Stantec Australia Pty Ltd
Level 16, 207 Kent Street
Sydney NSW 2000

29 April 2022

Project/File: 301400270

Chris Shinn
Fairfield City Council
PO Box 21
Fairfield NSW 1860

Dear Chris

Fairfield City Council (Council) on behalf of Traders in Purple have engaged Stantec to assess the traffic impact of a planning proposal application for a residential precinct ("Kamira Court Precinct") located at Kamira Avenue, Villawood.

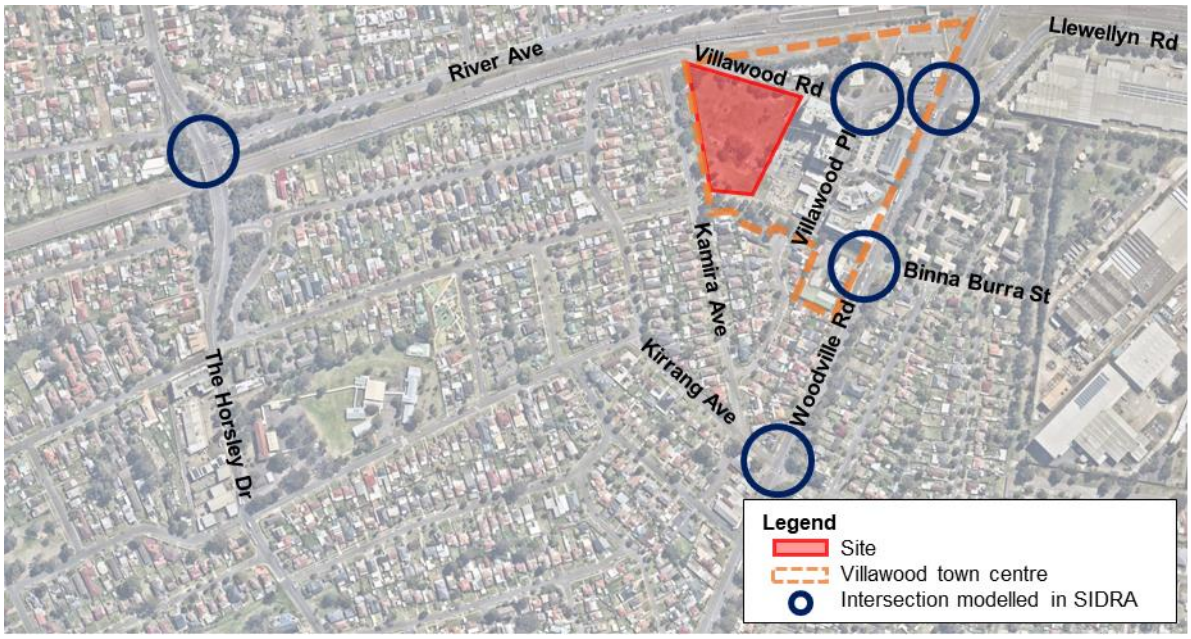
The purpose of this letter is to detail development of and results from the SIDRA model used as the basis for the assessment, set down through the following sections:

- background and proposal
- SIDRA Intersection Analysis
- summary.

1 Background and Proposal

The site is located at Kamira Avenue, Villawood. The study area, including key intersections modelled in SIDRA intersection modelling software, are illustrated in Figure 1.

Figure 1:Study area



Base Image Source: Nearmap

The indicative development scheme, including proposed vehicle access locations, are detailed in Table 1. The development also proposes to deliver the extension of Howatt Street and Kamira Court, forming a connection between Kamira Avenue and Kamira Court.

Table 1: Indicative development scheme and proposed vehicular access [1]

Stage	Building	Land Use		Vehicle Access
		Residential	**Non-Residential**	
1	**B**	112 units	1,216m2 supermarket GLFA and 1,273m2 retail GLFA	Howatt Street extension, near Kamira Avenue
2	**C**	80 units	112 residential units, 328m2 GFA library and 57m2 cafe GLFA	Villawood Road near Kamira Avenue
3	**A**	158 units	Child care centre and medical centre	Villawood Road near Kamira Court

[1] Source: Planning Proposal – Kamira Avenue, Villawood Transport Impact Assessment, Traffwise Consultants, 20 September 2021

Traffwise Consultants Pty Ltd (Traffwise) prepared a Traffic Impact Assessment to support the Planning Proposal in September 2021, referred to as the "Traffic Report". Subsequently, Traffwise prepared various responses to Council requests for further information (RFI's) through early 2022[1][2]. This study

[1] Comments on Kamira Court Precinct, Villawood – Planning Proposal Transport Assessment Review Technical Memorandum, Traffwise Consultants, 14 January 2021
[2] 2 Kamira Crt Project: Traffic, email from Ryan Duff (Traders in Purple) to Fairfield City Council and Stantec dated 23 March 2022

references development and traffic distribution information as set out in the Traffic Report, as well as traffic generation estimates as set out in the response to Council RFI's.

2 SIDRA Intersection Analysis

Fairfield Traffic Model

A mesoscopic (meso) Aimsun model, referred to as the "Fairfield Traffic Model", has been developed by Stantec on behalf of Council to use as a robust capacity forecasting tool that can provide visual and performance outputs to show the contributing factors driving infrastructure needs for planners and policy makers to modify planning scenarios.

For the purpose of this assessment, traffic volumes, phasing data and signal offsets have been adopted from the Fairfield Traffic Model.

Traffic Volumes

The following modelling scenarios have been assessed:

- existing condition (2020), with and without development traffic
- future growth scenario (2031), with and without development traffic.

The existing condition (2020) weekday AM and PM peak hour traffic volumes extracted from the Fairfield Traffic Model are summarised in Figure 2 and Figure 3 respectively.

Figure 2:2020 traffic volumes – AM Peak (7:15 to 8:15am)

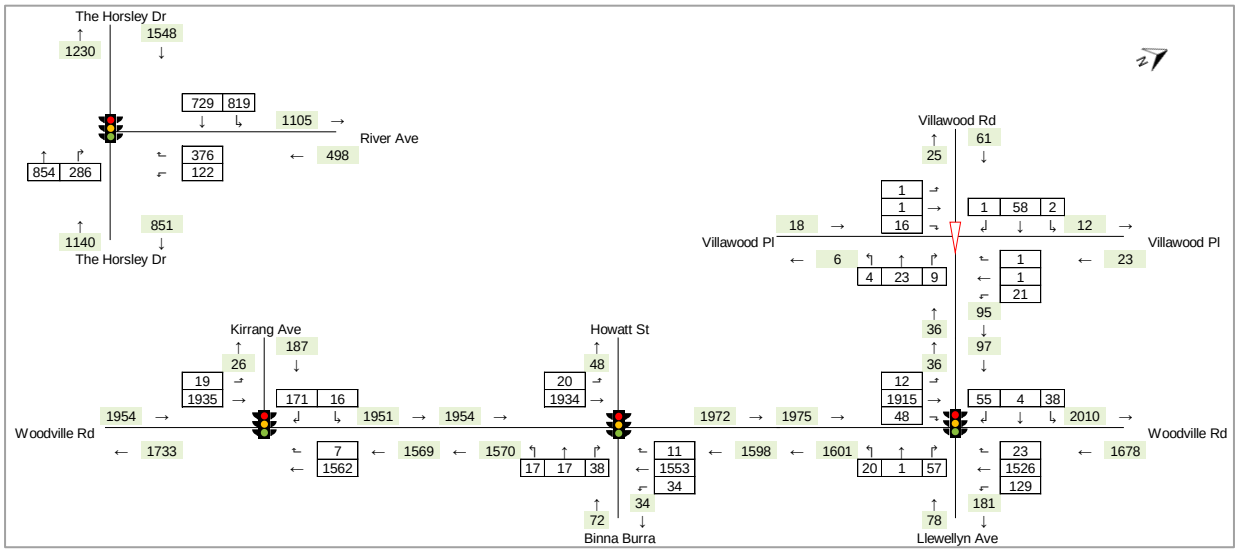
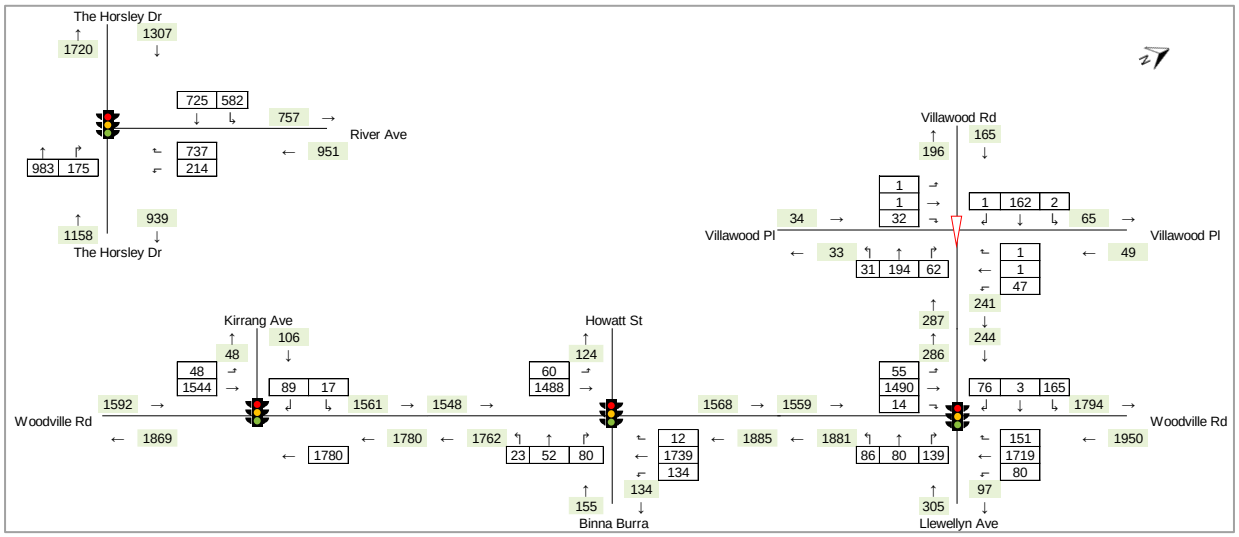


Figure 3:2020 traffic volumes – PM Peak (3:15pm to 4:15pm)



The future growth scenario (2031) weekday AM and PM peak hour traffic volumes extracted from the Fairfield Traffic Model are summarised in Figure 4 and Figure 5 respectively.

Figure 4:2031 traffic volumes – AM Peak (7:15 to 8:15am)

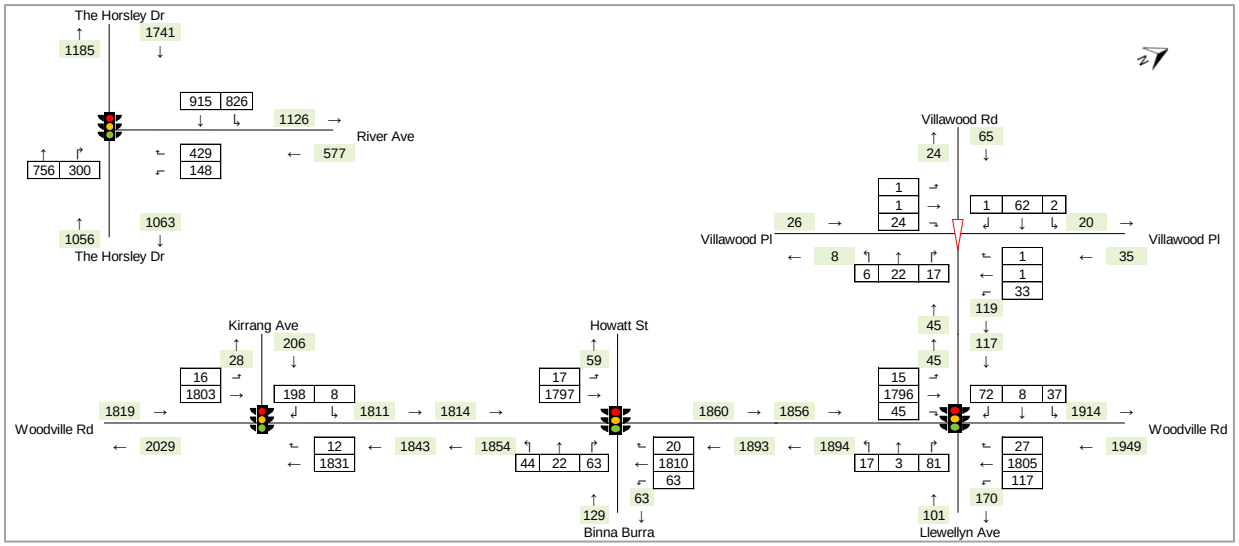
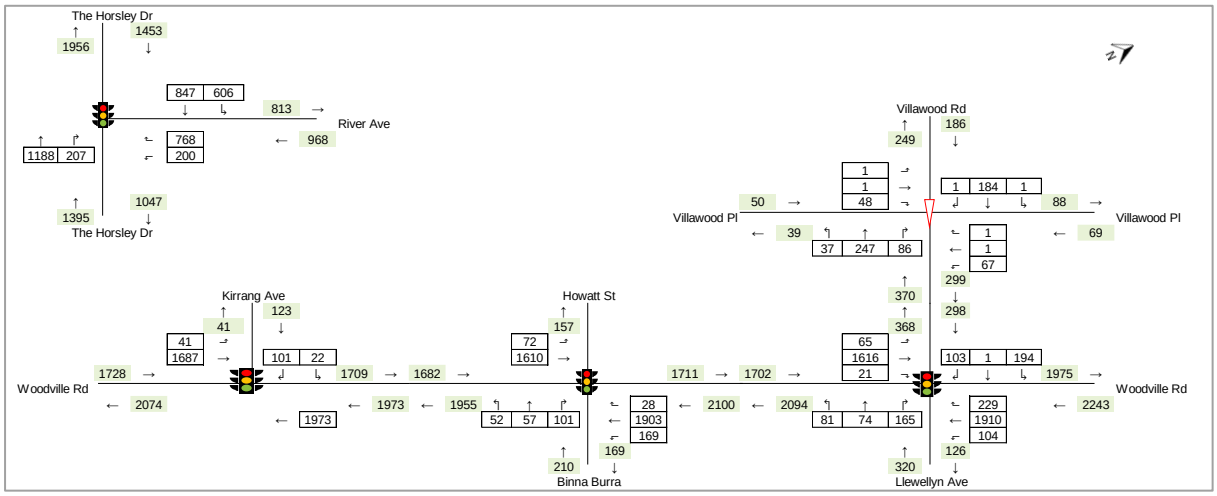


Figure 5:2031 traffic volumes – PM Peak (3:15pm to 4:15pm)



Traffic Generation

Traffic Generation estimates contained in the Traffic Report have been reviewed as part of the Response to Submissions process. Final agreed estimates adopted for the purpose of this assessment are contained in Attachment 1 of this letter[3] and are summarised in Table 2.

Table 2: Traffic generation estimates

Peak Period	Inbound	Outbound	Total
AM	117	178	**295**
PM	250	188	**438**

Based on the above, the indicative development scheme is expected to generate 295 and 438 vehicle trips during the AM and PM peak periods respectively. This is comprised of 116 inbound and 178 outbound vehicle movements in the AM peak period and 251 inbound and 188 outbound vehicle movements in the PM peak period.

[3] Trip Distribution attachment, 2 Kamira Crt Project: Traffic, email from Ryan Duff (Traders in Purple) to Fairfield City Council and Stantec dated 23 March 2022

Traffic Distribution

Traffic distribution assumptions are contained in the Traffic Report and extracted in Attachment 2. These are generally based on a review of select link analysis outputs from the Fairfield Traffic Model and includes the following:

- Inbound: 64 per cent from south, 32 per cent from north and 4 per cent from the east
- Outbound: 56 per cent from south, 40 per cent from north and 4 per cent from the east.

With regards to the distribution of traffic between the site and Woodville Road, we note the assessment assumes the Howatt Street extension operates as one way (eastbound) only. Recent designs reviewed by Stantec indicate the road is proposed to operate as two-way. As such, Stantec has made the following minor modifications to traffic distribution:

- redirection of vehicles approaching Building B from the north to travel along Villawood Place rather than circling the block to Villawood Road/ Kamira Avenue.
- redirection of vehicles approaching Building B from Binna Burra Road to travel along Howatt Street rather than circling the block via Woodville Road/ Villawood Road/ Kamira Avenue.

These modifications do not include any changes to the quantum of traffic at each approach to Woodville Road, and primarily impact the distribution of traffic at the Villawood Place/ Villawood Road intersection. It is recommended that as part of any future traffic impact assessments prepared to support development application(s) for the site, the traffic distribution is reviewed with regards to how vehicles travel between the various access points to/ from Woodville Road based on the proposed access points and Howatt Street road design.

Notwithstanding, during model preparation it was clear that the Kirrang Avenue approach to Woodville Road has limited capacity to accommodate an uplift in traffic during the AM peak period, whereas the Villawood Road approach to Woodville Avenue has additional spare capacity to accommodate traffic. As such, the following modification to traffic distribution was also incorporated:

- redirection of vehicles departing Building C and traveling to the south to egress via the Villawood Road approach to Woodville Road rather than the Kirrang Avenue approach.

Based on the above, Figure 6 and Figure 7 respectively shows the future AM and PM peak hour traffic volumes expected to be generated by the indicative development scheme.

Reference: **Kamira Court Precinct, Villawood - Planning Proposal Traffic Review**

Figure 6:AM peak hour indicative development scheme traffic volumes

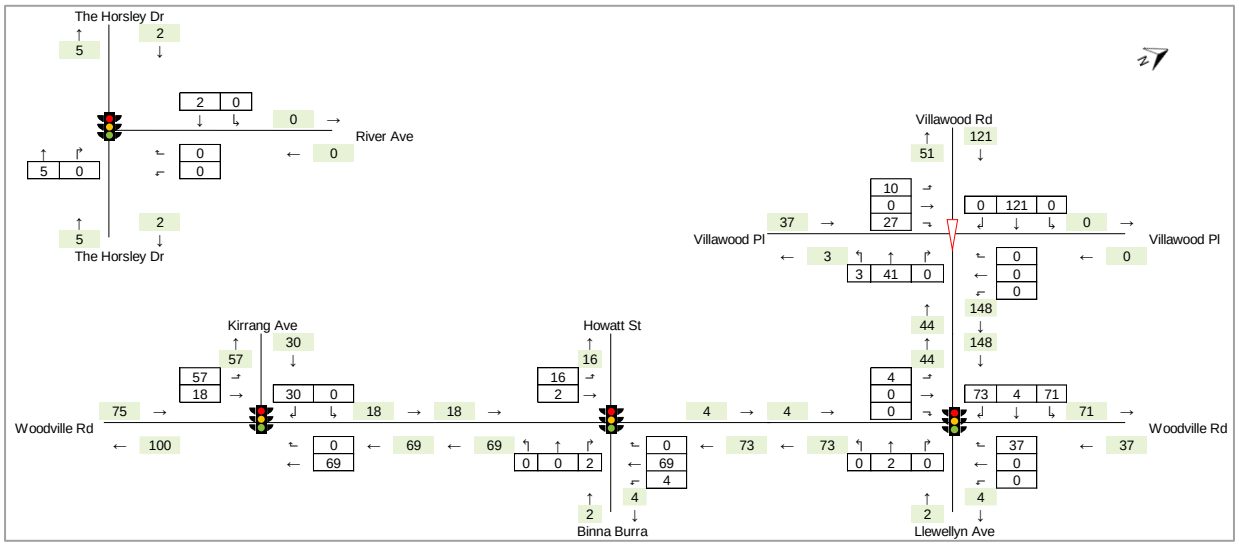
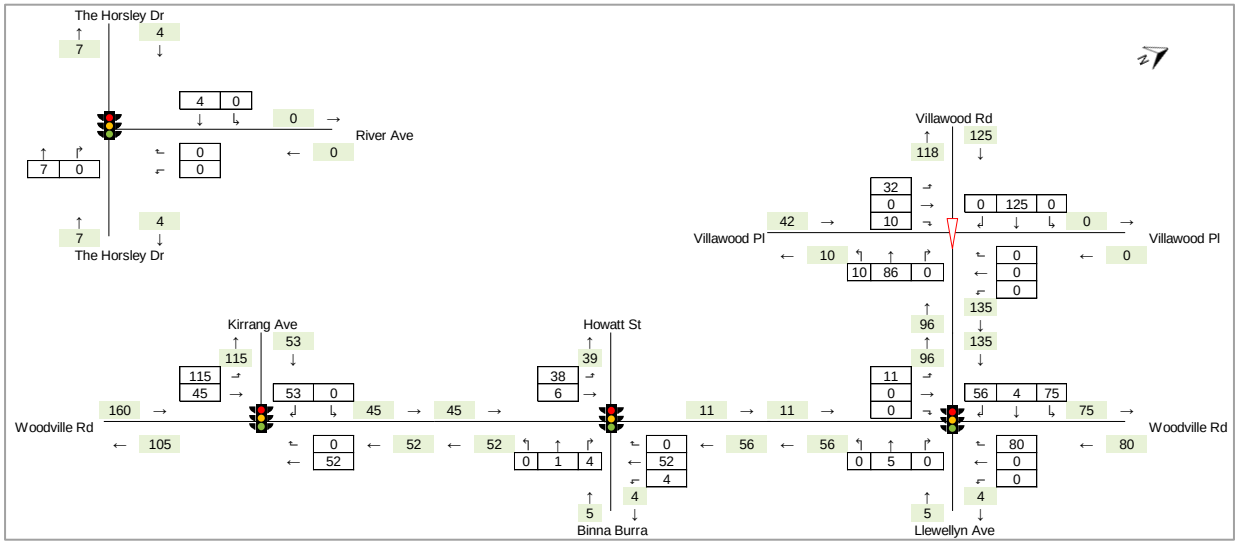


Figure 7: PM peak hour indicative development scheme traffic volumes



Based on the above, the relative uplift in traffic volumes at each intersection following development of the site is detailed in Table 3.

Table 3: 2031 uplift in traffic volumes during peak periods post development

Intersection	Uplift in Traffic Volumes (%)	
	AM	**PM**
Villawood Rd/ Villawood Pl	117.6%	38.9%
Woodville Rd/ Villawood Rd/ Llewellyn Ave	4.8%	5.1%
Woodville Rd/ Howatt St/ Binna Burra St	2.4%	2.7%
Woodville Rd/ Kirrang Ave	4.5%	6.9%
The Horsley Dr/ River Ave	0.2%	0.3%

Model Calibration

Detailed calibration notes are provided in Attachment 2.

Phase arrangements and times have been extracted from the Fairfield Traffic Model for the 2020 scenario and used to calibrate the 2020 model scenarios. It is noted that given the sensitivities within Transport for NSW for alterations to phase timing along key arterial roads which support broader regional movement patterns, only minor changes to phase times were permitted between the with and without development scenarios. This is discussed further throughout the intersection performance section.

Queue lengths have also been extracted from the Fairfield Traffic Model for the 2020 scenario during the relevant peak periods. These were used for base model calibration. The basis of the analysis was to compare queue lengths outputted by the SIDRA model against queue lengths recorded in the meso model and analyse any differences between the two sets, with a particular focus on the operation of any short lanes (i.e. short right turn lanes etc.). The queue length analysis indicates that the queue lengths outputted by the 2020 SIDRA model were similar to queue lengths extracted from the Fairfield Traffic model and are within an acceptable range.

Pedestrian protection has been coded in the SIDRA model as three seconds during each cycle for the relevant turning movements. While this is less than the actual pedestrian protection afforded each movement, site observations indicate there are currently low pedestrian volumes and hence, pedestrian movements are called in less than 50 per cent of cycles, if at all. As such, pedestrian protection of three seconds each cycle for each movement is considered suitably conservative for this assessment.

Intersection Performance

The commonly used measure of intersection performance is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service. Table 4 shows the criteria that SIDRA INTERSECTION software adopts in assessing the level of service.

Table 4: SIDRA INTERSECTION Level of Service criteria

Level of service (LOS)	Average delay per vehicle (secs/veh)	Traffic signals, roundabouts & give ways
A	Less than 14	Good operation
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity, at signals incidents will cause excessive delays
F	Greater than 70	Extreme delay, major treatment required

Table 5 presents a summary of the 2020 operation of the intersection, with full results presented in Attachment 3 of this letter.

Table 5: 2020 operating conditions – without development of the site

Intersection	Peak Period	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Villawood Rd/ Villawood Pl	AM	0.02	5	0	LOS A
	PM	0.07	9	1	LOS A
Woodville Rd/ Villawood Rd/ Llewellyn Ave	AM	0.82	17	200	LOS B
	PM	0.97	54	383	LOS D
Woodville Rd/ Howatt St/ Binna Burra St	AM	0.98	37	270	LOS C
	PM	0.96	30	270	LOS C
Woodville Rd/ Kirrang Ave	AM	0.96	29	290	LOS C
	PM	0.81	8	56	LOS A
The Horsley Dr/ River Ave [1]	AM	0.87	20	116	LOS B
	PM	0.99	35	251	LOS C

[1] Intersection modelled in isolation. As such, results report on the 95th percentile queue rather than average queue.

Table 5 indicates that the study intersections currently operate satisfactorily, with exception of Woodville Road/ Villawood Road/ Llewellyn Avenue that operates near capacity in the PM peak period. While each intersection along Woodville Road generally operates satisfactorily, any right turn bay/ movement typically operates at or over capacity. This is typical for non-critical movements to high demand arterial roads which support broader regional movement patterns, noting that with a 140 second cycle time, vehicles wanting to turn right must wait at least 100 seconds between respective phases, hence contributing to higher average delays on these approaches

Table 6 presents a summary of the operation of the intersection, following full development of the site, full results presented in Attachment 3 of this letter.

Table 6: 2020 operating conditions – with development of the site

Intersection	Peak Period	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Villawood Rd/ Villawood Pl	AM	0.10	7	1	LOS A
	PM	0.16	13	2	LOS A
Woodville Rd/ Villawood Rd/ Llewellyn Ave	AM	1.01	23	222	LOS B
	PM	1.25	68	383	LOS E
Woodville Rd/ Howatt St/ Binna Burra St	AM	0.99	39	270	LOS C
	PM	0.99	37	270	LOS C
Woodville Rd/ Kirrang Ave	AM	1.10	43	358	LOS C
	PM	0.89	15	186	LOS B
The Horsley Dr/ River Ave [1]	AM	0.87	20	116	LOS B
	PM	0.99	35	251	LOS C

[1] Intersection modelled in isolation. As such, results report on the 95th percentile queue rather than average queue.

Table 6 indicates that following development of the site, the Villawood Road/ Villawood Place and The Horsley Drive/ River Avenue are expected to continue operating at a similar level to the without development scenario, with minor increases to degree of saturation, delays and queues (if at all).

In the AM peak period, both Kirrang Avenue and Villawood Roads right turns movements onto Woodville Road are expected to operate over practical capacity with degree of saturation over 1.00. This is a result of additional traffic demand generated by the development. Throughout the modelling process, traffic was redistributed between each approach to Woodville Road to balance delays experienced at each right turn bay, noting this process naturally occurs following construction of a development as vehicles chose travel routes to minimise their individual delay.

In the PM peak period, the right turn bay on the northern approach to the Woodville Road/ Villawood Road/ Llewellyn Avenue intersection is similarly expected to operate over practical capacity with degree of saturation over 1.00. While the lane currently has significant length to accommodate any queuing, the capacity of the turn is limited by the green time available to be allocated to the movement. If additional green time is allocated to this right turn movement, the performance of Woodville Road deteriorates. To understand this better, a scenario was tested with SIDRA enabled to determine optimal phase times to balance overall delays at the intersection. As expected, this resulted in an improvement to results for the right turn movement with degree of saturation of 0.94 and average delays of 64 seconds, however both the north and southbound performance along Woodville Road deteriorated, with average delays for through traffic at the northern approach increasing by 30 seconds.

The development also notably impacts performance of the right turn movement at the Llewellyn Avenue approach to Woodville Road in the PM period. This is primarily a result of the additional development traffic turning left at the Villawood Road approach to Woodville Road conflicting with vehicles waiting to turn right at Llewellyn Avenue, noting these movements run in the same phase. Degree of saturation for right turning vehicles at Llewellyn Avenue increases from 0.94 to 1.00, average delays increase from 96 to 130 seconds and average queues increase from 65 to 79 metres in the PM peak period.

Table 7 presents a summary of the 2031 growth scenario operation of the intersections, without the development, with full results presented in Attachment 3 of this letter.

Table 7: 2031 operating conditions – without development of the site

Intersection	Peak Period	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Villawood Rd/ Villawood Pl	AM	0.03	6	0	LOS A
	PM	0.12	11	1	LOS A
Woodville Rd/ Villawood Rd/ Llewellyn Ave	AM	0.91	25	318	LOS B
	PM	1.10	110	645	LOS F
Woodville Rd/ Howatt St/ Binna Burra St	AM	1.90	17	270	LOS B
	PM	1.05	59	270	LOS E
Woodville Rd/ Kirrang Ave	AM	1.08	21	188	LOS B
	PM	0.89	15	230	LOS B
The Horsley Dr/ River Ave [1]	AM	0.92	24	154	LOS B
	PM	1.04	41	312	LOS C

[1] Intersection modelled in isolation. As such, results report on the 95th percentile queue rather than average queue.

Table 7 indicates the in 2031, the study intersections are expected to currently operate satisfactorily, with exception of Woodville Road/ Villawood Road/ Llewellyn Avenue and Woodville Road/ Kirrang Avenue in the PM peak periods that are expected to operate at or over capacity due to increased traffic volumes associated with regional traffic growth.

Kirrang Avenue approach right turn movement onto Woodville Road is expected to operate over practical capacity with degree of saturation of 1.08, with high average delays of 167 seconds and average queues of 114 metres in the AM peak period. By comparison, the Villawood Road approach right turn movement onto Woodville Road is expected to operate with a degree of saturation of 0.55 indicating it has spare capacity to accommodate additional traffic movements.

Table 8 presents a summary of the 2031 growth scenario operation of the intersections, with the development, with full results presented in Attachment 3 of this letter.

Table 8: 2031 operating conditions – with development of the site

Intersection	Peak Period	Degree of saturation (DOS)	Average delay (sec)	Average queue (m)	Level of service (LOS)
Villawood Rd/ Villawood Pl	AM	0.17	7	4	LOS A
	PM	0.28	17	3	LOS B
Woodville Rd/ Villawood Rd/ Llewellyn Ave	AM	1.16	35	318	LOS C
	PM	1.18	132	666	LOS F
Woodville Rd/ Howatt St/ Binna Burra St	AM	0.91	19	270	LOS B
	PM	1.08	70	270	LOS E
Woodville Rd/ Kirrang Ave	AM	1.23	272	173	LOS F
	PM	0.97	29	277	LOS C
The Horsley Dr/ River Ave [1]	AM	0.92	24	155	LOS B
	PM	1.04	41	312	LOS C

[1] Intersection modelled in isolation. As such, results report on the 95th percentile queue rather than average queue.

Table 5 indicates that following development of the site, the Villawood Road/ Villawood Place and The Horsley Drive/ River Avenue are expected to continue operating at a similar level to the without development scenario, with minor increases to degree of saturation, delays and queues (if at all).

Similar to the 2020 scenario, in the AM peak period, additional traffic demand generated by the development is expected to impact performance of both Kirrang Avenue and Villawood Roads right turns movements onto Woodville Road. Average delays for the right turn movement at the Kirrang Avenue approach to Woodville Road is expected to increase from 167 seconds to 281 post development, and the Villawood Road right turn movement is expected to increase from 74 to 210 seconds.

In the PM peak period, the development is expected to impact the operation of each intersection along Woodville Road, with overall intersection delays increasing from 110 to 132 seconds at Woodville Road/ Villawood Road, from 59 to 69 seconds at Woodville Road/ Howatt Street and 15 to 29 seconds at Woodville Road/ Kirrang Avenue. Similar to the 2020 scenario, the development is expected to result in the right turn bay on the northern approach to the Woodville Road Villawood Road/ Llewellyn Avenue intersection exceeding effective capacity, with degree of saturation expected to increase from 0.98 to 1.04. Notwithstanding, the average queue of 113 metres and 95 percentile queues of 185 metres can be accommodated within the existing storage bay. The development is also expected to increase delays for the Llewellyn Avenue right turn movement at Woodville Road, from 192 to 245 seconds.

Summary and Mitigation of Impact

Following development of the site, The Horsley Drive and River Avenue intersection is expected to continue operating at a similar level to the without development scenario in both 2020 and 2031, with minor increases to degree of saturation, delays and queues (if at all).

The intersection of Villawood Road and Villawood Place is expected to continue operating well and with spare capacity following development of the site in both the 2020 and 2031 scenario.

The development is expected to impact the performance of the following key turning movements along Woodville Road:

- right turn at Kirrang Avenue and Villawood Road approach to Woodville Road during the AM peak period
- right turn on northern approach of Woodville Road to Villawood Road during the PM peak period
- right turn at Llewellyn Avenue during the PM peak period.

Stantec have completed a high-level review of mitigation opportunities to offset the impact of the development and Villawood Town Centre generally.

Due to physical constraints at each Woodville Road intersection, there are limited opportunities to provide significant improvements to capacity through physical infrastructure works. Notwithstanding, a potential option may be to revise the Kirrang Avenue and Woodville Road intersection through moving the pedestrian crossing along Woodville Road from the southern approach to the northern approach of the intersection. This would:

- remove interference of pedestrians preventing vehicles from turning right out of Kirrang Avenue
- result in interference of pedestrians for vehicles turning left out of Kirrang Avenue, however, this is considered to be a minor consequence given the low left turn demand
- enables Kirrang Avenue to be line marked as a double right turn, with a shared left and right turn kerb side lane, increasing the capacity for vehicles to turn right out of Kirrang Avenue
- reduces demand for the Villawood Road right turn to Woodville Road as vehicles redistribute to turn right at Kirrang Avenue.

This mitigation would likely address the primary development impact during the morning peak period discussed above. Notwithstanding, Transport for NSW preference is for pedestrian crossings to be constructed at each leg of an intersection and hence, Transport for NSW may not approve of this mitigation.

With regards to the right turn on northern approach of Woodville Road to Villawood Road during the PM peak period, we note that while the turning movement is expected to exceed its practical capacity, the average and 95 percentile queues can be accommodated within the existing right turn storage bay. As such, modifications to traffic signal timings would be required to improve performance of this movement, however this is naturally not encouraged given sensitivities of Transport for NSW.

3 Conclusion

Access to/ from Villawood Town Centre is dependent on access to Woodville Road, being the key arterial road which support broader regional movement patterns across Sydney. As such, the addition of

295 and 438 vehicle trips in the AM and PM peak periods respectively is expected to impact the performance of the following key turning movements along Woodville Road:

- right turn at Kirrang Avenue and Villawood Road approach to Woodville Road during the AM peak period
- right turn on northern approach of Woodville Road to Villawood Road during the PM peak period
- right turn at Llewellyn Avenue during the PM peak period.

Stantec have completed a high-level review of mitigation opportunities to offset the impact of the development and Villawood Town Centre generally. Modifications to traffic signal timings to improve access into the town centre is naturally not encouraged given sensitivities of Transport for NSW. Due to physical constraints at each Woodville Road intersection, there are limited opportunities to provide significant improvements to capacity through physical infrastructure works. Notwithstanding, there may be an opportunity to improve performance of Kirrang Street during the AM peak period granted Transport and Council's support for such a solution.

It is recommended that any development in the Villawood Town Centre is conditioned to prepare and implement a Green Travel Plan to help reduce the quantum of traffic generated by the development through encouraging residents/ staff/ visitors to travel by alternate modes of travel to the private car.

As discussed, Stantec made minor modifications to traffic distribution based on Howatt Street extension proposed to operate as two-way rather than one-way as assumed by Traffwise. It is recommended this is refined further based on the proposed access points and Howatt Street road design as part of any future traffic impact assessments prepared to support development application(s) for the site.

Regards,

STANTEC AUSTRALIA PTY LTD

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Attachment: SIDRA Outputs

Attachment 1 – Trip Generation

Trip Generation - Building A | Stage 3

Residential Component - High Density

Unit Type	Quantity	Number of Bedrooms	Trip Generation		
			Weekday AM Peak	Weekday PM Peak	Daily Trips
1-Bed Unit	24	24			
2-Bed Unit	110	220			
3-Bed Unit	24	72			
Total Number of Units		158			
		TOTAL TRIPS	47	47	395.0
		IN	9	38	198
		OUT	38	9	198

Supermarket

Type	GLFA m2	Weekday AM Peak	Weekday PM Peak	Daily Trips
Supermarket	1216			
	TOTAL TRIPS	47	188	1885
	IN	24	94	942
	OUT	24	94	942

Other Retail

Type	GLFA m2	Weekday AM Peak	Weekday PM Peak	Daily Trips
Other Retail	1273			
	TOTAL TRIPS	29	59	586
	IN	15	29	293
	OUT	15	29	293

Total Peak Hour Trips

Peak Period	IN	Out	Total
Weekday AM Peak	48	76	124
Weekday PM Peak	161	133	294

Trip Generation - Building B | Stage 1

Residential Component - High Density

Unit Type	Quantity	Number of Bedrooms	Trip Generation		
			Weekday AM Peak	Weekday PM Peak	Daily Trips
1-Bed Unit	25	25			
2-Bed Unit	64	128			
3-Bed Unit	23	69			
Total Number of Units		112			
		TOTAL TRIPS	34	34	280.0
		IN	7	27	140
		OUT	27	7	140

Library

Type	GFA m2	GLFA m2	Weekday AM Peak	Weekday PM Peak	Daily Trips
Library	328	246			
		TOTAL TRIPS	1	7	33
		IN	1	3	16
		OUT	0	3	16

Ancillary Café

Type	GFA m2	GLFA m2	Weekday AM Peak	Weekday PM Peak	Daily Trips
Ancillary Café	57	43			
		TOTAL TRIPS	It is assumed that the ancillary café would be mostly used by the residents and visitors in the area. Therefore, no additional vehicular		
		IN			
		OUT			

Total Peak Hour Trips

Peak Period	IN	Out	Total
Weekday AM Peak	8	27	35
Weekday PM Peak	30	10	40

Trip Generation - Building C | Stage 2

Residential Component - High Density

Unit Type	Quantity	Number of Bedrooms	Trip Generation		
			Weekday AM Peak	Weekday PM Peak	Daily Trips
1-Bed Unit	14	14			
2-Bed Unit	57	114			
3-Bed Unit	9	27			
Total Number of Units		80			
		TOTAL TRIPS	24	24	200.0
		IN	5	19	100
		OUT	19	5	100

Child Care Centre

Type	Number of Students	Weekday AM Peak	Weekday PM Peak	Daily Trips
Child Care Centre	90			
	TOTAL TRIPS	90	54	360
	IN	45	27	180
	OUT	45	27	180

Medical Centre

Type	Consulting Rooms	Weekday AM Peak	Weekday PM Peak	Daily Trips
Medical Centre	8			
	TOTAL TRIPS	22	26	186
	IN	11	13	93
	OUT	11	13	93

Total Peak Hour Trips

Peak Period	IN	Out	Total
Weekday AM Peak	61	75	136
Weekday PM Peak	59	45	104

Grand Total Peak Hour Trips

Peak Period	IN	Out	Total
Weekday AM Peak	116	178	295
Weekday PM Peak	251	188	438

Attachment 2 – Trip Distribution

Figure 23 Adopted Trip Distribution – Building A | Stage 3

Figure 24 Adopted Trip Distribution – Building B | Stage 1

Figure 25 Adopted Trip Distribution – Building C | Stage 2

Attachment 3 – Calibration Notes

Model Calibration Notes			
Site Information	Name	Woodville Road/ Kirrang Road	
	TCS Number	12	
	Peak Hour	7:15am to 8:15am	3:15pm to 4:15pm
Lane Geometry	Lane Utilisation		
	Geometry		
	Capacity Adjustment	Sth Thru = -45%	
Lane Movements	Flow Proportions		
	Blockage Calibration		
Pedestrians	Pedestrian Minimum Time		
	Pedestrian Maximum Time		
	Pedestrian Actuation		
Volumes	Peak Flow Factor		
	Volume adjustment		
Priorities	Priorities	West App LT conflict South Thr (Turn on Red)	West App LT conflict South Thr (Turn on Red)
Gap Acceptance	Opposing Peds (Signals)	Coded as three seconds. While this is less than the actual pedestrian protection afforded each movement, site observations indicate there are currently low pedestrian volumes and hence, pedestrian movements are called in less than 50 per cent of cycles, if at all. As such, pedestrian protection of three seconds each cycle for each movement is considered suitably conservative for this assessment.	
	Minimum Departures		
Vehicle Movement Data	Signal Coordination		
	Start Loss		
	End Loss		
	Minimum Green		
	Maximum Green	West App LT = 18 sec	
	Phase Actuation		
	Late Start		
	Turn On Red	West App LT	West App LT
Phasing & Timing	Phase Sequence	A, B	A, B
	Reference Phase	A	A
	Variable Phase		
	Yellow Time		
	All-Red Time		
	Dummy Phases		
	Filter Option		
Intersection	Area Factor		
	Extra Bunching		
Network	Signal Offsets	0 seconds before start of Site 968 Phase A	0 seconds before start of Site 968 Phase A

Model Calibration Notes			
Site Information	Name	Woodville Road/ Villawood Road	
	TCS Number	968	
	Peak Hour	7:15am to 8:15am	3:15pm to 4:15pm
Lane Geometry	Lane Utilisation		
	Geometry		
	Capacity Adjustment		
Lane Movements	Flow Proportions		
	Blockage Calibration		
Pedestrians	Pedestrian Minimum Time		
	Pedestrian Maximum Time		
	Pedestrian Actuation		
Volumes	Peak Flow Factor		
	Volume adjustment		
Priorities	Priorities		
Gap Acceptance	Opposing Peds (Signals)	Coded as three seconds. While this is less than the actual pedestrian protection afforded each movement, site observations indicate there are currently low pedestrian volumes and hence, pedestrian movements are called in less than 50 per cent of cycles, if at all. As such, pedestrian protection of three seconds each cycle for each movement is considered suitably conservative for this assessment.	
	Minimum Departures		
Vehicle Movement Data	Signal Coordination		
	Start Loss		
	End Loss		
	Minimum Green	Nth RT = 12 sec	Sth RT = 18 sec
	Maximum Green		
	Phase Actuation		
	Late Start		
	Turn On Red	West App LT - removed from model as SIDRA struggled to model multiple phase transitions.	West App LT - removed from model as SIDRA struggled to model multiple phase transitions.
Phasing & Timing	Phase Sequence	A, C, D, E, E1, E2	A, C, D, E, E1, E2
	Reference Phase	A	A
	Variable Phase	E1, E2	E1, E2
	Yellow Time		
	All-Red Time		
	Dummy Phases		
	Filter Option		
Intersection	Area Factor		
	Extra Bunching		
Network	Signal Offsets		

Model Calibration Notes			
Site Information	Name	Woodville Road/ Villawood Road	
	TCS Number	1201	
	Peak Hour	7:15am to 8:15am	3:15pm to 4:15pm
Lane Geometry	Lane Utilisation		
	Geometry		
	Capacity Adjustment	Sth App Thr = -20%	Sth App Thr = -35%
Lane Movements	Flow Proportions		
	Blockage Calibration		
Pedestrians	Pedestrian Minimum Time		
	Pedestrian Maximum Time		
	Pedestrian Actuation		
Volumes	Peak Flow Factor		
	Volume adjustment		
Priorities	Priorities	West App LT conflict South Thr (Turn on Red)	West App LT conflict South Thr (Turn on Red)
Gap Acceptance	Opposing Peds (Signals)	Coded as three seconds. While this is less than the actual pedestrian protection afforded each movement, site observations indicate there are currently low pedestrian volumes and hence, pedestrian movements are called in less than 50 per cent of cycles, if at all. As such, pedestrian protection of three seconds each cycle for each movement is considered suitably conservative for this assessment.	
	Minimum Departures		
Vehicle Movement Data	Signal Coordination		
	Start Loss		
	End Loss		
	Minimum Green		
	Maximum Green		
	Phase Actuation		
	Late Start		
	Turn On Red		
Phasing & Timing	Phase Sequence	A,B,C	A,B,C
	Reference Phase	A	A
	Variable Phase		
	Yellow Time		
	All-Red Time		
	Dummy Phases		
	Filter Option		
Intersection	Area Factor		
	Extra Bunching		
Network	Signal Offsets	13 seconds before start of Site 968 Phase A	5 seconds before start of Site 968 Phase A

Model Calibration Notes			
Site Information	Name	The Horsley Drive/ River Avenue	
	TCS Number	1546	
	Peak Hour	7:15am to 8:15am	3:15pm to 4:15pm
Lane Geometry	Lane Utilisation		
	Geometry		
	Capacity Adjustment		
Lane Movements	Flow Proportions	East App LT = 100% Exit Lane 2 due to bus only short lane in Lane 1	East App LT = 100% Exit Lane 2 due to bus only short lane in Lane 1
	Blockage Calibration		
Pedestrians	Pedestrian Minimum Time		
	Pedestrian Maximum Time		
	Pedestrian Actuation		
Volumes	Peak Flow Factor		
	Volume adjustment		
Priorities	Priorities		
Gap Acceptance	Opposing Peds (Signals)	Coded as three seconds. While this is less than the actual pedestrian protection afforded each movement, site observations indicate there are currently low pedestrian volumes and hence, pedestrian movements are called in less than 50 per cent of cycles, if at all. As such, pedestrian protection of three seconds each cycle for each movement is considered suitably conservative for this assessment.	
	Minimum Departures		
Vehicle Movement Data	Signal Coordination		
	Start Loss		
	End Loss		
	Minimum Green	North App Thr = 40 sec	East App RT = 31 sec
	Maximum Green		
	Phase Actuation		
	Late Start		
Phasing & Timing	Phase Sequence	A, B, C, D	A, B, C, D
	Reference Phase	A	A
	Variable Phase		
	Yellow Time		
	All-Red Time		
	Dummy Phases		
	Filter Option		
Intersection	Area Factor		
	Extra Bunching		

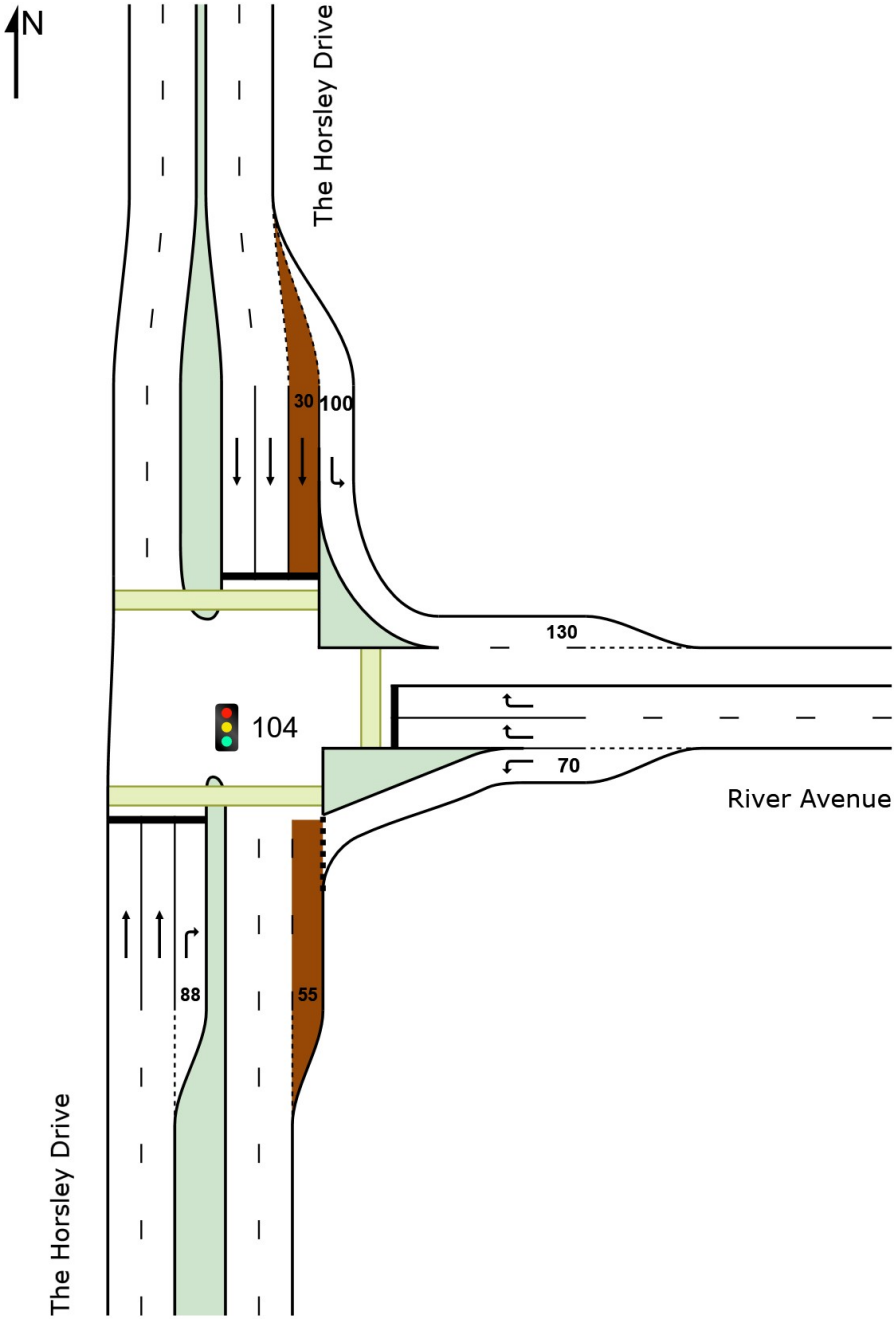
Attachment 4 - SIDRA Outputs

SITE LAYOUT

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution | **Template: Layouts**

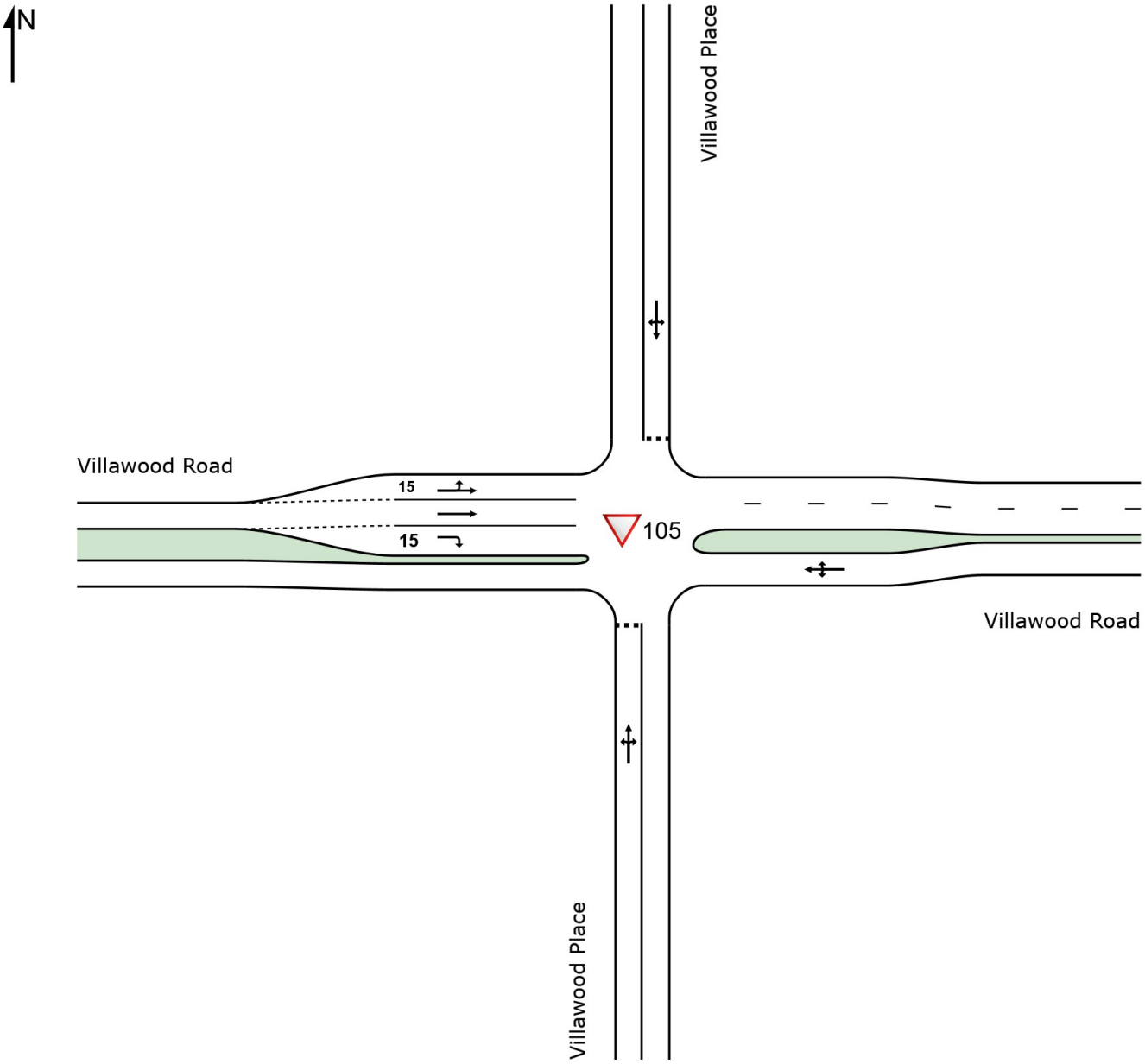
Site: 105 [Villawood Road and Villawood Place (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

Network: 1 [2020 AM Peak Without Dev (Network Folder: 2020 Scenario)]

Villawood Road and Villawood Place
Site Category: 2020 AM Peak Without Dev
Give-Way (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

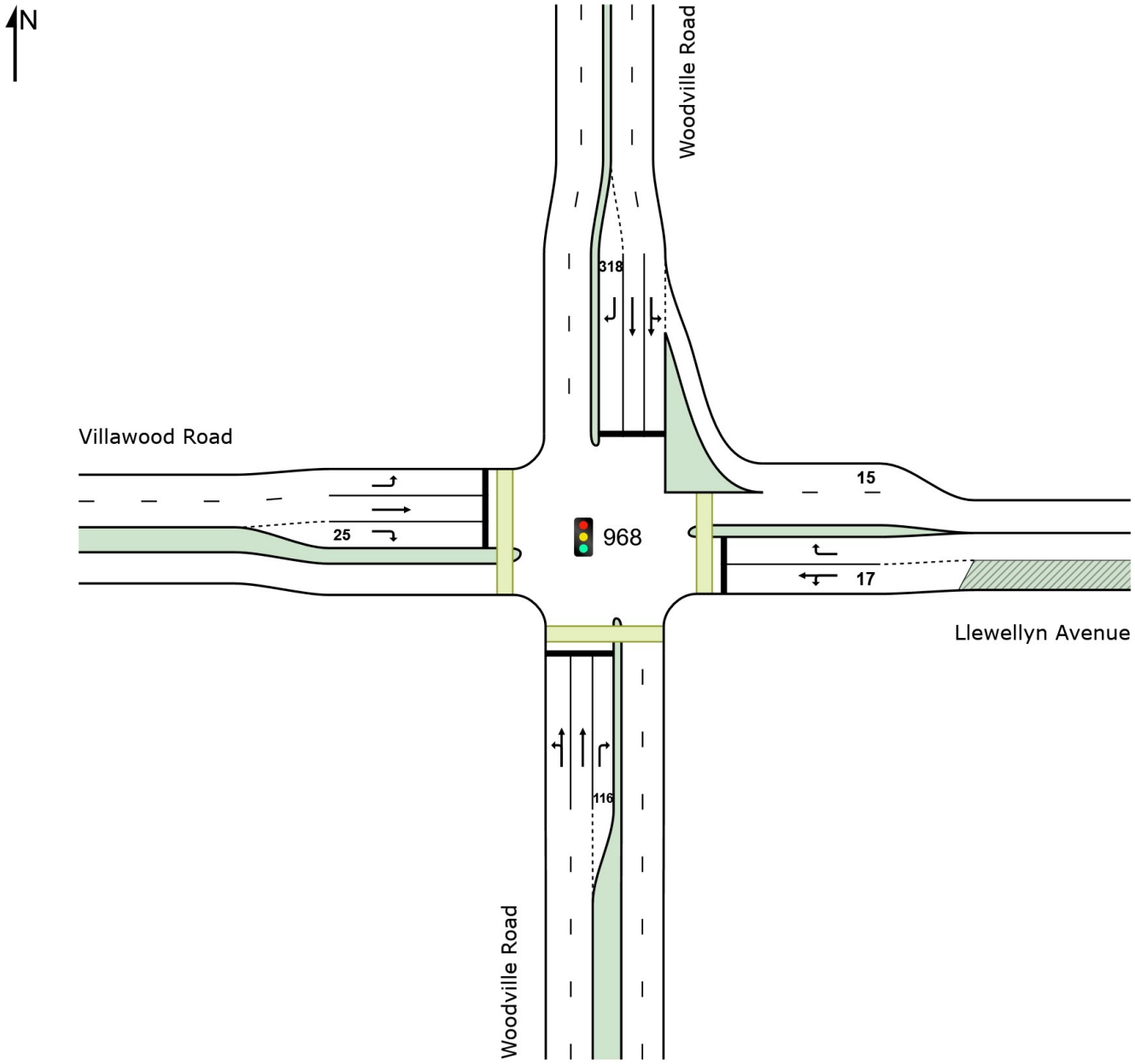
Network: 1 [2020 AM Peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default - Import
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, E1*, E2*
Output Phase Sequence: A, C, D, E, E1*
(* Variable Phase)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.


N
Woodville Road
318
Villawood Road
15
25
968
17
Llewellyn Avenue
116
Woodville Road

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

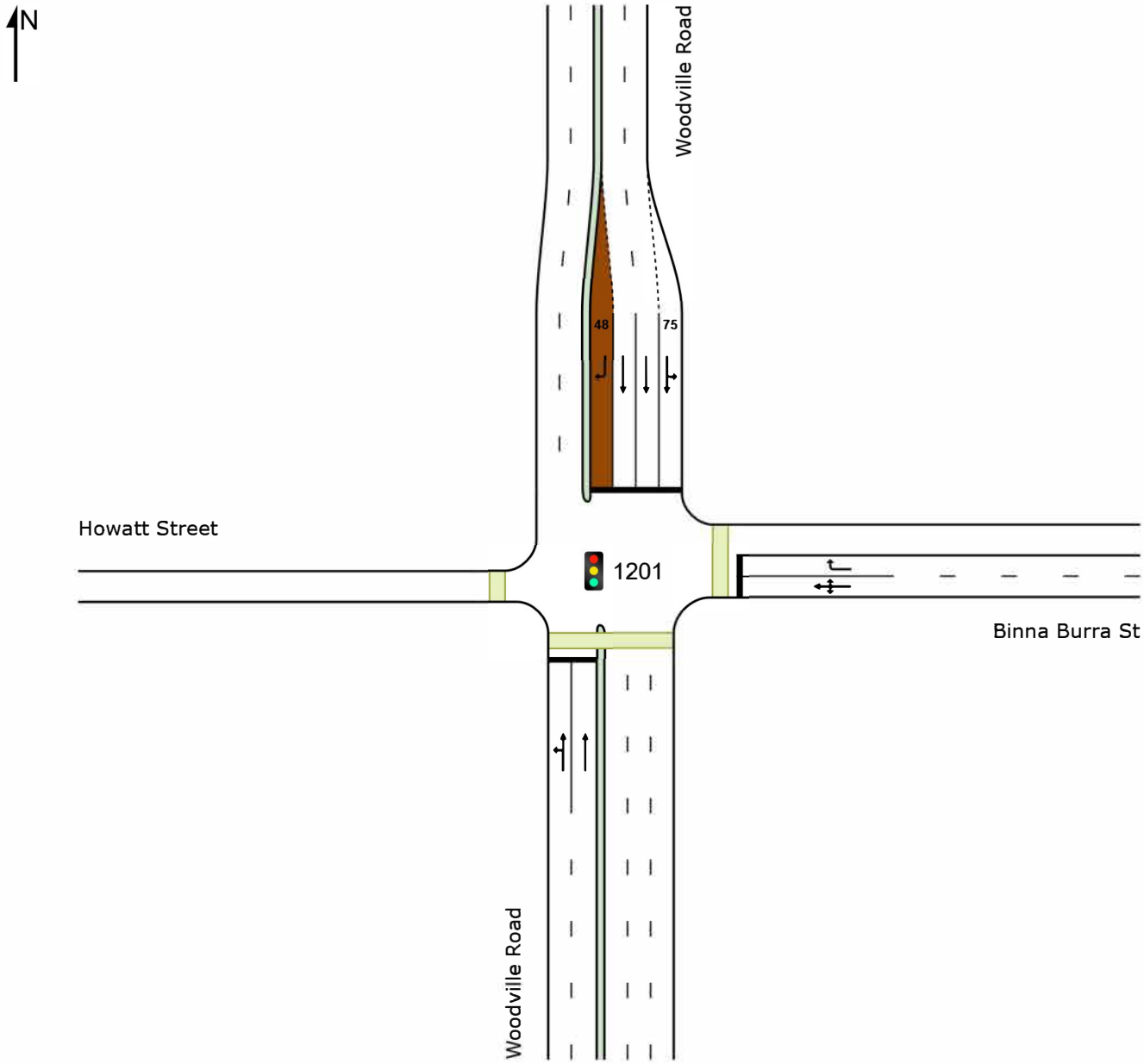
Network: 1 [2020 AM Peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.


N
Woodville Road
48
75
Howatt Street
1201
Binna Burra St
Woodville Road

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

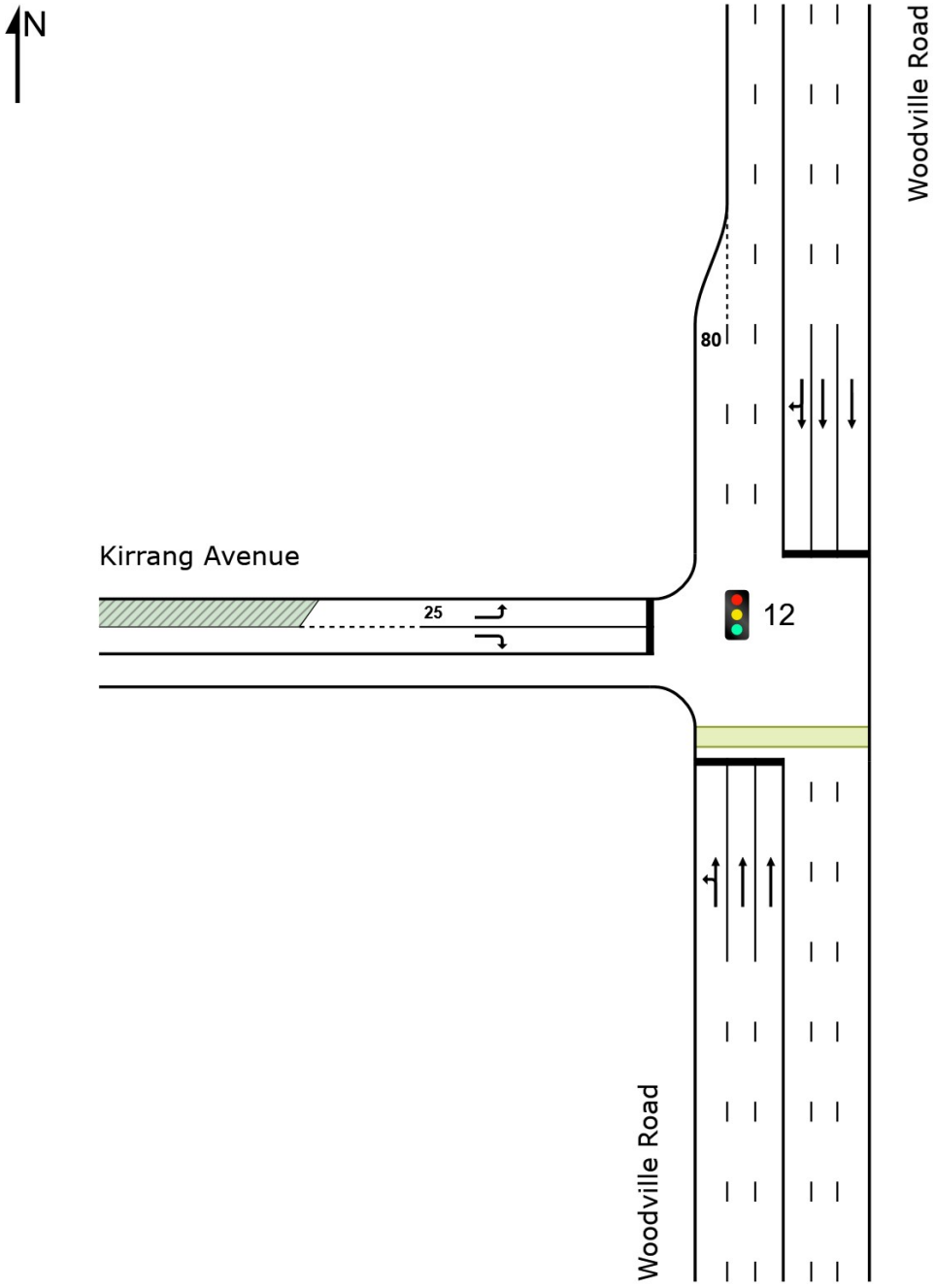
Network: 1 [2020 AM Peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Kirrang Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Friday, April 29, 2022 7:12:42 AM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\N20800-20899\N208790 Fairfield City Consultant Strate\Modelling\Villawood\220428sid-N208790 villawood - redistribution.sip9

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2020 Scenario - AM Peak | Without Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	854	105	899	12.3	0.347	5.9	LOS A	8.3	64.2	0.41	0.37	0.41	54.7
3	R2	286	8	301	2.8	* 0.870	38.9	LOS C	11.6	82.9	1.00	0.96	1.30	36.3
Approach		1140	113	1200	9.9	0.870	14.2	LOS A	11.6	82.9	0.56	0.52	0.64	48.5
East: River Avenue														
4	L2	122	20	128	16.4	0.135	9.0	LOS A	1.6	12.7	0.33	0.64	0.33	51.2
26	R2	376	35	396	9.3	* 0.813	57.2	LOS E	10.5	79.3	1.00	0.93	1.24	30.7
Approach		498	55	524	11.0	0.813	45.4	LOS D	10.5	79.3	0.84	0.86	1.02	34.1
North: The Horsley Drive														
27	L2	819	58	862	7.1	0.480	7.5	LOS A	0.0	0.0	0.00	0.52	0.00	54.4
8	T1	729	130	767	17.8	* 0.542	24.7	LOS B	14.4	115.6	0.82	0.71	0.82	42.7
Approach		1548	188	1629	12.1	0.542	15.6	LOS B	14.4	115.6	0.39	0.61	0.39	48.3
All Vehicles		3186	356	3354	11.2	0.870	19.7	LOS B	14.4	115.6	0.52	0.62	0.57	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

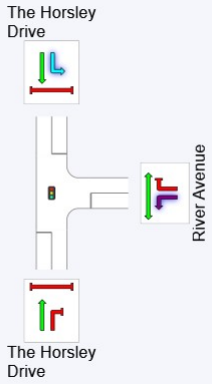
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	217.0	224.5	1.03

East: River Avenue												
P6	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	210.3	215.9	1.03
North: The Horsley Drive												
P7	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	216.2	223.5	1.03
All Pedestrians		150	158	44.3	LOS E	0.1	0.1	0.94	0.94	214.5	221.3	1.03

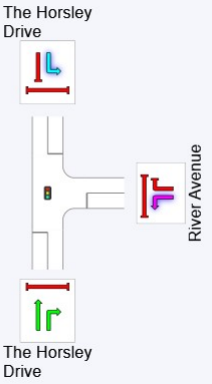
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

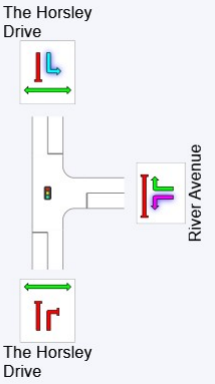
Phase A **REF**



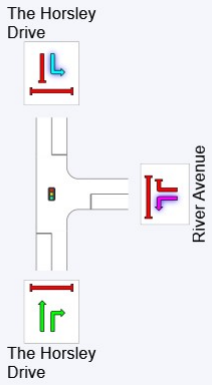
Phase B



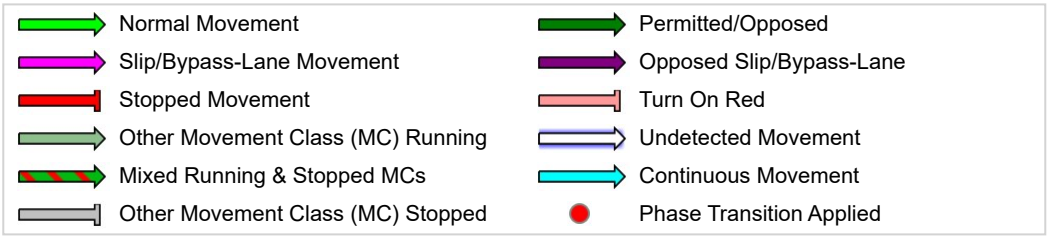
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	46	64	87
Green Time (sec)	40	12	17	7
Phase Time (sec)	46	18	23	13
Phase Split	46%	18%	23%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	1195	166	1258	13.9	0.547	12.5	LOS A	20.2	157.8	0.59	0.54	0.59	49.8
3	R2	207	9	218	4.3	* 0.660	32.1	LOS C	7.0	51.1	0.98	0.82	0.99	38.8
Approach		1402	175	1476	12.5	0.660	15.4	LOS B	20.2	157.8	0.65	0.58	0.65	47.8
East: River Avenue														
4	L2	200	22	211	11.0	0.204	11.0	LOS A	3.9	29.7	0.39	0.66	0.39	50.0
26	R2	768	60	808	7.8	* 1.044	130.7	LOS F	41.7	311.8	1.00	1.25	1.83	18.8
Approach		968	82	1019	8.5	1.044	106.0	LOS F	41.7	311.8	0.87	1.13	1.53	21.6
North: The Horsley Drive														
27	L2	606	26	638	4.3	0.349	6.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
8	T1	851	67	896	7.9	* 0.666	34.8	LOS C	22.0	164.4	0.90	0.79	0.90	38.3
Approach		1457	93	1534	6.4	0.666	23.0	LOS B	22.0	164.4	0.53	0.68	0.53	43.8
All Vehicles		3827	350	4028	9.1	1.044	41.2	LOS C	41.7	311.8	0.66	0.76	0.83	35.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

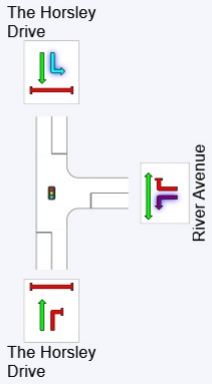
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	227.0	224.5	0.99

East: River Avenue												
P6	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	220.3	215.9	0.98
North: The Horsley Drive												
P7	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	226.2	223.5	0.99
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	224.5	221.3	0.99

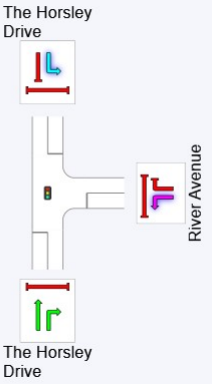
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

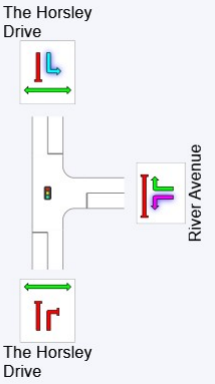
Phase A REF



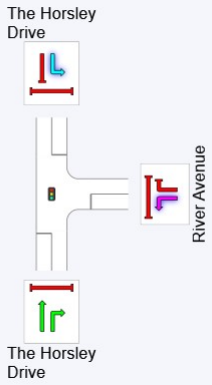
Phase B



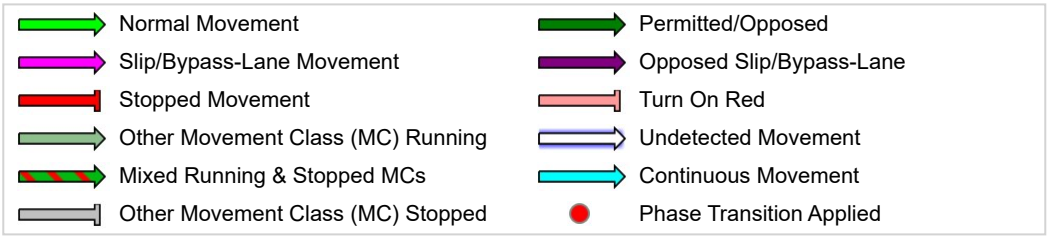
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	49	67	104
Green Time (sec)	43	12	31	10
Phase Time (sec)	49	18	37	16
Phase Split	41%	15%	31%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2020 Scenario - PM Peak | Without Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	983	120	1035	12.2	0.442	11.4	LOS A	14.9	115.0	0.54	0.48	0.54	50.6
3	R2	175	4	184	2.3	* 0.576	31.9	LOS C	5.9	41.9	0.97	0.80	0.97	39.0
Approach		1158	124	1219	10.7	0.576	14.5	LOS A	14.9	115.0	0.60	0.53	0.60	48.4
East: River Avenue														
4	L2	214	20	225	9.3	0.210	9.5	LOS A	3.5	26.5	0.34	0.65	0.34	51.0
26	R2	737	38	776	5.2	* 0.988	97.6	LOS F	34.4	251.2	1.00	1.13	1.58	23.0
Approach		951	58	1001	6.1	0.988	77.8	LOS F	34.4	251.2	0.85	1.02	1.30	26.2
North: The Horsley Drive														
27	L2	582	29	613	5.0	0.336	6.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
8	T1	725	65	763	9.0	* 0.558	32.4	LOS C	17.7	133.2	0.85	0.74	0.85	39.3
Approach		1307	94	1376	7.2	0.558	20.7	LOS B	17.7	133.2	0.47	0.64	0.47	44.9
All Vehicles		3416	276	3596	8.1	0.988	34.5	LOS C	34.4	251.2	0.62	0.71	0.75	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

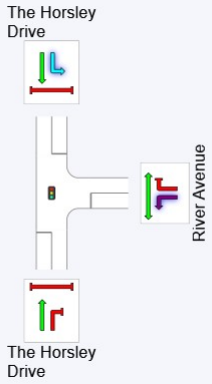
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	227.0	224.5	0.99

East: River Avenue												
P6	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	220.3	215.9	0.98
North: The Horsley Drive												
P7	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	226.2	223.5	0.99
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	224.5	221.3	0.99

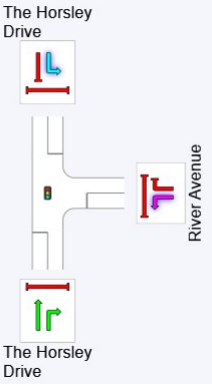
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

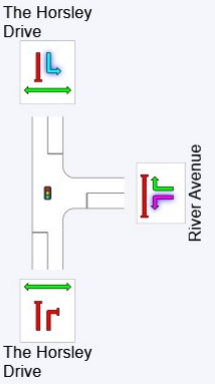
Phase A REF



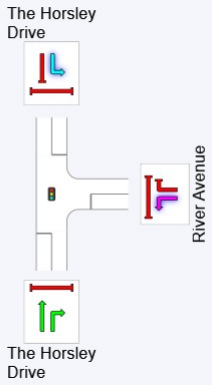
Phase B



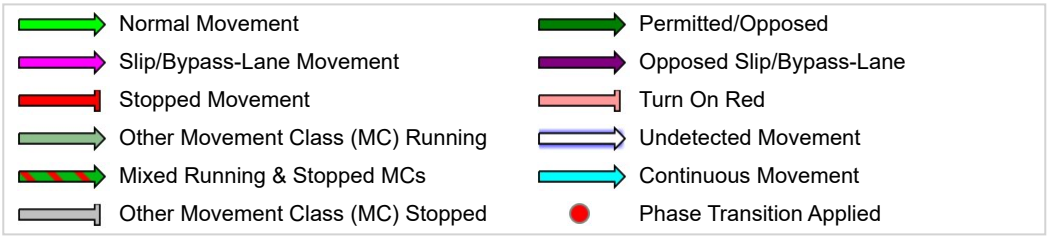
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	50	68	105
Green Time (sec)	44	12	31	9
Phase Time (sec)	50	18	37	15
Phase Split	42%	15%	31%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2020 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 5 [2020 PM peak Without Dev (Network Folder: 2020 Scenario)]

Villawood Road and Villawood Place
Site Category: 2020 PM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	1	0.0	1	0.0	0.068	5.4	LOS A	0.1	0.7	0.53	0.71	0.53	44.1
2	T1	1	0.0	1	0.0	0.068	7.0	LOS A	0.1	0.7	0.53	0.71	0.53	44.4
3	R2	34	0.0	34	0.0	0.068	9.3	LOS A	0.1	0.7	0.53	0.71	0.53	40.1
Approach		36	0.0	36	0.0	0.068	9.1	LOS A	0.1	0.7	0.53	0.71	0.53	40.5
East: Villawood Road														
4	L2	33	0.0	33	0.0	0.173	5.2	LOS A	0.2	1.5	0.12	0.17	0.12	47.0
5	T1	204	2.6	204	2.6	0.173	0.3	LOS A	0.2	1.5	0.12	0.17	0.12	47.8
6	R2	65	0.0	65	0.0	0.173	5.4	LOS A	0.2	1.5	0.12	0.17	0.12	46.7
Approach		302	1.7	302	1.7	0.173	1.9	NA	0.2	1.5	0.12	0.17	0.12	47.4
North: Villawood Place														
7	L2	49	0.0	49	0.0	0.044	4.9	LOS A	0.1	0.4	0.18	0.51	0.18	43.8
8	T1	1	0.0	1	0.0	0.044	7.2	LOS A	0.1	0.4	0.18	0.51	0.18	46.6
9	R2	1	0.0	1	0.0	0.044	8.4	LOS A	0.1	0.4	0.18	0.51	0.18	46.4
Approach		52	0.0	52	0.0	0.044	5.0	LOS A	0.1	0.4	0.18	0.51	0.18	44.0
West: Villawood Road														
10	L2	2	0.0	2	0.0	0.045	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
11	T1	171	3.1	171	3.1	0.045	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	5.3	LOS A	0.0	0.0	0.33	0.48	0.33	45.5
Approach		174	3.0	174	3.0	0.045	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.8
All Vehicles		563	1.9	563	1.9	0.173	2.1	NA	0.2	1.5	0.11	0.19	0.11	47.3

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

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2020 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 5 [2020 PM peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, E1*, E2*
Output Phase Sequence: A, B, D, E, E2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	58	0.0	58	0.0	0.864	39.2	LOS C	24.2	181.0	0.94	0.90	0.97	15.6
31	T1	1568	8.6	1568	8.6	0.864	33.6	LOS C	24.2	181.0	0.93	0.89	0.97	33.2
32	R2	15	7.1	15	7.1	* 0.067	63.8	LOS E	0.6	4.3	0.96	0.70	0.96	22.3
Approach		1641	8.3	1641	8.3	0.864	34.1	LOS C	24.2	181.0	0.93	0.89	0.97	32.7
East: Llewellyn Avenue														
21	L2	91	14.0	91	14.0	0.798	58.2	LOS E	6.6	49.6	0.92	0.88	1.11	20.0
5	T1	84	1.3	84	1.3	0.798	53.5	LOS D	6.6	49.6	0.92	0.88	1.11	20.0
23	R2	146	25.2	146	25.2	* 0.940	96.1	LOS F	7.6	64.5	0.97	1.10	1.54	22.1
Approach		321	15.7	321	15.7	0.940	74.2	LOS F	7.6	64.5	0.94	0.98	1.30	21.3
North: Woodville Road														
24	L2	84	18.8	84	18.8	0.972	73.7	LOS F	51.0	383.3	1.00	1.14	1.27	27.2
25	T1	1809	7.5	1809	7.5	* 0.972	67.9	LOS E	51.3	381.9	1.00	1.14	1.27	18.8
9	R2	159	2.6	159	2.6	0.822	50.5	LOS D	5.1	36.4	1.00	0.89	1.22	22.9
Approach		2053	7.6	2053	7.6	0.972	66.8	LOS E	51.3	383.3	1.00	1.12	1.26	19.6
West: Villawood Road														
10	L2	174	2.4	174	2.4	0.270	35.2	LOS C	4.8	34.6	0.76	0.76	0.76	28.9
11	T1	3	33.3	3	33.3	0.010	47.6	LOS D	0.1	0.9	0.82	0.54	0.82	23.6
12	R2	80	0.0	80	0.0	0.456	68.3	LOS E	3.2	22.6	0.97	0.78	0.97	4.4
Approach		257	2.0	257	2.0	0.456	45.6	LOS D	4.8	34.6	0.83	0.76	0.83	21.1
All Vehicles		4272	8.1	4272	8.1	0.972	53.5	LOS D	51.3	383.3	0.96	1.00	1.13	24.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

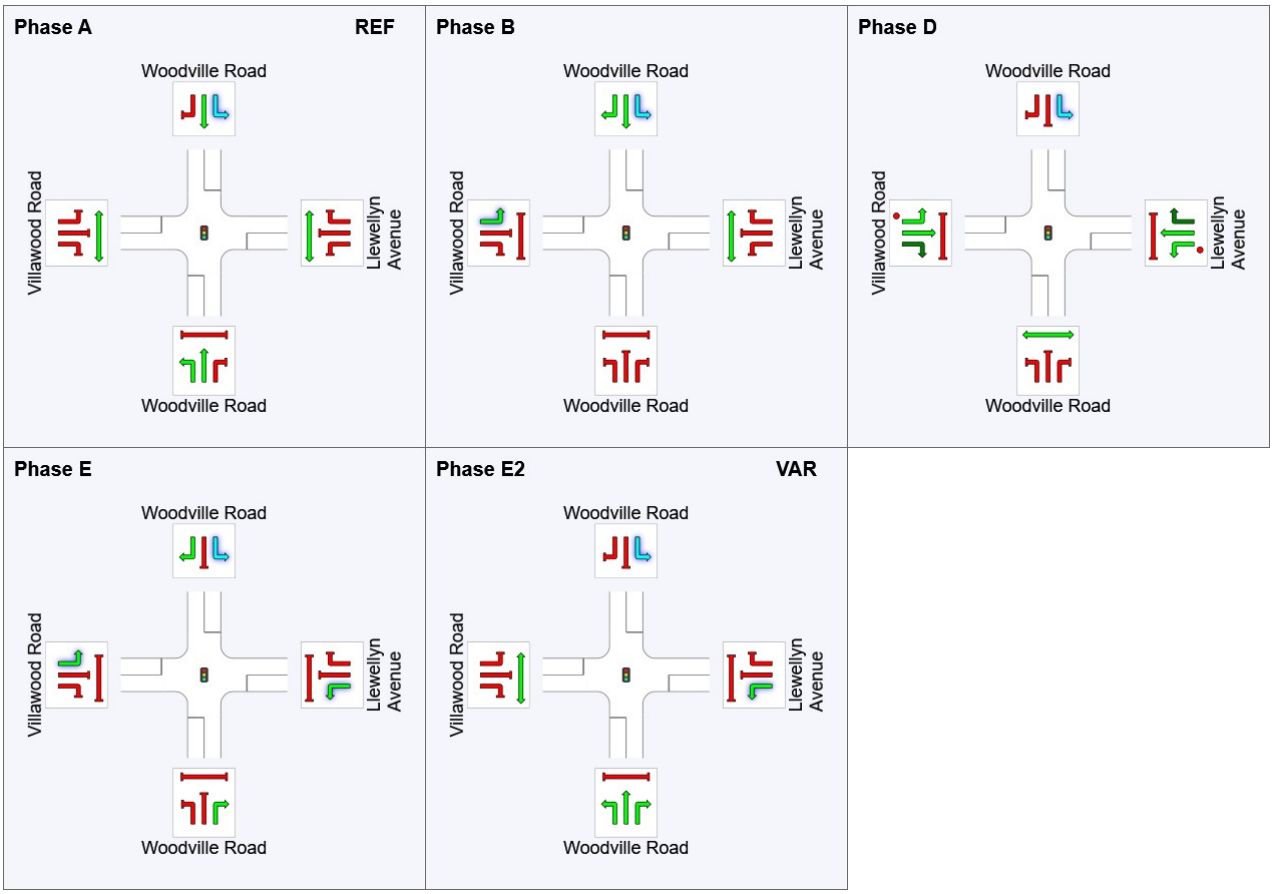
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

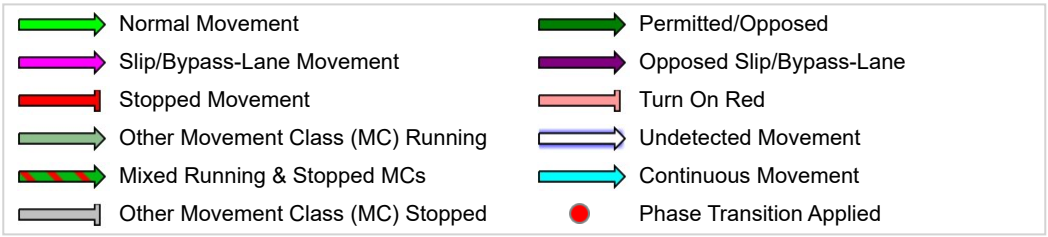
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	D	E	E2
Phase Change Time (sec)	0	67	82	116	128
Green Time (sec)	61	9	28	6	6
Phase Time (sec)	67	15	34	12	12
Phase Split	48%	11%	24%	9%	9%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2020 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 5 [2020 PM peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	63	0.0	63	0.0	0.959	64.5	LOS E	36.1	270.0	0.97	1.12	1.24	24.9
31	T1	1566	8.6	1566	8.6	* 0.959	58.6	LOS E	36.1	270.0	0.97	1.13	1.24	13.4
Approach		1629	8.3	1629	8.3	0.959	58.9	LOS E	36.1	270.0	0.97	1.13	1.24	14.1
East: Binna Burra St														
21	L2	24	0.0	24	0.0	0.618	71.3	LOS F	4.2	30.2	1.00	0.81	1.03	17.6
5	T1	55	7.7	55	7.7	* 0.618	66.7	LOS E	4.2	30.2	1.00	0.81	1.03	25.8
23	R2	84	0.0	84	0.0	0.618	73.0	LOS F	4.2	30.2	1.00	0.82	1.06	17.0
Approach		163	2.6	163	2.6	0.618	70.7	LOS F	4.2	30.2	1.00	0.82	1.05	20.6
North: Woodville Road														
24	L2	141	1.5	141	1.5	0.452	7.0	LOS A	2.5	18.6	0.10	0.21	0.10	48.9
25	T1	1831	8.0	1831	8.0	0.452	1.4	LOS A	2.6	19.3	0.10	0.13	0.10	52.0
9	R2	13	100.0	13	100.0	* 0.278	83.9	LOS F	0.6	7.4	1.00	0.70	1.00	19.2
Approach		1984	8.1	1984	8.1	0.452	2.4	LOS A	2.6	19.3	0.11	0.14	0.11	49.7
All Vehicles		3777	7.9	3777	7.9	0.959	29.7	LOS C	36.1	270.0	0.52	0.59	0.64	21.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

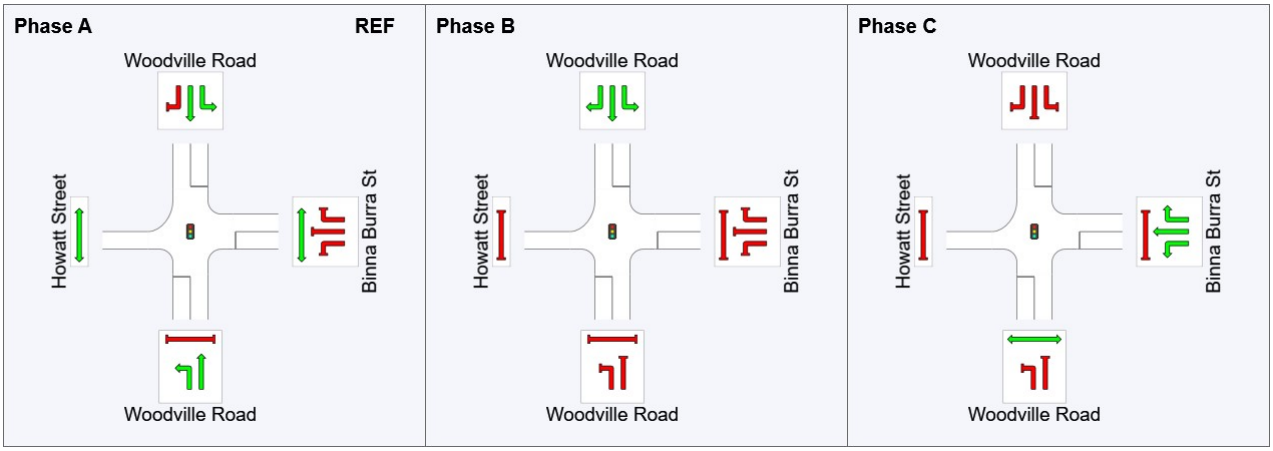
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94

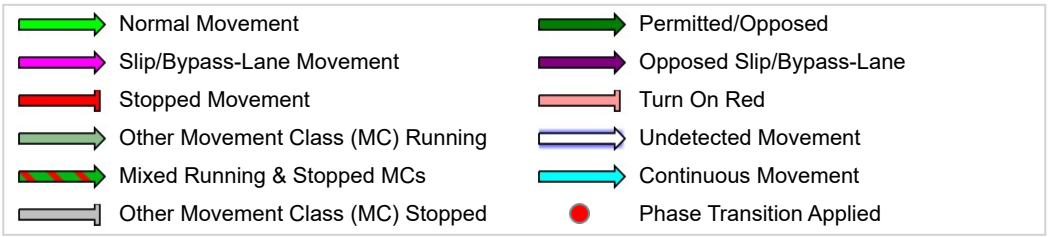
East: Binna Burra St										
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street										
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	135	101	113
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2020 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 5 [2020 PM peak Without Dev (Network Folder: 2020 Scenario)]

Woodville Road and Kirrang Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	51	0.0	51	0.0	0.356	9.9	LOS A	2.9	21.9	0.31	0.32	0.31	50.3
31	T1	1625	8.4	1625	8.4	* 0.810	10.9	LOS A	7.5	56.0	0.54	0.53	0.56	44.8
Approach		1676	8.2	1676	8.2	0.810	10.9	LOS A	7.5	56.0	0.53	0.52	0.55	45.1
North: Woodville Road														
25	T1	1874	8.0	1874	8.0	0.435	2.0	LOS A	4.6	34.2	0.14	0.12	0.14	57.5
Approach		1874	8.0	1874	8.0	0.435	2.0	LOS A	4.6	34.2	0.14	0.12	0.14	57.5
West: Kirrang Avenue														
27	L2	18	0.0	18	0.0	0.108	21.7	LOS B	0.1	0.8	0.55	0.68	0.55	31.5
29	R2	94	0.0	94	0.0	* 0.429	67.4	LOS E	3.7	26.1	0.97	0.78	0.97	26.8
Approach		112	0.0	112	0.0	0.429	60.1	LOS E	3.7	26.1	0.90	0.76	0.90	27.2
All Vehicles		3661	7.8	3661	7.8	0.810	7.8	LOS A	7.5	56.0	0.34	0.33	0.35	50.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

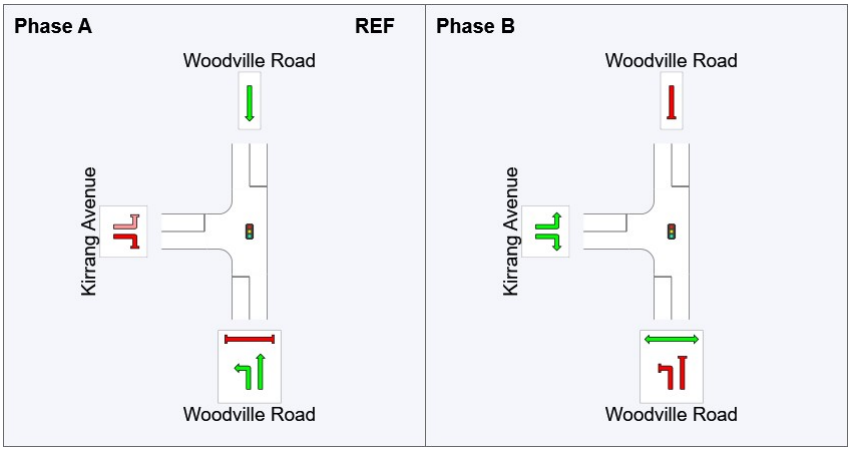
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

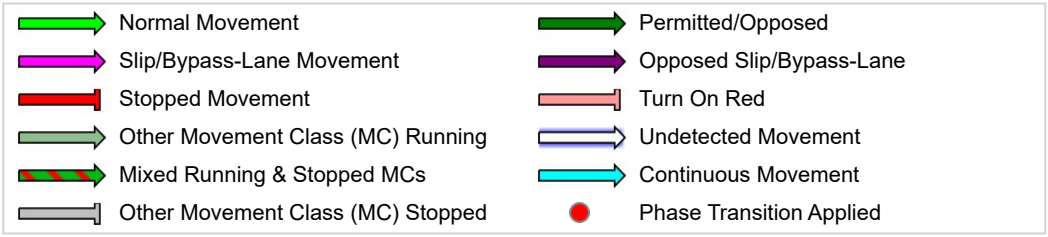
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	117
Green Time (sec)	111	17
Phase Time (sec)	117	23
Phase Split	84%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2020 Scenario - AM Peak | With Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	859	105	904	12.2	0.349	5.9	LOS A	8.4	64.6	0.41	0.37	0.41	54.7
3	R2	286	8	301	2.8	* 0.870	38.9	LOS C	11.6	82.9	1.00	0.96	1.30	36.3
Approach		1145	113	1205	9.9	0.870	14.1	LOS A	11.6	82.9	0.56	0.52	0.63	48.5
East: River Avenue														
4	L2	122	20	128	16.4	0.135	9.0	LOS A	1.6	12.7	0.33	0.64	0.33	51.2
26	R2	376	35	396	9.3	* 0.813	57.2	LOS E	10.5	79.3	1.00	0.93	1.24	30.7
Approach		498	55	524	11.0	0.813	45.4	LOS D	10.5	79.3	0.84	0.86	1.02	34.1
North: The Horsley Drive														
27	L2	819	58	862	7.1	0.480	7.5	LOS A	0.0	0.0	0.00	0.52	0.00	54.4
8	T1	731	130	769	17.8	* 0.544	24.8	LOS B	14.4	116.0	0.82	0.71	0.82	42.7
Approach		1550	188	1632	12.1	0.544	15.6	LOS B	14.4	116.0	0.39	0.61	0.39	48.2
All Vehicles		3193	356	3361	11.1	0.870	19.7	LOS B	14.4	116.0	0.52	0.62	0.57	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

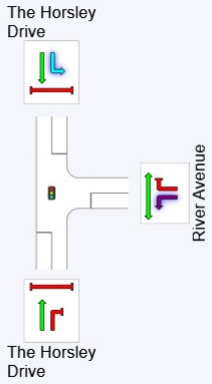
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	217.0	224.5	1.03

East: River Avenue												
P6	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	210.3	215.9	1.03
North: The Horsley Drive												
P7	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	216.2	223.5	1.03
All Pedestrians		150	158	44.3	LOS E	0.1	0.1	0.94	0.94	214.5	221.3	1.03

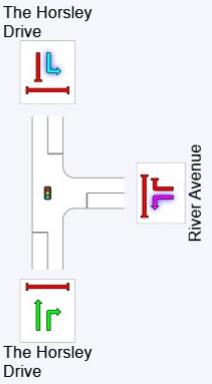
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

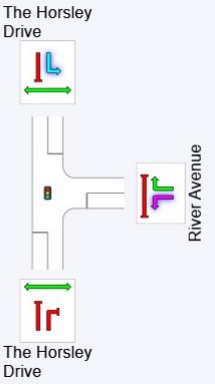
Phase A **REF**



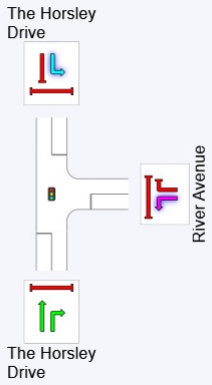
Phase B



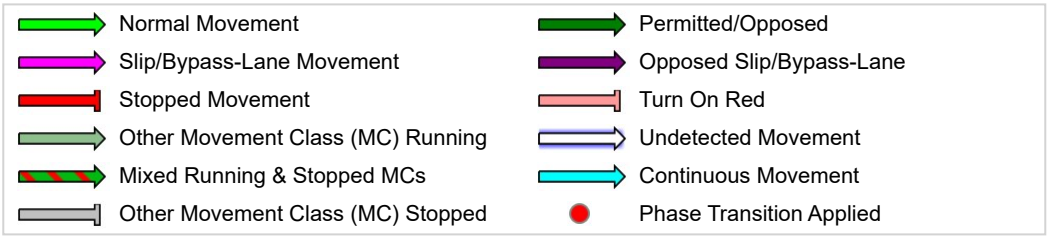
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	46	64	87
Green Time (sec)	40	12	17	7
Phase Time (sec)	46	18	23	13
Phase Split	46%	18%	23%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2020 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 15 [2020 AM Peak With Dev (Network Folder: 2020 Scenario)]

Villawood Road and Villawood Place
Site Category: 2020 AM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	12	0.0	12	0.0	0.097	4.8	LOS A	0.1	0.9	0.28	0.58	0.28	45.4
2	T1	1	0.0	1	0.0	0.097	5.6	LOS A	0.1	0.9	0.28	0.58	0.28	45.8
3	R2	45	0.0	45	0.0	0.097	7.1	LOS A	0.1	0.9	0.28	0.58	0.28	42.4
Approach		58	0.0	58	0.0	0.097	6.6	LOS A	0.1	0.9	0.28	0.58	0.28	43.4
East: Villawood Road														
4	L2	7	0.0	7	0.0	0.047	5.1	LOS A	0.0	0.2	0.07	0.11	0.07	47.8
5	T1	67	7.8	67	7.8	0.047	0.1	LOS A	0.0	0.2	0.07	0.11	0.07	48.6
6	R2	9	0.0	9	0.0	0.047	5.3	LOS A	0.0	0.2	0.07	0.11	0.07	47.5
Approach		84	6.3	84	6.3	0.047	1.2	NA	0.0	0.2	0.07	0.11	0.07	48.4
North: Villawood Place														
7	L2	22	0.0	22	0.0	0.021	4.9	LOS A	0.0	0.2	0.20	0.50	0.20	43.7
8	T1	1	0.0	1	0.0	0.021	5.5	LOS A	0.0	0.2	0.20	0.50	0.20	46.5
9	R2	1	0.0	1	0.0	0.021	6.8	LOS A	0.0	0.2	0.20	0.50	0.20	46.3
Approach		24	0.0	24	0.0	0.021	5.0	LOS A	0.0	0.2	0.20	0.50	0.20	44.1
West: Villawood Road														
10	L2	2	0.0	2	0.0	0.057	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
11	T1	188	3.9	188	3.9	0.057	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.17	0.50	0.17	45.8
Approach		192	3.8	192	3.8	0.057	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.8
All Vehicles		358	3.5	358	3.5	0.097	1.7	NA	0.1	0.9	0.08	0.16	0.08	47.8

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

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2020 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 15 [2020 AM Peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default - Import
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, E1*, E2*
Output Phase Sequence: A, C, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	17	0.0	17	0.0	0.821	17.0	LOS B	23.6	176.4	0.61	0.58	0.61	30.5
31	T1	2016	8.0	2016	8.0	* 0.821	8.8	LOS A	23.6	176.4	0.51	0.48	0.51	49.6
32	R2	51	0.0	51	0.0	0.218	50.9	LOS D	1.7	12.0	1.00	0.74	1.00	25.2
Approach		2083	7.7	2083	7.7	0.821	9.9	LOS A	23.6	176.4	0.53	0.49	0.53	48.4
East: Llewellyn Avenue														
21	L2	21	40.0	21	40.0	0.109	56.0	LOS D	0.9	8.0	0.89	0.70	0.89	20.2
5	T1	3	33.3	3	33.3	0.109	51.1	LOS D	0.9	8.0	0.89	0.70	0.89	20.2
23	R2	60	52.6	60	52.6	0.829	86.1	LOS F	2.8	28.5	1.00	0.95	1.40	23.3
Approach		84	48.8	84	48.8	0.829	77.3	LOS F	2.8	28.5	0.97	0.88	1.25	22.7
North: Woodville Road														
24	L2	136	12.4	136	12.4	0.835	29.5	LOS C	28.7	220.3	0.87	0.82	0.87	40.4
25	T1	1606	11.1	1606	11.1	0.835	24.1	LOS B	28.9	221.7	0.87	0.82	0.87	33.6
9	R2	63	6.7	63	6.7	* 0.420	73.6	LOS F	2.6	19.3	0.99	0.76	0.99	17.9
Approach		1805	11.0	1805	11.0	0.835	26.2	LOS B	28.9	221.7	0.88	0.82	0.88	33.4
West: Villawood Road														
10	L2	115	5.5	115	5.5	0.331	53.3	LOS D	4.0	29.7	0.90	0.77	0.90	23.2
11	T1	8	0.0	8	0.0	0.040	60.6	LOS E	0.3	2.2	0.92	0.62	0.92	20.7
12	R2	135	1.6	135	1.6	* 1.010	123.8	LOS F	7.9	56.1	1.00	1.16	1.77	2.5
Approach		258	3.3	258	3.3	1.010	90.4	LOS F	7.9	56.1	0.96	0.97	1.36	10.5
All Vehicles		4231	9.7	4231	9.7	1.010	23.1	LOS B	28.9	221.7	0.71	0.67	0.74	36.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

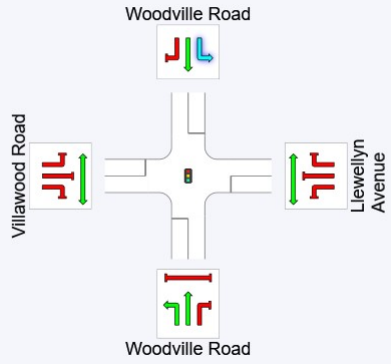
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

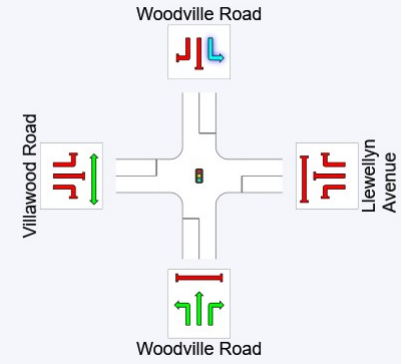
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

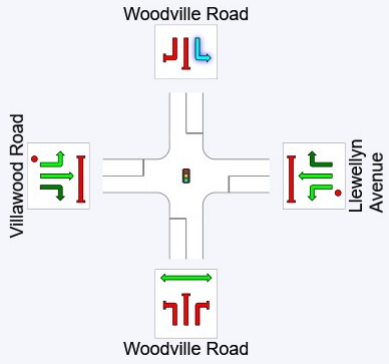
Phase A **REF**



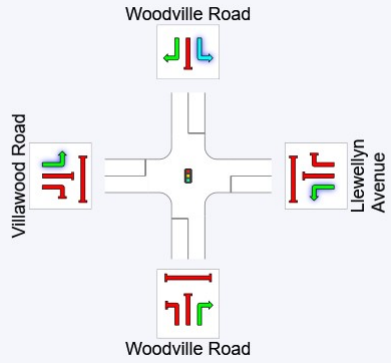
Phase C



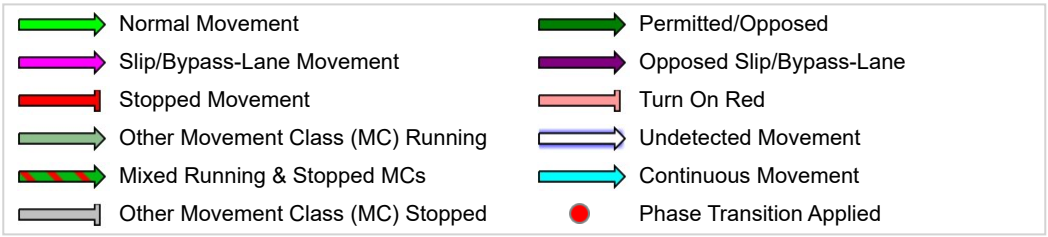
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	89	101	122
Green Time (sec)	83	6	15	12
Phase Time (sec)	89	12	21	18
Phase Split	64%	9%	15%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2020 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 15 [2020 AM Peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	38	0.0	38	0.0	0.987	74.4	LOS F	36.2	270.0	1.00	1.19	1.31	23.0
31	T1	2038	7.9	2038	7.9	* 0.987	68.5	LOS E	36.2	270.0	1.00	1.19	1.31	11.9
Approach		2076	7.7	2076	7.7	0.987	68.6	LOS E	36.2	270.0	1.00	1.19	1.31	12.2
East: Binna Burra St														
21	L2	18	5.9	18	5.9	0.223	68.0	LOS E	1.5	11.5	0.95	0.72	0.95	18.1
5	T1	18	23.5	18	23.5	* 0.223	63.3	LOS E	1.5	11.5	0.95	0.72	0.95	26.3
23	R2	42	2.5	42	2.5	0.223	66.8	LOS E	1.6	11.3	0.95	0.74	0.95	17.9
Approach		78	8.1	78	8.1	0.223	66.3	LOS E	1.6	11.5	0.95	0.73	0.95	20.4
North: Woodville Road														
24	L2	40	7.9	40	7.9	0.406	7.1	LOS A	2.2	16.6	0.10	0.13	0.10	49.6
25	T1	1707	10.9	1706	10.9	0.406	1.9	LOS A	4.2	32.0	0.13	0.13	0.13	51.1
9	R2	12	100.0	12	100.0	* 0.254	83.7	LOS F	0.5	6.7	1.00	0.69	1.00	19.2
Approach		1759	11.4	1758 N1	11.4	0.406	2.6	LOS A	4.2	32.0	0.14	0.13	0.14	49.2
All Vehicles		3913	9.4	3911 N1	9.4	0.987	38.9	LOS C	36.2	270.0	0.61	0.71	0.78	17.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

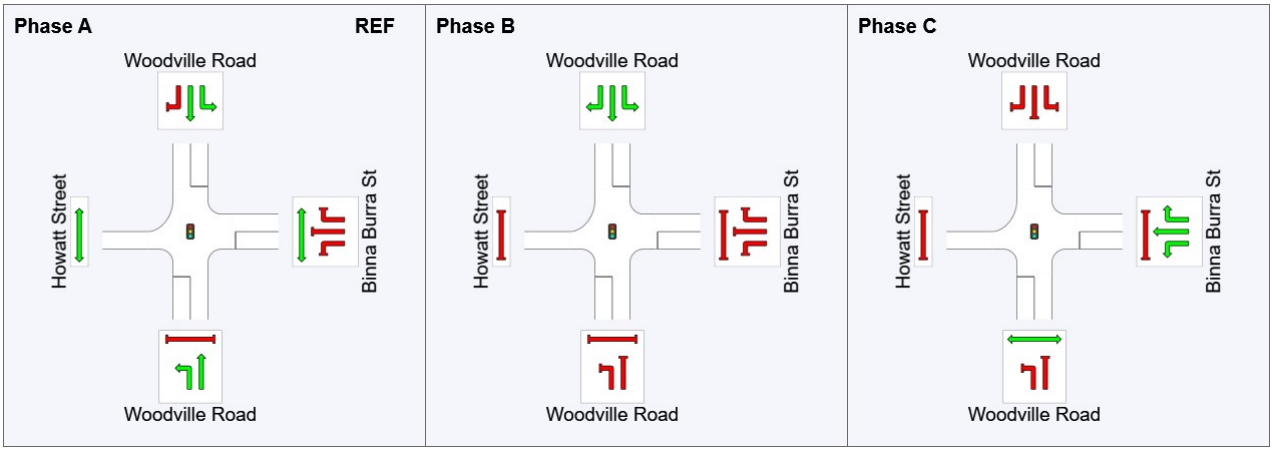
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											

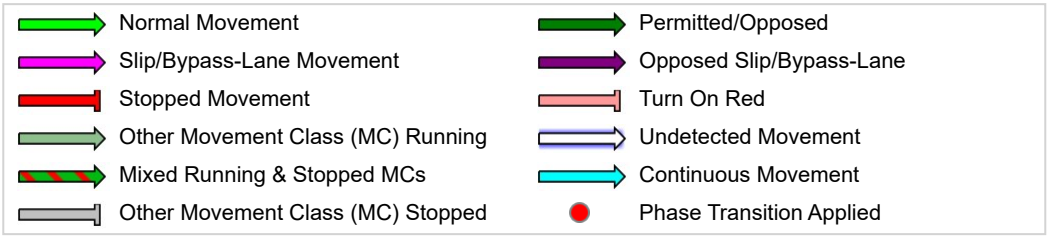
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94
East: Binna Burra St											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	127	93	105
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2020 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 15 [2020 AM Peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Kirrang Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	80	0.0	80	0.0	0.434	11.3	LOS A	9.8	72.4	0.37	0.39	0.37	49.3
31	T1	2056	7.8	2056	7.8	* 0.989	60.9	LOS E	48.0	358.2	0.84	1.04	1.13	20.3
Approach		2136	7.5	2136	7.5	0.989	59.1	LOS E	48.0	358.2	0.82	1.01	1.11	21.2
North: Woodville Road														
25	T1	1717	10.8	1716	10.8	0.468	4.3	LOS A	6.3	48.3	0.18	0.16	0.18	55.0
26	R2	7	14.3	7	14.3	0.468	17.7	LOS B	6.3	48.3	0.38	0.34	0.38	42.7
Approach		1724	10.8	1723 N1	10.8	0.468	4.3	LOS A	6.3	48.3	0.18	0.16	0.18	54.9
West: Kirrang Avenue														
27	L2	17	0.0	17	0.0	0.104	58.3	LOS E	0.6	4.5	0.86	0.69	0.86	19.5
29	R2	212	7.5	212	7.5	* 1.104	184.3	LOS F	15.8	117.5	1.00	1.32	2.06	14.1
Approach		228	6.9	228	6.9	1.104	175.0	LOS F	15.8	117.5	0.99	1.27	1.97	14.2
All Vehicles		4088	8.9	4087 N1	8.9	1.104	42.5	LOS C	48.0	358.2	0.56	0.67	0.76	28.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

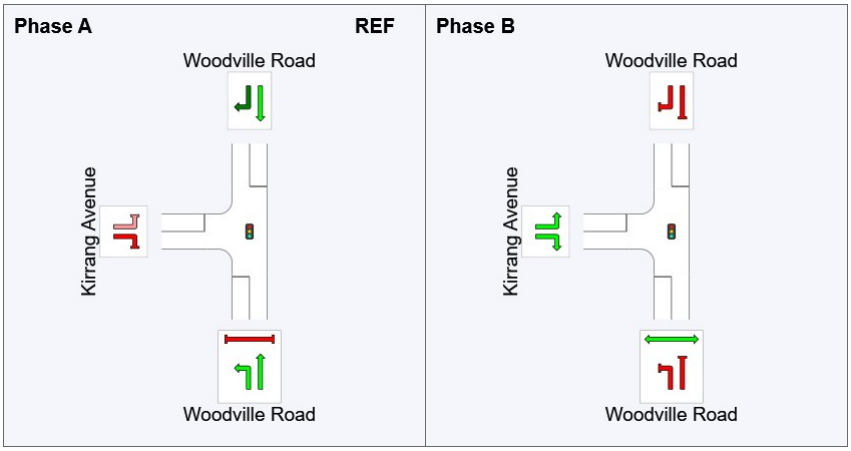
* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

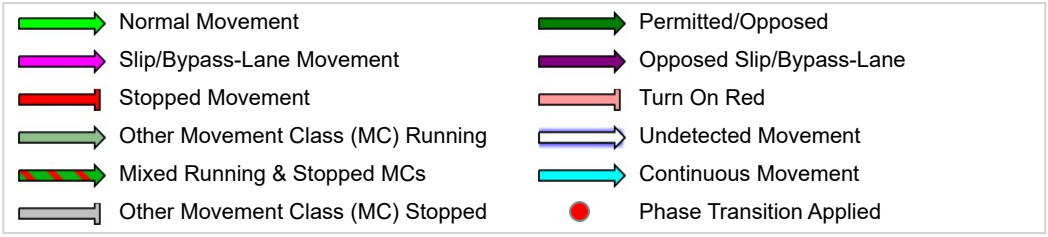
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	114
Green Time (sec)	108	20
Phase Time (sec)	114	26
Phase Split	81%	19%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2020 Scenario - PM Peak | With Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	990	120	1042	12.1	0.445	11.4	LOS A	15.0	116.0	0.54	0.49	0.54	50.6
3	R2	175	4	184	2.3	* 0.576	31.9	LOS C	5.9	41.9	0.97	0.80	0.97	39.0
Approach		1165	124	1226	10.6	0.576	14.5	LOS A	15.0	116.0	0.60	0.53	0.60	48.4
East: River Avenue														
4	L2	214	20	225	9.3	0.210	9.5	LOS A	3.5	26.5	0.34	0.65	0.34	51.0
26	R2	737	38	776	5.2	* 0.988	97.6	LOS F	34.4	251.2	1.00	1.13	1.58	23.0
Approach		951	58	1001	6.1	0.988	77.8	LOS F	34.4	251.2	0.85	1.02	1.30	26.2
North: The Horsley Drive														
27	L2	582	29	613	5.0	0.336	6.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
8	T1	729	65	767	8.9	* 0.561	32.4	LOS C	17.8	134.1	0.85	0.74	0.85	39.2
Approach		1311	94	1380	7.2	0.561	20.8	LOS B	17.8	134.1	0.47	0.65	0.47	44.9
All Vehicles		3427	276	3607	8.1	0.988	34.5	LOS C	34.4	251.2	0.62	0.71	0.75	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

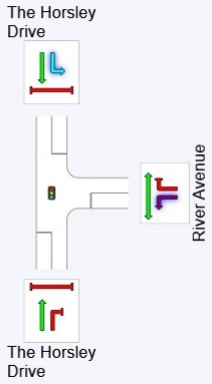
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	227.0	224.5	0.99

East: River Avenue												
P6	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	220.3	215.9	0.98
North: The Horsley Drive												
P7	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	226.2	223.5	0.99
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	224.5	221.3	0.99

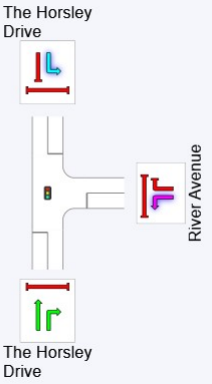
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

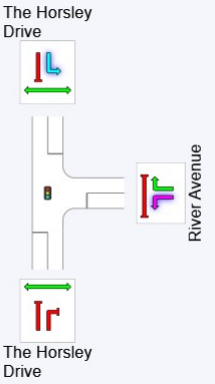
Phase A REF



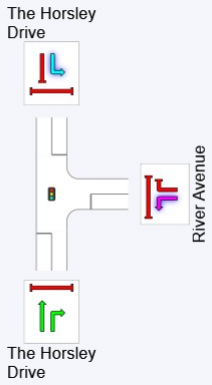
Phase B



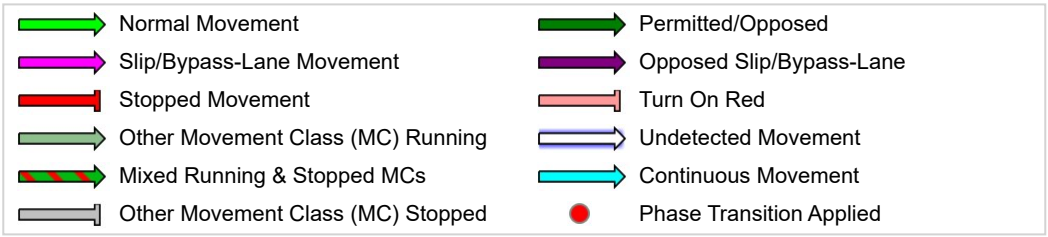
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	50	68	105
Green Time (sec)	44	12	31	9
Phase Time (sec)	50	18	37	15
Phase Split	42%	15%	31%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution — **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2020 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 14 [2020 PM peak With Dev (Network Folder: 2020 Scenario)]

Villawood Road and Villawood Place
Site Category: 2020 PM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	35	0.0	35	0.0	0.149	5.7	LOS A	0.2	1.7	0.48	0.68	0.48	43.9
2	T1	1	0.0	1	0.0	0.149	9.4	LOS A	0.2	1.7	0.48	0.68	0.48	44.2
3	R2	44	0.0	44	0.0	0.149	12.5	LOS A	0.2	1.7	0.48	0.68	0.48	39.8
Approach		80	0.0	80	0.0	0.149	9.5	LOS A	0.2	1.7	0.48	0.68	0.48	42.2
East: Villawood Road														
4	L2	43	0.0	38	0.0	0.203	5.8	LOS A	0.2	1.7	0.15	0.14	0.15	47.0
5	T1	295	1.8	259	1.7	0.203	0.5	LOS A	0.2	1.7	0.15	0.14	0.15	47.8
6	R2	65	0.0	57	0.0	0.203	6.1	LOS A	0.2	1.7	0.15	0.14	0.15	46.7
Approach		403	1.3	355 N1	1.2	0.203	2.0	NA	0.2	1.7	0.15	0.14	0.15	47.5
North: Villawood Place														
7	L2	49	0.0	49	0.0	0.056	5.1	LOS A	0.1	0.5	0.24	0.52	0.24	43.5
8	T1	1	0.0	1	0.0	0.056	9.3	LOS A	0.1	0.5	0.24	0.52	0.24	46.4
9	R2	1	0.0	1	0.0	0.056	11.5	LOS A	0.1	0.5	0.24	0.52	0.24	46.2
Approach		52	0.0	52	0.0	0.056	5.3	LOS A	0.1	0.5	0.24	0.52	0.24	43.7
West: Villawood Road														
10	L2	2	0.0	2	0.0	0.087	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
11	T1	302	1.7	302	1.7	0.087	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.38	0.48	0.38	45.4
Approach		305	1.7	305	1.7	0.087	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		840	1.3	791 N1	1.3	0.203	2.2	NA	0.2	1.7	0.13	0.17	0.13	47.3

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2020 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 14 [2020 PM peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, E2
Output Phase Sequence: A, B, D, E, E2

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	69	0.0	69	0.0	0.870	41.5	LOS C	24.2	181.0	0.96	0.93	1.01	14.8
31	T1	1568	8.6	1568	8.6	0.870	36.1	LOS C	24.2	181.0	0.95	0.92	1.00	32.2
32	R2	15	7.1	15	7.1	* 0.067	63.8	LOS E	0.6	4.2	0.94	0.70	0.94	22.3
Approach		1653	8.2	1653	8.2	0.870	36.6	LOS C	24.2	181.0	0.95	0.92	1.00	31.6
East: Llewellyn Avenue														
21	L2	91	14.0	91	14.0	0.850	63.7	LOS E	7.2	53.9	0.93	0.94	1.20	18.9
5	T1	89	1.2	89	1.2	0.850	59.0	LOS E	7.2	53.9	0.93	0.94	1.20	18.9
23	R2	146	25.2	146	25.2	* 1.000	129.6	LOS F	9.2	78.5	1.00	1.21	1.78	18.4
Approach		326	15.5	326	15.5	1.000	92.0	LOS F	9.2	78.5	0.96	1.06	1.46	18.6
North: Woodville Road														
24	L2	84	18.8	84	18.8	0.972	73.7	LOS F	51.0	383.3	1.00	1.14	1.27	27.2
25	T1	1809	7.5	1809	7.5	* 0.972	67.9	LOS E	51.3	381.9	1.00	1.14	1.27	18.8
9	R2	243	1.7	243	1.7	1.250	276.6	LOS F	20.5	145.7	1.00	1.47	2.59	5.4
Approach		2137	7.3	2137	7.3	1.250	91.8	LOS F	51.3	383.3	1.00	1.18	1.42	15.0
West: Villawood Road														
10	L2	253	1.7	253	1.7	0.391	36.7	LOS C	7.4	52.5	0.80	0.78	0.80	28.3
11	T1	7	14.3	7	14.3	0.021	47.8	LOS D	0.2	1.9	0.83	0.56	0.83	23.6
12	R2	139	0.0	139	0.0	0.819	77.8	LOS F	6.3	43.9	1.00	0.93	1.24	3.9
Approach		399	1.3	399	1.3	0.819	51.2	LOS D	7.4	52.5	0.87	0.83	0.95	19.1
All Vehicles		4515	7.7	4515	7.7	1.250	68.0	LOS E	51.3	383.3	0.97	1.04	1.23	20.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

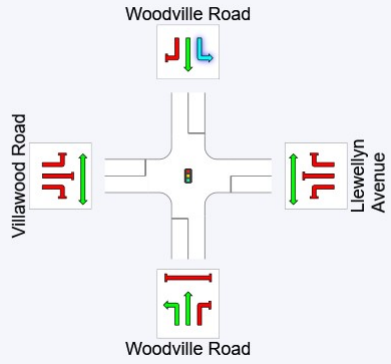
Mov	Dem.	Aver.	Level of	AVERAGE BACK OF	Prop.	Effective	Travel	Travel	Aver.

ID	Crossing	Flow	Delay	Service	QUEUE [Ped	Dist]	Que	Stop Rate	Time	Dist.	Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

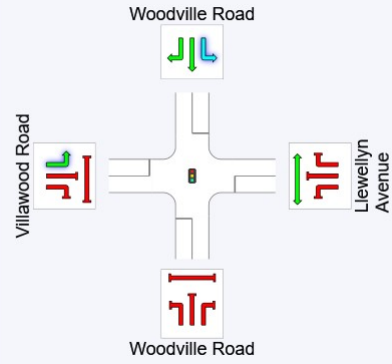
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

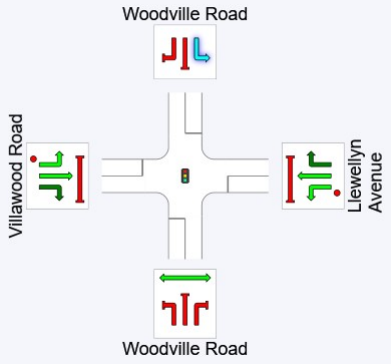
Phase A REF



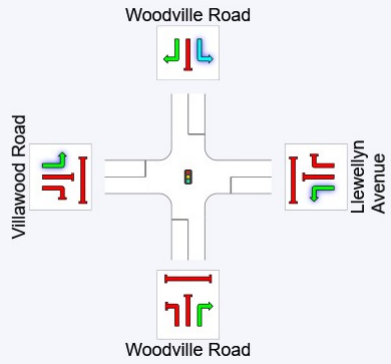
Phase B



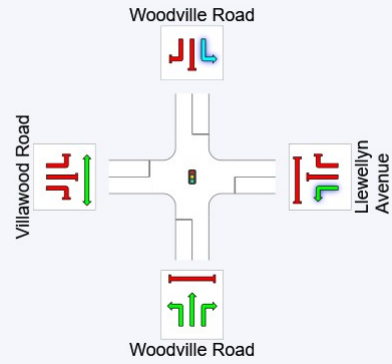
Phase D



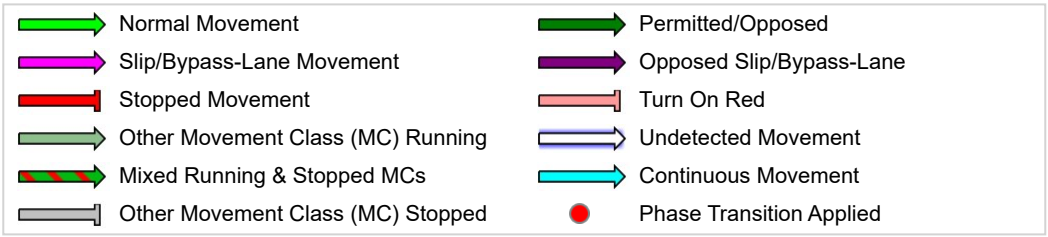
Phase E



Phase E2



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	D	E	E2
Phase Change Time (sec)	0	67	82	116	128
Green Time (sec)	61	9	28	6	6
Phase Time (sec)	67	15	34	12	12
Phase Split	48%	11%	24%	9%	9%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2020 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 14 [2020 PM peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	103	0.0	103	0.0	0.987	81.3	LOS F	36.2	270.0	1.00	1.22	1.37	21.7
31	T1	1573	8.6	1573	8.6	* 0.987	75.3	LOS F	36.2	270.0	1.00	1.23	1.37	11.0
Approach		1676	8.0	1676	8.0	0.987	75.7	LOS F	36.2	270.0	1.00	1.23	1.37	11.9
East: Binna Burra St														
21	L2	24	0.0	24	0.0	0.641	71.8	LOS F	4.3	31.3	1.00	0.83	1.05	17.5
5	T1	56	7.5	56	7.5	* 0.641	67.2	LOS E	4.3	31.3	1.00	0.83	1.05	25.7
23	R2	88	0.0	88	0.0	0.641	73.6	LOS F	4.3	31.3	1.00	0.84	1.09	16.9
Approach		168	2.5	168	2.5	0.641	71.2	LOS F	4.3	31.3	1.00	0.83	1.07	20.4
North: Woodville Road														
24	L2	145	1.4	145	1.4	0.464	7.4	LOS A	3.4	25.0	0.13	0.23	0.13	48.5
25	T1	1885	7.8	1885	7.8	0.464	2.2	LOS A	4.9	36.8	0.16	0.17	0.16	49.2
9	R2	13	100.0	13	100.0	* 0.278	83.9	LOS F	0.6	7.4	1.00	0.70	1.00	19.2
Approach		2043	7.9	2043	7.9	0.464	3.1	LOS A	4.9	36.8	0.16	0.18	0.16	47.6
All Vehicles		3887	7.7	3887	7.7	0.987	37.3	LOS C	36.2	270.0	0.56	0.66	0.72	18.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

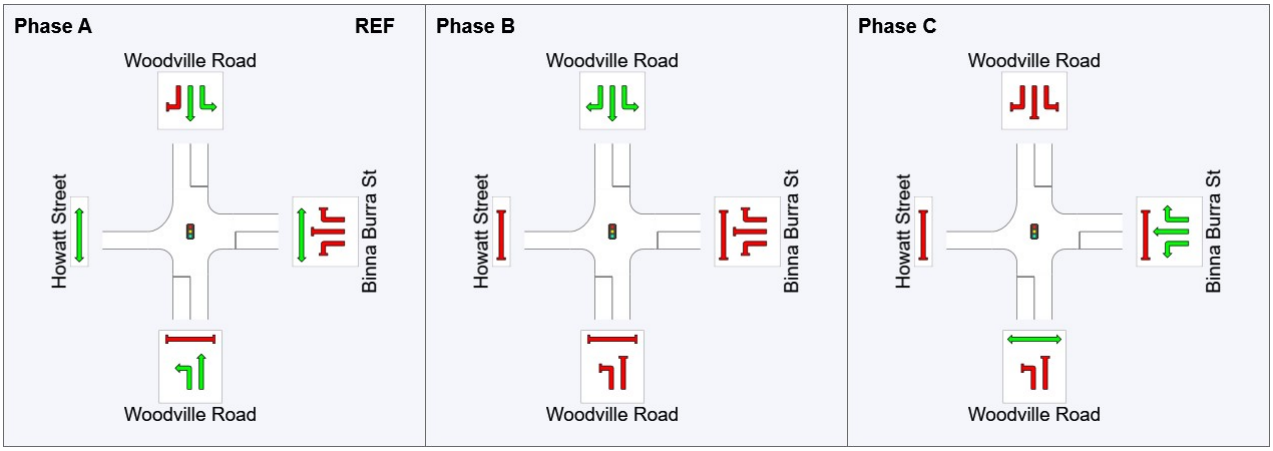
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94
East: Binna Burra St											

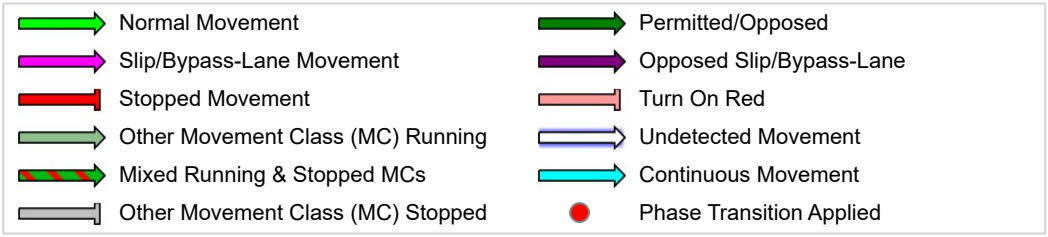
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	135	101	113
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2020 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 14 [2020 PM peak With Dev (Network Folder: 2020 Scenario)]

Woodville Road and Kirrang Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	172	0.0	172	0.0	0.391	10.1	LOS A	5.3	39.1	0.33	0.42	0.33	49.4
31	T1	1673	8.2	1673	8.2	* 0.890	25.3	LOS B	15.1	113.4	0.66	0.74	0.77	33.0
Approach		1844	7.4	1844	7.4	0.890	23.9	LOS B	15.1	113.4	0.63	0.71	0.73	34.9
North: Woodville Road														
25	T1	1928	7.8	1928	7.8	0.447	2.0	LOS A	4.7	34.9	0.14	0.12	0.14	57.6
Approach		1928	7.8	1928	7.8	0.447	2.0	LOS A	4.7	34.9	0.14	0.12	0.14	57.6
West: Kirrang Avenue														
27	L2	18	0.0	18	0.0	0.115	32.9	LOS C	0.2	1.7	0.68	0.71	0.68	26.5
29	R2	149	0.0	149	0.0	* 0.743	72.0	LOS F	6.3	44.4	1.00	0.86	1.11	25.9
Approach		167	0.0	167	0.0	0.743	67.9	LOS E	6.3	44.4	0.97	0.84	1.07	26.0
All Vehicles		3940	7.3	3940	7.3	0.890	15.1	LOS B	15.1	113.4	0.40	0.43	0.45	43.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

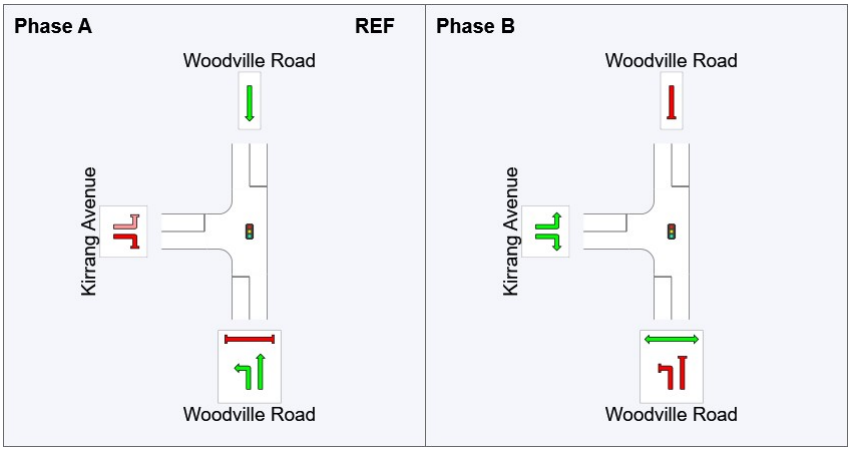
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

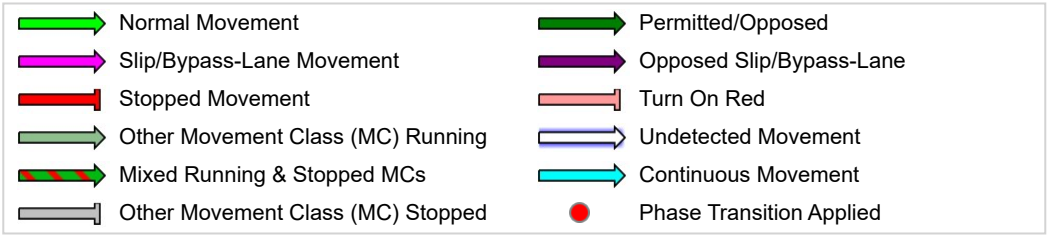
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	117
Green Time (sec)	111	17
Phase Time (sec)	117	23
Phase Split	84%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2031 Scenario - AM Peak | Without Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	756	95	796	12.6	0.308	5.7	LOS A	7.1	54.9	0.40	0.35	0.40	54.9
3	R2	300	8	316	2.7	* 0.912	44.9	LOS D	13.4	95.6	1.00	1.02	1.41	34.2
Approach		1056	103	1112	9.8	0.912	16.8	LOS B	13.4	95.6	0.57	0.54	0.69	46.9
East: River Avenue														
4	L2	148	27	156	18.2	0.176	11.1	LOS A	2.6	20.7	0.42	0.67	0.42	49.7
26	R2	429	38	452	8.9	* 0.924	69.5	LOS E	13.7	102.9	1.00	1.07	1.52	27.9
Approach		577	65	607	11.3	0.924	54.5	LOS D	13.7	102.9	0.85	0.96	1.24	31.4
North: The Horsley Drive														
27	L2	826	49	869	5.9	0.480	7.6	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
8	T1	915	150	963	16.4	* 0.675	26.6	LOS B	19.4	154.4	0.88	0.78	0.88	41.8
Approach		1741	199	1833	11.4	0.675	17.6	LOS B	19.4	154.4	0.46	0.66	0.46	47.1
All Vehicles		3374	367	3552	10.9	0.924	23.6	LOS B	19.4	154.4	0.56	0.67	0.67	43.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

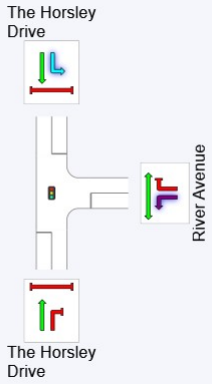
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	217.0	224.5	1.03

East: River Avenue												
P6	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	210.3	215.9	1.03
North: The Horsley Drive												
P7	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	216.2	223.5	1.03
All Pedestrians		150	158	44.3	LOS E	0.1	0.1	0.94	0.94	214.5	221.3	1.03

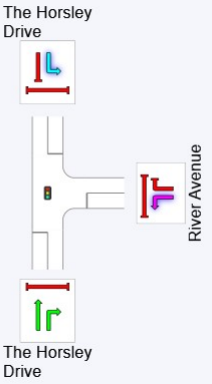
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

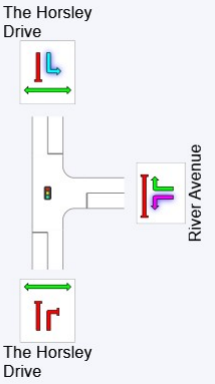
Phase A **REF**



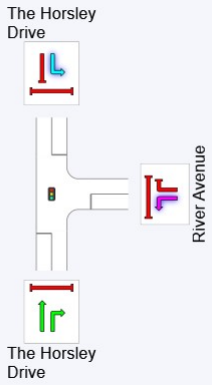
Phase B



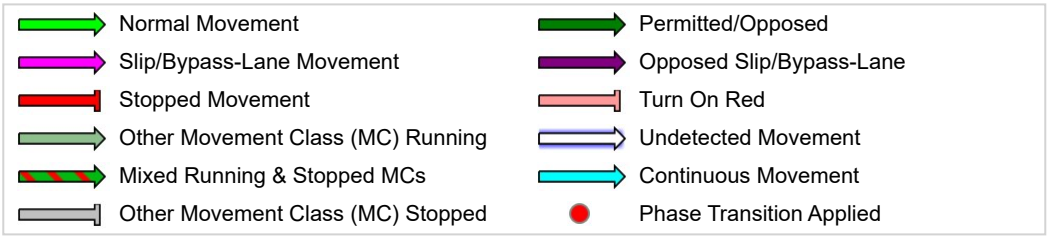
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	46	63	86
Green Time (sec)	40	11	17	8
Phase Time (sec)	46	17	23	14
Phase Split	46%	17%	23%	14%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2031 Scenario - AM Peak | Without Kamira Ave Traffic)]

Network: 8 [2031 AM Peak Without Dev (Network Folder: 2031)]

Villawood Road and Villawood Place
Site Category: 2020 AM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	1	0.0	1	0.0	0.033	4.7	LOS A	0.1	0.4	0.25	0.54	0.25	46.0
2	T1	1	0.0	1	0.0	0.033	4.4	LOS A	0.1	0.4	0.25	0.54	0.25	46.4
3	R2	25	0.0	25	0.0	0.033	5.7	LOS A	0.1	0.4	0.25	0.54	0.25	43.4
Approach		27	0.0	27	0.0	0.033	5.6	LOS A	0.1	0.4	0.25	0.54	0.25	43.8
East: Villawood Road														
4	L2	6	0.0	6	0.0	0.030	4.8	LOS A	0.0	0.3	0.09	0.27	0.09	45.8
5	T1	23	31.8	23	31.8	0.030	0.1	LOS A	0.0	0.3	0.09	0.27	0.09	46.6
6	R2	18	0.0	18	0.0	0.030	4.8	LOS A	0.0	0.3	0.09	0.27	0.09	45.6
Approach		47	15.6	47	15.6	0.030	2.5	NA	0.0	0.3	0.09	0.27	0.09	46.1
North: Villawood Place														
7	L2	35	0.0	35	0.0	0.029	4.7	LOS A	0.0	0.3	0.10	0.50	0.10	44.1
8	T1	1	0.0	1	0.0	0.029	4.4	LOS A	0.0	0.3	0.10	0.50	0.10	46.8
9	R2	1	0.0	1	0.0	0.029	5.4	LOS A	0.0	0.3	0.10	0.50	0.10	46.5
Approach		37	0.0	37	0.0	0.029	4.7	LOS A	0.0	0.3	0.10	0.50	0.10	44.4
West: Villawood Road														
10	L2	1	0.0	1	0.0	0.018	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
11	T1	65	9.7	65	9.7	0.018	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.10	0.51	0.10	46.0
Approach		67	9.4	67	9.4	0.018	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		179	7.6	179	7.6	0.033	2.5	NA	0.1	0.4	0.08	0.26	0.08	46.6

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

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2031 Scenario - AM Peak | Without Kamira Ave Traffic)]

Network: 8 [2031 AM Peak Without Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default - Import
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, E1*, E2*
Output Phase Sequence: A, C, D, E, E1*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	16	0.0	16	0.0	0.765	16.2	LOS B	19.5	144.8	0.54	0.51	0.54	31.7
31	T1	1891	7.0	1891	7.0	0.765	9.1	LOS A	19.5	144.8	0.49	0.46	0.49	49.3
32	R2	47	4.4	47	4.4	* 0.317	52.3	LOS D	1.6	11.7	0.99	0.74	0.99	24.8
Approach		1954	6.8	1954	6.8	0.765	10.2	LOS A	19.5	144.8	0.50	0.46	0.50	48.1
East: Llewellyn Avenue														
21	L2	18	35.3	18	35.3	0.110	58.4	LOS E	0.8	6.9	0.91	0.70	0.91	19.6
5	T1	3	33.3	3	33.3	0.110	53.5	LOS D	0.8	6.9	0.91	0.70	0.91	19.6
23	R2	85	51.9	85	51.9	* 0.790	80.1	LOS F	3.9	38.9	1.00	0.92	1.27	24.3
Approach		106	48.5	106	48.5	0.790	75.7	LOS F	3.9	38.9	0.98	0.88	1.20	23.6
North: Woodville Road														
24	L2	123	16.2	123	16.2	0.910	39.6	LOS C	41.1	317.1	0.94	0.95	1.02	36.4
25	T1	1900	11.5	1900	11.5	* 0.910	33.7	LOS C	41.4	317.9	0.94	0.95	1.02	28.7
9	R2	28	22.2	28	22.2	0.209	72.3	LOS F	1.1	9.6	0.97	0.73	0.97	18.1
Approach		2052	11.9	2052	11.9	0.910	34.6	LOS C	41.4	317.9	0.94	0.95	1.02	29.2
West: Villawood Road														
10	L2	39	13.5	39	13.5	0.119	50.9	LOS D	1.3	10.2	0.86	0.71	0.86	23.7
11	T1	8	0.0	8	0.0	0.040	60.6	LOS E	0.3	2.2	0.92	0.62	0.92	20.7
12	R2	76	1.4	76	1.4	0.549	73.8	LOS F	3.2	22.6	1.00	0.77	1.00	4.1
Approach		123	5.1	123	5.1	0.549	65.6	LOS E	3.2	22.6	0.95	0.75	0.95	12.0
All Vehicles		4235	10.3	4235	10.3	0.910	25.3	LOS B	41.4	317.9	0.74	0.72	0.78	35.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

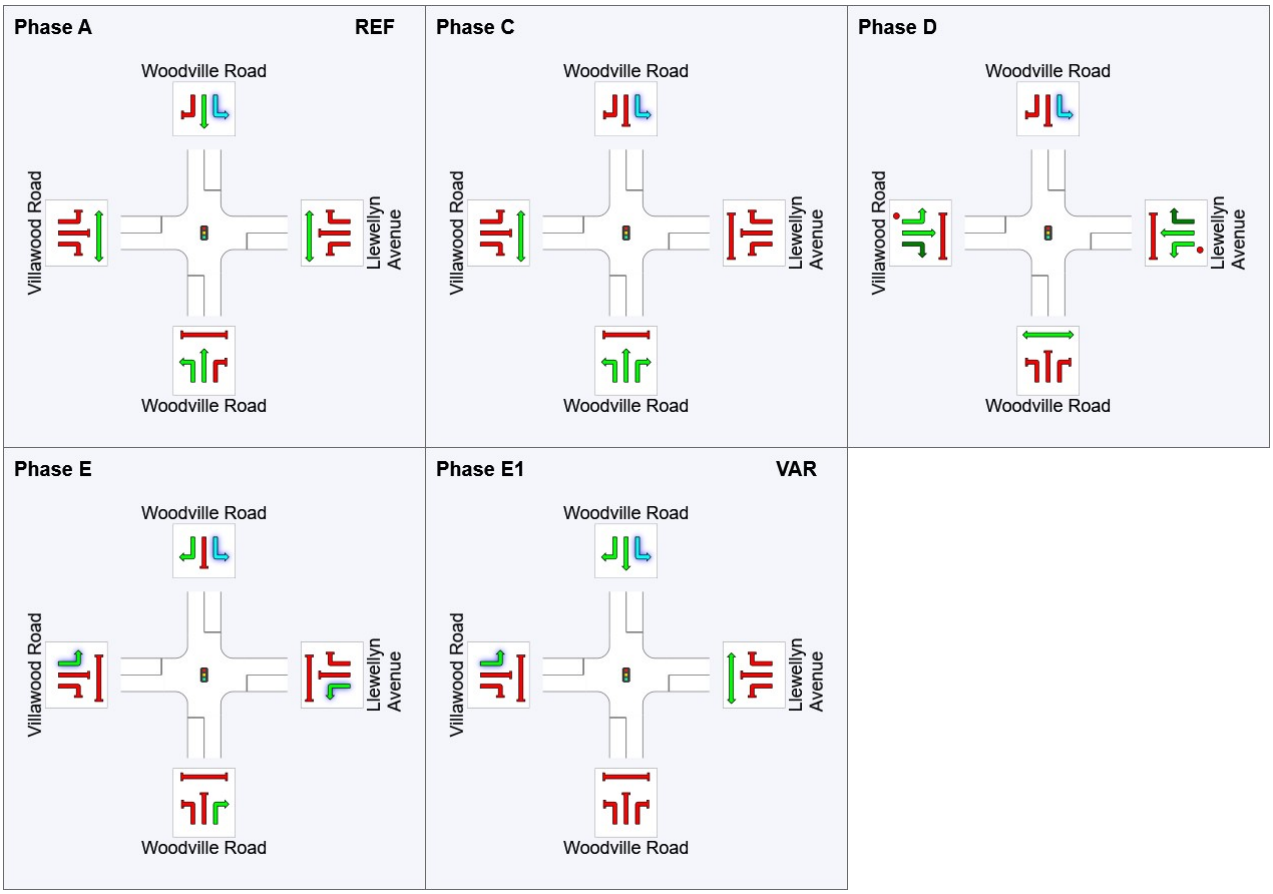
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

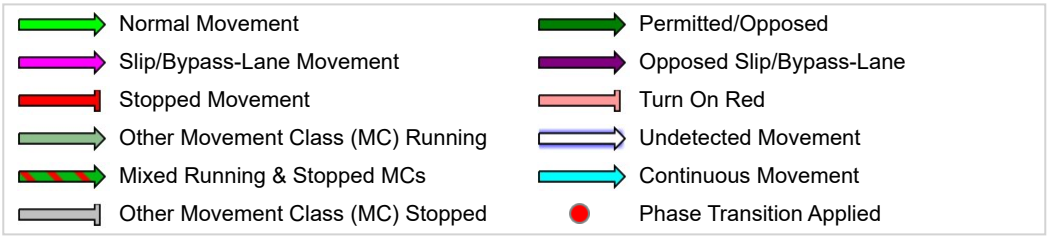
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	C	D	E	E1
Phase Change Time (sec)	0	89	101	122	134
Green Time (sec)	83	6	15	6	***
Phase Time (sec)	89	12	21	12	6
Phase Split	64%	9%	15%	9%	4%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2031 Scenario - AM Peak | Without Kamira Ave Traffic)]

Network: 8 [2031 AM Peak Without Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	18	0.0	18	0.0	0.902	33.7	LOS C	36.5	270.0	0.88	0.89	0.96	34.4
31	T1	1892	6.8	1892	6.8	* 0.902	27.9	LOS B	36.5	270.0	0.88	0.89	0.96	22.6
Approach		1909	6.8	1909	6.8	0.902	28.0	LOS B	36.5	270.0	0.88	0.89	0.96	22.8
East: Binna Burra St														
21	L2	46	2.3	46	2.3	0.412	70.4	LOS E	2.8	21.6	0.98	0.76	0.98	17.5
5	T1	23	27.3	23	27.3	* 0.412	65.8	LOS E	2.8	21.6	0.98	0.76	0.98	25.7
23	R2	66	4.8	66	4.8	0.359	68.1	LOS E	2.6	19.2	0.97	0.76	0.97	17.7
Approach		136	7.8	136	7.8	0.412	68.5	LOS E	2.8	21.6	0.97	0.76	0.97	19.4
North: Woodville Road														
24	L2	66	7.9	66	7.9	0.461	6.6	LOS A	1.7	12.7	0.07	0.12	0.07	49.9
25	T1	1905	11.5	1905	11.5	0.461	1.2	LOS A	3.2	24.6	0.09	0.10	0.09	53.5
9	R2	21	100.0	21	100.0	* 0.463	85.2	LOS F	1.0	12.5	1.00	0.72	1.01	19.0
Approach		1993	12.3	1993	12.3	0.463	2.3	LOS A	3.2	24.6	0.10	0.11	0.10	50.0
All Vehicles		4038	9.5	4038	9.5	0.902	16.7	LOS B	36.5	270.0	0.50	0.50	0.53	28.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

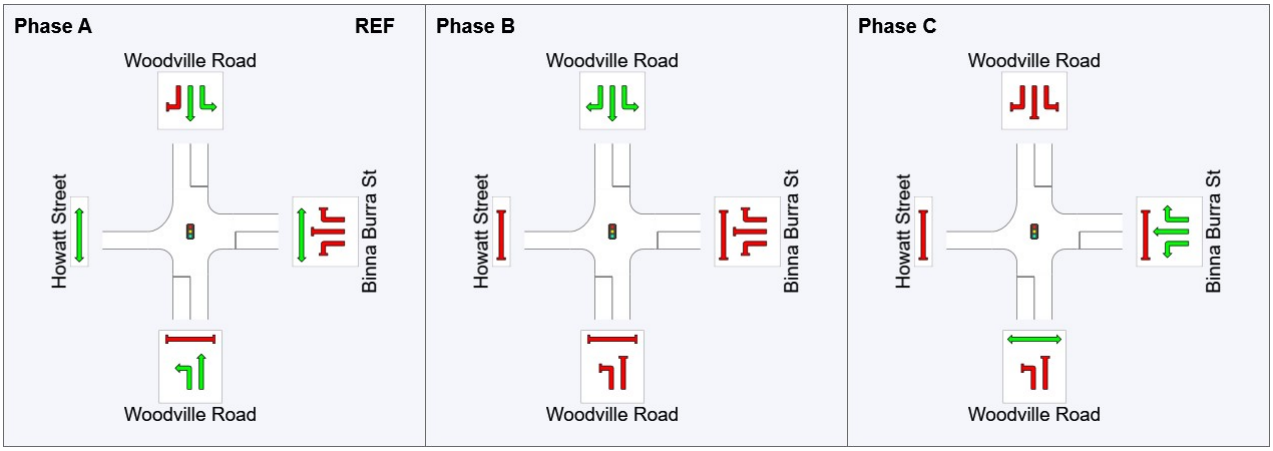
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94

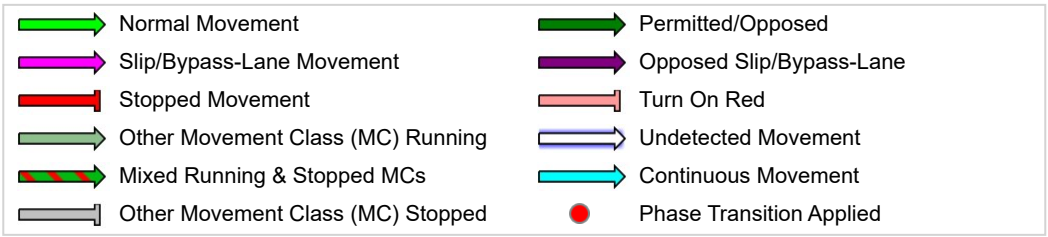
East: Binna Burra St										
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street										
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	127	93	105
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2031 Scenario - AM Peak | Without Kamira Ave Traffic)]

Network: 8 [2031 AM Peak Without Dev (Network Folder: 2031)]

Woodville Road and Kirrang Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	17	0.0	17	0.0	0.387	11.0	LOS A	7.4	54.5	0.35	0.33	0.35	49.9
31	T1	1898	6.9	1898	6.9	* 0.882	22.2	LOS B	25.4	188.1	0.66	0.68	0.74	35.4
Approach		1915	6.9	1915	6.9	0.882	22.1	LOS B	25.4	188.1	0.66	0.68	0.74	35.6
North: Woodville Road														
25	T1	1927	11.3	1927	11.3	0.518	3.1	LOS A	5.7	43.4	0.17	0.16	0.17	56.3
26	R2	13	0.0	13	0.0	0.518	10.8	LOS A	4.3	32.9	0.22	0.21	0.22	47.8
Approach		1940	11.2	1940	11.2	0.518	3.1	LOS A	5.7	43.4	0.17	0.16	0.17	56.2
West: Kirrang Avenue														
27	L2	8	0.0	8	0.0	0.049	30.4	LOS C	0.2	1.6	0.63	0.67	0.63	27.5
29	R2	208	12.1	208	12.1	* 1.080	167.0	LOS F	14.7	113.7	1.00	1.28	1.97	15.1
Approach		217	11.7	217	11.7	1.080	161.7	LOS F	14.7	113.7	0.99	1.25	1.91	15.3
All Vehicles		4072	9.2	4072	9.2	1.080	20.5	LOS B	25.4	188.1	0.44	0.46	0.53	39.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

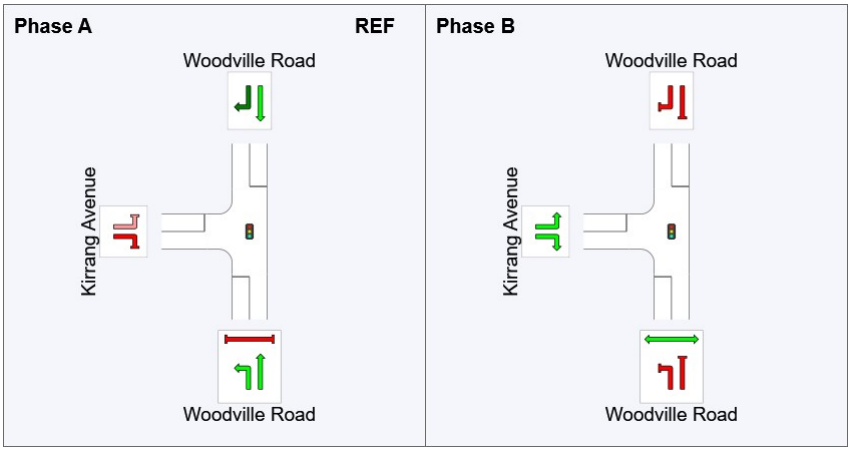
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

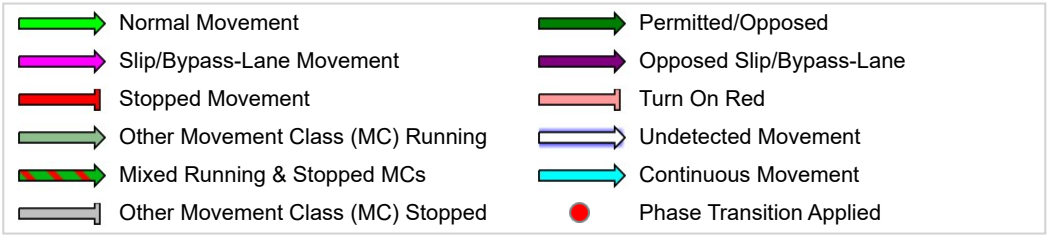
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	114
Green Time (sec)	108	20
Phase Time (sec)	114	26
Phase Split	81%	19%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2031 Scenario - PM Peak | Without Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	1188	166	1251	14.0	0.547	12.5	LOS A	20.2	158.1	0.59	0.54	0.59	49.9
3	R2	207	9	218	4.3	* 0.660	32.1	LOS C	7.0	51.1	0.98	0.82	0.99	38.8
Approach		1395	175	1468	12.5	0.660	15.4	LOS B	20.2	158.1	0.65	0.58	0.65	47.8
East: River Avenue														
4	L2	200	22	211	11.0	0.204	10.7	LOS A	3.8	28.8	0.38	0.66	0.38	50.2
26	R2	768	60	808	7.8	* 1.044	130.7	LOS F	41.7	311.8	1.00	1.25	1.83	18.8
Approach		968	82	1019	8.5	1.044	105.9	LOS F	41.7	311.8	0.87	1.12	1.53	21.6
North: The Horsley Drive														
27	L2	606	26	638	4.3	0.349	6.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
8	T1	847	67	892	7.9	* 0.663	34.7	LOS C	21.9	163.5	0.90	0.79	0.90	38.3
Approach		1453	93	1529	6.4	0.663	22.9	LOS B	21.9	163.5	0.53	0.68	0.53	43.8
All Vehicles		3816	350	4017	9.2	1.044	41.2	LOS C	41.7	311.8	0.66	0.76	0.83	35.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

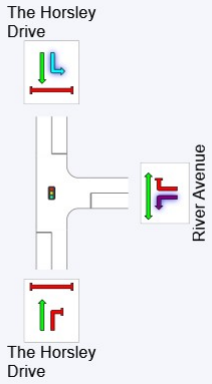
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	227.0	224.5	0.99

East: River Avenue												
P6	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	220.3	215.9	0.98
North: The Horsley Drive												
P7	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	226.2	223.5	0.99
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	224.5	221.3	0.99

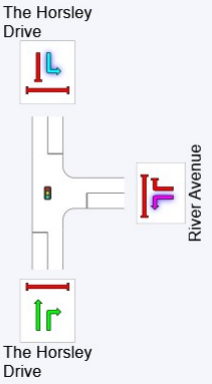
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

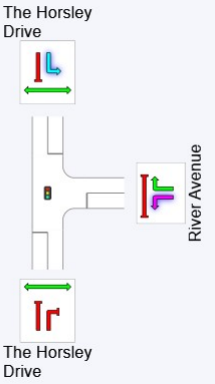
Phase A REF



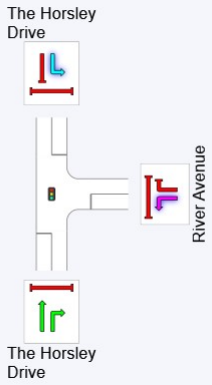
Phase B



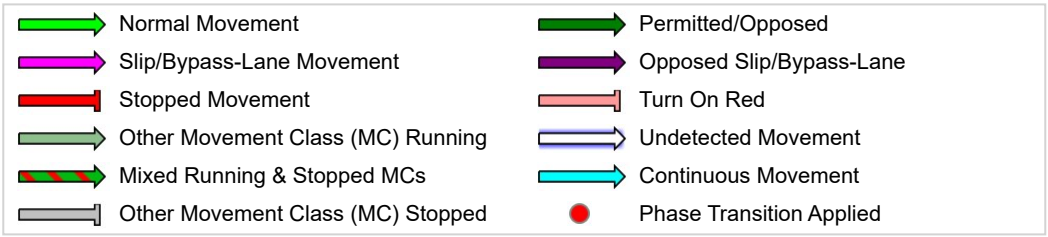
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	49	67	104
Green Time (sec)	43	12	31	10
Phase Time (sec)	49	18	37	16
Phase Split	41%	15%	31%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution — **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2031 Scenario - PM Peak | Without Kamira Ave Traffic)] — **Network: 11 [2031 PM peak Without Dev (Network Folder: 2031)]**

Villawood Road and Villawood Place
Site Category: 2020 PM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	1	0.0	1	0.0	0.121	5.7	LOS A	0.2	1.3	0.60	0.80	0.60	43.0
2	T1	1	0.0	1	0.0	0.121	8.2	LOS A	0.2	1.3	0.60	0.80	0.60	43.3
3	R2	51	0.0	51	0.0	0.121	11.3	LOS A	0.2	1.3	0.60	0.80	0.60	38.4
Approach		53	0.0	53	0.0	0.121	11.1	LOS A	0.2	1.3	0.60	0.80	0.60	38.7
East: Villawood Road														
4	L2	39	0.0	39	0.0	0.225	5.4	LOS A	0.3	2.2	0.14	0.18	0.14	46.9
5	T1	260	2.0	258	2.0	0.225	0.4	LOS A	0.3	2.2	0.14	0.18	0.14	47.6
6	R2	91	0.0	90	0.0	0.225	5.5	LOS A	0.3	2.2	0.14	0.18	0.14	46.6
Approach		389	1.4	386[N1]	1.4	0.225	2.1	NA	0.3	2.2	0.14	0.18	0.14	47.3
North: Villawood Place														
7	L2	71	0.0	71	0.0	0.062	4.9	LOS A	0.1	0.6	0.19	0.51	0.19	43.7
8	T1	1	0.0	1	0.0	0.062	8.4	LOS A	0.1	0.6	0.19	0.51	0.19	46.5
9	R2	1	0.0	1	0.0	0.062	9.8	LOS A	0.1	0.6	0.19	0.51	0.19	46.3
Approach		73	0.0	73	0.0	0.062	5.0	LOS A	0.1	0.6	0.19	0.51	0.19	43.9
West: Villawood Road														
10	L2	1	0.0	1	0.0	0.051	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
11	T1	194	2.2	194	2.2	0.051	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.38	0.48	0.38	45.4
Approach		196	2.2	196	2.2	0.051	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		711	1.3	707[N1]	1.3	0.225	2.5	NA	0.3	2.2	0.14	0.21	0.14	46.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2031 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 11 [2031 PM peak Without Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, E1*, E2*
Output Phase Sequence: A, B, D, E, E2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	68	0.0	65	0.0	0.944	64.2	LOS E	24.0	181.0	1.00	1.08	1.20	10.1
31	T1	1701	10.0	1622	10.0	0.944	58.8	LOS E	24.0	181.0	1.00	1.08	1.20	24.9
32	R2	22	9.5	21	9.5	* 0.097	64.3	LOS E	0.8	6.0	0.91	0.71	0.91	22.2
Approach		1792	9.6	1708 N1	9.6	0.944	59.1	LOS E	24.0	181.0	1.00	1.08	1.20	24.5
East: Llewellyn Avenue														
21	L2	85	13.6	85	13.6	0.842	63.4	LOS E	6.5	48.3	0.92	0.93	1.20	18.9
5	T1	78	0.0	78	0.0	0.842	58.8	LOS E	6.5	48.3	0.92	0.93	1.20	18.9
23	R2	174	24.8	174	24.8	* 1.103	192.2	LOS F	13.6	115.5	1.00	1.39	2.13	13.7
Approach		337	16.3	337	16.3	1.103	128.8	LOS F	13.6	115.5	0.96	1.17	1.68	15.0
North: Woodville Road														
24	L2	109	14.4	109	14.4	1.103	165.1	LOS F	83.2	645.1	1.00	1.57	1.83	16.0
25	T1	2011	12.3	2011	12.3	* 1.103	159.3	LOS F	83.2	645.1	1.00	1.58	1.83	9.6
9	R2	241	2.2	241	2.2	0.981	94.0	LOS F	10.0	71.0	1.00	1.16	1.56	14.9
Approach		2361	11.4	2361	11.4	1.103	152.9	LOS F	83.2	645.1	1.00	1.54	1.80	10.4
West: Villawood Road														
10	L2	204	2.1	204	2.1	0.299	33.7	LOS C	5.6	39.9	0.75	0.76	0.75	29.5
11	T1	1	0.0	1	0.0	0.003	47.9	LOS D	0.0	0.2	0.82	0.50	0.82	23.6
12	R2	108	0.0	108	0.0	0.621	70.3	LOS E	4.5	31.5	1.00	0.81	1.02	4.2
Approach		314	1.3	314	1.3	0.621	46.4	LOS D	5.6	39.9	0.84	0.78	0.84	20.4
All Vehicles		4803	10.4	4720 N1	10.6	1.103	110.2	LOS F	83.2	645.1	0.99	1.30	1.51	14.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

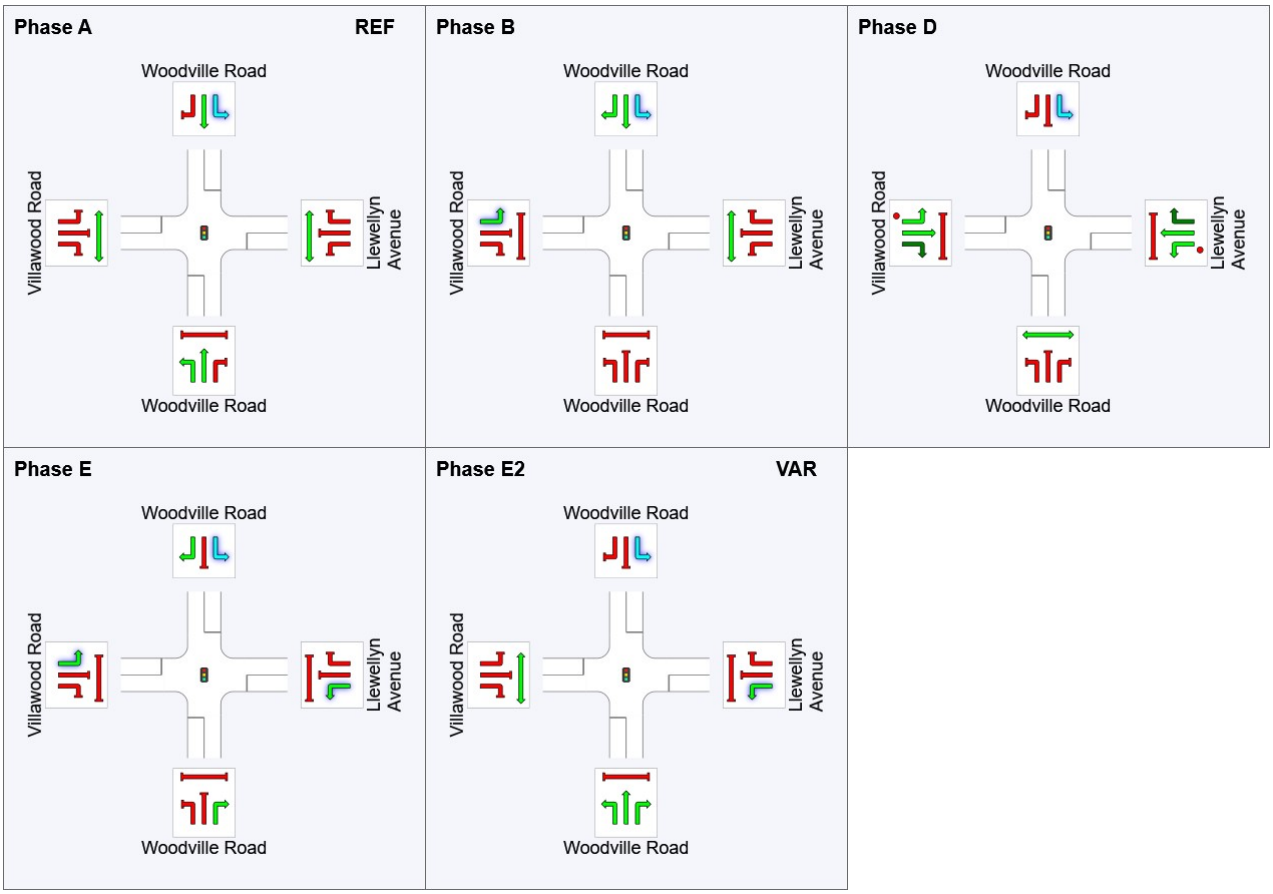
* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

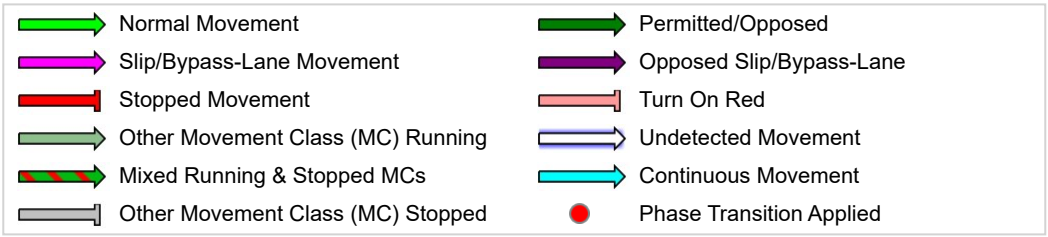
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	D	E	E2
Phase Change Time (sec)	0	70	83	116	134
Green Time (sec)	64	7	27	12	***
Phase Time (sec)	70	13	33	18	6
Phase Split	50%	9%	24%	13%	4%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2031 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 11 [2031 PM peak Without Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	76	0.0	76	0.0	1.052	126.4	LOS F	35.7	270.0	1.00	1.44	1.64	16.0
31	T1	1695	10.2	1695	10.2	* 1.052	120.5	LOS F	35.7	270.0	1.00	1.44	1.64	7.3
Approach		1771	9.8	1771	9.8	1.052	120.8	LOS F	35.7	270.0	1.00	1.44	1.64	7.8
East: Binna Burra St														
21	L2	55	3.8	55	3.8	0.830	79.6	LOS F	6.2	44.1	1.00	0.96	1.26	16.3
5	T1	60	1.8	60	1.8	* 0.830	75.0	LOS F	6.2	44.1	1.00	0.96	1.26	24.3
23	R2	106	0.0	106	0.0	0.830	82.7	LOS F	6.2	44.1	1.00	0.97	1.34	15.6
Approach		221	1.4	221	1.4	0.830	79.8	LOS F	6.2	44.1	1.00	0.97	1.30	18.6
North: Woodville Road														
24	L2	178	1.2	163	1.2	0.470	7.2	LOS A	3.0	22.9	0.12	0.24	0.12	48.5
25	T1	2003	12.8	1833	12.8	0.470	1.8	LOS A	3.7	28.8	0.13	0.16	0.13	50.3
9	R2	29	100.0	29	100.0	* 0.648	87.1	LOS F	1.4	17.9	1.00	0.79	1.15	18.7
Approach		2211	13.0	2025 N1	13.1	0.648	3.5	LOS A	3.7	28.8	0.14	0.17	0.14	46.6
All Vehicles		4202	11.1	4017 N1	11.6	1.052	59.4	LOS E	35.7	270.0	0.57	0.78	0.87	13.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

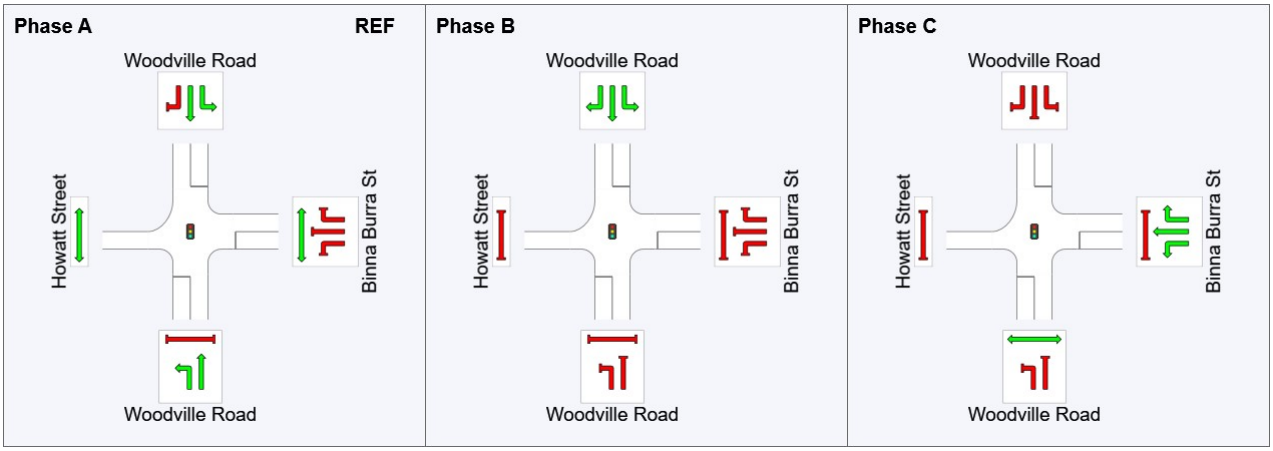
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

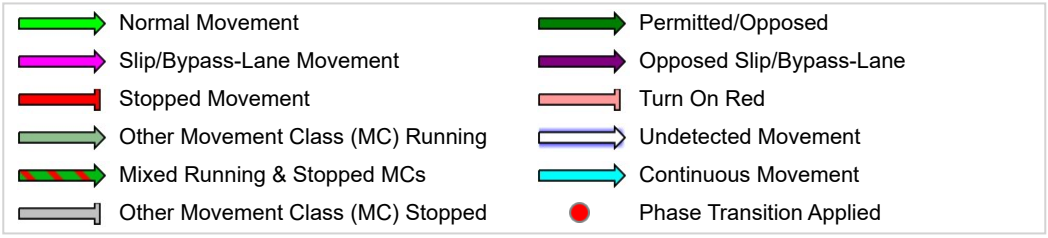
South: Woodville Road										
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94
East: Binna Burra St										
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street										
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	135	101	113
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2031 Scenario - PM Peak | Without Kamira Ave Traffic)]

Network: 11 [2031 PM peak Without Dev (Network Folder: 2031)]

Woodville Road and Kirrang Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	43	0.0	43	0.0	0.390	10.1	LOS A	12.9	97.5	0.32	0.33	0.32	50.3
31	T1	1776	10.0	1776	10.0	* 0.888	23.9	LOS B	30.3	230.1	0.63	0.68	0.74	34.2
Approach		1819	9.8	1819	9.8	0.888	23.5	LOS B	30.3	230.1	0.63	0.68	0.73	34.7
North: Woodville Road														
25	T1	2077	12.5	1906	12.4	0.455	3.4	LOS A	7.5	58.4	0.24	0.22	0.24	55.9
Approach		2077	12.5	1906 N1	12.4	0.455	3.4	LOS A	7.5	58.4	0.24	0.22	0.24	55.9
West: Kirrang Avenue														
27	L2	23	0.0	23	0.0	0.150	34.0	LOS C	0.6	4.0	0.71	0.73	0.71	26.1
29	R2	106	0.0	106	0.0	* 0.503	67.9	LOS E	4.3	29.8	0.98	0.79	0.98	26.7
Approach		129	0.0	129	0.0	0.503	61.9	LOS E	4.3	29.8	0.93	0.78	0.93	26.7
All Vehicles		4025	10.9	3855 N1	11.4	0.888	14.9	LOS B	30.3	230.1	0.45	0.45	0.49	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

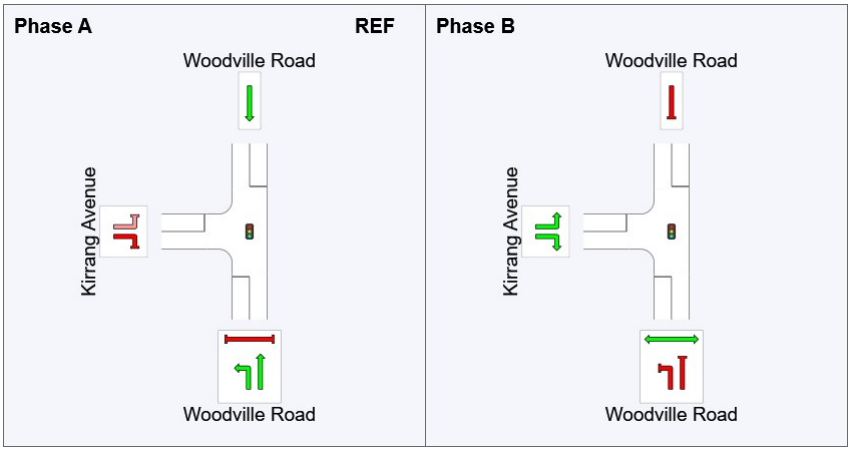
* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

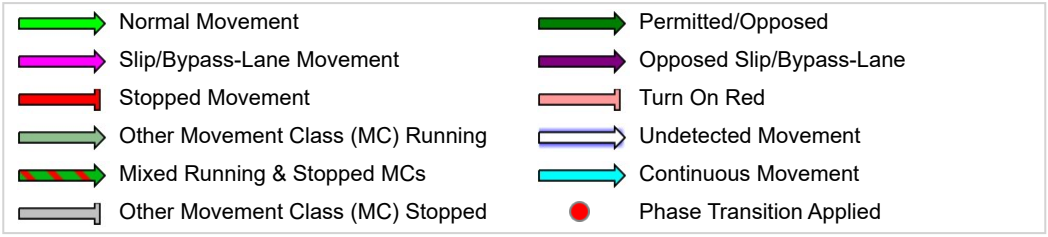
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	117
Green Time (sec)	111	17
Phase Time (sec)	117	23
Phase Split	84%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2031 Scenario - AM Peak | With Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	761	95	801	12.5	0.310	5.7	LOS A	7.1	55.3	0.40	0.35	0.40	54.9
3	R2	300	8	316	2.7	* 0.912	44.9	LOS D	13.4	95.6	1.00	1.02	1.41	34.2
Approach		1061	103	1117	9.7	0.912	16.8	LOS B	13.4	95.6	0.57	0.54	0.68	46.9
East: River Avenue														
4	L2	148	27	156	18.2	0.176	11.1	LOS A	2.6	20.7	0.42	0.67	0.42	49.7
26	R2	429	38	452	8.9	* 0.924	69.5	LOS E	13.7	102.9	1.00	1.07	1.52	27.9
Approach		577	65	607	11.3	0.924	54.5	LOS D	13.7	102.9	0.85	0.96	1.24	31.4
North: The Horsley Drive														
27	L2	826	49	869	5.9	0.480	7.6	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
8	T1	917	150	965	16.4	* 0.677	26.6	LOS B	19.4	154.8	0.88	0.78	0.88	41.8
Approach		1743	199	1835	11.4	0.677	17.6	LOS B	19.4	154.8	0.46	0.66	0.46	47.0
All Vehicles		3381	367	3559	10.9	0.924	23.6	LOS B	19.4	154.8	0.56	0.67	0.67	43.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

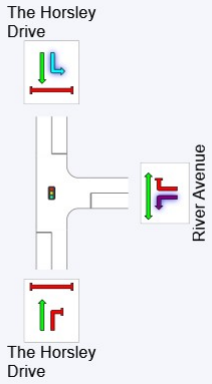
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	217.0	224.5	1.03

East: River Avenue												
P6	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	210.3	215.9	1.03
North: The Horsley Drive												
P7	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	216.2	223.5	1.03
All Pedestrians		150	158	44.3	LOS E	0.1	0.1	0.94	0.94	214.5	221.3	1.03

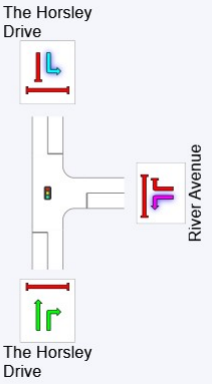
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

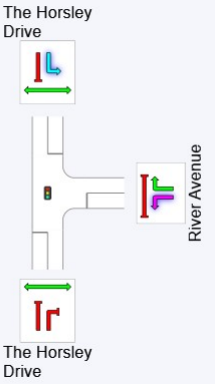
Phase A **REF**



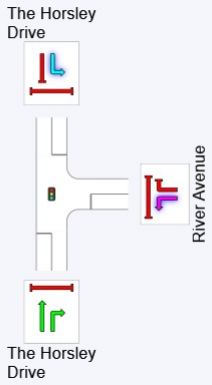
Phase B



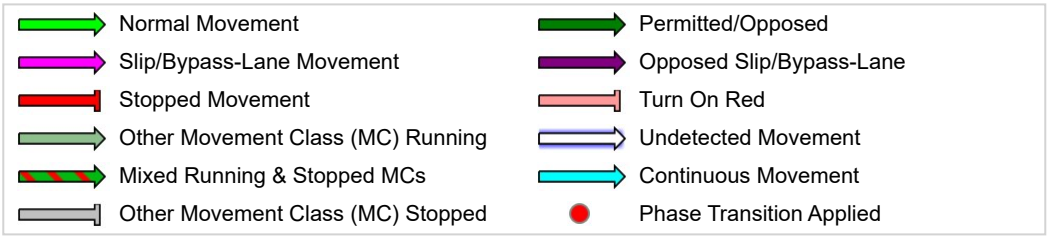
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	46	63	86
Green Time (sec)	40	11	17	8
Phase Time (sec)	46	17	23	14
Phase Split	46%	17%	23%	14%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2031 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 12 [2031 AM Peak With Dev (Network Folder: 2031)]

Villawood Road and Villawood Place
Site Category: 2020 AM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	12	0.0	12	0.0	0.170	4.8	LOS A	0.5	3.5	0.30	0.61	0.30	45.3
2	T1	1	0.0	1	0.0	0.170	5.7	LOS A	0.5	3.5	0.30	0.61	0.30	45.6
3	R2	54	0.0	54	0.0	0.170	7.4	LOS A	0.5	3.5	0.30	0.61	0.30	42.1
Approach		66	0.0	66	0.0	0.170	6.9	LOS A	0.5	3.5	0.30	0.61	0.30	43.1
East: Villawood Road														
4	L2	9	0.0	9	0.0	0.055	5.2	LOS A	0.1	0.4	0.11	0.16	0.11	47.1
5	T1	66	11.1	66	11.1	0.055	0.3	LOS A	0.1	0.4	0.11	0.16	0.11	47.9
6	R2	18	0.0	18	0.0	0.055	5.3	LOS A	0.1	0.4	0.11	0.16	0.11	46.8
Approach		94	7.9	94	7.9	0.055	1.7	NA	0.1	0.4	0.11	0.16	0.11	47.6
North: Villawood Place														
7	L2	35	0.0	35	0.0	0.031	4.9	LOS A	0.0	0.3	0.19	0.51	0.19	43.7
8	T1	1	0.0	1	0.0	0.031	5.6	LOS A	0.0	0.3	0.19	0.51	0.19	46.5
9	R2	1	0.0	1	0.0	0.031	6.9	LOS A	0.0	0.3	0.19	0.51	0.19	46.3
Approach		37	0.0	37	0.0	0.031	5.0	LOS A	0.0	0.3	0.19	0.51	0.19	44.0
West: Villawood Road														
10	L2	2	0.0	2	0.0	0.051	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
11	T1	193	3.3	193	3.3	0.051	0.0	LOS A	0.9	6.6	0.00	0.01	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.17	0.50	0.17	45.8
Approach		196	3.2	196	3.2	0.051	0.1	NA	0.9	6.6	0.00	0.01	0.00	49.9
All Vehicles		393	3.5	393	3.5	0.170	2.1	NA	0.9	6.6	0.10	0.19	0.10	47.3

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

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2031 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 12 [2031 AM Peak With Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default - Import
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E, E1*, E2*
Output Phase Sequence: A, C, D, E, E1*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	20	0.0	20	0.0	0.767	16.2	LOS B	19.7	145.6	0.54	0.51	0.54	31.6
31	T1	1891	7.0	1891	7.0	0.767	9.1	LOS A	19.7	145.6	0.49	0.46	0.49	49.3
32	R2	47	4.4	47	4.4	* 0.317	52.3	LOS D	1.6	11.8	0.99	0.74	0.99	24.8
Approach		1958	6.8	1958	6.8	0.767	10.2	LOS A	19.7	145.6	0.50	0.47	0.50	48.0
East: Llewellyn Avenue														
21	L2	18	35.3	18	35.3	0.123	59.3	LOS E	0.8	7.5	0.92	0.70	0.92	19.6
5	T1	5	20.0	5	20.0	0.123	54.4	LOS D	0.8	7.5	0.92	0.70	0.92	19.6
23	R2	85	51.9	85	51.9	1.158	228.9	LOS F	7.1	72.2	1.00	1.46	2.40	11.8
Approach		108	47.6	108	47.6	1.158	192.5	LOS F	7.1	72.2	0.98	1.29	2.08	12.4
North: Woodville Road														
24	L2	123	16.2	123	16.2	0.910	39.6	LOS C	41.1	317.1	0.94	0.95	1.02	36.4
25	T1	1900	11.5	1900	11.5	* 0.910	33.7	LOS C	41.4	317.9	0.94	0.95	1.02	28.7
9	R2	67	9.4	67	9.4	0.456	73.9	LOS F	2.8	21.1	0.99	0.77	0.99	17.8
Approach		2091	11.7	2091	11.7	0.910	35.3	LOS C	41.4	317.9	0.94	0.94	1.02	28.8
West: Villawood Road														
10	L2	114	4.6	114	4.6	0.326	53.2	LOS D	4.0	29.1	0.90	0.77	0.90	23.2
11	T1	13	0.0	13	0.0	0.060	60.9	LOS E	0.5	3.4	0.93	0.64	0.93	20.6
12	R2	153	0.7	153	0.7	* 1.135	208.4	LOS F	10.7	75.0	1.00	1.38	2.22	1.5
Approach		279	2.3	279	2.3	1.135	138.4	LOS F	10.7	75.0	0.96	1.10	1.63	6.9
All Vehicles		4436	9.8	4436	9.8	1.158	34.6	LOS C	41.4	317.9	0.75	0.75	0.85	30.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

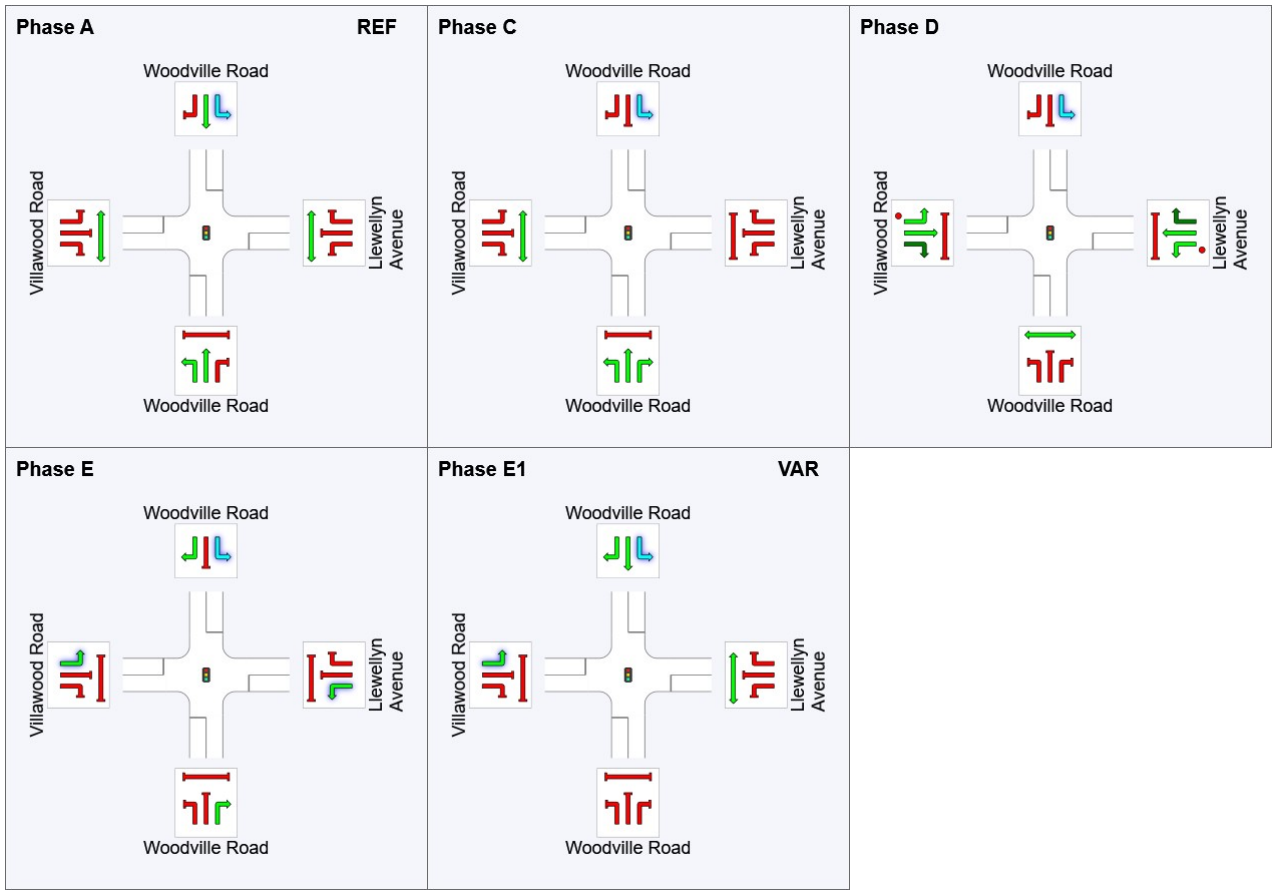
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

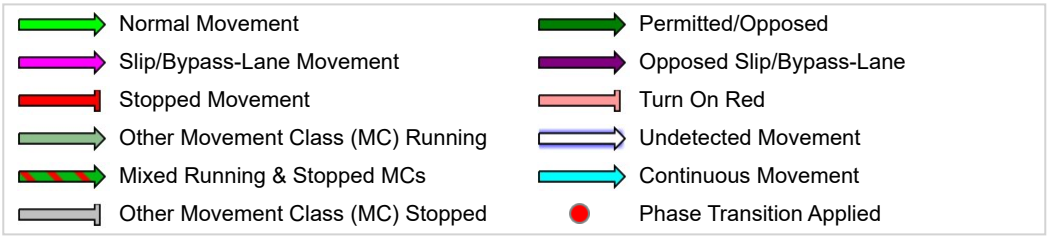
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	C	D	E	E1
Phase Change Time (sec)	0	89	101	122	134
Green Time (sec)	83	6	15	6	***
Phase Time (sec)	89	12	21	12	6
Phase Split	64%	9%	15%	9%	4%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified. If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2031 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 12 [2031 AM Peak With Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	35	0.0	35	0.0	0.912	36.7	LOS C	36.5	270.0	0.90	0.92	0.99	33.1
31	T1	1894	6.8	1894	6.8	* 0.912	31.5	LOS C	36.5	270.0	0.91	0.94	1.01	21.0
Approach		1928	6.7	1928	6.7	0.912	31.6	LOS C	36.5	270.0	0.91	0.94	1.01	21.3
East: Binna Burra St														
21	L2	46	2.3	46	2.3	0.412	70.4	LOS E	2.8	21.6	0.98	0.76	0.98	17.5
5	T1	23	27.3	23	27.3	* 0.412	65.8	LOS E	2.8	21.6	0.98	0.76	0.98	25.7
23	R2	68	4.6	68	4.6	0.370	68.2	LOS E	2.7	19.9	0.97	0.77	0.97	17.7
Approach		138	7.6	138	7.6	0.412	68.5	LOS E	2.8	21.6	0.97	0.76	0.97	19.4
North: Woodville Road														
24	L2	71	7.5	70	7.5	0.474	6.9	LOS A	2.3	17.8	0.09	0.14	0.09	49.6
25	T1	1978	11.1	1961	11.2	0.474	1.8	LOS A	4.8	36.7	0.13	0.13	0.13	51.4
9	R2	21	100.0	21	100.0	* 0.463	85.2	LOS F	1.0	12.5	1.00	0.72	1.01	19.0
Approach		2069	11.9	2052 N1	11.9	0.474	2.8	LOS A	4.8	36.7	0.13	0.14	0.13	48.5
All Vehicles		4136	9.3	4118 N1	9.4	0.912	18.5	LOS B	36.5	270.0	0.53	0.53	0.57	27.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

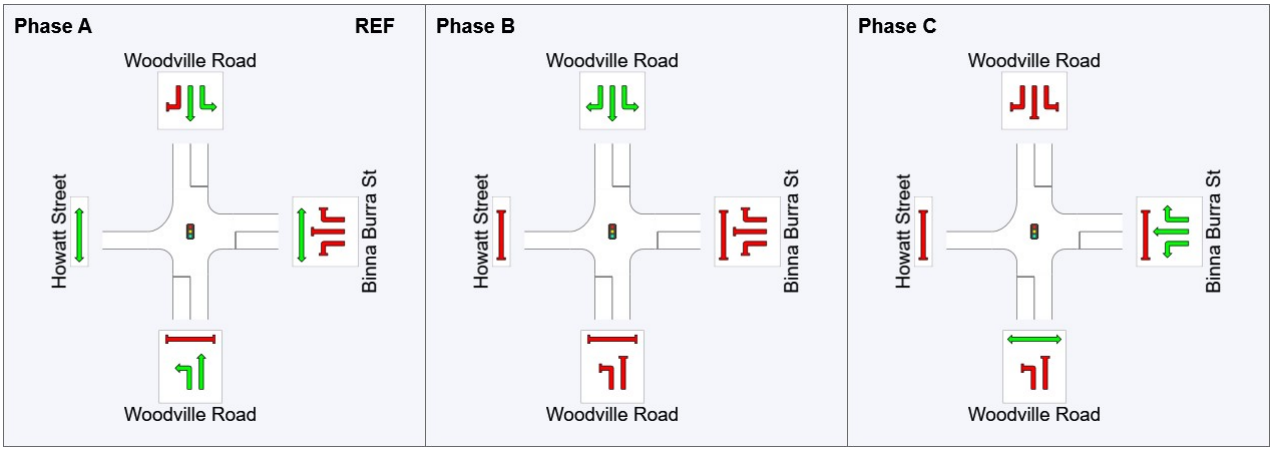
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											

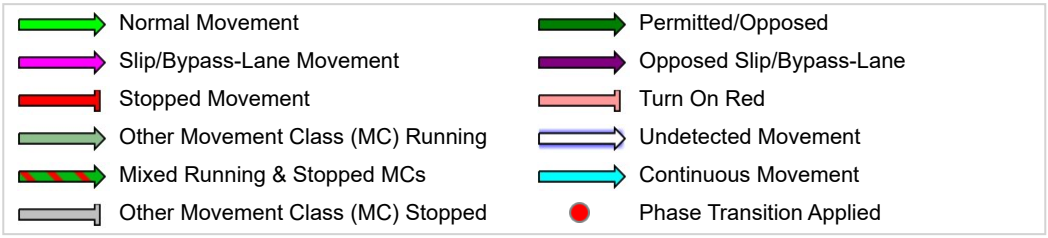
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94
East: Binna Burra St											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	127	93	105
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2031 Scenario - AM Peak | With Kamira Ave Traffic)]

Network: 12 [2031 AM Peak With Dev (Network Folder: 2031)]

Woodville Road and Kirrang Avenue
Site Category: 2020 AM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	77	0.0	77	0.0	0.403	11.1	LOS A	7.8	57.4	0.36	0.38	0.36	49.4
31	T1	1917	6.9	1917	6.9	* 0.918	32.0	LOS C	31.6	234.3	0.73	0.80	0.86	29.7
Approach		1994	6.6	1994	6.6	0.918	31.2	LOS C	31.6	234.3	0.71	0.79	0.84	30.6
North: Woodville Road														
25	T1	2000	10.9	1983	11.0	0.539	4.3	LOS A	7.3	55.4	0.21	0.19	0.21	54.9
26	R2	13	0.0	13	0.0	0.539	15.7	LOS B	7.3	55.4	0.37	0.34	0.37	44.1
Approach		2013	10.8	1995 N1	10.9	0.539	4.4	LOS A	7.3	55.4	0.21	0.19	0.21	54.9
West: Kirrang Avenue														
27	L2	8	0.0	8	0.0	0.050	36.8	LOS C	0.3	1.8	0.69	0.68	0.69	25.1
29	R2	240	10.5	240	10.5	* 1.225	280.5	LOS F	22.7	173.1	1.00	1.54	2.50	10.1
Approach		248	10.2	248	10.2	1.225	272.2	LOS F	22.7	173.1	0.99	1.51	2.44	10.2
All Vehicles		4255	8.8	4238 N1	8.8	1.225	32.7	LOS C	31.6	234.3	0.49	0.55	0.64	32.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

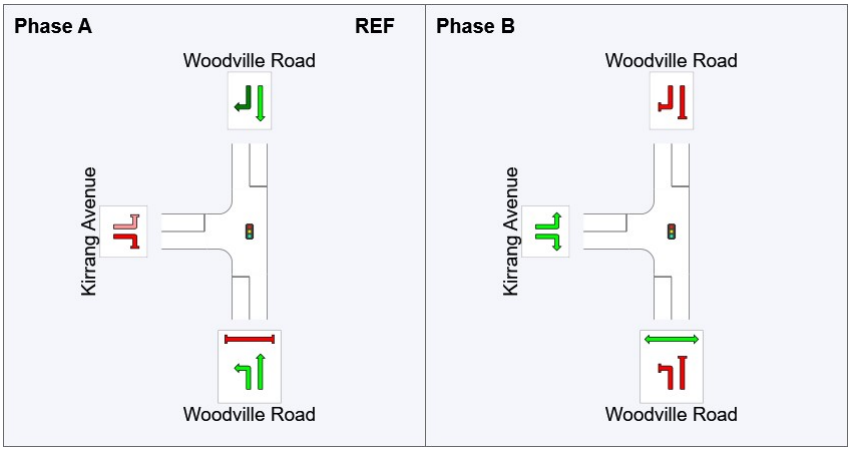
* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

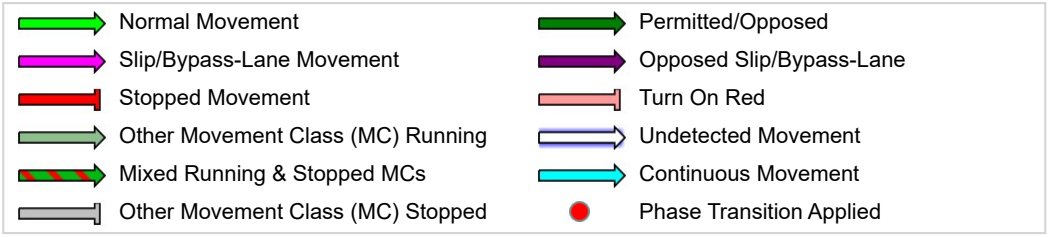
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	114
Green Time (sec)	108	20
Phase Time (sec)	114	26
Phase Split	81%	19%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution **Template: Movement, Phasing**

Site: 104 [The Horsley Drive and River Avenue (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)]

The Horsley Drive and River Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Horsley Drive														
2	T1	1195	166	1258	13.9	0.547	12.5	LOS A	20.2	157.8	0.59	0.54	0.59	49.8
3	R2	207	9	218	4.3	* 0.660	32.1	LOS C	7.0	51.1	0.98	0.82	0.99	38.8
Approach		1402	175	1476	12.5	0.660	15.4	LOS B	20.2	157.8	0.65	0.58	0.65	47.8
East: River Avenue														
4	L2	200	22	211	11.0	0.204	11.0	LOS A	3.9	29.7	0.39	0.66	0.39	50.0
26	R2	768	60	808	7.8	* 1.044	130.7	LOS F	41.7	311.8	1.00	1.25	1.83	18.8
Approach		968	82	1019	8.5	1.044	106.0	LOS F	41.7	311.8	0.87	1.13	1.53	21.6
North: The Horsley Drive														
27	L2	606	26	638	4.3	0.349	6.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.6
8	T1	851	67	896	7.9	* 0.666	34.8	LOS C	22.0	164.4	0.90	0.79	0.90	38.3
Approach		1457	93	1534	6.4	0.666	23.0	LOS B	22.0	164.4	0.53	0.68	0.53	43.8
All Vehicles		3827	350	4028	9.1	1.044	41.2	LOS C	41.7	311.8	0.66	0.76	0.83	35.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

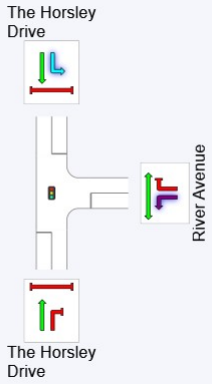
Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Horsley Drive												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	227.0	224.5	0.99

East: River Avenue												
P6	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	220.3	215.9	0.98
North: The Horsley Drive												
P7	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	226.2	223.5	0.99
All Pedestrians		150	158	54.3	LOS E	0.2	0.2	0.95	0.95	224.5	221.3	0.99

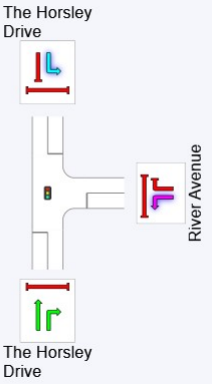
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

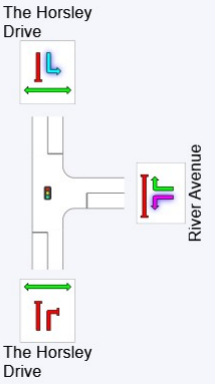
Phase A REF



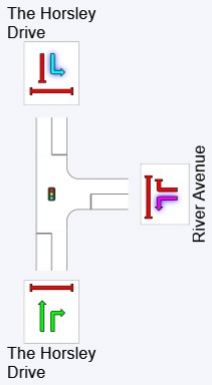
Phase B



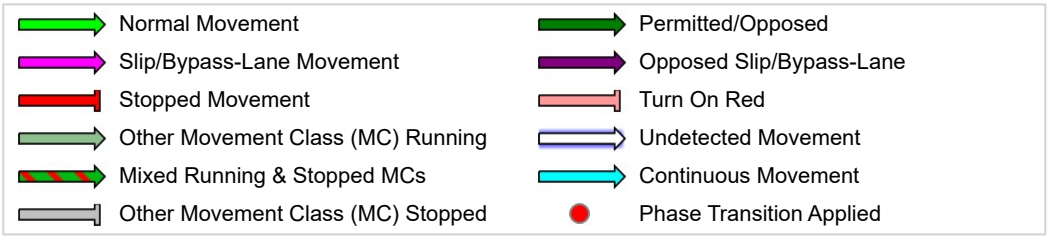
Phase C



Phase D



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	49	67	104
Green Time (sec)	43	12	31	10
Phase Time (sec)	49	18	37	16
Phase Split	41%	15%	31%	13%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 220428sid-N208790 villawood - redistribution — **Template: Movement, Phasing**

Site: 105 [Villawood Road and Villawood Place (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)] — **Network: 17 [2031 PM peak With Dev (Network Folder: 2031)]**

Villawood Road and Villawood Place
Site Category: 2020 PM Peak Without Dev
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Villawood Place														
1	L2	35	0.0	35	0.0	0.299	7.1	LOS A	0.4	2.9	0.60	0.79	0.69	41.9
2	T1	1	0.0	1	0.0	0.299	12.5	LOS A	0.4	2.9	0.60	0.79	0.69	42.2
3	R2	61	0.0	61	0.0	0.299	17.0	LOS B	0.4	2.9	0.60	0.79	0.69	36.7
Approach		97	0.0	97	0.0	0.299	13.4	LOS A	0.4	2.9	0.60	0.79	0.69	39.3
East: Villawood Road														
4	L2	49	0.0	47	0.0	0.276	6.1	LOS A	0.4	2.8	0.19	0.15	0.19	46.7
5	T1	351	1.5	336	1.5	0.276	0.7	LOS A	0.4	2.8	0.19	0.15	0.19	47.4
6	R2	91	0.0	87	0.0	0.276	6.4	LOS A	0.4	2.8	0.19	0.15	0.19	46.4
Approach		491	1.1	470[N1]	1.1	0.276	2.3	NA	0.4	2.8	0.19	0.15	0.19	47.2
North: Villawood Place														
7	L2	71	0.0	71	0.0	0.083	5.2	LOS A	0.1	0.7	0.28	0.54	0.28	43.4
8	T1	1	0.0	1	0.0	0.083	11.6	LOS A	0.1	0.7	0.28	0.54	0.28	46.3
9	R2	1	0.0	1	0.0	0.083	14.0	LOS A	0.1	0.7	0.28	0.54	0.28	46.1
Approach		73	0.0	73	0.0	0.083	5.5	LOS A	0.1	0.7	0.28	0.54	0.28	43.5
West: Villawood Road														
10	L2	1	0.0	1	0.0	0.112	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.4
11	T1	325	1.3	325	1.3	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
12	R2	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.43	0.48	0.43	45.3
Approach		327	1.3	327	1.3	0.112	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		987	1.0	967[N1]	1.0	0.299	2.9	NA	0.4	2.9	0.17	0.20	0.18	46.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 968 [Woodville Road and Villawood Road and Llewellyn Avenue (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 17 [2031 PM peak With Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, D, E, E1*, E2*
Output Phase Sequence: A, B, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	80	0.0	74	0.0	1.014	105.9	LOS F	24.0	181.0	1.00	1.27	1.46	6.3
31	T1	1701	10.0	1583	10.0	1.014	100.8	LOS F	24.0	181.0	1.00	1.28	1.46	17.5
32	R2	22	9.5	21	9.5	0.095	64.1	LOS E	0.8	5.8	0.91	0.71	0.91	22.2
Approach		1803	9.6	1678 N1	9.5	1.014	100.6	LOS F	24.0	181.0	1.00	1.28	1.46	17.2
East: Llewellyn Avenue														
21	L2	85	13.6	85	13.6	0.882	69.2	LOS E	7.1	52.4	0.92	0.98	1.29	17.9
5	T1	83	0.0	83	0.0	0.882	64.6	LOS E	7.1	52.4	0.92	0.98	1.29	17.9
23	R2	174	24.8	174	24.8	* 1.183	254.5	LOS F	15.9	134.9	1.00	1.55	2.43	11.0
Approach		342	16.0	342	16.0	1.183	162.2	LOS F	15.9	134.9	0.96	1.27	1.87	12.6
North: Woodville Road														
24	L2	109	14.4	109	14.4	1.117	177.2	LOS F	85.9	665.8	1.00	1.62	1.89	15.2
25	T1	2011	12.3	2011	12.3	* 1.117	171.4	LOS F	85.9	665.8	1.00	1.64	1.89	9.1
9	R2	325	1.6	325	1.6	* 1.044	106.5	LOS F	15.9	113.1	1.00	1.13	1.75	10.5
Approach		2445	11.0	2445	11.0	1.117	163.1	LOS F	85.9	665.8	1.00	1.57	1.87	9.5
West: Villawood Road														
10	L2	283	1.5	283	1.5	0.370	30.9	LOS C	7.6	53.7	0.74	0.77	0.74	30.7
11	T1	5	0.0	5	0.0	0.013	47.5	LOS D	0.2	1.2	0.82	0.55	0.82	23.7
12	R2	167	0.0	167	0.0	0.935	94.4	LOS F	8.6	60.2	1.00	1.05	1.49	3.2
Approach		456	0.9	456	0.9	0.935	54.4	LOS D	8.6	60.2	0.83	0.87	1.01	18.1
All Vehicles		5046	9.9	4921 N1	10.2	1.183	131.6	LOS F	85.9	665.8	0.98	1.38	1.65	12.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

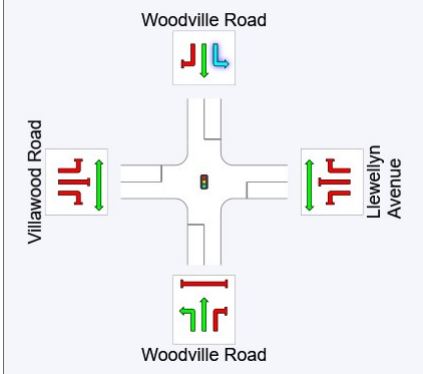
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	231.3	217.1	0.94
East: Llewellyn Avenue											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.5	218.7	0.94
West: Villawood Road											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.1	218.1	0.94
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	231.9	218.0	0.94

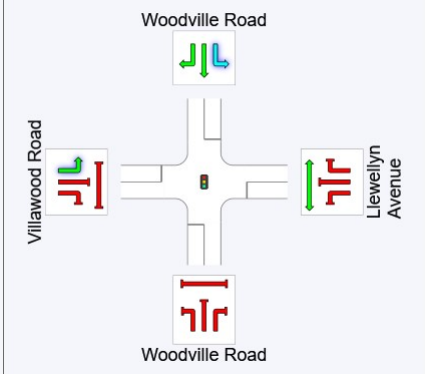
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence

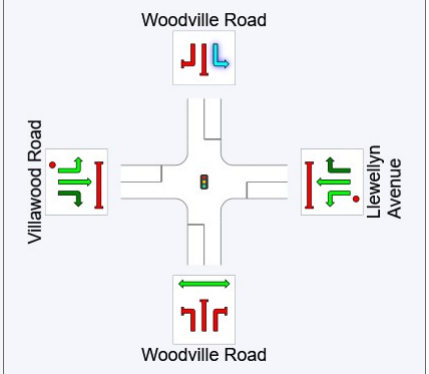
Phase A **REF**



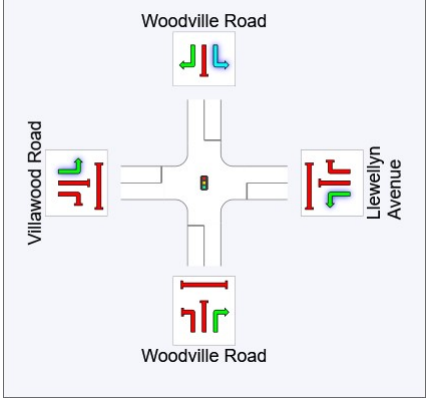
Phase B



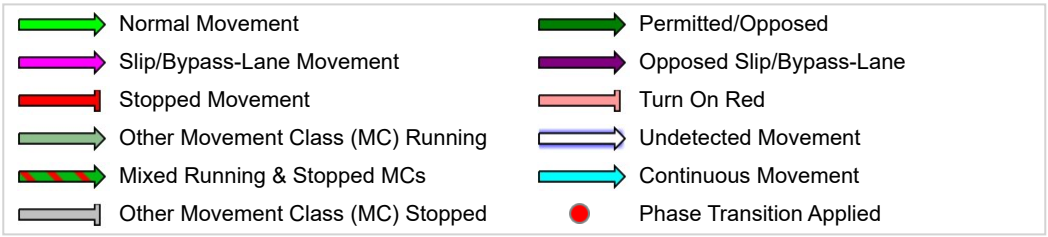
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	D	E
Phase Change Time (sec)	0	70	82	116
Green Time (sec)	64	6	28	18
Phase Time (sec)	70	12	34	24
Phase Split	50%	9%	24%	17%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 1201 [Woodville Road and Howatt Street and Binna Burra Street (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 17 [2031 PM peak With Dev (Network Folder: 2031)]

Woodville Road and Villawood Road and Llewellyn Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
1	L2	116	0.0	116	0.0	1.080	147.6	LOS F	35.8	270.0	1.00	1.52	1.76	14.2
31	T1	1701	10.2	1701	10.2	* 1.080	141.7	LOS F	35.8	270.0	1.00	1.54	1.76	6.3
Approach		1817	9.6	1817	9.6	1.080	142.1	LOS F	35.8	270.0	1.00	1.54	1.76	7.0
East: Binna Burra St														
21	L2	55	3.8	55	3.8	0.853	81.5	LOS F	6.4	45.8	1.00	0.99	1.31	16.0
5	T1	61	1.7	61	1.7	* 0.853	76.9	LOS F	6.4	45.8	1.00	0.99	1.31	24.0
23	R2	111	0.0	111	0.0	0.853	85.0	LOS F	6.4	45.8	1.00	1.00	1.39	15.3
Approach		226	1.4	226	1.4	0.853	82.0	LOS F	6.4	45.8	1.00	0.99	1.35	18.2
North: Woodville Road														
24	L2	182	1.2	165	1.1	0.477	7.7	LOS A	3.8	28.9	0.15	0.26	0.15	48.1
25	T1	2058	12.5	1866	12.4	0.477	2.5	LOS A	5.6	43.4	0.17	0.19	0.17	48.0
9	R2	29	100.0	29	100.0	* 0.648	87.1	LOS F	1.4	17.9	1.00	0.79	1.15	18.7
Approach		2269	12.7	2061 N1	12.7	0.648	4.1	LOS A	5.6	43.4	0.18	0.21	0.19	45.1
All Vehicles		4313	10.8	4104 N1	11.3	1.080	69.5	LOS E	35.8	270.0	0.59	0.84	0.95	12.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

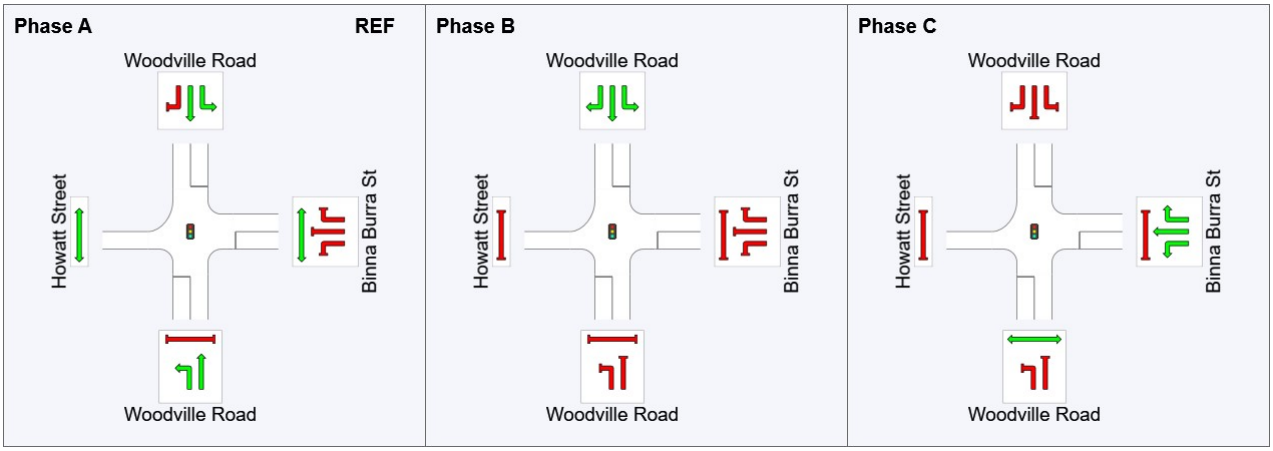
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											

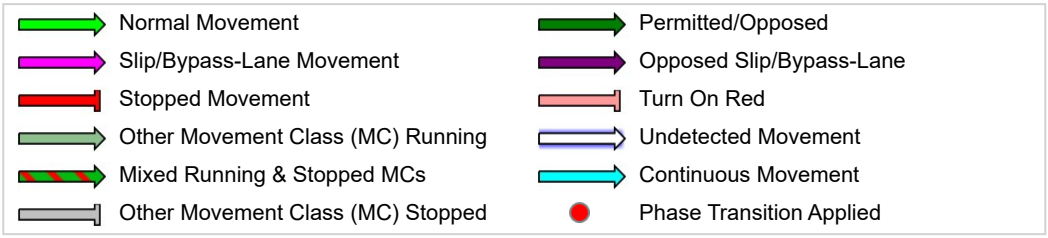
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.2	218.3	0.94
East: Binna Burra St											
P5	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	226.9	211.4	0.93
West: Howatt Street											
P4	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	222.7	206.0	0.92
All Pedestrians		158	64.3	LOS F	0.2	0.2	0.96	0.96	227.3	211.9	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	135	101	113
Green Time (sec)	100	6	16
Phase Time (sec)	106	12	22
Phase Split	76%	9%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Site: 12 [Woodville Road and Kirrang Avenue (Site Folder: 2031 Scenario - PM Peak | With Kamira Ave Traffic)]

Network: 17 [2031 PM peak With Dev (Network Folder: 2031)]

Woodville Road and Kirrang Avenue
Site Category: 2020 PM Peak Without Dev
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Map Extract Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Woodville Road														
30	L2	164	0.0	164	0.0	0.425	10.3	LOS A	13.6	101.3	0.34	0.41	0.34	49.4
31	T1	1823	9.8	1823	9.8	* 0.968	52.8	LOS D	36.5	277.0	0.82	1.01	1.08	22.2
Approach		1987	9.0	1987	9.0	0.968	49.3	LOS D	36.5	277.0	0.78	0.96	1.02	24.2
North: Woodville Road														
25	T1	2132	12.2	1940	12.1	0.461	3.4	LOS A	7.2	55.9	0.23	0.21	0.23	55.9
Approach		2132	12.2	1940 N1	12.1	0.461	3.4	LOS A	7.2	55.9	0.23	0.21	0.23	55.9
West: Kirrang Avenue														
27	L2	23	0.0	23	0.0	0.159	54.5	LOS D	0.7	4.9	0.86	0.74	0.86	20.3
29	R2	162	0.0	162	0.0	* 0.831	76.5	LOS F	7.2	50.3	1.00	0.92	1.23	25.1
Approach		185	0.0	185	0.0	0.831	73.7	LOS F	7.2	50.3	0.98	0.90	1.19	24.7
All Vehicles		4304	10.2	4112 N1	10.6	0.968	28.8	LOS C	36.5	277.0	0.53	0.60	0.65	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

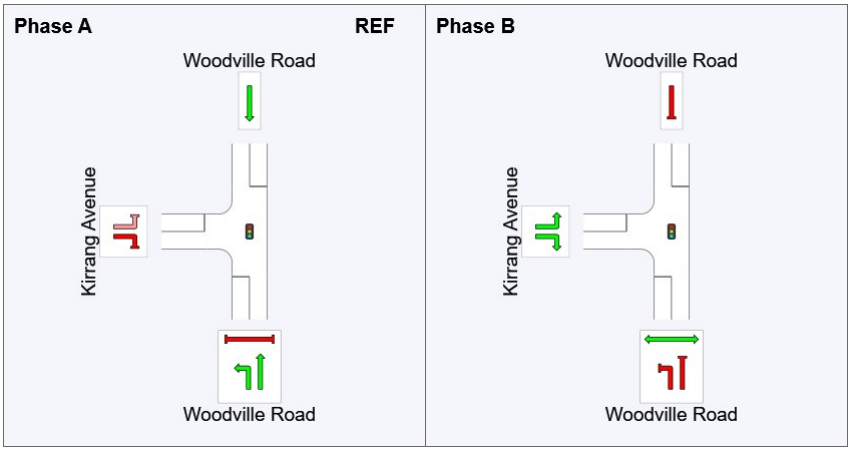
* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

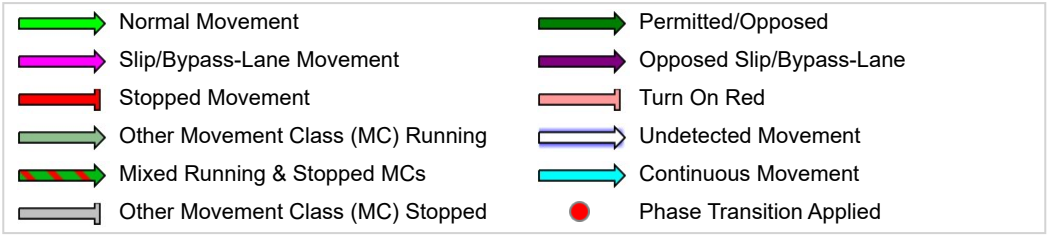
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Woodville Road											
P8	Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94
All Pedestrians		53	64.3	LOS F	0.2	0.2	0.96	0.96	233.0	219.4	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	117
Green Time (sec)	111	17
Phase Time (sec)	117	23
Phase Split	84%	16%

See the Timing Analysis 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, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.