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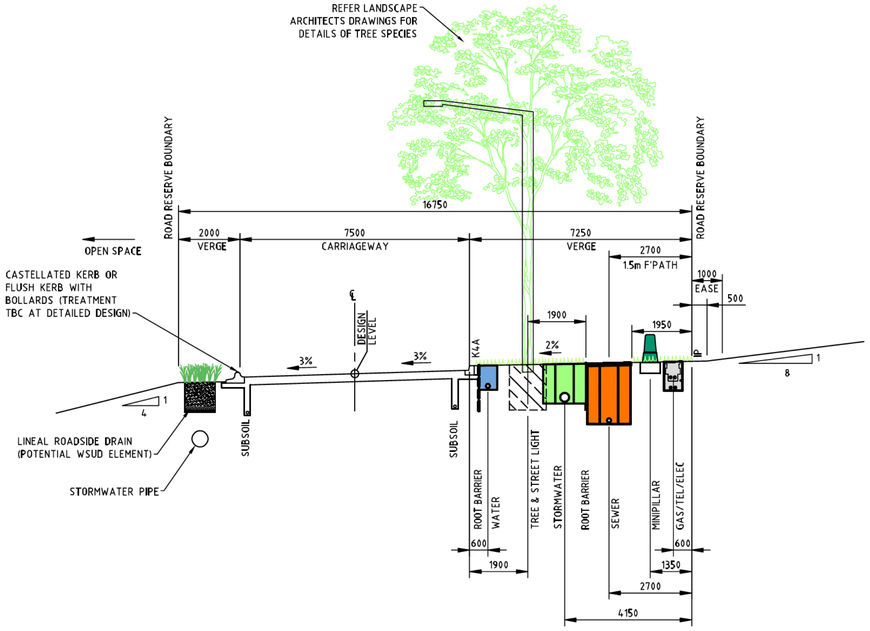

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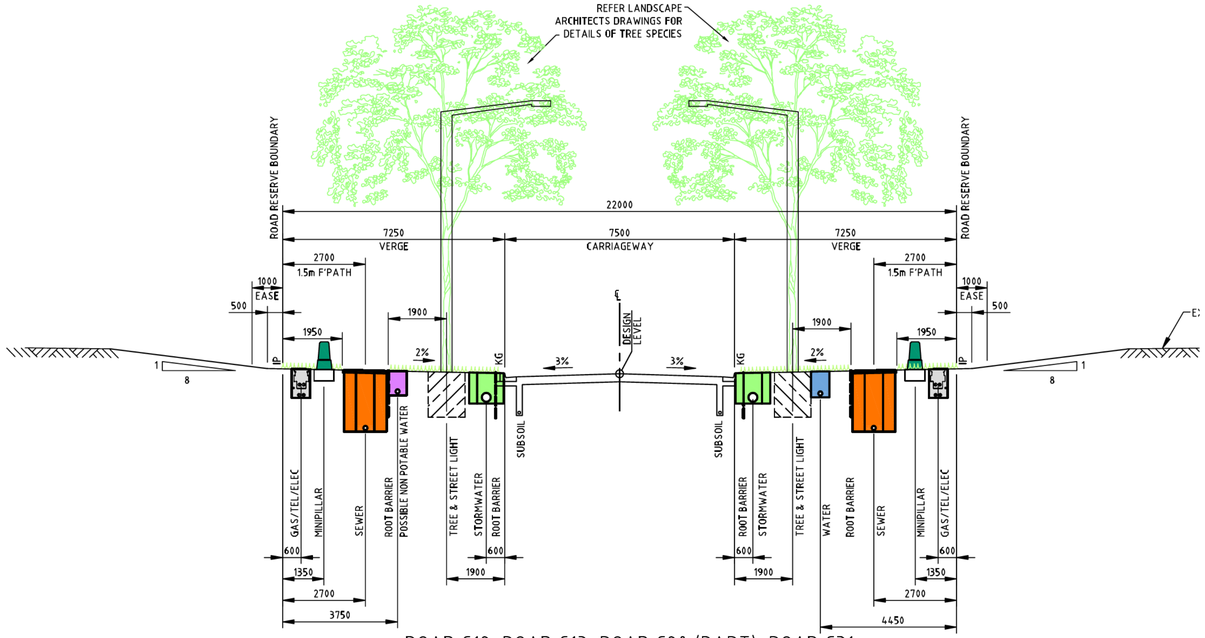

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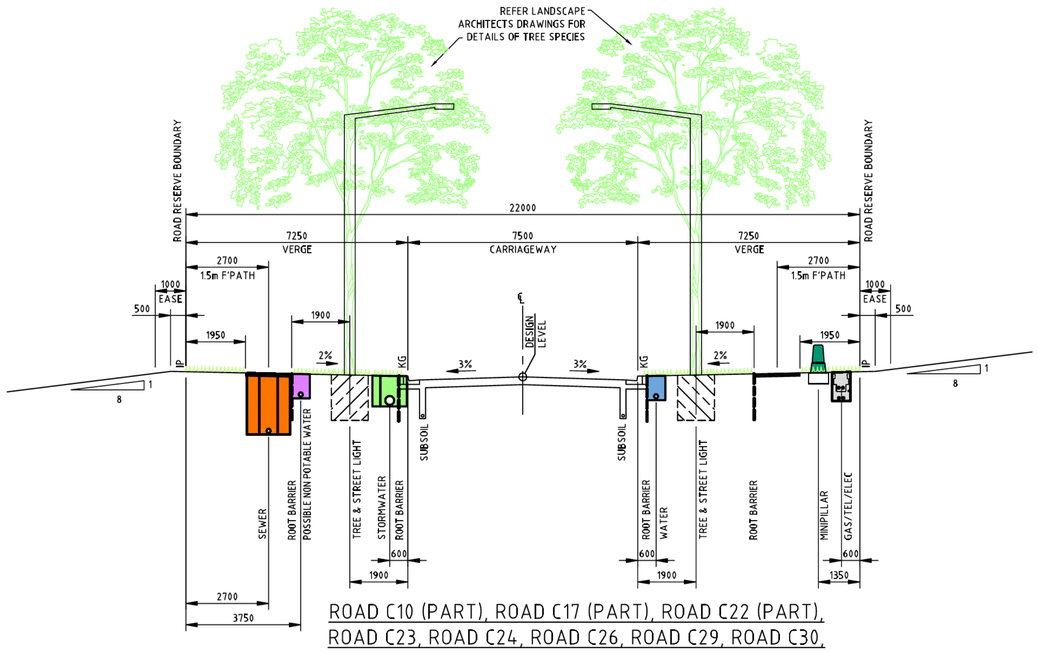

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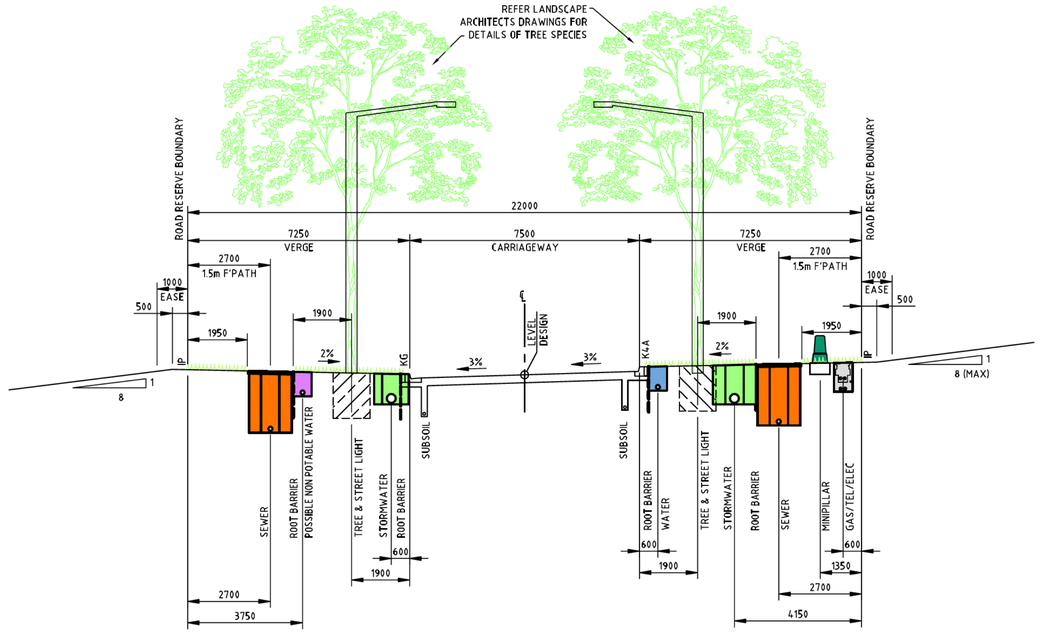

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1 : 100-A1 1 : 200-A3

DRAWING PRACTICE TO AS 1100

Rev	Date	Description	Drawn	Appr.
1	14/03/2011	FOR EDP APPROVAL	TE	RTC

Land Development Agency
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Quality System
Quality Endorsed Company
AS 9001 Lic. 3960 Standards Australia

Drawn	GZ	Date DEC 2010
Checked	RC	Date FEB 2011
Designed	GZ	Date DEC 2010
Verified	RC	Date MAR 2011
Approved	GL	Date MAR 2011

Client: LAND DEVELOPMENT AGENCY

COOMBS RESIDENTIAL ESTATE
ESTATE DEVELOPMENT PLAN

TYPICAL SECTIONS
SHEET 5 OF 7

Status: EDP SUBMISSION

Date	Datum	Scale	Size
DEC 2010	AHD	AS SHOWN	A1

Drawing Number	Page No	Revision
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DATE PLOTTED: 11 March 2011 4:44 PM BY: LEON RUECKER (CANBERRA)

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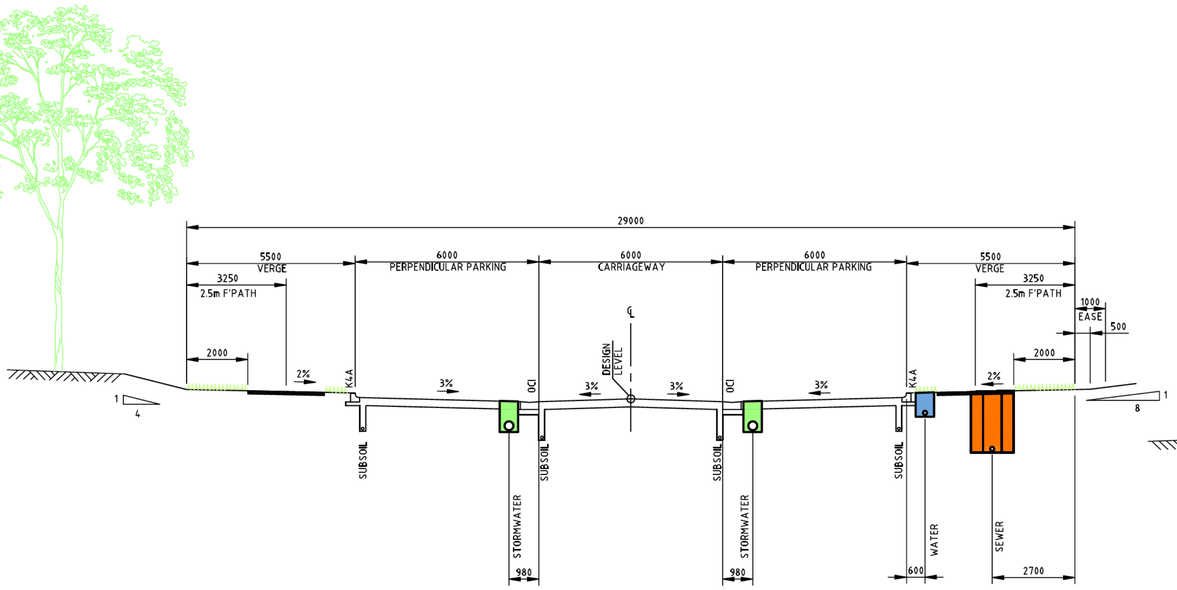

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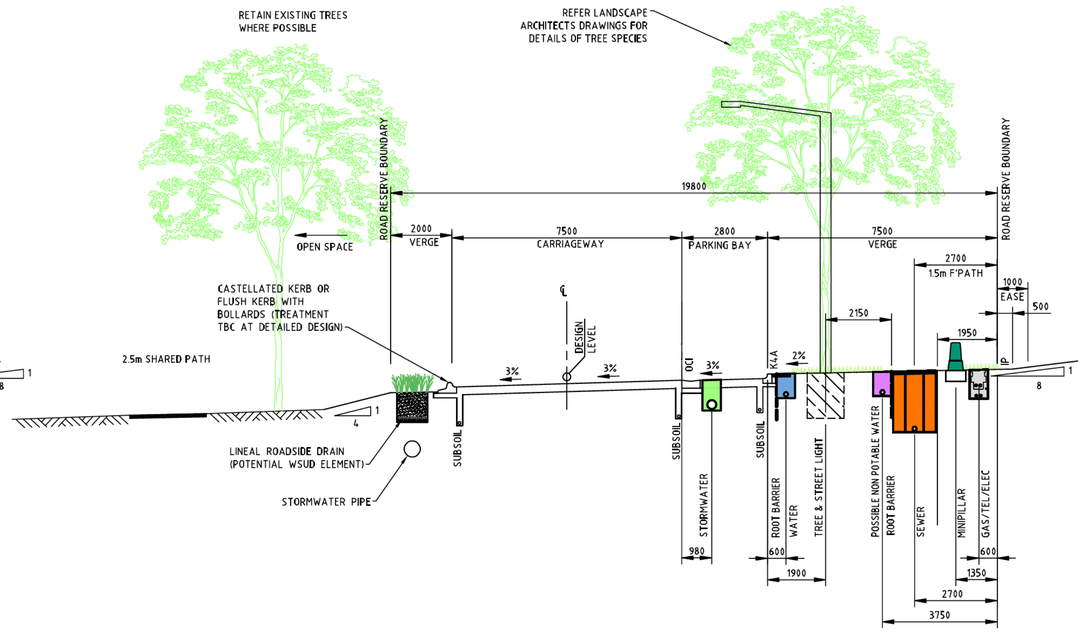

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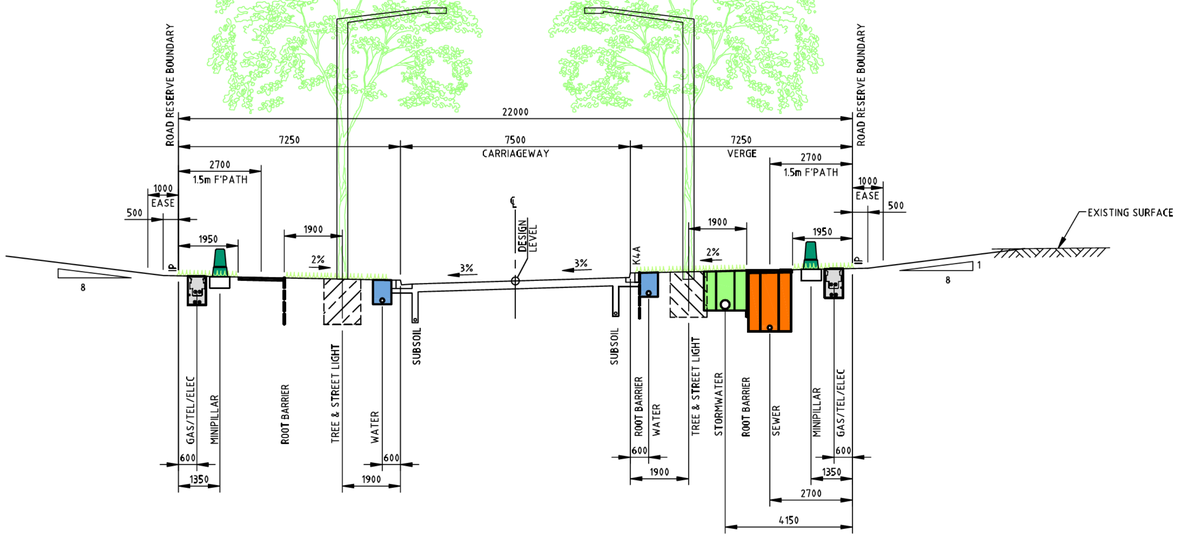

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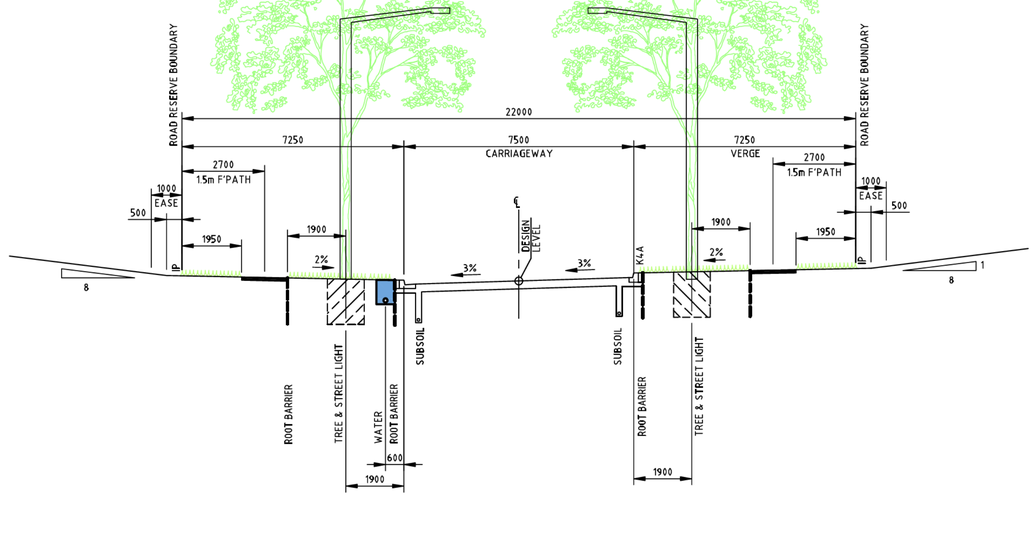

ROAD C51

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DRAWING PRACTICE TO AS 1100

Rev	Date	Description	Drawn	Appr.
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Quality System
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Drawn	GZ	Date DEC 2010
Checked	RC	Date FEB 2011
Designed	GZ	Date DEC 2010
Verified	RC	Date MAR 2011
Approved	GL	Date MAR 2011

Client: LAND DEVELOPMENT AGENCY

COOMBS RESIDENTIAL ESTATE
ESTATE DEVELOPMENT PLAN

TYPICAL SECTIONS
SHEET 6 OF 7

Status: EDP SUBMISSION

Date	Datum	Scale	Size
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Drawing Number	Page No	Revision
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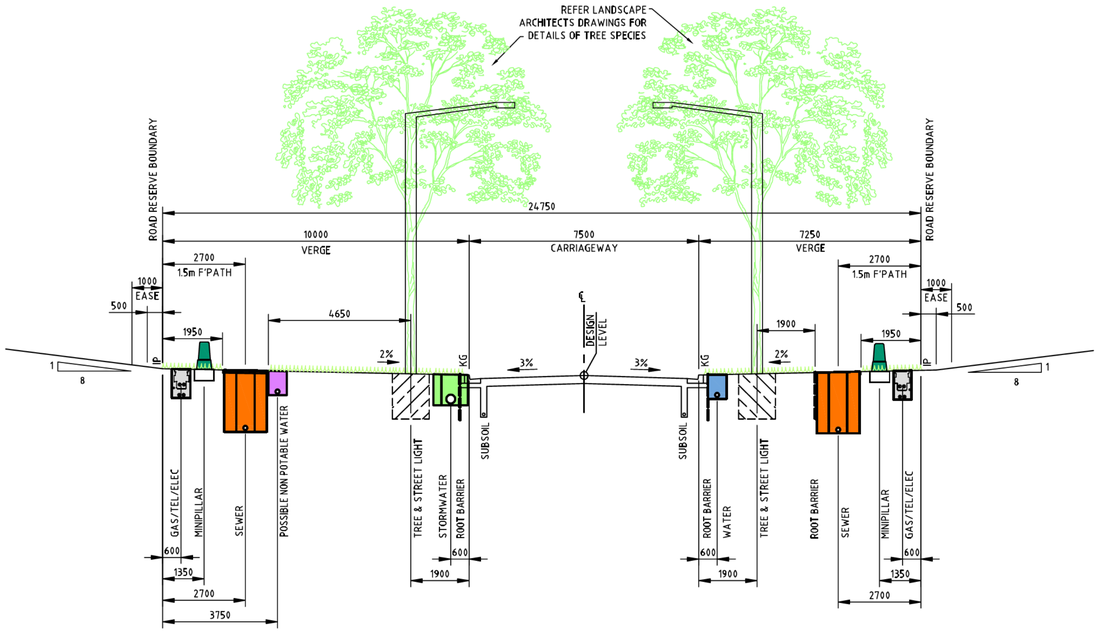

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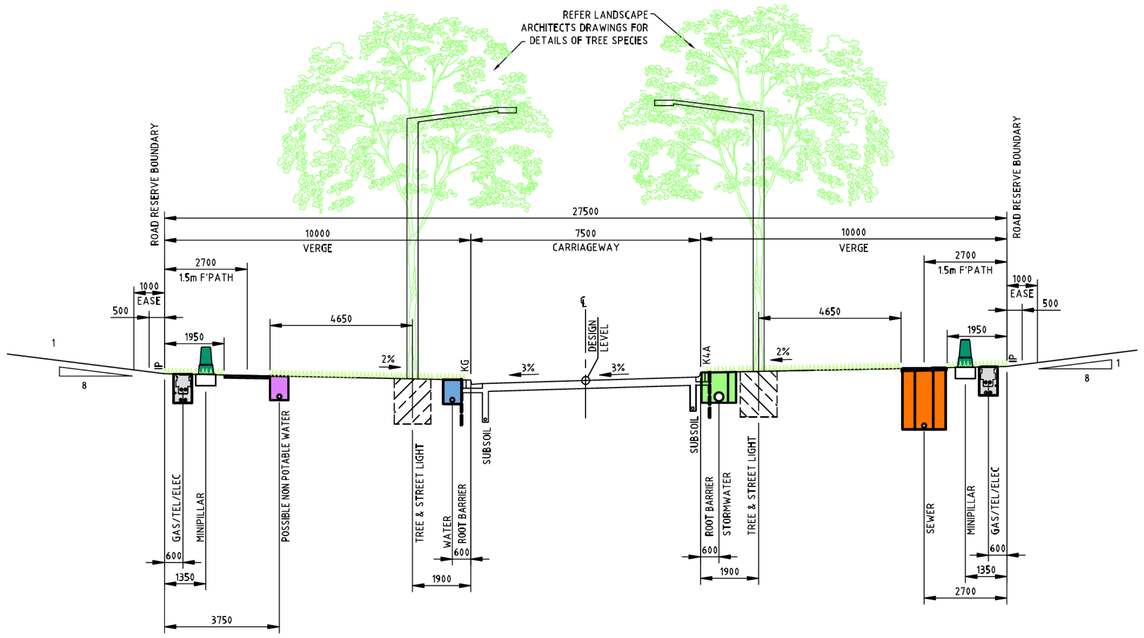
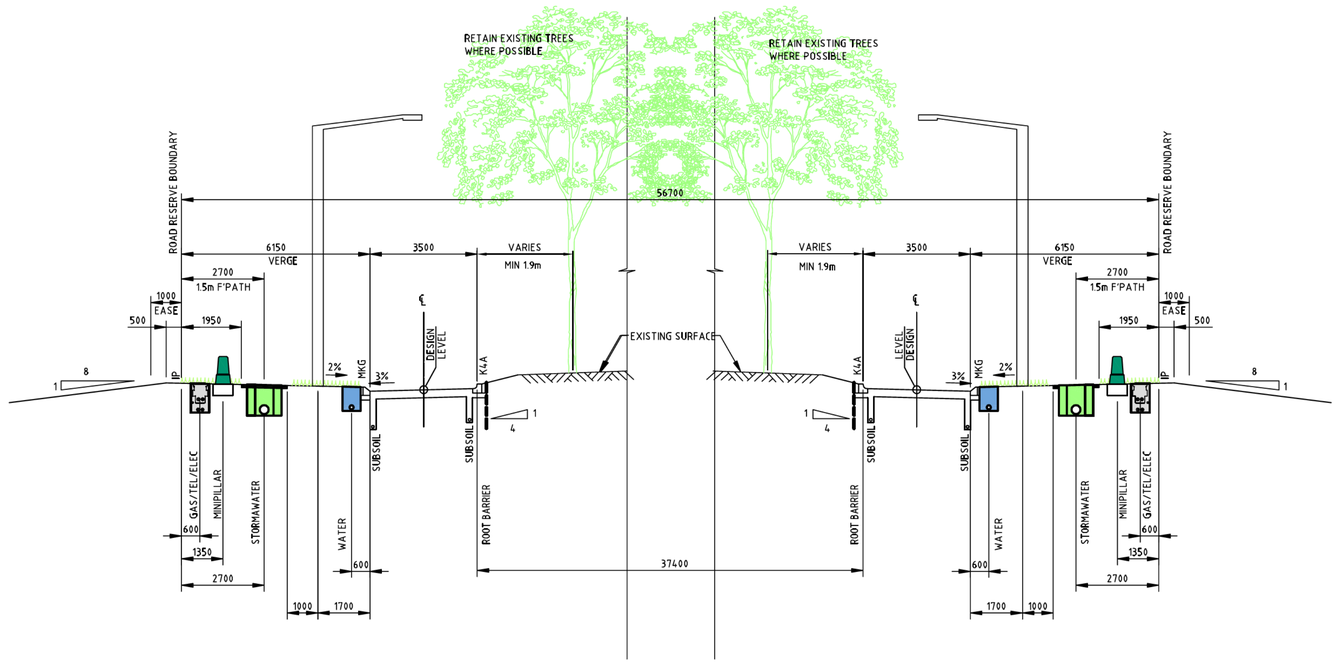


ROAD C35, ROAD C15



ROAD C46 (ONE-WAY TRAFFIC FLOW)

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1 : 100-A1 1 : 200-A3

DRAWING PRACTICE TO AS 1100

Rev	Date	Description	Drawn	Appr.
1	14/03/2011	FOR EDP APPROVAL	TE	RTC

Land Development Agency
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Quality System
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AS 9001 Lic. 3960 Standards Australia

Drawn	GZ	Date	DEC 2010
Checked	RC	Date	FEB 2011
Designed	GZ	Date	DEC 2010
Verified	RC	Date	MAR 2011
Approved	GL	Date	MAR 2011

Client: LAND DEVELOPMENT AGENCY

COOMBS RESIDENTIAL ESTATE
ESTATE DEVELOPMENT PLAN

TYPICAL SECTIONS
SHEET 7 OF 7

Status: EDP SUBMISSION

Date	Datum	Scale	Size
DEC 2010	AHD	AS SHOWN	A1

Drawing Number	Page No	Revision
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DATE PLOTTED: 11 March 2011 4:44 PM BY: LEON RUECKER (CANBERRA)

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Appendix B

SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 2021 JGD-Main Intersection (Interim)

JGD-Main Intersection 2021 AM Peak
(Interim)
Signals - Fixed Time Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	64	0.0	0.310	17.2	LOS B	6.2	44.7	0.45	0.82	41.7
22	T	807	5.0	0.592	17.1	LOS B	30.2	220.1	0.63	0.57	39.0
23	R	135	0.0	1.090	270.9	LOS F	21.8	152.6	1.00	1.42	7.1
Approach		1006	4.0	1.090	51.2	LOS D	30.2	220.1	0.67	0.70	24.4
North East: Coombs Road C03 (NE)											
24	L	414	0.0	1.108	248.4	LOS F	91.8	642.9	1.00	1.42	7.7
25	T	5	0.0	1.087	240.5	LOS F	91.8	642.9	1.00	1.42	7.7
26	R	180	0.0	1.107	248.7	LOS F	91.8	642.9	1.00	1.42	7.6
Approach		599	0.0	1.108	248.4	LOS F	91.8	642.9	1.00	1.42	7.7
North West: JGD (NW)											
27	L	66	0.0	0.594	21.7	LOS B	12.7	92.2	0.50	0.88	38.7
28	T	1595	5.0	1.136	260.3	LOS F	255.1	1862.3	0.91	1.92	7.3
29	R	28	0.0	0.355	82.3	LOS F	3.0	20.7	0.98	0.72	18.3
Approach		1689	4.7	1.136	248.0	LOS F	255.1	1862.3	0.90	1.86	7.6
South West: Wright (SW)											
30	L	109	0.0	0.533	19.3	LOS B	14.6	102.5	0.67	0.80	39.1
31	T	5	0.0	0.532	11.4	LOS A	14.6	102.5	0.67	0.60	41.2
32	R	255	0.0	0.533	19.6	LOS B	14.6	102.5	0.67	0.82	39.0
Approach		369	0.0	0.533	19.4	LOS B	14.6	102.5	0.67	0.81	39.1
All Vehicles		3663	3.3	1.136	171.0	LOS F	255.1	1862.3	0.83	1.36	10.4

Level of Service (Aver. Int. Delay): LOS F. 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	59.0	LOS E	0.2	0.2	0.89	0.89
P11	Across NE approach	53	13.2	LOS B	0.1	0.1	0.42	0.42
P13	Across NW approach	53	59.0	LOS E	0.2	0.2	0.89	0.89
P15	Across SW approach	53	13.2	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		212	36.1				0.65	0.65

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

PHASING SUMMARY

Site: 2021 JGD-Main Intersection (Interim)

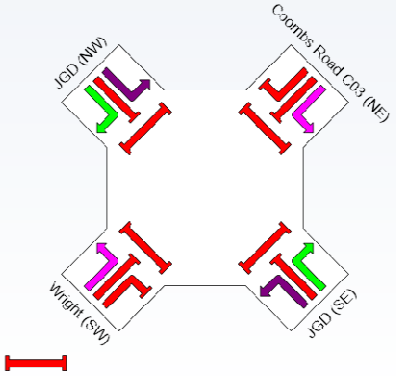
JGD-Main Intersection 2021 AM Peak
(Interim)
Signals - Fixed Time Cycle Time = 150 seconds (Practical Cycle Time)

Phase times determined by the program
Sequence: 4-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

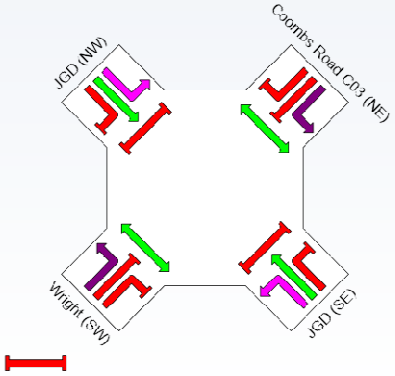
Phase Timing Results

Phase	A	C	D
Green Time (sec)	10	92	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	16	98	36
Phase Split	11 %	65 %	24 %

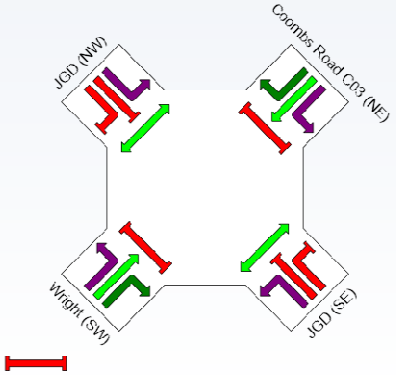
Phase A



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: 2021 JGD-Main Intersection (Ultimate)

JGD-Main Intersection 2021 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	64	0.0	0.403	25.5	LOS B	9.5	68.7	0.78	0.86	36.7
22	T	795	5.0	0.402	19.3	LOS B	9.9	72.6	0.78	0.66	37.2
23	R	147	0.0	0.792	51.7	LOS D	8.0	56.0	1.00	0.92	24.7
Approach		1006	4.0	0.792	24.4	LOS B	9.9	72.6	0.81	0.71	34.6
North East: Coombs Road C03 (NE)											
24	L	414	0.0	0.636	20.2	LOS B	13.2	92.7	0.76	0.90	38.6
25	T	5	0.0	0.641	12.4	LOS A	13.2	92.7	0.76	0.75	40.1
26	R	180	0.0	0.636	20.4	LOS B	13.2	92.7	0.76	0.91	38.6
Approach		599	0.0	0.636	20.2	LOS B	13.2	92.7	0.76	0.90	38.6
North West: JGD (NW)											
27	L	66	0.0	0.781	34.8	LOS C	21.2	154.4	0.95	0.95	32.2
28	T	1595	5.0	0.780	26.7	LOS B	21.3	155.8	0.95	0.90	32.8
29	R	25	0.0	0.135	45.1	LOS D	1.4	10.0	0.94	0.71	26.8
Approach		1686	4.7	0.780	27.3	LOS B	21.3	155.8	0.95	0.90	32.7
South West: Wright (SW)											
30	L	109	0.0	0.140	11.2	LOS A	1.8	12.7	0.41	0.71	46.0
31	T	5	0.0	0.140	3.3	LOS A	1.8	12.7	0.41	0.33	50.5
32	R	255	0.0	0.534	33.7	LOS C	10.2	71.4	0.88	0.82	31.1
Approach		369	0.0	0.534	26.7	LOS B	10.2	71.4	0.74	0.78	34.6
All Vehicles		3660	3.3	0.792	25.3	LOS B	21.3	155.8	0.86	0.84	34.3

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 D. 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
P11	Across NE approach	53	18.9	LOS B	0.1	0.1	0.69	0.69
P13	Across NW approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
P15	Across SW approach	53	20.3	LOS C	0.1	0.1	0.71	0.71
All Pedestrians		212	26.9				0.81	0.81

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

PHASING SUMMARY

Site: 2021 JGD-Main Intersection (Ultimate)

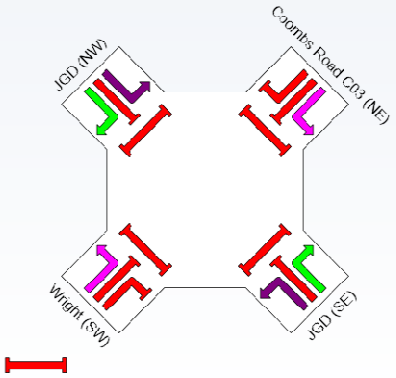
JGD-Main Intersection 2021 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Phase times determined by the program
Sequence: 4-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

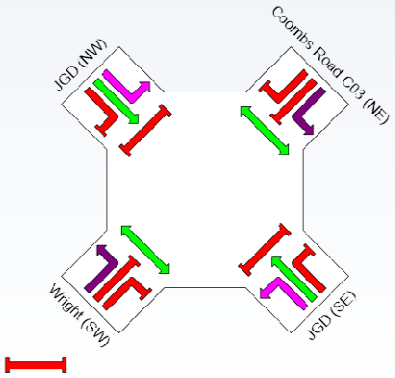
Phase Timing Results

Phase	A	C	D
Green Time (sec)	8	30	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	14	36	30
Phase Split	18 %	45 %	38 %

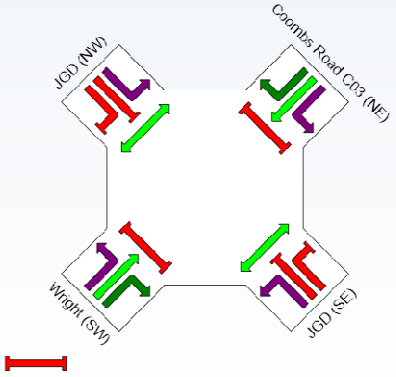
Phase A



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: 2031 JGD-Main Intersection (Ultimate)

JGD- Main Intersection 2031 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 100 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	64	0.0	0.399	24.7	LOS B	12.5	90.5	0.68	0.88	37.1
22	T	1024	5.0	0.399	17.6	LOS B	12.8	93.7	0.69	0.60	38.6
23	R	147	0.0	0.792	61.4	LOS E	9.5	66.2	1.00	0.90	22.3
Approach		1235	4.1	0.792	23.1	LOS B	12.8	93.7	0.72	0.65	35.5
North East: Coombs Road C03 (NE)											
24	L	414	0.0	0.771	31.4	LOS C	19.1	134.0	0.90	1.00	32.3
25	T	5	0.0	0.772	23.5	LOS B	19.1	134.0	0.90	0.93	32.8
26	R	180	0.0	0.771	31.6	LOS C	19.1	134.0	0.90	1.00	32.2
Approach		599	0.0	0.771	31.4	LOS C	19.1	134.0	0.90	1.00	32.3
North West: JGD (NW)											
27	L	66	0.0	0.814	35.1	LOS C	32.3	234.7	0.92	0.95	32.1
28	T	2142	5.0	0.811	26.5	LOS B	32.4	236.3	0.92	0.87	32.9
29	R	28	0.0	0.151	54.0	LOS D	2.0	13.7	0.95	0.72	24.2
Approach		2236	4.8	0.811	27.1	LOS B	32.4	236.3	0.92	0.87	32.8
South West: Wright (SW)											
30	L	109	0.0	0.293	13.0	LOS A	5.9	41.5	0.49	0.74	44.2
31	T	5	0.0	0.293	5.1	LOS A	5.9	41.5	0.49	0.42	47.9
32	R	255	0.0	0.293	25.8	LOS B	6.1	42.4	0.65	0.77	35.2
Approach		369	0.0	0.293	21.7	LOS B	6.1	42.4	0.60	0.76	37.6
All Vehicles		4439	3.6	0.811	26.1	LOS B	32.4	236.3	0.84	0.82	33.8

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 E. 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
P11	Across NE approach	53	16.2	LOS B	0.1	0.1	0.57	0.57
P13	Across NW approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
P15	Across SW approach	53	17.4	LOS B	0.1	0.1	0.59	0.59
All Pedestrians		212	30.5				0.76	0.76

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

PHASING SUMMARY

Site: 2031 JGD-Main Intersection (Ultimate)

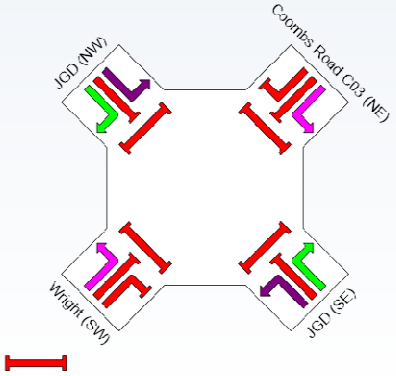
JGD- Main Intersection 2031 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 100 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program
Sequence: 4-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

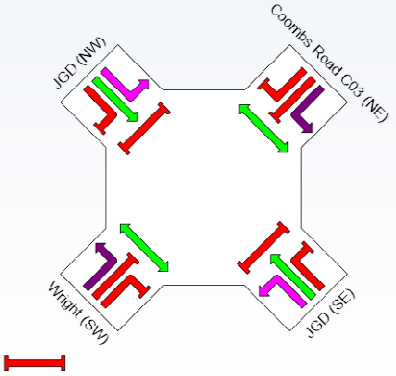
Phase Timing Results

Phase	A	C	D
Green Time (sec)	10	48	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	16	54	30
Phase Split	16 %	54 %	30 %

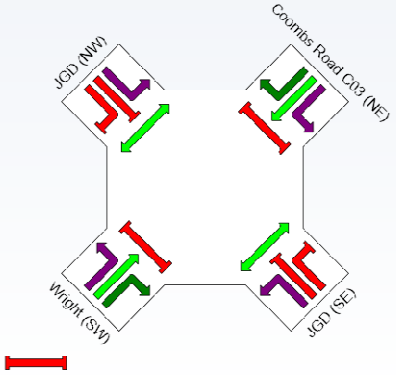
Phase A



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: 2021 JGD-Cotter Rd (Interim)

JGD-Cotter Rd 2021 AM Peak
(Interim)
Signals - Fixed Time Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	44	0.0	0.247	19.7	LOS B	5.9	42.4	0.49	0.83	39.9
22	T	935	5.0	0.472	17.9	LOS B	22.2	161.3	0.59	0.52	38.5
23	R	80	0.0	1.000[3]	82.3	LOS F	7.5	52.3	1.00	0.76	18.4
Approach		1059	4.2	1.000	22.8	LOS B	22.2	161.3	0.61	0.55	35.6
North East: Coombs Road C04 (NE)											
24	L	261	0.0	0.744	61.1	LOS E	22.9	160.2	0.95	1.03	22.5
25	T	5	0.0	0.744	53.3	LOS D	22.9	160.2	0.95	1.00	22.6
26	R	130	0.0	0.744	61.3	LOS E	22.9	160.2	0.95	1.03	22.4
Approach		396	0.0	0.744	61.1	LOS E	22.9	160.2	0.95	1.03	22.4
North West: JGD (NW)											
27	L	47	0.0	0.523	19.9	LOS B	12.6	91.2	0.47	0.89	39.9
28	T	2314	5.0	1.046	97.3	LOS F	175.9	1284.1	0.93	1.21	15.9
29	R	19	0.0	0.518	68.5	LOS E	1.8	12.9	0.89	0.71	20.8
Approach		2380	4.9	1.046	95.5	LOS F	175.9	1284.1	0.92	1.20	16.2
South West: Cotter Rd											
30	L	12	0.0	0.071	20.6	LOS B	1.5	10.3	0.60	0.72	38.5
31	T	5	0.0	0.071	12.7	LOS A	1.5	10.3	0.60	0.46	40.9
32	R	28	0.0	0.071	20.7	LOS B	1.5	10.3	0.60	0.74	38.4
Approach		45	0.0	0.071	19.8	LOS B	1.5	10.3	0.60	0.70	38.7
All Vehicles		3880	4.1	1.046	71.3	LOS F	175.9	1284.1	0.84	1.00	19.8

Level of Service (Aver. Int. Delay): LOS F. 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.

3 x = 1 00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	69.1	LOS F	0.2	0.2	0.96	0.96
P11	Across NE approach	53	15.9	LOS B	0.1	0.1	0.46	0.46
P13	Across NW approach	53	69.1	LOS F	0.2	0.2	0.96	0.96
P15	Across SW approach	53	15.9	LOS B	0.1	0.1	0.46	0.46
All Pedestrians		212	42.5				0.71	0.71

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

PHASING SUMMARY

Site: 2021 JGD-Cotter Rd (Interim)

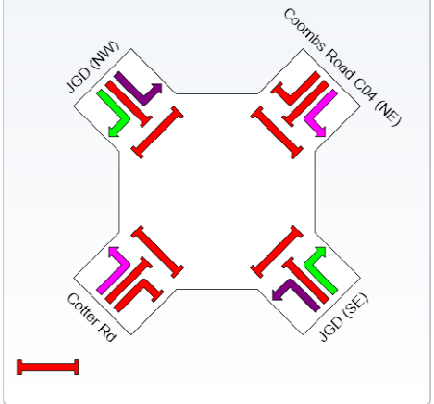
JGD-Cotter Rd 2021 AM Peak
(Interim)
Signals - Fixed Time Cycle Time = 150 seconds (Practical Cycle Time)

Phase times determined by the program
Sequence: 4-Phase
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

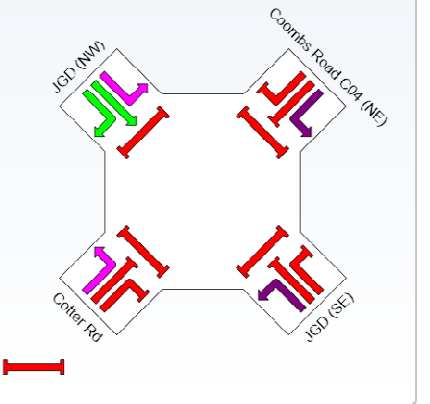
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	12	4	86	24
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	18	10	92	30
Phase Split	12 %	7 %	61 %	20 %

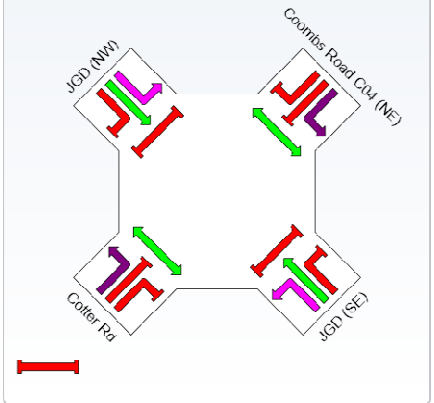
Phase A



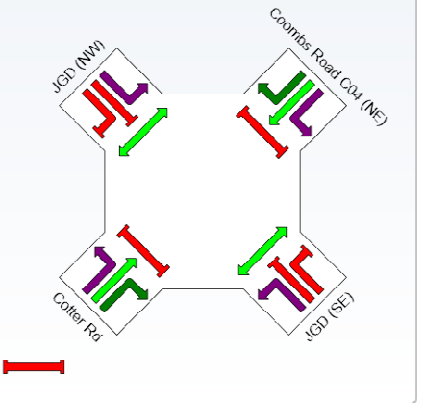
Phase B



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: 2021 JGD-Cotter Rd (Ultimate)

JGD-Cotter Rd 2021 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	44	0.0	0.389	39.6	LOS C	11.8	85.8	0.82	0.85	29.8
22	T	887	5.0	0.388	33.7	LOS C	12.2	88.9	0.83	0.70	29.8
23	R	128	0.0	0.689	67.7	LOS E	9.4	65.7	1.00	0.83	21.0
Approach		1059	4.2	0.689	38.1	LOS C	12.2	88.9	0.85	0.72	28.4
North East: Coombs Road C04 (NE)											
24	L	261	0.0	0.466	18.1	LOS B	12.5	87.8	0.62	0.79	40.1
25	T	5	0.0	0.465	10.3	LOS A	12.5	87.8	0.62	0.53	42.3
26	R	130	0.0	0.466	18.1	LOS B	12.5	87.8	0.62	0.79	40.1
Approach		396	0.0	0.466	18.0	LOS B	12.5	87.8	0.62	0.78	40.2
North West: JGD (NW)											
27	L	47	0.0	0.695	22.6	LOS B	18.4	133.8	0.85	0.89	39.0
28	T	2314	5.0	0.695	15.3	LOS B	18.8	137.2	0.86	0.76	39.8
29	R	19	0.0	0.347	41.0	LOS C	1.2	8.6	0.75	0.68	28.2
Approach		2380	4.9	0.695	15.7	LOS B	18.8	137.2	0.85	0.76	39.7
South West: Cotter Rd											
30	L	12	0.0	0.055	17.1	LOS B	1.5	10.8	0.49	0.72	41.0
31	T	5	0.0	0.055	9.2	LOS A	1.5	10.8	0.49	0.38	44.2
32	R	28	0.0	0.055	17.1	LOS B	1.5	10.8	0.49	0.72	41.0
Approach		45	0.0	0.055	16.2	LOS B	1.5	10.8	0.49	0.68	41.4
All Vehicles		3880	4.1	0.695	22.0	LOS B	18.8	137.2	0.82	0.75	35.9

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 E. 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	54.2	LOS E	0.2	0.2	0.95	0.95
P11	Across NE approach	53	45.9	LOS E	0.2	0.2	0.88	0.88
P13	Across NW approach	53	54.2	LOS E	0.2	0.2	0.95	0.95
P15	Across SW approach	53	45.9	LOS E	0.2	0.2	0.88	0.88
All Pedestrians		212	50.0				0.91	0.91

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

PHASING SUMMARY

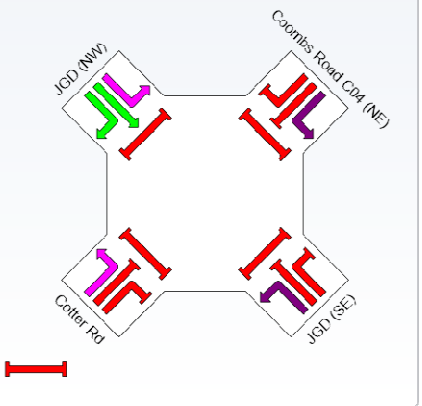
JGD-Cotter Rd 2021 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: New Sequence - 3
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

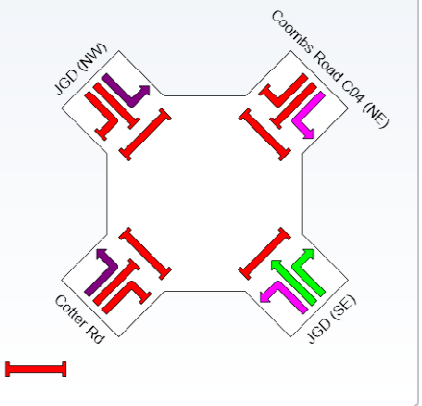
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	34	12	20	30
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	40	18	26	36
Phase Split	33 %	15 %	22 %	30 %

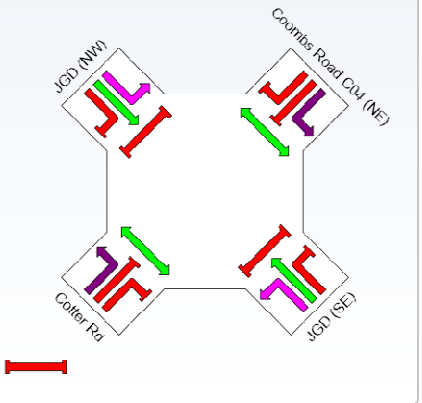
Phase A



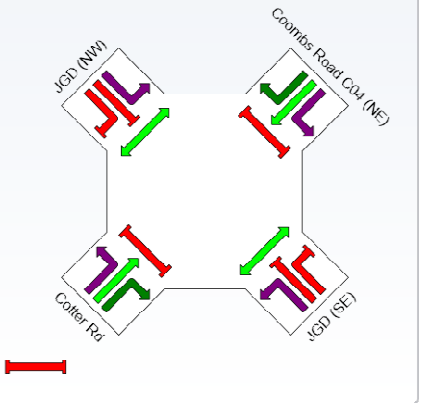
Phase B



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: 2031 JGD-Cotter Rd (Ultimate)

JGD-Cotter Rd 2031 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 120 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South East: JGD (SE)											
21	L	38	0.0	0.573	47.7	LOS D	15.8	115.1	0.92	0.86	27.0
22	T	1120	5.0	0.574	40.9	LOS C	16.0	117.0	0.92	0.78	27.1
23	R	128	0.0	0.827	74.1	LOS F	9.9	69.3	1.00	0.93	19.8
Approach		1286	4.4	0.827	44.4	LOS D	16.0	117.0	0.93	0.80	26.1
North East: Coombs Road C04 (NE)											
24	L	261	0.0	0.469	21.5	LOS B	13.9	97.0	0.67	0.80	37.8
25	T	5	0.0	0.465	13.7	LOS A	13.9	97.0	0.67	0.57	39.4
26	R	130	0.0	0.469	21.6	LOS B	13.9	97.0	0.67	0.80	37.8
Approach		396	0.0	0.469	21.5	LOS B	13.9	97.0	0.67	0.79	37.8
North West: JGD (NW)											
27	L	47	0.0	0.825	26.3	LOS B	26.0	189.0	0.93	0.93	36.8
28	T	2863	5.0	0.826	18.9	LOS B	26.5	193.2	0.93	0.86	37.2
29	R	17	0.0	0.288	36.4	LOS C	1.0	7.1	0.70	0.68	30.0
Approach		2927	4.9	0.826	19.1	LOS B	26.5	193.2	0.93	0.86	37.2
South West: Cotter Rd											
30	L	8	0.0	0.043	23.6	LOS B	1.4	10.1	0.58	0.72	36.7
31	T	5	0.0	0.043	15.7	LOS B	1.4	10.1	0.58	0.44	38.7
32	R	18	0.0	0.043	23.6	LOS B	1.4	10.1	0.58	0.72	36.7
Approach		31	0.0	0.043	22.4	LOS B	1.4	10.1	0.58	0.67	37.0
All Vehicles		4640	4.3	0.827	26.3	LOS B	26.5	193.2	0.91	0.84	33.3

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 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		per ped
P9	Across SE approach	53	54.2	LOS E	0.2	0.2	0.95	0.95
P11	Across NE approach	53	49.5	LOS E	0.2	0.2	0.91	0.91
P13	Across NW approach	53	54.2	LOS E	0.2	0.2	0.95	0.95
P15	Across SW approach	53	49.5	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		212	51.8				0.93	0.93

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

PHASING SUMMARY

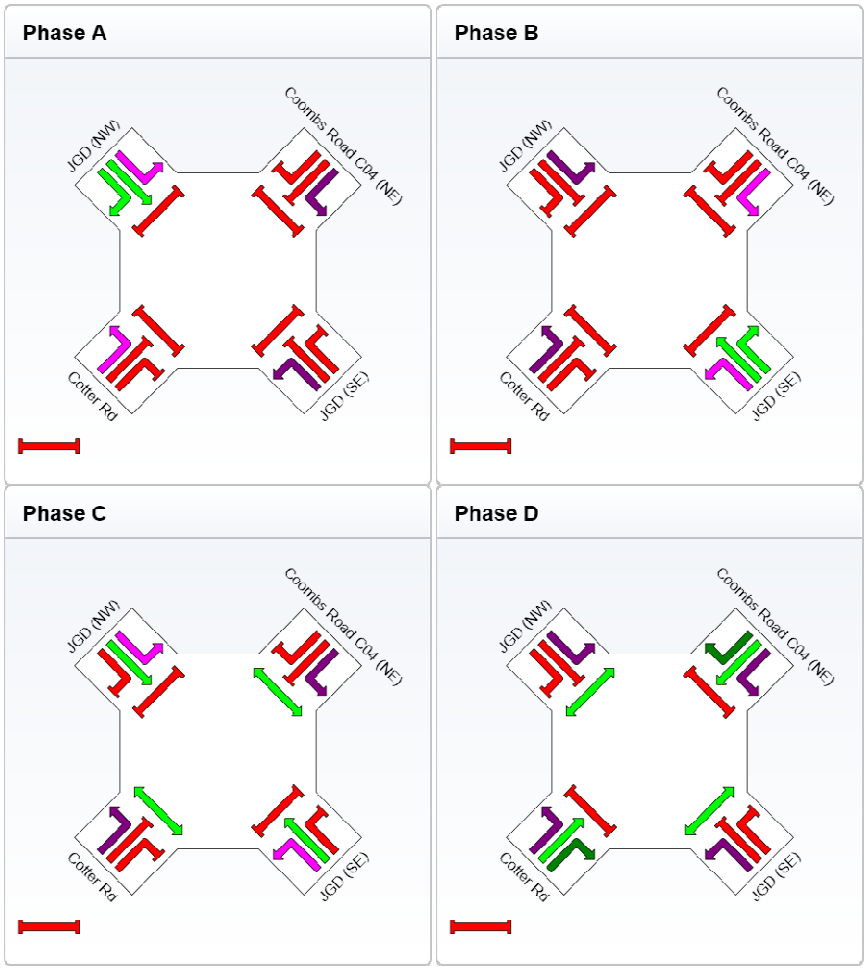
Site: 2031 JGD-Cotter Rd (Ultimate)

JGD-Cotter Rd 2031 AM Peak
(Ultimate)
Signals - Fixed Time Cycle Time = 120 seconds (Practical Cycle Time)

Phase times determined by the program
Sequence: New Sequence - 3
Input Sequence: A, B, C, D
Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	40	10	16	30
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	46	16	22	36
Phase Split	38 %	13 %	18 %	30 %



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: Road C03-C08 Roundabout

Road 34-19-13 Roundabout AM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C03 (S)											
1	L	5	0.0	0.250	1.4	LOS A	2.0	14.3	0.13	0.17	38.3
2	T	65	0.0	0.249	0.3	LOS A	2.0	14.3	0.13	0.05	38.9
3	R	342	0.0	0.249	5.8	LOS A	2.0	14.3	0.13	0.56	35.9
Approach		412	0.0	0.249	4.9	LOS A	2.0	14.3	0.13	0.47	36.3
East: Road C08 (E)											
4	L	382	0.0	0.372	3.6	LOS A	3.2	22.1	0.64	0.49	36.2
5	T	10	0.0	0.370	2.5	LOS A	3.2	22.1	0.64	0.41	36.1
6	R	10	0.0	0.370	8.1	LOS A	3.2	22.1	0.64	0.80	35.5
Approach		402	0.0	0.372	3.7	LOS A	3.2	22.1	0.64	0.50	36.2
North: Road C03 (N)											
7	L	14	0.0	0.311	3.6	LOS A	2.3	16.4	0.58	0.47	37.0
8	T	327	0.0	0.309	2.5	LOS A	2.3	16.4	0.58	0.36	37.0
9	R	3	0.0	0.300	8.0	LOS A	2.3	16.4	0.58	0.92	35.8
Approach		344	0.0	0.309	2.6	LOS A	2.3	16.4	0.58	0.37	37.0
West: Road C08 (W)											
10	L	2	0.0	0.077	3.0	LOS A	0.5	3.5	0.49	0.41	36.3
11	T	2	0.0	0.077	1.9	LOS A	0.5	3.5	0.49	0.34	36.4
12	R	82	0.0	0.077	7.5	LOS A	0.5	3.5	0.49	0.61	34.8
Approach		86	0.0	0.077	7.3	LOS A	0.5	3.5	0.49	0.60	34.9
All Vehicles		1244	0.0	0.372	4.0	LOS A	3.2	22.1	0.44	0.46	36.3

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 A. 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: Road C07-C04

Road C04-C07 AM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C04 (S)											
1	L	189	0.0	0.259	6.6	LOS A	2.8	19.4	0.68	0.19	35.4
2	T	260	0.0	0.259	2.1	LOS A	2.8	19.4	0.68	0.00	35.1
3	R	24	0.0	0.258	7.0	LOS A	2.8	19.4	0.68	0.79	35.5
Approach		473	0.0	0.259	4.2	LOS A	2.8	19.4	0.68	0.12	35.3
East: Road C07 (E)											
4	L	75	0.0	0.226	10.6	LOS A	1.0	7.3	0.57	0.71	33.0
5	T	22	0.0	0.227	9.2	LOS A	1.0	7.3	0.57	0.73	33.4
6	R	12	0.0	0.226	11.0	LOS A	1.0	7.3	0.57	0.84	32.9
Approach		109	0.0	0.226	10.3	LOS A	1.0	7.3	0.57	0.73	33.1
North: Road C04 (N)											
7	L	21	0.0	0.247	7.5	LOS A	2.6	18.5	0.62	0.24	35.3
8	T	323	0.0	0.246	3.0	LOS A	2.6	18.5	0.62	0.00	35.7
9	R	61	0.0	0.246	7.9	LOS A	2.6	18.5	0.62	0.85	35.2
Approach		405	0.0	0.246	4.0	LOS A	2.6	18.5	0.62	0.14	35.6
West: Road C07 (W)											
10	L	31	0.0	1.292	604.8	LOS F	100.5	703.5	1.00	10.99	3.0
11	T	5	0.0	1.250	603.4	LOS F	100.5	703.5	1.00	8.68	3.0
12	R	271	0.0	1.309	605.2	LOS F	100.5	703.5	1.00	8.32	3.0
Approach		307	0.0	1.311	605.1	LOS F	100.5	703.5	1.00	8.60	3.0
All Vehicles		1294	0.0	1.311	147.2	NA	100.5	703.5	0.73	2.19	10.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road C07-C04 - Rdabt

Road C04-C07 AM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C04 (S)											
1	L	189	0.0	0.325	1.8	LOS A	3.0	21.2	0.34	0.24	37.7
2	T	260	0.0	0.325	0.8	LOS A	3.0	21.2	0.34	0.13	38.0
3	R	24	0.0	0.324	6.3	LOS A	3.0	21.2	0.34	0.79	36.1
Approach		473	0.0	0.325	1.5	LOS A	3.0	21.2	0.34	0.21	37.7
East: Road C07 (E)											
4	L	75	0.0	0.129	5.2	LOS A	1.1	7.4	0.73	0.62	35.9
5	T	22	0.0	0.129	4.1	LOS A	1.1	7.4	0.73	0.58	35.7
6	R	12	0.0	0.129	9.7	LOS A	1.1	7.4	0.73	0.80	34.6
Approach		109	0.0	0.129	5.5	LOS A	1.1	7.4	0.73	0.63	35.7
North: Road C04 (N)											
7	L	21	0.0	0.356	3.2	LOS A	3.3	22.9	0.61	0.43	36.7
8	T	323	0.0	0.356	2.2	LOS A	3.3	22.9	0.61	0.34	36.6
9	R	61	0.0	0.357	7.7	LOS A	3.3	22.9	0.61	0.82	35.9
Approach		405	0.0	0.356	3.1	LOS A	3.3	22.9	0.61	0.42	36.5
West: Road C07 (W)											
10	L	31	0.0	0.267	3.0	LOS A	2.2	15.6	0.55	0.44	36.1
11	T	5	0.0	0.263	2.0	LOS A	2.2	15.6	0.55	0.36	36.1
12	R	271	0.0	0.267	7.6	LOS A	2.2	15.6	0.55	0.64	34.8
Approach		307	0.0	0.267	7.0	LOS A	2.2	15.6	0.55	0.61	34.9
All Vehicles		1294	0.0	0.356	3.6	LOS A	3.3	22.9	0.51	0.41	36.4

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 A. 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: Road 03-Road 28-Shared Zone

Road 03-Road 28 AM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 03 (S)											
2	T	415	0.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		415	0.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
East: Road 28											
4	L	39	0.0	0.099	11.9	LOS A	0.4	2.8	0.69	0.85	32.2
Approach		39	0.0	0.099	11.9	LOS A	0.4	2.8	0.69	0.85	32.2
North: Road 03 (N)											
7	L	9	0.0	0.409	4.5	LOS A	0.0	0.0	0.00	0.70	36.7
8	T	774	0.0	0.402	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		783	0.0	0.402	0.1	LOS A	0.0	0.0	0.00	0.01	40.0
All Vehicles		1237	0.0	0.402	0.4	NA	0.4	2.8	0.02	0.03	39.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road 03-Road 28-Main Road

Road 03-Road 28 AM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 03 (S)											
2	T	170	0.0	0.634	12.7	LOS A	6.9	48.3	1.00	0.00	29.9
3	R	280	0.0	0.633	17.6	LOS B	6.9	48.3	1.00	1.28	29.9
Approach		450	0.0	0.634	15.8	LOS B	6.9	48.3	1.00	0.80	29.9
East: Road 28											
4	L	318	0.0	3.347	4276.2	LOS F	551.6	3861.1	1.00	22.02	0.5
6	R	298	0.0	3.348	4276.6	LOS F	551.6	3861.1	1.00	17.89	0.5
Approach		616	0.0	3.354	4276.4	LOS F	551.6	3861.1	1.00	20.02	0.5
North: Road 03 (N)											
7	L	298	0.0	0.413	4.5	LOS A	0.0	0.0	0.00	0.62	36.7
8	T	493	0.0	0.413	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		791	0.0	0.413	1.7	LOS A	0.0	0.0	0.00	0.23	38.7
All Vehicles		1857	0.0	3.354	1423.1	NA	551.6	3861.1	0.57	6.94	1.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road 08-Road 07

Road 08 - Road 07 AM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 07											
1	L	352	0.0	0.350	4.5	LOS A	0.0	0.0	0.00	0.51	36.7
3	R	298	0.0	0.350	4.9	LOS A	0.0	0.0	0.00	0.60	36.4
Approach		650	0.0	0.350	4.7	LOS A	0.0	0.0	0.00	0.55	36.5
East: Road 08 (E)											
4	L	298	0.0	0.374	7.2	LOS A	2.5	17.8	0.50	0.71	35.0
5	T	61	0.0	0.374	5.9	LOS A	2.5	17.8	0.50	0.71	35.5
Approach		359	0.0	0.374	7.0	LOS A	2.5	17.8	0.50	0.71	35.1
West: Road 08 (W)											
11	T	85	0.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
12	R	300	0.0	0.205	4.9	LOS A	0.0	0.0	0.00	0.62	36.4
Approach		385	0.0	0.205	3.8	LOS A	0.0	0.0	0.00	0.48	37.1
All Vehicles		1394	0.0	0.374	5.0	NA	2.5	17.8	0.13	0.57	36.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road 08-Road 07 - Roundabout

Road 08 - Road 07 AM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 07											
1	L	352	0.0	0.455	3.9	LOS A	5.2	36.6	0.34	0.41	36.3
3	R	298	0.0	0.455	7.1	LOS A	5.2	36.6	0.34	0.60	34.8
Approach		650	0.0	0.455	5.4	LOS A	5.2	36.6	0.34	0.50	35.6
East: Road 08 (E)											
4	L	298	0.0	0.367	5.8	LOS A	3.3	23.4	0.64	0.64	35.5
5	T	61	0.0	0.367	4.9	LOS A	3.3	23.4	0.64	0.59	35.4
Approach		359	0.0	0.367	5.7	LOS A	3.3	23.4	0.64	0.63	35.5
West: Road 08 (W)											
11	T	85	0.0	0.385	4.9	LOS A	3.4	23.8	0.62	0.57	35.2
12	R	300	0.0	0.384	9.1	LOS A	3.4	23.8	0.62	0.72	34.1
Approach		385	0.0	0.384	8.2	LOS A	3.4	23.8	0.62	0.69	34.4
All Vehicles		1394	0.0	0.455	6.2	LOS A	5.2	36.6	0.50	0.58	35.2

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 A. 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: Road 20-Road 09

Road C20-RoadC09 AM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 09											
1	L	53	0.0	0.098	11.6	LOS A	0.4	3.0	0.47	0.71	45.4
3	R	9	0.0	0.098	11.9	LOS A	0.4	3.0	0.47	0.86	45.3
Approach		62	0.0	0.098	11.6	LOS A	0.4	3.0	0.47	0.73	45.4
East: Road 20 (E)											
4	L	9	0.0	0.170	8.2	LOS A	0.0	0.0	0.00	1.07	49.0
5	T	319	0.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		328	0.0	0.168	0.2	LOS A	0.0	0.0	0.00	0.03	59.6
West: Road 20 (W)											
11	T	381	0.0	0.208	1.8	LOS A	2.1	15.0	0.52	0.00	51.0
12	R	13	0.0	0.210	10.3	LOS A	2.1	15.0	0.52	0.97	49.3
Approach		394	0.0	0.208	2.1	LOS A	2.1	15.0	0.52	0.03	51.0
All Vehicles		784	0.0	0.208	2.1	NA	2.1	15.0	0.30	0.09	53.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road C03-C08 Roundabout

Road C03-C08 PM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C03 (S)											
1	L	102	0.0	0.593	1.5	LOS A	6.8	47.4	0.23	0.21	37.9
2	T	410	0.0	0.594	0.4	LOS A	6.8	47.4	0.23	0.10	38.4
3	R	478	0.0	0.594	6.0	LOS A	6.8	47.4	0.23	0.65	35.9
Approach		990	0.0	0.594	3.2	LOS A	6.8	47.4	0.23	0.37	37.0
East: Road C08 (E)											
4	L	258	0.0	0.189	1.5	LOS A	1.4	9.9	0.22	0.21	38.0
5	T	11	0.0	0.190	0.4	LOS A	1.4	9.9	0.22	0.09	38.5
6	R	14	0.0	0.189	6.0	LOS A	1.4	9.9	0.22	0.71	36.0
Approach		283	0.0	0.189	1.7	LOS A	1.4	9.9	0.22	0.23	37.9
North: Road C03 (N)											
7	L	11	0.0	0.068	3.4	LOS A	0.5	3.2	0.55	0.46	36.8
8	T	49	0.0	0.068	2.3	LOS A	0.5	3.2	0.55	0.36	36.9
9	R	11	0.0	0.068	7.9	LOS A	0.5	3.2	0.55	0.80	35.6
Approach		71	0.0	0.068	3.4	LOS A	0.5	3.2	0.55	0.45	36.6
West: Road C08 (W)											
10	L	4	0.0	0.027	6.5	LOS A	0.2	1.5	0.76	0.59	35.5
11	T	11	0.0	0.027	5.4	LOS A	0.2	1.5	0.76	0.55	35.5
12	R	5	0.0	0.027	11.0	LOS A	0.2	1.5	0.76	0.75	34.0
Approach		20	0.0	0.027	7.0	LOS A	0.2	1.5	0.76	0.61	35.1
All Vehicles		1364	0.0	0.594	3.0	LOS A	6.8	47.4	0.25	0.35	37.2

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 A. 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: Road C03-C08 Signals

RoadC03-C08 Signals PM PEAK
Signals - Fixed Time Cycle Time = 140 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C03 (S)											
1	L	102	0.0	0.639	32.9	LOS C	31.3	219.2	0.76	0.94	24.3
2	T	578	0.0	0.639	28.4	LOS B	31.3	219.2	0.76	0.79	24.6
3	R	310	0.0	1.000[3]	37.5	LOS C	13.2	92.4	1.00	0.85	22.8
Approach		990	0.0	1.000	31.7	LOS C	31.3	219.2	0.84	0.82	24.0
East: Road C08 (E)											
4	L	258	0.0	0.930	89.4	LOS F	22.9	160.4	1.00	1.10	14.3
5	T	11	0.0	0.928	84.9	LOS F	22.9	160.4	1.00	1.10	14.2
6	R	14	0.0	0.170	77.9	LOS F	1.5	10.4	0.99	0.68	15.6
Approach		283	0.0	0.930	88.6	LOS F	22.9	160.4	1.00	1.08	14.4
North: Road C03 (N)											
7	L	11	0.0	0.272	59.9	LOS E	4.8	33.3	0.96	0.78	18.4
8	T	49	0.0	0.272	55.4	LOS D	4.8	33.3	0.96	0.75	18.4
9	R	11	0.0	0.151	65.3	LOS E	1.1	7.4	0.93	0.66	17.3
Approach		71	0.0	0.272	57.6	LOS E	4.8	33.3	0.95	0.74	18.2
West: Road C08 (W)											
10	L	4	0.0	0.050	59.1	LOS E	1.3	9.4	0.89	0.70	18.5
11	T	11	0.0	0.050	54.6	LOS D	1.3	9.4	0.89	0.62	18.5
12	R	5	0.0	0.061	76.7	LOS F	0.5	3.8	0.98	0.64	15.7
Approach		20	0.0	0.061	61.0	LOS E	1.3	9.4	0.91	0.64	17.7
All Vehicles		1364	0.0	1.000	45.3	LOS D	31.3	219.2	0.88	0.87	20.6

Level of Service (Aver. Int. Delay): LOS D. 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.

3 x = 1 00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	Across S approach	53	58.5	LOS E	0.2	0.2	0.91	0.91
P3	Across E approach	53	64.1	LOS F	0.2	0.2	0.96	0.96
P5	Across N approach	53	58.5	LOS E	0.2	0.2	0.91	0.91
P7	Across W approach	53	20.1	LOS C	0.1	0.1	0.54	0.54
All Pedestrians		212	50.3				0.83	0.83

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

PHASING SUMMARY

Site: Road C03-C08 Signals

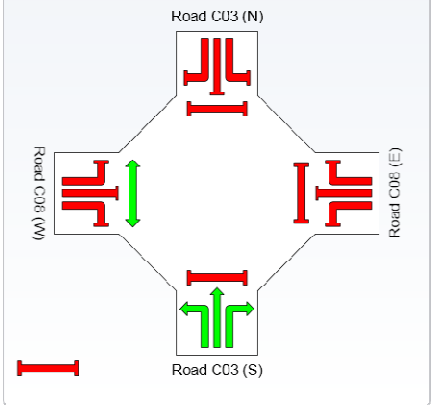
RoadC03-C08 Signals PM PEAK
Signals - Fixed Time Cycle Time = 140 seconds (Practical Cycle Time)

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

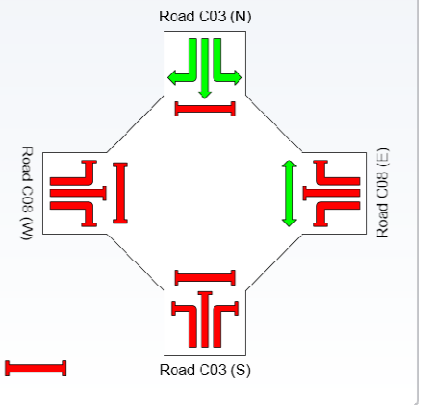
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	74	15	21	6
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	80	21	27	12
Phase Split	57 %	15 %	19 %	9 %

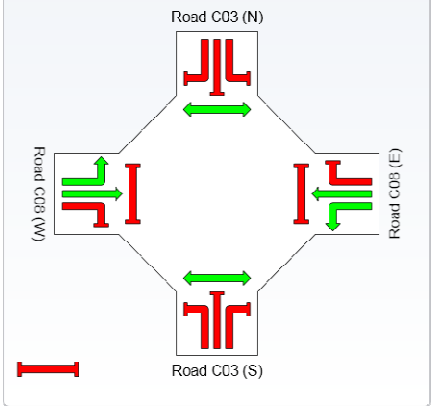
Phase A



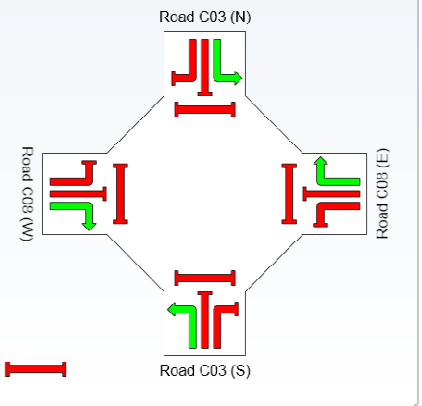
Phase B



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: Road C07-C04

Road C04-C07 PM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C04 (S)											
1	L	250	0.0	0.352	6.5	LOS A	3.8	26.9	0.68	0.19	35.3
2	T	297	0.0	0.351	2.0	LOS A	3.8	26.9	0.68	0.00	35.0
3	R	69	0.0	0.352	6.9	LOS A	3.8	26.9	0.68	0.76	35.4
Approach		616	0.0	0.351	4.4	LOS A	3.8	26.9	0.68	0.16	35.2
East: Road C07 (E)											
4	L	27	0.0	0.141	12.3	LOS A	0.6	4.3	0.58	0.66	32.0
5	T	5	0.0	0.139	11.0	LOS A	0.6	4.3	0.58	0.72	32.4
6	R	22	0.0	0.140	12.7	LOS A	0.6	4.3	0.58	0.83	31.9
Approach		54	0.0	0.141	12.3	LOS A	0.6	4.3	0.58	0.74	32.0
North: Road C04 (N)											
7	L	12	0.0	0.190	8.2	LOS A	2.2	15.6	0.65	0.23	35.0
8	T	281	0.0	0.191	3.7	LOS A	2.2	15.6	0.65	0.00	35.5
9	R	31	0.0	0.191	8.7	LOS A	2.2	15.6	0.65	0.90	34.9
Approach		324	0.0	0.191	4.4	LOS A	2.2	15.6	0.65	0.09	35.5
West: Road C07 (W)											
10	L	61	0.0	1.070	195.0	LOS F	39.8	278.8	1.00	5.43	8.1
11	T	22	0.0	1.048	193.6	LOS F	39.8	278.8	1.00	4.40	8.1
12	R	204	0.0	1.068	195.4	LOS F	39.8	278.8	1.00	4.32	8.1
Approach		287	0.0	1.067	195.2	LOS F	39.8	278.8	1.00	4.56	8.1
All Vehicles		1281	0.0	1.067	47.5	NA	39.8	278.8	0.74	1.15	20.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road C07-C04 - Rdabt

Road C04-C07 PM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C04 (S)											
1	L	250	0.0	0.395	1.6	LOS A	4.0	27.7	0.27	0.22	37.9
2	T	297	0.0	0.395	0.6	LOS A	4.0	27.7	0.27	0.10	38.3
3	R	69	0.0	0.394	6.1	LOS A	4.0	27.7	0.27	0.76	36.1
Approach		616	0.0	0.395	1.6	LOS A	4.0	27.7	0.27	0.22	37.8
East: Road C07 (E)											
4	L	27	0.0	0.056	3.9	LOS A	0.4	3.0	0.62	0.49	36.1
5	T	5	0.0	0.056	2.9	LOS A	0.4	3.0	0.62	0.44	36.0
6	R	22	0.0	0.056	8.5	LOS A	0.4	3.0	0.62	0.69	35.0
Approach		54	0.0	0.056	5.7	LOS A	0.4	3.0	0.62	0.57	35.6
North: Road C04 (N)											
7	L	12	0.0	0.286	3.1	LOS A	2.5	17.2	0.57	0.40	36.9
8	T	281	0.0	0.284	2.0	LOS A	2.5	17.2	0.57	0.31	36.9
9	R	31	0.0	0.284	7.6	LOS A	2.5	17.2	0.57	0.84	36.0
Approach		324	0.0	0.284	2.6	LOS A	2.5	17.2	0.57	0.36	36.8
West: Road C07 (W)											
10	L	61	0.0	0.268	3.6	LOS A	2.2	15.5	0.61	0.51	35.9
11	T	22	0.0	0.268	2.6	LOS A	2.2	15.5	0.61	0.44	35.8
12	R	204	0.0	0.267	8.1	LOS A	2.2	15.5	0.61	0.70	34.9
Approach		287	0.0	0.267	6.7	LOS A	2.2	15.5	0.61	0.64	35.2
All Vehicles		1281	0.0	0.395	3.2	LOS A	4.0	27.7	0.44	0.37	36.8

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 A. 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: Road C04-C7 Signals

Road C04-C07 Signals PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road C03 (S)											
1	L	250	0.0	0.852	48.6	LOS D	27.2	190.1	1.00	1.12	20.4
2	T	297	0.0	0.851	44.1	LOS D	27.2	190.1	1.00	1.12	20.4
3	R	69	0.0	0.234	30.9	LOS C	3.5	24.2	0.75	0.71	24.7
Approach		616	0.0	0.851	44.5	LOS D	27.2	190.1	0.97	1.07	20.8
East: Road C08 (E)											
4	L	27	0.0	0.110	44.6	LOS D	2.1	14.5	0.90	0.71	21.1
5	T	5	0.0	0.110	40.2	LOS C	2.1	14.5	0.90	0.66	21.2
6	R	22	0.0	0.088	46.5	LOS D	1.5	10.3	0.91	0.70	20.7
Approach		54	0.0	0.110	45.0	LOS D	2.1	14.5	0.90	0.70	20.9
North: Road C03 (N)											
7	L	12	0.0	0.846	63.3	LOS E	16.9	118.5	1.00	1.07	17.9
8	T	281	0.0	0.851	58.9	LOS E	16.9	118.5	1.00	1.07	17.8
9	R	31	0.0	0.288	42.5	LOS D	1.9	13.6	0.88	0.69	21.5
Approach		324	0.0	0.851	57.5	LOS E	16.9	118.5	0.99	1.03	18.1
West: Road C08 (W)											
10	L	61	0.0	0.284	46.1	LOS D	5.1	35.4	0.93	0.76	20.9
11	T	22	0.0	0.284	41.6	LOS C	5.1	35.4	0.93	0.72	20.9
12	R	204	0.0	0.816	56.3	LOS D	12.3	86.4	1.00	0.96	18.8
Approach		287	0.0	0.816	53.0	LOS D	12.3	86.4	0.98	0.90	19.3
All Vehicles		1281	0.0	0.851	49.7	LOS D	27.2	190.1	0.97	1.01	19.7

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS E. 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	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	Across S approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
P3	Across E approach	53	42.3	LOS E	0.1	0.1	0.92	0.92
P5	Across N approach	53	44.2	LOS E	0.1	0.1	0.94	0.94
P7	Across W approach	53	30.4	LOS D	0.1	0.1	0.78	0.78
All Pedestrians		212	40.3				0.90	0.90

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

PHASING SUMMARY

Site: Road C04-C7 Signals

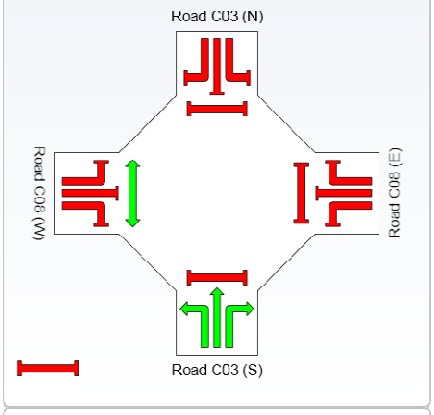
Road C04-C07 Signals PM PEAK
Signals - Fixed Time Cycle Time = 100 seconds (Practical Cycle Time)

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

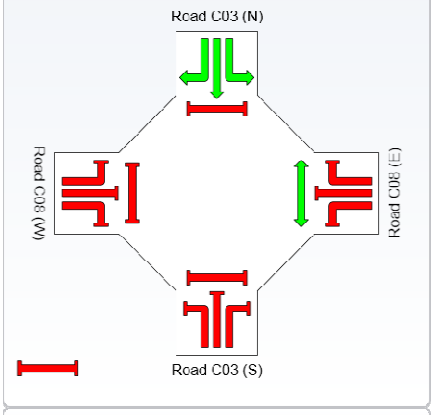
Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	31	17	15	13
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	37	23	21	19
Phase Split	37 %	23 %	21 %	19 %

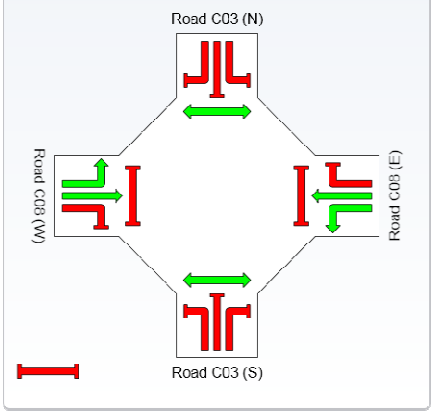
Phase A



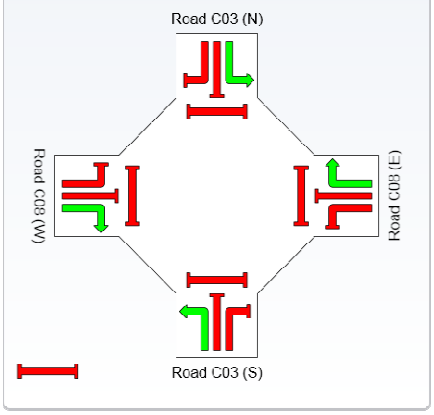
Phase B



Phase C



Phase D



	Normal Movement		Permitted/Opposed
	Slip-Lane Movement		Opposed Slip-Lane
	Stopped Movement		Continuous Movement
	Turn On Red		Undetected Movement
			Phase Transition Applied

MOVEMENT SUMMARY

Site: Road 03-Road 28-Shared Zone

Road 03-Road 28 PM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 03 (S)											
2	T	968	0.0	0.496	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		968	0.0	0.496	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
East: Road 28											
4	L	29	0.0	0.051	8.7	LOS A	0.2	1.5	0.54	0.74	34.1
Approach		29	0.0	0.051	8.7	LOS A	0.2	1.5	0.54	0.74	34.1
North: Road 03 (N)											
7	L	9	0.0	0.300	4.5	LOS A	0.0	0.0	0.00	0.70	36.7
8	T	581	0.0	0.303	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		590	0.0	0.303	0.1	LOS A	0.0	0.0	0.00	0.01	39.9
All Vehicles		1587	0.0	0.496	0.2	NA	0.2	1.5	0.01	0.02	39.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road 08-Road 07

Road 08 - Road 07 PM PEAK
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 07											
1	L	225	0.0	0.242	4.5	LOS A	0.0	0.0	0.00	0.50	36.7
3	R	224	0.0	0.242	4.9	LOS A	0.0	0.0	0.00	0.60	36.4
Approach		449	0.0	0.242	4.7	LOS A	0.0	0.0	0.00	0.55	36.5
East: Road 08 (E)											
4	L	224	0.0	0.324	7.5	LOS A	2.0	13.8	0.55	0.79	34.8
5	T	64	0.0	0.323	6.1	LOS A	2.0	13.8	0.55	0.71	35.3
Approach		288	0.0	0.324	7.2	LOS A	2.0	13.8	0.55	0.77	34.9
West: Road 08 (W)											
11	T	76	0.0	0.276	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
12	R	441	0.0	0.276	4.9	LOS A	0.0	0.0	0.00	0.60	36.4
Approach		517	0.0	0.276	4.2	LOS A	0.0	0.0	0.00	0.52	36.9
All Vehicles		1254	0.0	0.324	5.1	NA	2.0	13.8	0.13	0.59	36.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Road 08-Road 07 - Roundabout

Road 08 - Road 07 PM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 07											
1	L	225	0.0	0.324	3.8	LOS A	3.2	22.6	0.30	0.41	36.4
3	R	224	0.0	0.324	7.1	LOS A	3.2	22.6	0.30	0.60	34.9
Approach		449	0.0	0.324	5.5	LOS A	3.2	22.6	0.30	0.51	35.6
East: Road 08 (E)											
4	L	224	0.0	0.339	6.8	LOS A	3.0	20.7	0.72	0.72	35.2
5	T	64	0.0	0.339	5.9	LOS A	3.0	20.7	0.72	0.68	35.1
Approach		288	0.0	0.339	6.6	LOS A	3.0	20.7	0.72	0.71	35.2
West: Road 08 (W)											
11	T	76	0.0	0.463	4.4	LOS A	4.5	31.6	0.60	0.52	35.3
12	R	441	0.0	0.463	8.6	LOS A	4.5	31.6	0.60	0.68	34.2
Approach		517	0.0	0.463	8.0	LOS A	4.5	31.6	0.60	0.66	34.4
All Vehicles		1254	0.0	0.463	6.8	LOS A	4.5	31.6	0.52	0.62	35.0

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 A. 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: Road 08-Road 07 - Roundabout

Road 08 - Road 07 PM PEAK
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 07											
1	L	225	0.0	0.324	3.8	LOS A	3.2	22.6	0.30	0.41	36.4
3	R	224	0.0	0.324	7.1	LOS A	3.2	22.6	0.30	0.60	34.9
Approach		449	0.0	0.324	5.5	LOS A	3.2	22.6	0.30	0.51	35.6
East: Road 08 (E)											
4	L	224	0.0	0.339	6.8	LOS A	3.0	20.7	0.72	0.72	35.2
5	T	64	0.0	0.339	5.9	LOS A	3.0	20.7	0.72	0.68	35.1
Approach		288	0.0	0.339	6.6	LOS A	3.0	20.7	0.72	0.71	35.2
West: Road 08 (W)											
11	T	76	0.0	0.463	4.4	LOS A	4.5	31.6	0.60	0.52	35.3
12	R	441	0.0	0.463	8.6	LOS A	4.5	31.6	0.60	0.68	34.2
Approach		517	0.0	0.463	8.0	LOS A	4.5	31.6	0.60	0.66	34.4
All Vehicles		1254	0.0	0.463	6.8	LOS A	4.5	31.6	0.52	0.62	35.0

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 A. 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.

Appendix B

Precinct Boundaries

Cardno

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COOMBS & WRIGHT
LAND DEVELOPMENT AGENCY

Appendix C

Bushfire Risk Assessment

BUSHFIRE RISK ASSESSMENT REPORT

FOR THE

COOMBS ESTATE DEVELOPMENT PLAN [SOUTH OF HOLDENS CREEK]

AUSTRALIAN CAPITAL TERRITORY

PREPARED FOR THE

LAND DEVELOPMENT AGENCY

FEBRUARY 2011

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BUSHFIRE RISK ASSESSMENT REPORT

FOR THE

COOMBS ESTATE DEVELOPMENT PLAN
[SOUTH OF HOLDENS CREEK]

AUSTRALIAN CAPITAL TERRITORY

PREPARED FOR THE

LAND DEVELOPMENT AGENCY

FEBRUARY 2011

Assessment Number	Document	Preparation Date	Issue Date	Directors Approval
B101406 – A3	Final	10.2.2011	14.6.2011	*G.L.Swain*

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EXECUTIVE SUMMARY

The Land Development Agency is engaged to complete the planning, design, construction, development and marketing of land in the new suburb of Coombs, ACT in accordance with the Government's Land Release Program.

The proposed landuse in the new suburb consists of RZ1 Residential Suburban Zone; RZ5 Residential Zone – High Density; CZ5 Commercial Mixed Use Zone; PRZ1 – Parks & Recreation Urban Open Space Zone and School, Community Facilities Community Hall & Childcare.

Australian Bushfire Protection Planners Pty Limited prepared the Stage 1 & Stage 2 Bushfire Risk Assessments for the Molonglo Valley, including Western Broadacre for ACTPLA as part of the information accompanying the Molonglo Valley Draft Variation 281.

These reports were prepared in 2005 & 2006 and provided advice on the bushfire protection measures which were deemed to be necessary to protect the future urban and Broadacre development in the valley.

The assessment of bushfire risk and the provision of advice on the bushfire protection measures required to mitigate the identified risk in Molonglo Valley Stage 2 Bushfire Risk Assessment was determined on the basis that the Molonglo River corridor would be dammed downstream of Coppins Crossing Road and the lake and river corridor would be managed as a Foreshore Reserve/Open Space Reserve in order to reduce the risk posed by a fire burning along the river corridor, from the northwest.

Since the preparation of the Stage 1 & Stage 2 Molonglo Bushfire Risk Assessments the ACT Rural Fire Service / ESA have updated the Strategic Bushfire Risk Management Plan for the ACT and also investigated and mapped the urban edge of Canberra to determine the 'Asset Interface Classification [AIC].

Furthermore, *Planning for Bushfire Risk Mitigation* has been updated and now includes the provision of Asset Protection Zones based on the AIC and wider Home Asset Protection Zones [Ember Zones] in order to address potential ignition of structures from burning ember attack.

An Aprasia Habitat study has also been prepared for ACTPLA and the Molonglo Riparian Strategy for Coombs & North Weston is being undertaken jointly for LDA/ACTPLA/TAMS.

The Aprasia Habitat study found habitat for the endangered species Pink Tailed Worm [*Aprasia parapulchella*] located in the Holdens Creek corridor and on the rocky embankment of the Molonglo River. The need to retain this habitat and retention of the vegetation in the river corridor changes the status of the advice on which the previous 2005 & 2006 Bushfire Risk Assessments were prepared.

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As part of the planning for the new suburb, Australian Bushfire Protection Planners Pty Limited prepared, in April 2010, a Bushfire Risk Assessment for the suburb of Coombs for the Land Development Agency [LDA]. This report identified that the potential risk to the proposed development in the suburb of Coombs, which is located adjacent to the river corridor, is extreme.

The recommended fire protection measures, based on the assumption that the vegetation within the river corridor would be managed to the standards of an Outer Asset Protection Zone required a 50 metre wide Inner Asset Protection Zone be provided to the northwest of the residential precinct which faces Misery Point whilst a 40 metre wide Inner Asset Protection Zone be provided to the remainder of the river corridor.

The Ember Zone [HAPZ] to the residential precinct which faces Misery Point and the remainder of the river corridor was recommended to be BAL 29 for 100 metres plus BAL 19.0 for the next 150 metres, in accordance with A.S. 3959 – 2009 – *'Construction of Buildings in Bushfire Prone Areas'* and the stormwater detention ponds on Holdens Creek, Weston Creek and the internal creek lines maintained as an Inner Asset Protection Zone.

These recommendations were supported by ESA. However, recent advice from ESA, later in 2010, has resulted in the determination that the Outer Asset Protection Zone shall be 100 metres with the remaining bushfire protection measures as per the recommendations of the April 2010 Bushfire Risk Assessment.

Furthermore, following discussions & field investigations with TAMS, ESA, LAPS, ACTPLA & LDA it has been agreed the fuel loads of high quality Pink Tailed Worm Lizard [PTWL] habitats are compatible with the management requirements of an Outer Asset Protection Zone and the conservation requirements of the PTWL.

This report therefore re-examines the potential bushfire risks to the new suburb of Coombs, in accordance with the provisions of Australian Standard for Risk Management, AS/NZS 4360:2004 and *Planning for Bushfire Risk Mitigation,* taking into account the status of the planning / construction of the adjacent development in the new suburb of Wright and the potential risk from a fire occurrence in the vegetated Molonglo River corridor and updates the report prepared by ABPP in April 2010 to include a detailed assessment of the risk presented by the Aprasia Habitat and the potential management of the habitat to mitigate the risk.

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