

To:	Graeme Knox	At:	Lendlease
From:	Brendyn Rheinberger	At:	SLR Consulting Australia Pty Ltd
Date:	6 October 2022	Ref:	620.11743-M02-v0.1-20221006.docx
Subject:	Yarrabilba - MIBA North Precinct 5A Response to Information Request		

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1 Introduction

This memorandum has been prepared in response to an Information Request from Economic Development Queensland (EDQ) (email dated 21 September 2022) in respect of the MIBA North (Precinct 5A) development application within Yarrabilba. It is supplementary to the memorandum prepared by SLR Consulting (dated 30 June 2022) issued with the application.

This memorandum addresses the following traffic item raised by EDQ:

- *Provide a traffic impact assessment (SIDRA analysis or equal) of the Wongawallan Drive/Yarrabilba Drive Intersection with consideration of the traffic generation from this development to ensure this intersection is appropriately designed.*

2 Traffic Model and Intersection Volumes

The overall Yarrabilba road network and demographics have been modelled in 2018 (as an update to the previous traffic model in 2015). The Yarrabilba demographics and road network adopted in the modelling at 2018 are generally reflective of the most recent masterplan for Yarrabilba (including the MIBA Precinct 5A).

Traffic volumes at the Wongawallan Drive / Yarrabilba Drive intersection have been derived from that traffic model developed in 2018 and are used for the intersection capacity analysis herein.

3 Wongawallan Drive / Yarrabilba Drive SIDRA

The Wongawallan Drive / Yarrabilba Drive intersection was initially configured as a priority-controlled three-way intersection. This intersection is now signalised (since November 2017). It is not proposed to further alter the geometry of this intersection in future, hence the existing signalised intersection has been modelled in SIDRA as per **Figure** .

**PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL**

Approval no: DEV2022/1306
Date: 3 February 2023



Figure 1 Yarrabilba Drive / Wongawallan Drive - Existing Intersection Form



A summary of the SIDRA analysis outputs is included in **Table** and SIDRA summary outputs are included at **Appendix A**.

Table 1 Yarrabilba Drive / Wongawallan Drive - SIDRA Analysis Outputs

Scenario	AM Peak			PM Peak		
	DOS	Average Delay	95 %ile Queue	DOS	Average Delay	95 %ile Queue
<i>Existing Intersection Form</i>						
2031	0.39	14 sec	95m	0.56	11 sec	122m
Ultimate	0.36	15 sec	88m	0.38	11 sec	66m

The results shown in **Table** indicate that the operational performance is expected to remain well within the desired range (DOS of 0.9 for signalised intersections) over the design horizon (interim 2031 and ultimate (beyond 2040)). The operational performance of this intersection is expected to improve by the ultimate horizon, as additional alternative routes (between Yarrabilba and the external road network) become available, therefore reducing the traffic demand at this intersection.

No future upgrade works are therefore considered necessary at this location.

4 Conclusion

The analysis as reported herein confirms that the existing signalised intersection for at Wongawallan Drive / Yarrabilba Drive has been appropriately designed/constructed to accommodate the forecast traffic volumes.

BRENDYN RHEINBERGER
Associate Consultant – Transport Advisory
RPEQ #17962

BRETT McCLURG
Technical Director – Transport Advisory
RPEQ #7628

APPENDIX A

Wongawallan Dr / Yarrabilba Dr - SIDRA

SITE LAYOUT

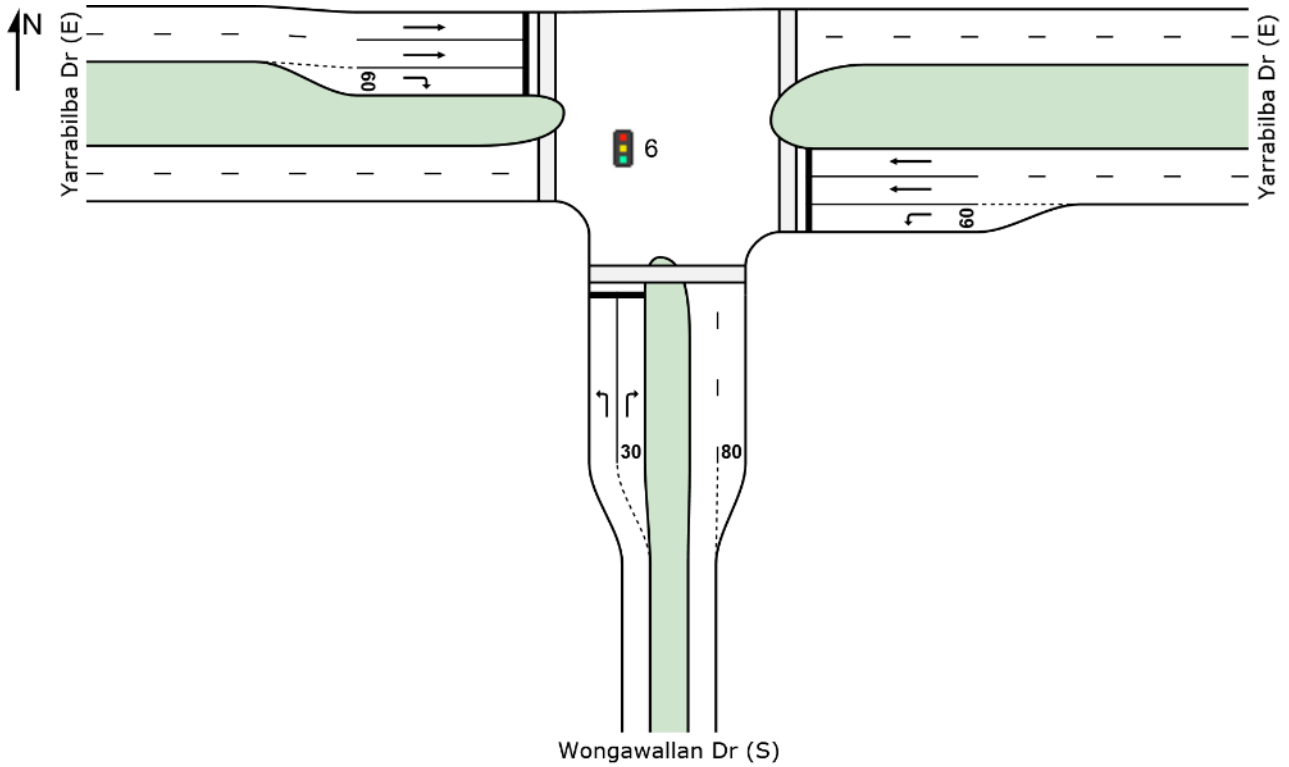
Site: 6 [2031 AM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated



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LANE SUMMARY

 **Site: 6 [2031 AM]**

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
								Veh	Dist m				
South: Wongawallan Dr (S)													
Lane 1	81	3.0	576	0.141	100	36.9	LOS D	3.4	24.2	Full	135	0.0	0.0
Lane 2	8	3.0	152	0.056	100	61.5	LOS E	0.5	3.3	Short	30	0.0	NA
Approach	89	3.0		0.141		39.2	LOS D	3.4	24.2				
East: Yarrabilba Dr (E)													
Lane 1	57	3.0	152	0.375	100	64.2	LOS E	3.3	23.7	Short	60	0.0	NA
Lane 2	429	3.0	1116	0.385	100	14.2	LOS B	13.3	95.2	Full	165	0.0	0.0
Lane 3	429	3.0	1116	0.385	100	14.2	LOS B	13.3	95.2	Full	165	0.0	0.0
Approach	916	3.0		0.385		17.3	LOS B	13.3	95.2				
West: Yarrabilba Dr (E)													
Lane 1	433	3.0	1562	0.277	100	2.7	LOS A	5.8	41.9	Full	180	0.0	0.0
Lane 2	433	3.0	1562	0.277	100	2.7	LOS A	5.8	41.9	Full	180	0.0	0.0
Lane 3	125	3.0	333	0.376	100	52.5	LOS D	6.5	46.9	Short	60	0.0	NA
Approach	991	3.0		0.376		9.0	LOS A	6.5	46.9				
Intersection	1996	3.0		0.385		14.2	LOS B	13.3	95.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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PHASING SUMMARY

 **Site: 6 [2031 AM]**

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase A

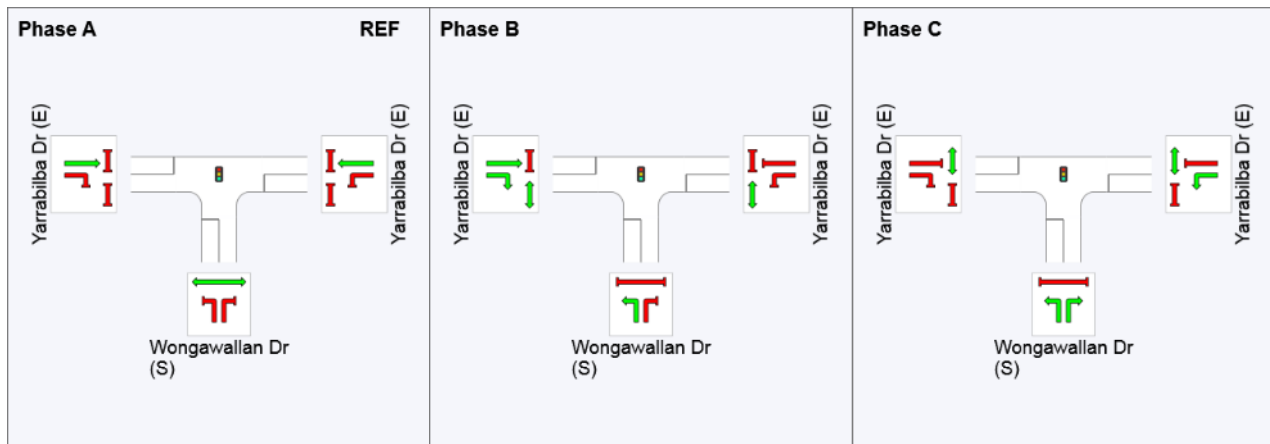
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Phase Timing Results

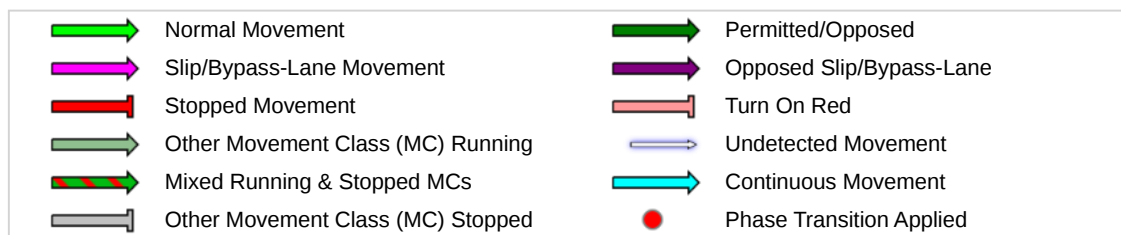
Phase	A	B	C
Phase Change Time (sec)	0	76	104
Green Time (sec)	70	22	10
Phase Time (sec)	76	28	16
Phase Split	63 %	23 %	13 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase



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LANE SUMMARY

Site: 6 [2031 PM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
								Veh	Dist m				
South: Wongawallan Dr (S)													
Lane 1	261	3.0	478 ¹	0.547	100	43.5	LOS D	12.7	90.9	Full	135	0.0	0.0
Lane 2	45	3.0	152	0.299	100	63.7	LOS E	2.6	18.7	Short	30	0.0	NA
Approach	306	3.0		0.547		46.5	LOS D	12.7	90.9				
East: Yarrabilba Dr (E)													
Lane 1	19	3.0	152	0.125	100	62.3	LOS E	1.1	7.6	Short	60	0.0	NA
Lane 2	272	3.0	1164	0.233	100	11.3	LOS B	7.1	51.0	Full	165	0.0	0.0
Lane 3	272	3.0	1164	0.233	100	11.3	LOS B	7.1	51.0	Full	165	0.0	0.0
Approach	562	3.0		0.233		13.0	LOS B	7.1	51.0				
West: Yarrabilba Dr (E)													
Lane 1	877	3.0	1562	0.561	100	3.9	LOS A	17.0	121.9	Full	180	0.0	0.0
Lane 2	846	3.0	1508 ¹	0.561	100	3.8	LOS A	15.9	114.3	Full	180	0.0	0.0
Lane 3	35	3.0	288	0.121	100	52.7	LOS D	1.8	12.7	Short	60	0.0	NA
Approach	1758	3.0		0.561		4.8	LOS A	17.0	121.9				
Intersection	2626	3.0		0.561		11.4	LOS B	17.0	121.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

- ¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

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PHASING SUMMARY

 **Site: 6 [2031 PM]**

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase A

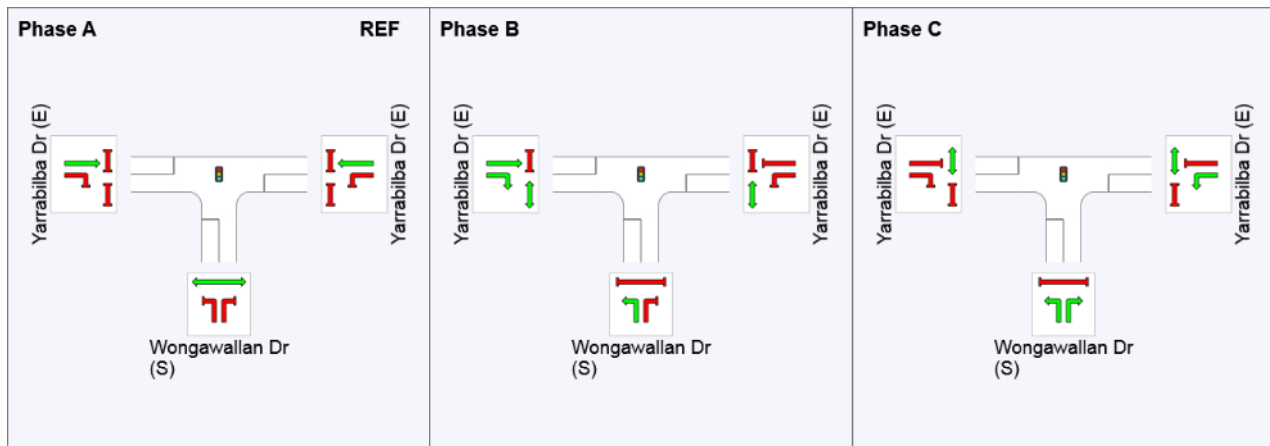
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Phase Timing Results

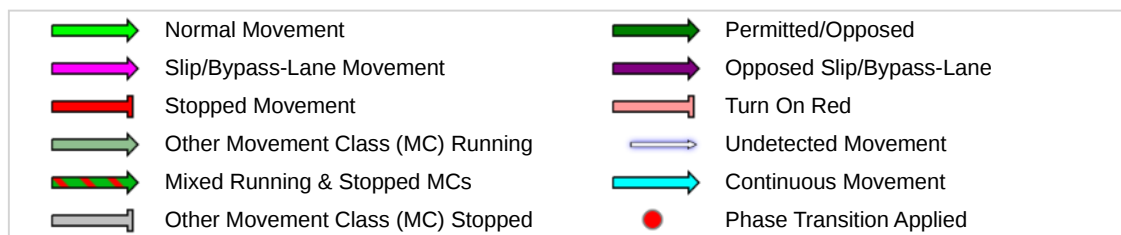
Phase	A	B	C
Phase Change Time (sec)	0	79	104
Green Time (sec)	73	19	10
Phase Time (sec)	79	25	16
Phase Split	66 %	21 %	13 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase



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LANE SUMMARY

Site: 6 [Ultimate AM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
								Veh	Dist m				
South: Wongawallan Dr (S)													
Lane 1	89	3.0	606	0.148	100	35.5	LOS D	3.6	26.1	Full	135	0.0	0.0
Lane 2	5	3.0	152	0.035	100	61.2	LOS E	0.3	2.1	Short	30	0.0	NA
Approach	95	3.0		0.148		36.9	LOS D	3.6	26.1				
East: Yarrabilba Dr (E)													
Lane 1	41	3.0	152	0.271	100	63.4	LOS E	2.3	16.9	Short	60	0.0	NA
Lane 2	391	3.0	1084	0.361	100	15.0	LOS B	12.2	87.9	Full	165	0.0	0.0
Lane 3	391	3.0	1084	0.361	100	15.0	LOS B	12.2	87.9	Full	165	0.0	0.0
Approach	823	3.0		0.361		17.4	LOS B	12.2	87.9				
West: Yarrabilba Dr (E)													
Lane 1	326	3.0	1562	0.209	100	2.5	LOS A	4.1	29.5	Full	180	0.0	0.0
Lane 2	326	3.0	1562	0.209	100	2.5	LOS A	4.1	29.5	Full	180	0.0	0.0
Lane 3	131	3.0	364	0.359	100	50.6	LOS D	6.7	47.8	Short	60	0.0	NA
Approach	783	3.0		0.359		10.6	LOS B	6.7	47.8				
Intersection	1701	3.0		0.361		15.3	LOS B	12.2	87.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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PHASING SUMMARY

Site: 6 [Ultimate AM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase A

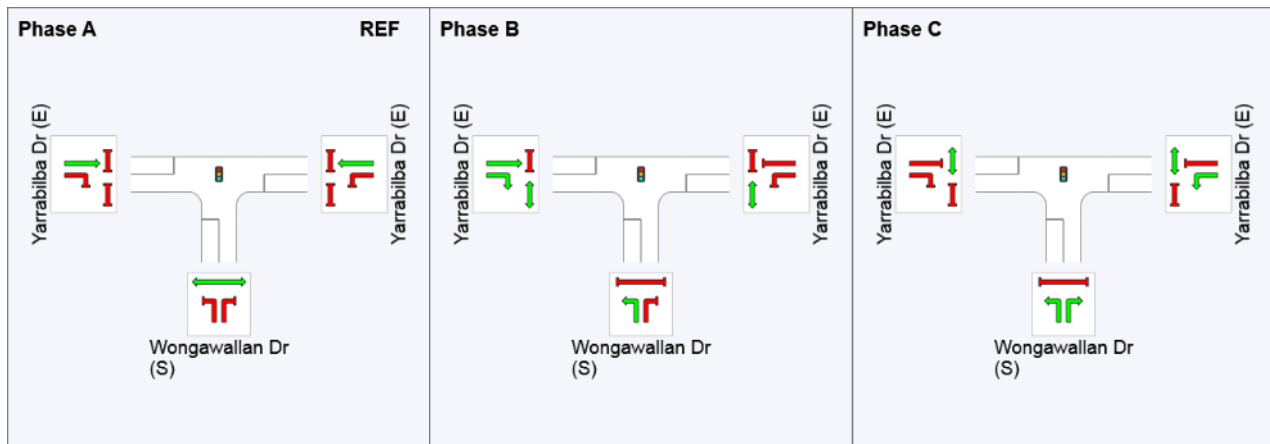
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	74	104
Green Time (sec)	68	24	10
Phase Time (sec)	74	30	16
Phase Split	62 %	25 %	13 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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LANE SUMMARY

Site: 6 [Ultimate PM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
								Veh	Dist m				
South: Wongawallan Dr (S)													
Lane 1	207	3.0	563 ¹	0.368	100	38.7	LOS D	9.2	66.2	Full	135	0.0	0.0
Lane 2	21	3.0	152	0.139	100	62.4	LOS E	1.2	8.5	Short	30	0.0	NA
Approach	228	3.0		0.368		40.9	LOS D	9.2	66.2				
East: Yarrabilba Dr (E)													
Lane 1	12	3.0	152	0.076	100	61.8	LOS E	0.6	4.6	Short	60	0.0	NA
Lane 2	225	3.0	1100	0.204	100	12.9	LOS B	6.2	44.5	Full	165	0.0	0.0
Lane 3	225	3.0	1100	0.204	100	12.9	LOS B	6.2	44.5	Full	165	0.0	0.0
Approach	461	3.0		0.204		14.2	LOS B	6.2	44.5				
West: Yarrabilba Dr (E)													
Lane 1	585	3.0	1562	0.375	100	3.0	LOS A	8.8	63.4	Full	180	0.0	0.0
Lane 2	585	3.0	1562	0.375	100	3.0	LOS A	8.8	63.4	Full	180	0.0	0.0
Lane 3	46	3.0	348	0.133	100	49.1	LOS D	2.3	16.2	Short	60	0.0	NA
Approach	1217	3.0		0.375		4.8	LOS A	8.8	63.4				
Intersection	1906	3.0		0.375		11.4	LOS B	9.2	66.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

- ¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

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PHASING SUMMARY

Site: 6 [Ultimate PM]

Signalised intersection: Yarrabilba Drive/Wongawallan Drive

Prepared by: MC

Reviewed by:

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase A

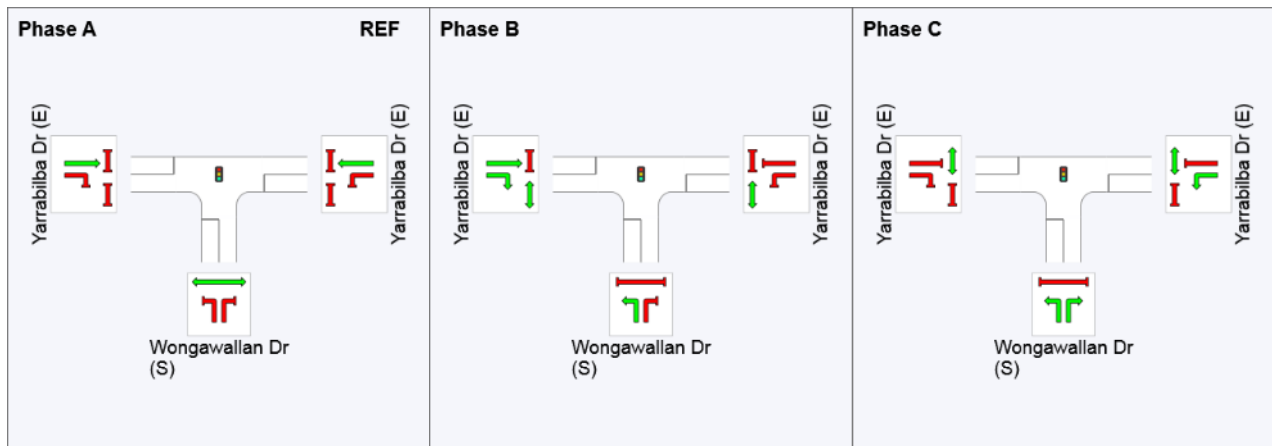
Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Phase Timing Results

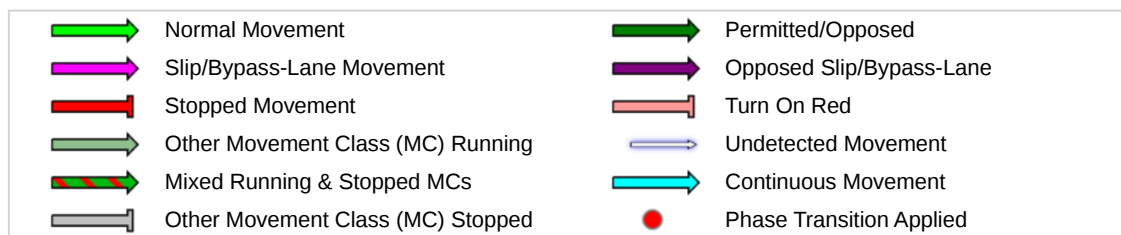
Phase	A	B	C
Phase Change Time (sec)	0	75	104
Green Time (sec)	69	23	10
Phase Time (sec)	75	29	16
Phase Split	63 %	24 %	13 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase

VAR: Variable Phase



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Attachment E
Figure 4.3

Legend

- Precinct Boundary

Existing/Future Road

Developable Area

Primary School

Secondary School

Greenfield / Open Space / Conservation Area
- Water Main by Year

Existing

2,017

2,021

2,022

2,023

2,024

2,026

2,027

2,028

2,030

2,031

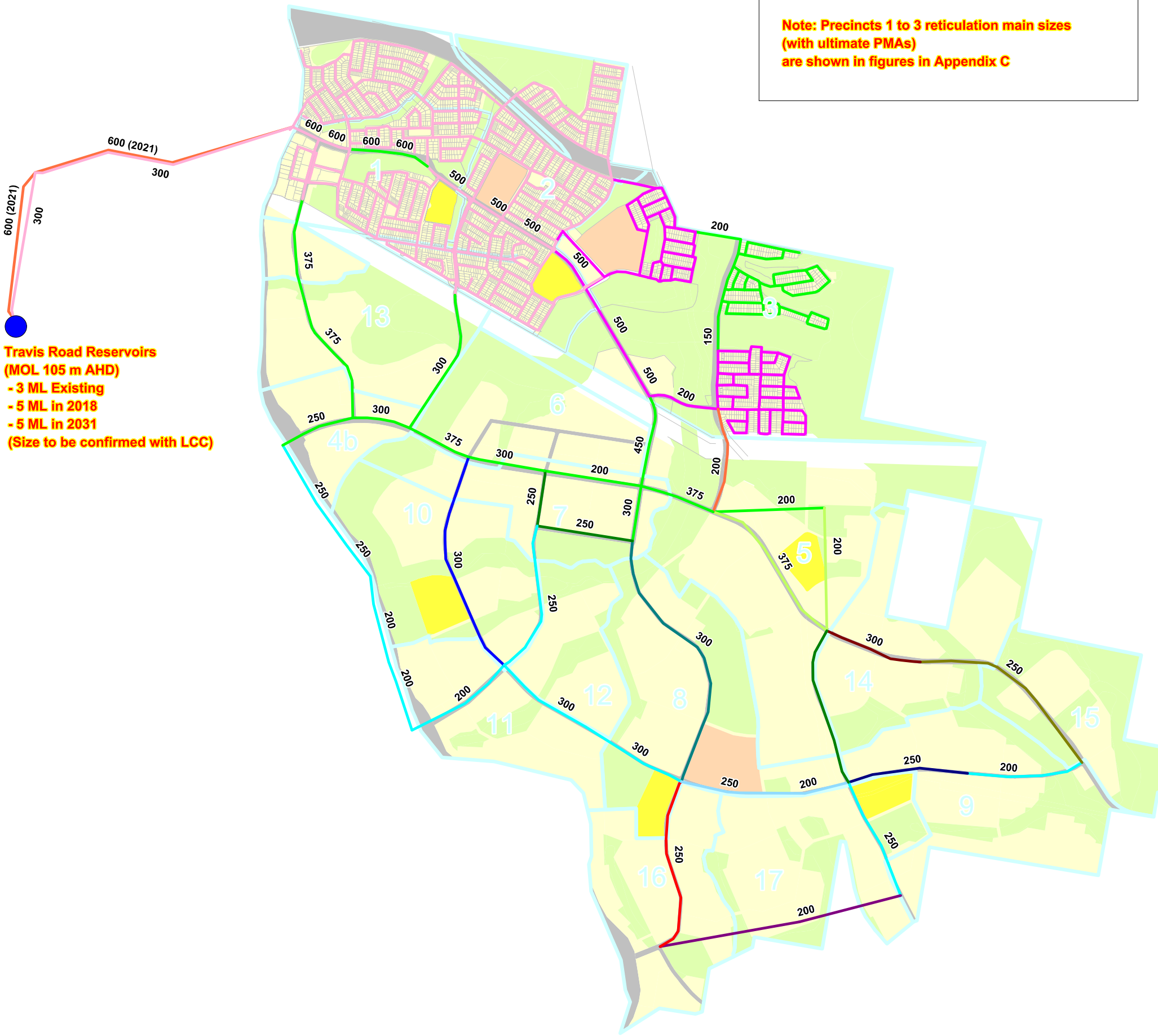
2,033

2,035

2,038

2,042

Note: Precincts 1 to 3 reticulation main sizes (with ultimate PMAs) are shown in figures in Appendix C



PHONE: (07) 3029 5000
FAX: (07) 3029 5050

Figure 4-3
Ultimate Yarrabilba
Water Network

DATUM: MGA Zone 56 (GDA 94)

PROJECT No: 83502580

FILE REFERENCE:
P:\Projects\ Project 2012 Onwards\Lend Lease\
83502580 - LL Yarrabilba 2015\50 Drawings\
50.15 GIS\Yarrabilba Wastewater Networks March 2017

SCALE: 1: 27,500



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