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Traffic Impact Assessment Report

Block 42 Section 65, Belconnen

Proposed Major Plan Amendment

18/06/2025

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Executive Summary

Quantum Traffic have been engaged to undertake a Traffic Impact Assessment for the proposed Major Plan Amendment at Block 42 Section 65, Belconnen. This report summarises the various transport planning assessments undertaken in relation to the proposed Major Plan Amendment.

Existing Conditions

Block 42 Section 65, Belconnen is currently zoned as CF: Community Facility Zone and is located on the west side of Aikman Drive, north of Lake Ginninderra College.

Under the existing conditions, vehicle access to the site is provided via an existing accessway for Lake Ginninderra College, ultimately connecting to Aikman Drive via an unsignalised intersection. This access is currently located on the adjacent Lake Ginninderra College site (Block 60, Section 65).

An existing path network is located in the vicinity of the subject site which supports walking and low-speed cycling trips.

There are 13 bus routes which serve stops located within close walking distance of the subject site.

Under the existing conditions, intersection analysis found that the two key intersections adjacent to the subject site operate with 'available capacity', 'acceptable delays' and 'acceptable queue lengths'.

Traffic demands for a 2040 base scenario have been developed with consideration for the following other nearby developments:

- Onderra Development on the University of Canberra site,
- Lawson Stage 2 subdivision, and
- Allowance for other growth on the road network to the 2040 horizon year.

Traffic modelling for the 2040 Base scenario indicates that the Aikman Drive / Emu Bank intersection will continue to operate within acceptable parameters, however, the Aikman Drive / Lake Ginninderra College access intersection will experience long delays (LOS F) for the right turn movements out of the Lake Ginninderra College access onto Aikman Drive. Given the small volumes predicted for these movements, the intersection is predicted to operate with acceptable DOS and queue lengths.

Proposal

The proposal is for a Major Plan Amendment, rezoning the site to CZ2 commercial zoning. A sketch Master Plan has been developed for the subject site which identifies the following indicative yields for possible future development:

- 330 residential apartments including:
  - 60% x 1 bedroom apartments & 1+ bedroom apartments
  - 25% x 2 bedroom apartments
  - 15% x 3 bedroom apartments
- 4,000m^2 Community Facilities including:

- 1,000m^2 Community Activity Centre
- 1,000m^2 Health Facility
- 2,000m^2 Office

Short stay parking for the community facility component is proposed to occur via an at grade car park at the western boundary of the site (approximately 40 spaces). Car parking for the residential component and staff parking for the community facility component is proposed to occur via basement levels.

Vehicle access is proposed to occur via the existing accessway to Lake Ginninderra College on the southern boundary of the subject site.

Parking Assessments

Parking assessments have been undertaken for the possible future development scenario in accordance with *Commercial Zone Specification ZS2.* These assessments found that:

- The proposed residential component is expected to generate car parking demands of 415-504 car parking spaces (depending on the final mix of apartments and the adopted parking rates).
- The proposed community facility component is expected to generate car parking demands of 110 spaces, including 47 short stay parking spaces and 63 long stay parking spaces.
- The at grade parking shown in the sketch Master Plan (approximately 40 spaces) can generally accommodate the estimated short stay parking demands for the community facility component. The balance of parking demands including staff for the community facility component and the residential component are recommended to be provided within basement levels.
- The proposed land uses will generate a requirement for:
  - 3-4 accessible car parking spaces.
  - 16-18 motorcycle parking spaces.
  - 352 EV Ready parking spaces.
- The proposed land uses will generate a requirement for 495 bicycle parking spaces, including 390 long term parking spaces and 105 short term parking spaces.
- We recommend long term bicycle parking is provided in individual residential storage units or via a dedicated bicycle parking in the basement levels. Short term bicycle parking is best provided via rails at the ground floor.
- The proposed land community facility component generates a benchmark end of trip requirement for 2 showers and 22 storage units under the Territory Plan. We recommend these end of trip facilities are provided within any future development.

Post-Development Traffic Conditions

Vehicle access is proposed to remain via the existing accessway to Lake Ginninderra College, with access to the broader road network via Aikman Drive. As part of future development on the subject site, TCCS and Education have previously agreed to subdivide the accessway from the Lake Ginninderra College site, creating stub road managed by TCCS.

The proposed development is expected to generate traffic demands in the order of 187-221 vehicle trips during the morning and evening peak hours on a typical weekday.

Intersection analysis found that, with the addition of traffic demands associated with the development, the Aikman Drive / Emu Bank intersection would continue to operate within its

practical capacity. However, the Aikman Drive / Lake Ginninderra College access would perform poorly (beyond practical capacity), with long delays associated with right turn movements from Lake Ginninderra College access onto Aikman Drive.

It is recommended the intersection of Aikman Drive / Lake Ginninderra College access is signalised to improve capacity for the minor leg. Given the proximity to the existing traffic signals, the proposal signals would need to operate in conjunction the existing traffic signals at Aikman Drive / Emu Bank. Capacity analysis of the proposed traffic signal arrangement indicates that both intersection can operate with 'available capacity', 'acceptable delays' and 'acceptable queue lengths'.

Conclusion

On this basis, there are no traffic engineering reasons why the proposed Major Plan Amendment should not be approved, subject to appropriate conditions.

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Tables

1 Introduction

Quantum Traffic have been engaged by the University of Canberra to undertake a Traffic Impact Assessment (TIA) in relation to a proposed Major Plan Amendment for Block 42 Section 65, Belconnen. This report summarises the various traffic engineering and transport planning assessments undertaken in relation to the Major Plan Amendment.

2 Existing Conditions

2.1 Subject Site

The subject site is located on the west side of Aikman Drive, approximately 370m northeast of Eastern Valley Way and approximately 910m south of Ginninderra Drive. The subject site has an area of 10,378m^2 and is currently zoned as CF: Community Facilities under the *Territory Plan*. The subject site is located on the boundary of the Belconnen Town Centre, providing excellent access to the existing town centre.

Land uses surrounding the site include public open space (John Knight Memorial Park) to the north, community uses to the east, south and west (University of Canberra and UC Senior Secondary College Lake Ginninderra). Figure 1 below presents the land use zoning of the subject site and surrounds.

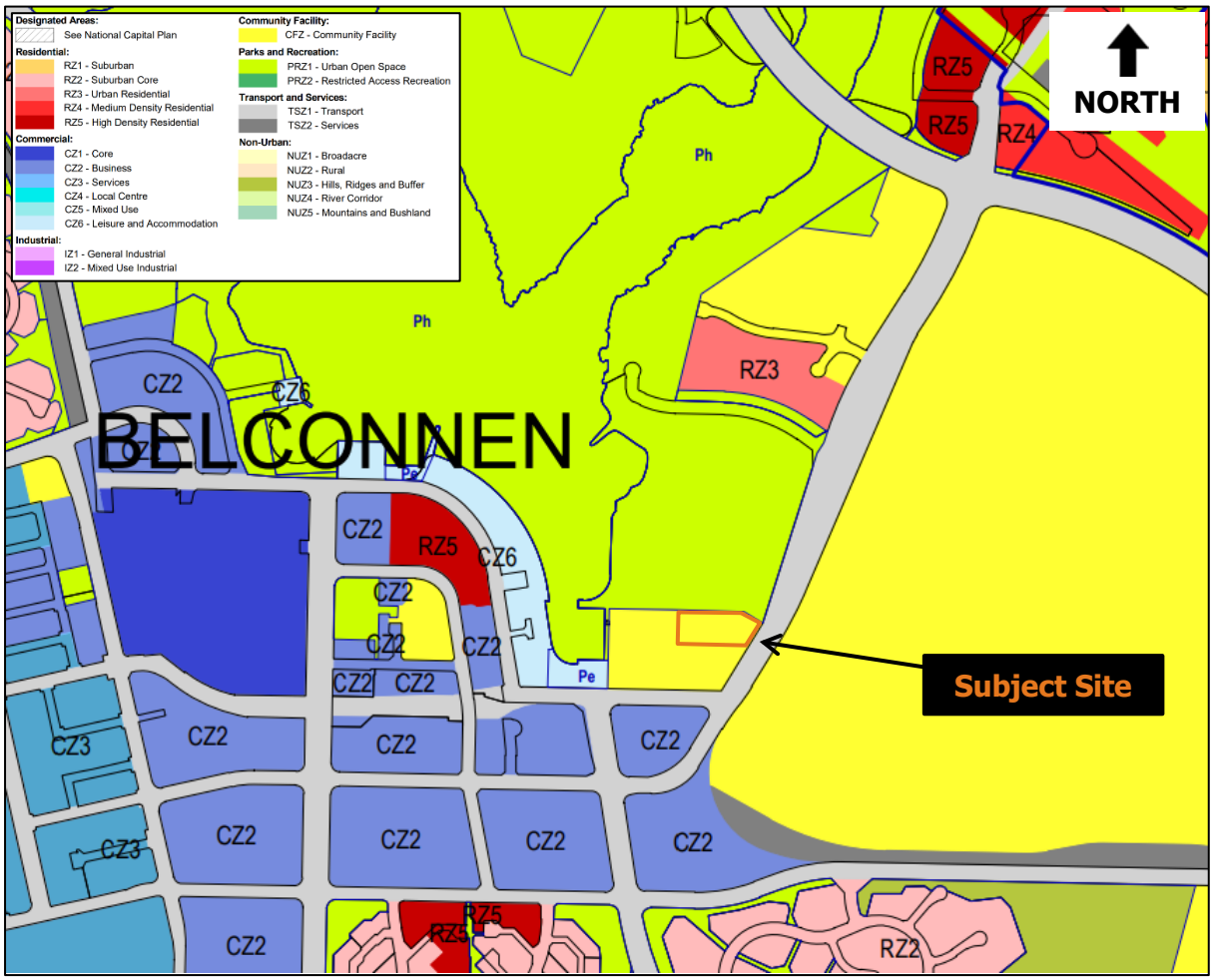


Figure 1: Locality Plan (source: ACTmapi)

The aerial photograph at Figure 2 below, shows that the subject site is currently vacant, with vehicle access provided at three (3) locations along the southern boundary of the site, via an existing accessway on Block 60 Section 65, Belconnen, which serves UC Senior Secondary College Lake Ginninderra. It is noted that there does not appear to be an access easement over this existing accessway.

Figure 2: Aerial Image (source: ACTmapi)

2.2 Active Travel Network

The subject site is well connected to strategic active travel routes, as shown on the *Active Travel Planning Tool* (*ATPT*), presented at Figure 3 below and listed below:

- An existing principal community route (C7: Belconnen – Gungahlin) which runs through John Knight Memorial Park, immediately north of the site,
- An existing principal community route (C3a: City – Belconnen via Town Centre) which runs along the north side of Emu Bank, approximately 80m south of the site,
- An existing/future main community route (Lake Ginninderra Circuit) which runs along the east side of Lake Ginninderra, approximately 120m west of the site,
- An existing local community route which runs through the University of Canberra, approximately 180m east of the site, and
- A future main community route (Future Belconnen Cycle Loop) which runs along the west side of Eastern Valley Way, approximately 340m southwest of the site.

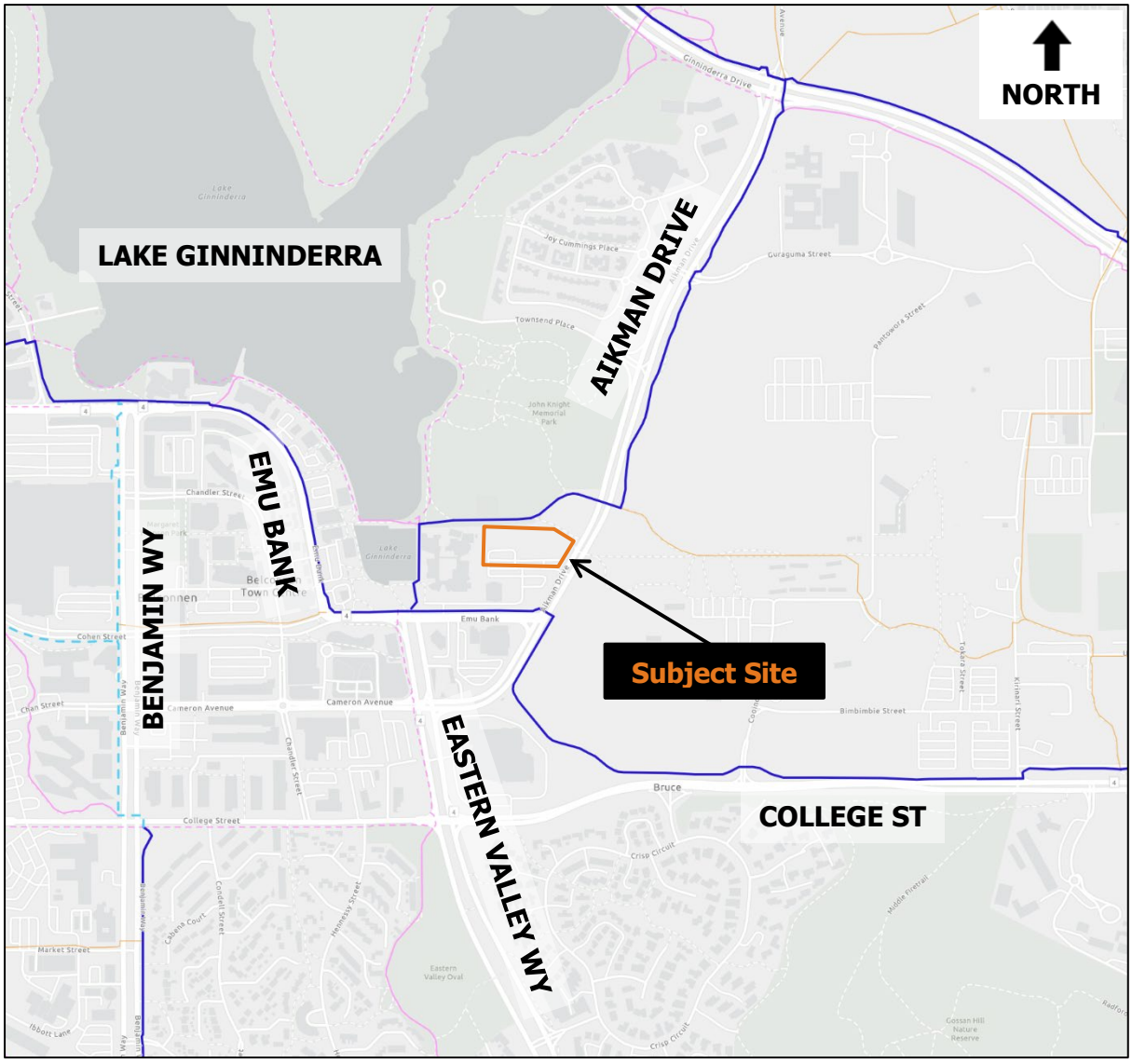


Figure 3: Strategic Active Travel Network (source: ATPT)

Active travel infrastructure in the vicinity of the site primarily comprises an existing network of paths, which parallel the road network. This path network provides off-road pedestrian and (low-speed) cyclist connections between the subject site and the surrounding land uses. Dedicated bicycle infrastructure, in the vicinity of the subject site is limited to the separated bicycle lanes along Emu Bank.

2.3 Public Transport Network

There are a total of 13 public transport routes which serve stops located within close walking distance (approximately 400m) of the subject site, as shown at Figure 4 below. These include:

- Bus routes R8, 24, 31, 43, 843 and 901 which serve stops located on Aikman Drive, 50m-100m northeast of the site, and
- Bus routes R2, R3, R4, R9, 23, 30 and 32 which serve the stops located on Eastern Valley Way, approximately 400m southwest of the site.

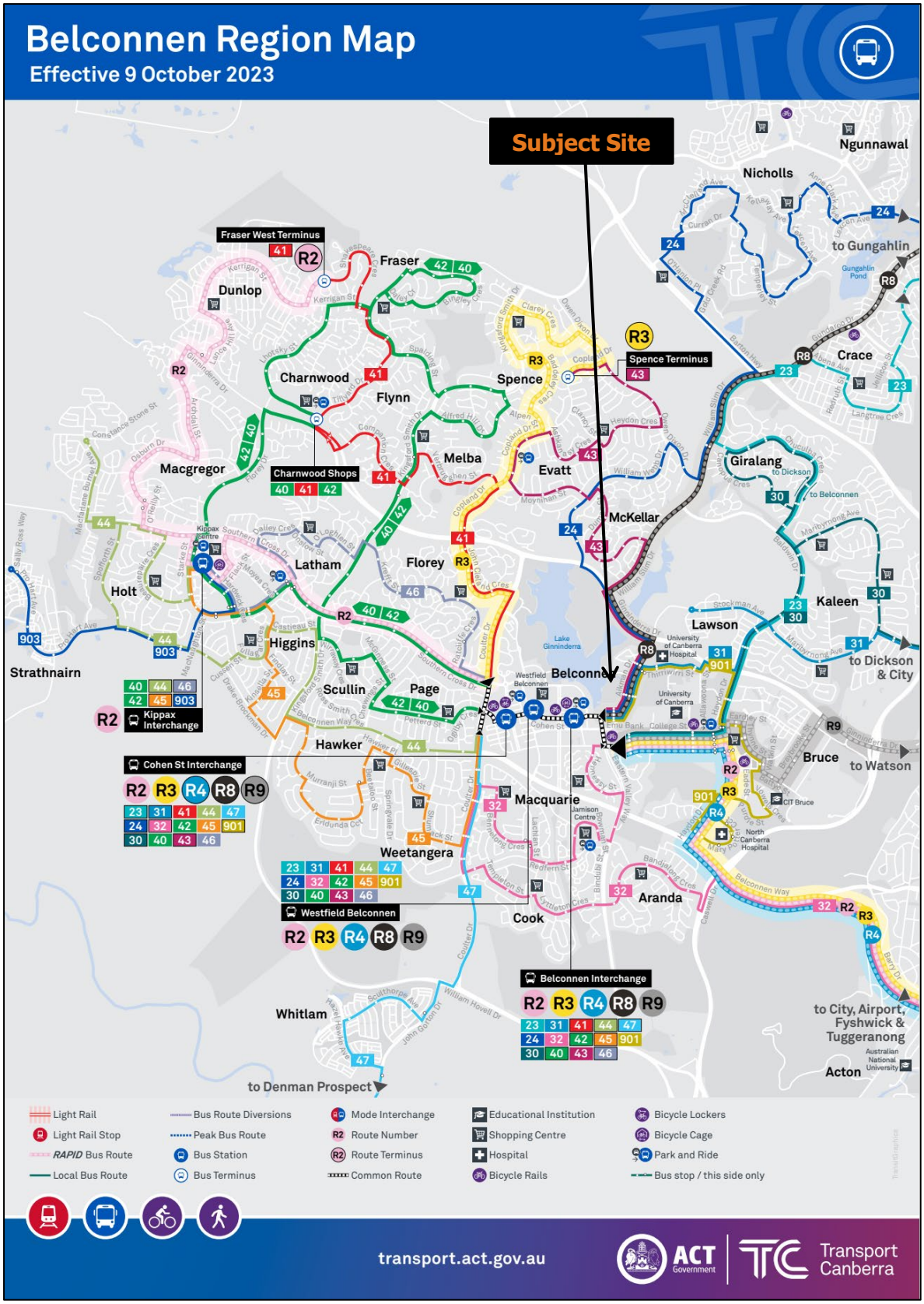


Figure 4: Public Transport Network (source: Transport Canberra)

2.4 Road Network

Aikman Drive is an arterial road which extends approximately 1.35km from Eastern Valley Way in the southwest to Ginninderra Drive in the north. Adjacent to the subject site, Aikman Drive comprises dual carriageways separated by a narrow raised median. Each carriageway supports an unprotected kerbside bicycle lane and two (2) through traffic lanes. On-street parking is prohibited on both sides of Aikman Drive by the bicycle lanes.

Active travel facilities, adjacent to the subject site, comprise 1.2m wide paths on both sides of the roadway and a signalised pedestrian crossing located approximately 50m north of the UC Senior Secondary College Lake Ginninderra vehicle access.

Aikman Drive forms part of the public transport network and is a gazetted heavy vehicle route for controlled access buses and PBS L1 truck and dog combinations but is not a gazetted heavy vehicle route for b-doubles or higher mass vehicles. Street lighting is provided along the length of Aikman Drive.

Adjacent to the subject site, Aikman Drive is subject to a posted 60km/h speed limit.

2.4.1 Existing Traffic Conditions

Classified turning movement counts were undertaken at two (2) intersections near the subject site, as listed below and outlined in red at Figure 5 below:

- Aikman Drive / Emu Bank, and
- Aikman Drive / Lake Ginninderra College.

Figure 5: Intersection Performance Analysis Study Area (source: ACTmapi)

These surveys were undertaken throughout the day on Thursday, 6 March 2025 to quantify the existing traffic volumes in the vicinity of the subject site. Figure 6 below presents the observed traffic volume profile and identifies a morning peak hour beginning at 8:15am and an evening peak hour beginning at 4:45pm.

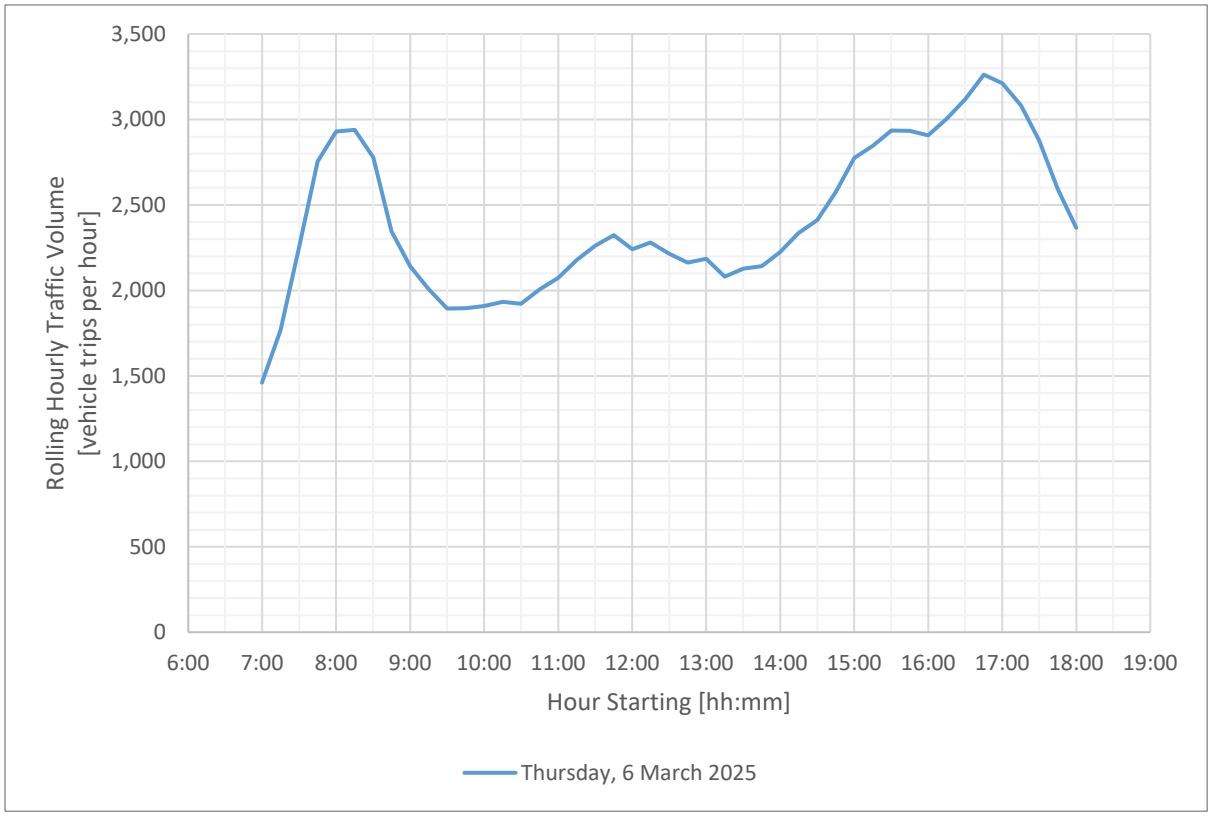


Figure 6: Traffic Volume Profile – 2025 Existing Conditions

Intersection Performance

The performance of the analysed intersections has been assessed using the SIDRA Intersection software package. The SIDRA software quantifies intersection performance using the following four (4) measures:

- Degree of Saturation (DOS), which represents the ratio of traffic demands to theoretical intersection capacity,
- Average delay, in seconds, experienced by vehicles at the intersection,
- Level of Service (LOS), which converts average delay to a letter grade, and
- 95th percentile queue length, in metres, which reflects the length of queueing that has a 5% chance of being exceeded.

The *RMS Traffic Modelling Guidelines* specify that the maximum practical DOS for various intersection types are as set out at Table 1 below. Beyond these values, traffic flows can become unstable, with minor flow disruptions likely to cause outsized delays and queue lengths.

Table 1: Practical Capacity of Intersections

Intersection Type	Maximum Practical DOS
Traffic Signal	0.90
Priority-Control	0.80

The *RMS Guide to Traffic Generating Developments (2002)* defines the LOS criteria as presented at Table 2 below.

Table 2: LOS Criteria for Intersections

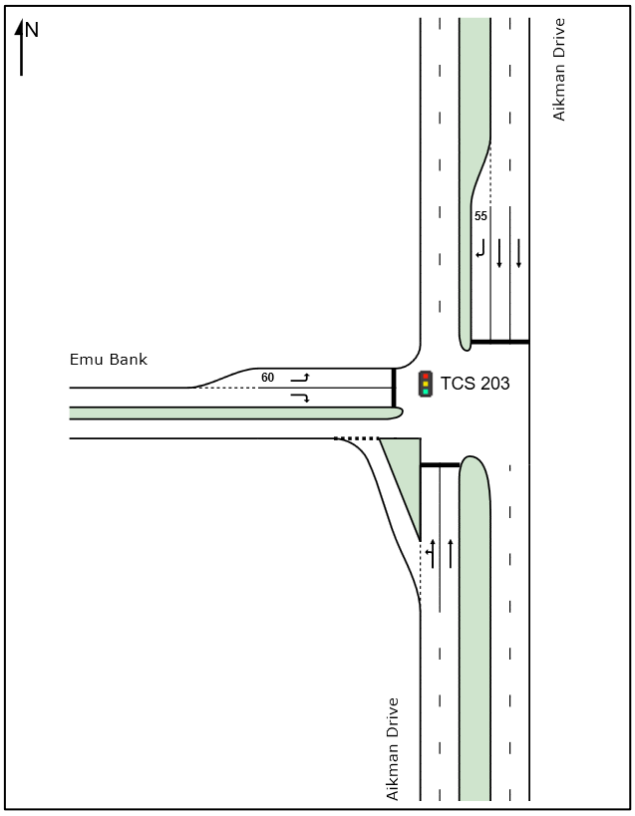
Level of Service	Average Delay
A	≤ 14s
B	15s – 28s
C	29s – 42s
D	43s – 56s
E	57s – 70s
F	> 70s

The 95th percentile queue lengths have been assessed against the available storage length within each respective lane.

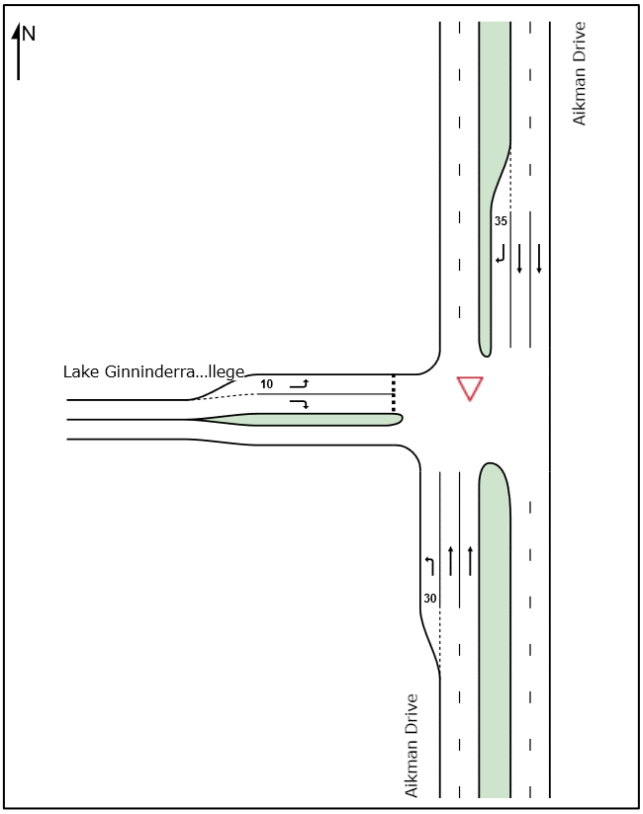
Model Geometry

The study area for the intersection performance analysis includes the two (2) intersections identified at Figure 5.

Figure 7 below presents the modelled geometry of the analysed intersections.



a) Aikman Drive / Emu Bank

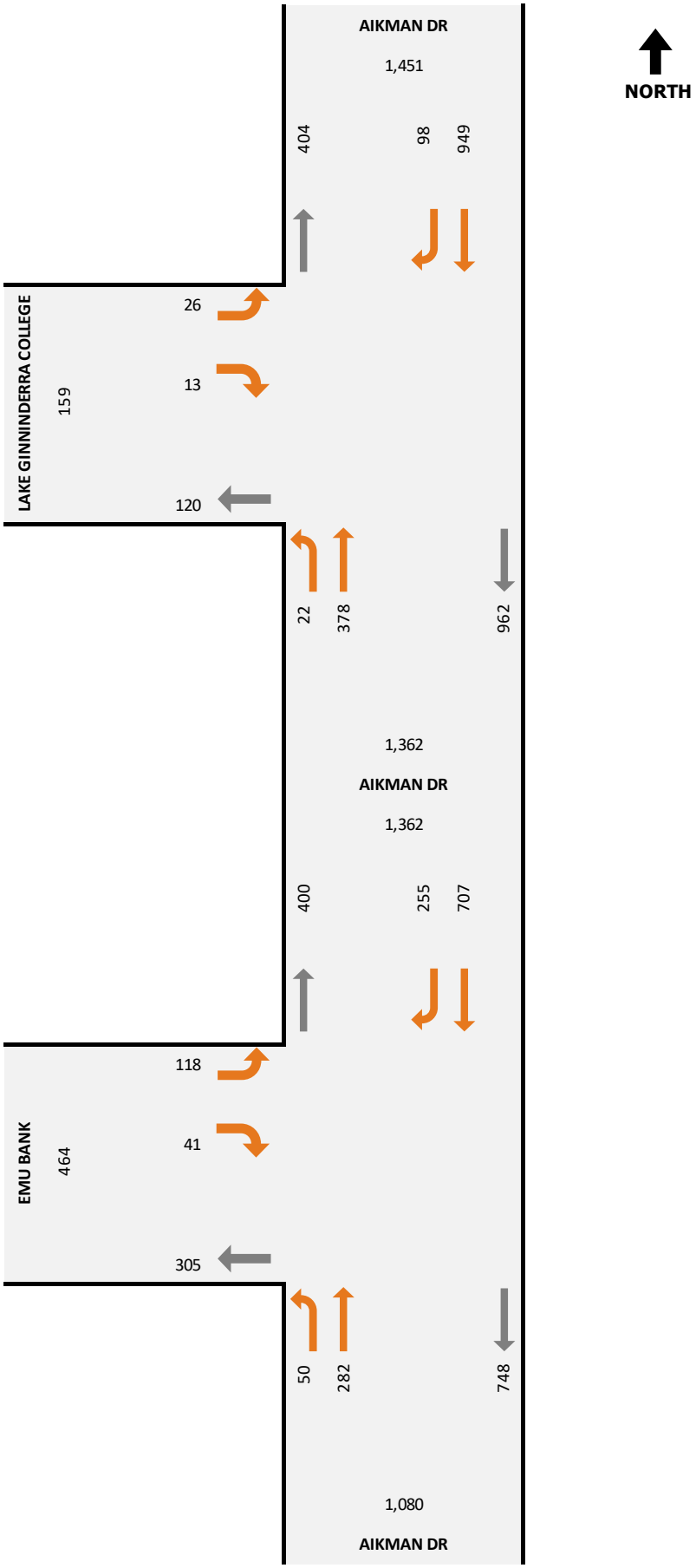


b) Aikman Drive / Lake Ginninderra College

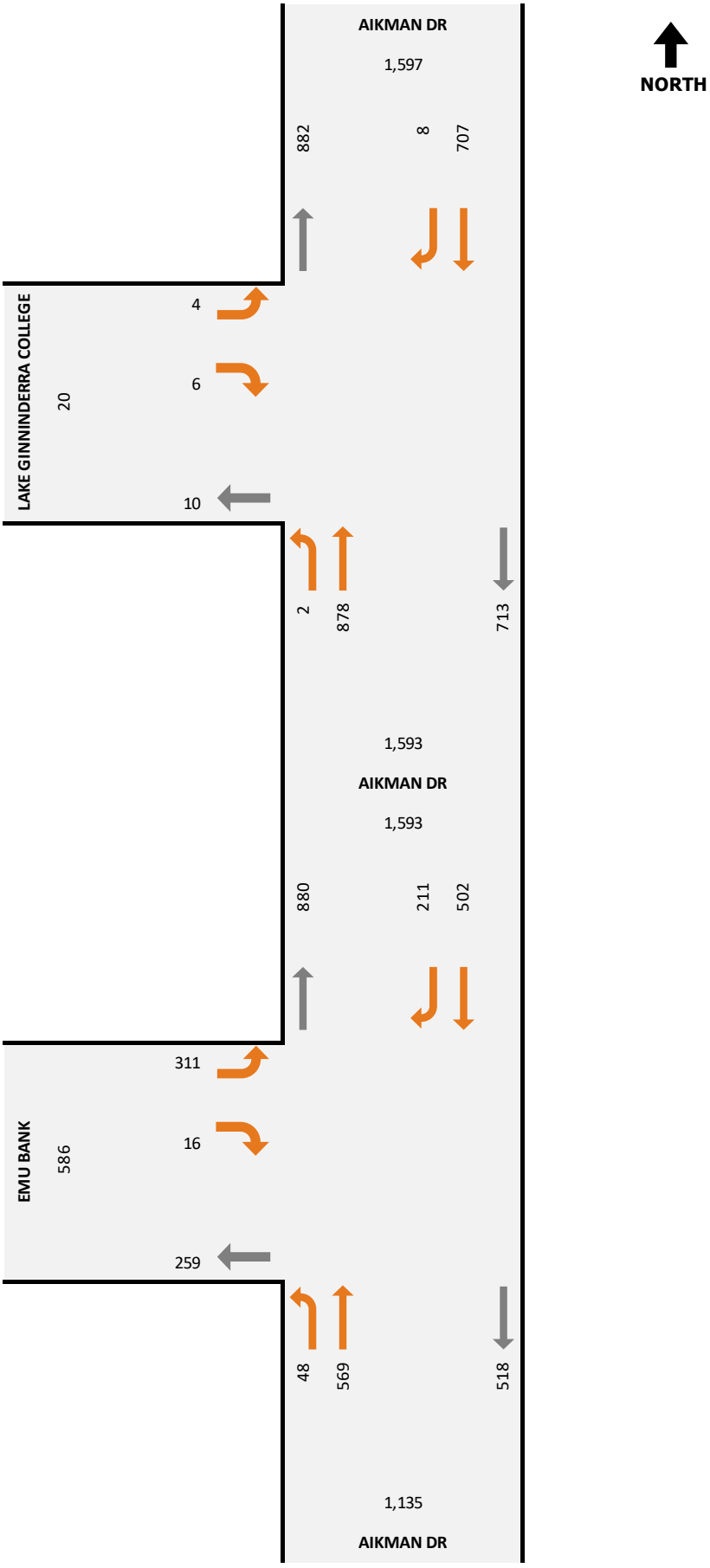
Figure 7: Modelled Intersection Geometry – 2025 Existing Conditions

Traffic Volumes

Figure 8 below, presents the observed turning movements at these intersections, during the identified morning and evening peak hours. More detailed breakdowns of the peak hour traffic volumes, under the existing conditions, are provided at Appendix A.



a) Morning Peak Hour (starting 8:15am)



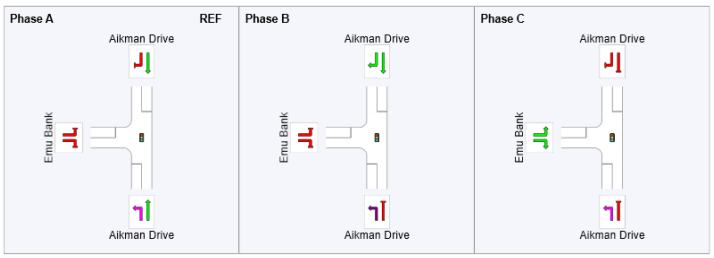
b) Evening Peak Hour (starting 4:45pm)

Figure 8: Peak Hour Traffic Volumes – 2025 Existing Conditions

Traffic Signal Operation

The operation of the traffic signals at Aikman Drive / Emu Bank has been derived from historical SCATS data, from Thursday, 6 March 2025.

The traffic signal phasing is presented at Figure 9 below, while Table 3 presents the traffic signal timings.



a) Aikman Drive / Emu Bank

Figure 9: Traffic Signal Phasing – 2025 Existing Conditions

Table 3: Traffic Signal Timings – 2025 Existing Conditions

Peak Hour	Phase			Cycle Time
	A	B	C	
Aikman Drive / Emu Bank				
Morning Peak Hour	22s	21s	9s	**52s**
Evening Peak Hour	25s	25s	12s	**62s**

Intersection Performance

Table 4 below summarises the performance of the road network under the 2025 existing conditions traffic volumes. Full details of the intersection performance analysis, under existing conditions, are provided at Appendix B.

Table 4: Intersection Performance Summary – 2025 Existing Conditions

Approach	AM Peak Hour			PM Peak Hour		
	DOS	Delay (LOS)	Queue	DOS	Delay (LOS)	Queue
Aikman Drive / Emu Bank						
S: Aikman Dr	0.27	12s (A)	22m	0.53	19s (B)	56m
N: Aikman Dr	0.52	8s (A)	44m	0.44	20s (B)	46m
W: Emu Bank	0.83	34s (C)	29m	0.36	15s (B)	44m
Total	**0.83**	**12s (A)**	**-**	**0.53**	**19s (B)**	**-**
Aikman Drive / Lake Ginninderra College						
S: Aikman Dr	0.11	5s (A)	0m	0.24	5s (A)	0m
N: Aikman Dr	0.26	9s (A)	3m	0.19	13s (A)	1m
W: Lake Ginninderra College	0.14	35s (C)	3m	0.08	42s (C)	2m
Total	**0.26**	**35s (C)**	**-**	**0.24**	**42s (C)**	**-**

The intersection performance analysis indicates that all of the analysed intersections operate within their practical capacity and with acceptable delays and queue lengths during both peak hours under the existing conditions.

The most critical intersection is Aikman Drive / Emu Bank in the AM peak period, with the west approach operating at a DOS of 0.83.

3 2040 Base Traffic Conditions

The base traffic conditions have been developed to represent the likely future operating conditions of the surrounding road network in 2040, without traffic contributions from the proposed development.

A summary of the key component of the base traffic conditions are summarised in the sections below.

3.1 Known Other Developments

The following nearby development have been identified to generate traffic volumes on Aikman Drive in the vicinity of the subject site:

- 'Onderra Project' – University of Canberra Site:
  - 1,629 residential dwellings (371 terraces, 1,258 apartments)
  - 3,500m^2 ancillary retail uses
- Lawson Stage 2 Subdivision:
  - Approximately 1,000 dwellings, community facilities and mixed use sites.

The following section summarise the traffic demands adopted for the nearby developments.

3.1.1 Onderra Project

AECOM prepared a Transport Impact Assessment report for the Onderra project in April 2024 (Ref: 60559998, Dated 23/4/24, Revision D).

The TIA report identifies an ultimate traffic generation of 549 veh/hr for the proposed development, with the following volumes predicted on Aikman Drive in the section south of Townsend Place:

- AM peak hour
  - Northbound 13 veh/hr
  - Southbound 64 veh/hr
- PM peak hour
  - Northbound 64 veh/hr
  - Southbound 13 veh/hr

A summary of the adopted peak hour traffic demands for the Onderra Project are provided in Appendix C.

3.1.2 Lawson Stage 2 Subdivision

The Lawson Stage 2B Estate Development Plan includes a road hierarchy and traffic analysis plan that outlines the expected daily traffic volumes on the internal road network. The plan shows a daily traffic volume of 5,987 vehicles per day at the southern end of Tenterfield Avenue, as shown in Figure 10 below.

The expected traffic volumes on Aikman Drive associated with Lawson Stage 2 have been estimated as follows:

- Peak hourly volumes estimated at 10% of the daily volume (599 veh/hr)

- 20% of vehicle trips from Tenterfield Avenue travelling along Aikman Drive (120 veh/hr)
- AM peak hour volume split in accordance with the typical residential in/out split as follows:
    - Northbound – 24 veh/hr (20%)
    - Southbound – 96 veh/hr (80%)
- PM peak hour volume split in accordance with the typical residential in/out split as follows:
    - Northbound – 72 veh/hr (60%)
    - Southbound – 48 veh/hr (40%)

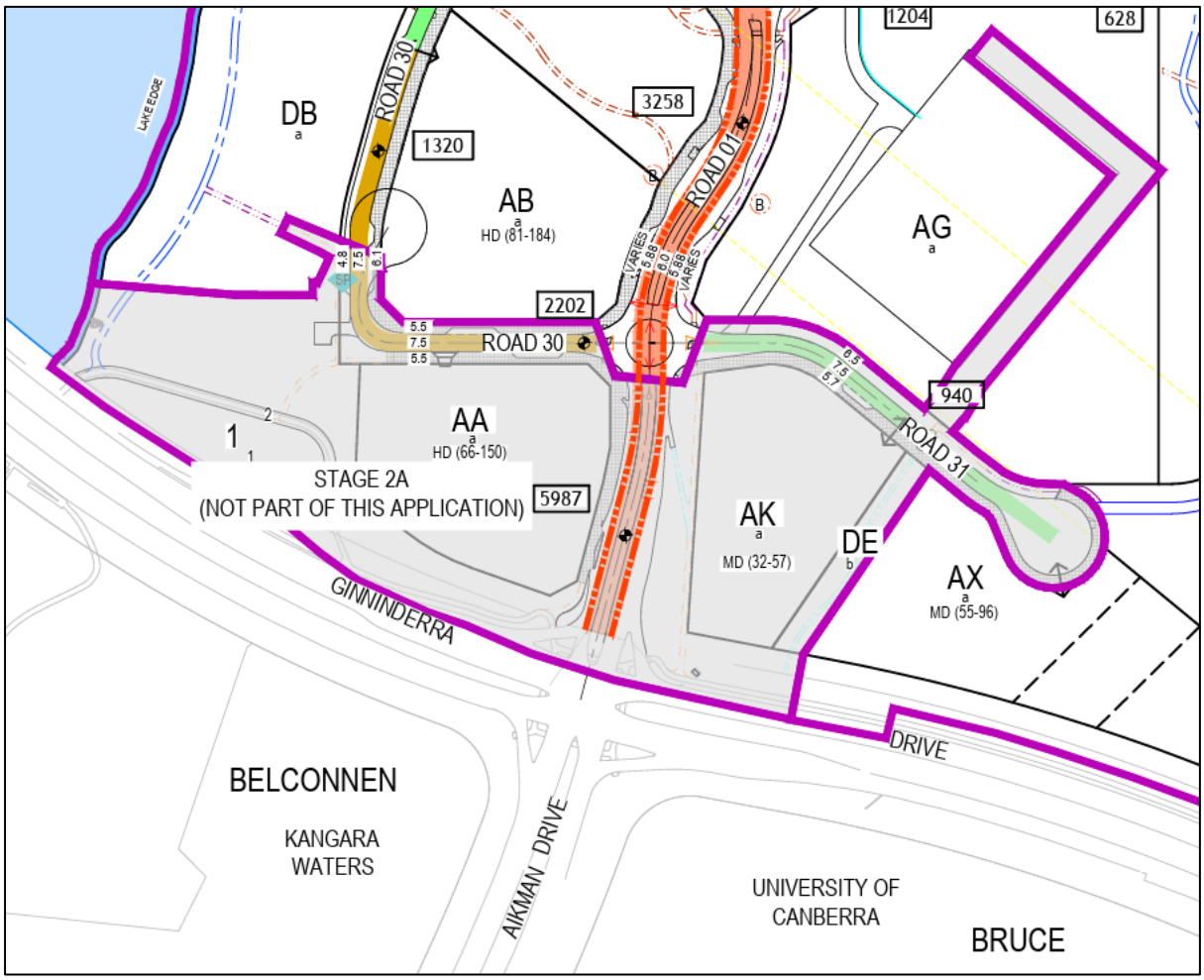


Figure 10: Lawson Stage 2 – EDP Predicted Daily Traffic Volumes

A summary of the adopted peak hour traffic volumes for the Lawson Stage 2 Subdivision are provided in Appendix D.

3.1.3 Background Growth to 2040

The previous AECOM assessment prepared for the Onderra project identified likely future traffic growth on Aikman Drive of 2.7% p.a., based on analysis of CSTM data.

It is important to acknowledge that the allowances for Onderra and Lawson have already accounted for some of the future traffic growth in the local area. Furthermore, the proposed

development, will also account for a level of growth expected on the surrounding road network into the future.

In order to assess the traffic volume growth rate to be applied for the 2040 'future' analysis, we have assessed a 'screen line' surrounding the assessed intersections. The traffic volumes entering this screen line have been assessed for the existing conditions and the development sites already included within the previous analysis. Table 5 below presents a summary of the screen line analysis, showing the growth already accounted for in the 'post development' analysis and the additional growth required to form a 2.7% p.a. growth 2040 'future' data set.

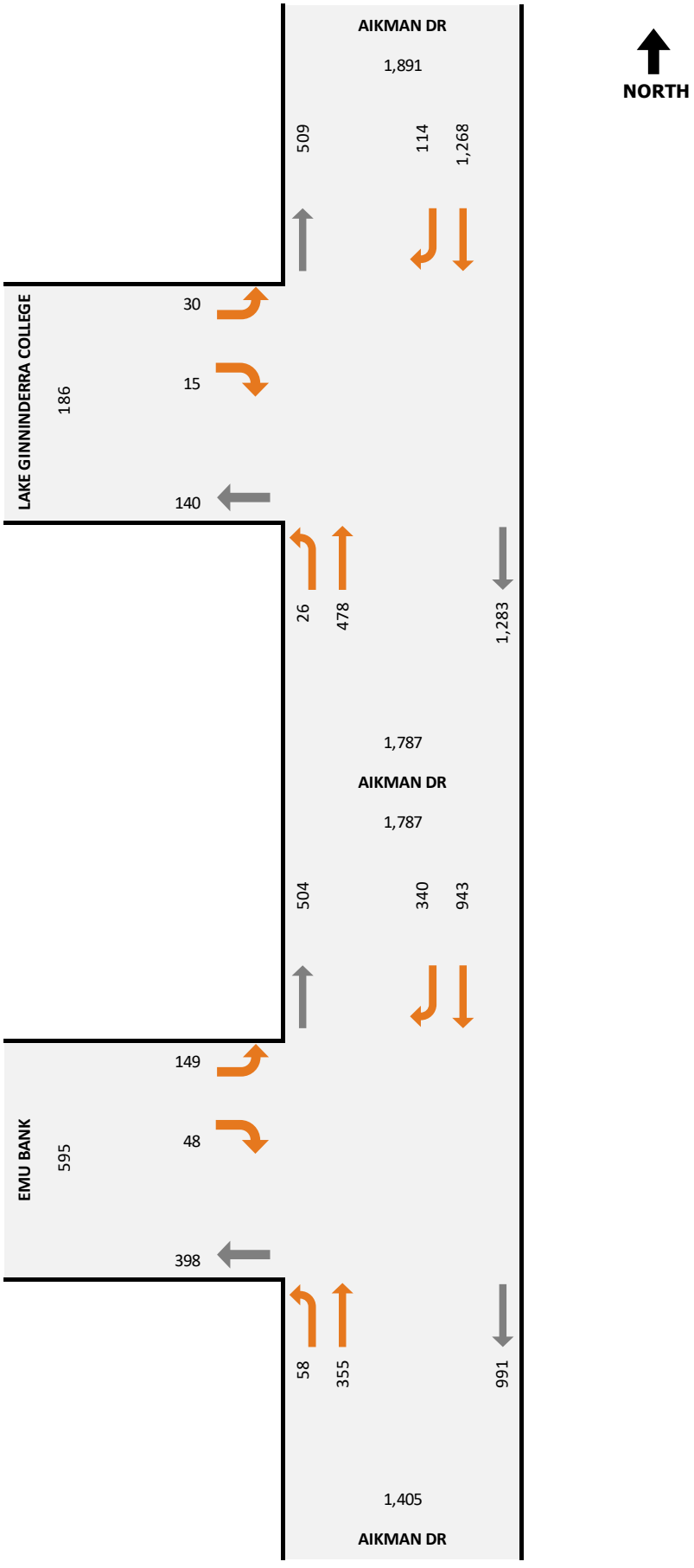
Table 5: Future Growth Rate Analysis

Measure / Component	AM Peak	PM Peak
Existing Volume	1,577 vehicles/hour	1,669 vehicles/hour
Volumes Associated with Subject Site (Block 42, Section 65)	220 vehicles/hour	191 vehicles/hour
Other Development Sites ('Onderra' and 'Lawson')	197 vehicles/hour	197 vehicles/hour
TOTAL Volume	**1,994 vehicles/hour**	**2,057 vehicles/hour**
Net Growth Accounted For	417 vehicles/hour	388 vehicles/hour
Growth Already Accounted For (Over 10 Years)	1.65% p.a.	
Aikman Drive Predicted 10 Year Growth Rate	2.7% p.a.	
Additional Growth Associated with Other Developments to Achieve 2.7% p.a.	**1.10% p.a.**	

In view of the above, the allowances for Onderra, Lawson and the proposed development account for 1.65% p.a. growth in the local area. On this basis, to achieve a total 2.7% p.a. growth in the surrounding road network, an additional 1.1% p.a. linear growth has been applied to all existing traffic movements in the local area to predict future traffic volumes for 2040.

3.1.1 2040 Base Case Traffic Volumes

Figure 11 below, presents the traffic demands adopted for the 2040 base scenario intersection analysis. More detailed breakdowns of the peak hour traffic demands, under the base scenario, are provided at Appendix E.



a) Morning Peak Hour

b) Evening Peak Hour

Figure 11: Peak Hour Traffic Demands – 2040 Base Conditions

3.2 Model Geometry

The analysed intersections remain as adopted for the existing conditions analysis presented previously in Section 3.2.

3.3 Traffic Signal Operation

The traffic signal phasing adopted in the base scenario, remains unchanged from that adopted for the existing conditions intersection analysis (Figure 9).

Given the differences in traffic demands between the existing conditions and the base scenario, it is anticipated that the average phase timings at these intersections would differ as a result of the SCATS controllers dynamically adjusting signal timings to suit the prevailing traffic demands. To reflect this dynamic optimisation of traffic signal timings, the SIDRA software has been allowed to optimise the traffic signal phase timings (whilst retaining the same overall cycle time as the existing conditions) in the base scenario. As such, Table 6 below presents the traffic signal timings adopted for the base scenario.

Table 6: Traffic Signal Timings – 2040 Base Scenario

Peak Hour	Phase A	Phase B	Phase C	Cycle Time
Aikman Drive / Emu Bank				
Morning Peak Hour	15s	23s	14s	**52s**
Evening Peak Hour	28s	22s	12s	**62s**

3.4 Intersection Performance

Table 7 below summarises the performance of the road network under the 2040 base scenario traffic demands. Full details of the intersection performance analysis, under the base scenario, are provided at Appendix F.

Table 7: Intersection Performance Summary – 2040 Base Scenario

Approach	AM Peak Hour			PM Peak Hour		
	DOS	Delay (LOS)	Queue	DOS	Delay (LOS)	Queue
Aikman Drive / Emu Bank						
S: Aikman Dr	0.56	19s (B)	33m	0.60	17s (B)	73m
N: Aikman Dr	0.60	10s (A)	57m	0.61	20s (B)	57m
W: Emu Bank	0.60	27s (B)	31m	0.53	18s (B)	69m
Total	**0.60**	**14s (A)**	**-**	**0.61**	**19s (B)**	**-**
Aikman Drive / Lake Ginninderra College						
S: Aikman Dr	0.13	5s (A)	0m	0.32	5s (A)	0m
N: Aikman Dr	0.35	10s (A)	4m	0.24	18s (B)	1m
W: Lake Ginninderra College	0.40	**110s (F)**	8m	0.24	**119s (F)**	4m
Total	**0.40**	**110s (F)**	**-**	**0.32**	**119s (F)**	**-**

The intersection performance analysis indicates that, with the addition of traffic demands associated with a number of nearby developments, the Aikman Drive / Emu Bank intersection will continue to operate within its practical capacities and with acceptable delays and queue lengths during both peak hours.

The Aikman Drive / Lake Ginninderra College access is predicted to operate with long delays for the right turn movements out of the Lake Ginninderra College Access (110-119s - LOS F). The intersection is predicted to operate with acceptable DOS and queue lengths, given the

small demands predicted to turn right out of the Lake Ginninderra College access in the 2040 base scenario.

4 Proposed Development

The proposal is for a Major Plan Amendment for Block 42 Section 65, Belconnen to rezone the land to commercial (CZ2) and allow for future development of residential apartments and community facilities.

A sketch Master Plan has been prepared to provide an indication of potential future development on the subject site, with the following indicative development yields:

- 330 residential apartments including:
  - 60% 1 Bedroom & 1+ Bedroom Apartments (approximately 198 apartments)
  - 25% 2 Bedroom Apartments (approximately 83 apartments)
  - 15% 3 Bedroom Apartments (approximately 49 apartments)
- Community facility uses including:
  - Community Activity Centre – 1,000m^2
  - Health Facility – 1,000m^2
  - Offices – 2,000m^2

The sketch master plan indicates that the form/structure of future development is likely to be as follows:

- Residential building on the eastern portion of the site, with the community facilities building on the western portion of the site.
- Visitor parking (short stay) for the community facilities component provide via an at grade car park on the western portion of the site.
- Long stay parking for the residential component and community facilities component provided via basement parking.
- Vehicle access to the site is proposed to occur via the existing accessway to Lake Ginninderra College, with vehicle access to the broader road network occurring via Aikman Drive.
- Waste collection / loading would occur on-site via a dedicated loading bay.

A copy of the sketch concept plan prepared by Cox Architecture is provided in Appendix G.

5 Parking Assessments

The following sections set out the benchmarks/requirements for the various types of parking associated with the proposed Major Plan Amendment. It is important to note that under the current *Territory Plan* only the Assessment Outcomes are to be considered as mandatory rules/requirements, with *Advisory Note 06: Planning Technical Specifications* stating that:

> *"The planning technical specifications are not rules, and compliance is not mandatory."*

On this basis, this assessment distinguishes between 'suggested benchmarks', which originated in the Technical Specifications documents and are not mandatory, and 'requirements' (i.e. from the *National Construction Code*), which are mandatory.

5.1 Vehicle Parking

Assessment Outcome 26 of the *Commercial Zones Policy* (*E02*) requires that:

> *"Vehicle and bicycle parking sufficiently caters for the development while minimising visual impacts from the street or public space. This includes consideration of parking location, dimensions and the number of spaces provided"*

Specification 26.1a of the *Commercial Zones Specifications* (*ZS2*) identifies that the suggested benchmarks for the provision of overall car parking, are set out in *"Table 5"*.

The following sections review the suggested benchmarks for the provision of car parking for each component of the proposed development.

5.1.1 Residential Component

The suggested benchmark parking rates for residential dwellings varies by location. In this instance, the subject site is proposed to be rezoned to CZ2 zoning outside of a designated centre and therefore the following benchmark car parking rates are suggested:

> *"As per Residential Rate"*

The benchmark car parking rates with the *Residential Zone Specification ZS1* is as follows.

- 3+ Bedroom Units – 2 spaces/dwelling
- 2 Bedroom Units – 1.5 spaces/dwellings (provided minimum allocation of 1 space/dwelling and a maximum allocation of 2 spaces/dwelling)
- 1 Bedroom/Studio Units – 1 spaces/dwellings
- Visitor Parking – 1 space / 4 dwellings.

A summary of the benchmark car parking for the residential component of the development are presented in Table 14 below.

Table 8: Residential Component – Territory Plan Parking Assessment

Component	Size	Benchmark Car Parking Rate	Benchmark Rate
1 Bedroom	198 x 1 bedroom	1 spaces / 1-bedroom dwelling	198 spaces
2 Bedroom	83 x 2 bedroom	1.5 spaces / 2-bedroom dwelling	125 spaces
3 Bedroom	49 x 3 bedroom	2 spaces / 2-bedroom dwelling	98 spaces
Visitor	330 Dwellings	0.25 spaces / dwelling	83 spaces
OVERALL TOTAL			**504 spaces**

The residential component has a benchmark parking provision of 504 spaces including 421 resident spaces and 83 visitor spaces.

Whilst noting the benchmark parking rates outlined in the Territory Plan, it is important to consider the location of the subject site on the boundary of the Belconnen Town Centre. Whilst not technically located within the centre, the sites' position directly adjacent to the centre is likely to result in similar parking behaviour to existing apartment dwellings in the town centre. We have reviewed of car ownership data collected within the Belconnen SA2 statistical area at the 2021 Australian Census, as presented in Table 9 below.

Table 9: ABS Census Car Ownership

Apartment Type	Car Ownership Rate
1 Bedroom Apartments	0.91 cars per apartment
2 Bedroom Apartments	1.15 cars per apartment
3+ Bedroom Apartments	1.51 cars per apartment

It is also commonly accepted that residential visitor parking is not as high as the 1 space / 4 dwelling (0.25 spaces/dwelling) benchmark rate specified in the *Commercial Zone Specification ZS2*. The *RMS Guide to Traffic Impact Assessment (2024)* outlines residential visitor parking provision for high density development of 1 space / 5 dwellings (0.2 spaces/dwelling) to 1 space / 7 dwellings (0.14 spaces/dwelling). For the purposes of this assessment, we recommend that a peak visitor parking rate of 1 space / 5 dwellings is adopted.

The above ABS car ownership rates and reduced visitor parking rate have been applied to the indicative residential development scheme in Table 10 below.

Table 10: Residential Component – ABS Census Parking Assessment

Use	Size	Benchmark Car Parking Rate	Benchmark Rate
1 Bedroom	198 x 1 bedroom	0.91 spaces / 1-bedroom dwelling	180 spaces
2 Bedroom	83 x 2 bedroom	1.15 spaces / 2-bedroom dwelling	95 spaces
3 Bedroom	49 x 3 bedroom	1.51 spaces / 2-bedroom dwelling	74 spaces
Visitor	330 Dwellings	1 space / 5 dwellings	66 spaces
OVERALL TOTAL			**415 spaces**

In view of the above, the application of the empirical rates results in 415 spaces for the residential dwellings, compared with 504 spaces under the Territory Plan benchmark rates.

Overall, the car parking demands will ultimately depend on the future development scheme, however, the likely parking demands are in the order of 415-504 spaces.

5.1.2 Community Facility Component

The proposed community facility component includes a community activity centre, health facility and office elements. A summary of the benchmark car parking rates identified in the *Commercial Zones Specifications* (*ZS2*) are presented in Table 11 below.

Table 11: Community Facility Component – Territory Plan Parking Assessment

Component	Size	Benchmark Car Parking Rate	Benchmark Rate
Community Activity Centre	1,000m^2	3 spaces / 100m^2 GFA	30 spaces
Health Facility	1,000m^2	4 spaces / 100m^2 GFA	40 spaces
Office	2,000m^2	2 spaces / 100m^2 GFA	40 spaces
OVERALL TOTAL			**110 spaces**

In view of the above, the community facility component has a benchmark parking rate of 110 spaces.

We have estimated the long-stay and short stay parking provision for the proposed community facilities component as shown in Table 12 below.

Table 12: Community Facility Component – Short Stay & Long Stay Parking

Component	Benchmark Rate	Short Stay	Long Stay
Community Activity Centre	30 spaces	90% - 27 spaces	10% - 3 spaces
Health Facility	40 spaces	50% - 20 spaces	50% - 20 spaces
Office	40 spaces	0% - 0 spaces	100% - 40 spaces
OVERALL TOTAL	**110 spaces**	**47 spaces**	**63 spaces**

In view of the above, the proposed community facilities component is expected to generate approximately 63 spaces of long stay parking and 47 spaces of short stay parking.

5.1.3 Car Parking Provision

The sketch Master Plan shows an at grade car park for the community facilities component with an indicative yield of 40 spaces. This parking could generally accommodate the 47 spaces short term parking demands identified for the community facilities component.

The balance of parking demands including long stay parking for the community facilities component (63 spaces) and all parking for the residential component (415-504 spaces) would be accommodated within the basement parking levels.

Overall, the likely future parking demands can be accommodated on-site through a mixture of at grade and basement parking.

5.2 Accessible Car Parking

Clause D4D6-2aiii of the *National Construction Code* (*NCC 2022*) specifies that accessible car parking must be provided at the following rates:

- Class 2 (Multi-Unit Residential) – No requirement.
- Class 5 (Office Buildings) – 1 space for every 100 spaces.
- Class 9a (Health Care Buildings) – 1 spaces for every 50 spaces.
- Class 9b (Assembly Buildings) – 1 spaces for every 50 spaces.

In view of the above, the NCC would require 3 accessible parking spaces for proposed community facility uses (110 spaces).

Specification 26.3a of *ZS2* also specifies a benchmark for the provision of accessible car parking spaces, as follows:

> *"Parking spaces for people with disabilities in public carparks of more than 10 spaces comprise a minimum of 3% (rounded up to the nearest whole number) of the total number of parking spaces required for the development."*

The on-site parking provision for the residential component would be considered 'private carpark' under *Australian Standard 2890 Part 1: Off-street car parking* (*AS2890.1*). On this basis, the suggested accessible parking benchmark of *ZS2* would not apply to the residential component. Applying the ZS2 rate to the community centre component (110 spaces) would generate a requirement for 4 accessible parking spaces.

5.3 Motorcycle Parking

The note to Table 5 of *ZS2* specifies a benchmark for the provision of motorcycle parking, as:

> *"3 dedicated [motorcycle] spaces per 100 car parking spaces… with a minimum provision of 1 [motorcycle] space for carparks with a minimum of 30 car parking spaces."*

On this basis, *ZS2* suggests a benchmark for motorcycle parking as 16-18 motorcycle parking spaces.

5.4 Electric Vehicle Car Parking

Assessment Outcome 24 of the *E02* requires that:

> *"The development provides electric vehicle [(EV)] parking and access to charging locations in multi-unit housing and commercial buildings."*

Specification 24.1 of *ZS2* quantifies a benchmark for the provision of 'EV ready' car parking as a minimum of:

> *"EV ready car parking space is provided for at the following minimum rates:*
>
> *a) 1 for each unit in a new multi-unit housing development that is provided with car parking.*
>
> *b) 20% of non-residential parking spaces in new commercial developments"*

On this basis, an assessment of the suggested benchmark EV Ready parking is shown in Table 12 below.

Table 13: EV Ready Parking Assessment – ZS2 Benchmark

Component	Size	Rate	EV Ready Spaces
Residential	330 units provided with car parking	1 for each unit that is provided with car parking	330 spaces
Non-Residential	110 spaces	20% of parking spaces	22 spaces
TOTAL			**352 spaces**

The provision of EV Ready parking principally relates to the sufficient provision of electrical switchboard capacity. On this basis, we are satisfied that potential future development on the site could accommodate EV Ready parking.

5.5 Bicycle Parking & End-Of-Trip Facilities

Assessment Outcome 25 of *E02* requires that:

> *"The development provides appropriate end-of-trip facilities in buildings, which includes secure bicycle parking and change rooms (including showers, lockers and drying facilities)".*

5.5.1 Bicycle Parking

The second specification 25.1a of *ZS2* identifies benchmarks for the provision of bicycle parking are set out in *"Table 4"*.

An assessment of the *ZS2* benchmarks is provided in Table 13 below.

Table 14: Commercial Zone Specifications – Bicycle Parking Assessment

Component	Size[1]	Statutory Rate	Requirement
Residential Component			
Long Stay	281 – 1 & 2 Bedroom Dwellings	1 space per one or two bedroom dwelling	281
	49 – 3 Bedroom Dwellings	2 spaces per three or more bedroom dwelling	98
Short Stay	330 dwellings	1 space per 10 dwellings	33
TOTAL	**-**	**-**	**412 Spaces**
Community Facility Component – Community Activity Centre			
Long Stay	850m^2	1 space per 1,500m^2 NLA	1
Short Stay		1 space per 15m^2 NLA	57
TOTAL	**-**	**-**	**58 spaces**
Community Facility Component – Health Facility			
Long Stay	850m^2	1 space per 1,500m^2 NLA	1
Short Stay		1 space per 75m^2 NLA	11
TOTAL	**-**		**12 spaces**
Community Facility Component – Office			
Long Stay	1,700m^2	1 space per 200m^2 NLA	9
Short Stay		1 space per 400m^2 NLA	4
TOTAL	**-**	**-**	**13 spaces**

Note 1: NLA estimated as 85% of GFA

In view of the above, the overall development is expected to require 495 bicycle parking spaces including 390 long term bicycle parking spaces and 105 short term bicycle parking spaces.

Long stay bicycle parking for high density residential dwellings is typically accommodated within individual storage units. The minimum envelope required is 1.8m long, 0.6-0.7m wide and 1.2m high to satisfy the bicycle envelope outlines in AS2890.3-2015. Long stay bicycle parking for the community facility component is best provided through a dedicated bicycle parking area within the basement levels.

For short stay parking, spaces are best accommodated through bicycle rails on the ground floor.

5.5.2 End-Of-Trip Facilities

Specification 25.3 of *ZS2* quantifies benchmarks for the provision of end-of-trip facilities, as:

- Showers and change facilities:
  - *"A minimum of one shower is provided for the first 5 long-stay [bicycle] spaces or part thereof, plus an additional shower for each 10 [long-stay] bicycle parking spaces thereafter.*
  - *Shower and change facilities must be rounded up such that an equal number of male and female facilities are provided."*
- Personal storage facilities:
  - *"[Lockers] must be… provided at a rate of 2 for each [long-stay] bicycle parking space provided"*

The end of trip facility requirements only apply to the community facility component.

An assessment of the suggested benchmarks for end of trip facilities is provided in Table 14 below.

Table 15: End-of-Trip Facility Assessment

Use	Bicycle Parking Benchmark	Statutory End-of-Trip Facility Rate	Requirement (1)
Shower & Change Facilities			
Community Facility Component	11 long-stay bicycle spaces	1 shower to the first 5 long-stay bicycle spaces, plus 1 additional shower to each 10 long-stay bicycle spaces thereafter.	2
		TOTAL	**2**
Personal Storage Facilities			
Potential Office Development Scenario	11 long-stay bicycle spaces	2 lockers per long-stay bicycle space.	22
		TOTAL	**22**

Based on the above, the benchmark for the potential office scenario is for 2 showers/change rooms and 22 personal storage lockers under Schedule 2 of *ZS2 Commercial Zones Specifications*.

6 Traffic Assessments

Assessment Outcome 24 of the *Commercial Zones Policy* (*E02*) requires that:

> *"The functionality and layout of the development is accessible and adaptable, while achieving good connections with the surrounding area. This includes consideration of traffic flow and passive surveillance."*

Specification 7.1 of the *Commercial Zones Specifications* (*ZS2*) identifies the suggested benchmark approach to address Outcome 24 as follows:

> *"Endorsement by Transport Canberra and City Services (TCCS) to confirm the road network can accommodate additional traffic likely to be generated by the development. Offsite works may be required to support additional traffic from a development."*

The following sections review the likely traffic impacts associated with the potential development scenarios and assesses compliance with Assessment Outcome 24.

6.1 Vehicle Access

Vehicle access is proposed to continue to occur via the accessway along the southern boundary of the site, which is currently located on the Lake Ginninderra College site.

Previous discussions with TCCS and the Education department have agreed on a scheme for future development where the accessway is subdivided from the school site and operates as a stub road managed by TCCS.

6.2 Traffic Generation

6.2.1 Residential Component

The typical daily traffic generation rate for multi-unit development is 6 vehicle trips per dwelling per day, which reflects the rates that were formerly published in the *Estate Development Code* for multi-unit developments. Residential land uses typically experience in the order of 10% of the daily traffic volumes during each of the commuter peak hours (i.e. 0.6 trips/unit/hour).

Engineering Advisory Note EAN14 outlines reduced traffic generation rates to be applied in the Northbourne Avenue corridor and in the vicinity of the Town Centres. EAN 14 includes defined boundaries for town centres and indicates that developments in proximity close to town centres, just outside the boundaries, would be assessed on a case-by-case basis. The boundary for the Belconnen Town Centre is located on Emu Bank, in very close vicinity to the subject site. On this basis, we are of the view that the reduced rates identified in EAN 14 are appropriate for the subject site.

The daily traffic generation rate identified in EAN 14 is 3.37 trips/dwelling/day, which results in a peak hour traffic generation rate of 0.337 trips/dwelling/day (assuming 10% of trips occur in each of the commuter peak hours).

The directional split of vehicle has been adopted from the RMS *High Density Residential Trip Generation Surveys: Data Report* as follows:

- AM peak – 29% of trips towards the site
- PM peak – 65% of trips towards the site

A summary of the expected traffic generation for the potential multi-unit development scenario is provided in Table 15 below.

Table 16: Potential Residential Development Scenario – Traffic Generation

Time Period	Size	Generation Rate	In	Out	Total
Daily Traffic Generation	330 Dwellings	3.37 trips/unit/day	556	556	1,112
AM Commuter Peak Hour		0.337 trips/unit/hour	32	79	111
PM Commuter Peak Hour		0.337 trips/unit/hour	72	39	111

Overall, the multi-unit development scenario is expected to generate 1,112 daily vehicle trips, inclusive of 111 vehicle trips generated during each of the morning and afternoon peak hours.

6.2.2 Community Facility Component

The following section review the likely traffic generation associated with the individual elements of the community facility component.

Community Activity Centre

There are no published traffic generation rates for comparable uses to a 'Community Activity Centre'. On this basis, traffic generation has been estimated on a first principles basis.

The proposed community activity centre component includes a parking provision of 30 spaces. We expect future patrons of the Community Activity Centre would be likely to have a duration of stay on-site of approximately 1 hour. In this setting, peak traffic generation could see all of the on-site spaces fill (30 'in' trips) or empty (30 'out' trips) in a 1 hour period.

A summary of the likely peak traffic generation for the community activity centre element is shown in Table 16 below.

Table 17: Community Facility: Community Activity Centre Element – Traffic Generation

Time Period	Size	Generation Rate	In	Out	Total
AM Commuter Peak Hour	30 Spaces	1 trips/space/hour	15	15	30
PM Commuter Peak Hour		1 trips/space/hour	15	15	30

Health Facility Element

The *RMS Trip Generation Surveys Medical Centres: Data Report* presents empirical traffic generation data collected, during 2015, at 20 medical centres throughout Sydney and regional NSW. Figure 12 below presents the profile of the rolling hourly traffic generation rate (vehicle trips per medical suite per hour) across the six (6) regional sites on weekdays.

The profile in Figure 12 indicates that traffic volumes associated with medical centres experience two (2) broad peaks, in the morning, just after the commuter peak hour, and at mid-afternoon. These peaks are likely to reflect the overlap of patients both arriving and departing for appointments, with the decrease around midday likely due to medical practitioners taking lunch breaks (and not having patients arrive for appointments).

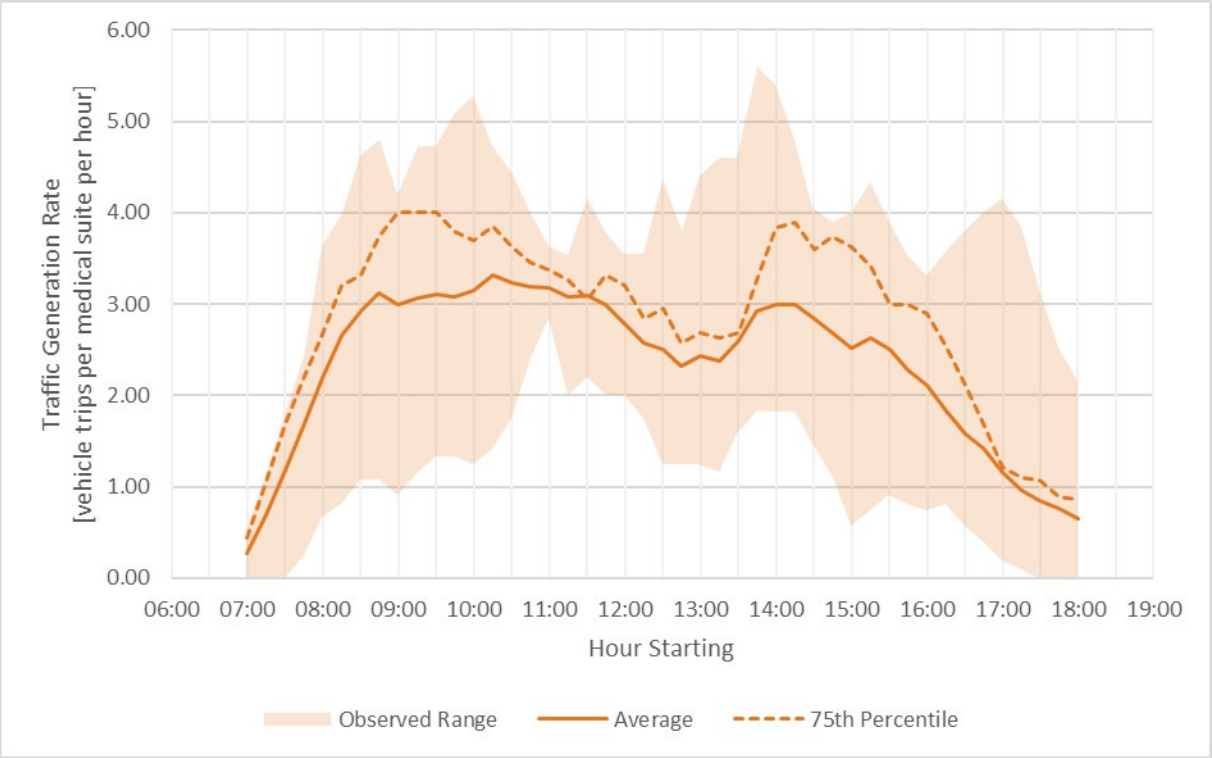


Figure 12: Regional Medical Centres – Traffic Generation Profile

Table 17 below presents the adopted commuter peak hour traffic generation rates for the health facility component. It is noted that these rates conservatively reflect the 75th percentile traffic generation rates observed in the dataset.

Table 18: Medical Centre – Traffic Generation Rates

Time Period	Traffic Generation Rates
AM Commuter Peak Hour (8am-9am)	2.67 vehicle trips per health suite per hour
PM Commuter Peak Hour (5pm-6pm)	1.21 vehicle trips per health suite per hour

For the purpose of this assessment, we have estimated the number of suites/practitioners based on the average rate of 1 suite / 55m^2 identified in the *RMS Trip Generation Surveys Medical Centres: Data Report.* On this basis, the 1,000m^2 health facility is likely to incorporate 18 health suites.

Further analysis of the RMS dataset indicates that trips are predominantly inbound (i.e. towards the site) during the morning peak hour and predominantly outbound (i.e. departing the site) during the evening peak hour. This reflects the typical profile for workplaces, at which staff arrive in the morning and depart in the evening. Table 18 below presents the adopted in/out splits for the health facility component.

Table 19: Health Facility – In/Out Splits

Time Period	In Percentage
AM Commuter Peak Hour (8am-9am)	69% of trips towards the site
PM Commuter Peak Hour (5pm-6pm)	32% of trips towards the site

A summary of the likely traffic generation for the health facility element of the proposed development is provided in Table 19 below.

Table 20: Community Facility: Health Facility Element – Traffic Generation

Time Period	Size	Generation Rate	In	Out	Total
AM Commuter Peak Hour	18 Suites	2.67 trips/health suite/hour	33	15	48
PM Commuter Peak Hour		1.21 trips/health suite/hour	7	15	22

Office Element

The peak hour traffic generation rates adopted for the office element reflects those rates published in RMS's *Traffic Generating Developments: Updated traffic surveys* (1.6 vehicle trips per 100m^2 GFA during the weekday morning peak hour and 1.2 vehicle trips per 100m^2 GFA during the weekday evening peak hour).

It is understood that these rates are derived from the dataset presented in RTA's *Trip Generation and Parking Generation Surveys (Office Blocks): Data Report*. On this basis, this dataset has been used to derive the in/out directional splits for office land uses. This dataset indicates that approximately 96% of vehicle trips during the morning peak hour, and approximately 8% of vehicle trips during the evening peak hour were inbound towards the site. This distribution reflects the highly tidal nature of trips associated with office land uses.

A summary of the expected traffic generation for the potential office development scenario is provided in Table 20 below.

Table 21: Community Facility: Office Element – Traffic Generation

Time Period	Size	Generation Rate	In	Out	Total
AM Commuter Peak Hour	2,000m^2 GFA	1.6 trips/100m^2 GFA	29	1	30
PM Commuter Peak Hour		1.2 trips/100m^2 GFA	7	15	22

6.2.3 Summary

A summary of the expected peak hour traffic generation for the proposed development is presented in Table 21 below.

Table 22: Traffic Generation Summary

Time Period		In	Out	Total
AM Peak				
Residential		32	79	111
Community Facility	Community Activity Centre	15	15	30
	Health Facility	33	15	48
	Office	30	2	30
TOTAL		**110**	**111**	**221**
PM Peak				
Residential		72	39	111
Community Facility	Community Activity Centre	15	15	30
	Health Facility	7	15	22
	Office	2	22	24
TOTAL		**96**	**91**	**187**

6.3 Traffic Distribution

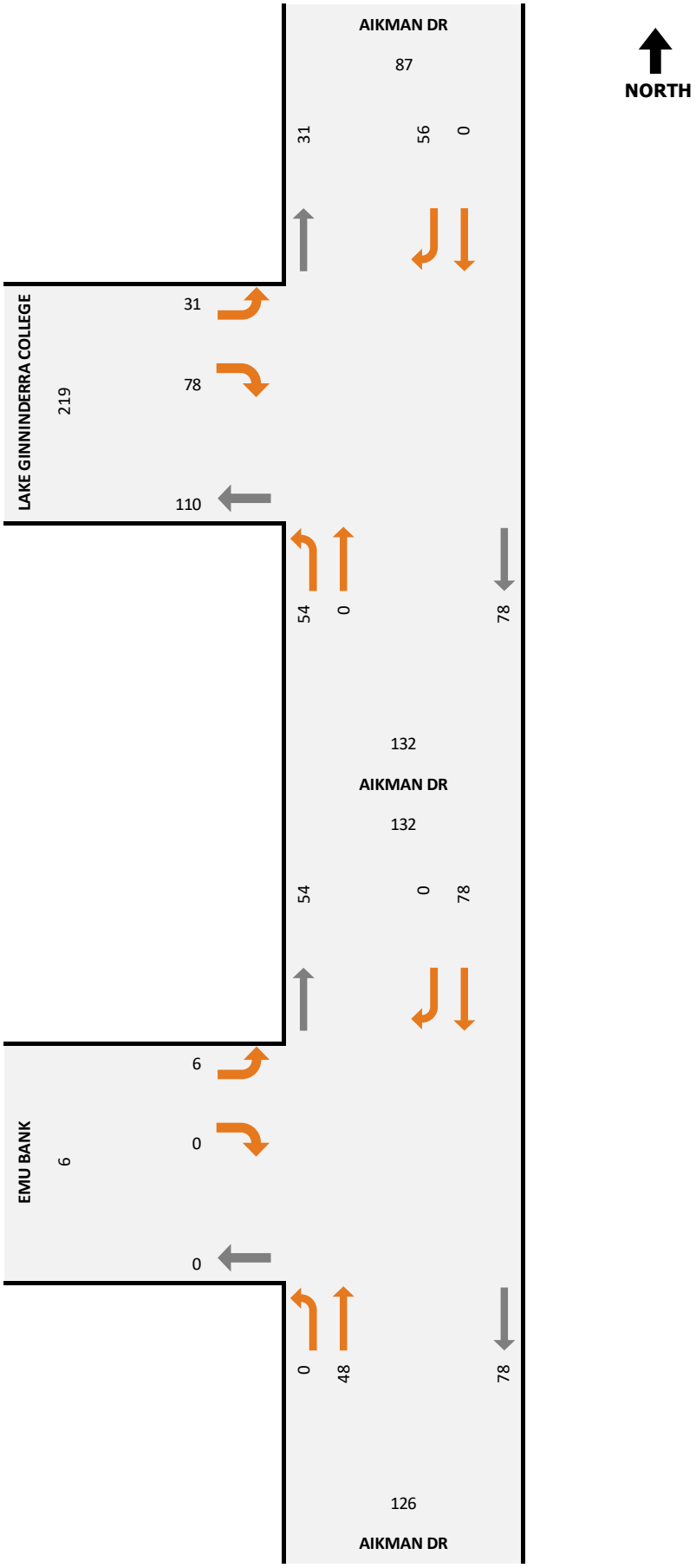
The directional traffic distribution of the proposed development has been adopted based on a review of the journey-to-work data collected at the 2021 Australian Census. Table 22 below presents the adopted directional splits.

Table 23: Directional Splits – Proposed Development Traffic Demands

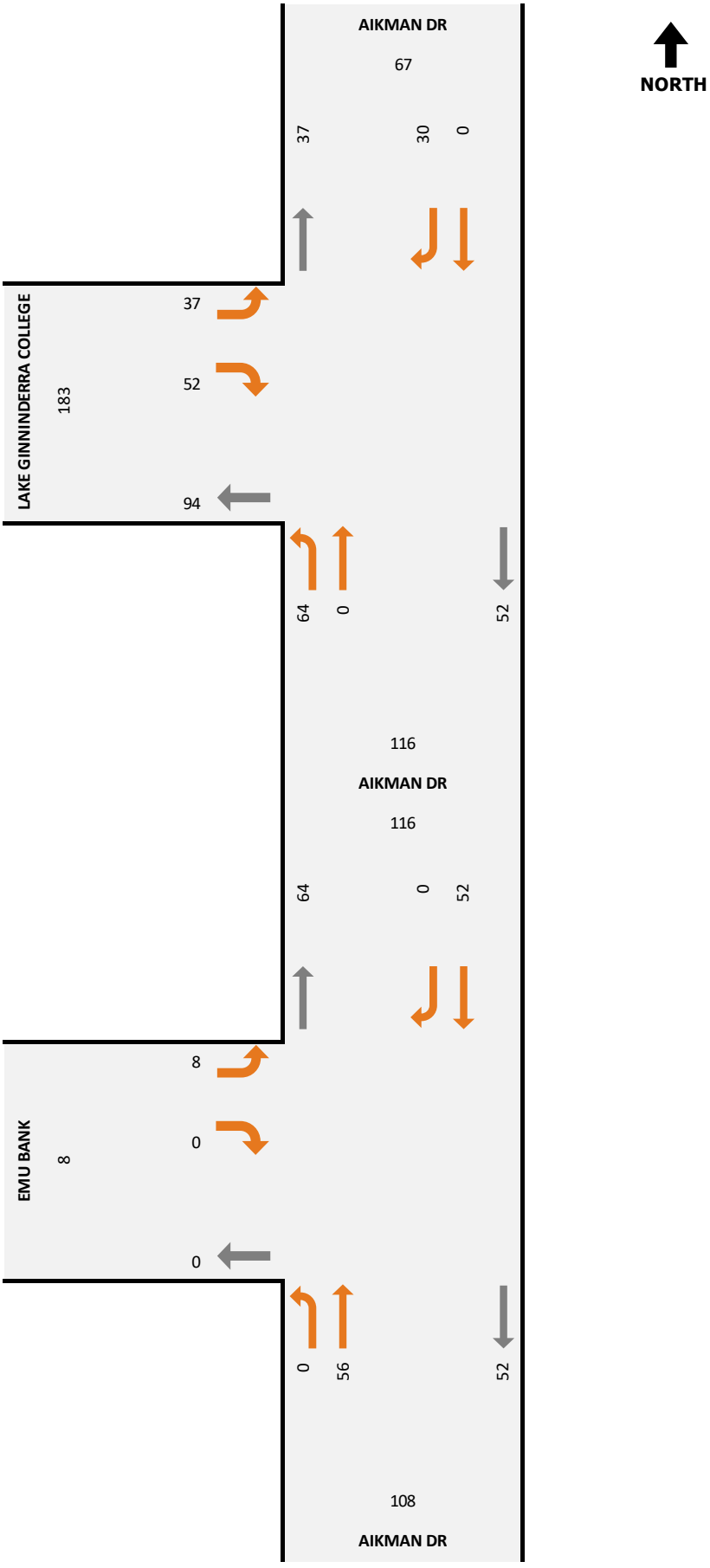
Direction	Residential		Community Facility	
	Inbound	Outbound	Inbound	Outbound
Emu Bank (West)	10%	0%	4%	0%
Aikman Drive (South)	67%	85%	33%	40%
Aikman Drive (North)	23%	15%	63%	60%

6.4 Development Traffic Volumes

Figure 13 below presents the development traffic demands adopted for this analysis.



(a) Morning Peak Hour



(b) Evening Peak Hour

Figure 13: Development Traffic Volumes

6.5 2040 Post Development Traffic Analysis

6.5.1 Model Geometry

The modelled geometry of the analysed intersections remains as adopted for the existing conditions analysis (presented previously in Figure 7).

6.5.2 Traffic Signal Operation

As for the base scenario, the post-development scenario retains the same traffic signal phasing as adopted for the existing conditions intersection analysis (Figure 9) and allows the SIDRA software to optimise the traffic signal phase timings, while retaining the same cycle time as under the existing conditions. As such, Table 23 below presents the traffic signal timings adopted for the post-development scenario.

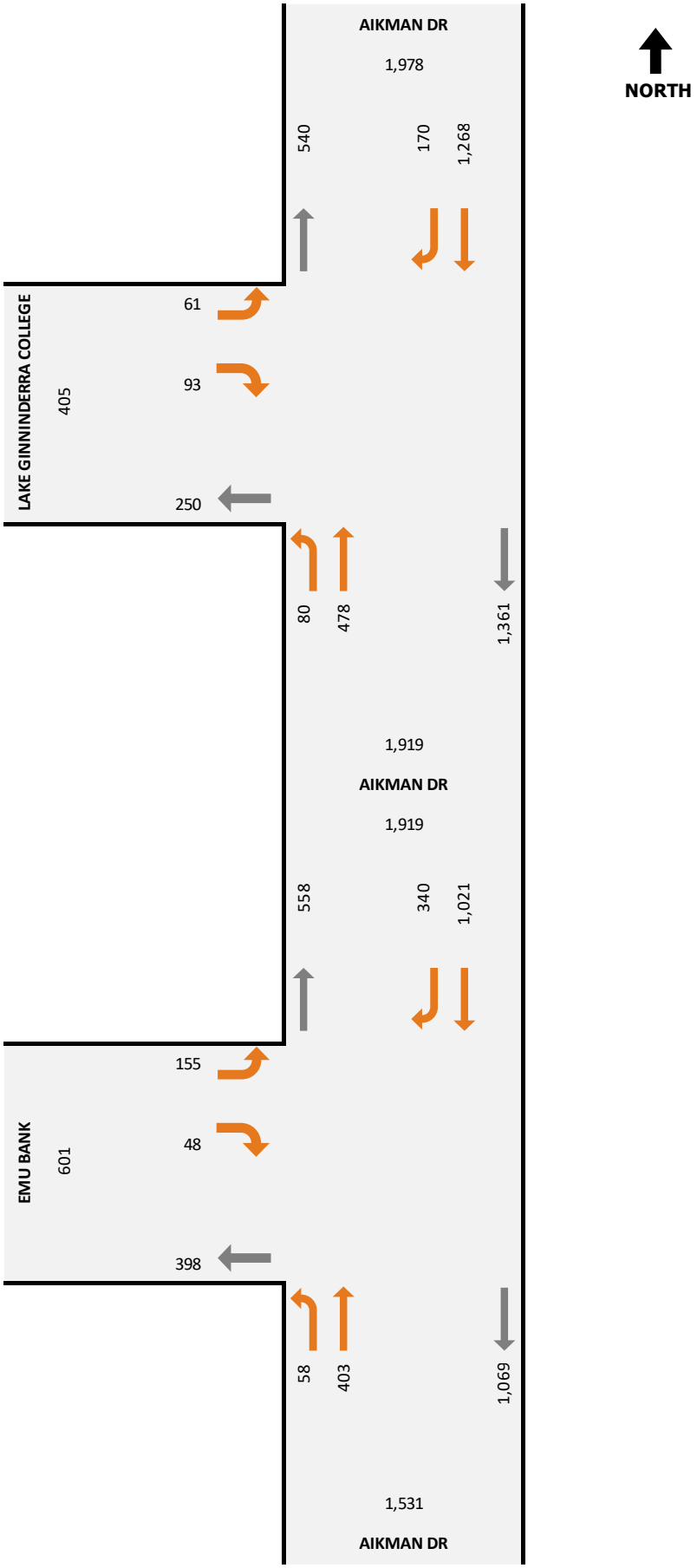
Table 24: Traffic Signal Timings – 2040 Post-Development Scenario

Peak Hour	Phase A	Phase B	Phase C	Cycle Time
Aikman Drive / Emu Bank				
Morning Peak Hour	16s	22s	14s	**52s**
Evening Peak Hour	29s	21s	12s	**62s**

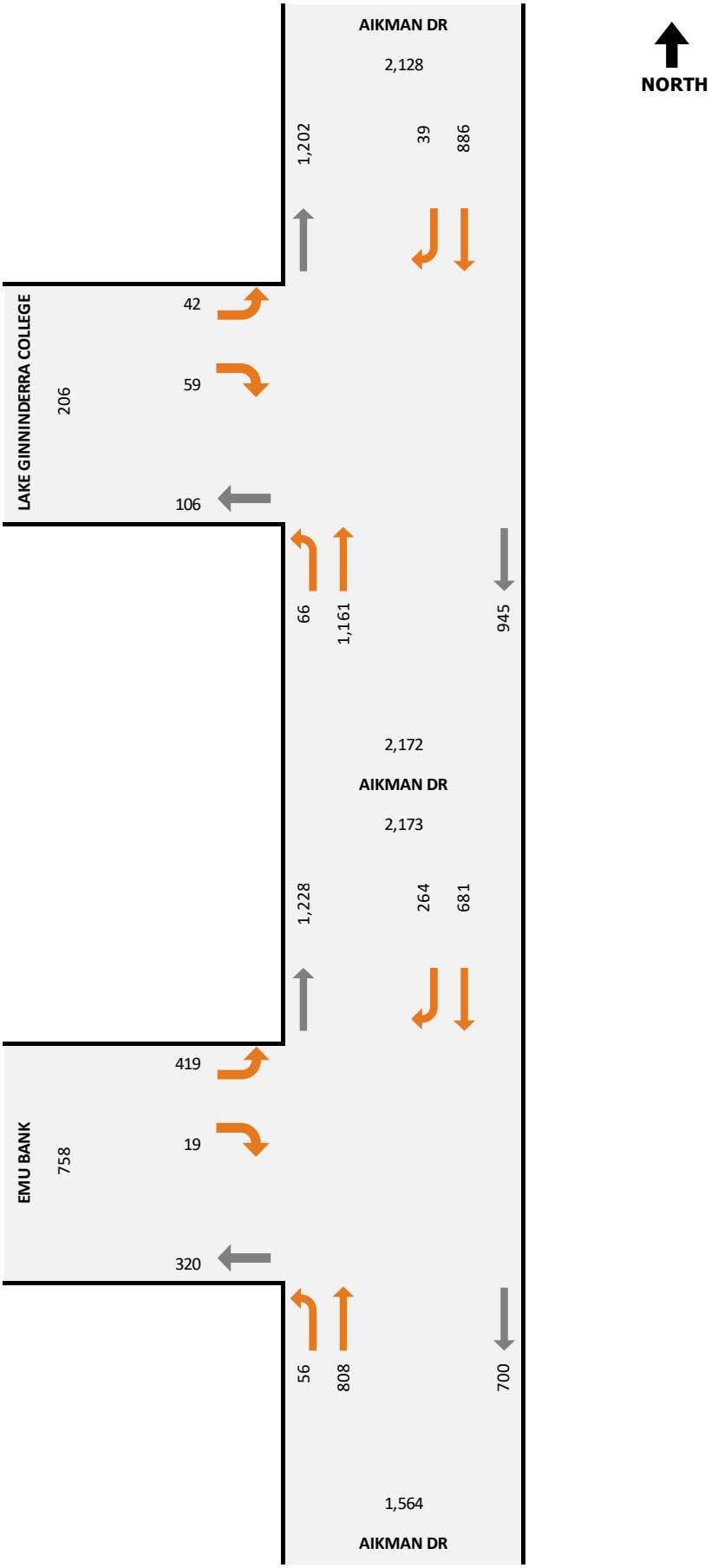
6.5.3 2040 Post Development Traffic Demands

The post-development traffic demands represent the turning movements adopted for the 2040 base scenario, plus the traffic demands associated with the proposed development (Figure 13).

On this basis, Figure 14 below, presents the traffic demands adopted for the 2040 post-development intersection analysis.



(a) Morning Peak Hour



(b) Evening Peak Hour

Figure 14: 2040 'Post Development' Traffic Data Set

6.5.4 Intersection Performance

Table 24 below summarises the performance of the road network under the 2040 post-development conditions traffic demands. Full details of the post development intersection performance analysis are provided at Appendix H.

Table 25: Intersection Performance Summary – 2040 Post-Development

Approach	AM Peak Hour			PM Peak Hour		
	DOS	Delay (LOS)	Queue	DOS	Delay (LOS)	Queue
Aikman Drive / Emu Bank						
S: Aikman Dr	0.59	20s (B)	38m	0.62	17s (B)	79m
N: Aikman Dr	0.63	10s (A)	59m	0.63	20s (B)	60m
W: Emu Bank	0.63	28s (B)	32m	0.55	18s (B)	72m
Total	**0.63**	**14s (A)**	**-**	**0.63**	**19s (B)**	**-**
Aikman Drive / Lake Ginninderra College						
S: Aikman Dr	0.13	5s (A)	0m	0.32	5s (A)	0m
N: Aikman Dr	0.35	11s (A)	8m	0.24	20s (B)	3m
W: Lake Ginninderra College	**2.73**	**1695s (F)**	**290m**	**2.30**	**1348s (F)**	172m
Total	**2.73**	**1695s (F)**	**-**	**2.30**	**1348s (F)**	**-**

The intersection performance analysis indicates that the intersection of Aikman Drive / Emu Bank will continue to operate under acceptable conditions, however, the intersection of Aikman Drive / Lake Ginninderra College Access is predicted to perform poorly.

During both the AM and PM peak periods, the right turn from Lake Ginninderra College Access to Aikman Drive is the critical movement. The addition of traffic volumes associated with the proposed development result in long delays (LOS F) and long queue lengths (172-290m).

In view of the above the existing unsignalised intersection at Aikman Drive / Lake Ginninderra College Access cannot accommodate the traffic demands associated with the proposed development and upgrades are required.

6.6 Recommended Road Network Upgrades

Based on the previous SIDRA analysis, the key issue for the Aikman Drive / Lake Ginninderra College Access is related to capacity for right out movements from the minor access. Options to address this issue are limited to the following:

- Signalise the intersection to provide additional capacity to the minor leg, or
- Convert the intersection to left out only and require vehicle access to the south to U-turn at Thirriwirri Street traffic signal (approximately 500m north).

Given the intersection also currently provides primary access to Lake Ginninderra College, the option to signalise the intersection is considered preferable.

From an operational perspective, the intersection is located in close proximity to the existing traffic signals at Aikman Drive / Emu Bank (approximately 70m off-set). On this basis, the provision of traffic signals at the Lake Ginninderra College access would need to consider the following:

- Complementary signal phasing with the existing Aikman Drive / Emu Bank intersection.
- Signal phase off-set to account for the distance between the intersections.

An existing pedestrian operated signals installation is located approximately 40m north of the intersection. We recommend that the existing POS is removed and pedestrian crossing is incorporated into the northern leg of the proposed traffic signals.

An aerial photo showing the general proposed configuration of traffic signals at Aikman Drive / Lake Ginninderra College access is shown in Figure 15 below.

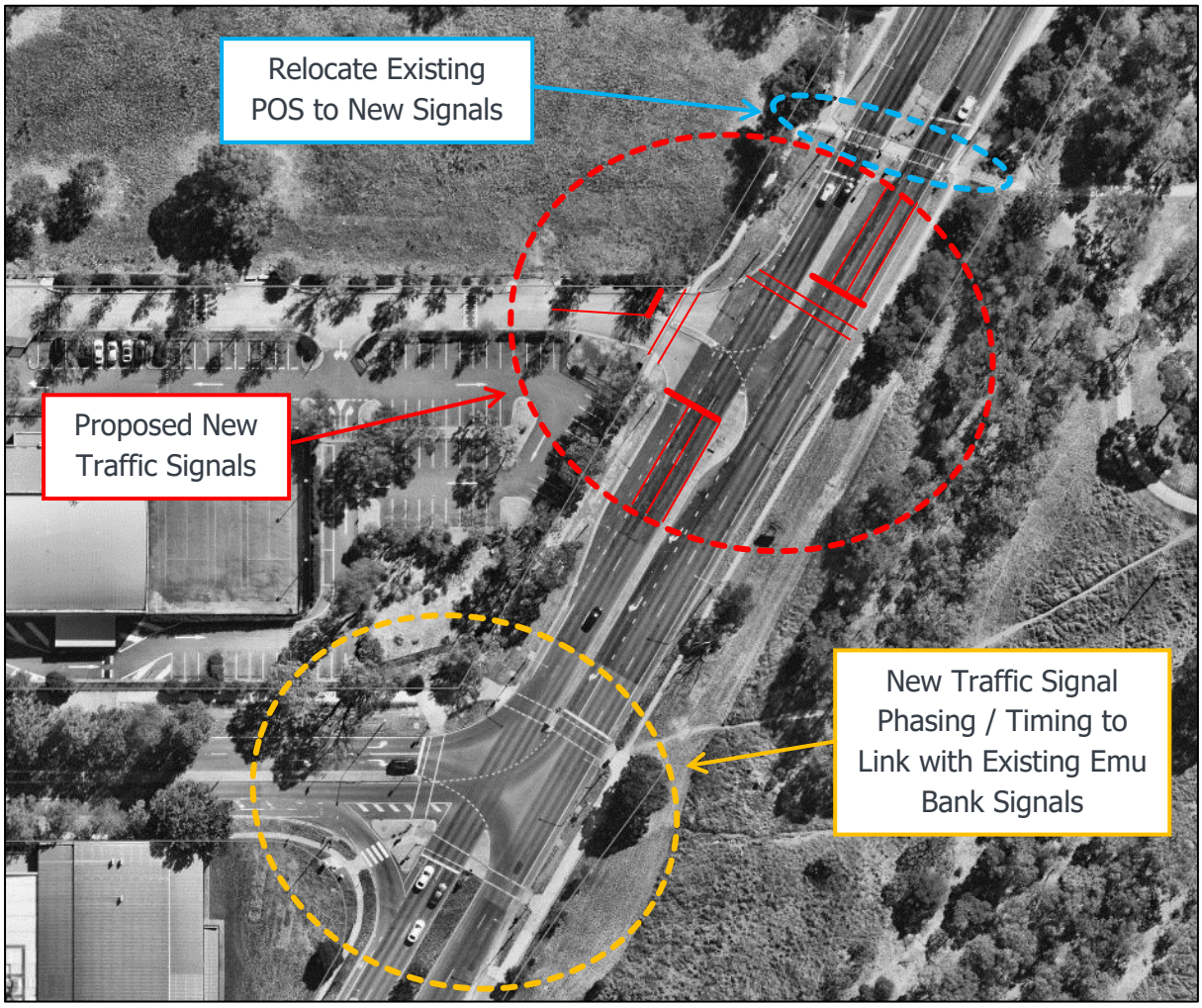


Figure 15: Recommended Upgrades – Aikman Drive / Lake Ginninderra College Access (Source: Nearmap)

The capacity of the proposed traffic signals has been assessed using SIDRA network analysis, with 'routes' defined in the peak directions to best coordinate the signal phasing and timing between the two intersections. A summary of the adopted network layout is shown in Figure 16.

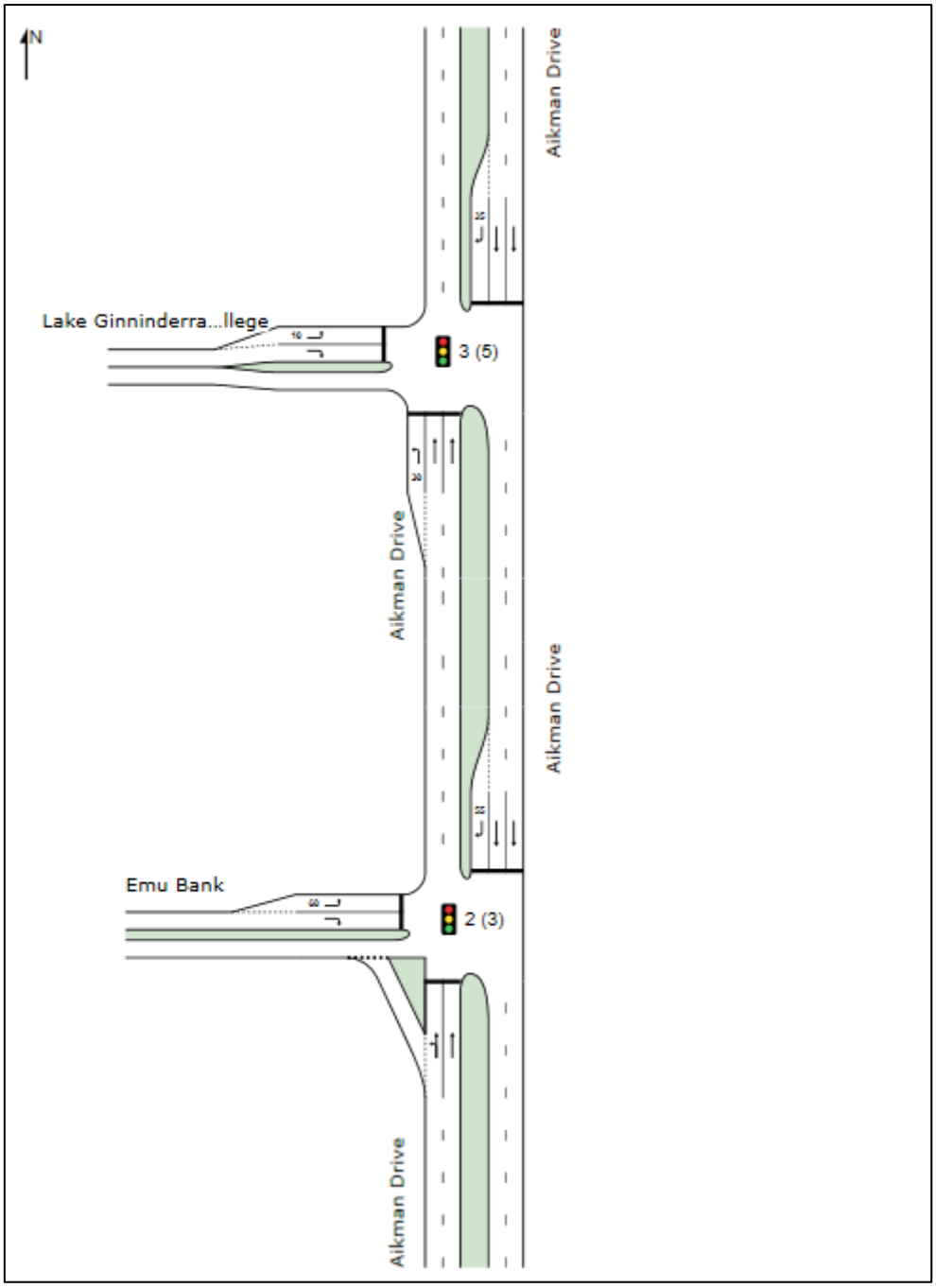


Figure 16: SIDRA Modelling – Site Layout – Proposed Traffic Signals

Signal phasing for the Aikman Drive / Emu Bank intersection has been maintained as per the existing conditions/ base case scenarios, with signal phasing for the Aikman Drive / Lake Ginninderra College access shown in Figure 17 below.

The signal phase times and off-sets between the two intersections have been determined by the SIDRA model. A summary of the signal phase times utilised in the analysis are shown in Table 25 below.

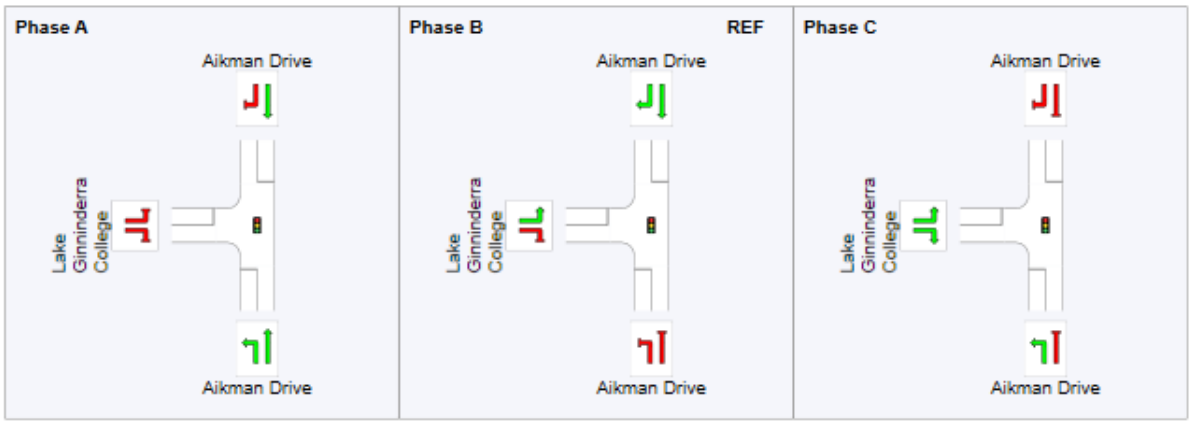


Figure 17: SIDRA Modelling – Signal Phasing – Proposed Traffic Signals

Table 26: Traffic Signal Timings – Proposed Traffic Signals Scenario

Peak Hour	Phase A	Phase B	Phase C	TOTAL
Aikman Drive / Emu Bank				
Morning Peak Hour	16s	22s	14s	**52s**
Evening Peak Hour	27s	23s	12s	**62s**
Aikman Drive / Lake Ginninderra College				
Morning Peak Hour	22s	18s	12s	**52s**
Evening Peak Hour	38s	12s	12s	**62s**

A summary of the key outputs of the network SIDRA modelling provided in Table 26 below.

Table 27: Intersection Performance Summary – Recommended Traffic Signals Configuration

Approach	AM Peak Hour			PM Peak Hour		
	DOS	Delay (LOS)	Queue	DOS	Delay (LOS)	Queue
Aikman Drive / Emu Bank						
S: Aikman Dr	0.59	19s (B)	38m	0.78	23s (C)	110m
N: Aikman Dr	0.63	7s (A)	60m	0.58	18s (B)	58m
W: Emu Bank	0.63	28s (C)	32m	0.79	25s (C)	98m
Total	**0.63**	**12s (A)**	-	**0.79**	**22s (C)**	**-**
Aikman Drive / Lake Ginninderra College						
S: Aikman Dr	0.43	6s (A)	23m	0.63	11s (B)	96m
N: Aikman Dr	0.53	8s (A)	65m	0.34	5s (A)	38m
W: Lake Ginninderra College	0.46	19s (B)	18m	0.35	25s (C)	13m
Total	**0.53**	**8s (A)**	-	**0.63**	**9s (A)**	**-**

The above capacity modelling results indicate the proposed traffic signals at Aikman Drive / Lake Ginninderra College access can operate under acceptable parameter when considered in a network with the existing traffic signals at Aikman Drive / Emu Bank.

Full details of the post development SIDRA analysis for the signalisation of Aikman Drive / Lake Ginninderra College access are provided at Appendix I.

7 Conclusions

Quantum Traffic have been engaged to undertake a TIA in relation to a Major Plan Amendment for Block 42 Section 65, Belconnen. As part of this assessment, it has been concluded that:

a) Block 42 Section 65, Belconnen is currently zoned as CF: Community Facility Zone and is located on the west side of Aikman Drive, north of Lake Ginninderra College,

b) Under the existing conditions, vehicle access to the site is provided via an existing accessway for Lake Ginninderra College, ultimately connecting to Aikman Drive via an unsignalised intersection. This access is located on the adjacent Lake Ginninderra College site (Block 60, Section 65),

c) An existing path network is located in the vicinity of the subject site which supports walking and low-speed cycling trips,

d) There are 13 bus routes which serve stops located within close walking distance of the subject site,

e) Under the existing conditions, intersection analysis found that the two key intersections adjacent to the subject site operate with 'available capacity', 'acceptable delays' and 'acceptable queue lengths',

f) Traffic volumes for the 2040 base scenario have been developed with consideration for the following other nearby developments:
   - Onderra Development on the University of Canberra site,
   - Lawson Stage 2 subdivision, and
   - Allowance for other growth on the road network to the 2040 horizon year.

g) Traffic modelling for the 2040 Base scenario indicates that the Aikman Drive / Emu Bank intersection will continue to operate within acceptable parameters, however, the Aikman Drive / Lake Ginninderra College access intersection will experience long delays (LOS F) for the right turn movements out of the Lake Ginninderra College access onto Aikman Drive. Given the small volumes predicted for the right turn movement, the intersection is predicted to operate with acceptable DOS and queue lengths,

h) The proposal is for a Major Plan Amendment, rezoning the site to CZ2 commercial zoning. A sketch concept plan for the site shows an indicative yield for possible future development as follows:
   - 330 residential apartments,
   - 4,000m^2 Community Facilities including:
     - 1,000m^2 Community Activity Centre
     - 1,000m^2 Health Facility
     - 2,000m^2 Office

   Short stay parking for the community facility component is proposed to occur via an at grade car park at the western boundary of the site (approximately 40 spaces). Car parking for the residential component and staff parking for the community facility component is proposed to occur via basement levels,

i) Parking assessments have been undertaken for the possible future development scenario in accordance with *Commercial Zone Specification ZS2*. These assessments found that:

- The proposed residential component is expected to generate car parking demands of 415-504 car parking spaces (depending on the final mix of apartments).
- The proposed community facility component is expected to generate car parking demands of 110 spaces, including 47 short stay parking spaces and 63 long stay parking spaces.
- The proposed at grade parking (approximately 40 spaces) can generally accommodate the estimated short stay parking demands for the community facility component. The balance of parking demands including staff for the community facility component and the residential component are recommended to be provided within basement levels.
- The proposed land uses will generate a requirement for:
  - 3-4 accessible car parking spaces.
  - 16-18 motorcycle parking spaces.
  - 352 EV Ready parking spaces.
- The proposed land uses will generate a requirement for 495 bicycle parking spaces, including 390 long term parking spaces and 105 short term parking spaces.
- We recommend long term bicycle parking is provided in individual residential storage units or via a dedicated bicycle parking in the basement levels. Short term bicycle parking is best provided via rails at the ground floor.
- The proposed community facility component generates a benchmark provision of 2 showers and 22 storage units under the Territory Plan. We recommend these end of trip facilities are provided within any future development.

j) Vehicle access is proposed to remain via the existing accessway to Lake Ginninderra College, with access to the broader road network via Aikman Drive. As part of future development on the subject site, TCCS and Education have previously agreed to subdivide the accessway from the Lake Ginninderra College site, creating stub road managed by TCCS,

k) The proposed development is expected to generate traffic demands in the order of 187-221 vehicle trips during the morning and evening peak hours on a typical weekday,

l) Intersection analysis found that, with the addition of traffic demands associated with the development, the Aikman Drive / Emu Bank intersection would continue to operate within its practical capacity. However, the Aikman Drive / Lake Ginninderra College access would perform poorly (beyond practical capacity), with long delays associated with right turn movements from Lake Ginninderra College access onto Aikman Drive,

m) It is recommended the intersection of Aikman Drive / Lake Ginninderra College access is signalised to improve capacity for the minor leg. Given the proximity to the existing traffic signals, the proposal signals would need to operate with the existing traffic signals at Aikman Drive / Emu Bank. Capacity analysis of the proposed traffic signal arrangement indicates that both intersection can operate with 'available capacity', 'acceptable delays' and 'acceptable queue lengths'.

On this basis, there are no traffic engineering reasons why the proposed Major Plan Amendment should not be approved, subject to appropriate conditions.

Appendix A:

Peak Hour Traffic Volumes – Existing Conditions

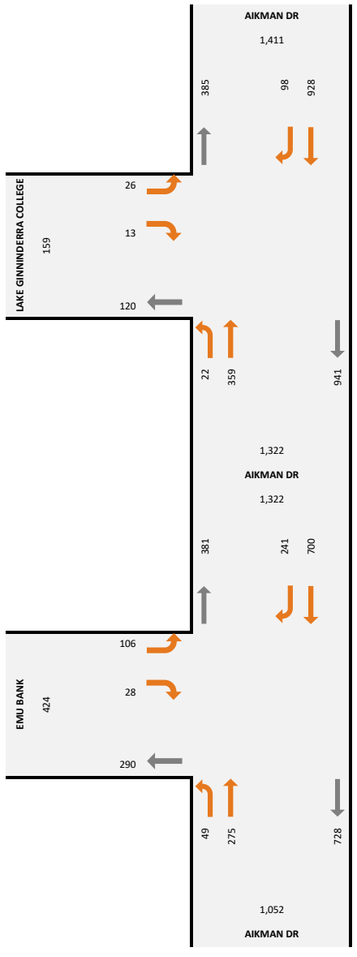
25-0072: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

2025 Existing Conditions

Weekday Morning Peak Hour

Light Vehicles

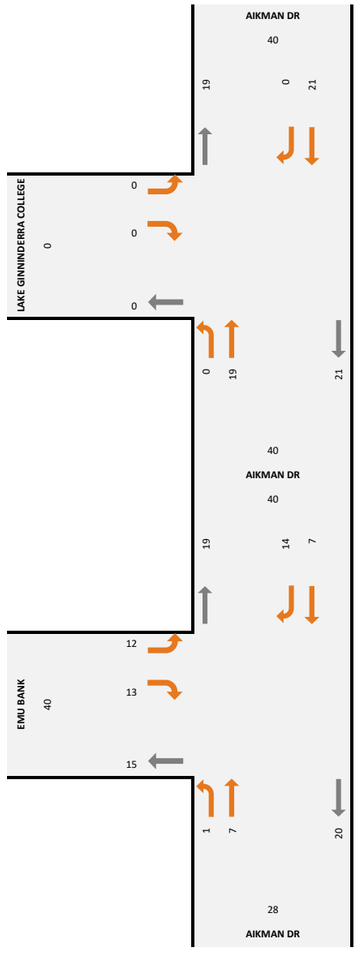


NORTH

2025 Existing Conditions

Weekday Morning Peak Hour

Heavy Vehicles

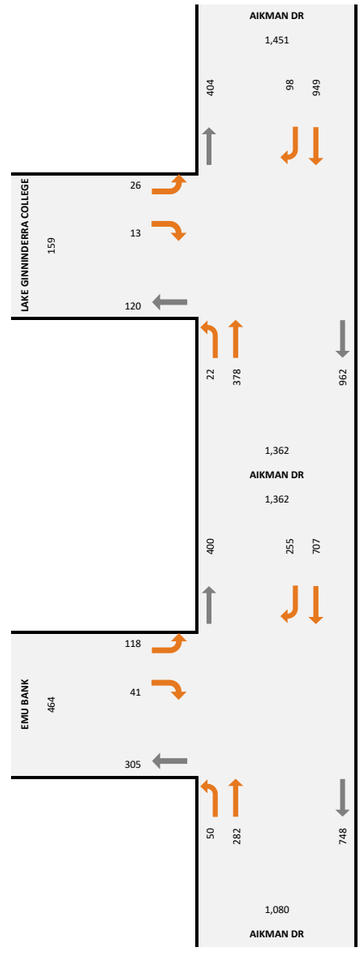


NORTH

2025 Existing Conditions

Weekday Morning Peak Hour

All Vehicles



NORTH

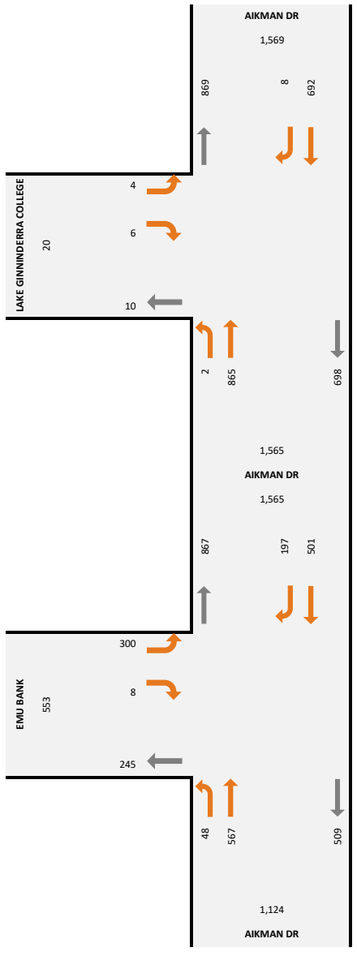
25-0072: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

2025 Existing Conditions

Weekday Evening Peak Hour

Light Vehicles

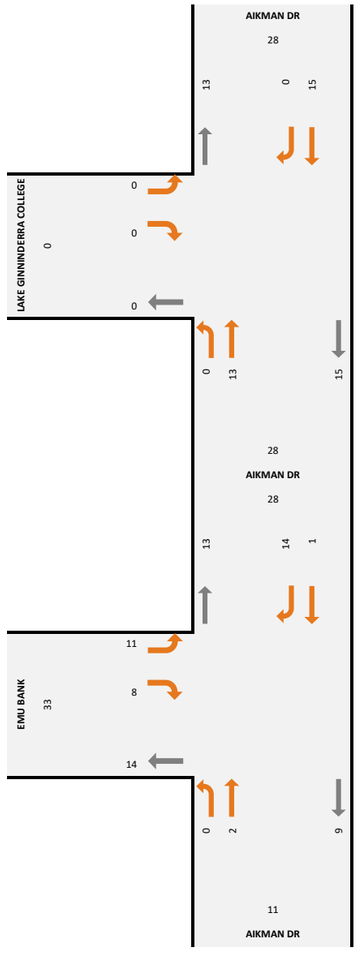


NORTH

2025 Existing Conditions

Weekday Evening Peak Hour

Heavy Vehicles

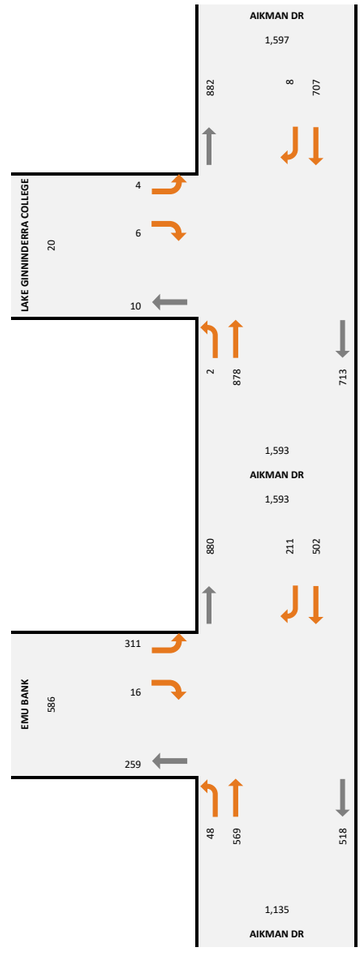


NORTH

2025 Existing Conditions

Weekday Evening Peak Hour

All Vehicles



NORTH

Appendix B:

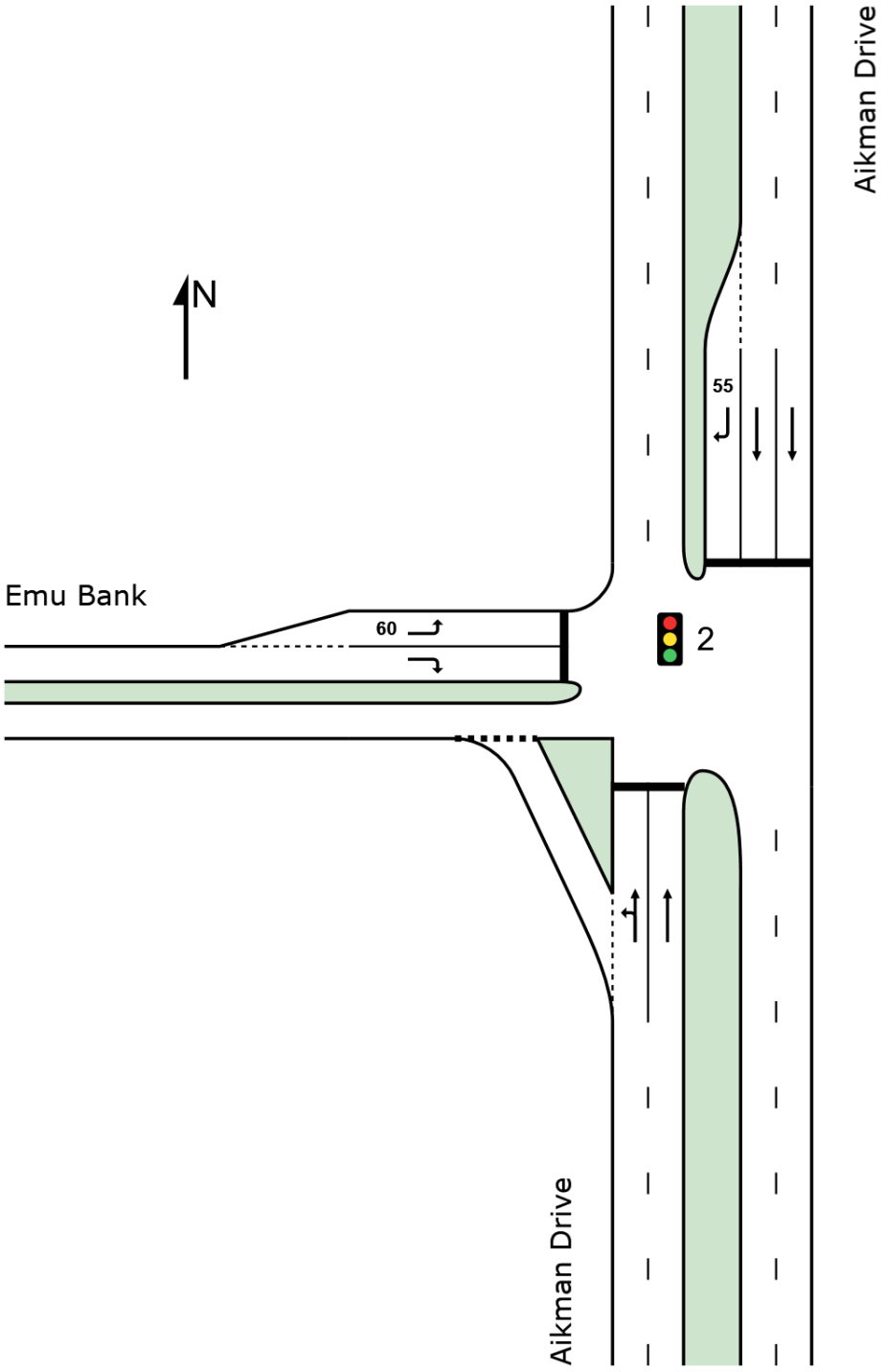
Intersection Performance Results – Existing Conditions

SITE LAYOUT

Site: [2] ExCond AM: AD-EB (Existing Conditions)

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated
Site Scenario: 1 | Local Volumes

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



Organisation: QUANTUM TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Created: Wednesday, 18 June 2025 3:45:03 PM
Project: Z:\QUANTUM TRAFFIC\6-PROJECTS\ACTIVE\2025\Block 42 Section 65, Belconnen (25-0072)\5-Other Info\SIDRA\25-0072_20250603.sipx

MOVEMENT SUMMARY

Site: [2] ExCond AM: AD-EB (Existing Conditions)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	53	2.0	53	2.0	0.268	6.6	LOS A	2.3	16.3	0.73	1.07	0.73	29.3
2	T1	All MCs	297	2.5	297	2.5	* 0.268	13.0	LOS A	3.1	22.3	0.76	0.84	0.76	31.4
Approach			349	2.4	349	2.4	0.268	12.0	LOS A	3.1	22.3	0.76	0.88	0.76	31.0
North: Aikman Drive															
8	T1	All MCs	744	1.0	744	1.0	0.270	2.9	LOS A	3.4	23.8	0.38	0.33	0.38	52.5
9	R2	All MCs	268	5.5	268	5.5	* 0.521	22.1	LOS B	5.9	43.5	0.89	0.80	0.89	22.0
Approach			1013	2.2	1013	2.2	0.521	8.0	LOS A	5.9	43.5	0.52	0.46	0.52	39.8
West: Emu Bank															
10	L2	All MCs	124	10.2	124	10.2	* 0.829	35.2	LOS C	3.7	28.5	1.00	1.05	1.54	16.4
12	R2	All MCs	43	31.7	43	31.7	0.329	30.3	LOS C	1.2	10.3	0.97	0.73	0.97	23.2
Approach			167	15.7	167	15.7	0.829	33.9	LOS C	3.7	28.5	0.99	0.97	1.39	18.3
All Vehicles			1529	3.7	1529	3.7	0.829	11.7	LOS A	5.9	43.5	0.62	0.61	0.67	33.3

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [2] ExCond AM: AD-EB (Existing Conditions)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

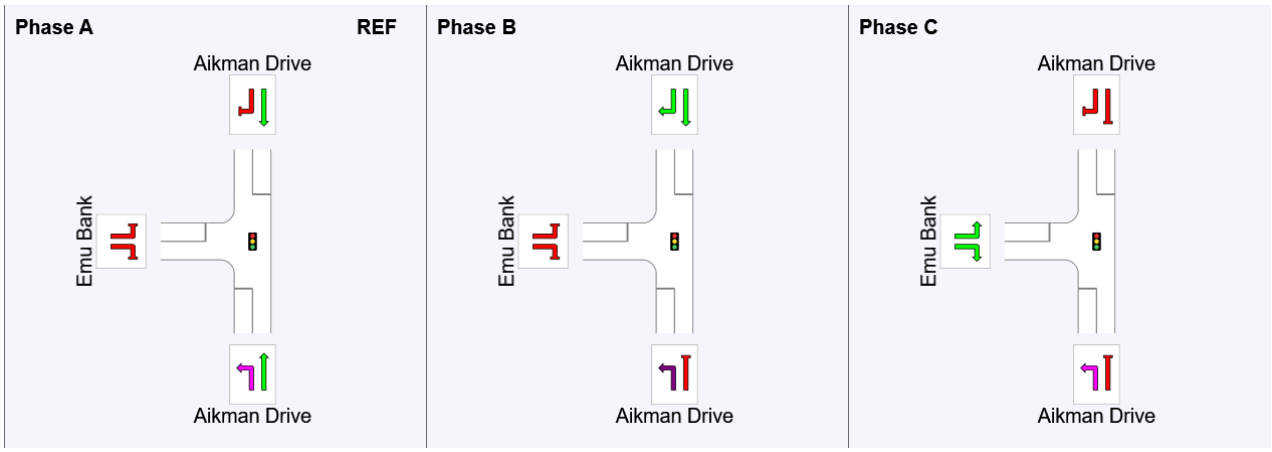
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0.0	20.5	41.5
Green Time (sec)	16.0	15.0	4.5
Phase Time (sec)	22.0	21.0	9.0
Phase Split	42%	40%	17%
Phase Frequency (%)	100.0	100.0	75.0[2]

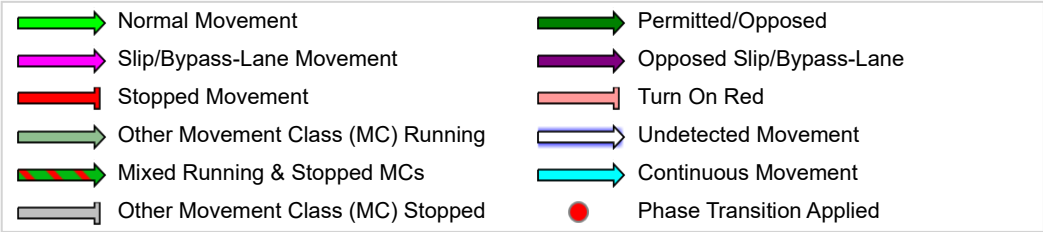
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified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

2 Phase Frequency is implied by a Phase Time specified by the user that is less than the Required Movement Time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

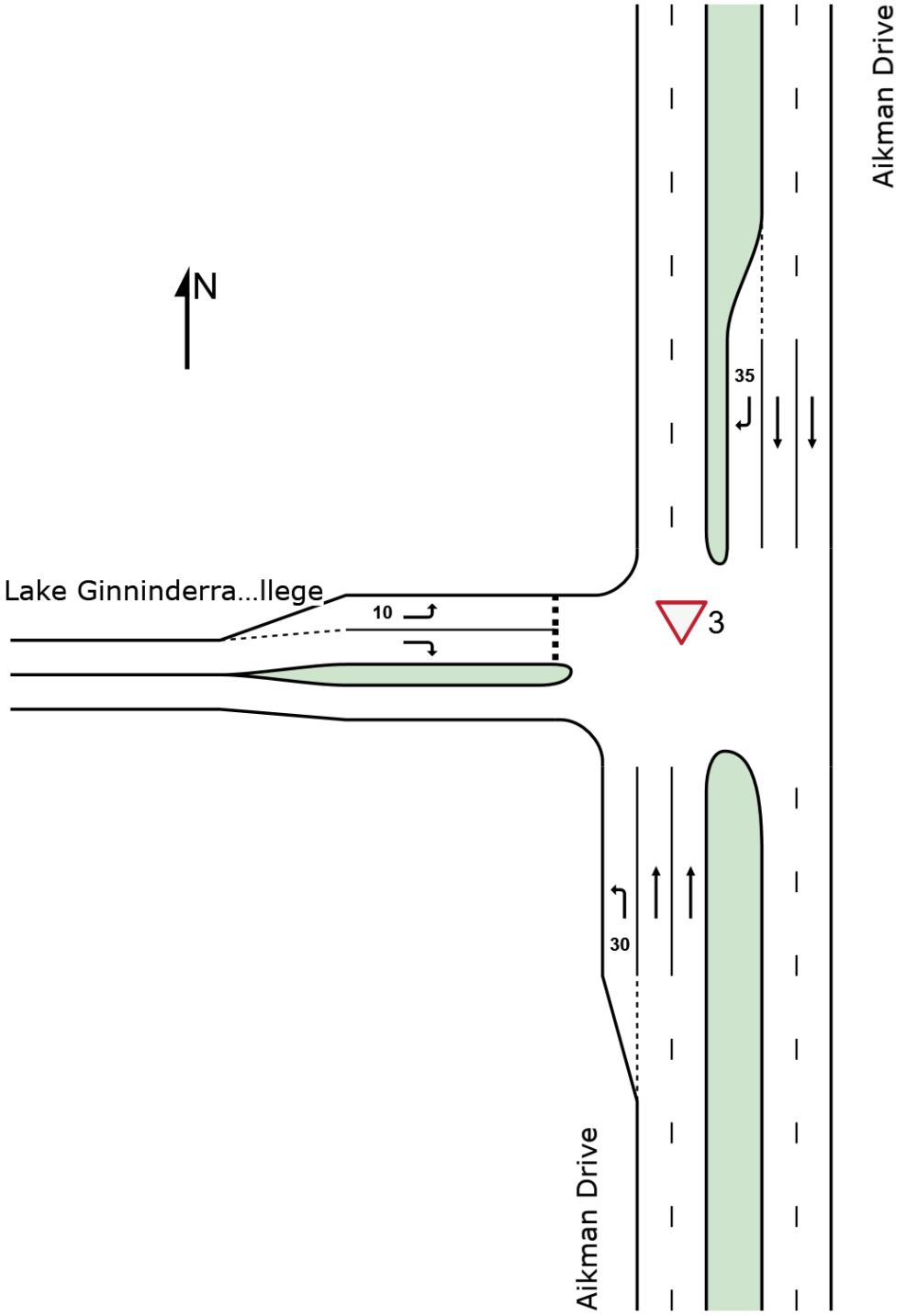


SITE LAYOUT

Site: [3] ExCond AM: AD-LGC (Existing Conditions)

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

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



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Project: Z:\QUANTUM TRAFFIC\6-PROJECTS\ACTIVE\2025\Block 42 Section 65, Belconnen (25-0072)\5-Other Info\SIDRA \25-0072_20250603.sipx

MOVEMENT SUMMARY

Site: [3] ExCond AM: AD-LGC (Existing Conditions)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	23	0.0	23	0.0	0.012	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	398	5.0	398	5.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			421	4.8	421	4.8	0.105	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.3
North: Aikman Drive															
8	T1	All MCs	999	2.2	999	2.2	0.260	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	103	0.0	103	0.0	0.149	8.5	LOS A	0.5	3.3	0.36	0.68	0.36	37.9
Approach			1102	2.0	1102	2.0	0.260	0.9	NA	0.5	3.3	0.03	0.06	0.03	56.5
West: Lake Ginninderra College															
10	L2	All MCs	27	0.0	27	0.0	0.024	0.8	LOS A	0.1	0.7	0.28	0.14	0.28	39.5
12	R2	All MCs	14	0.0	14	0.0	0.139	34.9	LOS C	0.4	2.8	0.90	0.90	0.90	11.8
Approach			41	0.0	41	0.0	0.139	12.2	LOS A	0.4	2.8	0.49	0.39	0.49	29.8
All Vehicles			1564	2.7	1564	2.7	0.260	1.0	NA	0.5	3.3	0.04	0.06	0.04	56.0

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [7] ExCond PM: AD-EB (Existing Conditions)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	51	0.0	51	0.0	0.525	7.2	LOS A	7.7	53.7	0.86	1.07	0.86	24.9
2	T1	All MCs	599	0.4	599	0.4	* 0.525	19.8	LOS B	8.0	56.3	0.87	0.90	0.87	26.4
Approach			649	0.3	649	0.3	0.525	18.8	LOS B	8.0	56.3	0.87	0.91	0.87	26.3
North: Aikman Drive															
8	T1	All MCs	528	0.2	528	0.2	0.443	19.0	LOS B	6.6	46.1	0.85	0.71	0.85	30.8
9	R2	All MCs	222	6.6	222	6.6	* 0.409	23.6	LOS B	5.5	40.5	0.84	0.79	0.84	21.3
Approach			751	2.1	751	2.1	0.443	20.4	LOS B	6.6	46.1	0.85	0.73	0.85	27.6
West: Emu Bank															
10	L2	All MCs	327	3.5	327	3.5	0.361	13.7	LOS A	6.1	44.0	0.65	0.72	0.65	25.4
12	R2	All MCs	17	50.0	17	50.0	* 0.127	33.5	LOS C	0.5	5.1	0.94	0.69	0.94	21.5
Approach			344	5.8	344	5.8	0.361	14.7	LOS B	6.1	44.0	0.66	0.72	0.66	25.0
All Vehicles			1744	2.2	1744	2.2	0.525	18.7	LOS B	8.0	56.3	0.82	0.80	0.82	26.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [7] ExCond PM: AD-EB (Existing Conditions)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

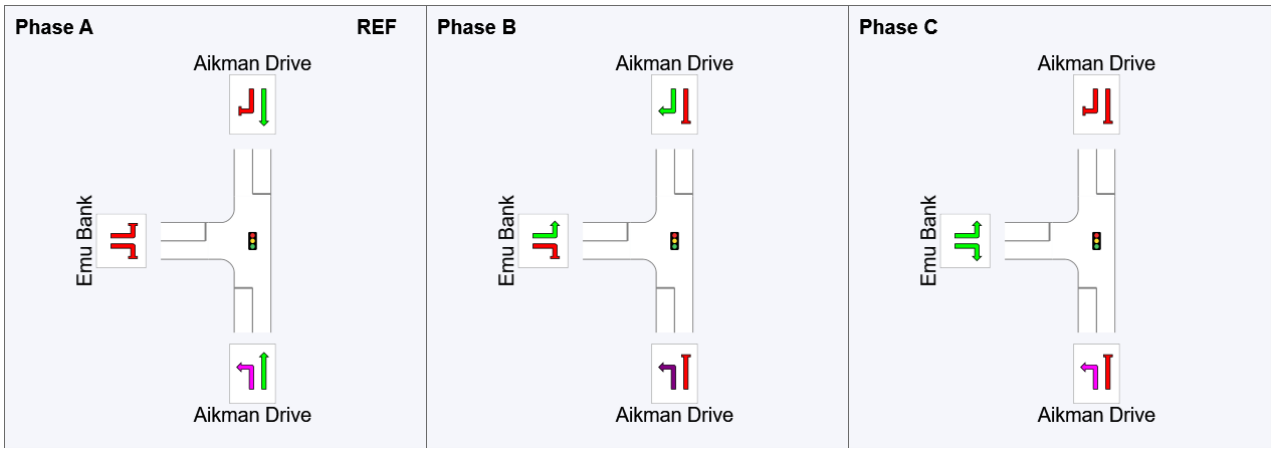
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

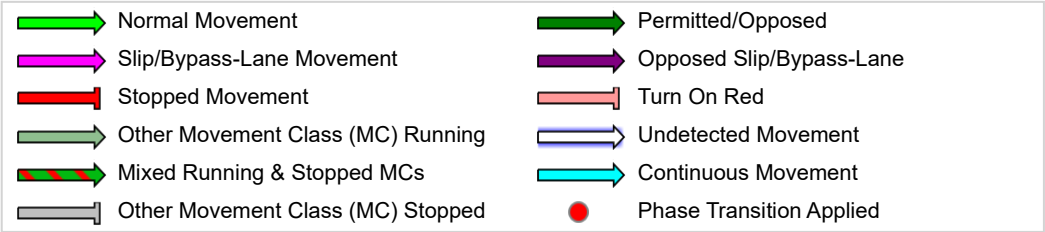
Phase	A	B	C
Phase Change Time (sec)	0.0	25.0	50.0
Green Time (sec)	19.0	19.0	6.0
Phase Time (sec)	25.0	25.0	12.0
Phase Split	40%	40%	19%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [8] ExCond PM: AD-LGC (Existing Conditions)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	924	1.5	924	1.5	0.239	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			926	1.5	926	1.5	0.239	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Aikman Drive															
8	T1	All MCs	744	2.1	744	2.1	0.193	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	8	0.0	8	0.0	0.022	12.8	LOS A	0.1	0.4	0.63	0.78	0.63	35.7
Approach			753	2.1	753	2.1	0.193	0.2	NA	0.1	0.4	0.01	0.01	0.01	59.4
West: Lake Ginninderra College															
10	L2	All MCs	4	0.0	4	0.0	0.005	2.0	LOS A	0.0	0.1	0.45	0.25	0.45	39.0
12	R2	All MCs	6	0.0	6	0.0	0.078	41.9	LOS C	0.2	1.6	0.91	0.91	0.91	10.7
Approach			11	0.0	11	0.0	0.078	25.9	LOS B	0.2	1.6	0.72	0.65	0.72	21.0
All Vehicles			1689	1.7	1689	1.7	0.239	0.3	NA	0.2	1.6	0.01	0.01	0.01	59.2

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QUANTUM TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Tuesday, 3 June 2025 10:04:47 AM
Project: Z:\QUANTUM TRAFFIC\6-PROJECTS\ACTIVE\2025\Block 42 Section 65, Belconnen (25-0072)\5-Other Info\SIDRA \25-0072_20250603.sipx

Appendix C:

Peak Hour Traffic Demands – Onderra Development

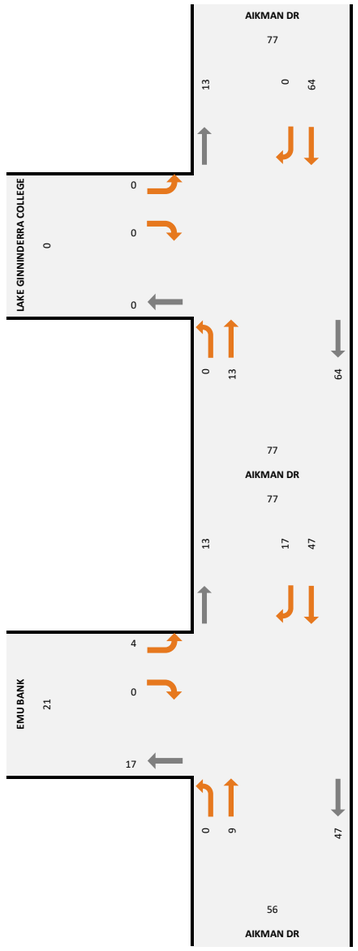
25-0072: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

Onderra Development Volumes

Weekday Morning Peak Hour

Light Vehicles

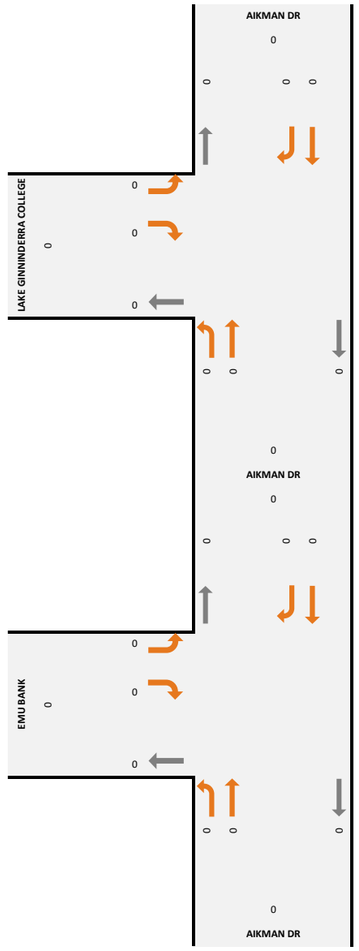


NORTH

Onderra Development Volumes

Weekday Morning Peak Hour

Heavy Vehicles

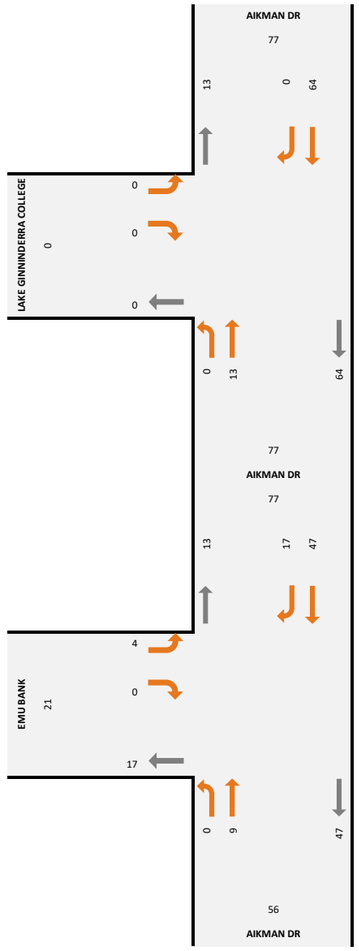


NORTH

Onderra Development Volumes

Weekday Morning Peak Hour

All Vehicles



NORTH

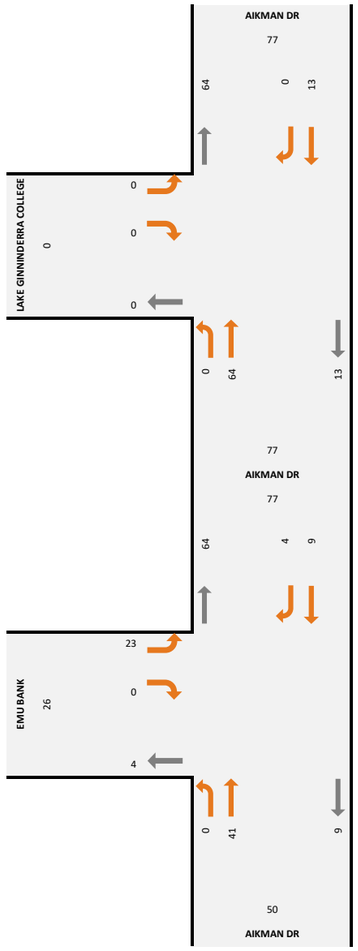
25-0072: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

Onderra Development Volumes

Weekday E vening Peak Hour

Light Vehicles

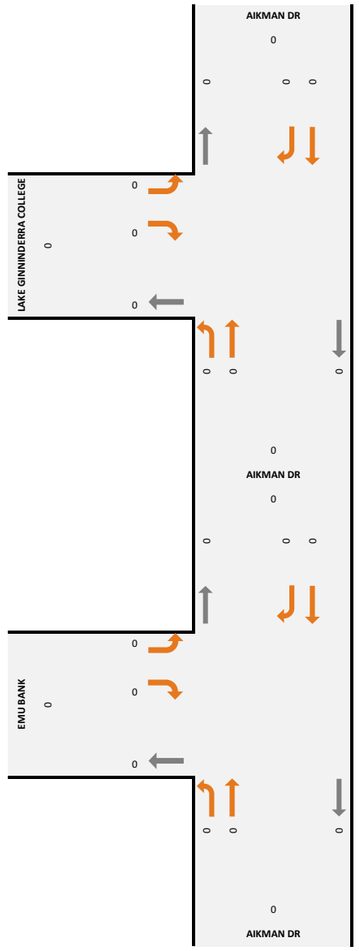


NORTH

Onderra Development Volumes

Weekday E vening Peak Hour

Heavy Vehicles

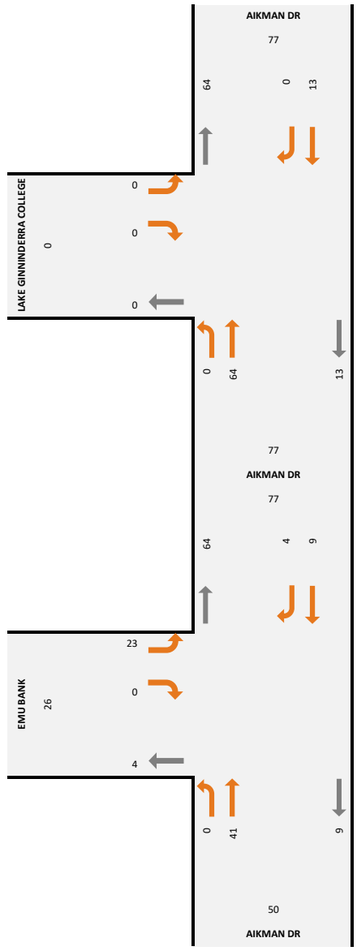


NORTH

Onderra Development Volumes

Weekday E vening Peak Hour

All Vehicles



NORTH

Appendix D:

Peak Hour Traffic Demands – Lawson 2 Development

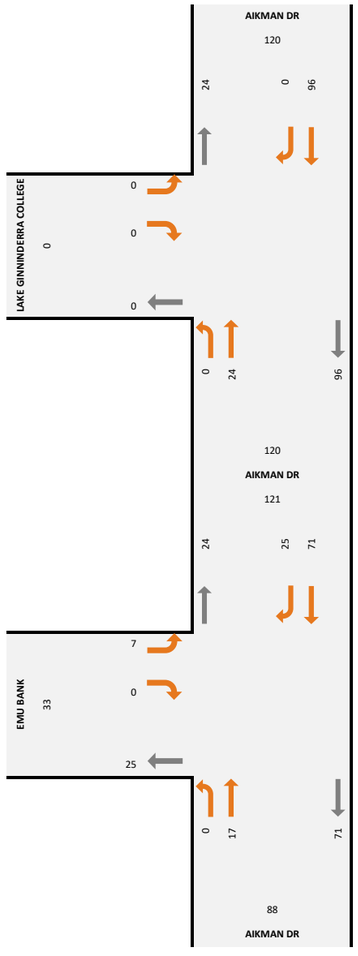
23-0078: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

Lawson Stage 2 Estate

Weekday Morning Peak Hour

Light Vehicles

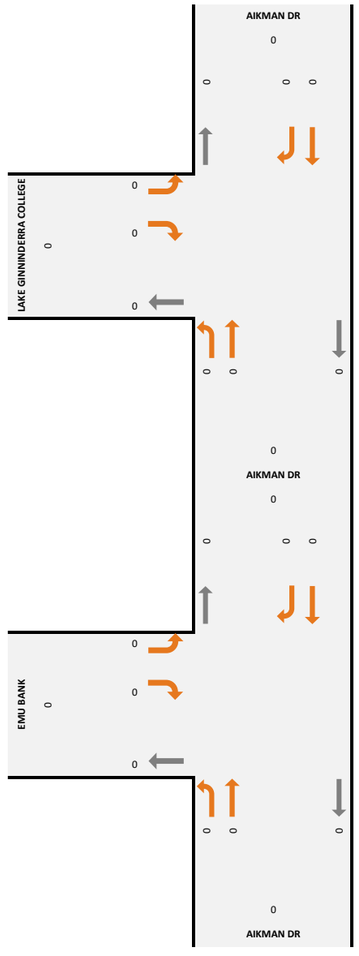


NORTH

Lawson Stage 2 Estate

Weekday Morning Peak Hour

Heavy Vehicles

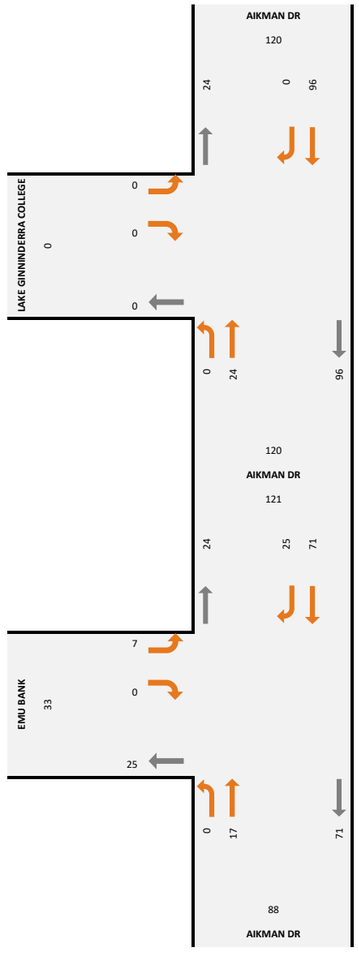


NORTH

Lawson Stage 2 Estate

Weekday Morning Peak Hour

All Vehicles



NORTH

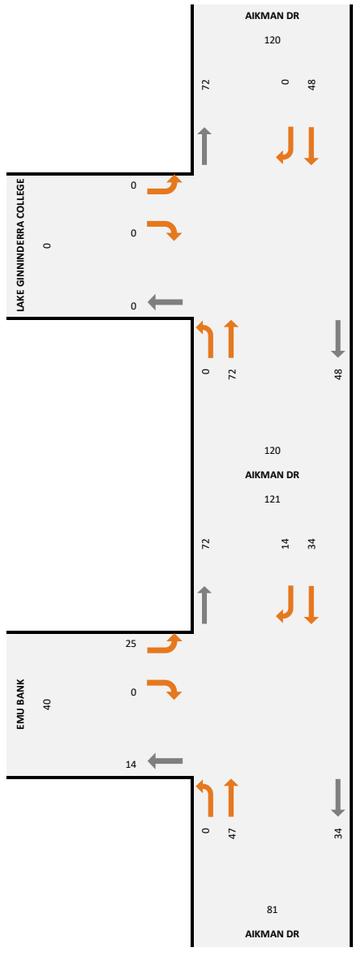
23-0078: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

Lawson Stage 2 Estate

Weekday Evening Peak Hour

Light Vehicles

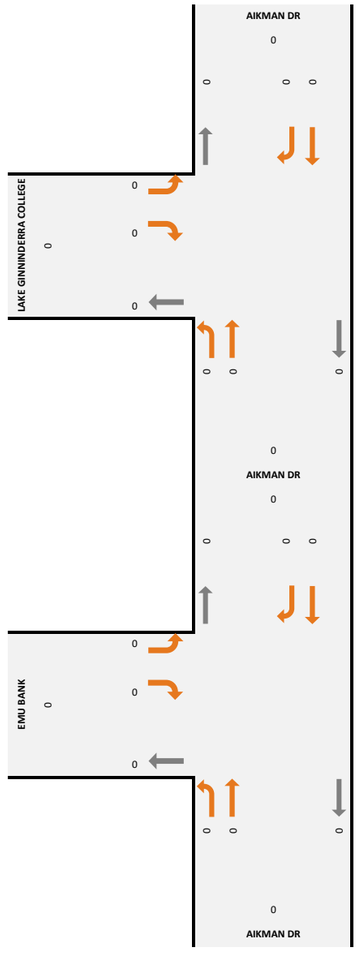


NORTH

Lawson Stage 2 Estate

Weekday Evening Peak Hour

Heavy Vehicles

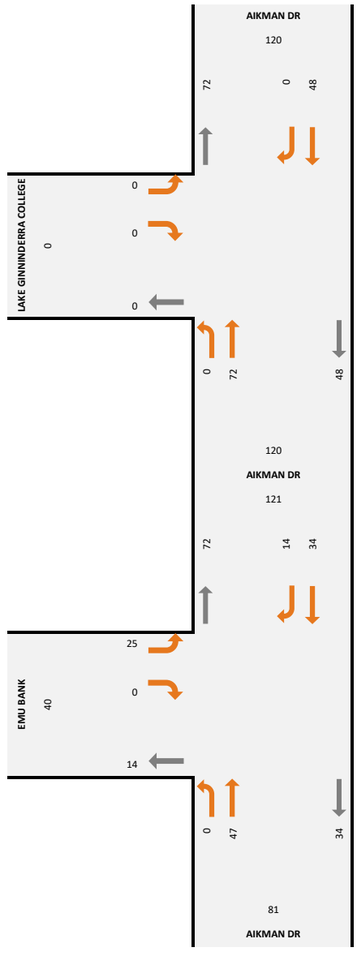


NORTH

Lawson Stage 2 Estate

Weekday Evening Peak Hour

All Vehicles



NORTH

Appendix E:

Peak Hour Traffic Demands – Base Conditions

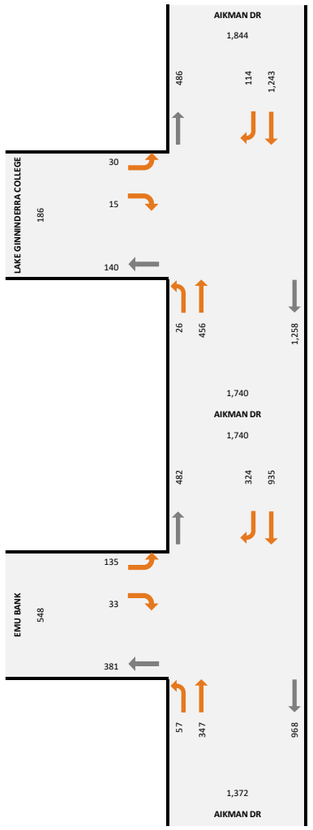
25-0078: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

2040 Base Scenario

Weekday Morning Peak Hour

Light Vehicles

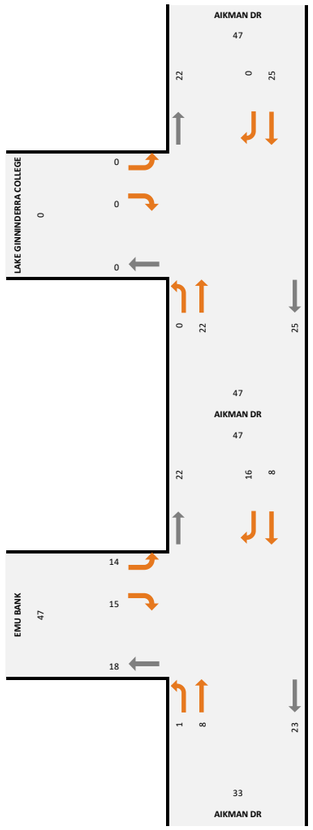


NORTH

2040 Base Scenario

Weekday Morning Peak Hour

Heavy Vehicles

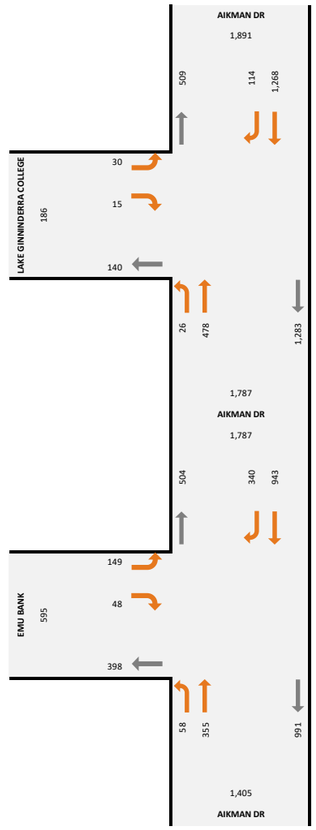


NORTH

2040 Base Scenario

Weekday Morning Peak Hour

All Vehicles



NORTH

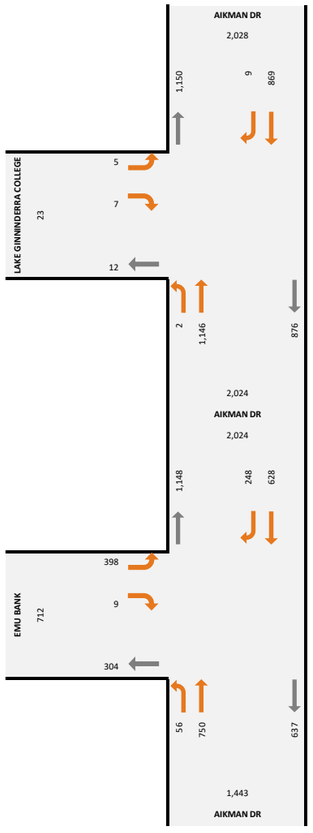
25-0078: Block 42 Section 65, Belconnen

Peak Hour Traffic Volumes

2040 Base Scenario

Weekday Evening Peak Hour

Light Vehicles

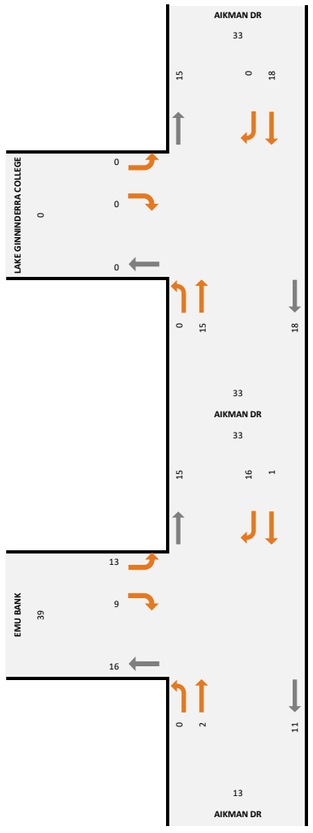


NORTH

2040 Base Scenario

Weekday Evening Peak Hour

Heavy Vehicles

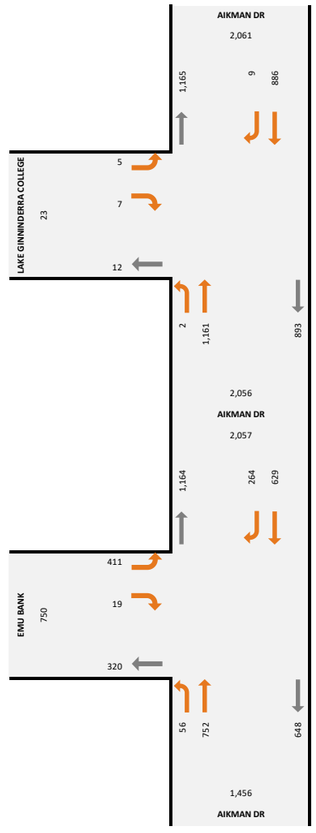


NORTH

2040 Base Scenario

Weekday Evening Peak Hour

All Vehicles



NORTH

Appendix F:

Intersection Performance Results – Base Conditions

MOVEMENT SUMMARY

Site: [2 (2)] Base AM: AD-EB (Base - 2040)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	61	1.7	61	1.7	0.562	7.9	LOS A	4.3	30.6	0.93	1.07	0.93	24.9
2	T1	All MCs	374	2.3	374	2.3	* 0.562	21.3	LOS B	4.6	33.0	0.95	0.92	0.95	25.4
Approach			435	2.2	435	2.2	0.562	19.4	LOS B	4.6	33.0	0.95	0.94	0.95	25.3
North: Aikman Drive															
8	T1	All MCs	993	0.8	993	0.8	0.413	5.5	LOS A	6.5	45.7	0.55	0.48	0.55	47.1
9	R2	All MCs	358	4.7	358	4.7	* 0.602	21.0	LOS B	7.9	57.3	0.89	0.82	0.89	22.6
Approach			1351	1.9	1351	1.9	0.602	9.6	LOS A	7.9	57.3	0.64	0.57	0.64	37.7
West: Emu Bank															
10	L2	All MCs	157	9.4	157	9.4	* 0.602	27.8	LOS B	4.1	30.8	0.98	0.83	1.05	18.6
12	R2	All MCs	51	31.3	51	31.3	0.222	26.0	LOS B	1.2	10.8	0.91	0.72	0.91	24.8
Approach			207	14.7	207	14.7	0.602	27.4	LOS B	4.1	30.8	0.96	0.81	1.02	20.4
All Vehicles			1993	3.3	1993	3.3	0.602	13.6	LOS A	7.9	57.3	0.74	0.68	0.75	31.4

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [2 (2)] Base AM: AD-EB (Base - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

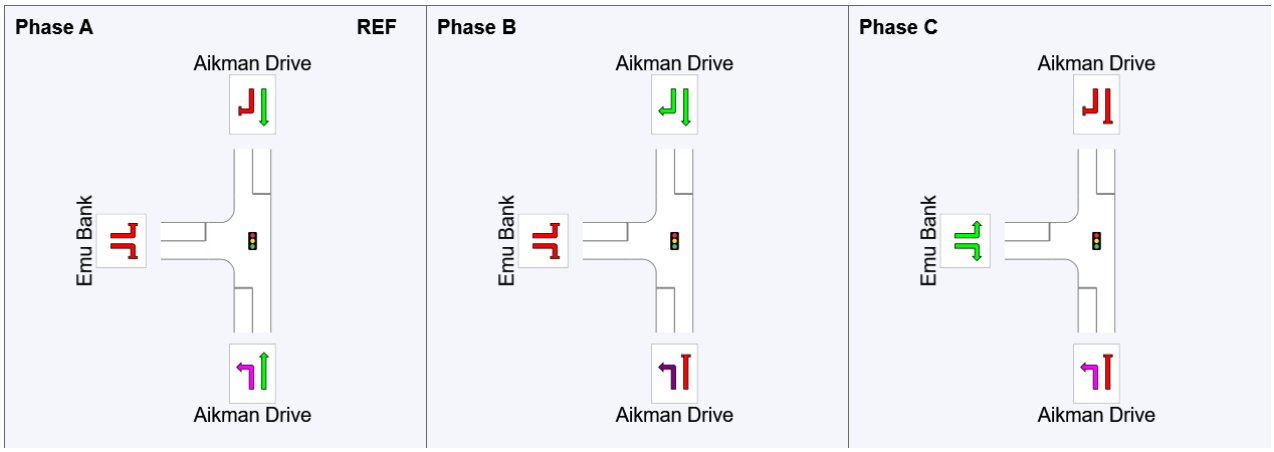
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

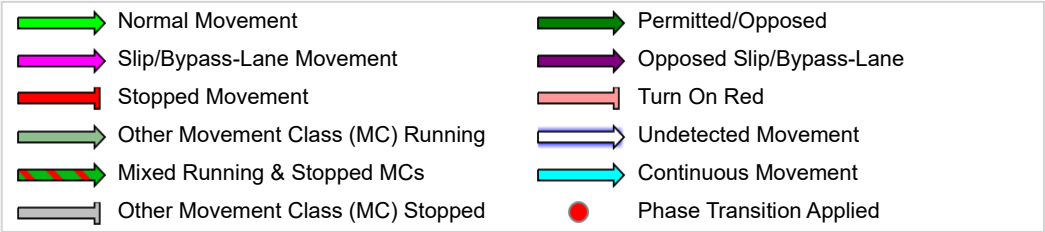
Phase	A	B	C
Phase Change Time (sec)	0.0	15.0	38.2
Green Time (sec)	9.0	17.2	7.8
Phase Time (sec)	15.0	23.2	13.8
Phase Split	29%	45%	27%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [3 (2)] Base AM: AD-LGC (Base - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	27	0.0	27	0.0	0.015	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	503	4.6	503	4.6	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			531	4.4	531	4.4	0.133	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.3
North: Aikman Drive															
8	T1	All MCs	1335	2.0	1335	2.0	0.347	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	120	0.0	120	0.0	0.194	9.5	LOS A	0.6	4.3	0.45	0.74	0.45	37.4
Approach			1455	1.8	1455	1.8	0.347	0.9	NA	0.6	4.3	0.04	0.06	0.04	56.7
West: Lake Ginninderra College															
10	L2	All MCs	32	0.0	32	0.0	0.029	1.0	LOS A	0.1	0.9	0.33	0.17	0.33	39.4
12	R2	All MCs	16	0.0	16	0.0	0.400	109.6	LOS F	1.1	8.0	0.97	1.04	1.11	5.7
Approach			47	0.0	47	0.0	0.400	37.2	LOS C	1.1	8.0	0.54	0.46	0.59	21.7
All Vehicles			2033	2.4	2033	2.4	0.400	1.6	NA	1.1	8.0	0.04	0.06	0.04	55.5

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [7 (2)] Base PM: AD-EB (Base - 2040)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	59	0.0	59	0.0	0.597	8.0	LOS A	10.1	71.0	0.86	1.06	0.86	25.2
2	T1	All MCs	792	0.3	792	0.3	* 0.597	18.1	LOS B	10.4	73.3	0.86	0.90	0.86	27.2
Approach			851	0.2	851	0.2	0.597	17.4	LOS B	10.4	73.3	0.86	0.91	0.86	27.0
North: Aikman Drive															
8	T1	All MCs	662	0.2	662	0.2	0.478	17.0	LOS B	7.9	55.6	0.83	0.70	0.83	32.5
9	R2	All MCs	278	6.1	278	6.1	* 0.606	27.4	LOS B	7.7	56.6	0.93	0.82	0.93	19.7
Approach			940	1.9	940	1.9	0.606	20.1	LOS B	7.9	56.6	0.86	0.74	0.86	27.8
West: Emu Bank															
10	L2	All MCs	433	3.2	433	3.2	0.528	16.8	LOS B	9.6	68.8	0.77	0.77	0.77	23.5
12	R2	All MCs	19	50.0	19	50.0	* 0.143	33.6	LOS C	0.6	5.7	0.95	0.69	0.95	21.4
Approach			452	5.1	452	5.1	0.528	17.5	LOS B	9.6	68.8	0.78	0.77	0.78	23.4
All Vehicles			2242	1.9	2242	1.9	0.606	18.6	LOS B	10.4	73.3	0.84	0.81	0.84	26.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [7 (2)] Base PM: AD-EB (Base - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

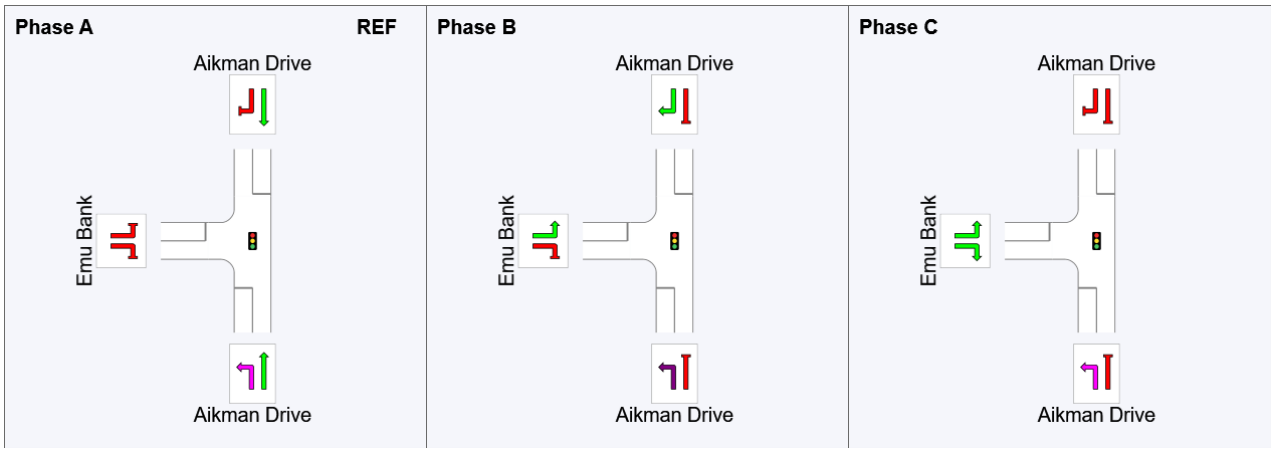
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

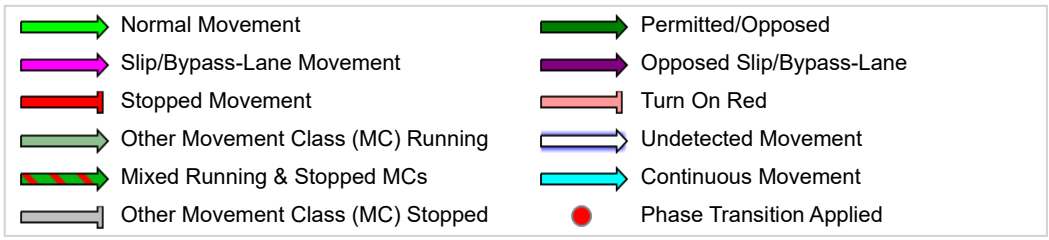
Phase	A	B	C
Phase Change Time (sec)	0.0	28.0	50.0
Green Time (sec)	22.0	16.0	6.0
Phase Time (sec)	28.0	22.0	12.0
Phase Split	45%	35%	19%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [8 (2)] Base PM: AD-LGC (Base - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	1222	1.3	1222	1.3	0.316	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1224	1.3	1224	1.3	0.316	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Aikman Drive															
8	T1	All MCs	934	2.0	934	2.0	0.243	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	9	0.0	9	0.0	0.036	17.8	LOS B	0.1	0.7	0.75	0.90	0.75	33.4
Approach			943	2.0	943	2.0	0.243	0.3	NA	0.1	0.7	0.01	0.01	0.01	59.3
West: Lake Ginninderra College															
10	L2	All MCs	5	0.0	5	0.0	0.007	3.0	LOS A	0.0	0.2	0.52	0.34	0.52	38.4
12	R2	All MCs	7	0.0	7	0.0	0.238	119.0	LOS F	0.6	4.4	0.97	1.00	1.02	5.4
Approach			13	0.0	13	0.0	0.238	70.7	LOS F	0.6	4.4	0.78	0.72	0.81	13.2
All Vehicles			2180	1.6	2180	1.6	0.316	0.5	NA	0.6	4.4	0.01	0.01	0.01	58.8

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix G:

Sketch Master Plan – Possible Future Development

Design Development
Site Plan

Residential GFA = 32,000m^2
Community Zone GFA = 4,000m^2
Building Coverage = 42%
Facade Solar = 65%
Apartment Yield = 330 approx.

- Stepped form to Aikman Drive, ties into Town Centre heights
- Quality deep root zones
- Strong basement and loading zone entry points, due to building length
- Residential dialogue to ecological corridor
- Possible communal rooftop gardens
- Existing trees retained
- Two forms facing park

Legend

	Site
	Protected Trees
	Ecological + Deep Root Zone
	Loading Zone
	Basement Entry
	Community: 4 storeys
	Residential: 4 - 6 storeys
	Residential: 10 storeys
	Residential: 12 - 16 storeys

Appendix H:

Intersection Performance Results – Post-Development Conditions

MOVEMENT SUMMARY

Site: [2 (3)] PostDev AM: AD-EB (Post Dev - 2040)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	61	1.7	61	1.7	0.592	8.1	LOS A	5.0	35.5	0.94	1.07	0.94	24.7
2	T1	All MCs	424	2.0	424	2.0	* 0.592	21.1	LOS B	5.3	37.6	0.95	0.93	0.97	25.5
Approach			485	2.0	485	2.0	0.592	19.5	LOS B	5.3	37.6	0.95	0.95	0.96	25.3
North: Aikman Drive															
8	T1	All MCs	1075	0.8	1075	0.8	0.447	5.6	LOS A	7.2	50.8	0.56	0.50	0.56	46.9
9	R2	All MCs	358	4.7	358	4.7	* 0.628	21.9	LOS B	8.1	59.0	0.91	0.83	0.92	22.2
Approach			1433	1.8	1433	1.8	0.628	9.7	LOS A	8.1	59.0	0.65	0.58	0.65	37.8
West: Emu Bank															
10	L2	All MCs	163	9.0	163	9.0	* 0.628	28.2	LOS B	4.3	32.3	0.99	0.85	1.08	18.5
12	R2	All MCs	51	31.3	51	31.3	0.223	26.0	LOS B	1.2	10.8	0.92	0.72	0.92	24.7
Approach			214	14.3	214	14.3	0.628	27.7	LOS B	4.3	32.3	0.97	0.82	1.04	20.2
All Vehicles			2132	3.1	2132	3.1	0.628	13.7	LOS A	8.1	59.0	0.75	0.69	0.76	31.4

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [2 (3)] PostDev AM: AD-EB (Post Dev - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

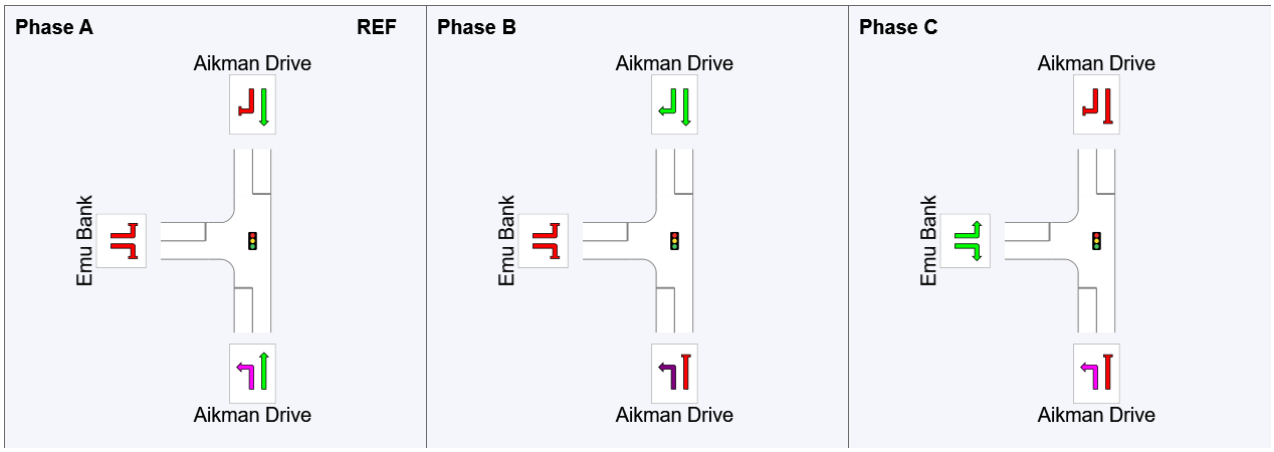
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

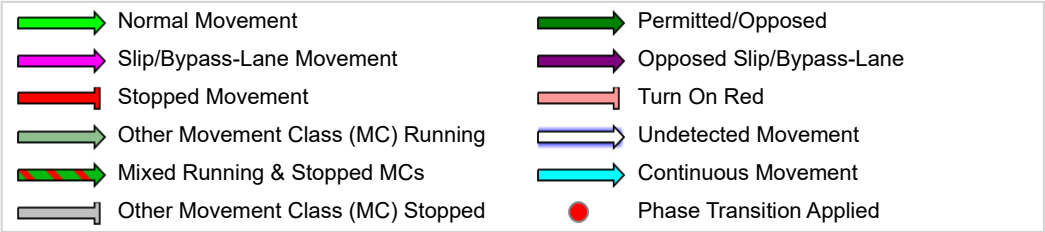
Phase	A	B	C
Phase Change Time (sec)	0.0	15.8	38.3
Green Time (sec)	9.8	16.5	7.7
Phase Time (sec)	15.8	22.5	13.7
Phase Split	30%	43%	26%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [3 (3)] PostDev AM: AD-LGC (Post Dev - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	84	0.0	84	0.0	0.045	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	503	4.6	503	4.6	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			587	3.9	587	3.9	0.133	0.7	NA	0.0	0.0	0.00	0.08	0.00	58.2
North: Aikman Drive															
8	T1	All MCs	1335	2.0	1335	2.0	0.347	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	179	0.0	179	0.0	0.305	10.5	LOS A	1.1	7.9	0.52	0.82	0.58	36.8
Approach			1514	1.7	1514	1.7	0.347	1.4	NA	1.1	7.9	0.06	0.10	0.07	55.3
West: Lake Ginninderra College															
10	L2	All MCs	64	0.0	64	0.0	0.060	21.9	LOS B	0.3	1.8	0.33	0.19	0.33	39.3
12	R2	All MCs	98	0.0	98	0.0	2.733	1695.2	LOS F	41.5	290.2	1.00	4.38	7.26	1.2
Approach			162	0.0	162	0.0	2.733	1032.4	LOS F	41.5	290.2	0.74	2.72	4.52	3.3
All Vehicles			2263	2.2	2263	2.2	2.733	75.0	NA	41.5	290.2	0.09	0.28	0.37	31.4

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QUANTUM TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 18 June 2025 3:22:02 PM
Project: Z:\QUANTUM TRAFFIC\6-PROJECTS\ACTIVE\2025\Block 42 Section 65, Belconnen (25-0072)\5-Other Info\SIDRA\25-0072_20250603.sipx

MOVEMENT SUMMARY

Site: [7 (3)] PostDev PM: AD-EB (Post Dev - 2040)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	59	0.0	59	0.0	0.623	8.1	LOS A	11.0	77.0	0.86	1.06	0.86	25.2
2	T1	All MCs	851	0.2	851	0.2	* 0.623	17.9	LOS B	11.2	78.9	0.87	0.90	0.87	27.2
Approach			909	0.2	909	0.2	0.623	17.3	LOS B	11.2	78.9	0.87	0.91	0.87	27.0
North: Aikman Drive															
8	T1	All MCs	717	0.1	717	0.1	0.503	16.8	LOS B	8.6	60.2	0.83	0.71	0.83	32.7
9	R2	All MCs	278	6.1	278	6.1	* 0.631	28.4	LOS B	7.9	58.0	0.94	0.83	0.97	19.4
Approach			995	1.8	995	1.8	0.631	20.0	LOS B	8.6	60.2	0.86	0.74	0.87	28.0
West: Emu Bank															
10	L2	All MCs	441	3.1	441	3.1	0.551	17.4	LOS B	10.0	71.9	0.79	0.78	0.79	23.2
12	R2	All MCs	19	50.0	19	50.0	* 0.143	33.6	LOS C	0.6	5.7	0.95	0.69	0.95	21.4
Approach			460	5.0	460	5.0	0.551	18.1	LOS B	10.0	71.9	0.80	0.78	0.80	23.1
All Vehicles			2364	1.8	2364	1.8	0.631	18.6	LOS B	11.2	78.9	0.85	0.82	0.85	26.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [7 (3)] PostDev PM: AD-EB (Post Dev - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

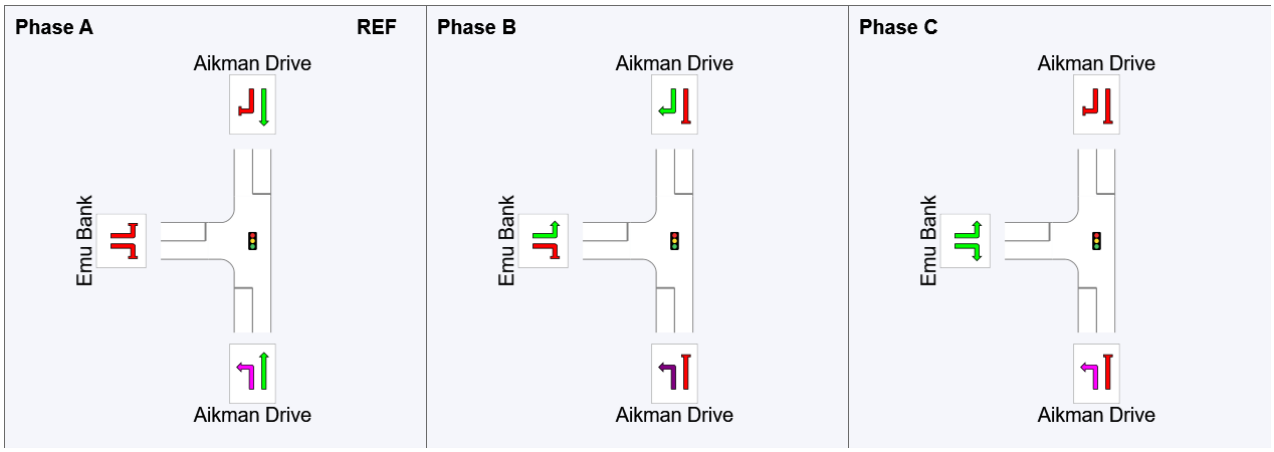
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

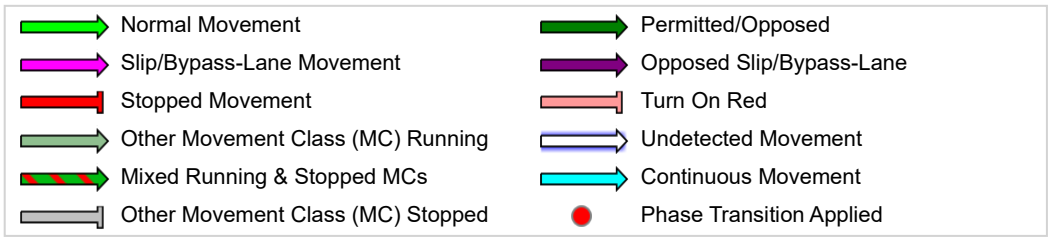
Phase	A	B	C
Phase Change Time (sec)	0.0	28.7	50.0
Green Time (sec)	22.7	15.3	6.0
Phase Time (sec)	28.7	21.3	12.0
Phase Split	46%	34%	19%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [8 (3)] PostDev PM: AD-LGC (Post Dev - 2040)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	69	0.0	69	0.0	0.037	4.8	LOS A	0.0	0.0	0.00	0.57	0.00	38.7
2	T1	All MCs	1222	1.3	1222	1.3	0.316	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1292	1.2	1292	1.2	0.316	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.2
North: Aikman Drive															
8	T1	All MCs	934	2.0	934	2.0	0.243	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	41	0.0	41	0.0	0.168	19.7	LOS B	0.5	3.2	0.79	0.92	0.80	32.6
Approach			975	1.9	975	1.9	0.243	0.9	NA	0.5	3.2	0.03	0.04	0.03	57.6
West: Lake Ginninderra College															
10	L2	All MCs	44	0.0	44	0.0	0.060	21.9	LOS B	0.2	1.7	0.53	0.43	0.53	38.2
12	R2	All MCs	62	0.0	62	0.0	2.303	1348.2	LOS F	24.6	172.4	1.00	3.33	5.40	1.2
Approach			106	0.0	106	0.0	2.303	796.6	LOS F	24.6	172.4	0.80	2.13	3.37	3.6
All Vehicles			2373	1.5	2373	1.5	2.303	36.2	NA	24.6	172.4	0.05	0.13	0.16	39.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix I:

Intersection Performance Results – Post-Development Conditions – Signalisation of Aikman Drive / Lake Ginninderra College Access

MOVEMENT SUMMARY

Site: [2 (3)] PostDev AM: AD-EB (Post Dev - 2040)
Network: [4] AM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 52.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	61	1.7	61	1.7	0.591	8.2	LOS A	5.0	35.4	0.94	1.07	0.94	24.8
2	T1	All MCs	424	2.0	424	2.0	* 0.591	21.1	LOS C	5.3	37.6	0.95	0.93	0.97	22.1
Approach			485	2.0	485	2.0	0.591	19.4	LOS B	5.3	37.6	0.95	0.95	0.96	22.6
North: Aikman Drive															
8	T1	All MCs	1075	0.8	1075	0.8	0.447	1.2	LOS A	3.5	24.8	0.17	0.15	0.17	56.5
9	R2	All MCs	358	4.7	358	4.7	* 0.628	22.5	LOS C	8.2	60.0	0.92	0.83	0.94	21.9
Approach			1433	1.8	1433	1.8	0.628	6.5	LOS A	8.2	60.0	0.36	0.32	0.36	42.1
West: Emu Bank															
10	L2	All MCs	163	9.0	163	9.0	* 0.628	28.2	LOS C	4.3	32.3	0.99	0.85	1.08	15.9
12	R2	All MCs	51	31.3	51	31.3	0.223	26.0	LOS C	1.2	10.8	0.92	0.72	0.92	24.7
Approach			214	14.3	214	14.3	0.628	27.7	LOS C	4.3	32.3	0.97	0.82	1.04	18.6
All Vehicles			2132	3.1	2132	3.1	0.628	11.6	LOS B	8.2	60.0	0.56	0.52	0.57	32.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [2 (3)] PostDev AM: AD-EB (Post Dev - 2040)
Network: [4] AM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 52.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

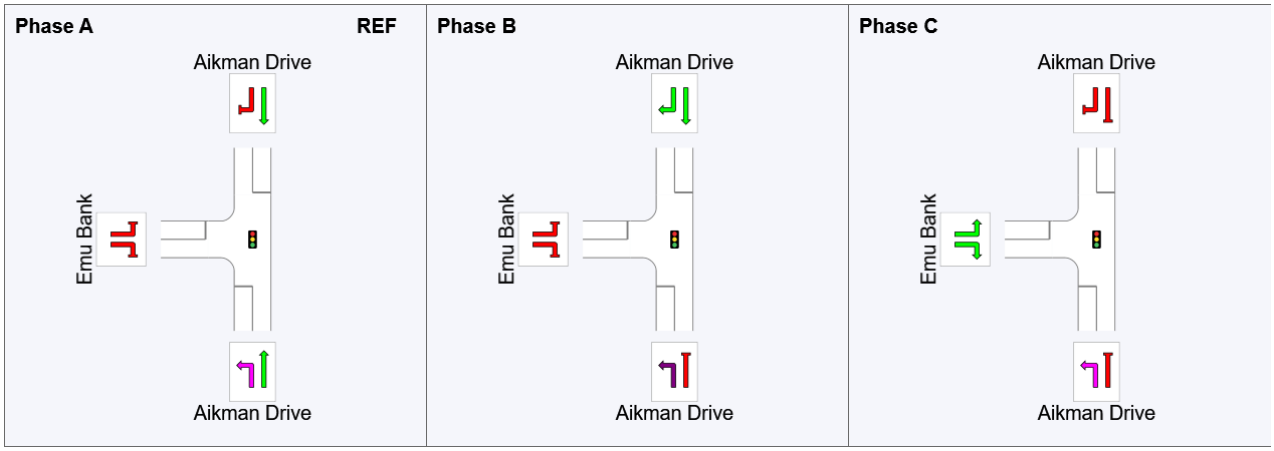
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A
Offset: 0 seconds (Program)

Phase Timing Summary

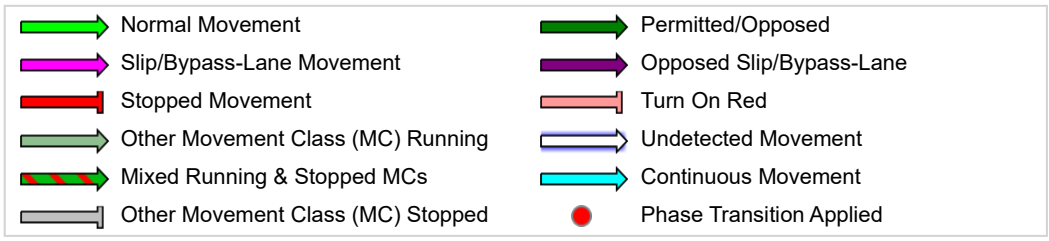
Phase	A	B	C
Phase Change Time (sec)	0.0	15.8	38.3
Green Time (sec)	9.8	16.5	7.7
Phase Time (sec)	15.8	22.5	13.7
Phase Split	30%	43%	26%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [3 (5)] PostDev AM: AD-LGC - SIGNALS (Post Dev - 2040)
Network: [4] AM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 52.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	84	0.0	84	0.0	0.084	6.3	LOS A	0.3	1.9	0.13	0.60	0.13	22.2
2	T1	All MCs	503	4.6	503	4.6	0.426	6.1	LOS A	3.2	23.0	0.43	0.35	0.43	51.9
Approach			587	3.9	587	3.9	0.426	6.1	LOS A	3.2	23.0	0.38	0.39	0.38	48.4
North: Aikman Drive															
8	T1	All MCs	1335	2.0	1335	2.0	* 0.532	5.3	LOS A	9.1	64.7	0.57	0.51	0.57	52.2
9	R2	All MCs	179	0.0	179	0.0	0.426	25.5	LOS C	4.1	28.5	0.90	0.79	0.90	30.4
Approach			1514	1.7	1514	1.7	0.532	7.7	LOS A	9.1	64.7	0.61	0.54	0.61	47.3
West: Lake Ginninderra College															
10	L2	All MCs	64	0.0	64	0.0	0.076	8.6	LOS A	0.9	6.4	0.59	0.45	0.59	35.5
12	R2	All MCs	98	0.0	98	0.0	* 0.457	25.1	LOS C	2.5	17.6	0.97	0.75	0.97	10.8
Approach			162	0.0	162	0.0	0.457	18.6	LOS B	2.5	17.6	0.82	0.63	0.82	22.3
All Vehicles			2263	2.2	2263	2.2	0.532	8.0	LOS A	9.1	64.7	0.57	0.51	0.57	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [3 (5)] PostDev AM: AD-LGC - SIGNALS (Post Dev - 2040)
Network: [4] AM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 52.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

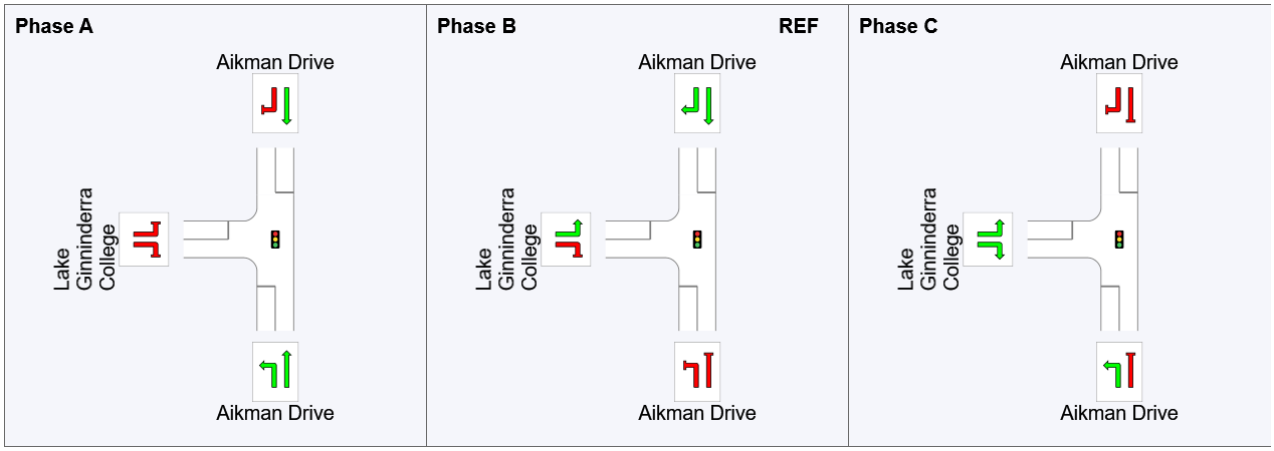
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase B
Offset: 16 seconds (Program)

Phase Timing Summary

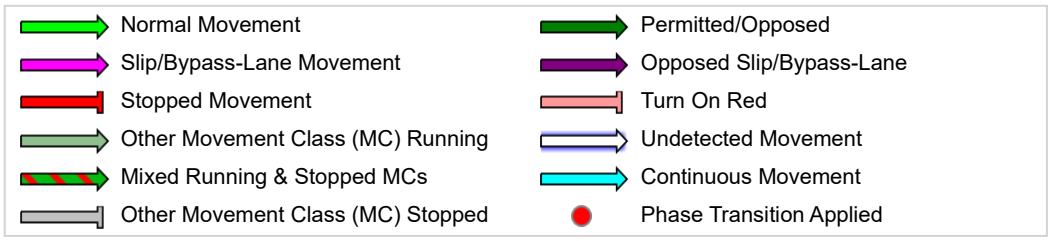
Phase	A	B	C
Phase Change Time (sec)	45.8	16.0	33.8
Green Time (sec)	16.2	11.8	6.0
Phase Time (sec)	22.2	17.8	12.0
Phase Split	43%	34%	23%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [7 (3)] PostDev PM: AD-EB (Post Dev - 2040)
Network: [3] PM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 62.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	59	0.0	59	0.0	0.781	12.7	LOS B	11.6	81.4	0.95	1.11	1.12	22.4
2	T1	All MCs	851	0.2	851	0.2	* 0.781	24.1	LOS C	15.7	110.3	0.95	0.99	1.10	21.1
Approach			909	0.2	909	0.2	0.781	23.4	LOS C	15.7	110.3	0.95	1.00	1.10	21.2
North: Aikman Drive															
8	T1	All MCs	717	0.1	717	0.1	0.537	14.9	LOS B	8.3	58.2	0.77	0.66	0.77	34.5
9	R2	All MCs	278	6.1	278	6.1	0.578	27.2	LOS C	7.6	56.3	0.93	0.82	0.93	19.8
Approach			995	1.8	995	1.8	0.578	18.3	LOS B	8.3	58.2	0.82	0.70	0.82	29.2
West: Emu Bank															
10	L2	All MCs	441	3.1	441	3.1	* 0.793	24.5	LOS C	13.6	97.5	0.91	0.95	1.09	17.2
12	R2	All MCs	19	50.0	19	50.0	0.143	33.6	LOS C	0.6	5.7	0.95	0.69	0.95	21.4
Approach			460	5.0	460	5.0	0.793	24.8	LOS C	13.6	97.5	0.91	0.94	1.08	17.5
All Vehicles			2364	1.8	2364	1.8	0.793	21.5	LOS C	15.7	110.3	0.89	0.86	0.98	23.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: [7 (3)] PostDev PM: AD-EB (Post Dev - 2040)
Network: [3] PM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Emu Bank
Existing Signalised T-Intersection
Site Category: Existing Conditions - PM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 62.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

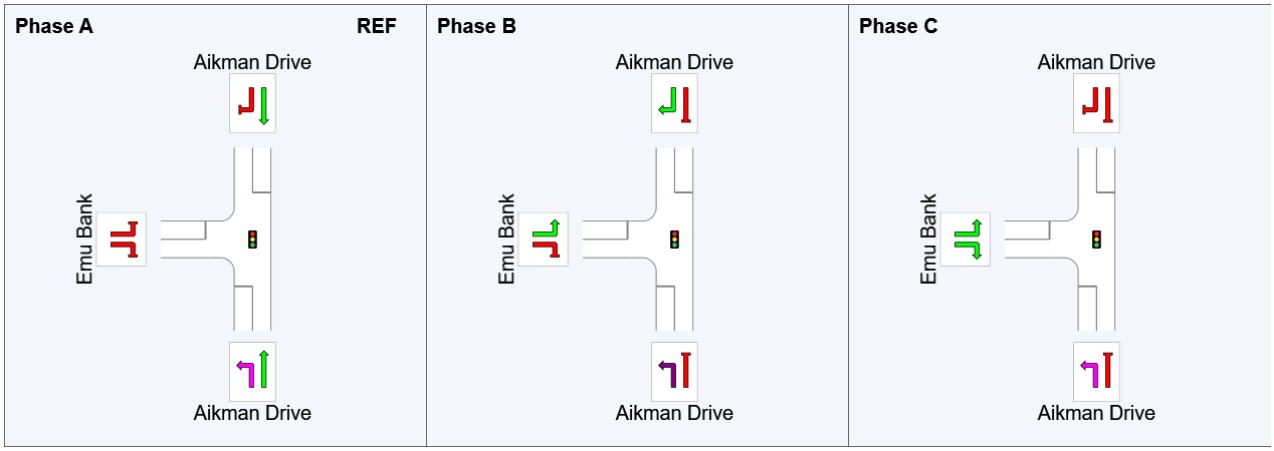
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS_Three-Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A
Offset: 0 seconds (Program)

Phase Timing Summary

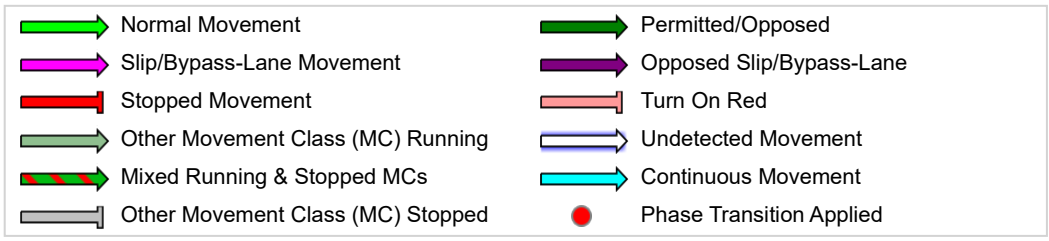
Phase	A	B	C
Phase Change Time (sec)	0.0	27.2	50.0
Green Time (sec)	21.2	16.8	6.0
Phase Time (sec)	27.2	22.8	12.0
Phase Split	44%	37%	19%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: [3 (6)] PostDev PM: AD-LGC - SIGNALS (Post Dev - 2040)
Network: [3] PM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 62.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Aikman Drive															
1	L2	All MCs	69	0.0	69	0.0	0.053	14.0	LOS B	0.9	6.5	0.47	0.60	0.47	20.6
2	T1	All MCs	1222	1.3	1222	1.3	* 0.628	10.3	LOS B	13.6	96.2	0.59	0.53	0.59	49.8
Approach			1292	1.2	1292	1.2	0.628	10.5	LOS B	13.6	96.2	0.58	0.53	0.58	46.0
North: Aikman Drive															
8	T1	All MCs	934	2.0	934	2.0	0.342	3.7	LOS A	5.4	38.4	0.41	0.36	0.41	54.2
9	R2	All MCs	41	0.0	41	0.0	* 0.228	35.8	LOS D	1.2	8.6	0.96	0.73	0.96	27.1
Approach			975	1.9	975	1.9	0.342	5.0	LOS A	5.4	38.4	0.43	0.38	0.43	51.6
West: Lake Ginninderra College															
10	L2	All MCs	44	0.0	44	0.0	0.082	17.4	LOS B	1.0	6.9	0.76	0.57	0.76	31.6
12	R2	All MCs	62	0.0	62	0.0	* 0.346	30.4	LOS C	1.9	13.3	0.97	0.73	0.97	9.8
Approach			106	0.0	106	0.0	0.346	25.0	LOS C	1.9	13.3	0.88	0.66	0.88	20.6
All Vehicles			2373	1.5	2373	1.5	0.628	8.9	LOS A	13.6	96.2	0.54	0.47	0.54	46.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QUANTUM TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 18 June 2025 2:36:25 PM
Project: Z:\QUANTUM TRAFFIC\6-PROJECTS\ACTIVE\2025\Block 42 Section 65, Belconnen (25-0072)\5-Other Info\SIDRA \25-0072_20250603.sipx

PHASING SUMMARY

Site: [3 (6)] PostDev PM: AD-LGC - SIGNALS (Post Dev - 2040)
Network: [3] PM Peak (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Aikman Drive / Lake Ginninderra College
Existing Priority-Controlled T-Intersection
Site Category: Existing Conditions - AM Peak Hour
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 62.0 seconds (Network User-Given Cycle Time)
Network Scenario: 1 | Local Volumes **Site Scenario: 1 | Local Volumes**

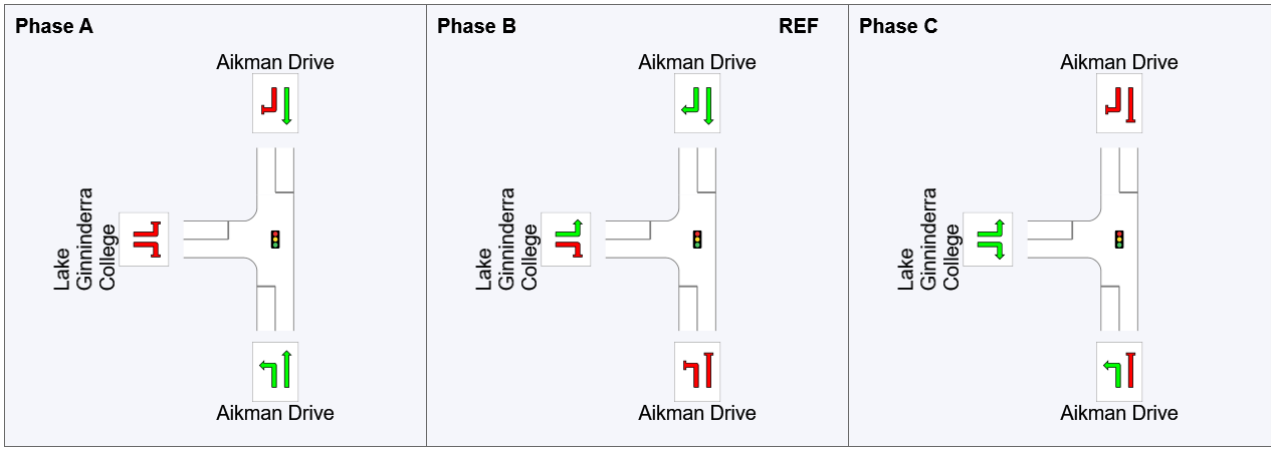
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase B
Offset: 45 seconds (Program)

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	7.0	45.0	57.0
Green Time (sec)	32.0	6.0	6.0
Phase Time (sec)	38.0	12.0	12.0
Phase Split	61%	19%	19%
Phase Frequency (%)	100.0	100.0	100.0

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

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase