TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

A division of Monvale Pty Ltd ACN 060 653 125
ABN 44 060 653 125

24 July 2012
Ref: 10028

Ros Read
Urban Perspectives
Suite 23, Level 6, 58 Pitt Street
Sydney NSW 2000

email: ros@urbanperspectives.com.au

Dear Ros

Proposed Superyacht Marina, Rozelle Bay

I refer to your advice that the Department of Planning and Infrastructure has requested that further traffic assessment be undertaken to:

- reflect the proposed changed carpark capacity
- assess the impact on the Level of Service at the existing James Craig Road/The Crescent intersection without the projected Passenger Terminal traffic or intersection upgrade

My report dated November 2010 assessed the following proposed development elements:

- 6,145m^2 indoor floor space and 1,843m^2 outdoor area comprising:

- commercial	2,690m^2
- retail	470m^2
- restaurant	1,984m^2
- function	700m^2
- workshop	50m^2
- staff	540m^2

- 166 parking spaces instructive plus 24 spaces for vessel births

Suite 502 Level 5 282 Victoria Avenue PO Box 1160 Chatswood NSW 2067 ph (02) 9411 5660 Fax (02) 9904 6622
Email ttpa@ttpa.com.au

It is understood that the revised scheme will comprise:

- Marine 2,851m^2
  Yacht Club 1,932m^2
  Ancillary bar/restaurant 966m^2
  Provedore/restaurant 451m^2
  Total 6,200m^2

- 226 parking spaces plus provision for vessel births

The assessment in regard to traffic implications in my report dealt with the weekday morning and afternoon as well as the weekend midday peak periods. Details of the existing intersection arrangement and the relevant peak traffic movements are attached. The operational performance of the intersection during the stated peak periods has been modelled using SIDRA and the results indicating a relatively satisfactory operation are provided in the following while the output and the criteria for interpreting the results is attached:

AM		**PM**		**WE MD**	
LOS	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**
A	2.0	A	6.5	A	2.7

There will be relatively little activity generated by the Yacht Club, restaurants, bars and small provedore etc during the weekday morning and afternoon periods. The revised proposal involves an additional 60 parking spaces to that of the submitted scheme while the approved Masterplan assessed a traffic outcome along Jones Craig Road substantially greater than that established with the submitted scheme as follows:

	VEHICLE PER HOUR (TWO WAY)		
	AM	**PM**	**WE MD**
Masterplan	482	423	211
TTPA	331	355	181
Difference	-151	-68	-30

The assessed traffic generation of the various elements of the revised development based on the carparking provision are as follows:

	AM		PM		WE MD	
	IN	**OUT**	**IN**	**OUT**	**IN**	**OUT**
Marine *	10	5	5	10	10	10
Yacht Club	10	5	25	5	15	5
Restaurant\Bars	5	5	15	-	40	20
Provedore/Restaurant	10	10	15	5	15	15
Total	**35**	**25**	**60**	**20**	**80**	**50**

* not including existing vessel birth

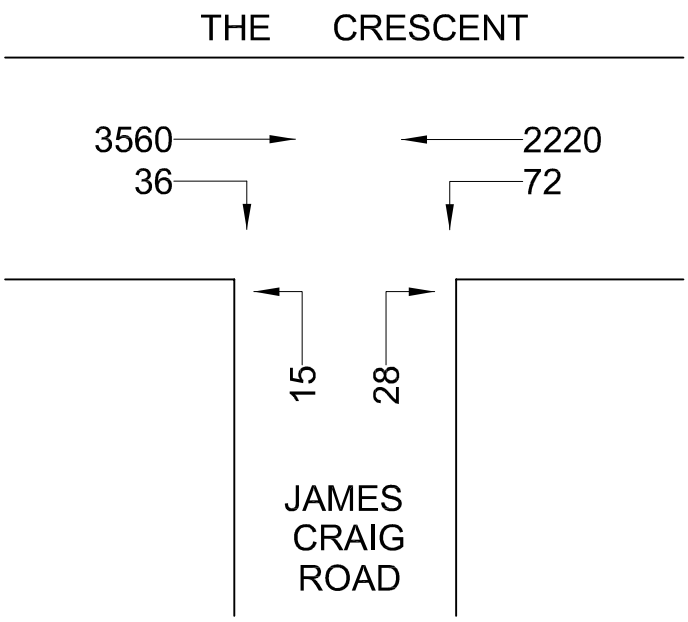
The operational performance of the intersection has been modelled using SIDRA for the future circumstance as prescribed by the Department. The results of that assessment are attached and summarised in the following:

AM		PM		WE MD	
LOS	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**
A	2.4	A	6.8	A	3.7

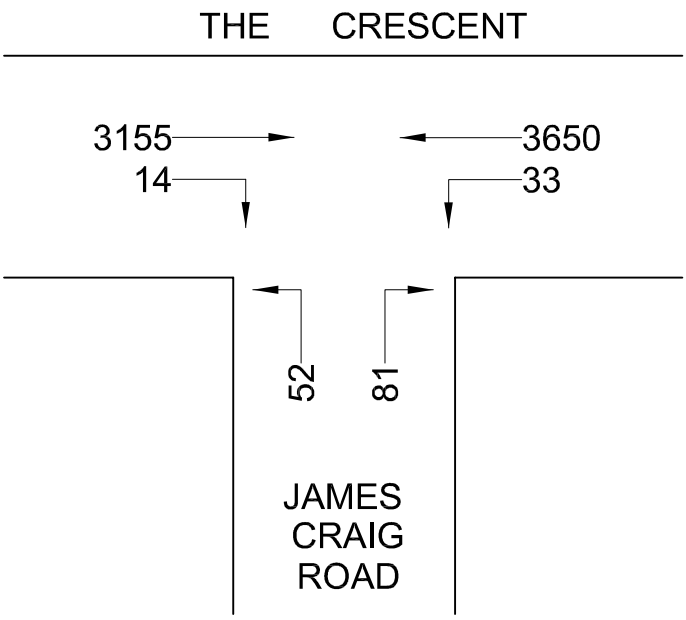
The results indicate that the existing Level of Service will be retained with the projected traffic generation of the proposed development.

Yours faithfully

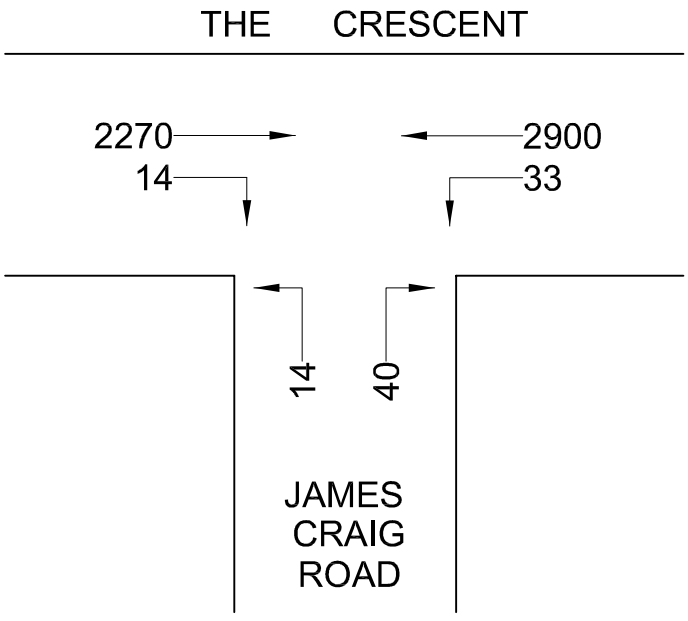
Ross Nettle
Director
Transport and Traffic Planning Associates



AM PEAK

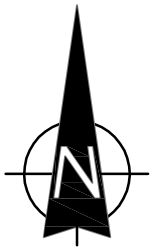


PM PEAK



SAT MIDDAY

LEGEND



EXISTING TRAFFIC VOLUMES

FIG 5

0650.255.VV.3033

DRAWN BY CADD
DO NOT AMEND MANUALLY

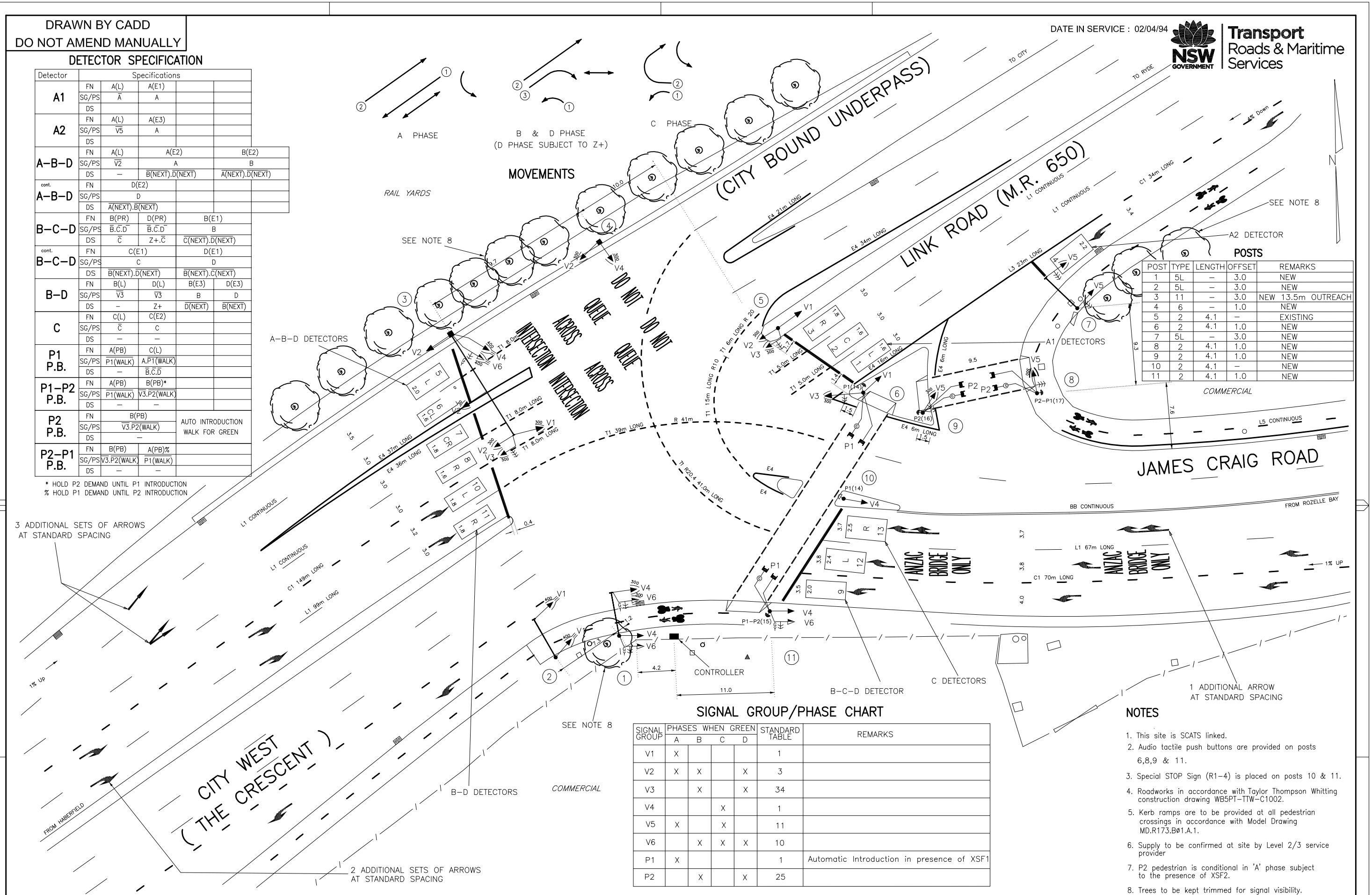
DATE IN SERVICE : 02/04/94

NSW GOVERNMENT Transport Roads & Maritime Services

DETECTOR SPECIFICATION

Detector		Specifications			
A1	FN	A(L)	A(E1)		
	SG/PS	$\overline{A}$	A		
	DS				
A2	FN	A(L)	A(E3)		
	SG/PS	$\overline{V5}$	A		
	DS				
A–B–D	FN	A(L)	A(E2)		B(E2)
	SG/PS	$\overline{V2}$	A		B
	DS	–	$\overline{B(NEXT).D(NEXT)}$		$\overline{A(NEXT).D(NEXT)}$
cont. A–B–D	FN	D(E2)			
	SG/PS	D			
	DS	$\overline{A(NEXT).B(NEXT)}$			
B–C–D	FN	B(PR)	D(PR)	B(E1)	
	SG/PS	$\overline{B.C.D}$	$\overline{B.C.D}$	B	
	DS	$\overline{C}$	Z+.$\overline{C}$	$\overline{C(NEXT).D(NEXT)}$	
cont. B–C–D	FN	C(E1)		D(E1)	
	SG/PS	C		D	
	DS	$\overline{B(NEXT).D(NEXT)}$		$\overline{B(NEXT).C(NEXT)}$	
B–D	FN	B(L)	D(L)	B(E3)	D(E3)
	SG/PS	$\overline{V3}$	$\overline{V3}$	B	D
	DS	–	Z+	D(NEXT)	$\overline{B(NEXT)}$
C	FN	C(L)	C(E2)		
	SG/PS	$\overline{C}$	C		
	DS	–	–		
P1 P.B.	FN	A(PB)	C(L)		
	SG/PS	P1($\overline{WALK}$)	A.$\overline{P1(WALK)}$		
	DS	–	$\overline{B.C.D}$		
P1–P2 P.B.	FN	A(PB)	B(PB)*		
	SG/PS	P1($\overline{WALK}$)	$\overline{V3.P2(WALK)}$		
	DS	–	–		
P2 P.B.	FN	B(PB)		AUTO INTRODUCTION WALK FOR GREEN	
	SG/PS	$\overline{V3.P2(WALK)}$			
	DS	–			
P2–P1 P.B.	FN	B(PB)	A(PB)%		
	SG/PS	$\overline{V3.P2(WALK)}$	P1($\overline{WALK}$)		
	DS	–	–		

* HOLD P2 DEMAND UNTIL P1 INTRODUCTION
% HOLD P1 DEMAND UNTIL P2 INTRODUCTION



POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	5L	–	3.0	NEW
2	5L	–	3.0	NEW
3	11	–	3.0	NEW 13.5m OUTREACH
4	6	–	1.0	NEW
5	2	4.1	–	EXISTING
6	2	4.1	1.0	NEW
7	5L	–	3.0	NEW
8	2	4.1	1.0	NEW
9	2	4.1	1.0	NEW
10	2	4.1	–	NEW
11	2	4.1	1.0	NEW

SIGNAL GROUP/PHASE CHART

SIGNAL GROUP	PHASES WHEN GREEN A	B	C	D	STANDARD TABLE	REMARKS
V1	X				1	
V2	X	X		X	3	
V3		X		X	34	
V4			X		1	
V5	X		X		11	
V6		X	X	X	10	
P1	X				1	Automatic Introduction in presence of XSF1
P2		X		X	25	

NOTES

1. This site is SCATS linked.
2. Audio tactile push buttons are provided on posts 6,8,9 & 11.
3. Special STOP Sign (R1–4) is placed on posts 10 & 11.
4. Roadworks in accordance with Taylor Thompson Whitting construction drawing WB5PT–TTW–C1002.
5. Kerb ramps are to be provided at all pedestrian crossings in accordance with Model Drawing MD.R173.Bø1.A.1.
6. Supply to be confirmed at site by Level 2/3 service provider
7. P2 pedestrian is conditional in 'A' phase subject to the presence of XSF2.
8. Trees to be kept trimmed for signal visibility.

A ORIGINAL ISSUE

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	△	STD POSIT	VD001-5
GAS VALVE	#	PRES. DETECT	VC005-17
SEWER MANHOLE	⊛	VEH. GROUP OP	TS-TN-019
TELECOM PIT	◪	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	☌	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	⚿	SURVEYOR: HARD & FORESTER	
TELECOM PILLAR	⊘	DATE : JUNE 2011	

U.B.D. Ref. Map 11 N4
I.S.G. E: 316 075
CO-ORDS N: 1 250 775

DESIGNED JS
CHECKED CT
CT
SITE CHECKED
RW
RECOMMENDED

DESIGN APPROVAL
APPROVED
R.NETTLE
DIRECTOR
POSITION
DATE 24.05.12
DESIGN PREPARED BY
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

RMS ACCEPTANCE
RECOMMENDED
POSITION
DATE
ACCEPTED
POSITION
DATE

ROADS AND MARITIME SERVICES

LEICHARDT COUNCIL AREA
TRAFFIC SIGNALS AT
CITY WEST LINK (MR 650) ROAD AND
JAMES CRAIG ROAD
ROZELLE

DESIGN LAYOUT TCS No 3033

EXISTING ☐ PROPOSED ☒
CADD FILE: VV3033_6A.dgn
SCALE 5 0 (1:200) 5 10
ISSUE A
FILE 255 TS 288
SUPERSEDES SHEET/ISSUE 1H
REGN. 0650.255.VV.3033
SHEET 6

$DATE$ $TIME$ $FILE$

Criteria for Interpreting Results of SIDRA Analysis

1. *Level of Service (LOS)*

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'B'	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
'C'	Satisfactory	Satisfactory but accident study required
'D'	Operating near capacity	Near capacity and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

2. *Average Vehicle Delay (AVD)*

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	*Traffic Signals, Roundabouts*	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode

3. *Degree of Saturation (DS)*

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**[1] both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

[1] *the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs*

MOVEMENT SUMMARY

Site: AM Peak - Existing

The Cresent x James Craig Rd
Existing AM Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	16	5.0	0.068	65.9	LOS E	1.5	10.7	0.91	0.70	20.9
3	R	29	5.0	0.384	82.8	LOS F	3.1	22.4	1.00	0.72	18.2
Approach		45	5.0	0.384	76.9	LOS F	3.1	22.4	0.97	0.71	19.1
East: The Cresent (E)											
4	L	76	5.0	0.060	8.3	LOS A	0.2	1.6	0.06	0.63	53.5
5	T	2337	5.0	0.542	2.0	LOS A	7.1	52.1	0.16	0.15	64.9
Approach		2413	5.0	0.542	2.2	LOS A	7.1	52.1	0.16	0.16	64.5
West: The Cresent (W)											
11	T	3747	5.0	0.569	0.9	LOS A	8.5	61.8	0.12	0.11	66.8
12	R	38	5.0	0.236	9.6	LOS A	0.3	2.1	0.08	0.67	52.1
Approach		3785	5.0	0.569	1.0	LOS A	8.5	61.8	0.12	0.11	66.6
All Vehicles		6243	5.0	0.569	2.0	LOS A	8.5	61.8	0.14	0.14	64.6

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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	4.9	LOS A	0.1	0.1	0.26	0.26
All Pedestrians		53	4.9				0.26	0.26

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

PHASING SUMMARY

The Cresent x James Craig Rd
Existing AM Peak

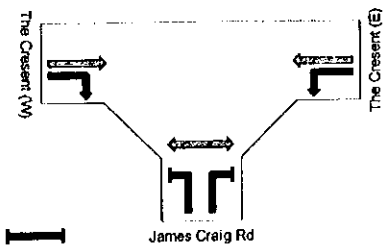
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

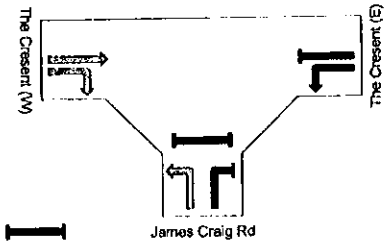
Phase Timing Results

Phase	A	B	C
Green Time (sec)	110	6	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	116	12	12
Phase Split	83 %	9 %	9 %

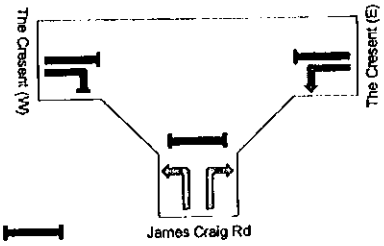
Phase A



Phase B



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: PM Peak - Existing

The Cresent x James Craig Rd
Existing PM Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	55	5.0	0.214	65.6	LOS E	4.7	34.0	0.92	0.76	21.0
3	R	85	5.0	0.832	87.2	LOS F	8.1	59.1	1.00	0.93	17.6
Approach		140	5.0	0.832	78.7	LOS F	8.1	59.1	0.97	0.86	18.8
East: The Cresent (E)											
4	L	35	5.0	0.025	8.3	LOS A	0.1	0.7	0.05	0.62	53.5
5	T	3842	5.0	0.928	8.6	LOS A	43.1	314.6	0.58	0.57	52.6
Approach		3877	5.0	0.928	8.6	LOS A	43.1	314.6	0.58	0.57	52.6
West: The Cresent (W)											
11	T	3321	5.0	0.513	0.9	LOS A	7.0	51.0	0.11	0.10	67.1
12	R	15	5.0	0.105	14.2	LOS A	0.3	2.0	0.17	0.68	46.7
Approach		3336	5.0	0.513	1.0	LOS A	7.0	51.0	0.11	0.10	67.0
All Vehicles		7353	5.0	0.928	6.5	LOS A	43.1	314.6	0.37	0.36	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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	5.4	LOS A	0.1	0.1	0.28	0.28
All Pedestrians		53	5.4				0.28	0.28

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

PHASING SUMMARY

The Cresent x James Craig Rd
Existing PM Peak

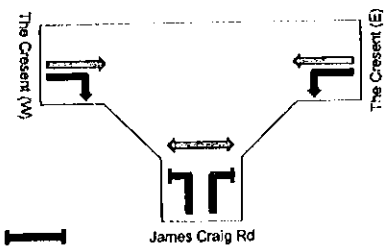
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

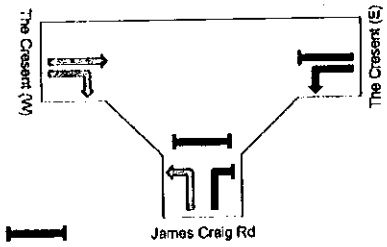
Phase Timing Results

Phase	A	B	C
Green Time (sec)	108	6	8
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	114	12	14
Phase Split	81 %	9 %	10 %

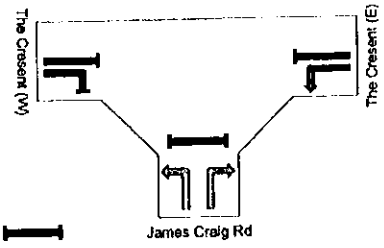
Phase A



Phase B



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: WEMID Peak - Existing

The Cresent x James Craig Rd
Existing WEMID Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	15	5.0	0.064	65.8	LOS E	1.4	10.0	0.91	0.70	20.9
3	R	42	5.0	0.548	83.9	LOS F	4.3	31.2	1.00	0.75	18.0
Approach		57	5.0	0.548	79.2	LOS F	4.3	31.2	0.98	0.74	18.7
East: The Cresent (E)											
4	L	35	5.0	0.027	8.3	LOS A	0.1	0.7	0.05	0.62	53.5
5	T	3053	5.0	0.714	2.8	LOS A	12.5	91.6	0.26	0.24	62.7
Approach		3087	5.0	0.714	2.9	LOS A	12.5	91.6	0.25	0.24	62.6
West: The Cresent (W)											
11	T	2389	5.0	0.363	0.7	LOS A	4.3	31.1	0.08	0.08	67.7
12	R	15	5.0	0.103	9.6	LOS A	0.1	0.7	0.06	0.67	52.0
Approach		2404	5.0	0.363	0.7	LOS A	4.3	31.1	0.08	0.08	67.6
All Vehicles		5548	5.0	0.714	2.7	LOS A	12.5	91.6	0.19	0.18	63.1

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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	4.9	LOS A	0.1	0.1	0.26	0.26
All Pedestrians		53	4.9				0.26	0.26

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

PHASING SUMMARY

Site: WEMID Peak - Existing

The Cresent x James Craig Rd
Existing WEMID Peak

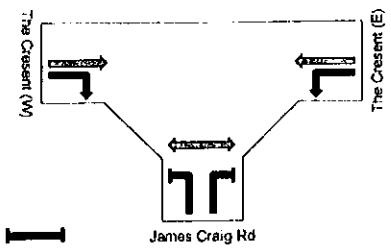
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

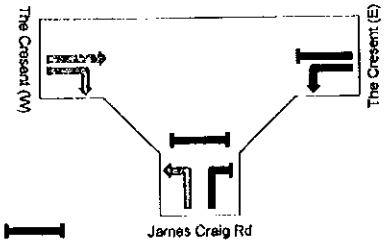
Phase Timing Results

Phase	A	B	C
Green Time (sec)	110	6	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	116	12	12
Phase Split	83 %	9 %	9 %

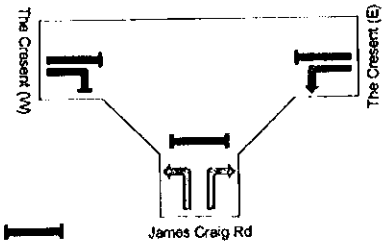
Phase A



Phase B



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: AM Peak - Future

The Cresent x James Craig Rd
Future AM Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	32	5.0	0.123	64.6	LOS E	2.8	20.4	0.91	0.73	21.2
3	R	40	5.0	0.521	83.7	LOS F	4.1	29.8	1.00	0.74	18.1
Approach		72	5.0	0.521	75.2	LOS F	4.1	29.8	0.96	0.74	19.3
East: The Cresent (E)											
4	L	97	5.0	0.078	8.3	LOS A	0.3	2.1	0.06	0.63	53.5
5	T	2337	5.0	0.550	2.1	LOS A	7.2	52.6	0.16	0.15	64.6
Approach		2434	5.0	0.550	2.4	LOS A	7.2	52.6	0.16	0.17	64.1
West: The Cresent (W)											
11	T	3747	5.0	0.569	0.9	LOS A	8.5	61.8	0.12	0.11	66.8
12	R	54	5.0	0.273	9.7	LOS A	0.5	3.4	0.09	0.68	51.9
Approach		3801	5.0	0.569	1.1	LOS A	8.5	61.8	0.12	0.11	66.6
All Vehicles		6306	5.0	0.569	2.4	LOS A	8.5	61.8	0.14	0.14	63.8

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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	5.4	LOS A	0.1	0.1	0.28	0.28
All Pedestrians		53	5.4				0.28	0.28

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

SIDRA INTERSECTION

PHASING SUMMARY

The Cresent x James Craig Rd
Future AM Peak

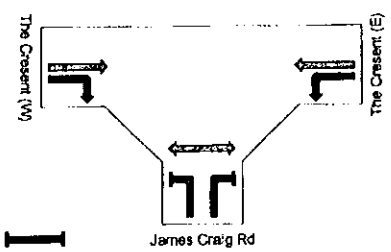
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

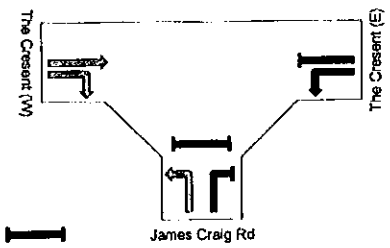
Phase Timing Results

Phase	A	B	C
Green Time (sec)	108	8	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	114	14	12
Phase Split	81 %	10 %	9 %

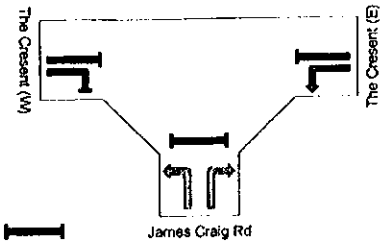
Phase A



Phase B



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: PM Peak - Future

The Cresent x James Craig Rd
Future PM Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	65	5.0	0.255	66.0	LOS E	5.5	39.9	0.93	0.76	20.9
3	R	96	5.0	0.935	97.8	LOS F	9.5	69.1	1.00	1.05	16.3
Approach		161	5.0	0.935	84.9	LOS F	9.5	69.1	0.97	0.94	17.9
East: The Cresent (E)											
4	L	77	5.0	0.057	8.3	LOS A	0.2	1.6	0.06	0.63	53.5
5	T	3842	5.0	0.928	8.6	LOS A	43.1	314.6	0.58	0.57	52.6
Approach		3919	5.0	0.928	8.6	LOS A	43.1	314.6	0.57	0.57	52.7
West: The Cresent (W)											
11	T	3321	5.0	0.513	0.9	LOS A	7.0	51.0	0.11	0.10	67.1
12	R	36	5.0	0.239	15.1	LOS B	0.8	5.9	0.21	0.70	45.8
Approach		3357	5.0	0.513	1.1	LOS A	7.0	51.0	0.11	0.11	66.8
All Vehicles		7437	5.0	0.935	6.8	LOS A	43.1	314.6	0.37	0.37	55.7

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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	5.4	LOS A	0.1	0.1	0.28	0.28
All Pedestrians		53	5.4				0.28	0.28

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

PHASING SUMMARY

Site: PM Peak - Future

The Cresent x James Craig Rd
Future PM Peak

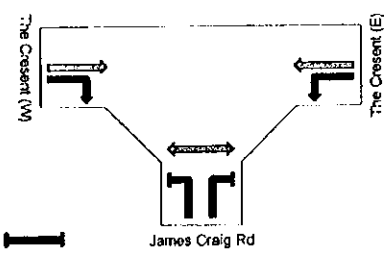
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

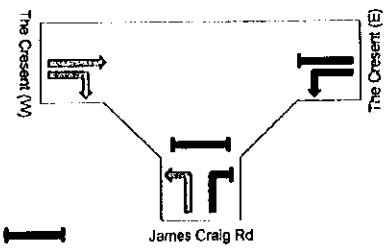
Phase Timing Results

Phase	A	B	C
Green Time (sec)	108	6	8
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	114	12	14
Phase Split	81 %	9 %	10 %

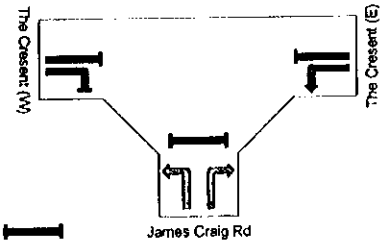
Phase A



Phase B



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: WEMID Peak - Future

The Cresent x James Craig Rd
Future WEMID Peak

Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: James Craig Rd											
1	L	36	5.0	0.140	64.8	LOS E	3.1	22.9	0.91	0.74	21.2
3	R	74	5.0	0.719	83.5	LOS F	7.0	50.9	1.00	0.84	18.1
Approach		109	5.0	0.719	77.4	LOS F	7.0	50.9	0.97	0.81	19.0
East: The Cresent (E)											
4	L	77	5.0	0.061	8.3	LOS A	0.2	1.6	0.06	0.63	53.5
5	T	3053	5.0	0.725	3.0	LOS A	12.9	94.0	0.27	0.25	62.2
Approach		3129	5.0	0.725	3.2	LOS A	12.9	94.0	0.26	0.26	62.0
West: The Cresent (W)											
11	T	2389	5.0	0.369	0.8	LOS A	4.3	31.3	0.08	0.08	67.7
12	R	57	5.0	0.333	10.1	LOS A	0.5	4.0	0.09	0.68	51.4
Approach		2446	5.0	0.369	1.0	LOS A	4.3	31.3	0.08	0.09	67.3
All Vehicles		5685	5.0	0.725	3.7	LOS A	12.9	94.0	0.20	0.20	61.4

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 F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	5.4	LOS A	0.1	0.1	0.28	0.28
All Pedestrians		53	5.4				0.28	0.28

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS A. LOS Method for individual pedestrian movements: Delay (HCM).

PHASING SUMMARY

Site: WEMID Peak - Future

The Cresent x James Craig Rd
Future WEMID Peak

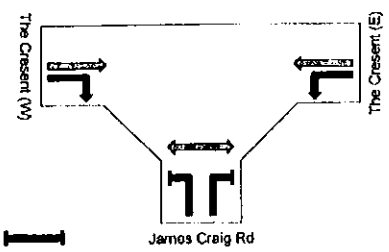
Signals - Fixed Time Cycle Time = 140 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A, B, C
Output Sequence: A, B, C

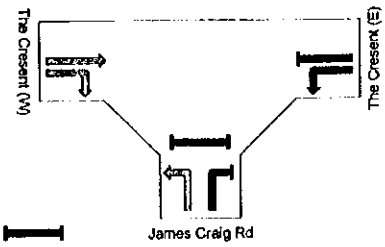
Phase Timing Results

Phase	A	B	C
Green Time (sec)	108	6	8
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	114	12	14
Phase Split	81 %	9 %	10 %

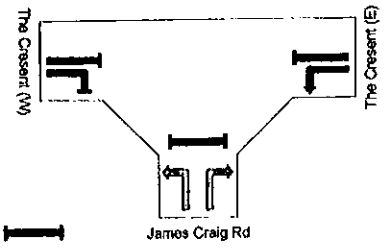
Phase A



Phase B

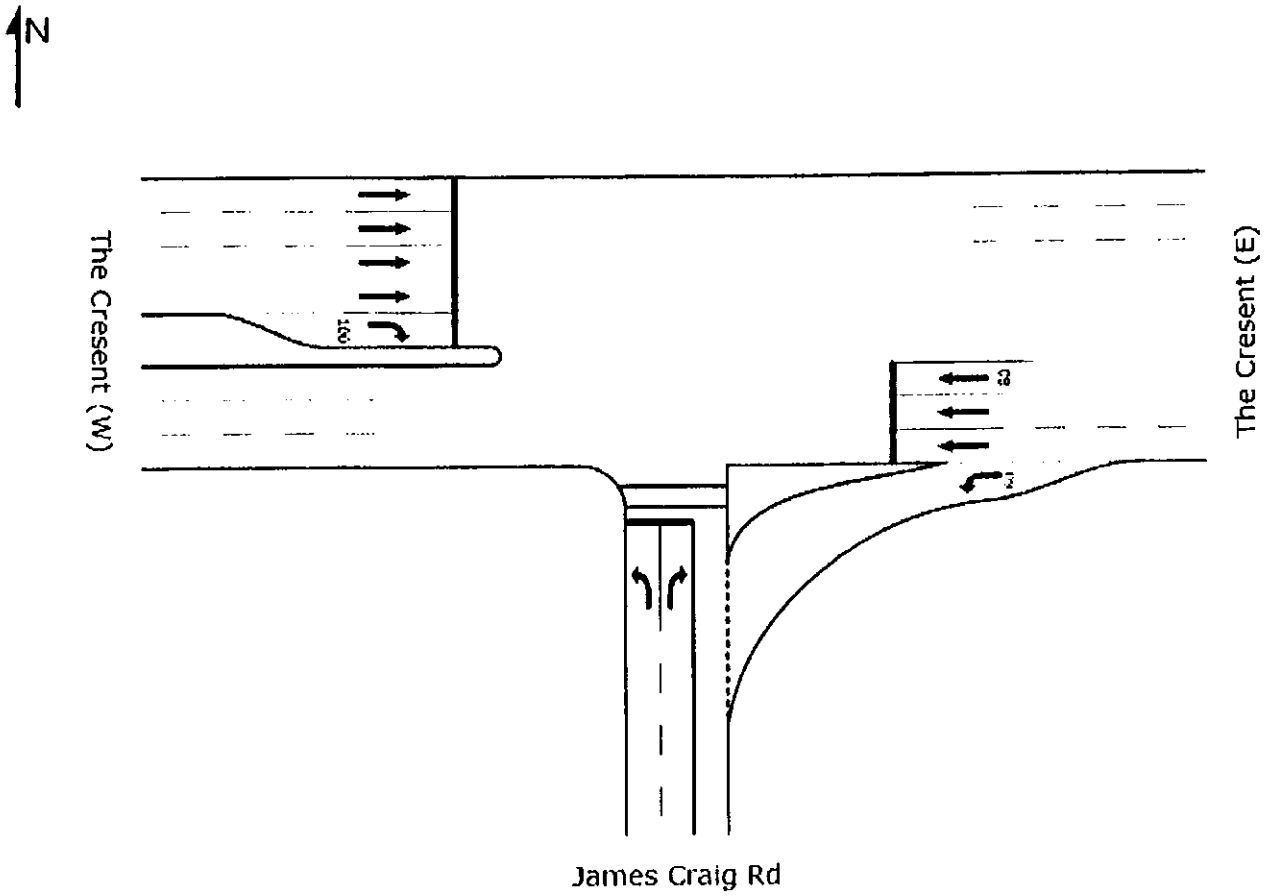


Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red

Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied


N
The Cresent (W)
The Cresent (E)
James Craig Rd