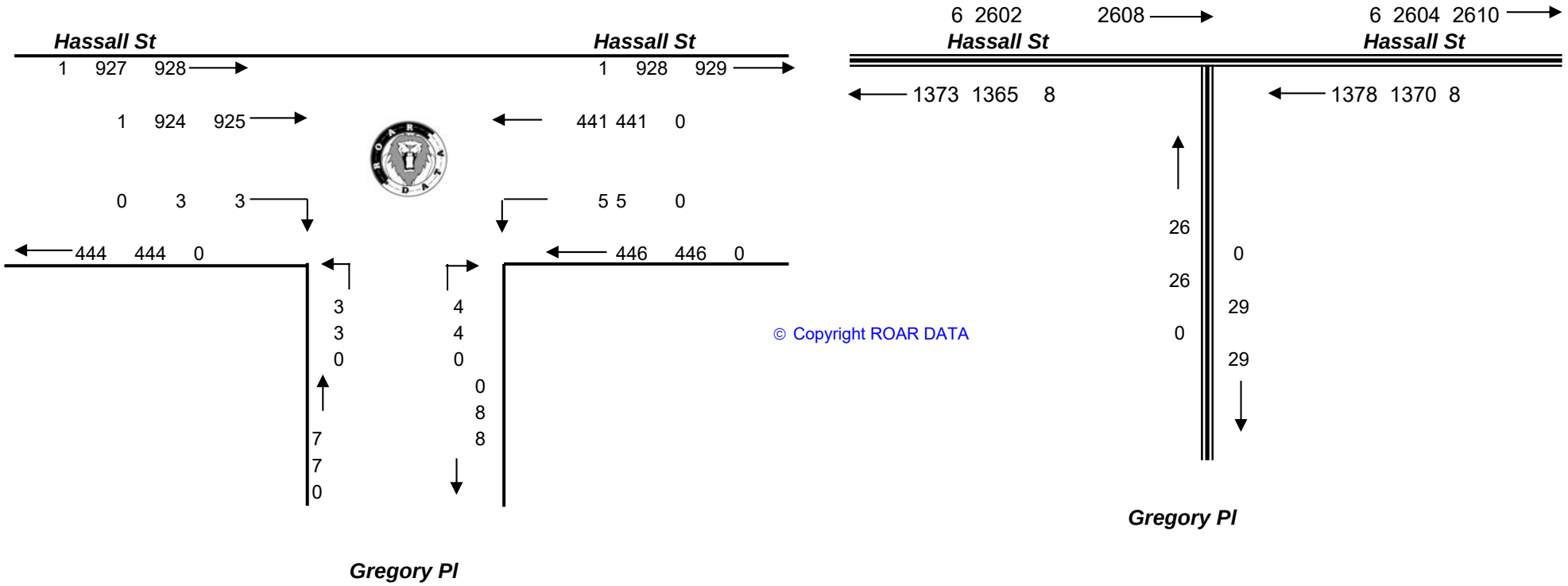
Job No/Name : 7558 HARRIS PARK Gregory Place

Day/Date : Thursday 24th June 2021

PM PEAK
1700 - 1800

N

TOTAL VOLUMES FOR COUNT PERIOD



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client : Traffic Solutions Pty. Ltd.

Job No/Name : 4742 PARRAMATTA Gregory Pl

Day/Date : Wednesday 31st July 2013

PEDS	WEST	SOUTH	EAST	
Time Per	Hassall St	Gregory Pl	Hassall St	TOT
0630 - 0645	0	0	1	1
0645 - 0700	0	1	0	1
0700 - 0715	1	3	0	4
0715 - 0730	0	1	0	1
0730 - 0745	1	3	0	4
0745 - 0800	1	3	0	4
0800 - 0815	1	11	0	12
0815 - 0830	0	5	0	5
0830 - 0845	0	11	0	11
0845 - 0900	0	3	0	3
0900 - 0915	0	5	0	5
0915 - 0930	0	5	0	5
Per End	**4**	**51**	**1**	**56**

PEDS	WEST	SOUTH	EAST	
Peak Per	Hassall St	Gregory Pl	Hassall St	TOT
0630 - 0730	1	5	1	7
0645 - 0745	2	8	0	10
0700 - 0800	3	10	0	13
0715 - 0815	3	18	0	21
0730 - 0830	3	22	0	25
0745 - 0845	2	30	0	32
0800 - 0900	1	30	0	31
0815 - 0915	0	24	0	24
0830 - 0930	0	24	0	24
PEAK HR	**1**	**30**	**0**	**31**

Lights	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	176	1	0	1	2	104	284
0645 - 0700	183	2	1	2	2	116	306
0700 - 0715	176	1	0	1	2	122	302
0715 - 0730	163	2	1	3	2	136	307
0730 - 0745	169	1	0	0	0	168	338
0745 - 0800	189	1	1	1	1	175	368
0800 - 0815	185	2	0	1	1	185	374
0815 - 0830	193	0	1	1	3	196	394
0830 - 0845	191	2	0	1	2	234	430
0845 - 0900	188	1	7	2	6	191	395
0900 - 0915	125	1	0	2	4	141	273
0915 - 0930	97	2	0	1	1	161	262
Per End	**2035**	**16**	**11**	**16**	**26**	**1929**	**4033**

Heavies	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	5	0	0	0	0	3	8
0645 - 0700	5	0	0	0	0	3	8
0700 - 0715	6	0	0	0	0	5	11
0715 - 0730	3	0	0	0	0	3	6
0730 - 0745	6	0	0	0	0	5	11
0745 - 0800	6	0	0	0	0	2	8
0800 - 0815	4	0	0	0	0	1	5
0815 - 0830	3	0	0	0	0	3	6
0830 - 0845	4	0	0	0	0	3	7
0845 - 0900	4	0	0	0	0	4	8
0900 - 0915	5	0	0	0	0	3	8
0915 - 0930	4	0	0	0	0	2	6
Per End	**55**	**0**	**0**	**0**	**0**	**37**	**92**

Combined	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
0630 - 0645	181	1	0	1	2	107	292
0645 - 0700	188	2	1	2	2	119	314
0700 - 0715	182	1	0	1	2	127	313
0715 - 0730	166	2	1	3	2	139	313
0730 - 0745	175	1	0	0	0	173	349
0745 - 0800	195	1	1	1	1	177	376
0800 - 0815	189	2	0	1	1	186	379
0815 - 0830	196	0	1	1	3	199	400
0830 - 0845	195	2	0	1	2	237	437
0845 - 0900	192	1	7	2	6	195	403
0900 - 0915	130	1	0	2	4	144	281
0915 - 0930	101	2	0	1	1	163	268
Per End	**2090**	**16**	**11**	**16**	**26**	**1966**	**4125**

Lights	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	698	6	2	7	8	478	1199
0645 - 0745	691	6	2	6	6	542	1253
0700 - 0800	697	5	2	5	5	601	1315
0715 - 0815	706	6	2	5	4	664	1387
0730 - 0830	736	4	2	3	5	724	1474
0745 - 0845	758	5	2	4	7	790	1566
0800 - 0900	757	5	8	5	12	806	1593
0815 - 0915	697	4	8	6	15	762	1492
0830 - 0930	601	6	7	6	13	727	1360
PEAK HR	**757**	**5**	**8**	**5**	**12**	**806**	**1593**

Heavies	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	19	0	0	0	0	14	33
0645 - 0745	20	0	0	0	0	16	36
0700 - 0800	21	0	0	0	0	15	36
0715 - 0815	19	0	0	0	0	11	30
0730 - 0830	19	0	0	0	0	11	30
0745 - 0845	17	0	0	0	0	9	26
0800 - 0900	15	0	0	0	0	11	26
0815 - 0915	16	0	0	0	0	13	29
0830 - 0930	17	0	0	0	0	12	29
PEAK HR	**15**	**0**	**0**	**0**	**0**	**11**	**26**

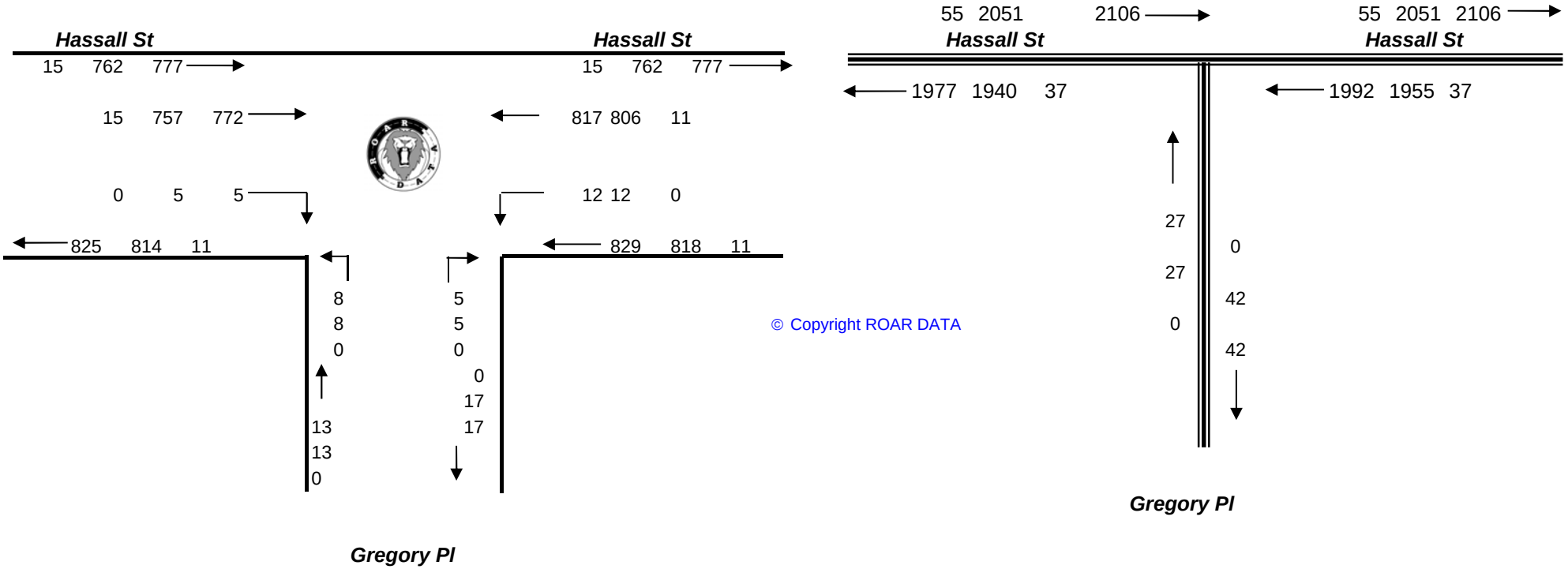
Combined	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
0630 - 0730	717	6	2	7	8	492	1232
0645 - 0745	711	6	2	6	6	558	1289
0700 - 0800	718	5	2	5	5	616	1351
0715 - 0815	725	6	2	5	4	675	1417
0730 - 0830	755	4	2	3	5	735	1504
0745 - 0845	775	5	2	4	7	799	1592
0800 - 0900	772	5	8	5	12	817	1619
0815 - 0915	713	4	8	6	15	775	1521
0830 - 0930	618	6	7	6	13	739	1389
PEAK HR	**772**	**5**	**8**	**5**	**12**	**817**	**1619**

Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Job No/Name : 4742 PARRAMATTA Gregory Pl
Day/Date : Wednesday 31st July 2013

AM PEAK
0800 - 0900

TOTAL VOLUMES FOR COUNT PERIOD



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 4742 PARRAMATTA Gregory Pl
Day/Date : Wednesday 31st July 2013

PEDS	WEST	SOUTH	EAST	
Time Per	Hassall St	Gregory Pl	Hassall St	TOT
1500 - 1515	0	2	0	**2**
1515 - 1530	0	6	0	**6**
1530 - 1545	0	5	0	**5**
1545 - 1600	1	4	0	**5**
1600 - 1615	0	7	0	**7**
1615 - 1630	1	5	0	**6**
1630 - 1645	0	5	0	**5**
1645 - 1700	0	6	0	**6**
1700 - 1715	0	5	0	**5**
1715 - 1730	0	15	0	**15**
1730 - 1745	8	14	0	**22**
1745 - 1800	0	7	0	**7**
Per End	**10**	**81**	**0**	**91**

PEDS	WEST	SOUTH	EAST	
Peak Per	Hassall St	Gregory Pl	Hassall St	TOT
1500 - 1600	1	17	0	**18**
1515 - 1615	1	22	0	**23**
1530 - 1630	2	21	0	**23**
1545 - 1645	2	21	0	**23**
1600 - 1700	1	23	0	**24**
1615 - 1715	1	21	0	**22**
1630 - 1730	0	31	0	**31**
1645 - 1745	8	40	0	**48**
1700 - 1800	8	41	0	**49**
PEAK HR	**8**	**41**	**0**	**49**

Lights	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
1500 - 1515	158	0	1	2	1	127	**289**
1515 - 1530	203	2	1	3	1	179	**389**
1530 - 1545	179	0	2	4	2	145	**332**
1545 - 1600	203	3	1	2	1	157	**367**
1600 - 1615	175	1	1	5	1	114	**297**
1615 - 1630	257	0	1	2	7	132	**399**
1630 - 1645	255	0	2	11	4	138	**410**
1645 - 1700	223	0	3	6	4	144	**380**
1700 - 1715	225	2	3	2	1	148	**381**
1715 - 1730	295	1	2	5	1	125	**429**
1730 - 1745	248	3	0	4	0	140	**395**
1745 - 1800	245	3	4	1	0	157	**410**
Per End	**2666**	**15**	**21**	**47**	**23**	**1706**	**4478**

Heavies	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
1500 - 1515	0	0	0	0	0	0	**0**
1515 - 1530	3	0	0	0	0	3	**6**
1530 - 1545	2	0	0	0	0	1	**3**
1545 - 1600	5	0	0	0	0	2	**7**
1600 - 1615	1	0	0	0	0	3	**4**
1615 - 1630	4	0	0	0	0	5	**9**
1630 - 1645	1	0	0	0	0	2	**3**
1645 - 1700	3	0	0	0	0	4	**7**
1700 - 1715	2	0	0	0	0	3	**5**
1715 - 1730	3	0	0	0	0	5	**8**
1730 - 1745	1	0	0	0	0	1	**2**
1745 - 1800	3	0	0	0	0	4	**7**
Per End	**28**	**0**	**0**	**0**	**0**	**33**	**61**

Combined	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Time Per	T	R	L	R	L	T	TOT
1500 - 1515	158	0	1	2	1	127	**289**
1515 - 1530	206	2	1	3	1	182	**395**
1530 - 1545	181	0	2	4	2	146	**335**
1545 - 1600	208	3	1	2	1	159	**374**
1600 - 1615	176	1	1	5	1	117	**301**
1615 - 1630	261	0	1	2	7	137	**408**
1630 - 1645	256	0	2	11	4	140	**413**
1645 - 1700	226	0	3	6	4	148	**387**
1700 - 1715	227	2	3	2	1	151	**386**
1715 - 1730	298	1	2	5	1	130	**437**
1730 - 1745	249	3	0	4	0	141	**397**
1745 - 1800	248	3	4	1	0	161	**417**
Per End	**2694**	**15**	**21**	**47**	**23**	**1739**	**4539**

Lights	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
1500 - 1600	743	5	5	11	5	608	**1377**
1515 - 1615	760	6	5	14	5	595	**1385**
1530 - 1630	814	4	5	13	11	548	**1395**
1545 - 1645	890	4	5	20	13	541	**1473**
1600 - 1700	910	1	7	24	16	528	**1486**
1615 - 1715	960	2	9	21	16	562	**1570**
1630 - 1730	998	3	10	24	10	555	**1600**
1645 - 1745	991	6	8	17	6	557	**1585**
1700 - 1800	1013	9	9	12	2	570	**1615**
PEAK HR	**1013**	**9**	**9**	**12**	**2**	**570**	**1615**

Heavies	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
1500 - 1600	10	0	0	0	0	6	**16**
1515 - 1615	11	0	0	0	0	9	**20**
1530 - 1630	12	0	0	0	0	11	**23**
1545 - 1645	11	0	0	0	0	12	**23**
1600 - 1700	9	0	0	0	0	14	**23**
1615 - 1715	10	0	0	0	0	14	**24**
1630 - 1730	9	0	0	0	0	14	**23**
1645 - 1745	9	0	0	0	0	13	**22**
1700 - 1800	9	0	0	0	0	13	**22**
PEAK HR	**9**	**0**	**0**	**0**	**0**	**13**	**22**

Combined	WEST		SOUTH		EAST		
	Hassall St		Gregory Pl		Hassall St		
Peak Per	T	R	L	R	L	T	TOT
1500 - 1600	753	5	5	11	5	614	**1393**
1515 - 1615	771	6	5	14	5	604	**1405**
1530 - 1630	826	4	5	13	11	559	**1418**
1545 - 1645	901	4	5	20	13	553	**1496**
1600 - 1700	919	1	7	24	16	542	**1509**
1615 - 1715	970	2	9	21	16	576	**1594**
1630 - 1730	1007	3	10	24	10	569	**1623**
1645 - 1745	1000	6	8	17	6	570	**1607**
1700 - 1800	1022	9	9	12	2	583	**1637**
PEAK HR	**1022**	**9**	**9**	**12**	**2**	**583**	**1637**

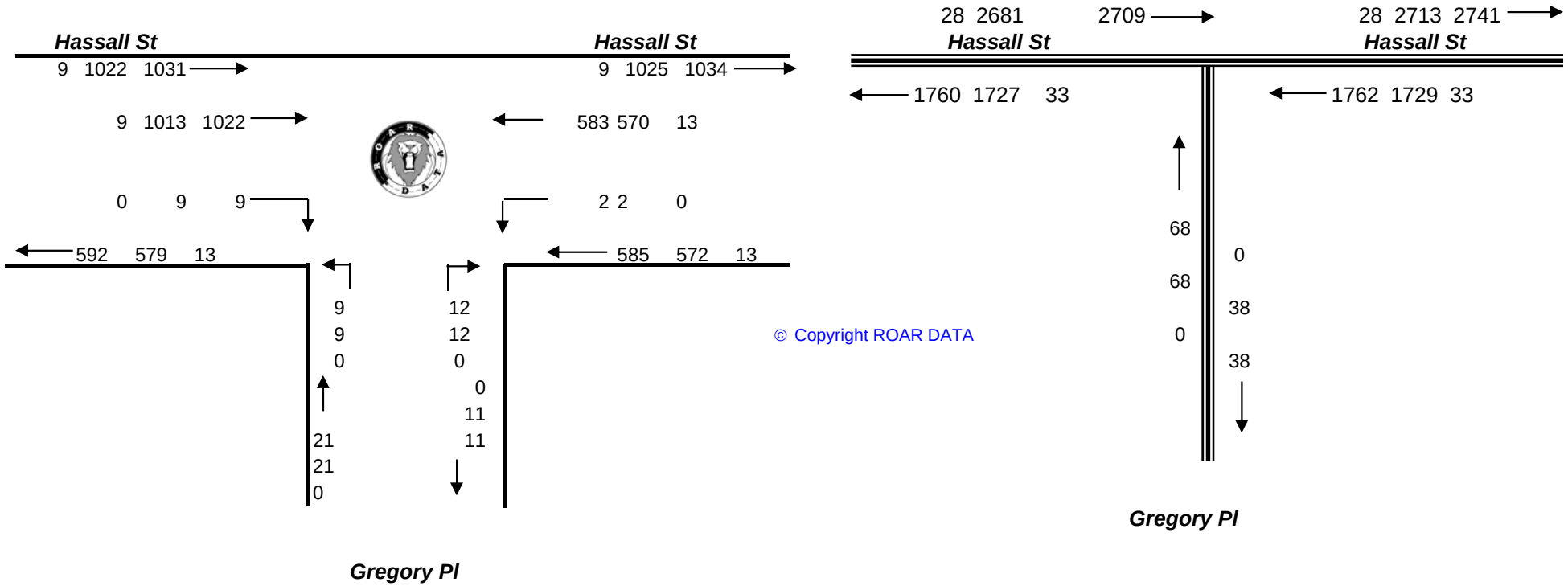
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Traffic Solutions Pty. Ltd.
Job No/Name : 4742 PARRAMATTA Gregory Pl
Day/Date : Wednesday 31st July 2013

PM PEAK
1700 - 1800

N

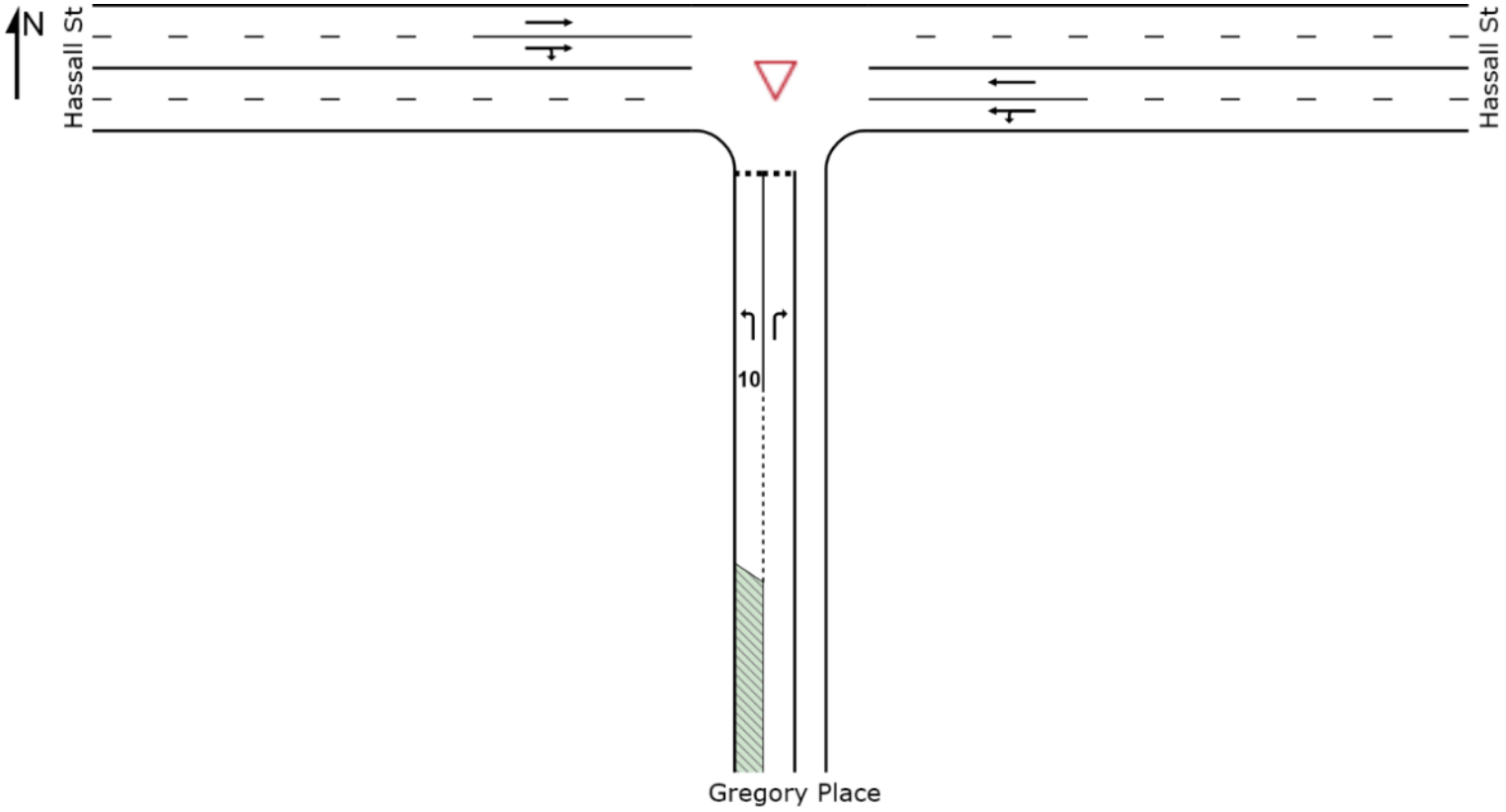
TOTAL VOLUMES FOR COUNT PERIOD



SITE LAYOUT

Site: Existing AM peak Hr

Hassall St and Gregory Place, Harris Park
Giveway / Yield (Two-Way)



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SIDRA INTERSECTION 6.0.24.4877
Project: T:\20202021\068\Hassall.sip6
8000870, 6016543, TRAFFIC SOLUTIONS PTY LTD, PLUS / 1PC

MOVEMENT SUMMARY

▽ Site: Existing AM peak Hr

Hassall St and Gregory Place, Harris Park
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gregory Place											
1	L2	2	0.0	0.002	6.4	LOS A	0.0	0.1	0.30	0.52	52.7
3	R2	3	0.0	0.011	16.4	LOS B	0.0	0.3	0.74	0.80	46.0
Approach		5	0.0	0.011	12.4	LOS A	0.0	0.3	0.56	0.69	48.5
East: Hassall St											
4	L2	8	0.0	0.124	5.6	LOS A	0.0	0.0	0.00	0.02	58.2
5	T1	469	1.3	0.124	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		478	1.3	0.124	0.1	NA	0.0	0.0	0.00	0.01	59.9
West: Hassall St											
11	T1	763	0.4	0.199	1.1	LOS A	1.7	11.7	0.19	0.01	58.9
12	R2	6	0.0	0.199	7.8	LOS A	1.7	11.7	0.39	0.01	56.2
Approach		769	0.4	0.199	1.2	NA	1.7	11.7	0.19	0.01	58.9
All Vehicles		1253	0.8	0.199	0.8	NA	1.7	11.7	0.12	0.01	59.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 6

MOVEMENT SUMMARY

▽ Site: Existing PM peak Hr

Hassall St and Gregory Place, Harris Park
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gregory Place											
1	L2	3	0.0	0.003	6.4	LOS A	0.0	0.1	0.30	0.52	52.7
3	R2	4	0.0	0.019	20.9	LOS B	0.1	0.4	0.80	0.89	43.6
Approach		7	0.0	0.019	14.7	LOS B	0.1	0.4	0.59	0.73	47.1
East: Hassall St											
4	L2	5	0.0	0.120	5.6	LOS A	0.0	0.0	0.00	0.01	58.2
5	T1	464	0.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		469	0.0	0.120	0.1	NA	0.0	0.0	0.00	0.01	59.9
West: Hassall St											
11	T1	974	0.1	0.251	1.2	LOS A	2.2	15.7	0.20	0.00	58.9
12	R2	3	0.0	0.251	7.9	LOS A	2.2	15.7	0.41	0.00	56.2
Approach		977	0.1	0.251	1.2	NA	2.2	15.7	0.20	0.00	58.8
All Vehicles		1454	0.1	0.251	0.9	NA	2.2	15.7	0.14	0.01	59.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 6

MOVEMENT SUMMARY

Site: Potential AM peak Hr

Hassall St and Gregory Place, Harris Park
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gregory Place											
1	L2	34	0.0	0.030	6.4	LOS A	0.1	0.9	0.30	0.55	52.7
3	R2	47	0.0	0.166	17.9	LOS B	0.6	4.2	0.77	0.91	45.2
Approach		81	0.0	0.166	13.1	LOS A	0.6	4.2	0.58	0.76	48.0
East: Hassall St											
4	L2	19	0.0	0.127	5.6	LOS A	0.0	0.0	0.00	0.05	57.9
5	T1	469	1.3	0.127	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		488	1.3	0.127	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: Hassall St											
11	T1	763	0.4	0.204	1.1	LOS A	1.7	11.8	0.19	0.01	58.8
12	R2	15	0.0	0.204	7.8	LOS A	1.7	11.8	0.40	0.03	56.1
Approach		778	0.4	0.204	1.2	NA	1.7	11.8	0.20	0.01	58.8
All Vehicles		1347	0.7	0.204	1.6	NA	1.7	11.8	0.15	0.06	58.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 6

MOVEMENT SUMMARY

Site: Potential PM peak Hr

Hassall St and Gregory Place, Harris Park
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gregory Place											
1	L2	9	0.0	0.008	6.3	LOS A	0.0	0.3	0.29	0.53	52.7
3	R2	13	0.0	0.061	22.4	LOS B	0.2	1.4	0.82	0.93	42.8
Approach		22	0.0	0.061	15.5	LOS B	0.2	1.4	0.59	0.76	46.6
East: Hassall St											
4	L2	43	0.0	0.131	5.6	LOS A	0.0	0.0	0.00	0.10	57.5
5	T1	464	0.0	0.131	0.0	LOS A	0.0	0.0	0.00	0.05	59.6
Approach		507	0.0	0.131	0.5	NA	0.0	0.0	0.00	0.05	59.4
West: Hassall St											
11	T1	974	0.1	0.264	1.3	LOS A	2.4	16.5	0.21	0.02	58.7
12	R2	26	0.0	0.264	8.2	LOS A	2.4	16.5	0.45	0.04	55.7
Approach		1000	0.1	0.264	1.4	NA	2.4	16.5	0.22	0.02	58.6
All Vehicles		1529	0.1	0.264	1.3	NA	2.4	16.5	0.15	0.04	58.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 6