GTAconsultants

REF: V198070

DATE: 18 March 2021

Victorian Planning Authority
Level 25, 35 Collins Street
Melbourne VIC 3000

Attention: Mr Hugh Stanford (Senior Strategic Planner)

Dear Hugh,

RE: SUNBURY SOUTH / LANCEFIELD ROAD (SS-IN-03) ULTIMATE INTERSECTION – ADDITIONAL ANALYSIS

Reference is made to the October 2020 traffic conclave (meeting of traffic experts) for the Sunbury South and Lancefield Road Infrastructure Contributions Plan (ICP) which included the following outcome (item no. 4.2):

> *'The road network can function without the northern bridge [LR-BR-01] within acceptable parameters, based on the strategic operation for the ICP. Accordingly, the northern bridge should be removed from the ICP.'*

From a traffic and transport perspective, the removal of the northern bridge has the potential to impact the performance of the interim intersections on Lancefield Road as all traffic from the PSP's will now travel through them.

The Sunbury Growth Corridor – Jackson Creek Northern Bridge Removal report annexed to this letter (21 December 2020) has been prepared to understand the suitability of the interim intersection arrangements without the delivery of the northern bridge (LR-BR-01). The December 2020 Report investigated:

- The suitability of the interim intersections proposed in the ICP; and
- The level of development (traffic flow) that could occur prior to the need for the interim intersections of LR-IN-04, LR-IN-03 and SS-IN-03 being upgraded to their ultimate configuration.

The assessment focused on the 75% level of the full development (100%) traffic flows which represents the typical lifespan of interim intersections prior to the State constructing the ultimate arrangement. The report found that all of the interim intersections at 75% development exceeded the target DOS of 0.9 and LOS C and mitigations were recommended.

The assessment also found that the Sunbury Road / Lancefield Road intersection for the ultimate design (as per the GHD layout) and 100% of traffic flow will fail, as outlined in Table 1 for LR-IN-04, LR-IN-03 and SS-IN-03.

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Table 1: Summary of Ultimate Intersection Performance (LR-IN-04, LR-IN-03 and SS-IN-03)

Intersection/Location	AM Peak			PM Peak		
	DOS	LOS	Cycle Length (s)	DOS	LOS	Cycle Length (s)
Ultimate ICP Layout – With Northern Bridge (Option 5)						
LR-IN-04	0.77	D	120	0.91	D	120
LR-IN-03	0.82	C	100	0.87	D	100
SS-IN-03	1.42	F	140	1.52	F	140
Ultimate ICP Layout – Without Northern Bridge (Option 2a)						
LR-IN-04	0.88	E	140	0.87	D	140
LR-IN-03	0.89	D	140	0.91	D	140
SS-IN-03	1.43	F	140	1.58	F	140

The commonly used measure of intersection performance is referred to as the Degree of Saturation (DOS). The DOS represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection. For signalised intersections, a DOS of around 0.95 is typically considered the 'ideal' limit, beyond which queues and delays increase disproportionately.

The analysis indicates that the two ultimate intersections on Lancefield Road will be able to operate satisfactorily with and without the northern bridge. However, the intersection of SS-IN-03 is expected to fail with a DOS of 1.52 with the northern bridge and a DOS of 1.58 without the northern bridge.

These outcomes were discussed with the Department of Transport (DoT) who raised questions regarding the suitability of the ultimate intersection designs and their respective footprints within the allowable road reserve, and whether additional land take (acquisition) is required.

In this regard, the VPA have requested additional analysis of the intersection of Sunbury Road and Lancefield Road (SS-IN-03) for the ultimate design at full (100%) development of the PSP's. Specifically, the following scenarios have been assessed:

- Scenario 1 – This scenario seeks to obtain the best level of service achievable at the intersection within the existing road reserve,
- Scenarios 2a & 2b – This scenario investigates mitigations to the intersection layout that improve its performance with minor levels of land acquisition.
- Scenario 3 – This scenario explores alternate intersection layouts that seek to obtain the best level of service achievable within the existing road reserve.

This letter summarises the inputs, assumptions and outcomes of the assessment.

Assumptions

In undertaking the analysis, a number of assumptions have been included:

- 2D functional layout design:
    - It is important to note that the analysis undertaken in this assessment is very preliminary in nature and does not include any assessment of the 2D functional layout of the intersection. All of the recommendations within this are based on our interpretation of the plans prepared by GHD Drawing Number (2113308A-CIV-1102-E) for the VPA.

- Intersection Geometry:
  - It has been assumed that the road reserve for Sunbury Road and Lancefield Road is to be 60m.
  - Minimal attention has been given to providing the exact length of turn lanes, and the distances nominated exclude deceleration and taper requirements.
- Pedestrian Demand:
  - Intersections which include pedestrian movements have been modelled with a pedestrian volume of 50 pedestrians per hour. Pedestrians are assumed to be able to cross the whole carriageway in one movement.
- Traffic Volumes:
  - The traffic volumes have been obtained from the strategic model and have included some minor adjustments to cater for illogical flows or outputs.
  - The AM and PM peak hour design traffic volumes have been input as specified in from VITM model for Option 2a (Without the Northern Bridge). The SIDRA parameter for Peak Flow Factor has been set to 100%.
- Intersection Phasing:
  - Diamond right turn phasing is provided wherever simultaneous right turn movements are possible.
  - A maximum cycle length of 140 seconds is desirable.
  - Left turn overlap phasing has been adopted.
- Target Degree of Saturation:
  - Achieve a degree of saturation (DOS) under 1.0, with a DOS of 0.9 or better most desirable.

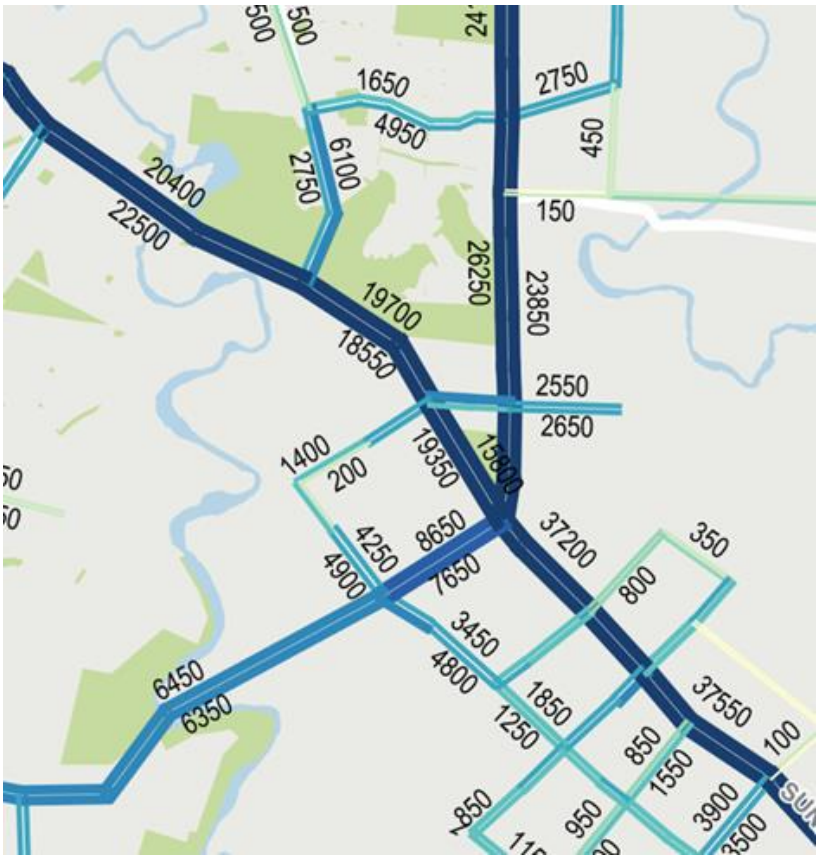
Traffic Volumes

The daily volumes for Option 2a (Without the Northern Bridge) Ultimate (2051) Scenario, as detailed in the Supplementary Report dated 25 September 2020, indicated that:

1. Sunbury Road east of Lancefield Road is anticipated to carry in the order of 75,000 vehicles per day (vpd)
2. Lancefield Road north of Sunbury Road is anticipated to carry in the order of 50,000 vpd
3. Sunbury Road west of Lancefield Road is anticipated to carry in the order of 38,000 vpd.

The daily volume plot for Option 2a is shown in Figure 1.

Figure 1: VITM daily plots for Option 2a (2051)



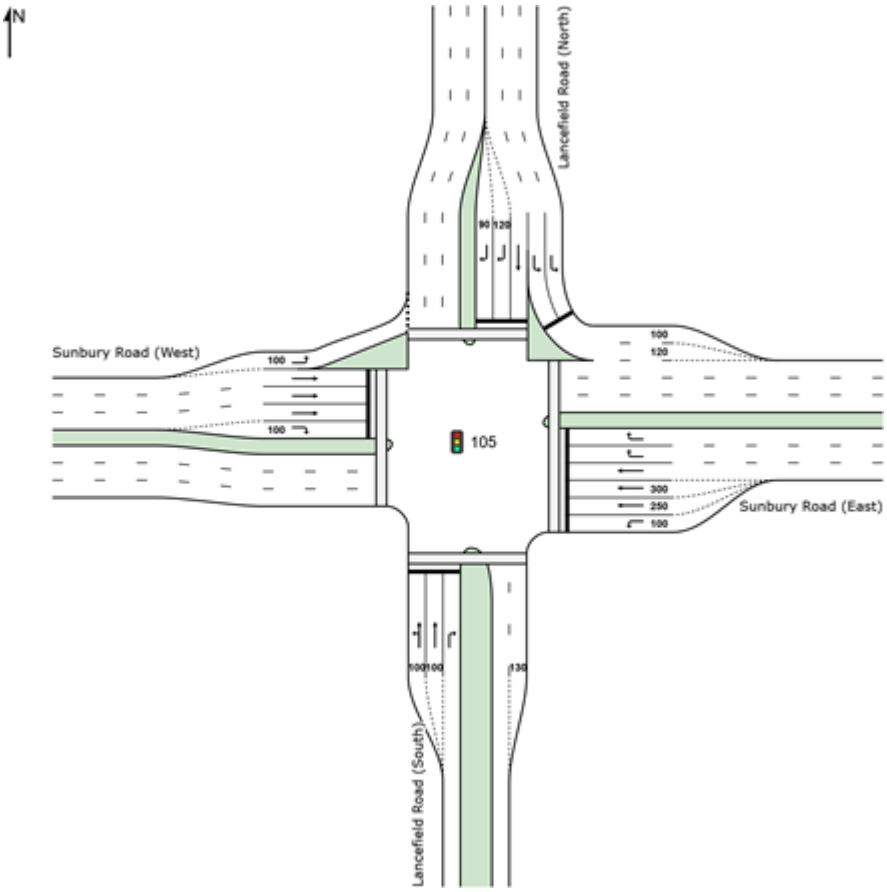
The plot shows that Lancefield Road is expected to carry more traffic than Sunbury Road (west of Lancefield Road).

Scenario Assessment

The approach to the analysis has sought to identify and address key capacity constraints whilst identifying potential mitigations that would fit within the proposed road reserve that has been identified on the GHD design plans. It is reiterated that whilst our best estimate of potential items that may "fit" within the road reserve has been applied, concept designs have not been developed to confirm whether the additional design elements require further land acquisition.

It is noted that the ultimate layout prepared by GHD in the ICP does not include Sunbury Road or Lancefield Road with six lane cross sections which have been indicated in all planning documents (i.e. Growth Corridor Plan, GTA traffic analysis reports). In this instance, the refence or "base layout" has been prepared so that is includes both roads as six lane cross sections, as shown in Figure 2.

Figure 2: Proposed Base Layout for SS-IN-03 with six lanes on Sunbury Road and Lancefield Road



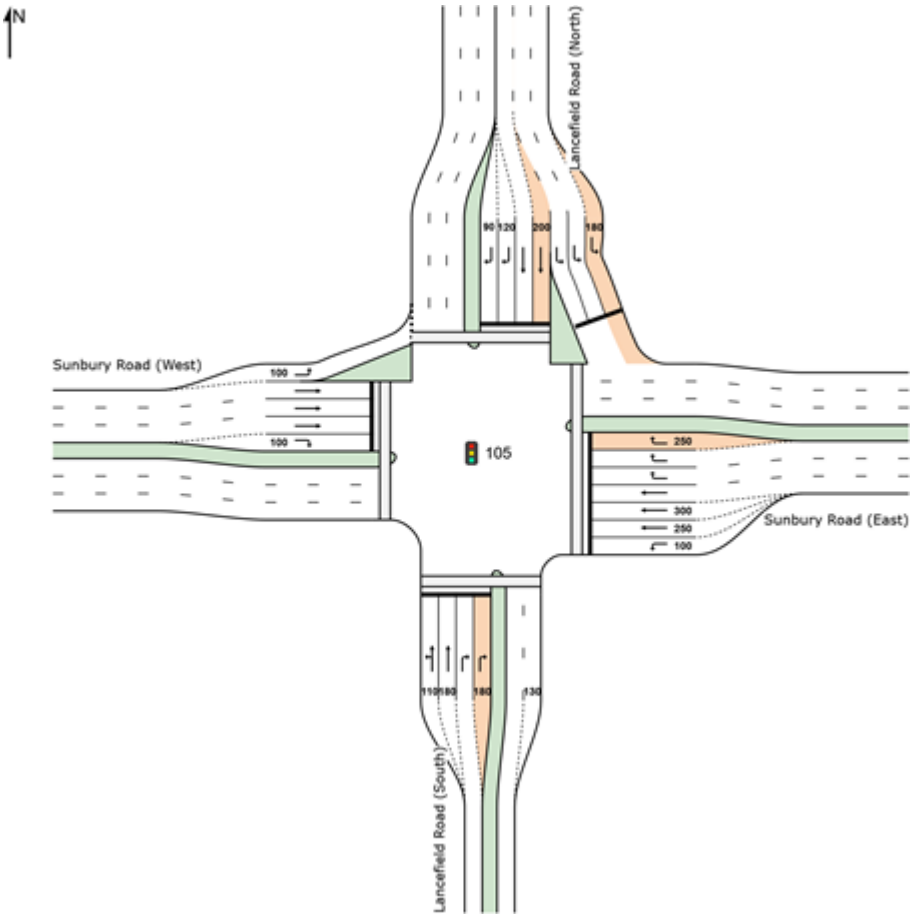
The results for the three scenarios are summarised in the following sections of this letter.

Scenario 1 – Optimum Level of Service achievable within the existing road reserve

The key goal in this geometry is to provide adequate throughput for Lancefield Road and Sunbury Road. This required providing additional lanes as follows and is shown in Figure 3:

1. North approach short left turn lane (180m)
2. North approach short through lane (200m)
3. East approach short right turn lane (250m)
4. South approach short right turn lane (180m).

Figure 3: Proposed SS-IN-03 Layout (Scenario 1)



The positive elements of this layout are:

1. The design has changed the north approach left turn movements from a continuous merge lane to signalised left turn slip lanes. The advantage of this is that there is potentially additional road reserve available on the eastern side of the intersection to accommodate the three full length lanes and an additional right turn lane.
2. The additional right turn lane on the south approach can be accommodated within the proposed median and may not require additional land acquisition.
3. The short through lane on the north approach has been set to the east of the long through lane to take advantage of the angle which the left turn lanes would be on.

A limitation of this layout is:

4. The alignment of the east / west through movements will need careful consideration in the design due to the triple right turns from the east.

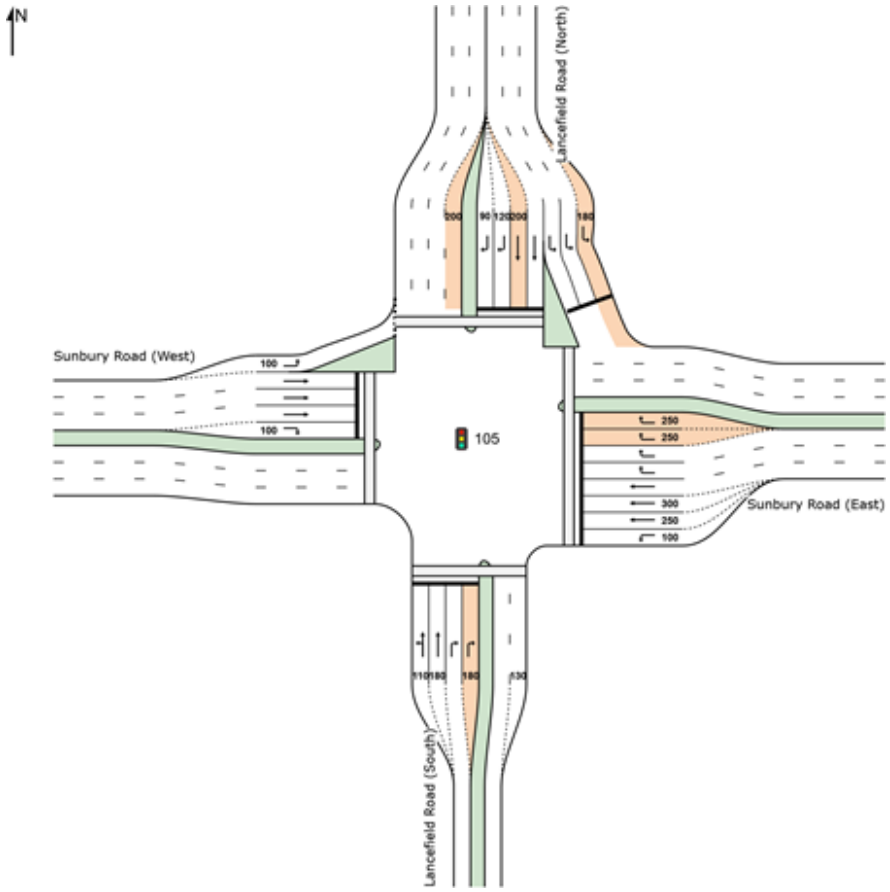
Scenario 2a – Mitigations that improve intersection performance with minor levels of land acquisition

The intent of Scenario 2a is to provide more capacity for the right turn movement from Sunbury Road east to Lancefield Road north. This required providing additional lanes from those described in Scenario 1 as follows:

1. East approach short right turn lanes (250m)
2. North approach short departure lane (200m)
3. North approach short left turn lane (180m)
4. North approach short through lane (200m)
5. South approach short right turn lane (180m).

This layout has the potential need to increase boundary on north western corner to allow for the additional departure lane and will require more detailed investigations of its geometry. The geometry of this layout is shown in Figure 4.

Figure 4: Proposed SS-IN-03 Layout (Scenario 2a)



The positive elements of this layout are:

1. Additional right turn capacity
2. Reduces queues on the east approach, allowing through and left turn traffic to reach the stop line
3. Less likely for queuing to affect other intersections to the east.

Some limitations of this layout are:

4. Involves a right to left merge on the north departure lanes.
5. May require a wide median on the west approach to improve alignment of through lanes, potentially impacting on the property boundaries
6. Poor amenity for pedestrians

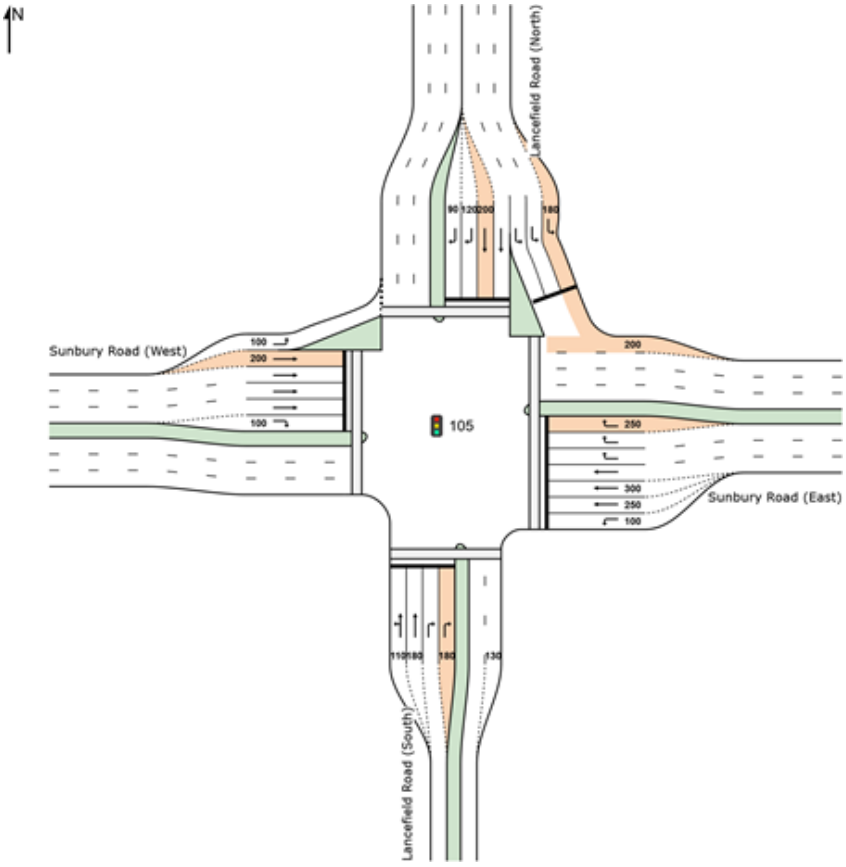
Scenario 2b – Mitigations that improve intersection performance with minor levels of land acquisition

The intent of this geometry is to provide further capacity for the west approach through movement to enable the redistribution of green time to other critical movements. This requires additional lanes from those described in Scenario 1 as follows:

1. North approach short through lane (200m)
2. North approach short left turn lane (180m)
3. West approach short through lane (200m)
4. East approach short departure (200m)
5. East approach short right turn lane (200m)
6. South approach short right turn lane (180m).

This layout has the potential need to increase boundary on north western corner boundary further to allow for the northern shift of the left turn slip lane. The geometry of this layout is shown in Figure 5.

Figure 5: Proposed SS-IN-03 Layout (Scenario 2b)



The positive elements of this layout are:

1. Reduces green time requirements of west approach though, enabling more green time for the east approach right turn.
2. Can run with a shorter cycle length in the AM Peak improving wait times for pedestrians.

A limitation of this layout is:

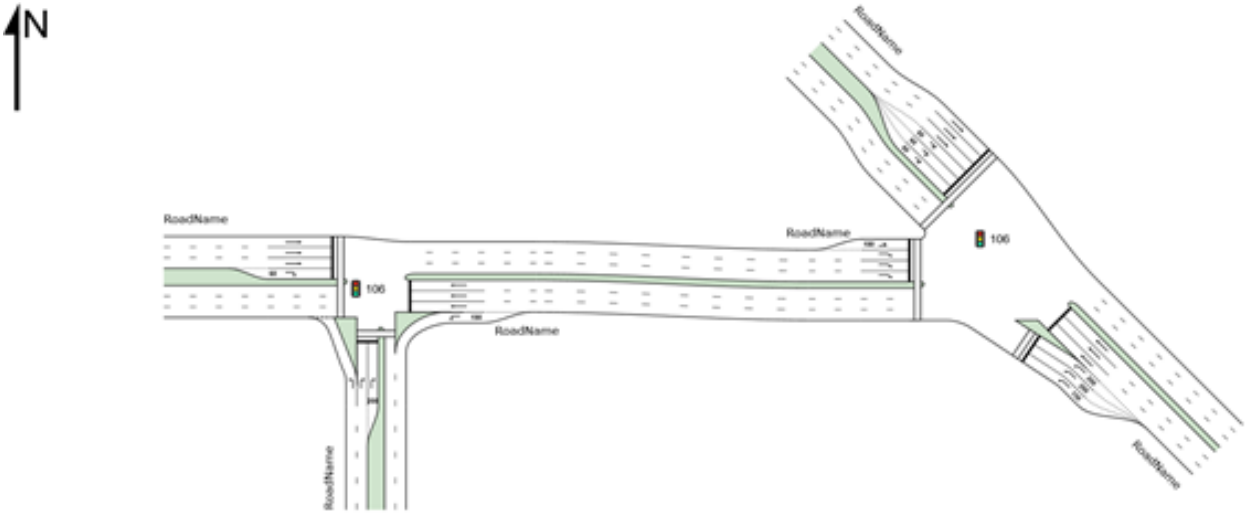
3. May require a wide median on the west approach to improve alignment of through lanes, potentially impacting on the property boundaries (i.e., land acquisition).

Scenario 3 –Alternate Intersection Layout Within Existing Road Reserve

The intent of this geometry is to allow the Sunbury Road (East) and Lancefield Road (north) approaches to operate as the major through movements. The proposed configuration allows some of the Lancefield Road turning movements on the south approach to occur in the shadow of the major north - east through movement.

This layout assumes a distance of 200m between intersections which based on an initial review of the plans appears to be a plausible solution. The alternative intersection layouts for Scenario 3 is shown diagrammatically in Figure 6.

Figure 6: Proposed SS-IN-03 Layout (Scenario 3)



The positive elements of this layout are:

1. Separates critical movements to provide more green time for dominant movements.
2. Rationalises the number movements at the major intersection of Lancefield Road and Sunbury Road.
3. Can run with a shorter cycle length improving wait times for pedestrians.

A limitation of this layout is:

4. Provides pedestrian crossing only on the north western sides of both intersections. This could potentially be a significant issue if this provides access to an activity centre.

Intersection Performance Results

A summary of the SIDRA analysis for each intersection is provided in Table 2 with the SIDRA summary outputs and layouts provided in Attachment A. It is reiterated that the analysis is based on the SIDRA layouts provided and that further investigations into the functional design of the intersections will be required.

Table 2: Summary of Intersection Performance

Intersection/Location	AM Peak			PM Peak		
	DOS	LOS	Cycle Length (s)	DOS	LOS	Cycle Length (s)
GHD Design (Base)	1.43	F	140	1.58	F	140
GHD Design with six lanes on Sunbury Road and Lancefield Road (Base)	1.28	F	140	1.51	F	140
Scenario 1	0.88	D	140	1.05	E	140
Scenario 2a	0.88	D	120	0.93	E	140
Scenario 2b	0.87	D	120	1.01	E	140
Scenario 3	0.88	D	110	1.07	F	140

The results show that Scenario 2a provides the best operating performance with land acquisition. Alternatively, Scenario 1 provides the best operating conditions within the proposed property boundaries. Scenarios 2b performs slightly worse than Scenario 2a but slightly better than Scenario 3.

Summary

The ultimate intersection layout for SS-IN-03 proposed in the ICP has been assessed using SIDRA to determine its suitability without the delivery of the northern bridge in the ICP for the three scenarios. The proposed designs provided in this letter indicate that Scenario 2a provides the best operating performance however does require land acquisition with a DoS of 0.88 and 0.93 in the AM and PM peak respectively. Scenario 1 provides the best results for the intersection within the proposed road reservations along Sunbury Road and Lancefield Road, however will have a DoS of 1.07 in the PM peak.

Naturally, should you have any questions or require any further information, please do not hesitate to contact myself on (03) 9851 9600.

Yours sincerely

GTA CONSULTANTS

Reece Humphreys
Director

encl.

Attachment A – SIDRA Outputs

Attachment B – Analysis Report

ATTACHMENT A

SIDRA Outputs

USER REPORT FOR SITE

Project: 210209-V198070-Sunbury Growth ICP Modelling_Ultimate Scenario - SS03 - for VPA

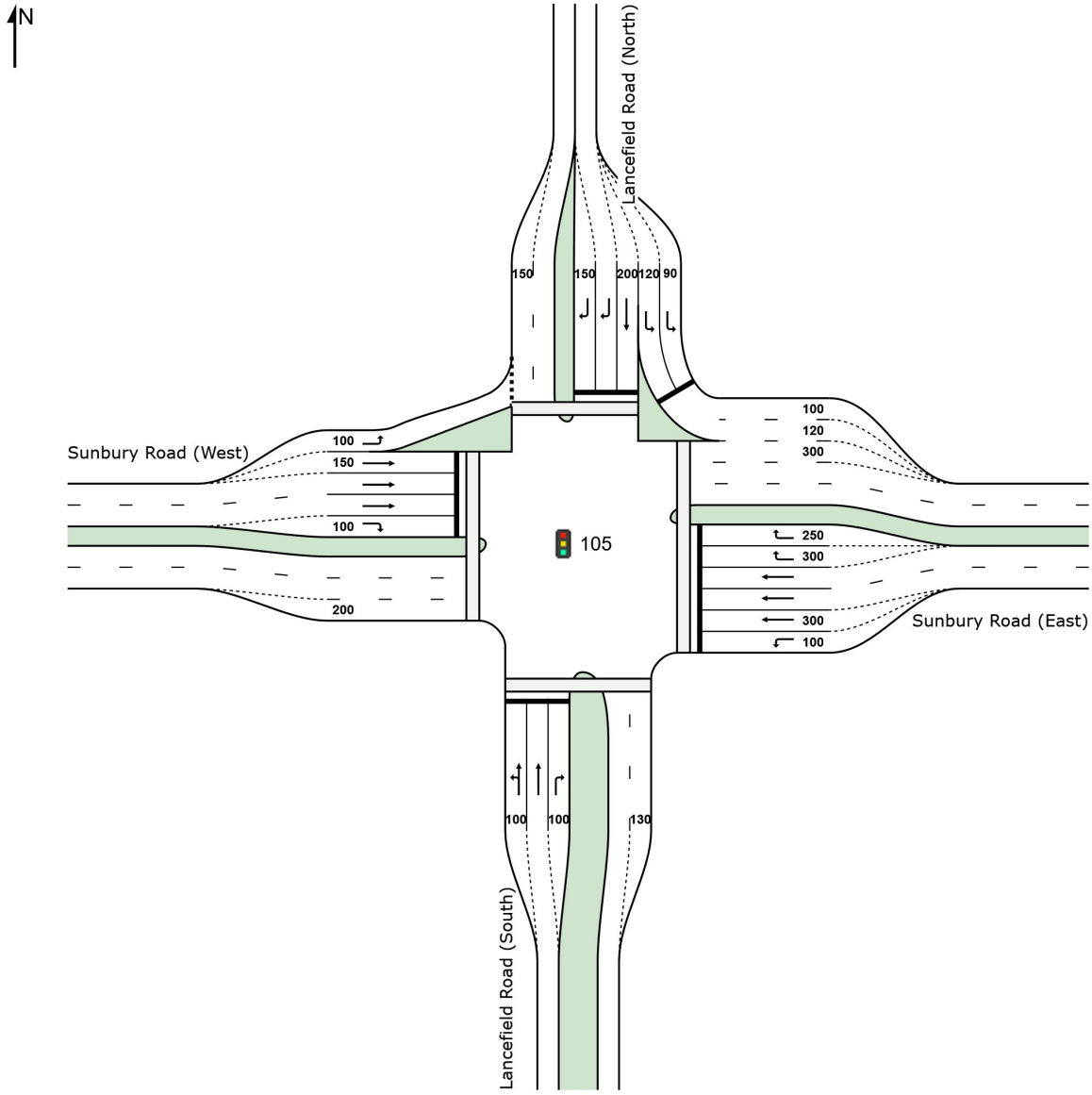
Template: GTA Appendix Site

Site: 105 [SS-IN-03-AM Peak - 100% (Option 2a) - PSP Ultimate Design (GHD) - Base]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

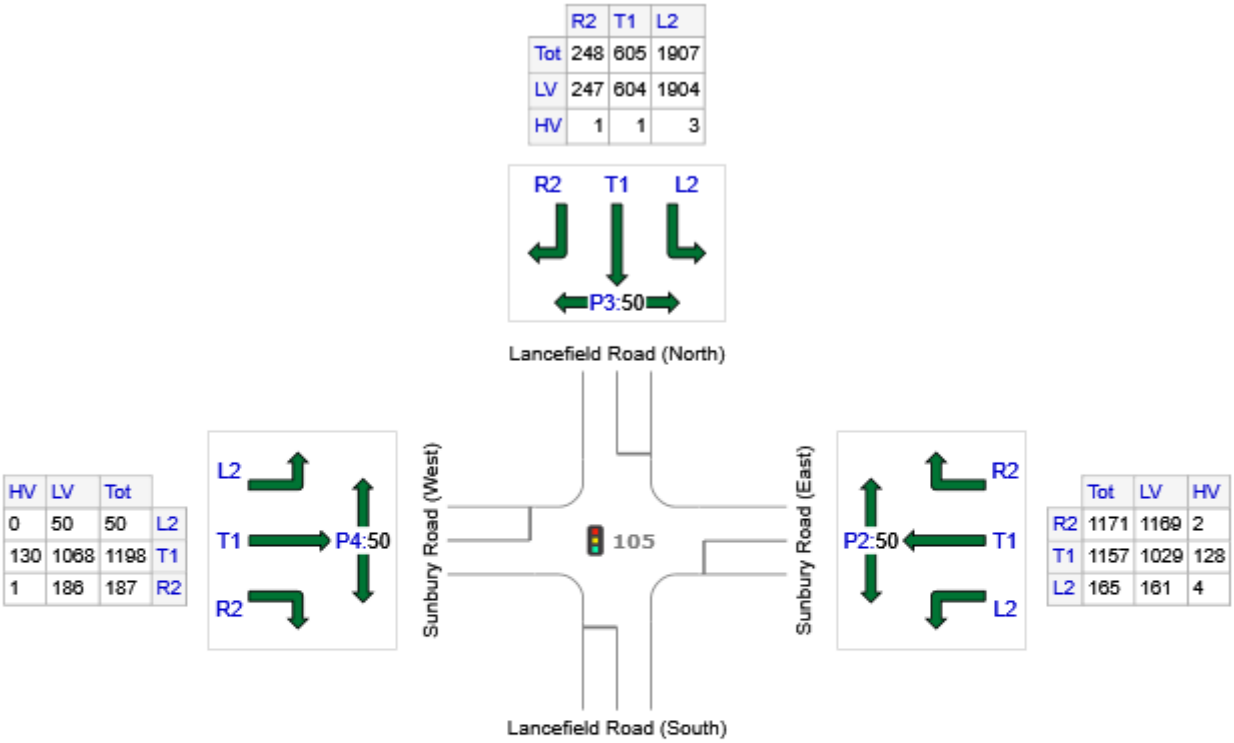
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	757	754	3
E: Sunbury Road (East)	2493	2359	134
N: Lancefield Road (North)	2760	2755	5
W: Sunbury Road (West)	1435	1304	131
Total	7445	7172	273

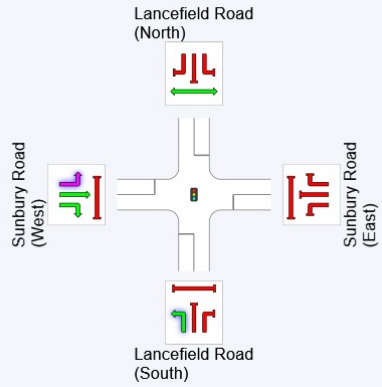
Phase Timing Summary

Phase	D2	B	C	D1
Phase Change Time (sec)	86	114	0	44
Green Time (sec)	22	20	38	36
Phase Time (sec)	28	26	44	42
Phase Split	20%	19%	31%	30%

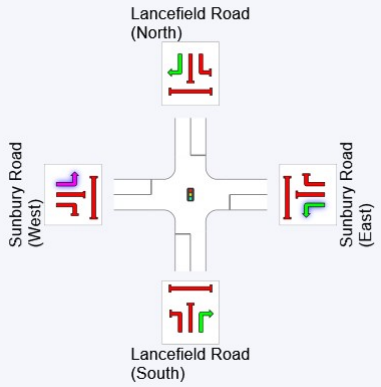
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence

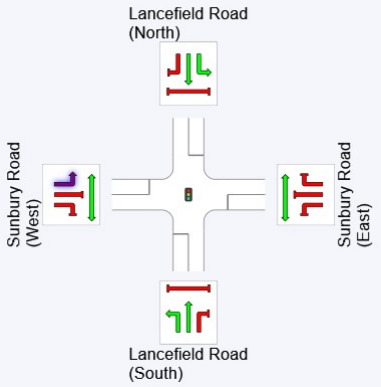
Phase D2



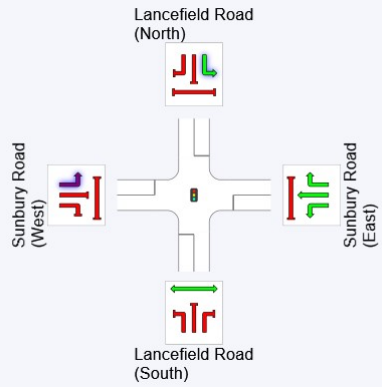
Phase B



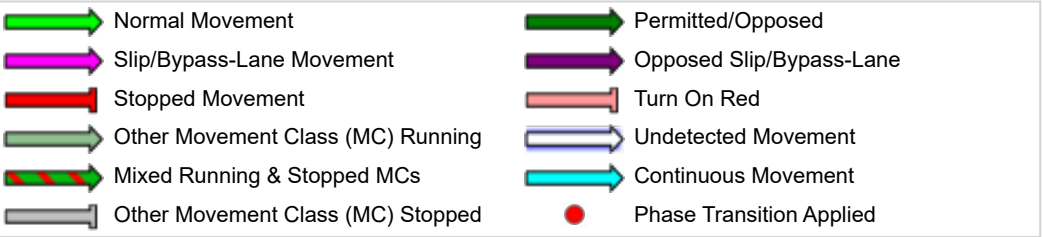
Phase C **REF**



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	193	0.7	553	0.348	94[6]	34.9	LOS C	7.4	52.3	Short	100	0.0	NA
Lane 2	195	0.4	528	0.370	100	44.2	LOS D	10.7	75.4	Full	500	0.0	4.6[8]
Lane 3	369	0.3	265	1.394	100	423.0	LOS F	71.0	498.0	Short	100	0.0	NA
Approach	757	0.4		1.394		226.5	LOS F	71.0	498.0				
East: Sunbury Road (East)													
Lane 1	165	2.4	730	0.226	100	21.1	LOS C	4.4	31.5	Short	100	0.0	NA
Lane 2	374	11.1	446[1]	0.837	100	58.7	LOS E	25.8	197.9	Short	300	0.0	NA
Lane 3	392	11.1	468	0.837	100	59.0	LOS E	27.3	209.2	Full	500	0.0	0.0
Lane 4	392	11.1	468	0.837	100	59.0	LOS E	27.3	209.2	Full	500	0.0	42.3[8]
Lane 5	553	0.2	477	1.159	89[6]	223.4	LOS F	77.1	540.2	Short	300	0.0	NA
Lane 6	618	0.2	477	1.296	100	337.6	LOS F	107.2	751.4	Short	250	0.0	NA
Approach	2493	5.4		1.296		162.0	LOS F	107.2	751.4				
North: Lancefield Road (North)													
Lane 1	800	0.2	652[1]	1.228	86[6]	277.2	LOS F	132.3	927.2	Short	90	0.0	NA
Lane 2	1107	0.2	774[1]	1.430	100	451.1	LOS F	230.3	1614.4	Short	120	0.0	NA
Lane 3	605	0.2	471[1]	1.286	100	323.7	LOS F	103.7	727.1	Short	200	0.0	NA
Lane 4	124	0.4	265	0.469	100	66.0	LOS E	7.9	55.6	Full	500	0.0	100.0[8]
Lane 5	124	0.4	265	0.469	100	66.0	LOS E	7.9	55.6	Short	150	0.0	NA
Approach	2760	0.2		1.430		338.1	LOS F	230.3	1614.4				
West: Sunbury Road (West)													
Lane 1	50	0.0	1032	0.048	100	16.8	LOS B	1.3	9.3	Short	100	0.0	NA
Lane 2	399	10.9	286	1.395	100	418.8	LOS F	77.1	589.6	Short	150	0.0	NA
Lane 3	399	10.9	286	1.395	100	418.8	LOS F	77.1	589.6	Full	500	0.0	19.9
Lane 4	399	10.9	286	1.395	100	418.8	LOS F	77.1	589.6	Full	500	0.0	19.9
Lane 5	187	0.5	291	0.643	100	66.2	LOS E	12.2	85.7	Short	100	0.0	NA
Approach	1435	9.1		1.395		358.8	LOS F	77.1	589.6				
Intersection	7445	3.7		1.430		271.8	LOS F	230.3	1614.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

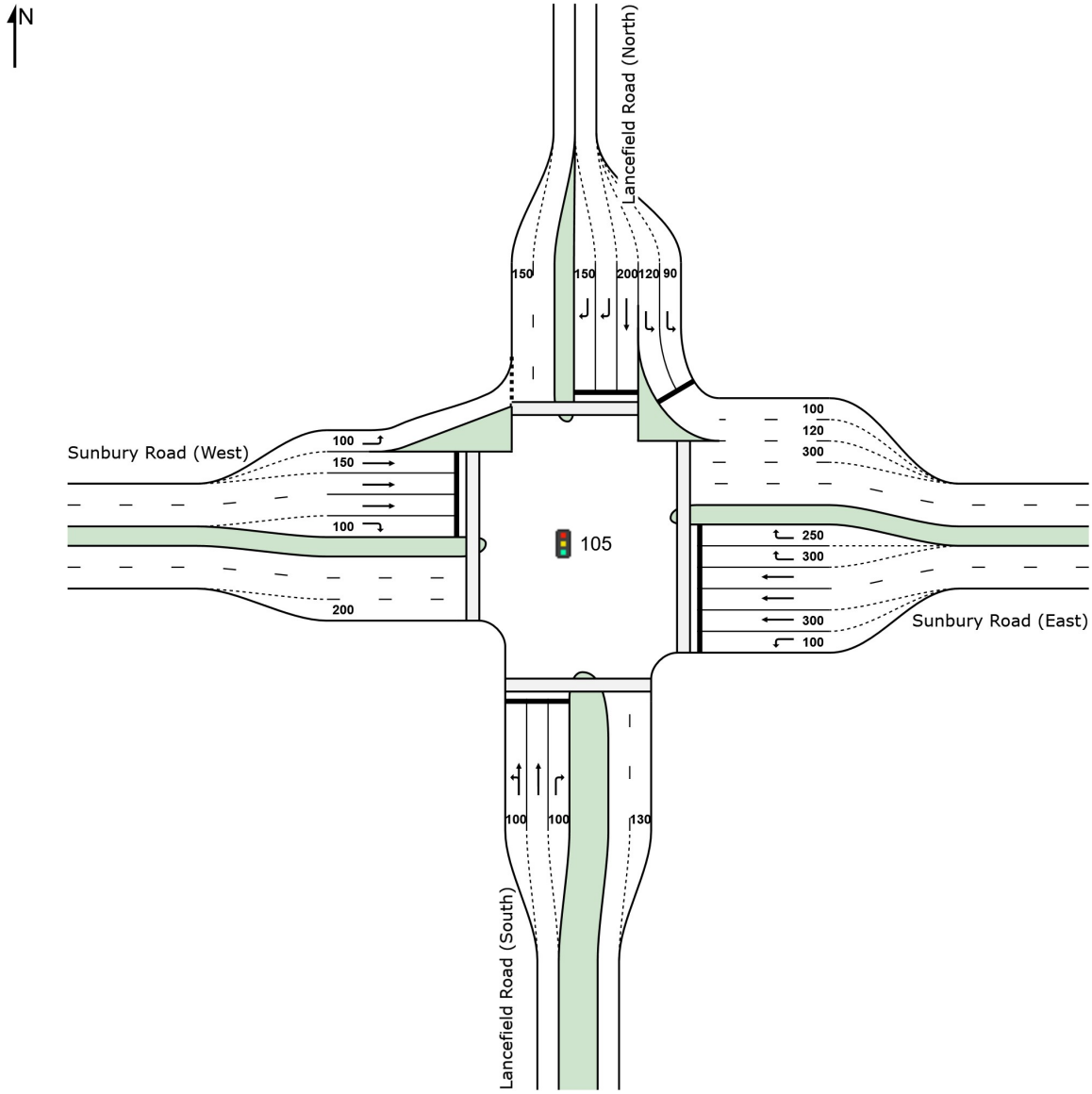
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Site: 105 [SS-IN-03-PM Peak - 100% (Option 2a) - PSP Ultimate Design (GHD) - Base]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

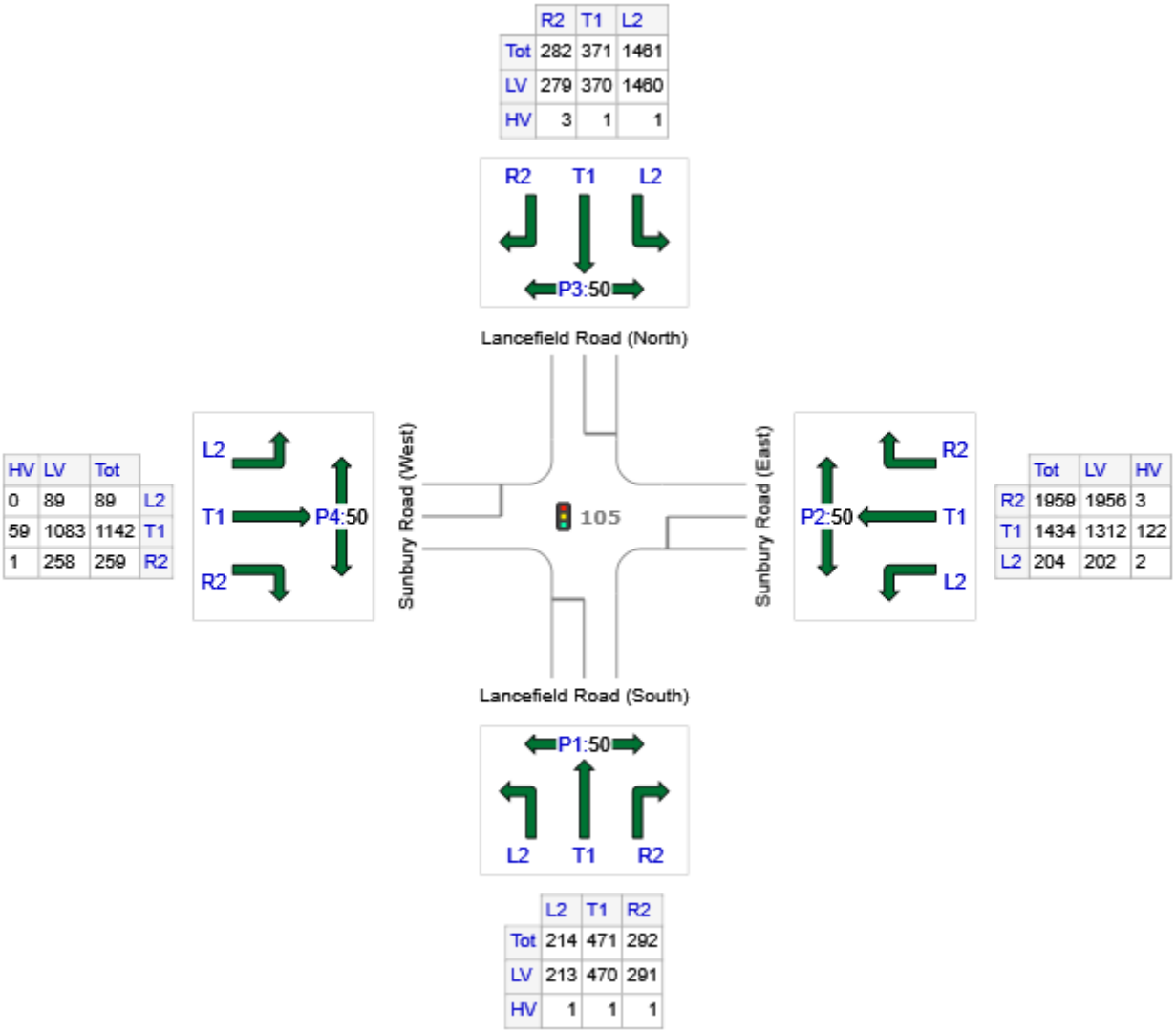
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	977	974	3
E: Sunbury Road (East)	3597	3470	127
N: Lancefield Road (North)	2114	2109	5
W: Sunbury Road (West)	1490	1430	60
Total	8178	7983	195

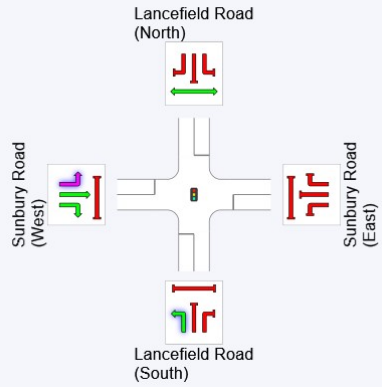
Phase Timing Summary

Phase	D2	B	C	D1
Phase Change Time (sec)	96	120	0	38
Green Time (sec)	18	14	32	52
Phase Time (sec)	24	20	38	58
Phase Split	17%	14%	27%	41%

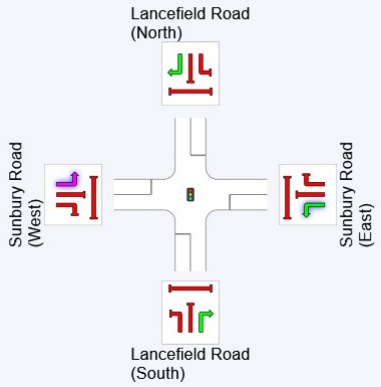
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence

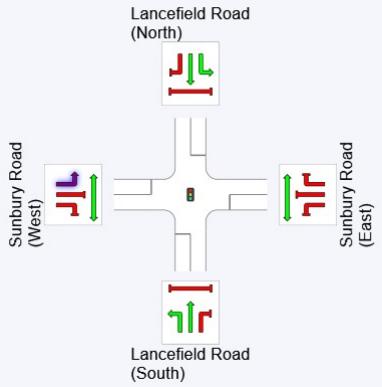
Phase D2



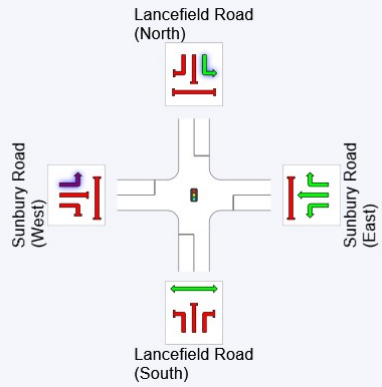
Phase B



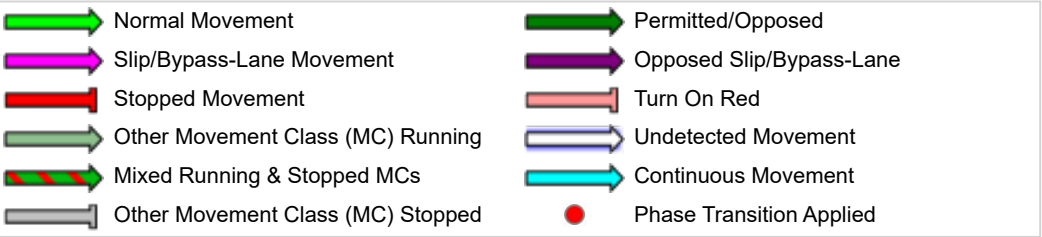
Phase C **REF**



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	343	0.4	473	0.724	94[6]	53.2	LOS D	18.7	131.4	Short	100	0.0	NA
Lane 2	342	0.2	445	0.769	100	56.4	LOS E	22.5	157.9	Full	500	0.0	0.0
Lane 3	292	0.3	185	1.576	100	581.2	LOS F	65.7	460.9	Short	100	0.0	NA
Approach	977	0.3		1.576		212.1	LOS F	65.7	460.9				
East: Sunbury Road (East)													
Lane 1	204	1.0	869	0.235	100	17.9	LOS B	4.9	34.3	Short	100	0.0	NA
Lane 2	425	8.5	577[1]	0.735	100	38.3	LOS D	23.5	176.2	Short	300	0.0	NA
Lane 3	505	8.5	686	0.735	100	40.6	LOS D	29.6	222.2	Full	500	0.0	0.0
Lane 4	505	8.5	686	0.735	100	40.6	LOS D	29.6	222.2	Full	500	0.0	100.0[8]
Lane 5	925	0.2	689	1.342	89[6]	374.8	LOS F	171.8	1203.9	Short	300	0.0	NA
Lane 6	1034	0.2	689	1.501	100	513.6	LOS F	223.8	1568.9	Short	250	0.0	NA
Approach	3597	3.5		1.501		260.9	LOS F	223.8	1568.9				
North: Lancefield Road (North)													
Lane 1	694	0.1	849[1]	0.818	86[6]	21.8	LOS C	27.2	190.6	Short	90	0.0	NA
Lane 2	767	0.1	805[1]	0.952	100	57.1	LOS E	49.5	346.7	Short	120	0.0	NA
Lane 3	371	0.3	445	0.834	100	60.9	LOS E	25.9	181.6	Short	200	0.0	NA
Lane 4	141	1.1	184	0.765	100	76.7	LOS E	10.0	70.8	Full	500	0.0	0.0
Lane 5	141	1.1	184	0.765	100	76.7	LOS E	10.0	70.8	Short	150	0.0	NA
Approach	2114	0.2		0.952		48.8	LOS D	49.5	346.7				
West: Sunbury Road (West)													
Lane 1	89	0.0	709	0.126	100	32.9	LOS C	3.8	26.5	Short	100	0.0	NA
Lane 2	381	5.2	243	1.569	100	569.7	LOS F	85.2	623.1	Short	150	0.0	NA
Lane 3	381	5.2	243	1.569	100	569.7	LOS F	85.2	623.1	Full	500	0.0	25.0[8]
Lane 4	381	5.2	243	1.569	100	569.7	LOS F	85.2	623.1	Full	500	0.0	25.0
Lane 5	259	0.4	238	1.088	100	171.4	LOS F	30.2	212.1	Short	100	0.0	NA
Approach	1490	4.0		1.569		468.4	LOS F	85.2	623.1				
Intersection	8178	2.4		1.576		238.1	LOS F	223.8	1568.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

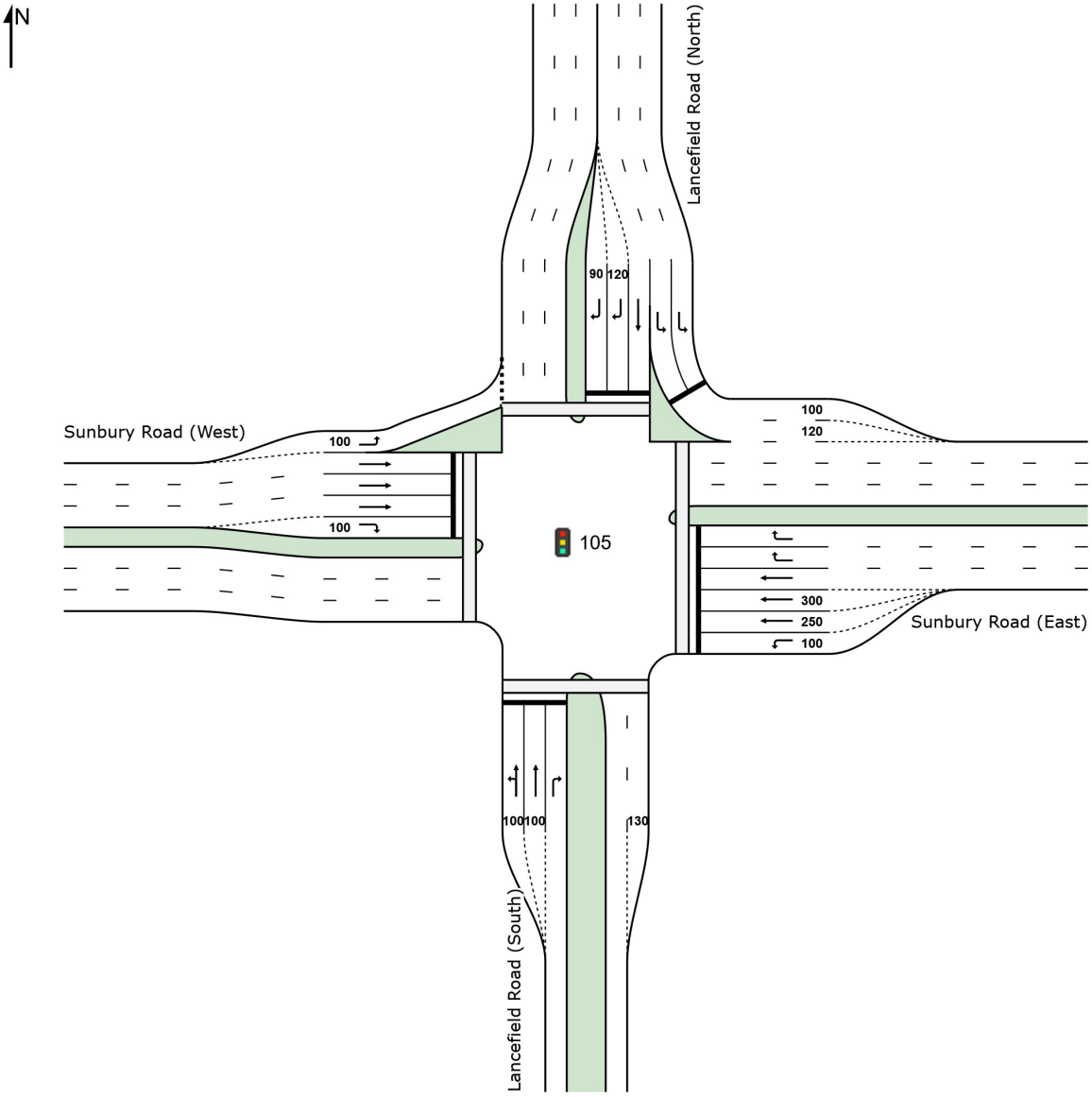
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Site: 105 [SS-IN-03-AM Peak - 100% (Option 2a) - PSP Ultimate Design (GHD) - Base - GTA updates - 3 lanes]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

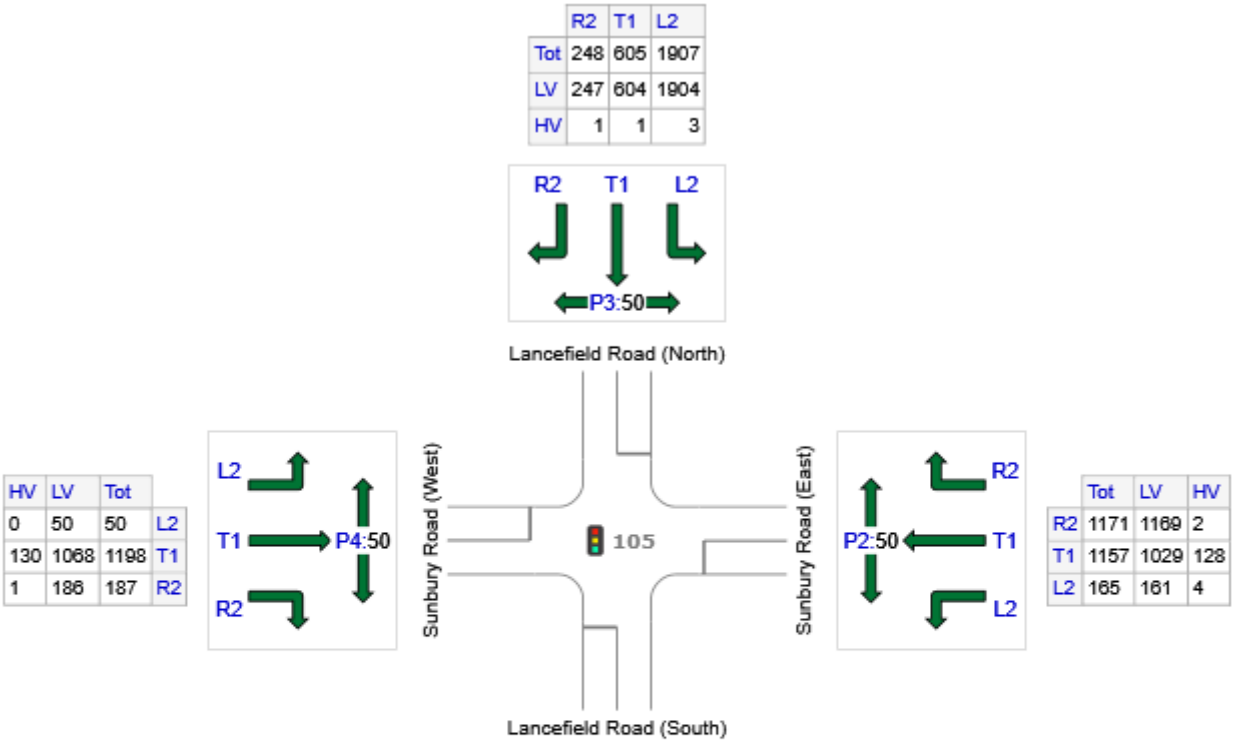
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	757	754	3
E: Sunbury Road (East)	2493	2359	134
N: Lancefield Road (North)	2760	2755	5
W: Sunbury Road (West)	1435	1304	131
Total	7445	7172	273

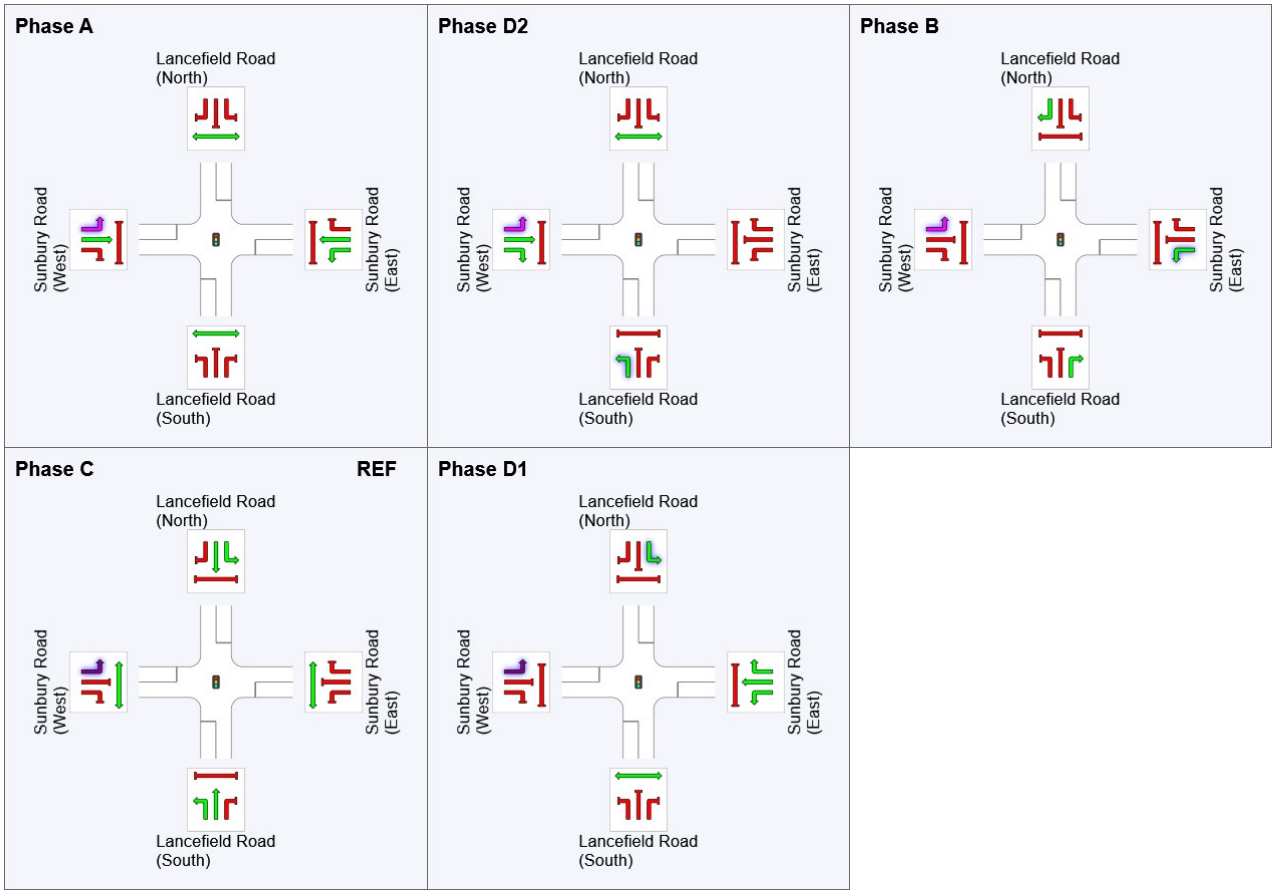
Phase Timing Summary

Phase	A	D2	B	C	D1
Phase Change Time (sec)	82	87	112	0	41
Green Time (sec)	***	19	22	35	35
Phase Time (sec)	5	25	28	41	41
Phase Split	4%	18%	20%	29%	29%

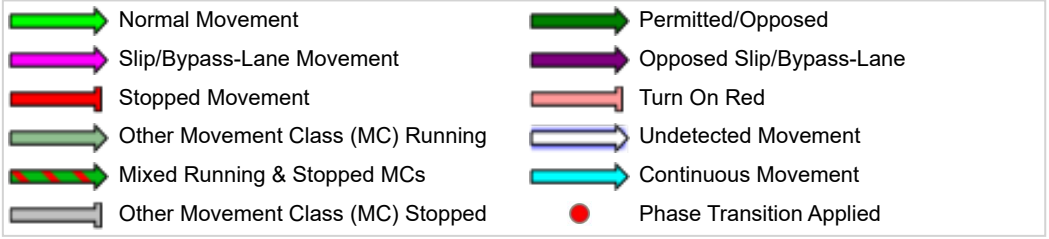
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

*** 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.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	199	0.7	510	0.389	100	39.5	LOS D	8.4	59.0	Short	100	0.0	NA
Lane 2	189	0.4	486	0.389	100	46.8	LOS D	10.7	75.2	Short	100	0.0	NA
Lane 3	369	0.3	291	1.267	100	314.9	LOS F	60.8	426.3	Full	500	0.0	0.0
Approach	757	0.4		1.267		175.6	LOS F	60.8	426.3				
East: Sunbury Road (East)													
Lane 1	165	2.4	808	0.204	100	19.0	LOS B	4.1	29.5	Short	100	0.0	NA
Lane 2	382	11.1	512[1]	0.746	100	49.2	LOS D	23.8	182.3	Short	250	0.0	NA
Lane 3	387	11.1	520	0.746	100	49.3	LOS D	24.2	185.5	Short	300	0.0	NA
Lane 4	387	11.1	520	0.746	100	49.3	LOS D	24.2	185.5	Full	500	0.0	0.0
Lane 5	586	0.2	464	1.263	100	309.5	LOS F	96.9	679.3	Full	500	0.0	32.9
Lane 6	586	0.2	464	1.263	100	309.5	LOS F	96.9	679.3	Full	500	0.0	32.9
Approach	2493	5.4		1.263		169.5	LOS F	96.9	679.3				
North: Lancefield Road (North)													
Lane 1	881	0.2	1007	0.875	86[6]	39.8	LOS D	55.2	386.8	Full	500	0.0	0.0
Lane 2	1026	0.2	1007	1.019	100	101.4	LOS F	105.2	737.5	Full	500	0.0	40.5
Lane 3	605	0.2	479[1]	1.264	100	304.5	LOS F	100.2	702.1	Full	500	0.0	36.0
Lane 4	124	0.4	291	0.426	100	63.8	LOS E	7.8	54.5	Short	120	0.0	NA
Lane 5	124	0.4	291	0.426	100	63.8	LOS E	7.8	54.5	Short	90	0.0	NA
Approach	2760	0.2		1.264		122.9	LOS F	105.2	737.5				
West: Sunbury Road (West)													
Lane 1	50	0.0	1040	0.048	100	16.5	LOS B	1.3	9.2	Short	100	0.0	NA
Lane 2	399	10.9	312	1.279	100	319.4	LOS F	67.1	513.0	Full	500	0.0	7.3
Lane 3	399	10.9	312	1.279	100	319.4	LOS F	67.1	513.0	Full	500	0.0	7.3
Lane 4	399	10.9	312	1.279	100	319.4	LOS F	67.1	513.0	Full	500	0.0	7.3
Lane 5	187	0.5	251	0.745	100	71.6	LOS E	12.9	90.6	Short	100	0.0	NA
Approach	1435	9.1		1.279		276.5	LOS F	67.1	513.0				
Intersection	7445	3.7		1.279		173.5	LOS F	105.2	737.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

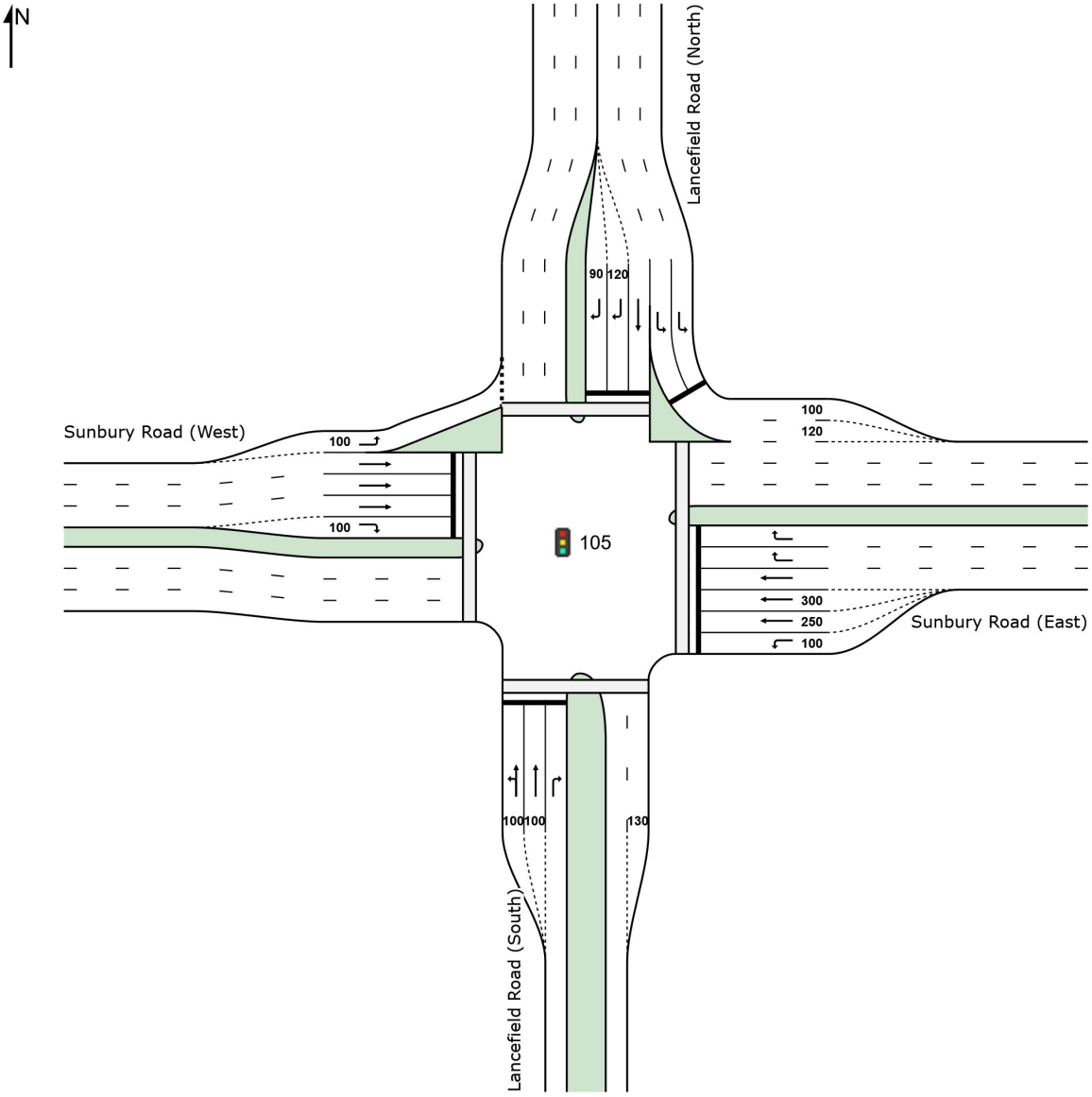
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-PM Peak - 100% (Option 2a) - PSP Ultimate Design (GHD) - Base - GTA Updates - 3 lanes]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

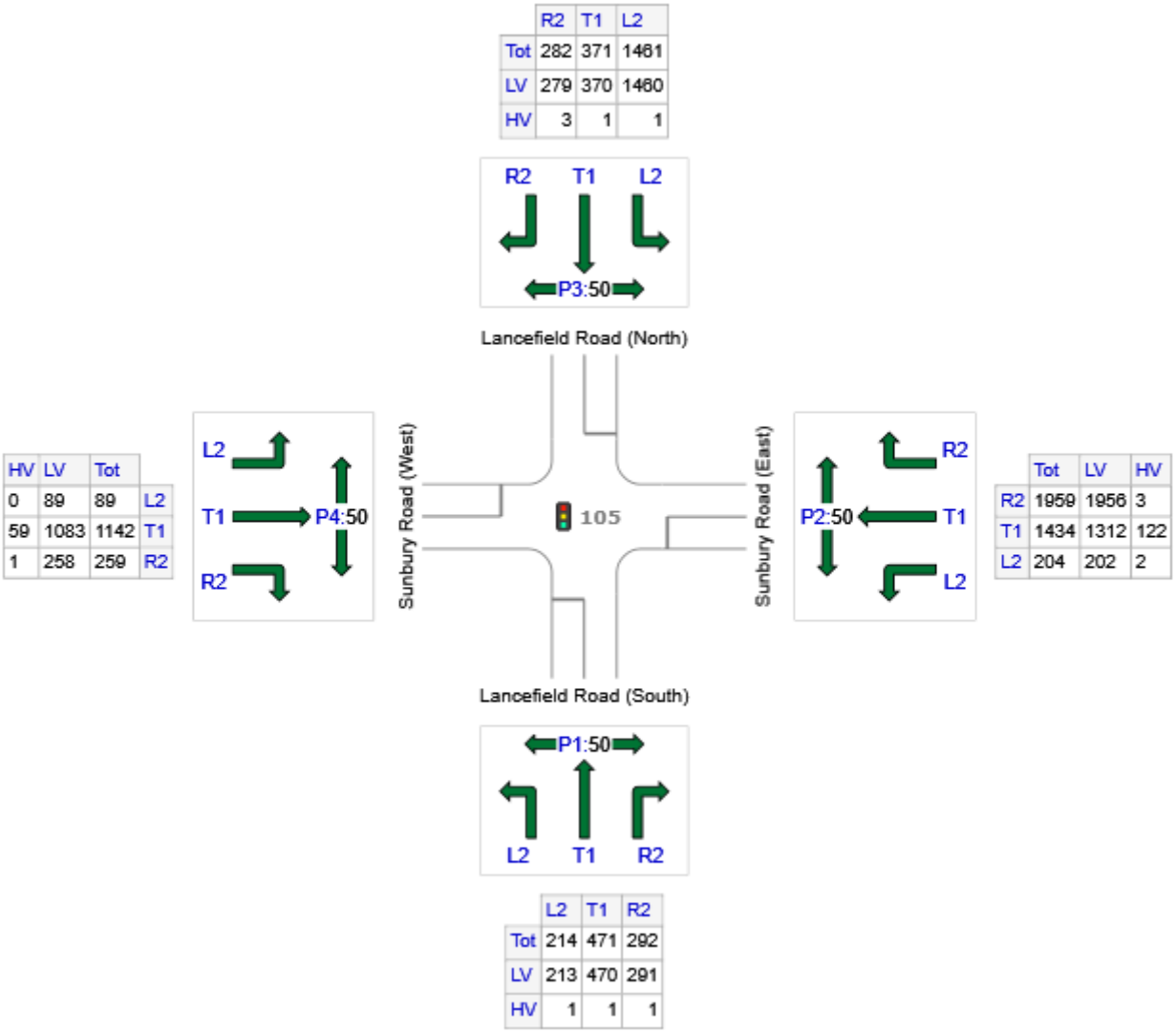
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: D2, B, B2*, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	977	974	3
E: Sunbury Road (East)	3597	3470	127
N: Lancefield Road (North)	2114	2109	5
W: Sunbury Road (West)	1490	1430	60
Total	8178	7983	195

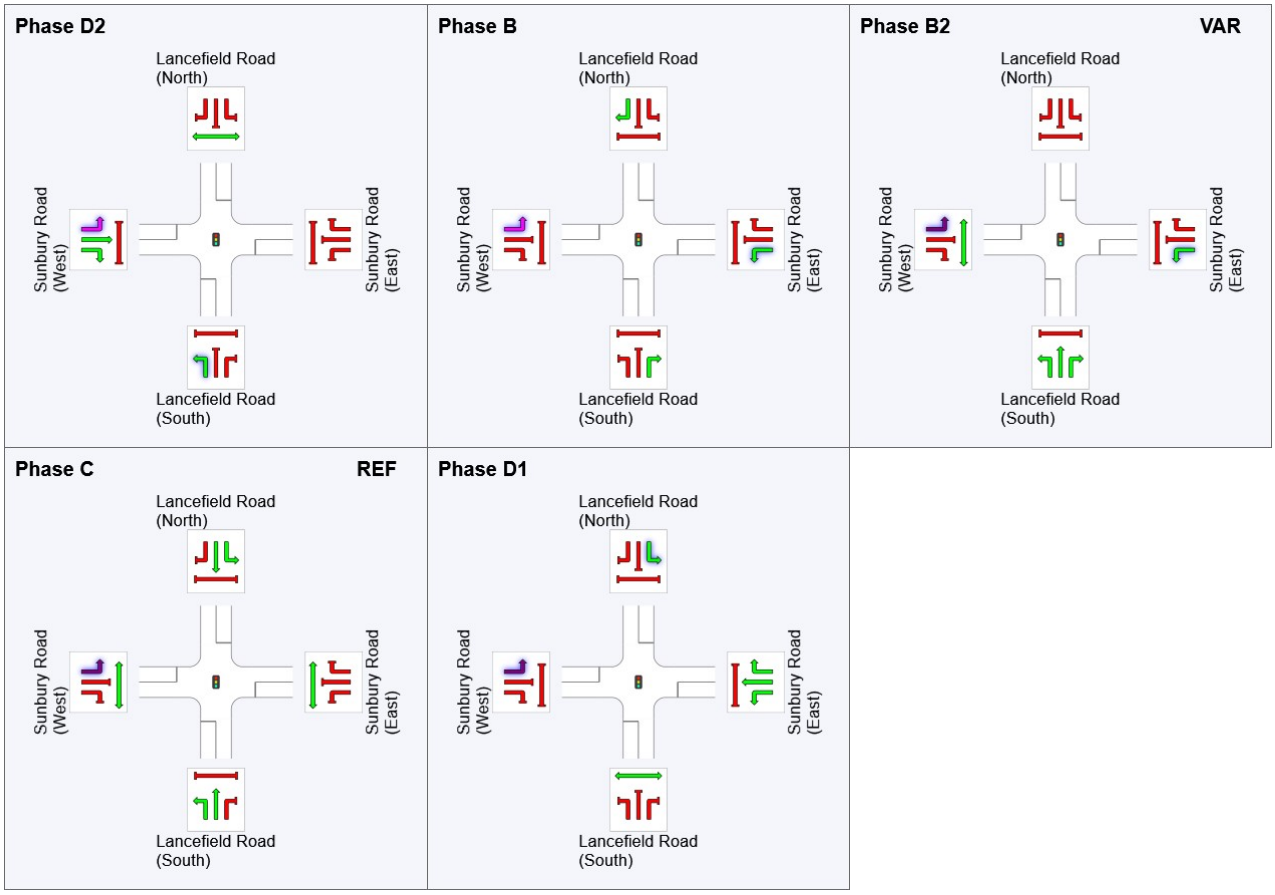
Phase Timing Summary

Phase	D2	B	B2	C	D1
Phase Change Time (sec)	93	119	139	0	38
Green Time (sec)	20	14	***	32	49
Phase Time (sec)	26	20	1	38	55
Phase Split	19%	14%	1%	27%	39%

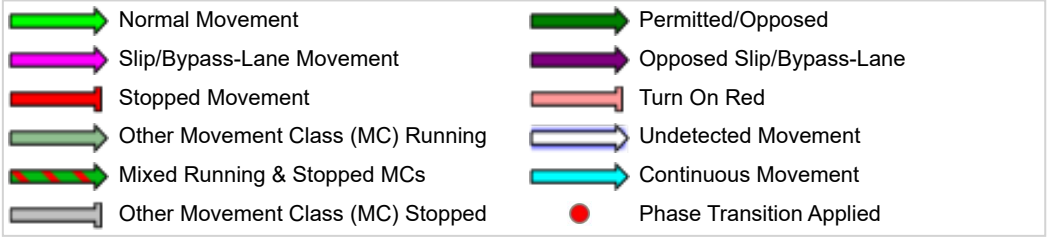
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

*** 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.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	352	0.4	485	0.726	100	52.7	LOS D	19.4	136.1	Short	100	0.0	NA
Lane 2	333	0.2	459	0.726	100	53.6	LOS D	21.1	148.3	Short	100	0.0	NA
Lane 3	292	0.3	198	1.471	100	490.0	LOS F	60.4	424.0	Full	500	0.0	0.0
Approach	977	0.3		1.471		183.7	LOS F	60.4	424.0				
East: Sunbury Road (East)													
Lane 1	204	1.0	843	0.242	100	18.4	LOS B	4.9	34.4	Short	100	0.0	NA
Lane 2	427	8.5	548[1]	0.779	100	42.9	LOS D	25.2	189.1	Short	250	0.0	NA
Lane 3	504	8.5	647	0.779	100	44.2	LOS D	30.9	231.9	Short	300	0.0	NA
Lane 4	504	8.5	647	0.779	100	44.2	LOS D	30.9	231.9	Full	500	0.0	0.0
Lane 5	980	0.2	649	1.509	100	520.9	LOS F	213.0	1493.2	Full	500	0.0	100.0
Lane 6	980	0.2	649	1.509	100	520.9	LOS F	213.0	1493.2	Full	500	0.0	100.0
Approach	3597	3.5		1.509		302.2	LOS F	213.0	1493.2				
North: Lancefield Road (North)													
Lane 1	675	0.1	1154	0.585	86[6]	22.2	LOS C	26.9	188.1	Full	500	0.0	0.0
Lane 2	786	0.1	1154	0.681	100	24.0	LOS C	34.6	242.0	Full	500	0.0	0.0
Lane 3	371	0.3	445	0.834	100	60.9	LOS E	25.9	181.6	Full	500	0.0	0.0
Lane 4	141	1.1	184	0.765	100	76.7	LOS E	10.0	70.8	Short	120	0.0	NA
Lane 5	141	1.1	184	0.765	100	76.7	LOS E	10.0	70.8	Short	90	0.0	NA
Approach	2114	0.2		0.834		36.9	LOS D	34.6	242.0				
West: Sunbury Road (West)													
Lane 1	89	0.0	746	0.119	100	30.3	LOS C	3.6	25.2	Short	100	0.0	NA
Lane 2	381	5.2	270	1.412	100	433.5	LOS F	74.6	545.5	Full	500	0.0	12.9
Lane 3	381	5.2	270	1.412	100	433.5	LOS F	74.6	545.5	Full	500	0.0	12.9
Lane 4	381	5.2	270	1.412	100	433.5	LOS F	74.6	545.5	Full	500	0.0	12.9
Lane 5	259	0.4	265	0.979	100	106.0	LOS F	23.2	162.7	Short	100	0.0	NA
Approach	1490	4.0		1.412		352.5	LOS F	74.6	545.5				
Intersection	8178	2.4		1.509		228.6	LOS F	213.0	1493.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

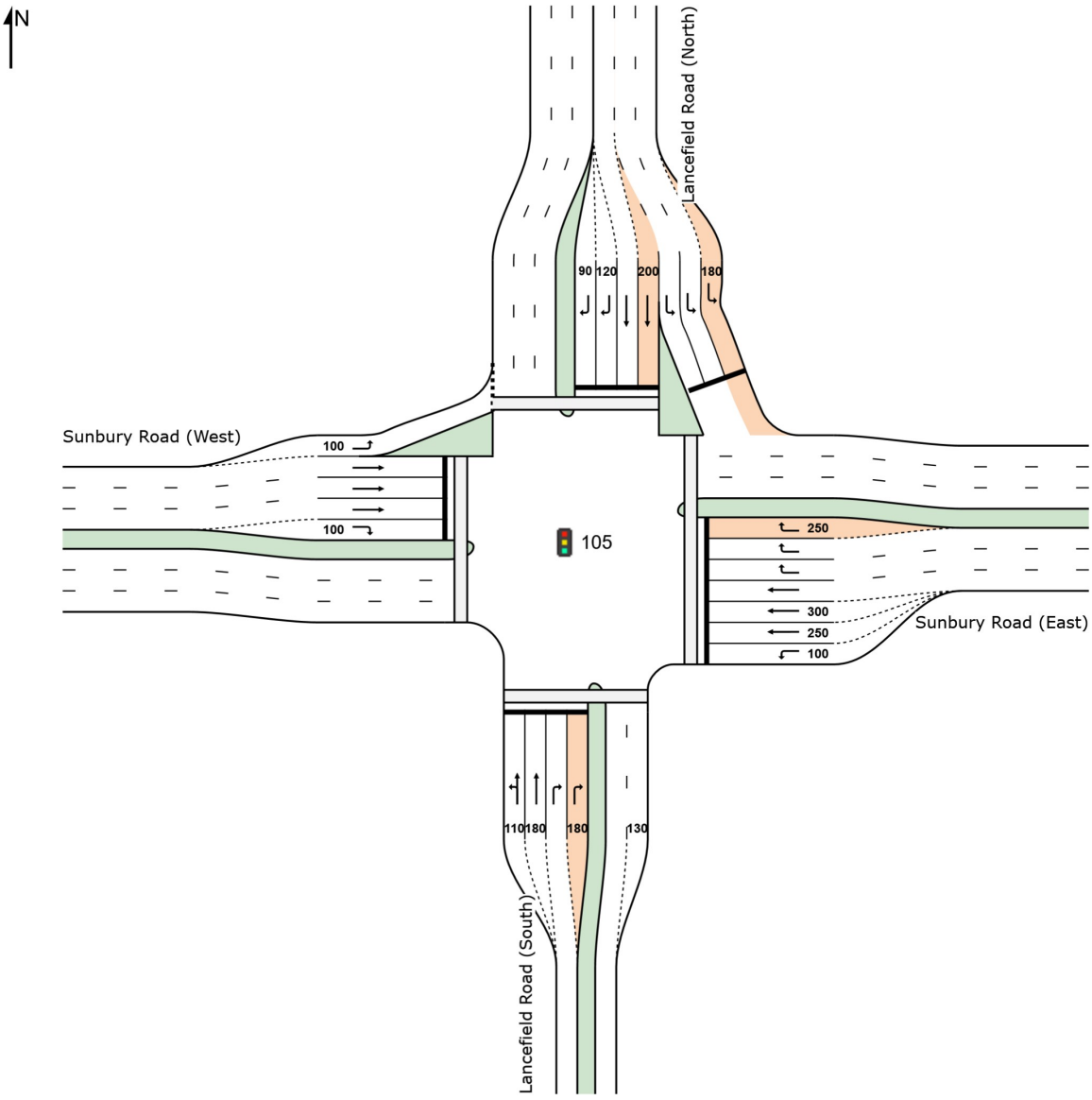
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-AM Peak - 100% (Option 2a) - Scenario 1 - GTA]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

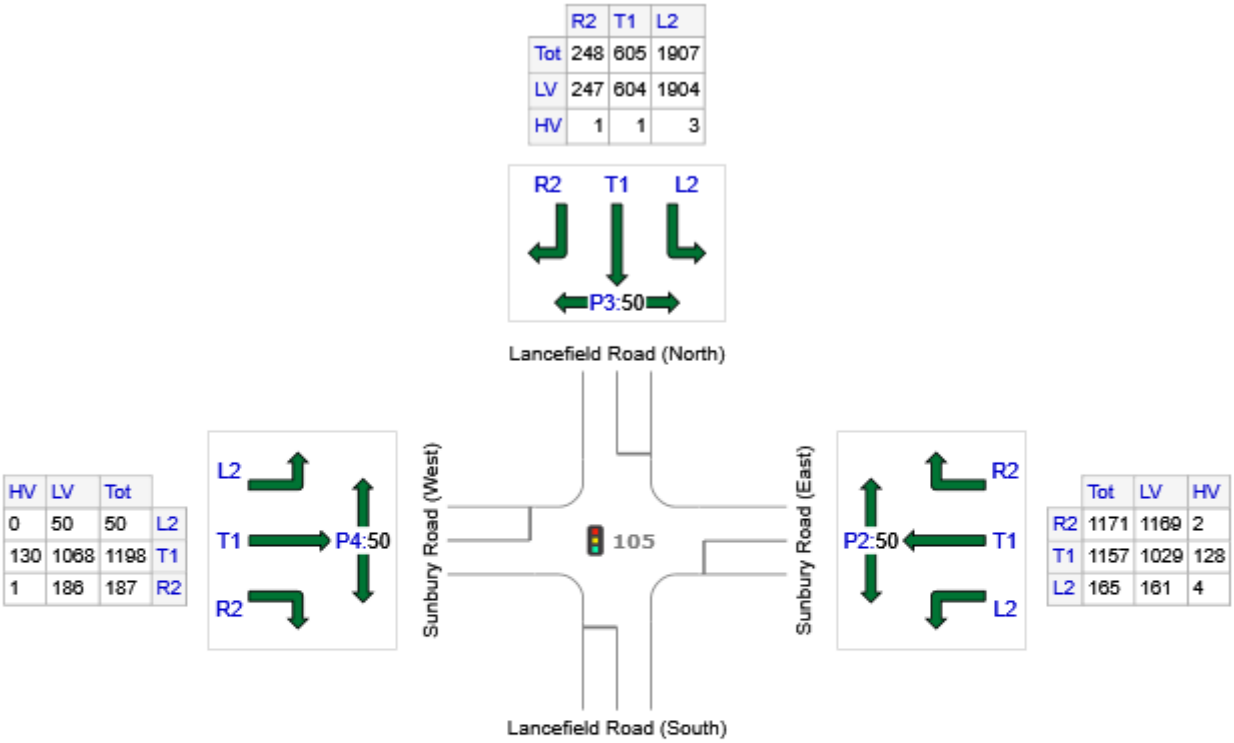
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



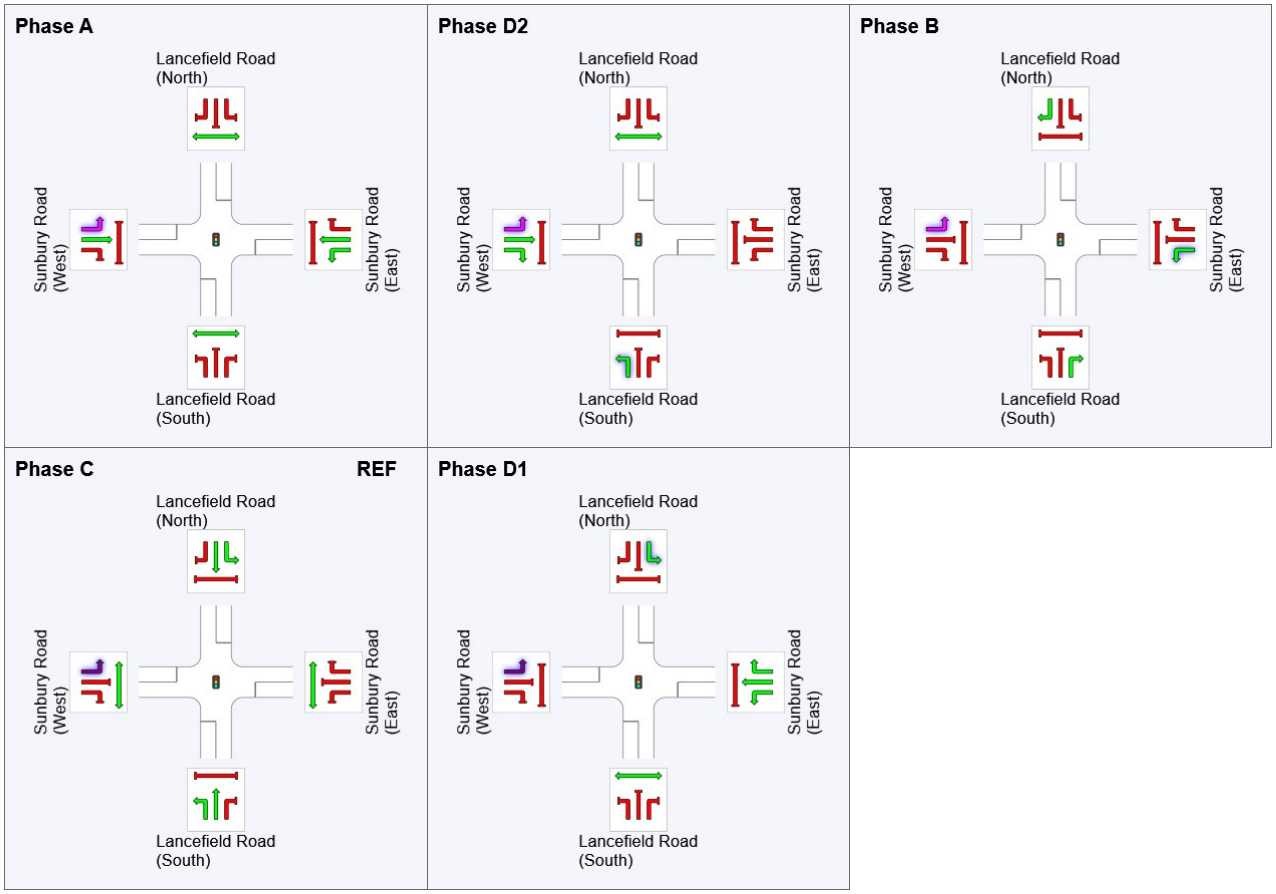
	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	757	754	3
E: Sunbury Road (East)	2493	2359	134
N: Lancefield Road (North)	2760	2755	5
W: Sunbury Road (West)	1435	1304	131
Total	7445	7172	273

Phase Timing Summary

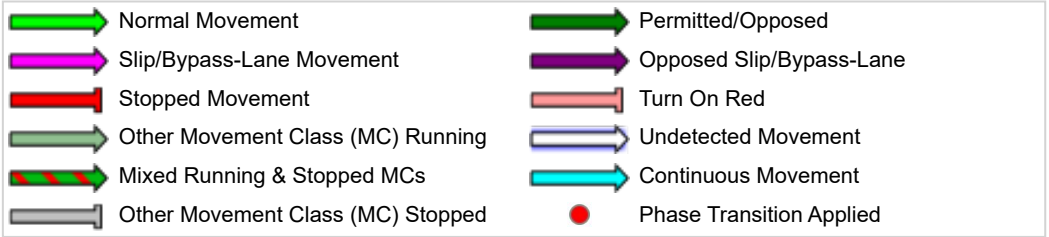
Phase	A	D2	B	C	D1
Phase Change Time (sec)	76	89	118	0	36
Green Time (sec)	7	23	16	30	34
Phase Time (sec)	13	29	22	36	40
Phase Split	9%	21%	16%	26%	29%

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	200	0.6	442	0.452	100	45.3	LOS D	9.1	63.9	Short	110	0.0	NA
Lane 2	188	0.4	417	0.452	100	51.6	LOS D	11.2	78.7	Short	180	0.0	NA
Lane 3	185	0.3	212	0.871	100	81.9	LOS F	13.9	97.5	Full	500	0.0	0.0
Lane 4	185	0.3	212	0.871	100	81.9	LOS F	13.9	97.5	Short	180	0.0	NA
Approach	757	0.4		0.871		64.7	LOS E	13.9	97.5				
East: Sunbury Road (East)													
Lane 1	165	2.4	822	0.201	100	18.3	LOS B	3.7	26.3	Short	100	0.0	NA
Lane 2	386	11.1	611	0.631	100	42.0	LOS D	22.1	169.2	Short	250	0.0	NA
Lane 3	386	11.1	611	0.631	100	42.0	LOS D	22.1	169.2	Short	300	0.0	NA
Lane 4	386	11.1	611	0.631	100	42.0	LOS D	22.1	169.2	Full	500	0.0	0.0
Lane 5	390	0.2	450	0.866	100	69.3	LOS E	28.3	198.7	Full	500	0.0	0.0
Lane 6	390	0.2	450	0.866	100	69.3	LOS E	28.3	198.7	Full	500	0.0	0.0
Lane 7	390	0.2	450	0.866	100	69.3	LOS E	28.3	198.7	Short	250	0.0	NA
Approach	2493	5.4		0.866		53.2	LOS D	28.3	198.7				
North: Lancefield Road (North)													
Lane 1	636	0.2	928	0.685	100	33.8	LOS C	32.5	228.0	Short	180	0.0	NA
Lane 2	636	0.2	928	0.685	100	33.8	LOS C	32.5	228.0	Full	500	0.0	0.0
Lane 3	636	0.2	928	0.685	100	33.8	LOS C	32.5	228.0	Full	500	0.0	0.0
Lane 4	271	0.2	417	0.650	81[6]	54.3	LOS D	17.0	119.2	Short	200	0.0	NA
Lane 5	334	0.2	417	0.799	100	59.7	LOS E	22.7	158.9	Full	500	0.0	0.0
Lane 6	124	0.4	212	0.586	100	70.7	LOS E	8.3	58.1	Short	120	0.0	NA
Lane 7	124	0.4	212	0.586	100	70.7	LOS E	8.3	58.1	Short	90	0.0	NA
Approach	2760	0.2		0.799		42.3	LOS D	32.5	228.0				
West: Sunbury Road (West)													
Lane 1	50	0.0	1099	0.046	100	14.2	LOS B	1.2	8.1	Short	100	0.0	NA
Lane 2	403	10.9	461[1]	0.875	100	63.6	LOS E	29.4	225.2	Full	500	0.0	0.0
Lane 3	410	10.9	468	0.875	100	63.7	LOS E	30.0	229.7	Full	500	0.0	0.0
Lane 4	386	10.9	441[1]	0.875	100	63.4	LOS E	28.0	214.2	Full	500	0.0	0.0
Lane 5	187	0.5	304	0.615	100	65.0	LOS E	12.1	84.8	Short	100	0.0	NA
Approach	1435	9.1		0.875		62.0	LOS E	30.0	229.7				
Intersection	7445	3.7		0.875		52.0	LOS D	32.5	229.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

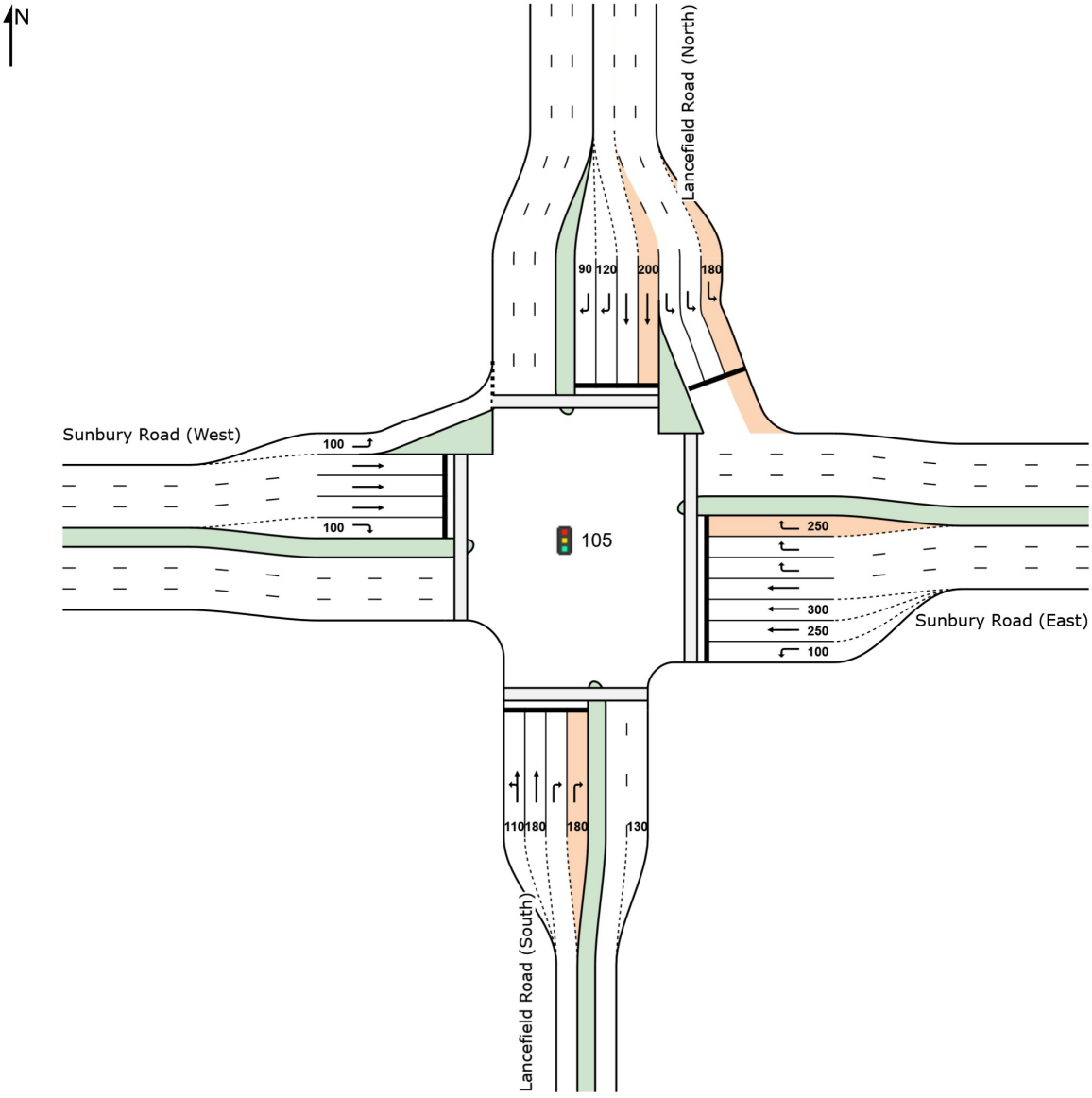
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-PM Peak - 100% (Option 2a) - Scenario 1 - GTA]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

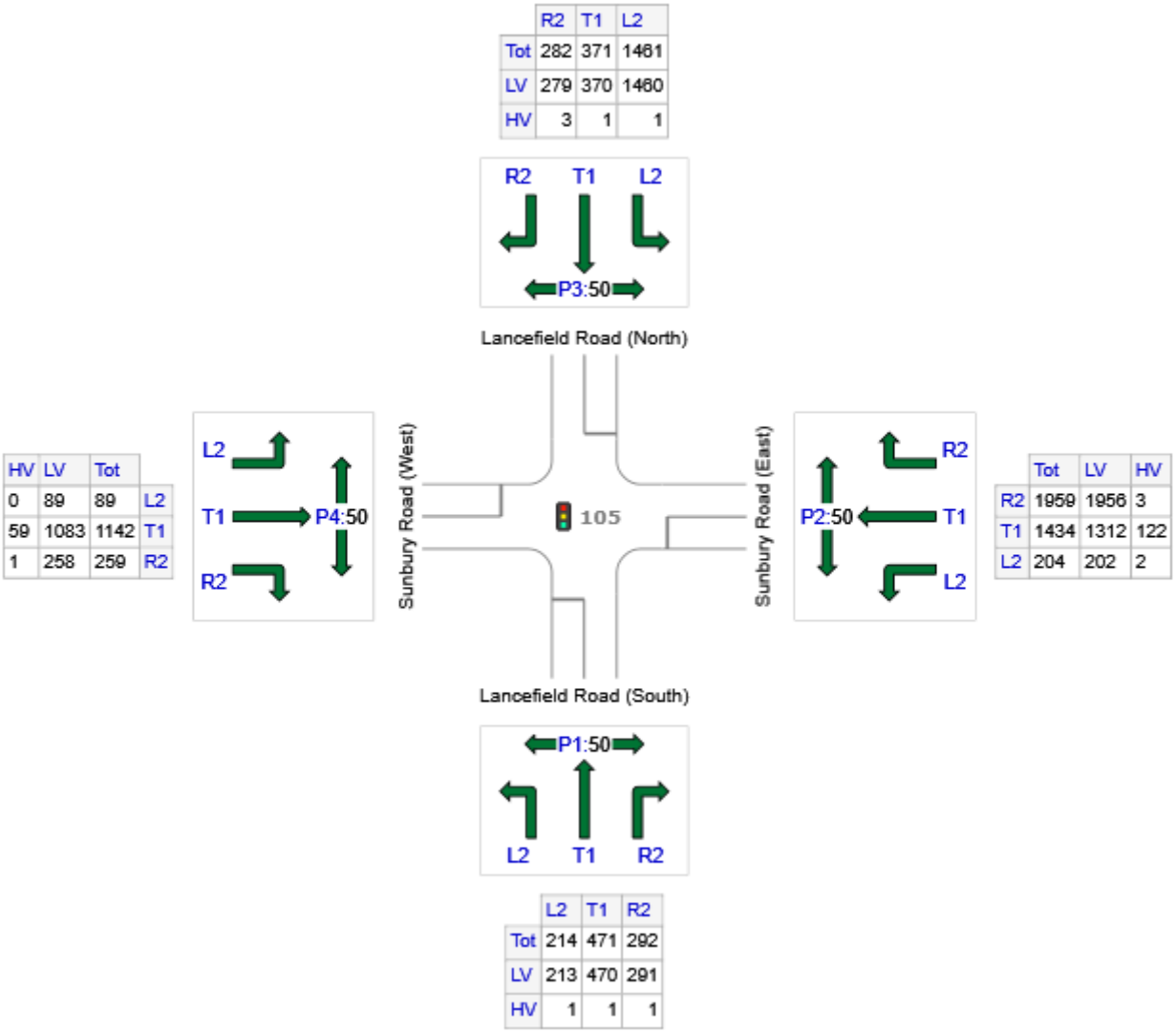
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	977	974	3
E: Sunbury Road (East)	3597	3470	127
N: Lancefield Road (North)	2114	2109	5
W: Sunbury Road (West)	1490	1430	60
Total	8178	7983	195

Phase Timing Summary

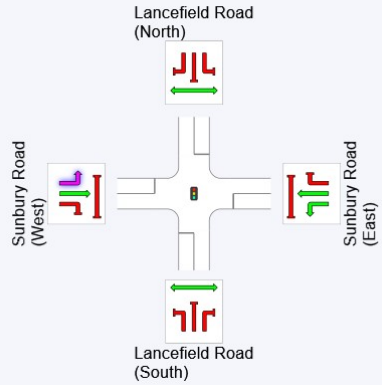
Phase	A	D2	B	C	D1
Phase Change Time (sec)	89	92	123	0	36
Green Time (sec)	***	25	11	30	47
Phase Time (sec)	3	31	17	36	53
Phase Split	2%	22%	12%	26%	38%

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

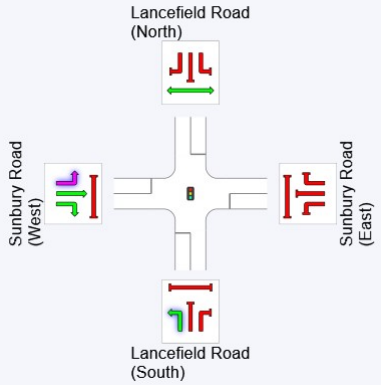
*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.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

Output Phase Sequence

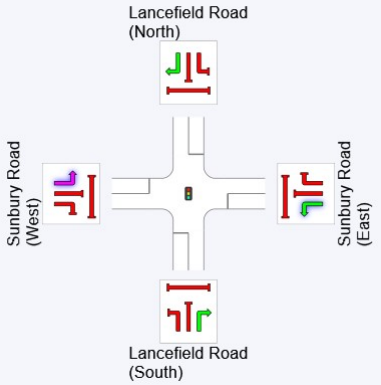
Phase A



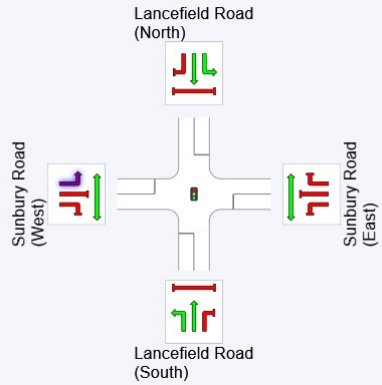
Phase D2



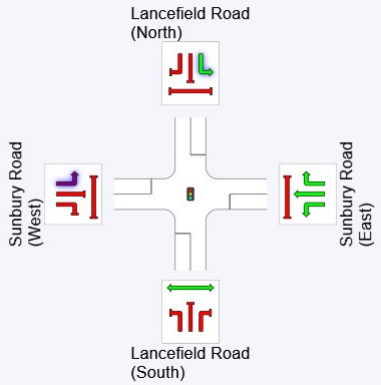
Phase B



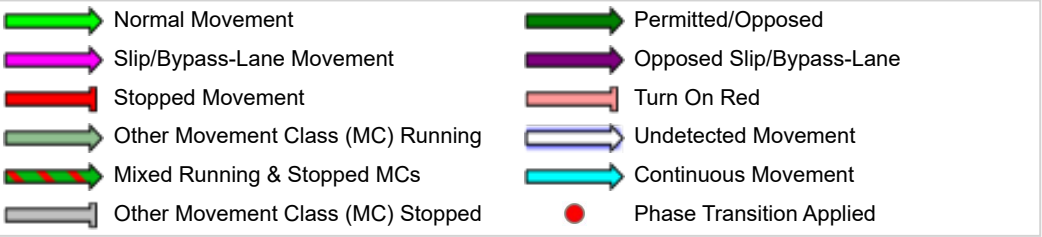
Phase C REF



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	353	0.4	444	0.795	100	58.4	LOS E	21.1	148.0	Short	110	0.0	NA
Lane 2	332	0.2	417	0.795	100	59.5	LOS E	22.5	157.6	Short	180	0.0	NA
Lane 3	146	0.3	146	1.003	100	119.0	LOS F	13.5	94.9	Full	500	0.0	0.0
Lane 4	146	0.3	146	1.003	100	119.0	LOS F	13.5	94.9	Short	180	0.0	NA
Approach	977	0.3		1.003		76.9	LOS E	22.5	157.6				
East: Sunbury Road (East)													
Lane 1	204	1.0	804	0.254	100	19.3	LOS B	4.6	32.8	Short	100	0.0	NA
Lane 2	426	8.5	557[1]	0.764	100	41.1	LOS D	24.5	183.9	Short	250	0.0	NA
Lane 3	504	8.5	660	0.764	100	42.5	LOS D	30.3	227.2	Short	300	0.0	NA
Lane 4	504	8.5	660	0.764	100	42.5	LOS D	30.3	227.2	Full	500	0.0	0.0
Lane 5	653	0.2	623	1.049	100	135.7	LOS F	71.9	503.6	Full	500	0.0	5.7
Lane 6	653	0.2	623	1.049	100	135.7	LOS F	71.9	503.6	Full	500	0.0	5.7[8]
Lane 7	653	0.2	623	1.049	100	135.7	LOS F	71.9	503.6	Short	250	0.0	NA
Approach	3597	3.5		1.049		91.8	LOS F	71.9	503.6				
North: Lancefield Road (North)													
Lane 1	487	0.1	1100	0.443	100	22.2	LOS C	18.0	125.9	Short	180	0.0	NA
Lane 2	487	0.1	1100	0.443	100	22.2	LOS C	18.0	125.9	Full	500	0.0	0.0
Lane 3	487	0.1	1100	0.443	100	22.2	LOS C	18.0	125.9	Full	500	0.0	0.0
Lane 4	166	0.3	417	0.399	81[6]	50.9	LOS D	9.8	68.6	Short	200	0.0	NA
Lane 5	205	0.3	417	0.490	100	52.1	LOS D	12.3	86.3	Full	500	0.0	0.0
Lane 6	141	1.1	145	0.974	100	105.8	LOS F	12.2	86.3	Short	120	0.0	NA
Lane 7	141	1.1	145	0.974	100	105.8	LOS F	12.2	86.3	Short	90	0.0	NA
Approach	2114	0.2		0.974		38.5	LOS D	18.0	125.9				
West: Sunbury Road (West)													
Lane 1	89	0.0	785	0.113	100	29.1	LOS C	3.5	24.7	Short	100	0.0	NA
Lane 2	381	5.2	372[1]	1.023	100	120.6	LOS F	38.5	281.1	Full	500	0.0	0.0
Lane 3	386	5.2	377	1.023	100	120.4	LOS F	38.9	284.6	Full	500	0.0	0.0
Lane 4	375	5.2	367[1]	1.023	100	120.9	LOS F	37.9	277.1	Full	500	0.0	0.0
Lane 5	259	0.4	331	0.783	100	68.6	LOS E	17.8	125.0	Short	100	0.0	NA
Approach	1490	4.0		1.023		106.1	LOS F	38.9	284.6				
Intersection	8178	2.4		1.049		78.9	LOS E	71.9	503.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

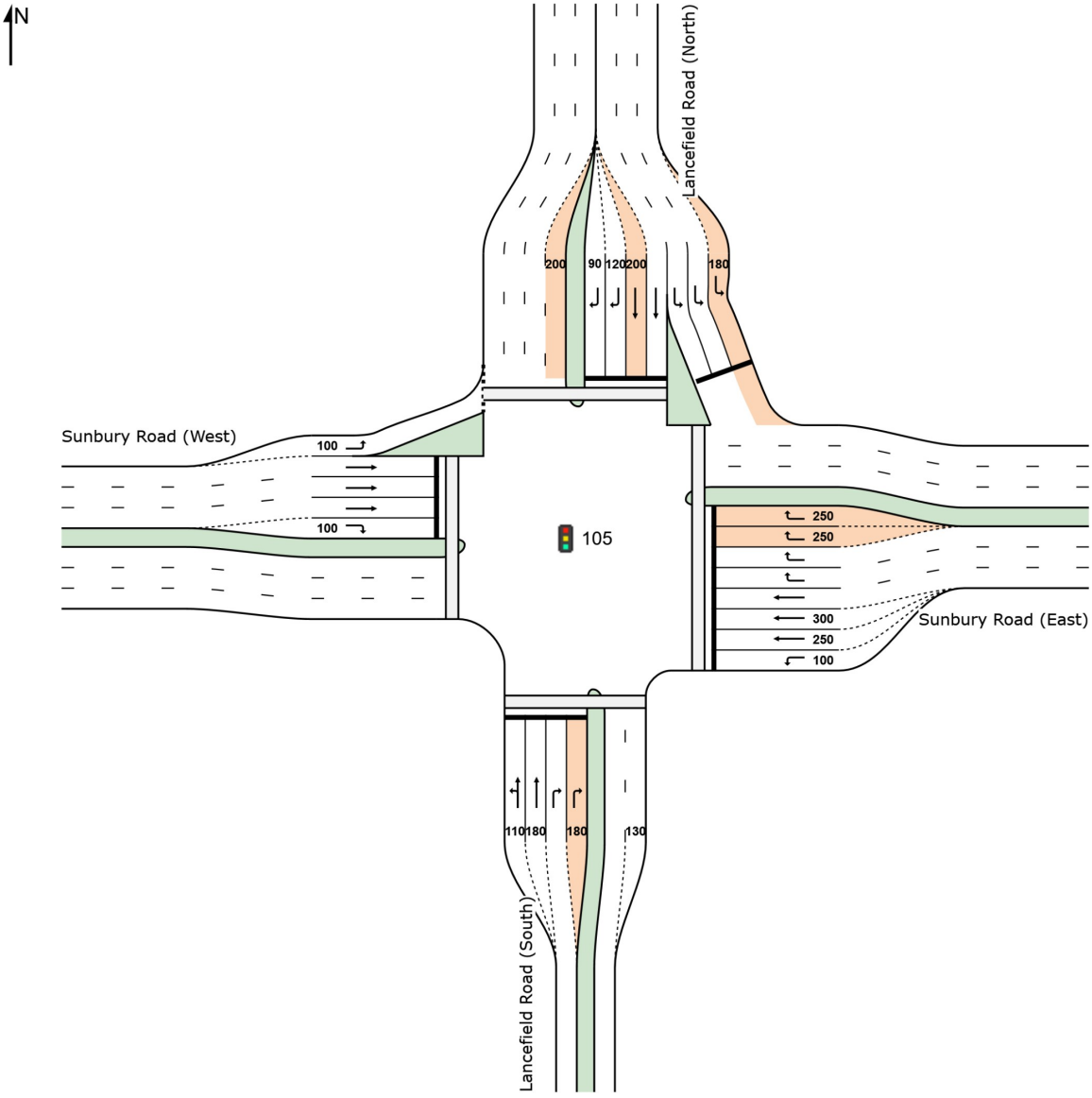
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Site: 105 [SS-IN-03-AM Peak - 100% (Option 2a) - Scenario 2a- GTA - East approach RT]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

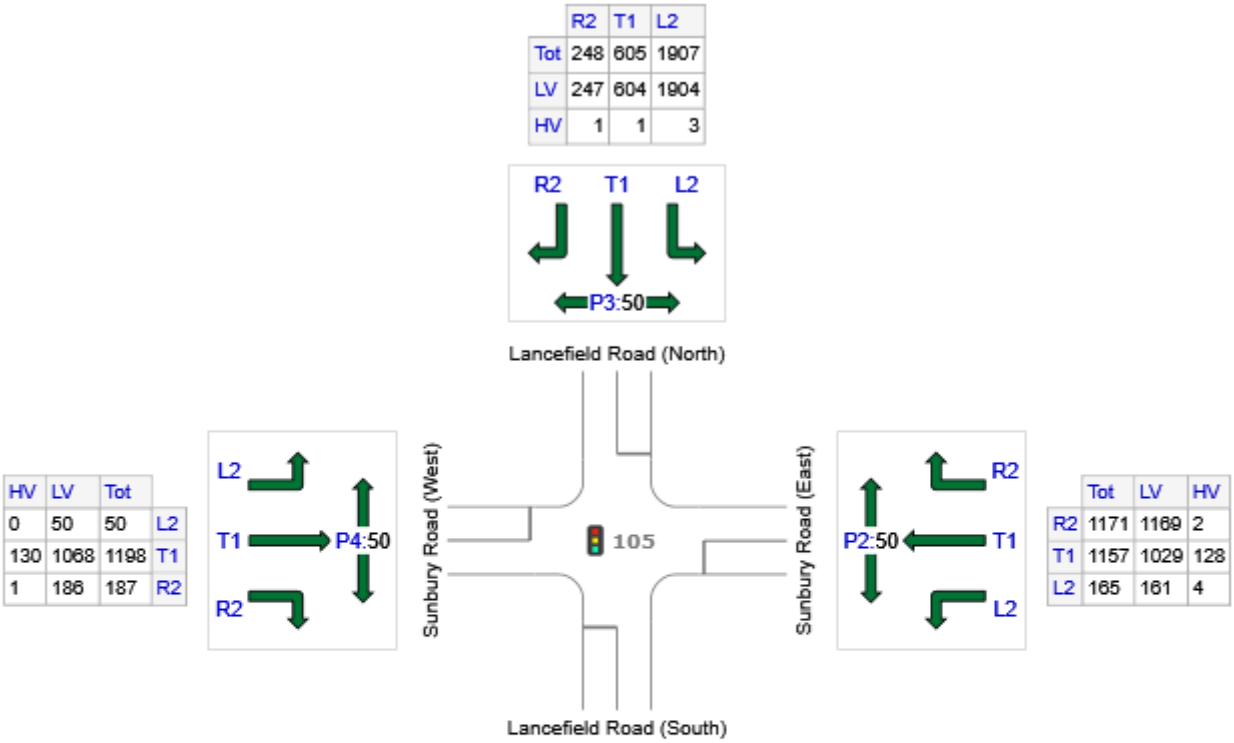
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	757	754	3
E: Sunbury Road (East)	2493	2359	134
N: Lancefield Road (North)	2760	2755	5
W: Sunbury Road (West)	1435	1304	131
Total	7445	7172	273

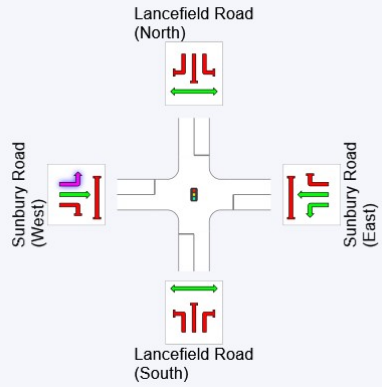
Phase Timing Summary

Phase	A	D2	B	C	D1
Phase Change Time (sec)	64	77	100	0	36
Green Time (sec)	7	17	14	30	22
Phase Time (sec)	13	23	20	36	28
Phase Split	11%	19%	17%	30%	23%

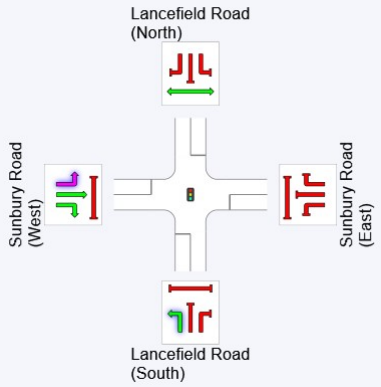
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence

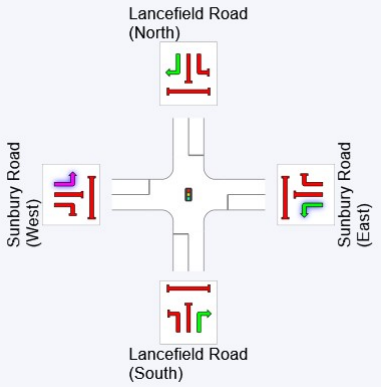
Phase A



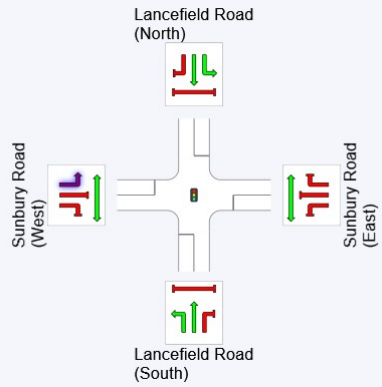
Phase D2



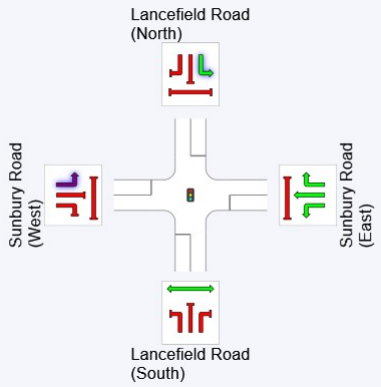
Phase B



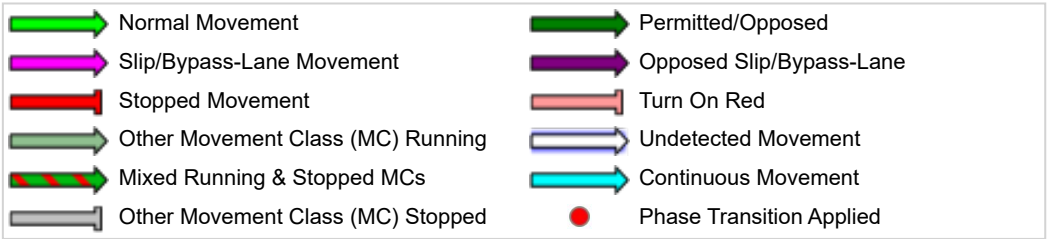
Phase C **REF**



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	200	0.6	516	0.387	100	33.7	LOS C	6.9	48.6	Short	110	0.0	NA
Lane 2	188	0.4	486	0.387	100	40.3	LOS D	9.2	64.4	Short	180	0.0	NA
Lane 3	185	0.3	216	0.853	100	70.5	LOS E	11.9	83.4	Full	500	0.0	0.0
Lane 4	185	0.3	216	0.853	100	70.5	LOS E	11.9	83.4	Short	180	0.0	NA
Approach	757	0.4		0.853		53.3	LOS D	11.9	83.4				
East: Sunbury Road (East)													
Lane 1	165	2.4	745	0.221	100	18.6	LOS B	3.7	26.5	Short	100	0.0	NA
Lane 2	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Short	250	0.0	NA
Lane 3	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Short	300	0.0	NA
Lane 4	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Full	500	0.0	0.0
Lane 5	293	0.2	340	0.861	100	65.9	LOS E	18.7	131.2	Full	500	0.0	0.0
Lane 6	293	0.2	340	0.861	100	65.9	LOS E	18.7	131.2	Full	500	0.0	0.0
Lane 7	293	0.2	340	0.861	100	65.9	LOS E	18.7	131.2	Short	250	0.0	NA
Lane 8	293	0.2	340	0.861	100	65.9	LOS E	18.7	131.2	Short	250	0.0	NA
Approach	2493	5.4		0.861		51.5	LOS D	20.5	157.5				
North: Lancefield Road (North)													
Lane 1	636	0.2	897	0.709	100	31.6	LOS C	29.0	203.0	Short	180	0.0	NA
Lane 2	636	0.2	897	0.709	100	31.6	LOS C	29.0	203.0	Full	500	0.0	0.0
Lane 3	636	0.2	897	0.709	100	31.6	LOS C	29.0	203.0	Full	500	0.0	0.0
Lane 4	275	0.2	487	0.564	83[6]	42.5	LOS D	14.1	98.9	Full	500	0.0	0.0
Lane 5	330	0.2	487	0.678	100	44.0	LOS D	17.6	123.2	Short	200	0.0	NA
Lane 6	124	0.4	216	0.574	100	61.5	LOS E	7.1	50.0	Short	120	0.0	NA
Lane 7	124	0.4	216	0.574	100	61.5	LOS E	7.1	50.0	Short	90	0.0	NA
Approach	2760	0.2		0.709		36.8	LOS D	29.0	203.0				
West: Sunbury Road (West)													
Lane 1	50	0.0	1175	0.043	100	11.1	LOS B	0.9	6.0	Short	100	0.0	NA
Lane 2	399	10.9	455	0.877	100	57.3	LOS E	25.8	197.2	Full	500	0.0	0.0
Lane 3	399	10.9	455	0.877	100	57.3	LOS E	25.8	197.2	Full	500	0.0	0.0
Lane 4	399	10.9	455	0.877	100	57.3	LOS E	25.8	197.2	Full	500	0.0	0.0
Lane 5	187	0.5	262	0.713	100	61.4	LOS E	11.0	77.2	Short	100	0.0	NA
Approach	1435	9.1		0.877		56.2	LOS E	25.8	197.2				
Intersection	7445	3.7		0.877		47.2	LOS D	29.0	203.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

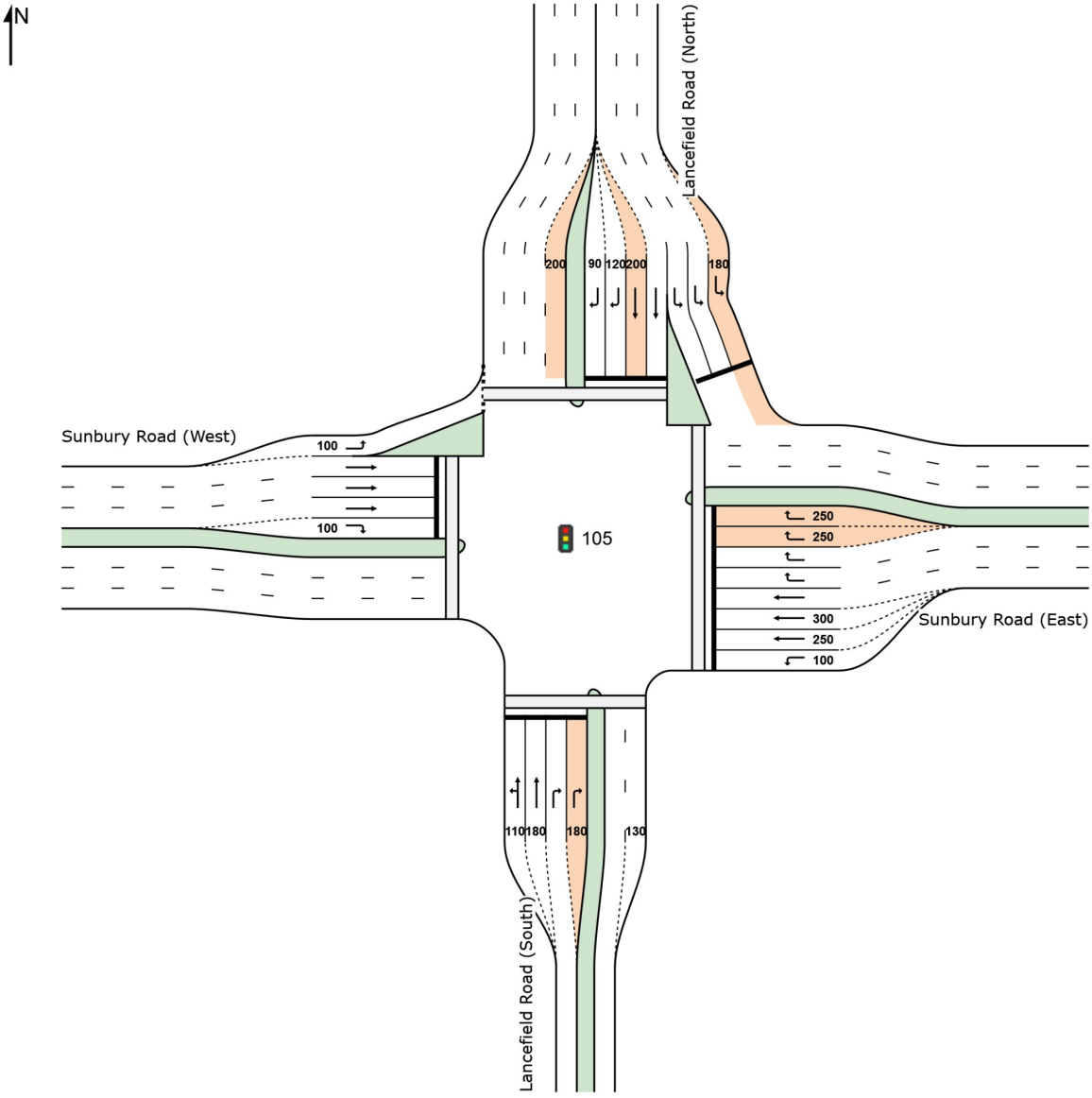
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-PM Peak - 100% (Option 2a) - Scenario 2a- GTA - East approach RT]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

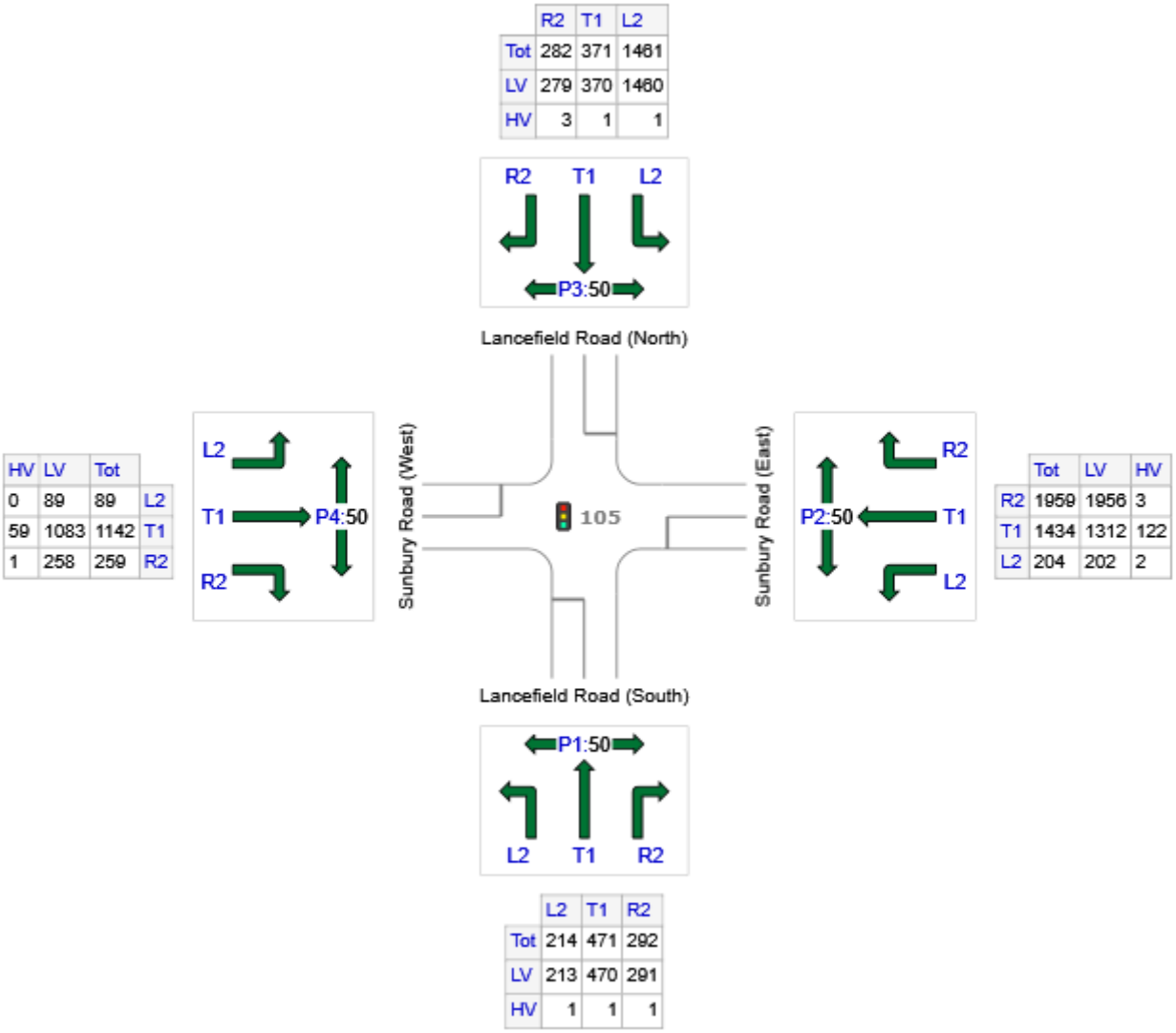
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	977	974	3
E: Sunbury Road (East)	3597	3470	127
N: Lancefield Road (North)	2114	2109	5
W: Sunbury Road (West)	1490	1430	60
Total	8178	7983	195

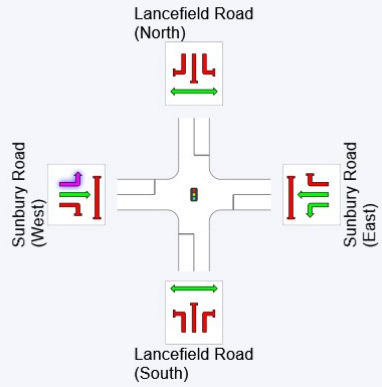
Phase Timing Summary

Phase	A	D2	B	C	D1
Phase Change Time (sec)	85	92	122	0	38
Green Time (sec)	1	24	12	32	41
Phase Time (sec)	7	30	18	38	47
Phase Split	5%	21%	13%	27%	34%

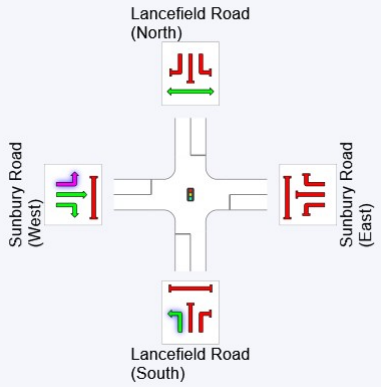
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence

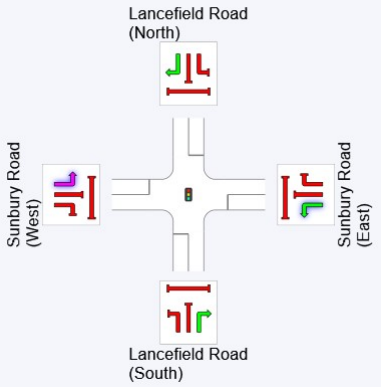
Phase A



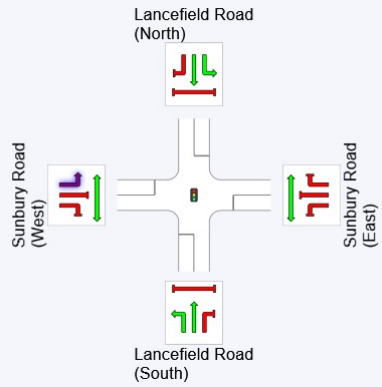
Phase D2



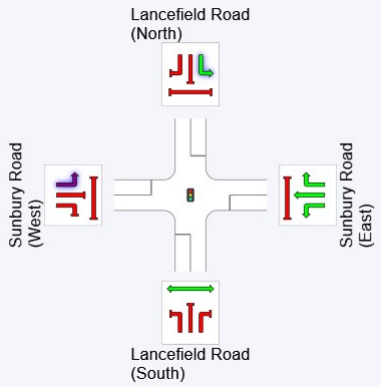
Phase B



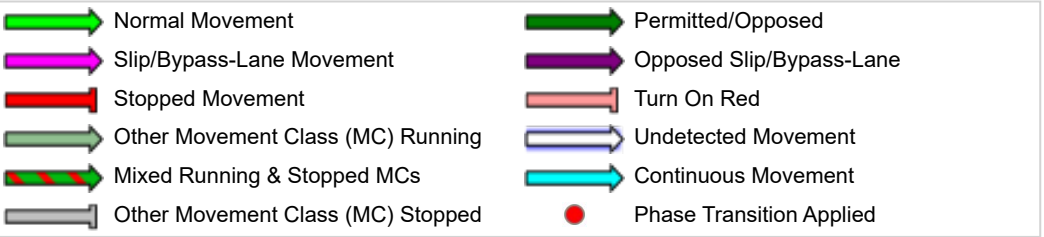
Phase C **REF**



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	352	0.4	471	0.748	100	54.1	LOS D	19.9	139.7	Short	110	0.0	NA
Lane 2	333	0.2	445	0.748	100	55.3	LOS E	21.5	151.1	Short	180	0.0	NA
Lane 3	146	0.3	159	0.919	100	90.9	LOS F	11.6	81.4	Full	500	0.0	0.0
Lane 4	146	0.3	159	0.919	100	90.9	LOS F	11.6	81.4	Short	180	0.0	NA
Approach	977	0.3		0.919		65.5	LOS E	21.5	151.1				
East: Sunbury Road (East)													
Lane 1	204	1.0	790	0.258	100	19.7	LOS B	4.9	34.4	Short	100	0.0	NA
Lane 2	428	8.5	539[1]	0.794	100	44.8	LOS D	25.9	194.6	Short	250	0.0	NA
Lane 3	503	8.5	634	0.794	100	46.0	LOS D	31.6	237.2	Short	300	0.0	NA
Lane 4	503	8.5	634	0.794	100	46.0	LOS D	31.6	237.2	Full	500	0.0	0.0
Lane 5	490	0.2	543	0.901	100	70.6	LOS E	37.2	260.5	Full	500	0.0	0.0
Lane 6	490	0.2	543	0.901	100	70.6	LOS E	37.2	260.5	Full	500	0.0	0.0
Lane 7	490	0.2	543	0.901	100	70.6	LOS E	37.2	260.5	Short	250	0.0	NA
Lane 8	490	0.2	543	0.901	100	70.6	LOS E	37.2	260.5	Short	250	0.0	NA
Approach	3597	3.5		0.901		57.8	LOS E	37.2	260.5				
North: Lancefield Road (North)													
Lane 1	487	0.1	1047	0.465	100	24.6	LOS C	19.3	134.9	Short	180	0.0	NA
Lane 2	487	0.1	1047	0.465	100	24.6	LOS C	19.3	134.9	Full	500	0.0	0.0
Lane 3	487	0.1	1047	0.465	100	24.6	LOS C	19.3	134.9	Full	500	0.0	0.0
Lane 4	168	0.3	445	0.379	83[6]	49.0	LOS D	9.7	68.1	Full	500	0.0	0.0
Lane 5	203	0.3	445	0.455	100	50.1	LOS D	11.9	83.6	Short	200	0.0	NA
Lane 6	141	1.1	158	0.892	100	86.9	LOS F	10.9	76.9	Short	120	0.0	NA
Lane 7	141	1.1	158	0.892	100	86.9	LOS F	10.9	76.9	Short	90	0.0	NA
Approach	2114	0.2		0.892		37.3	LOS D	19.3	134.9				
West: Sunbury Road (West)													
Lane 1	89	0.0	878	0.101	100	22.4	LOS C	3.0	20.9	Short	100	0.0	NA
Lane 2	383	5.2	412[1]	0.929	100	77.6	LOS E	30.9	226.0	Full	500	0.0	0.0
Lane 3	388	5.2	418	0.929	100	77.6	LOS E	31.4	229.4	Full	500	0.0	0.0
Lane 4	371	5.2	399[1]	0.929	100	77.6	LOS E	29.8	217.7	Full	500	0.0	0.0
Lane 5	259	0.4	317	0.816	100	71.4	LOS E	18.3	128.4	Short	100	0.0	NA
Approach	1490	4.0		0.929		73.2	LOS E	31.4	229.4				
Intersection	8178	2.4		0.929		56.2	LOS E	37.2	260.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

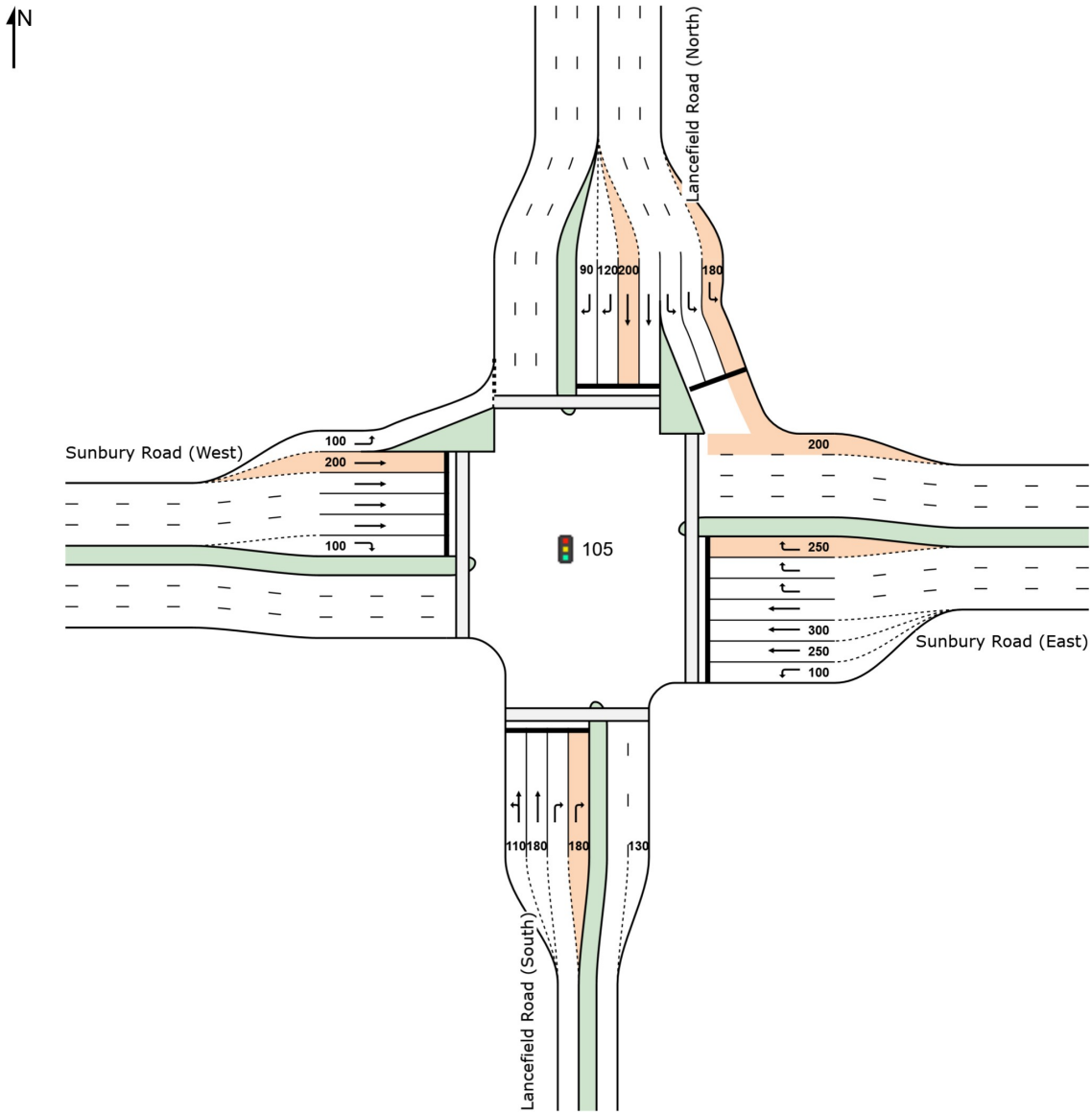
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-AM Peak - 100% (Option 2a) - Scenario 2b - GTA - West approach lane]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

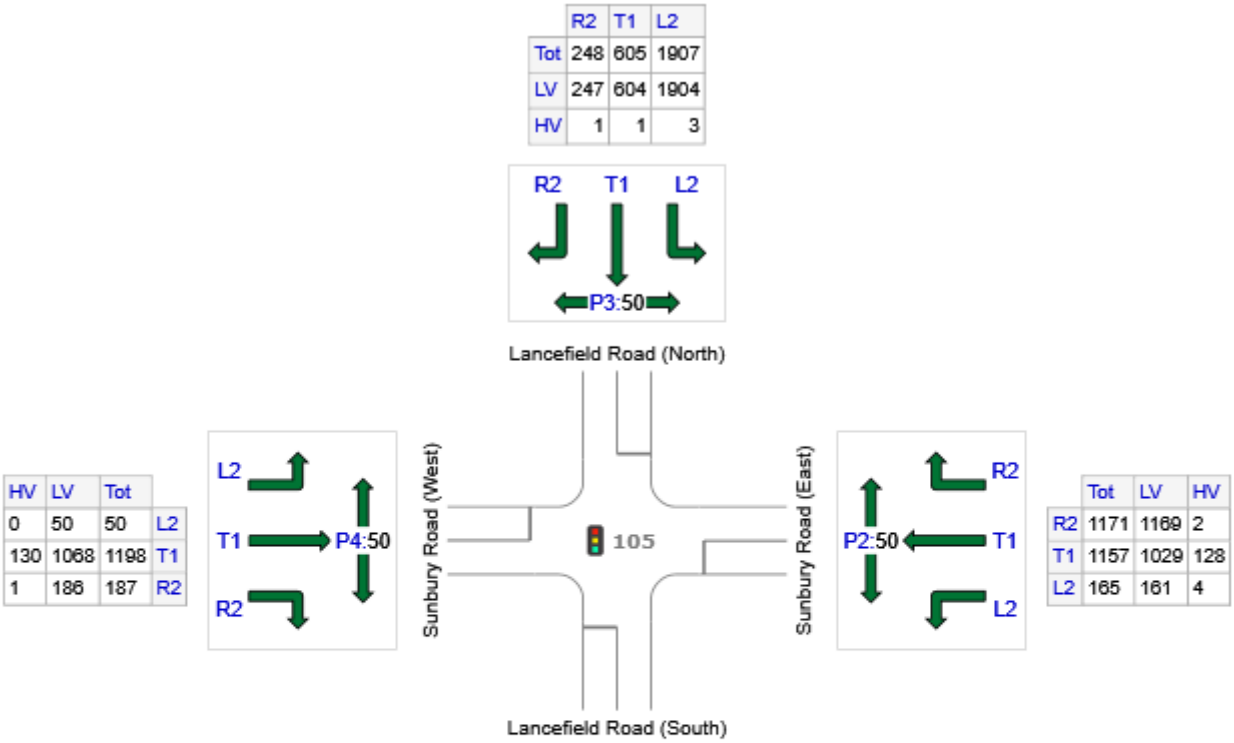
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: A, D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	757	754	3
E: Sunbury Road (East)	2493	2359	134
N: Lancefield Road (North)	2760	2755	5
W: Sunbury Road (West)	1435	1304	131
Total	7445	7172	273

Phase Timing Summary

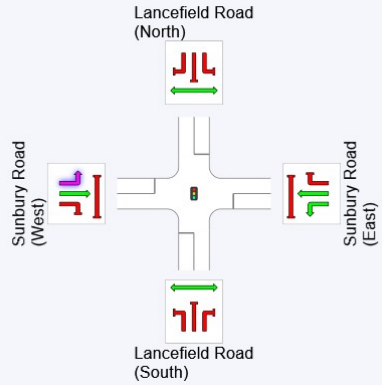
Phase	A	D2	B	C	D1
Phase Change Time (sec)	71	77	100	0	36
Green Time (sec)	***	17	14	30	29
Phase Time (sec)	6	23	20	36	35
Phase Split	5%	19%	17%	30%	29%

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

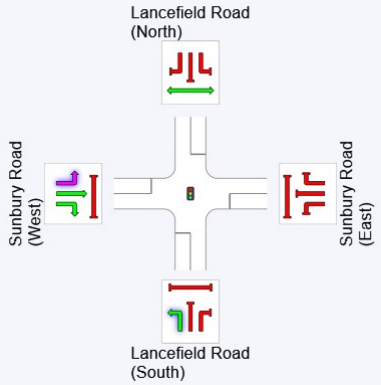
*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.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

Output Phase Sequence

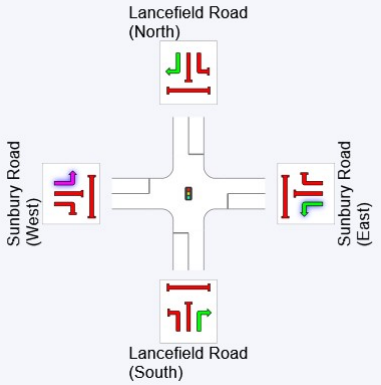
Phase A



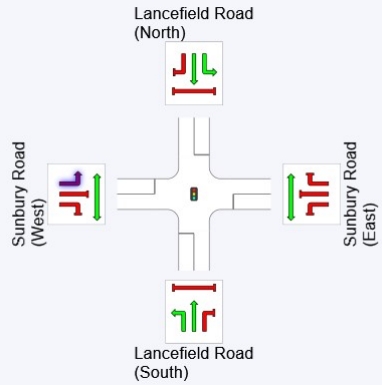
Phase D2



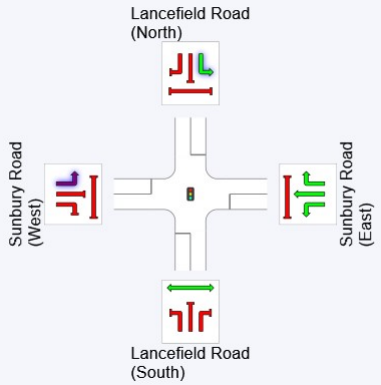
Phase B



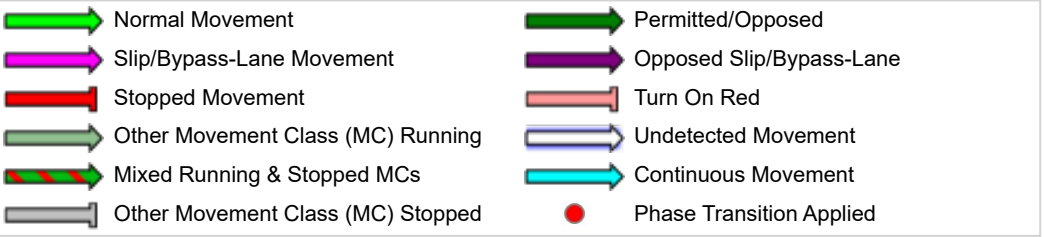
Phase C REF



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	200	0.6	516	0.387	100	33.7	LOS C	6.9	48.6	Short	110	0.0	NA
Lane 2	188	0.4	486	0.387	100	40.3	LOS D	9.2	64.4	Short	180	0.0	NA
Lane 3	185	0.3	216	0.853	100	70.5	LOS E	11.9	83.4	Full	500	0.0	0.0
Lane 4	185	0.3	216	0.853	100	70.5	LOS E	11.9	83.4	Short	180	0.0	NA
Approach	757	0.4		0.853		53.3	LOS D	11.9	83.4				
East: Sunbury Road (East)													
Lane 1	165	2.4	745	0.221	100	18.6	LOS B	3.7	26.5	Short	100	0.0	NA
Lane 2	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Short	250	0.0	NA
Lane 3	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Short	300	0.0	NA
Lane 4	386	11.1	531	0.727	100	41.7	LOS D	20.5	157.5	Full	500	0.0	0.0
Lane 5	390	0.2	448	0.871	100	62.5	LOS E	24.9	174.9	Full	500	0.0	0.0
Lane 6	390	0.2	448	0.871	100	62.5	LOS E	24.9	174.9	Full	500	0.0	0.0
Lane 7	390	0.2	448	0.871	100	62.5	LOS E	24.9	174.9	Short	250	0.0	NA
Approach	2493	5.4		0.871		49.9	LOS D	24.9	174.9				
North: Lancefield Road (North)													
Lane 1	636	0.2	1005	0.633	100	26.0	LOS C	25.6	179.5	Short	180	0.0	NA
Lane 2	636	0.2	1005	0.633	100	26.0	LOS C	25.6	179.5	Full	500	0.0	0.0
Lane 3	636	0.2	1005	0.633	100	26.0	LOS C	25.6	179.5	Full	500	0.0	0.0
Lane 4	275	0.2	487	0.564	83[6]	42.5	LOS D	14.1	98.9	Full	500	0.0	0.0
Lane 5	330	0.2	487	0.678	100	44.0	LOS D	17.6	123.2	Short	200	0.0	NA
Lane 6	124	0.4	216	0.574	100	61.5	LOS E	7.1	50.0	Short	120	0.0	NA
Lane 7	124	0.4	216	0.574	100	61.5	LOS E	7.1	50.0	Short	90	0.0	NA
Approach	2760	0.2		0.678		33.0	LOS C	25.6	179.5				
West: Sunbury Road (West)													
Lane 1	50	0.0	1072	0.047	100	12.8	LOS B	1.0	6.9	Short	100	0.0	NA
Lane 2	300	10.9	349	0.858	100	59.5	LOS E	19.1	146.0	Short	200	0.0	NA
Lane 3	300	10.9	349	0.858	100	59.5	LOS E	19.1	146.0	Full	500	0.0	0.0
Lane 4	300	10.9	349	0.858	100	59.5	LOS E	19.1	146.0	Full	500	0.0	0.0
Lane 5	300	10.9	349	0.858	100	59.5	LOS E	19.1	146.0	Full	500	0.0	0.0
Lane 6	187	0.5	262	0.713	100	61.4	LOS E	11.0	77.2	Short	100	0.0	NA
Approach	1435	9.1		0.858		58.1	LOS E	19.1	146.0				
Intersection	7445	3.7		0.871		45.6	LOS D	25.6	179.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

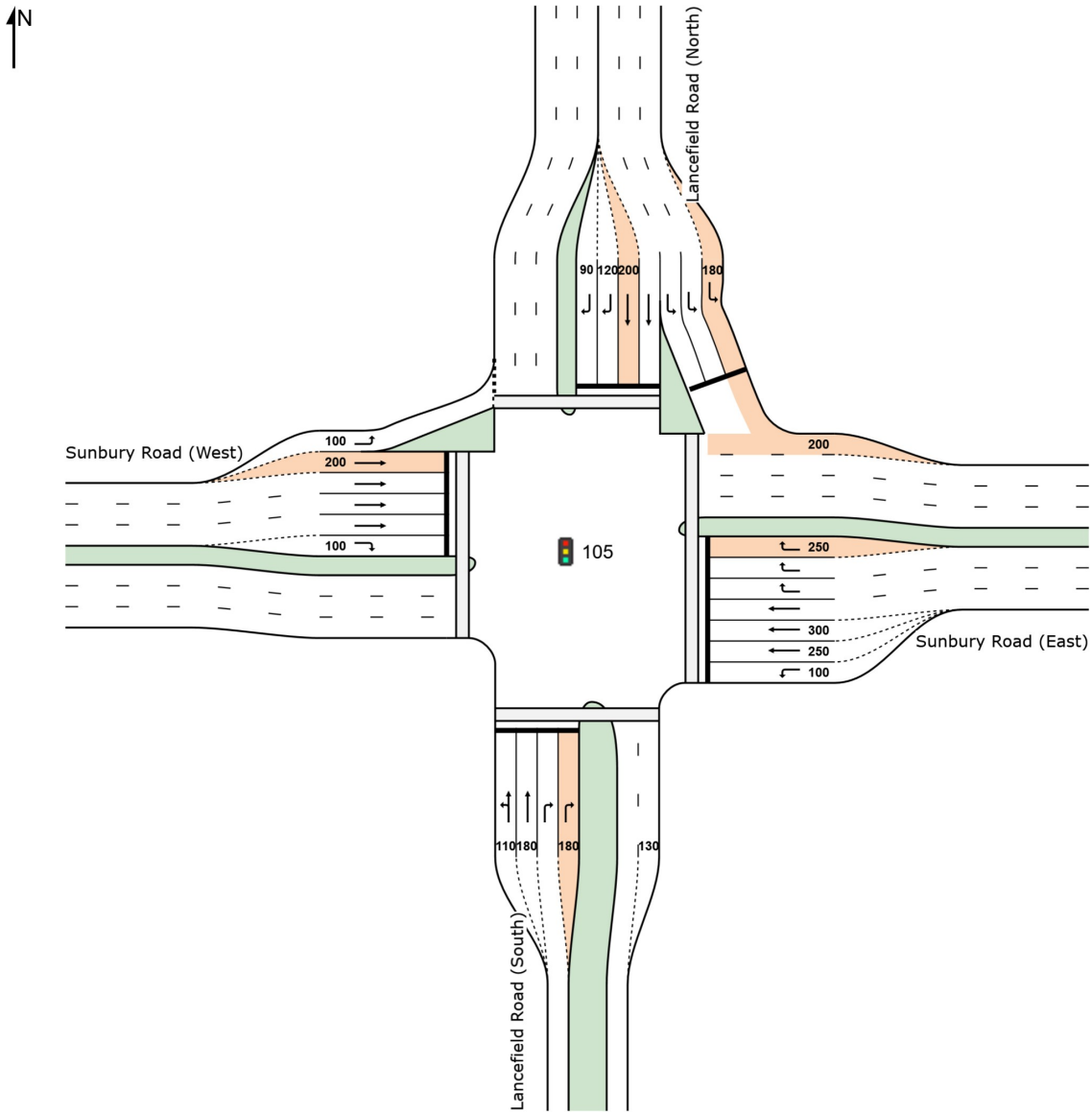
6 Lane under-utilisation due to downstream effects

Site: 105 [SS-IN-03-PM Peak - 100% (Option 2a) - Scenario 2b - GTA - West approach lane]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

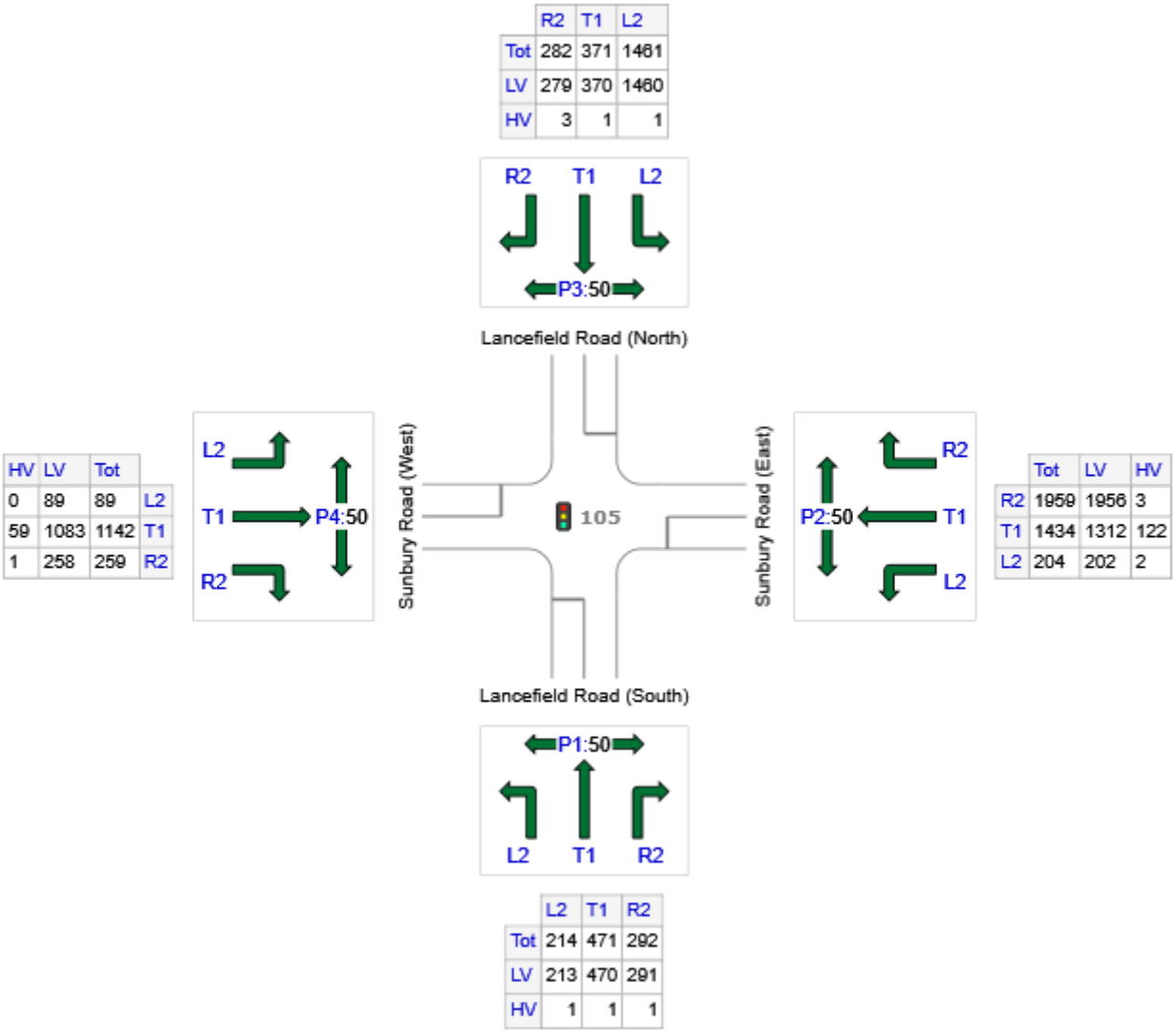
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, D2, B, B1*, B2*, C, D1
Output Phase Sequence: D2, B, C, D1
(* Variable Phase)

Site Layout



Input Volumes

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Lancefield Road (South)	977	974	3
E: Sunbury Road (East)	3597	3470	127
N: Lancefield Road (North)	2114	2109	5
W: Sunbury Road (West)	1490	1430	60
Total	8178	7983	195

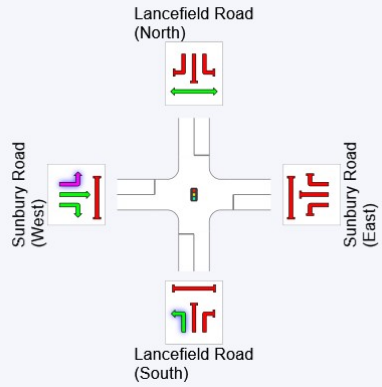
Phase Timing Summary

Phase	D2	B	C	D1
Phase Change Time (sec)	94	123	0	38
Green Time (sec)	23	11	32	50
Phase Time (sec)	29	17	38	56
Phase Split	21%	12%	27%	40%

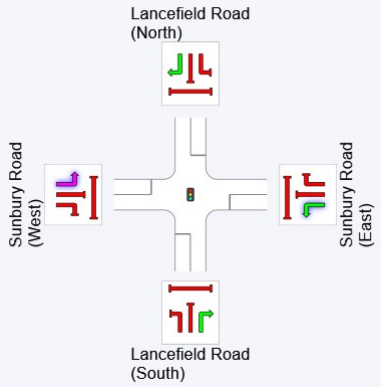
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence

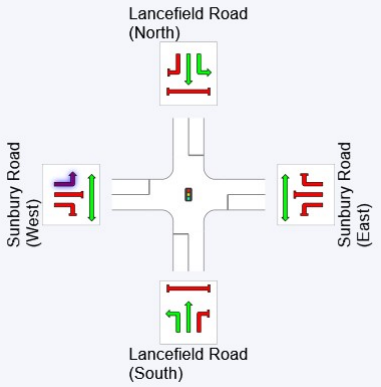
Phase D2



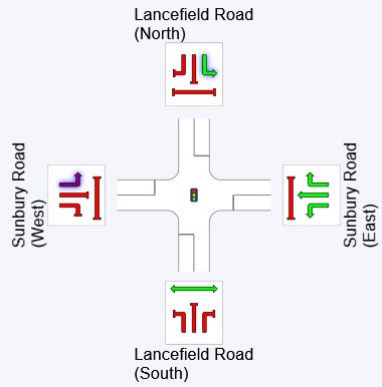
Phase B



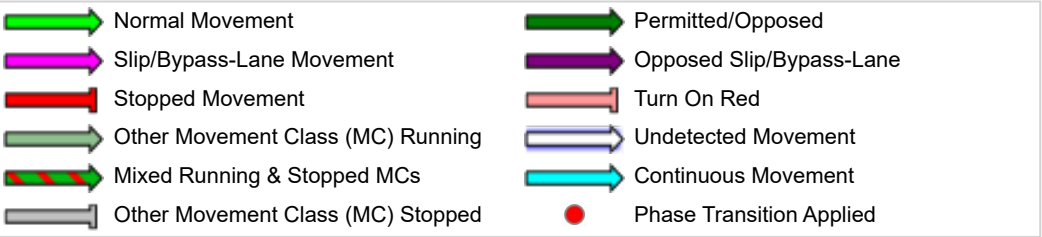
Phase C **REF**



Phase D1



REF: Reference Phase
VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lancefield Road (South)													
Lane 1	352	0.4	471	0.748	100	54.6	LOS D	19.9	139.7	Short	110	0.0	NA
Lane 2	333	0.2	445	0.748	100	55.3	LOS E	21.5	151.1	Short	180	0.0	NA
Lane 3	146	0.3	146	1.003	100	119.0	LOS F	13.5	94.9	Full	500	0.0	0.0
Lane 4	146	0.3	146	1.003	100	119.0	LOS F	13.5	94.9	Short	180	0.0	NA
Approach	977	0.3		1.003		74.1	LOS E	21.5	151.1				
East: Sunbury Road (East)													
Lane 1	204	1.0	804	0.254	100	19.4	LOS B	4.9	34.3	Short	100	0.0	NA
Lane 2	426	8.5	557[1]	0.764	100	41.1	LOS D	24.5	183.9	Short	250	0.0	NA
Lane 3	504	8.5	660	0.764	100	42.5	LOS D	30.3	227.2	Short	300	0.0	NA
Lane 4	504	8.5	660	0.764	100	42.5	LOS D	30.3	227.2	Full	500	0.0	0.0
Lane 5	653	0.2	663	0.986	100	96.1	LOS F	60.9	426.7	Full	500	0.0	0.0
Lane 6	653	0.2	663	0.986	100	96.1	LOS F	60.9	426.7	Full	500	0.0	0.0
Lane 7	653	0.2	663	0.986	100	96.1	LOS F	60.9	426.7	Short	250	0.0	NA
Approach	3597	3.5		0.986		70.2	LOS E	60.9	426.7				
North: Lancefield Road (North)													
Lane 1	487	0.1	1167	0.417	100	19.4	LOS B	16.4	114.7	Short	180	0.0	NA
Lane 2	487	0.1	1167	0.417	100	19.4	LOS B	16.4	114.7	Full	500	0.0	0.0
Lane 3	487	0.1	1167	0.417	100	19.4	LOS B	16.4	114.7	Full	500	0.0	0.0
Lane 4	168	0.3	445	0.379	83[6]	49.0	LOS D	9.7	68.1	Full	500	0.0	0.0
Lane 5	203	0.3	445	0.455	100	50.1	LOS D	11.9	83.6	Short	200	0.0	NA
Lane 6	141	1.1	145	0.974	100	105.8	LOS F	12.2	86.3	Short	120	0.0	NA
Lane 7	141	1.1	145	0.974	100	105.8	LOS F	12.2	86.3	Short	90	0.0	NA
Approach	2114	0.2		0.974		36.2	LOS D	16.4	114.7				
West: Sunbury Road (West)													
Lane 1	89	0.0	747	0.119	100	30.3	LOS C	3.6	25.2	Short	100	0.0	NA
Lane 2	286	5.2	310	0.921	100	80.0	LOS E	22.8	166.4	Short	200	0.0	NA
Lane 3	286	5.2	310	0.921	100	80.0	LOS E	22.8	166.4	Full	500	0.0	0.0
Lane 4	286	5.2	310	0.921	100	80.0	LOS E	22.8	166.4	Full	500	0.0	0.0
Lane 5	286	5.2	310	0.921	100	80.0	LOS E	22.8	166.4	Full	500	0.0	0.0
Lane 6	259	0.4	304	0.851	100	75.1	LOS E	18.9	132.8	Short	100	0.0	NA
Approach	1490	4.0		0.921		76.1	LOS E	22.8	166.4				
Intersection	8178	2.4		1.003		63.0	LOS E	60.9	426.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

USER REPORT FOR NETWORK SITE

Project: 210209-V198070-Sunbury Growth ICP Modelling_Ultimate Scenario - SS03 - for VPA

Template: GTA Appendix Site

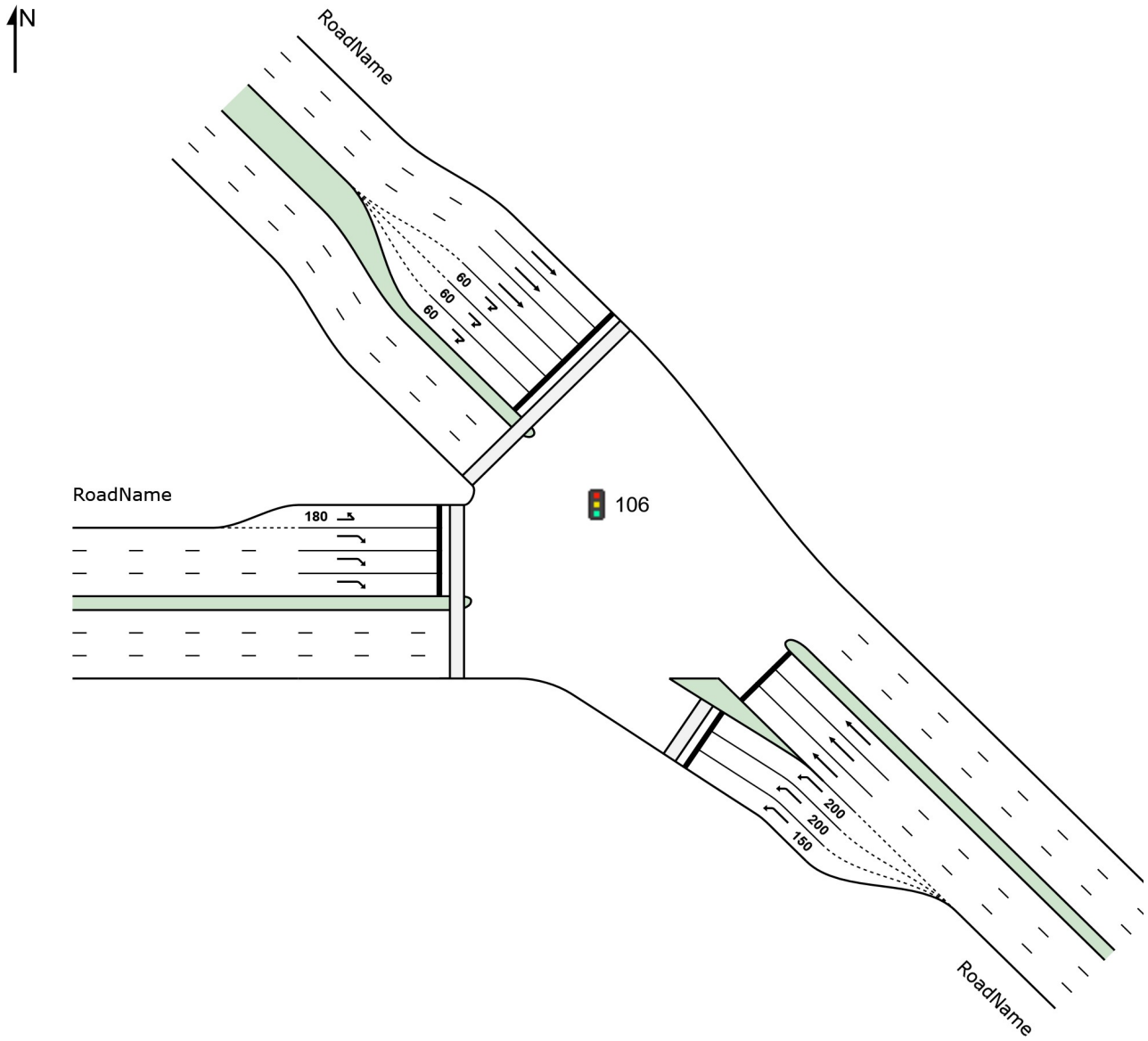
Site: 106 [SS-IN-03 AM Peak - 100% (Option 2a) - Scenario 3 (T-Int)]

Network: 1 [Alternative Layout - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Practical Cycle Time)
Common Control Group: CCG1 [CCG]

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: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, C, D, B
Output Phase Sequence: A, C, D, B

Site Layout

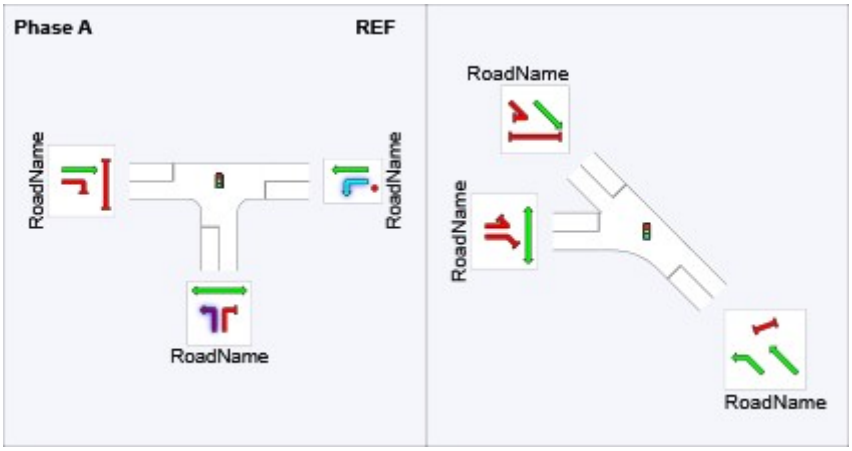

N
RoadName
60
60
60
RoadName
180
106
200
200
150
RoadName

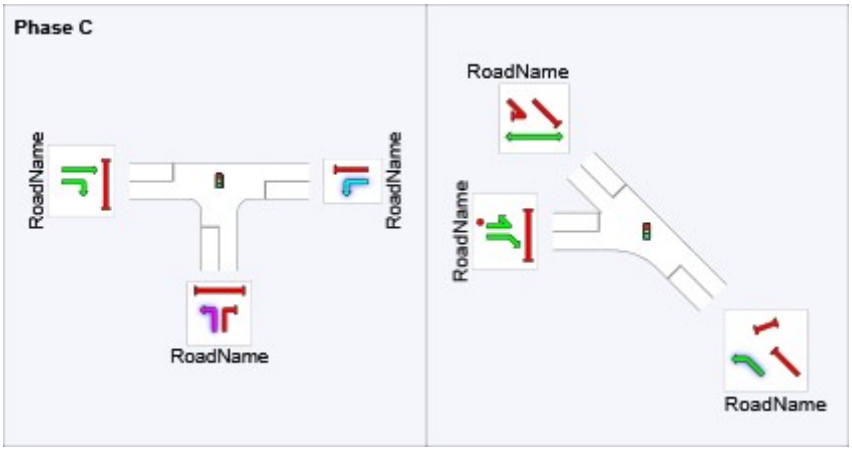
Phase Timing Summary (CCG)

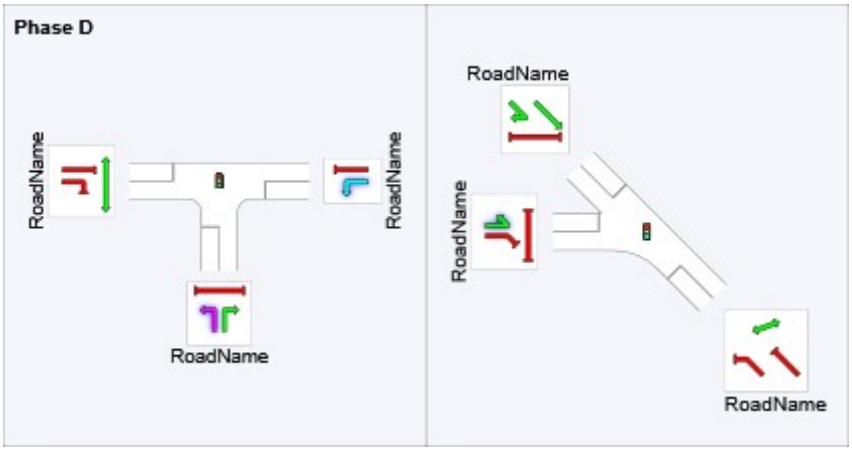
Phase	A	C	D	B
Phase Change Time (sec)	0	33	77	103
Green Time (sec)	27	38	20	1
Phase Time (sec)	33	44	26	7
Phase Split	30%	40%	24%	6%

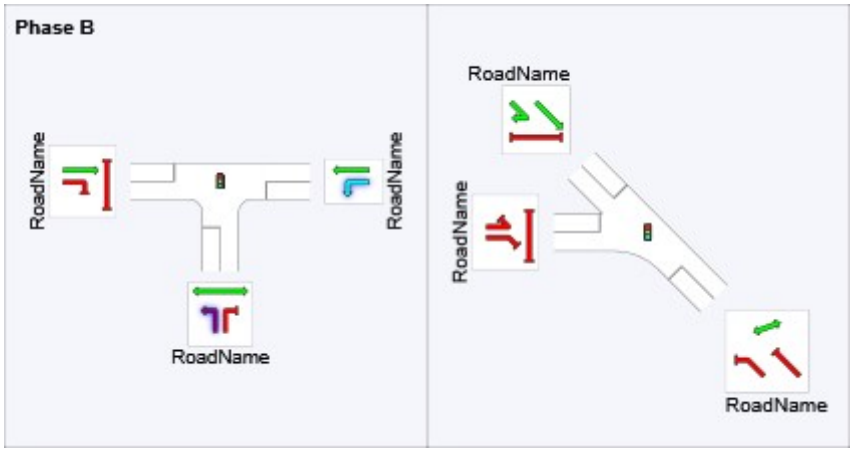
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

Output Phase Sequence (CCG)









REF: Reference Phase
VAR: Variable Phase

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

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: RoadName															
Lane 1	463	10.0	463	10.0	1083	0.428	100	14.6	LOS B	7.4	55.9	Short	150	-6.1 N3	NA
Lane 2	464	10.0	464	10.0	1085	0.428	100	14.6	LOS B	7.4	56.0	Short	200	-5.9 N3	NA
Lane 3	464	10.0	464	10.0	1085	0.428	100	14.6	LOS B	7.4	56.0	Short	200	-5.9 N3	NA
Lane 4	411	0.2	411	0.2	478	0.859	100	50.9	LOS D	14.6	102.1	Full	500	0.0	0.0
Lane 5	411	0.2	411	0.2	478	0.859	100	50.9	LOS D	14.6	102.1	Full	500	0.0	0.0
Lane 6	411	0.2	411	0.2	478	0.859	100	50.9	LOS D	14.6	102.1	Full	500	0.0	0.0
Approach	2624	5.4	2624	5.4		0.859		31.7	LOS C	14.6	102.1				
NorthWest: RoadName															
Lane 1	725	0.2	725	0.2	1063	0.682	100	19.2	LOS B	17.0	119.4	Full	500	0.0	0.0
Lane 2	725	0.2	725	0.2	1063	0.682	100	19.2	LOS B	17.0	119.4	Full	500	0.0	0.0
Lane 3	558	0.2	558	0.2	819 1	0.682	100	16.9	LOS B	11.5	80.9	Full	500	0.0	0.0
Lane 4	315	0.2	315	0.2	374	0.843	100	57.9	LOS E	11.2	78.8	Short	60	-6.1 N3	NA
Lane 5	291	0.2	291	0.2	346 1	0.843	100	57.5	LOS E	10.3	71.9	Short	60	-5.9 N3	NA
Lane 6	291	0.2	291	0.2	346 1	0.843	100	57.5	LOS E	10.3	71.9	Short	60	-5.9 N3	NA
Approach	2905	0.2	2905	0.2		0.843		30.7	LOS C	17.0	119.4				
West: RoadName															
Lane 1	336	0.3	336	0.3	855	0.393	100	19.8	LOS B	5.9	41.1	Short	180	0.0	NA
Lane 2	550	8.4	550	8.4	624	0.882	100	51.9	LOS D	19.9	149.3	Full	200	0.0	22.9
Lane 3	550	8.4	550	8.4	624	0.882	100	52.6	LOS D	20.2	151.3	Full	200	0.0	24.1
Lane 4	550	8.4	550	8.4	624	0.882	100	52.6	LOS D	20.2	151.3	Full	200	0.0	24.1
Approach	1986	7.0	1986	7.0		0.882		46.8	LOS D	20.2	151.3				
Intersection	7516	3.8	7516	3.8		0.882		35.3	LOS C	20.2	151.3				

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

Site: 106 [SS-IN-03 AM Peak - 100% (Option 2a) - Scenario 3 (Southern Road)]

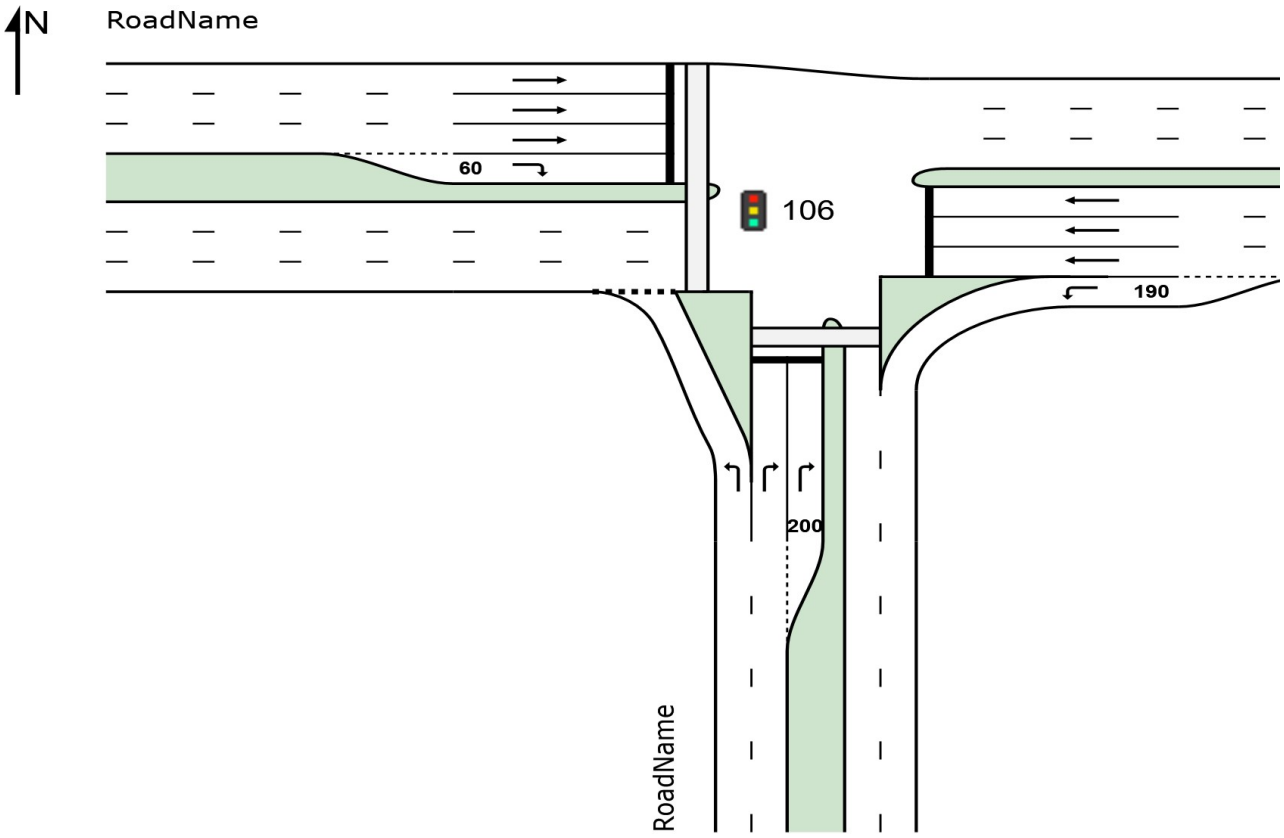
Network: 1 [Alternative Layout - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Practical Cycle Time)
Common Control Group: CCG1 [CCG]

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: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, C, D, B
Output Phase Sequence: A, C, D, B

Some CCG output elements have been omitted as they have already been included under other Sites belonging to the same CCG.

Site Layout



Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: RoadName															
Lane 1	126	0.8	126	0.8	998	0.127	100	11.6	LOS A	1.4	9.6	Full	500	0.0	0.0
Lane 2	142	0.4	142	0.4	256	0.554	100	51.2	LOS D	4.4	30.8	Full	500	-24.1 N3	0.0
Lane 3	142	0.4	142	0.4	256	0.554	100	51.2	LOS D	4.4	30.8	Short	200	-24.1 N3	NA
Approach	409	0.5	409	0.5		0.554		39.0	LOS C	4.4	30.8				
East: RoadName															
Lane 1	811	0.6	811	0.6	1849	0.438	100	5.6	LOS A	0.0	0.0	Short	190	0.0	NA
Lane 2	493	9.2	493	9.2	569	0.867	100	45.1	LOS D	16.5	125.0	Full	200	0.0	6.8
Lane 3	493	9.2	493	9.2	569	0.867	100	44.7	LOS D	16.5	124.7	Full	200	0.0	6.6
Lane 4	493	9.2	493	9.2	569	0.867	100	44.7	LOS D	16.5	124.7	Full	200	0.0	6.6
Approach	2289	6.2	2289	6.2		0.867		31.0	LOS C	16.5	125.0				
West: RoadName															
Lane 1	442	10.4	442	10.4	998	0.443	100	7.2	LOS A	6.1	46.6	Full	500	-22.9 N3	0.0
Lane 2	436	10.4	436	10.4	983	0.443	100	7.2	LOS A	6.0	45.9	Full	500	-24.1 N3	0.0
Lane 3	436	10.4	436	10.4	983	0.443	100	7.2	LOS A	6.0	45.9	Full	500	-24.1 N3	0.0
Lane 4	197	0.5	197	0.5	639	0.308	100	33.9	LOS C	4.7	33.2	Short	60	0.0	NA
Approach	1511	9.1	1511	9.1		0.443		10.7	LOS A	6.1	46.6				
Intersection	4209	6.7	4209	6.7		0.867		24.5	LOS B	16.5	125.0				

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

N3 Capacity Adjustment due to downstream lane blockage determined by the program.

USER REPORT FOR NETWORK SITE

Project: 210209-V198070-Sunbury Growth ICP Modelling_Ultimate Scenario - SS03 - for VPA

Template: GTA Appendix Site

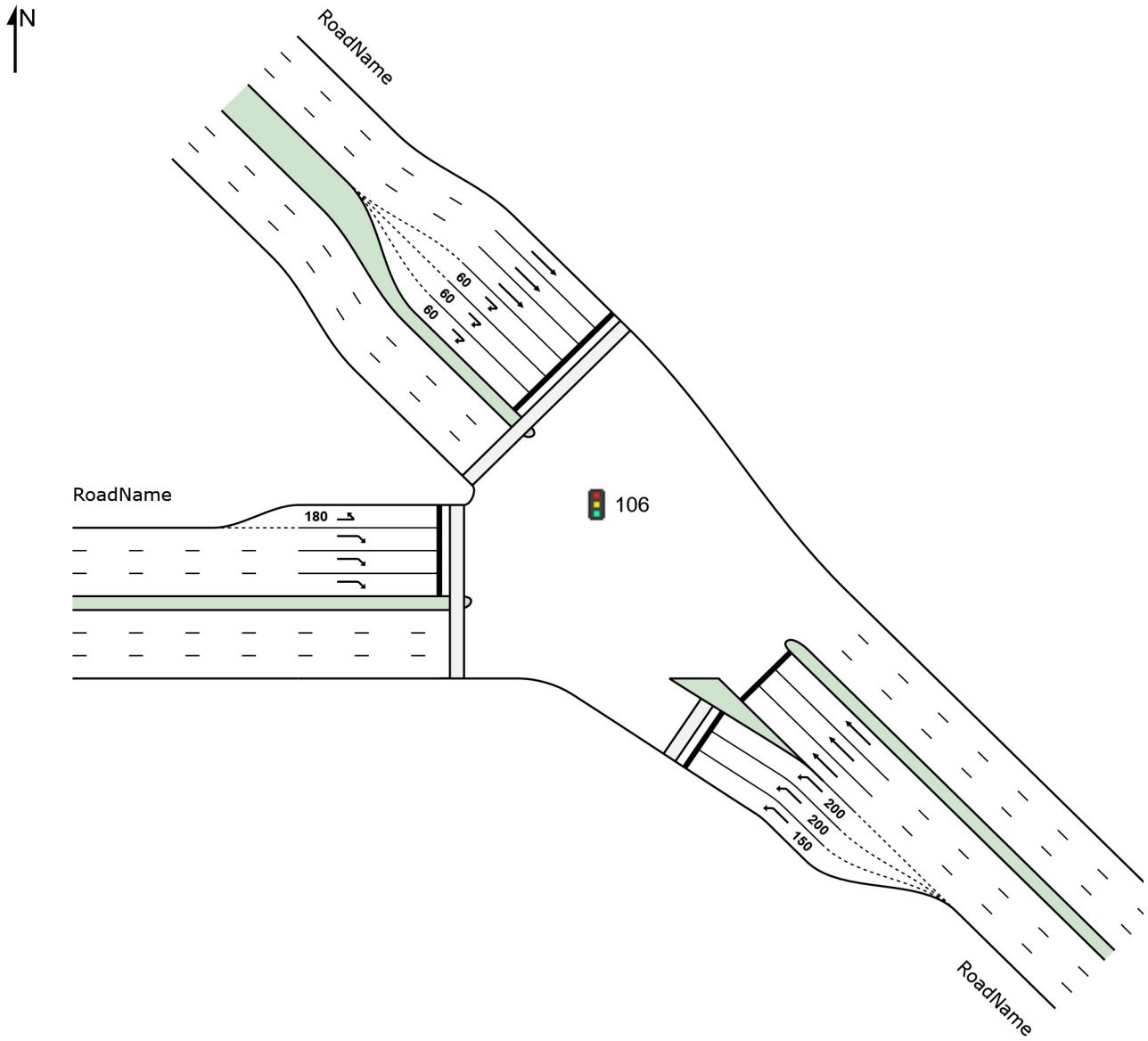
Site: 106 [SS-IN-03 PM Peak - 100% (Option 2a) - Scenario 3 (T-Int)]

Network: 2 [Alternative Layout - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Practical Cycle Time)
Common Control Group: CCG1 [CCG]

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: CCG Phasing (phase reduction applied)
Reference Phase: Phase A
Input Phase Sequence: A, C, D, B
Output Phase Sequence: A, C, D

Site Layout

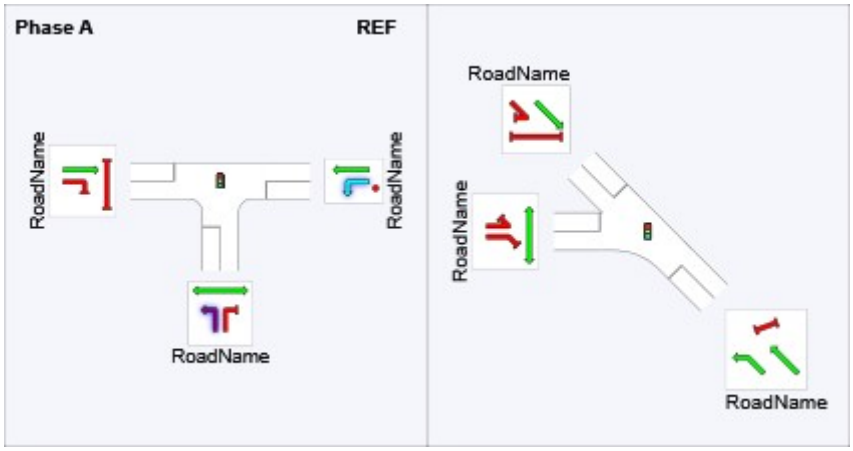

N
RoadName
60
60
60
RoadName
180
106
200
200
150
RoadName

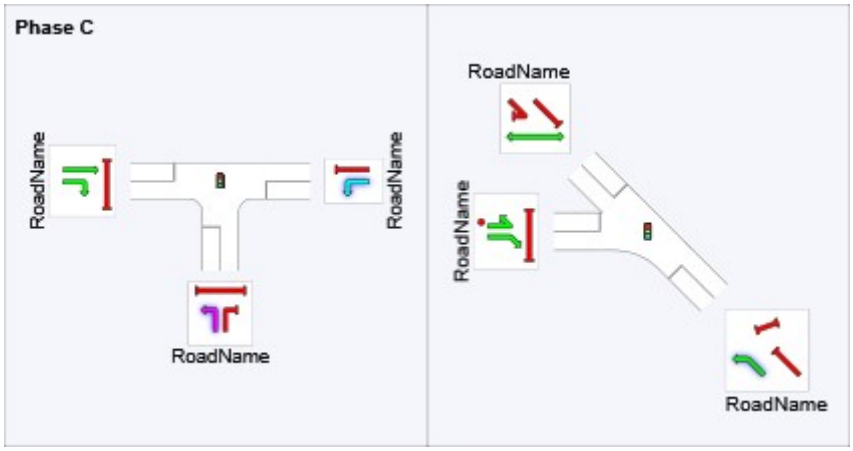
Phase Timing Summary (CCG)

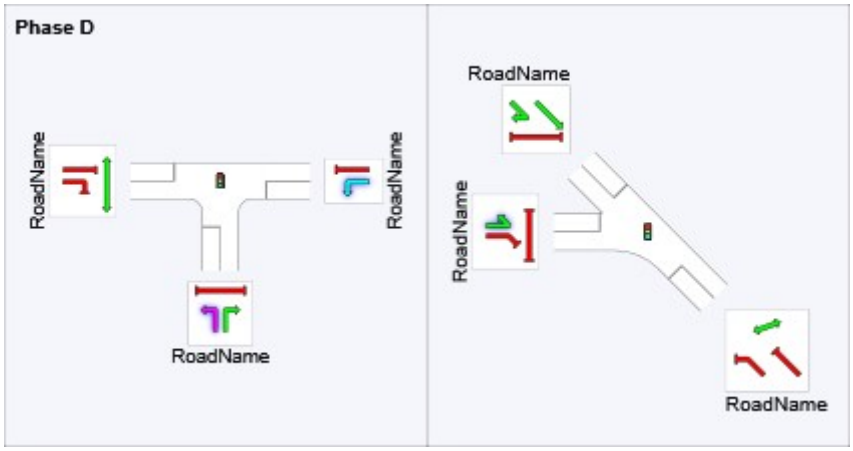
Phase	A	C	D
Phase Change Time (sec)	0	50	89
Green Time (sec)	44	33	35
Phase Time (sec)	50	39	41
Phase Split	38%	30%	32%

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

Output Phase Sequence (CCG)

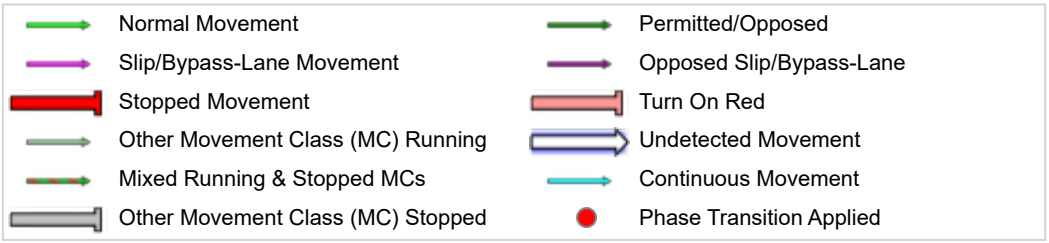






REF: Reference Phase

VAR: Variable Phase



Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: RoadName															
Lane 1	615	7.0	615	7.0	575[1]	1.070	100	148.8	LOS F	46.5	345.4	Short	150	-50.0[N3]	NA
Lane 2	615	7.0	615	7.0	575[1]	1.070	100	148.8	LOS F	46.5	345.4	Short	200	-50.0[N3]	NA
Lane 3	622	7.0	622	7.0	582	1.070	100	148.5	LOS F	47.0	349.1	Short	200	-50.0[N3]	NA
Lane 4	688	0.2	688	0.2	659	1.044	100	122.2	LOS F	43.5	305.1	Full	500	0.0	16.8[8]
Lane 5	688	0.2	688	0.2	659	1.044	100	122.2	LOS F	43.5	305.1	Full	500	0.0	4.6
Lane 6	688	0.2	688	0.2	659	1.044	100	122.2	LOS F	43.5	305.1	Full	500	0.0	4.6
Approach	3918	3.4	3918	3.4		1.070		134.7	LOS F	47.0	349.1				
NorthWest: RoadName															
Lane 1	544	0.1	544	0.1	1274	0.427	100	11.4	LOS A	9.9	69.5	Full	500	0.0	0.0
Lane 2	544	0.1	544	0.1	1274	0.427	100	11.4	LOS A	9.9	69.5	Full	500	0.0	0.0
Lane 3	449	0.1	449	0.1	1052	0.427	100	10.6	LOS A	7.7	53.7	Full	500	0.0	0.0
Lane 4	229	0.6	229	0.6	218	1.052	100	154.1	LOS F	15.8	111.4	Short	60	-50.0[N3]	NA
Lane 5	229	0.6	229	0.6	218	1.052	100	154.1	LOS F	15.8	111.4	Short	60	-50.0[N3]	NA
Lane 6	229	0.6	229	0.6	218	1.052	100	154.1	LOS F	15.8	111.4	Short	60	-50.0[N3]	NA
Approach	2225	0.2	2225	0.2		1.052		55.3	LOS D	15.8	111.4				
West: RoadName															
Lane 1	589	0.2	589	0.2	849	0.694	100	27.4	LOS B	15.7	110.4	Short	180	0.0	NA
Lane 2	503	4.2	503	4.2	472	1.067	100	142.0	LOS F	27.6[N4]	200.0[N4]	Full	200	0.0	50.0
Lane 3	503	4.2	503	4.2	472	1.067	100	142.0	LOS F	27.6[N4]	200.0[N4]	Full	200	0.0	50.0
Lane 4	503	4.2	503	4.2	472	1.067	100	142.0	LOS F	27.6[N4]	200.0[N4]	Full	200	0.0	50.0
Approach	2099	3.1	2099	3.1		1.067		109.8	LOS F	27.6	200.0				
Intersection	8242	2.5	8242	2.5		1.070		106.9	LOS F	47.0	349.1				

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.

Site: 106 [SS-IN-03 PM Peak - 100% (Option 2a) - Scenario 3 (Southern Road)]

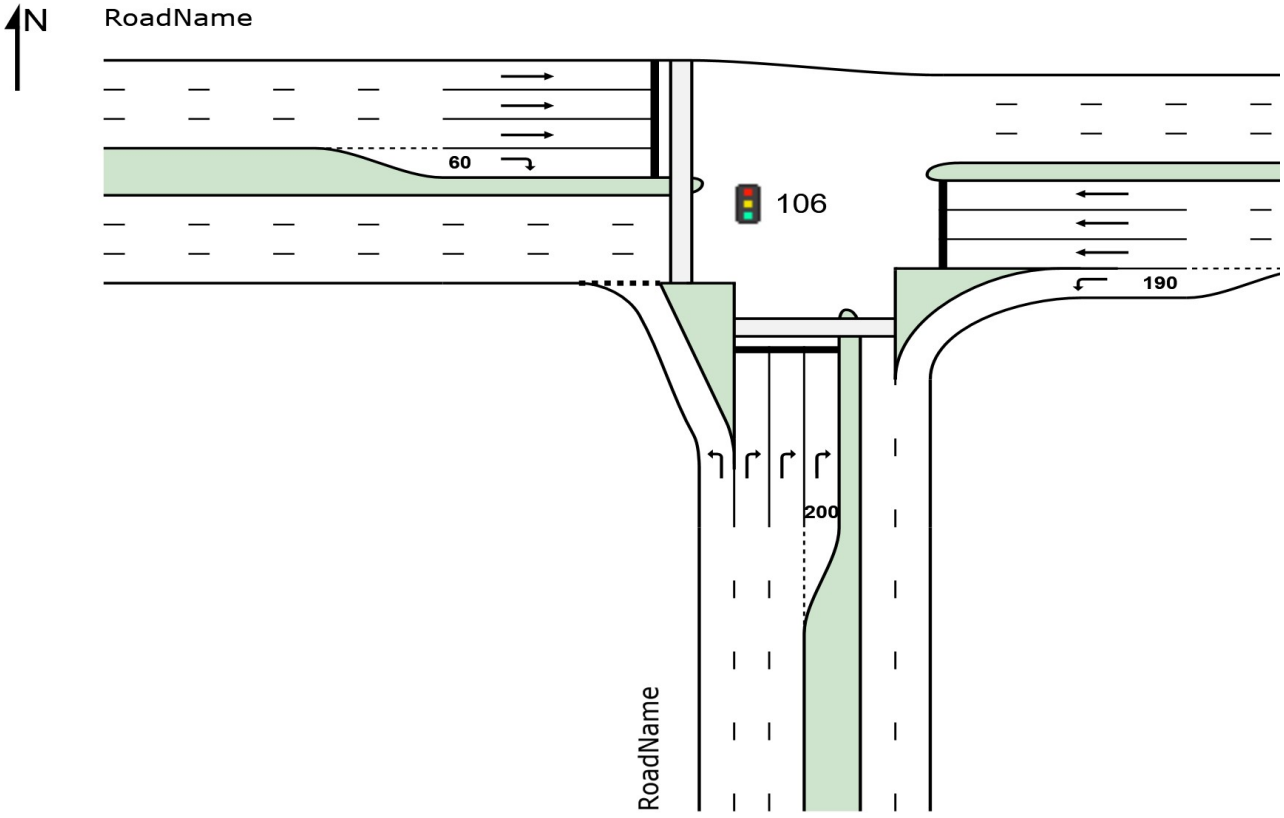
Network: 2 [Alternative Layout - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Practical Cycle Time)
Common Control Group: CCG1 [CCG]

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: CCG Phasing (phase reduction applied)
Reference Phase: Phase A
Input Phase Sequence: A, C, D, B
Output Phase Sequence: A, C, D

Some CCG output elements have been omitted as they have already been included under other Sites belonging to the same CCG.

Site Layout



Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: RoadName															
Lane 1	225	0.5	225	0.5	982	0.229	100	17.8	LOS B	3.9	27.6	Full	500	0.0	0.0
Lane 2	268	0.3	268	0.3	251	1.067	100	160.5	LOS F	18.9	132.8	Full	500	-49.7 N3	0.0
Lane 3	268	0.3	268	0.3	251	1.067	100	160.5	LOS F	18.9	132.8	Full	500	-49.7 N3	0.0
Lane 4	268	0.3	268	0.3	251	1.067	100	160.5	LOS F	18.9	132.8	Short	200	-49.7 N3	NA
Approach	1028	0.3	1028	0.3		1.067		129.2	LOS F	18.9	132.8				
East: RoadName															
Lane 1	605	0.5	605	0.5	1850	0.327	100	5.6	LOS A	0.0	0.0	Short	190	0.0	NA
Lane 2	645	6.8	645	6.8	632	1.020	100	107.9	LOS F	27.0 N 4	200.0 N4	Full	200	0.0	50.0
Lane 3	645	6.8	645	6.8	632	1.020	100	107.9	LOS F	27.0 N 4	200.0 N4	Full	200	0.0	50.0
Lane 4	645	6.8	645	6.8	632	1.020	100	107.9	LOS F	27.0 N 4	200.0 N4	Full	200	0.0	50.0
Approach	2540	5.3	2540	5.3		1.020		83.5	LOS F	27.0	200.0				
West: RoadName															
Lane 1	452	4.8	452	4.8	607	0.745	100	17.7	LOS B	12.2	88.9	Full	500	-49.7 N3	0.0
Lane 2	452	4.8	452	4.8	607	0.745	100	17.7	LOS B	12.2	88.9	Full	500	-49.7 N3	0.0
Lane 3	392	4.8	392	4.8	526 1	0.745	100	17.1	LOS B	9.7	70.8	Full	500	-49.7 N3	0.0
Lane 4	273	0.4	273	0.4	298 1	0.914	100	73.9	LOS F	11.8	82.7	Short	60	0.0	NA
Approach	1568	4.0	1568	4.0		0.914		27.3	LOS B	12.2	88.9				
Intersection	5137	3.9	5137	3.9		1.067		75.5	LOS F	27.0	200.0				

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N4 Average back of queue has been restricted to the available queue storage space.