Forestry Place, Yarralumla

Transport Impact Assessment

Prepared for: The Shepherd Foundation as beneficiary for The Trustee for the Gunyar ACT Properties Trust

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Revision

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A	17/03/2021	Connor Hoang Ingrid Bissaker	John Kiriakidis	John Kiriakidis
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G	12/01/2023	Ingrid Bissaker	John Kiriakidis	John Kiriakidis
H	15/09/2023	Bernadette Chaun	Ingrid Bissaker	John Kiriakidis
I	8/11/2023	Bernadette Chaun	Ingrid Bissaker	John Kiriakidis

_____

John Kiriakidis

For and on behalf of

Stantec Australia Pty Ltd

L9, The Forum, 203 Pacific Highway, St Leonards NSW 2065

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Limitations

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CONTENTS

TRANSPORT IMPACT ASSESSMENT

Forestry Place, Yarralumla

Appendices

1. Introduction

1.1 Background

Stantec has been engaged by Oakstand on behalf of The Shepherd Foundation as beneficiary for The Trustee for the Gunyar ACT Properties Trust to assist with development planning in association with land located at Block 7, Section 4, Yarralumla, formerly the Yarralumla CSIRO site. Hereon and as part of this masterplan proposal, the site is referred to as Forestry Place.

A Proposed National Capital Plan Amendment (viz. masterplan) is being submitted to the National Capital Authority, and indicatively includes a range of land uses including residential, aged care and commercial (office) and hotel land uses.

In preparing this study, Stantec participated in a range of virtual and direct public consultation meetings with the broader community to ensure local traffic and transport issues were considered and identified. Detailed site inspections were also completed in November 2020 to validate and document the operation of the transport network within and around the Yarralumla area. These findings have been relied upon to inform the depth and breadth of the assessment contained in this study as well as the methodology relied upon to evaluate the transport impact of the proposal.

The following traffic and transport impact assessment study sets out a review of the transport impacts associated with the masterplan.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the Proposed National Capital Plan Amendment (or masterplan), including consideration of the following:

- existing traffic and parking conditions surrounding the site as well as current projects in the area
- adequacy of existing public transport services
- suitability of the proposed parking in terms of supply (quantum) and layout
- service vehicle requirements
- pedestrian and bicycle requirements
- the traffic generating characteristics of the proposed development
- suitability of the proposed access arrangements for the site
- the transport impact of the development proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- National Capital Plan
- Territory Plan
- Parking and Vehicular Access General Code, ACT Planning & Land Authority, effective 17 June 2022.
- Access and Mobility General Code, ACT Planning & Land Authority, effective 4 October 2013.
- End of Trip Facilities General Code, ACT Planning & Land Authority, effective 30 November 2022.
- Guidelines for Transport Impact Assessment, version 3.1, Transport Canberra and City Services, 2020.
- Estate Development Code, ACT Government, effective 28 August 2020.
- Yarralumla Precinct Map and Code, ACT Government, effective 20 October 2023.
- Guidelines for SIDRA Analysis Draft version 1.0, Transport Canberra and City Services.
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/ NZS 2890.1:2004.
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018.
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/ NZS 2890.6:2009.
- Traffic and car parking surveys undertaken by Matrix and Geocounts as referenced in the context of this report.

2. Existing Conditions

2.1 Site Context and Location

The subject site is identifiable as Block 7, Section 4 located at Wilf Crane Crescent, Yarralumla, formerly known as the CSIRO site and now identifiable as Forestry Place (https://www.forestryplace.com.au/). The site of approximately 11 hectares has a frontage of approximately 550 metres to Wilf Crane Crescent to the east, 300 metres to Banks Street to the east and approximately 390 metres to Bentham Street to the south.

The site is located in a designated area and is occupied by CSIRO under a crown lease which is operable until the year 2092. The existing lease agreement for the site executed on the 20 June 2002 for a 90year period, permits a maximum gross floor area of 17,400sqm of floor space for scientific research purposes. The current buildings on the site total approximately 9,800sqm.

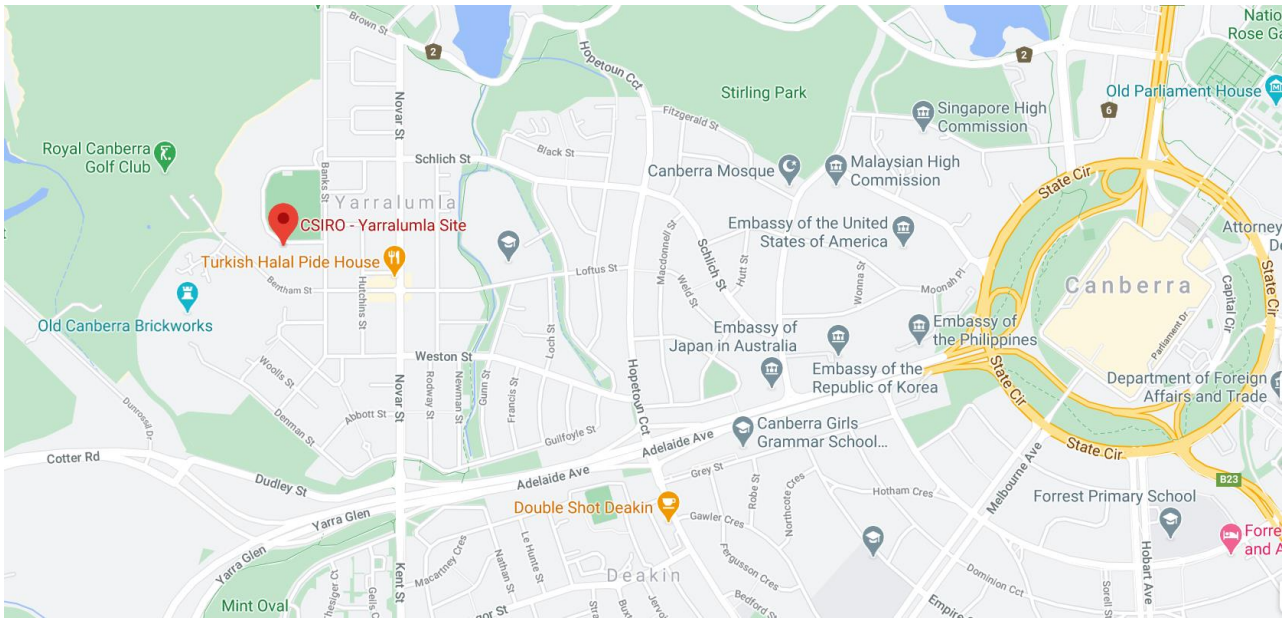
The surrounding properties predominantly include recreational and low-density residential uses, with the Royal Canberra Golf Club located to the sites west and the former Brickworks site to the south-west.

The site extents and location as well as the sites immediate surrounds is provided at Figure 2.1.

Figure 2.1 – Subject Site Boundaries and Surroundings

The location of the site relative to the broader transport network context is provided at Figure 2.2 on the following page.

Figure 2.2 – Site location relative to broader transport network and CBD



2.2 Road Network

2.2.1 Road Hierarchy

The classification of roads in ACT is based on a formal road hierarchy, relating to the function of the road and its ability to service two purposes – the movement of traffic and access to property.

Primarily, there are two types of roads defined by the ACT government – trunk roads (arterial roads) and local roads (major collector roads, minor collector roads and access streets).

Each road type serves a different function and is designed accordingly. As such, a road hierarchy is essential to providing a safe and efficient road network.

The functional road classifications are as follows[1]:

Arterial Roads – Strategically significant roads that cater for high vehicle volumes travelling over large distances. They do not interact with the places that the road passes through.

Sub-Arterial Roads –Main roads between strategic centres that provide safe, reliable and efficient movement.

Major Collector Roads –Part of urban neighbourhoods. These roads collect and distribute traffic between the primary (arterial and sub-arterial) road network and the user destinations.

Minor Collector Roads – Distribute traffic from Access Streets to Major Collector or Arterial roads. A reasonable level of residential amenity and safety is maintained by restricting vehicle speeds by means of street alignment, intersection design or by speed control measures.

Access Streets – Used where the residential environment is dominant, traffic is subservient, speed and volumes are low and pedestrian and cycle movements are facilitated. Access Streets are categorised as Access Street A or B according to traffic volumes and context. Access Street A generally collects traffic from Rear Lanes and connects to other Access or Collector Roads; they do not normally accommodate traffic from other streets.

A characteristics summary, including the identified hierarchical function of individual key links on the surrounding road network is provided at Table 2.1 on the following page.

[1] Section 1.1.6.2 Street Planning and Design Municipal Infrastructure Standards 01, TCCS, April 2019

Table 2.1 – Road Description & Summary – Key Links

Road Name	Class	Description
Banks Street	Minor Collector [1]	• North-south orientated. • Single lane two-way divided street. • Imposed speed limit of 50 kilometres per hour. • Approximately 8 to 9-metre-wide carriageway. • Kerbside parking is not permitted along the street in vicinity of the site.
Schlich Street	Minor Collector Road	• Generally, east-west orientated connecting to Banks Street and Novar St, and to Empire Circuit further east. • Single lane, two-way divided road. • Imposed speed limit of 50 kilometres per hour. • Approximately 10-metre-wide carriageway. • Unrestricted kerbside parking available along the road.
Wilf Crane Crescent	Access Street	• Currently provides access to CSIRO buildings and parking facilities, circulating around Forestry Oval. • Connects to Banks Street via two points. • Imposed speed limit of 40 kilometres per hour. • Approximately 5-metre-wide carriageway. • Kerbside parking provided along some sections of the road.
Bentham Street	Minor Collector [2]	• Provides access from Banks Street to local residences and the Royal Canberra Golf Club. • Orientated in a general east-west direction. • Single lane, two-way divided road. • Approximately 8 to 9-metre-wide carriageway, narrowing on approach to the Golf Club. • Imposed speed limit of 50 kilometres per hour. • Kerbside parking is permitted along eastern sections of the road.
Novar Street	Major Collector Road [3]	• Orientated in north-south direction. • Runs parallel to Banks Street, providing the main access to Adelaide Avenue and other arterial roads within the local area. • Single lane, two-way divided road. • Approximately 10-metre-wide carriageway within a 29.5 road reserve. • Imposed speed limit of 60 kilometres per hour.

[1] Elevated from an Access Street to a Minor Collector having regard to the passive use of the site's frontage for car parking and the absence of regular staggered car parking along this road length.
[2] Elevated from an Access Street to a Minor Collector to reflect the operational function of the road as a mixed-use function which serves commercial development as well as residential access needs.
[3] As defined in Appendix A Table A.2, ACT Trunk Road Infrastructure Standard No. 3 Traffic Management, Supplement to Austroads Guide: Traffic Management, Edition No.1 Revision No.1, Territory and Municipal Services, October 2012

2.3 Traffic Volumes

2.3.1 Traffic Demand 2020

On Thursday, 3 December and Saturday, 5 December 2020, Stantec commissioned traffic movement counts at key intersections illustrated in Figure 2.3, for the following periods:

- Thursday 7:00am to 10:00am and 4:00pm to 7:00pm
- Saturday 10:30am to 1:30pm.

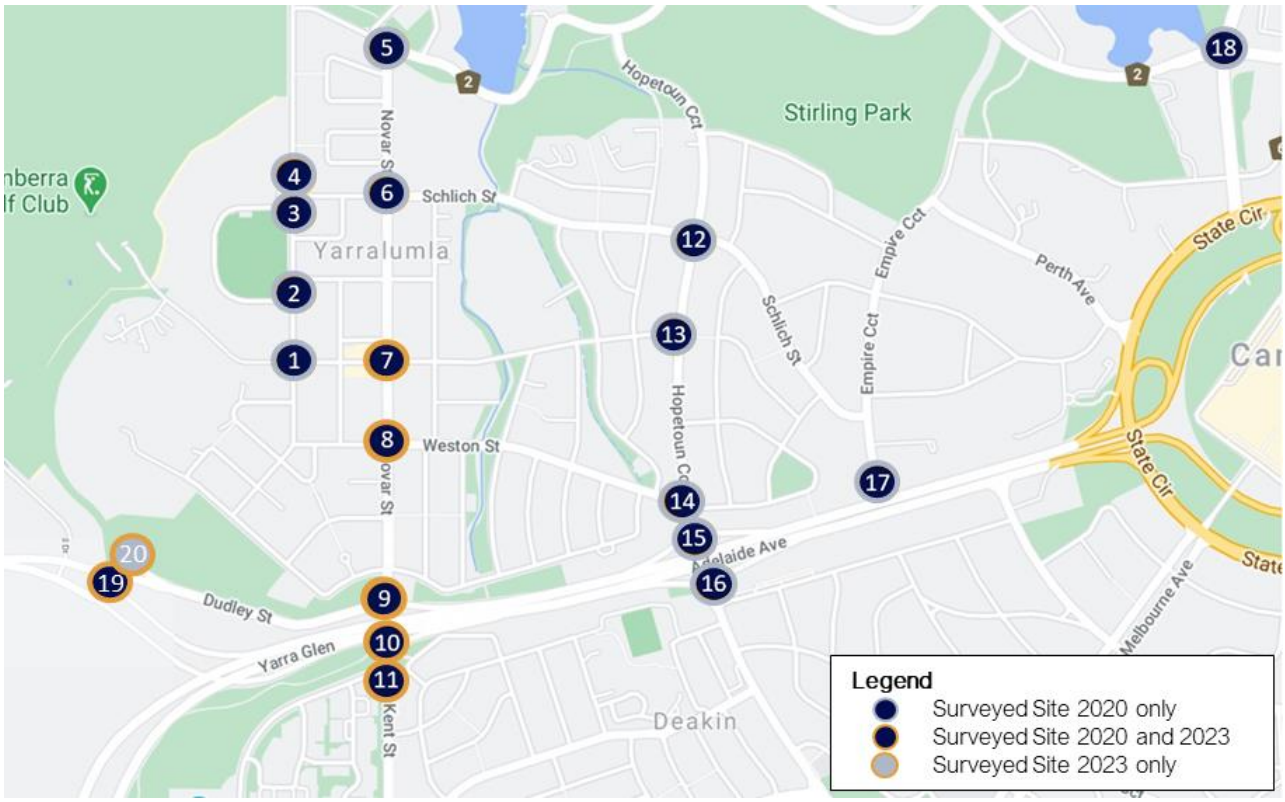
These periods were selected based on a review of historic data collected for the surrounding area both directly (Stantec surveys) and indirectly from data collected by nearby residents as well as data collected in association with planning for the former Brickworks re-development. This data review indicated that at specific times of the year, weekend volumes can equal and, in some instances, exceed typical weekday demands. Accordingly, a cautious approach was selected which involved data collection over a weekday and weekend day.

Furthermore, given global events related to COVID-19, traffic conditions during early to mid-2020 were not typical of traditional circumstances and not considered representative of peak repeatable conditions. These changes in travel behaviour can be seen diagrammatically at Section 3.1 of this report. Consultation with TCCS in October 2020 indicated that generally traffic was back to 95 per cent of pre-COVID levels, with volumes along Cotter Road down 3.1 per cent compared to early March 2020 (pre-COVID). Further review of SCATS traffic count data along Cotter Road in November

2020 indicates additional growth in peak period traffic demand, with traffic conditions during the survey period considered representative of typical activity periods prior to the influence of COVID.

The intersections surveyed and shown in Figure 2.3 were selected on a cautionary basis, representing those which are likely to be subject to greatest change (i.e. subject to development traffic) as part of the site's re-development. It is noted that the site was vacant on the day of the surveys.

Figure 2.3 – Traffic Survey Locations



Base map source: Google Maps, accessed February 2021

The road network peak hours have been determined for the network as-a-whole by aggregating traffic demands across all 19 intersections. This approach ensures that the analysis identifies the precinct wide peak consistent and representative with a *'fit-for-purpose'* analytic evaluation.

The peak hour for traffic demand for the surveyed network as assessed from the traffic counts are as follows:

- Weekday:
  - AM peak: 8:15am to 9:15am
  - PM peak: 5:00pm to 6:00pm
- Weekend:
  - Midday peak: 11:30am to 12:30pm.

2.3.2 Traffic Demand 2023

To date, the 2020 traffic surveys have formed the basis for analysis of traffic impacts of the proposed masterplan, with this Transport Impact Assessment being progressively re-submitted to various stakeholders for review from 2021 through to January 2023.

Following preparation of traffic modelling for the project based on the 2020 counts, road works have been completed at the Adelaide Avenue interchange with Kent Street/ Novar Street in May 2023. Further details of these road works are detailed in Section 2.8.3 of this report. To understand the impact of these road works to the operation of the road network, Stantec commissioned updated traffic movement counts for the same time periods on Thursday 20 July and Saturday 22 July 2023. The intersections surveyed included intersections 8 to 11 and 19, as shown at Figure 2.3. In addition, the future Canberra Brickworks Precinct roundabout access with Dudley Street was also surveyed (identified as intersection 20 at Figure 2.3).

The peak hour for traffic demand for the surveyed network as assessed from the 2023 traffic counts are as follows:

- Weekday:
  - AM peak: 8:15am to 9:15am
  - PM peak: 4:45pm to 5:45pm
- Weekend:
  - Midday peak: 12:15pm to 1:15pm.

Table 2.2 and Table 2.3 have been prepared to compare changes to traffic volumes between 2020 and 2023 for the relevant study intersections.

Table 2.2 – Weekday Intersection Volume Comparison (2020 to 2023)

Intersection	Peak Period	Intersection Traffic Volumes		
		2020	2023	Change (%)
Dudley Street/ Cotter Road	8:15am to 9:15am	2,830	2,683	-5.2%
	4:45pm to 5:45pm [1]	1612	1348	-16.4%
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue entry ramp (EB)	8:15am to 9:15am	1861	1,665	-10.5%
	4:45pm to 5:45pm [1]	1950	1508	-22.7%
Kent Street/ Adelaide Avenue exit ramp (WB)	8:15am to 9:15am	1890	1697	-10.2%
	4:45pm to 5:45pm [1]	1880	1438	-23.5%
Kent Street/ Denison Street	8:15am to 9:15am	1811	1,666	-8.0%
	4:45pm to 5:45pm [1]	1816	1402	-22.8%

[1] The common peak hour for the selected comparison intersections in 2020 corresponds to 4:45pm to 5:45pm, rather than 5:00pm to 6:00pm as reported for the broader network of intersections in Section 2.3.1. As such, traffic volumes during 4:45ppm to 5:45pm have been compared.

Table 2.3 – Saturday Intersection Volume Comparison (2020 to 2023)

Intersection	Peak Period	Intersection Traffic Volumes		
		2020	2023	Change (%)
Dudley Street/ Cotter Road	11:30am to 12:30pm	1,252	1,004	-19.8%
	12:15pm to 1:15pm	1,121	1034	-7.8%
	Peak Hour Comparison [1]	1,252	1034	-17.4%
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue entry ramp (EB)	11:30am to 12:30pm	1408	954	-32.2%
	12:15pm to 1:15pm	1233	1017	-17.5%
	Peak Hour Comparison [1]	1408	1017	-27.8%
Kent Street/ Adelaide Avenue exit ramp (WB)	11:30am to 12:30pm	1024	823	-19.6%
	12:15pm to 1:15pm	863	862	-0.1%
	Peak Hour Comparison [1]	1024	862	-15.8%
Kent Street/ Denison Street	11:30am to 12:30pm	929	777	-16.4%
	12:15pm to 1:15pm	809	814	0.6%
	Peak Hour Comparison [1]	929	814	-12.4%

[1] The common peak hours are different between 2020 (11:30am to 12:30pm) and 2023 (12:15pm to 1:15pm), however have been compared to understand the difference between the peak traffic traveling through the road network during any one hour on a Saturday midday period.

Table 2.2 and Table 2.3 indicate that generally, traffic volumes have reduced both along the Adelaide Avenue interchange with Novar Street and Kent Street, as well as at the Dudley Street / Cotter Road intersection during the weekday and Saturday peak periods. The reduced peak hour traffic loads are likely and mostly (but not entirely) due to sustained behaviour changes of commuters from residual effects from the pandemic, where a five-day working week within the office (and associated travel to/ from said office) is no longer the traditional work format.

To validate the reliability of updated traffic counts, historical SCATS traffic count data for the Cotter Road/ Dudley Street signalised intersection on Thursday 20 July and Saturday 22 July 2023 has been obtained from TCCS. The comparison found traffic count data and SCATS traffic volumes are effectively equivalent, with a differential of between 0 to 1 per cent, or up to 11 vehicles, during weekday AM, PM and Saturday peak periods.

2.3.3 Summary of Traffic Demands

For the purpose of traffic modelling, the new 2023 traffic volumes have been used for existing conditions for the applicable intersections. For the remaining intersections that were not re-surveyed, given traffic volumes have reduced between 2020 and 2023, a conservative approach would be to assume there has been no change to traffic volumes between 2020 and 2023, rather than apply a reduction to these volumes.

The weekday AM and PM and Saturday midday peak hour traffic flows for the key intersections are summarised at Appendix A. Review of the 2020 data indicates that weekend volumes along Novar Street and Banks Street north of Dudley Street exceed typical weekday demand, assumed to be associated with activity to and from the recreational areas at the northern edge of Yarralumla, whereas weekend volumes along Novar Street south of Dudley Street in 2020 and 2023 are lower than typical weekday demand.

2.4 Intersection Operation

On a review of the surveyed intersection data, the operation of the following key intersections identified at Figure 2.3 and within the study area have been assessed using SIDRA Intersection modelling software, which is universally applied across Australasia as an appropriate analytic modelling tool:

1. Banks Street/ Bentham Street
2. Banks Street/ Wilf Crane Crescent
7. Bentham Street/ Novar Street
8. Novar Street/ Weston Street
9. Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue entry ramp (eastbound)
10. Kent Street/ Adelaide Avenue exit ramp (westbound)
11. Kent Street/ Denison Street
19. Dudley Street/ Cotter Road (eastbound)
20. Dudley Street/ Canberra Brickworks Precinct roundabout.

Intersections 8 to 11, 19 and 20 as identified at Figure 2.3, comprising the Adelaide Avenue interchange and adjoining Dudley Street intersections and Novar Street/ Weston Street intersection whose traffic volumes were collected in 2023, have been modelled in SIDRA Intersection using the network function given their close proximity.

SIDRA INTERSECTION[2] is a modelling software package which calculates intersection performance. The commonly used measure of intersection performance, as defined by Transport for NSW, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.4 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

Table 2.4: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but crash study required
D	43 to 56	Near capacity	Near capacity, crash study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Another commonly used measure of intersection performance is referred to as the *Degree of Saturation (DOS)*. The DOS represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection. For roundabout intersections, a DOS of around 0.95 has been typically considered the practical capacity, beyond which queues and

[2] Program used under license from Akcelik & Associates Pty Ltd.

delays increase disproportionately[3]. For other unsignalised intersections, the practical capacity is typically considered to be a DOS of 0.90.

Historical SCATS phasing data for each signalised intersection on Thursday 20 July and Saturday 22 July 2023 has been obtained from TCCS to assist with calibrating and validating the traffic model and to understand offset and link plan details. The existing condition models are consistent with recorded and observed queue lengths and SCATS phasing data.

Table 2.5 presents a summary of the existing operation of the intersection, with full results presented at Appendix B of this report.

Table 2.5: Overall Existing Operating Conditions – December 2020 / July 2023 [1]

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	Average/ 95th Percentile Queue (m)	Level of Service (LOS)
Banks Street/ Wilf Crane Crescent	AM	0.02	5	1	A
	PM	0.02	5	0	A
	Sat	0.05	5	0	A
Banks Street/ Bentham Street	AM	0.02	5	1	A
	PM	0.05	5	1	A
	Sat	0.04	5	1	A
Bentham Street/ Novar Street	AM	0.13	12	5	A
	PM	0.14	11	5	A
	Sat	0.06	12	2	A
Weston Street/ Novar Street [2]	AM	0.14	11	2	A
	PM	0.18	10	2	A
	Sat	0.05	11	1	A
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue entry ramp (EB) [2]	AM	0.94	41	98	C
	PM	0.69	19	46	B
	Sat	0.67	22	25	B
Kent Street/ Adelaide Avenue exit ramp (WB) [2]	AM	0.87	17	69	B
	PM	0.32	8	33	A
	Sat	0.23	9	15	A
Kent Street/ Denison Street [2]	AM	0.59	12	45	A
	PM	0.65	13	50	A
	Sat	0.27	10	16	A
Dudley Street/ Cotter Road (EB) [2]	AM	0.90	16	270	B
	PM	0.75	15	58	B
	Sat	0.51	11	29	A
Dudley Street/ CBP Access [2]	AM	0.01	14	0	A
	PM	0.01	10	0	A
	Sat	0.01	10	0	A

[1] Results correspond to the overall results per approach
[2] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

[3] SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

		Intersection Degree of Saturation (X)		
		Signals	Roundabouts	Unsignalised
A	Excellent	<=0.60	<=0.60	<=0.60
B	Very Good	0.60-0.70	0.60-0.70	0.60-0.70
C	Good	0.70-0.90	0.70-0.85	0.70-0.80
D	Acceptable	0.90-0.95	0.85-0.95	0.80-0.90
E	Poor	0.95-1.00	0.95-1.00	0.90-1.00
F	Very Poor	>=1.0	>=1.0	>=1.0

Analysis set out at Table 2.5 indicates that for the most part, peak operating conditions on the evaluated transport network are operating well within acceptable limits.

Previous traffic analysis completed for the Adelaide Avenue Interchange based on 2020 traffic data and the unsignalised intersection arrangement indicated the intersection of Dudley Street, Novar Street and Adelaide Avenue entry ramp was the most congested intersection on the analysed network during the AM peak period, with demands nearing capacity and queues extending on Dudley Street to Cotter Road. The updated analysis completed based using 2023 traffic data and a signalised arrangement at the interchange indicates the intersection operation has improved since the infrastructure upgrade works, with the intersections operating within acceptable limits during the critical AM peak period.

2.5 Public Transport

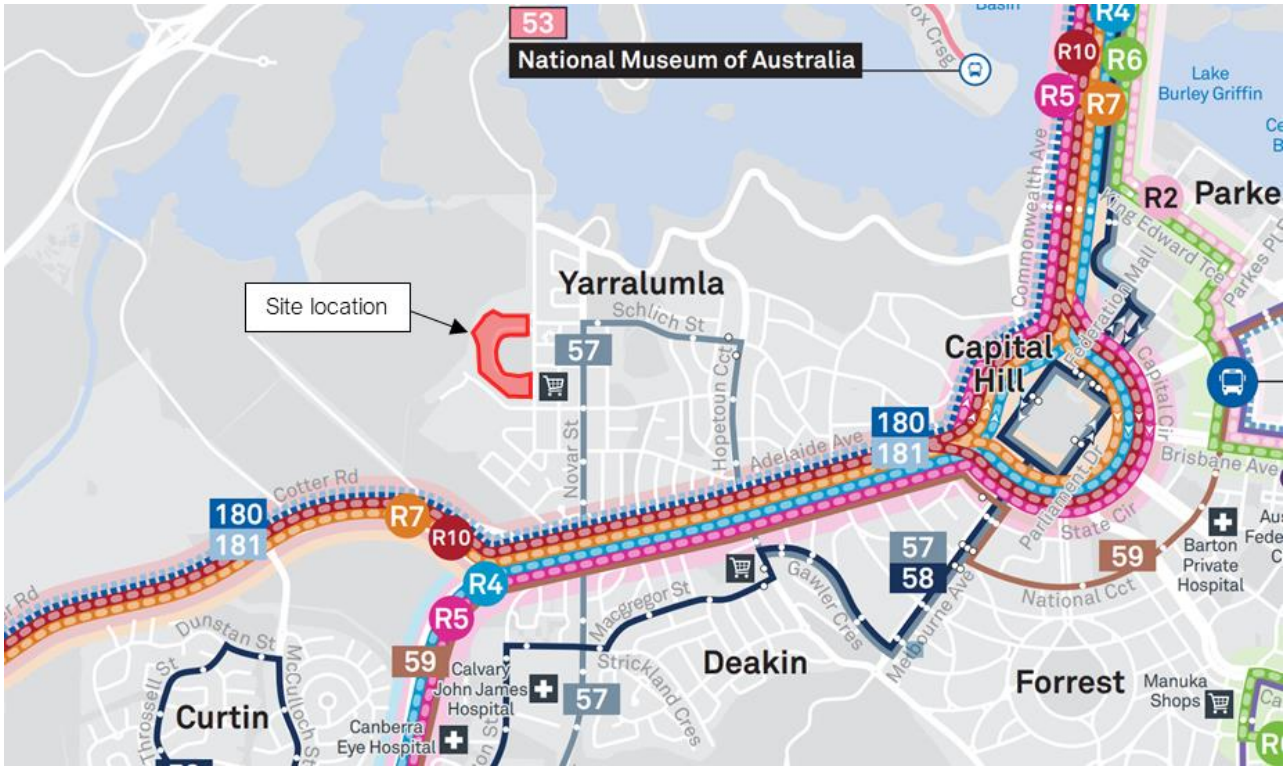
There are numerous bus routes available within the Canberra City Centre which extend through a range of nearby suburbs. A single route currently services Yarralumla (route 57), connecting the City interchange with the Woden interchange. A review of the existing public transport available near the site is summarised at Table 2.6 and shown indicatively at Figure 2.4, both on the following page.

A review of future public transport available near the site (Light Rail along Adelaide Avenue) is discussed at Section 3.3.2 and 6.

Table 2.6 – Public Transport Provision

Service	Route Number	Route Description	Location of stop	Distance to nearest stop	Frequency om/off-peak
Bus	57	City interchange to Woden Interchange	Novar Street	400m	30 mins / 60 mins

Figure 2.4 – Surrounding Public Transport Network



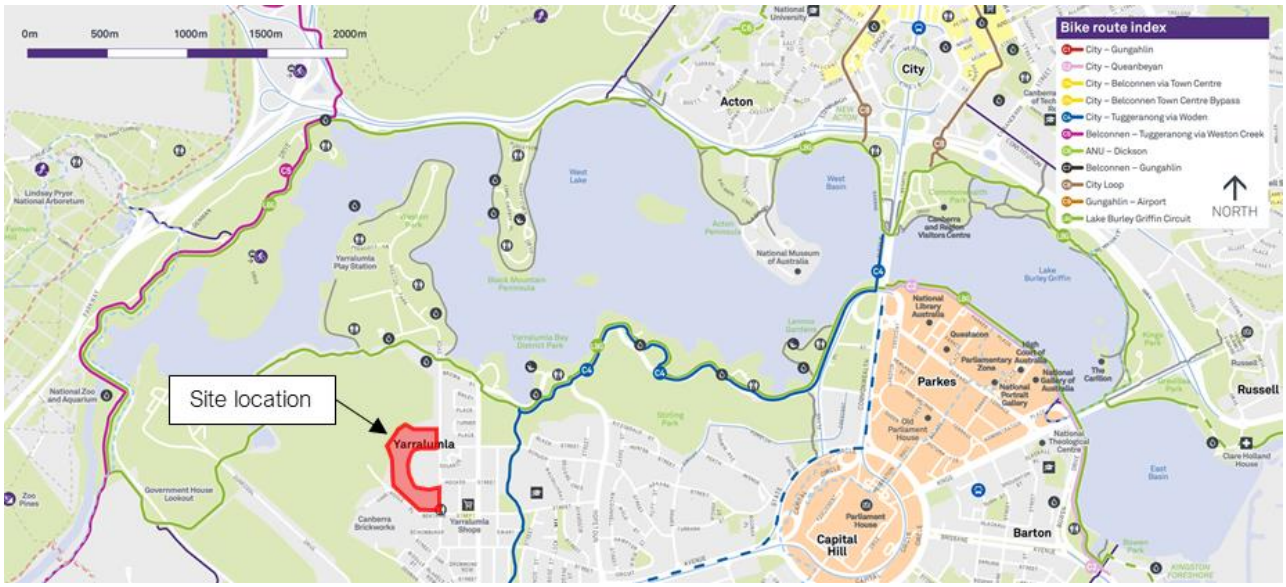
Source: Weekday All Services Map effective 30 January 2023, Transport Canberra, accessed September 2023 (https://www.transport.act.gov.au)

2.6 Walking and Cycling Infrastructure

There is a general absence of footpaths in the local area, with only a single footpath located on the opposite side of Banks Street, and no formal crossing points in the vicinity of the site. The site is well serviced by surrounding cycling infrastructure, with bicycle trails located along the Molonglo River and within the nearby residential area.

The surrounding existing cycling infrastructure is shown at Figure 2.5 on the following page. Proposed changes to the bicycle and pedestrian network are discussed in Section 4.2 and 6.

Figure 2.5 – Surrounding Cycling Network



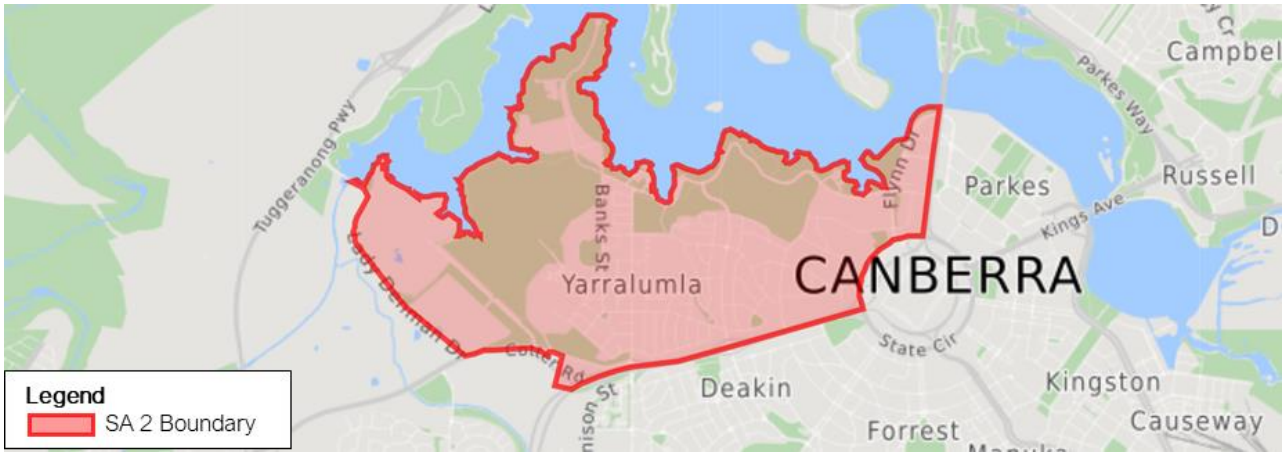
Source: Lake Burley Griffin Guide, Transport Canberra, accessed September 2023 (https://www.transport.act.gov.au)

2.7 Existing Travel Behaviour

Journey to work data has been sourced from the Australian Bureau of Statistics (ABS) 2016 census and provides an idea of existing travel patterns from the local area. Canberra was subject to COVID lockdowns the day after census night. As such, 2021 census data could not be considered typical and hence 2016 data has been referenced. Figure 2.7 details the catchment of census data analysed which corresponds to the Statistical Area (SA) 2 – Yarralumla.

Table 2.7, Figure 2.7 and Figure 2.8 provide a summary of the existing journey to work transport modes relied upon by residents in the surrounding Yarralumla area. The results indicates that the majority of commuters travel by private car (82 per cent driver and seven per cent passenger), with six per cent travelling by bus. Three per cent of commuters cycled to work, with only one per cent walking to work. The data also indicates that the majority of residents travel by private car (75 per cent driver and nine per cent passenger), with five per cent travelling by bus. Four per cent of residents walked to work and four per cent cycled to work.

Figure 2.6 – Boundary of Yarralumla SA2



Source: https://itt.abs.gov.au/ accessed September 2023

Table 2.7 – Existing travel mode share to / from Yarralumla (2016 Census [1])

Travel Mode	Mode Split	
	Commuters (travelling to the precinct)	Residents (travelling from the precinct)
Vehicle (as driver)	82%	75%
Vehicle (as passenger)	7%	9%
Motorcycle	1%	1%
Bus	6%	5%
Walking	1%	4%
Cycling	3%	4%
Other	0%	2%

[1] Canberra was subject to COVID lockdowns the day after census night. As such, 2021 census data could not be considered typical and hence 2016 data has been referenced.

Figure 2.7 – Existing travel mode share to Yarralumla (employees) – 2016 Census

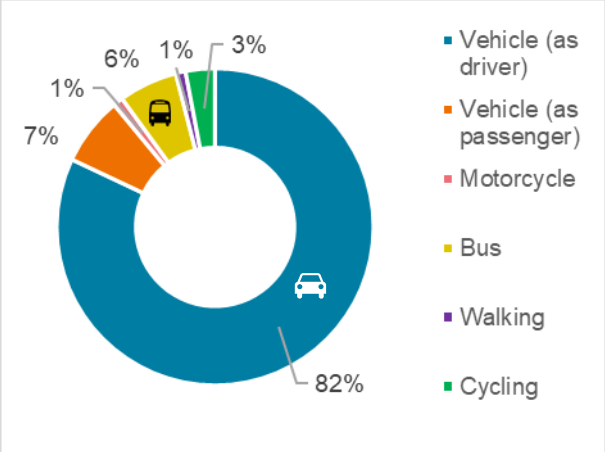
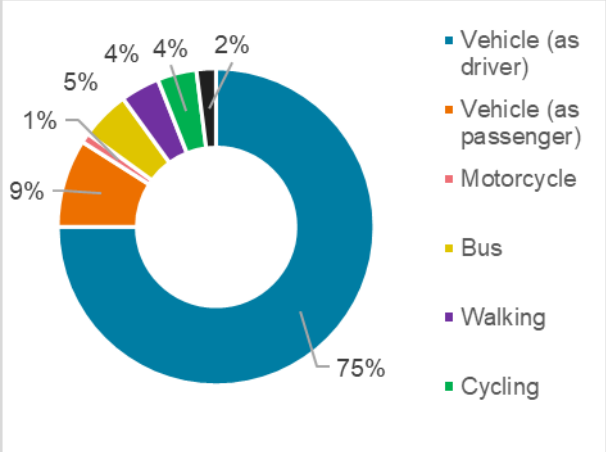


Figure 2.8 – Existing travel mode share from Yarralumla (residents) – 2016 Census



2.7.1 Car Ownership Rates

2016 ABS census data collected for apartments within Yarralumla identified the following car ownership rates for different sized dwellings:

Table 2.8 – 2016 Census Data – Resident Car Ownership Rates Yarralumla

Description	Semi-detached, row or terrace house, townhouse etc with two or more storeys	Flat, unit or apartment in a one or more storey block
One-bedroom		1.00
Two-bedroom	1.28	1.3
Three-bedroom	1.69	1.57
Average	**1.69**	**1.23**

2.8 Significant Approved Land Use & Infrastructure Projects in the Area

2.8.1 Overview

Investigations and research reveal that the Yarralumla area will be subject to meaningful change in the foreseeable future both as it relates to growth in and use and changes in the existing transport system. The following report sub-sections outline those projects which have been identified and considers their relevance and impact on the proposed re-development of Forestry Place.

2.8.2 Canberra Brickworks Development

The Canberra Brickworks Precinct (CBP) is considered a significant urban renewal project. Redevelopment of the site currently proposes around 380 residential dwellings as well as adaptive reuse of the existing heritage Brickworks buildings for retail and commercial uses. Table 2.9 indicate the proposed mix of uses and their applicable scale or size for the former Brickworks site re-development.

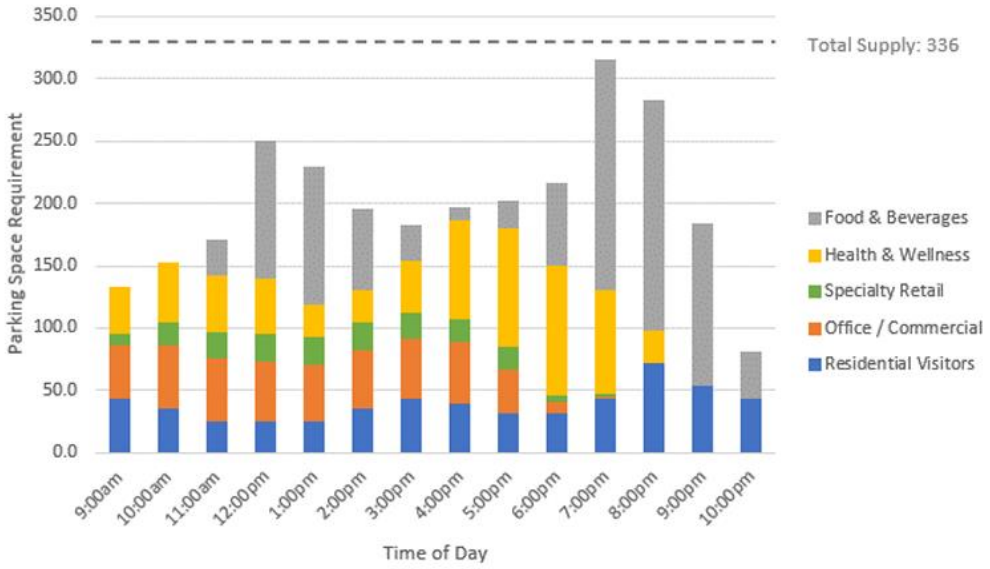
Table 2.9 – Summary of Brickworks

Land Use	Description	Scale [1]
Residential	Various typologies including detached dwellings, townhouses and apartments	380 dwellings
Commercial Office	Traditional white-collar office offer	1,358sqm
Commercial Non-retail		706sqm
Food & Beverage	Café and restaurant style dining	1,830sqm
Fitness & Wellness	Consulting rooms, day spa	1,156sqm
Health Facility Space	Medical Centre	1,836sqm
Retail	Store and speciality retail	738sqm

[1] Yarralumla Brickworks, Traffic and Parking Report, Calibre, July 2023

Furthermore, at the time of preparing this report it is understood that CBP will provide around 336 public car parking spaces servicing the commercial office, food and beverage, and health and wellness land uses, as well as the visitor demand for residential uses[4]. Temporal car parking demand analysis completed by Calibre and extracted at Figure 2.9, indicates that the commercial component(s) of the development, as well as visitors to the apartment/ townhouses, are expected to experience a peak demand for 315 car parking spaces across a typical weekday.

Figure 2.9 – Canberra Brickworks Precinct – temporal public parking demand [1]



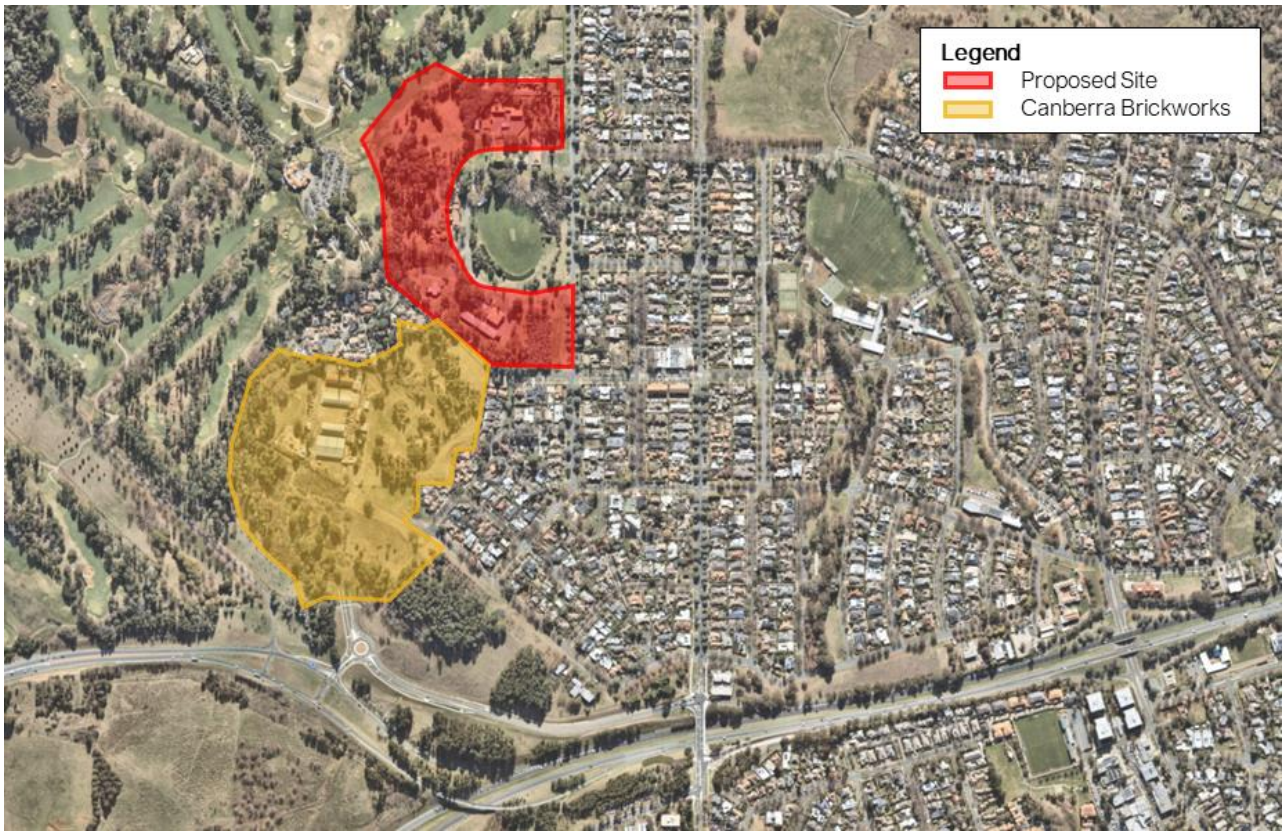
[1] Figure 3.3, Yarralumla Brickworks, Traffic and Parking Report, Calibre, July 2023

Thirteen (13) single lot dwellings are proposed to have entry via Bentham Street and nine (9) single lot dwellings are proposed to have entry via Denman Street, however primary access will be via Dudley Street. Under these access arrangements, the CBP is expected to have a more substantial impact on the operational performance of the Dudley Street intersections with Cotter Road at its western end, and Novar Street at its eastern end. A further indirect impact can also be expected at the Adelaide Avenue interchange with Novar Street and Kent Street. Contributory road works have been completed as part of the re-development along Dudley Street, these works are described and shown diagrammatically in Section 2.8.3 of this report.

The relative proximity of the Canberra Brickworks Precinct with the subject site is illustrated at Figure 2.10.

[4] Section 3.2.1, Yarralumla Brickworks, Traffic and Parking Report, Calibre, July 2023

Figure 2.10 – Canberra Brickworks Precinct



Source: Nearmap

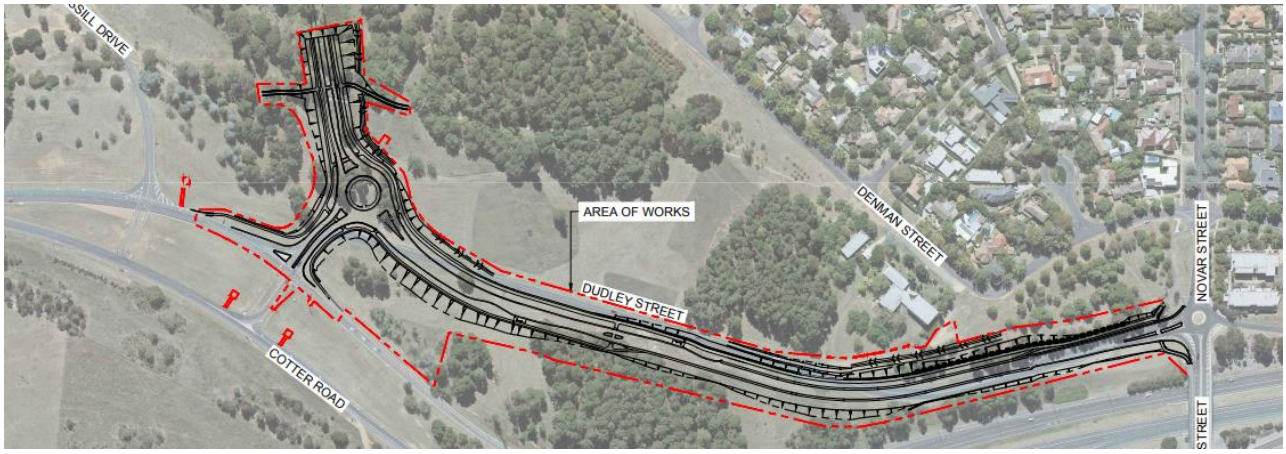
2.8.3 Road Network Upgrades

Dudley Street Upgrade (Complete)

To support development of the CBP, Dudley Street was recently upgraded between Novar Street and Cotter Road, including a new access road into the Precinct, as shown at Figure 2.11 and Figure 2.12. The upgrades were necessary to allow Dudley Street to operate safely and to meet the design requirements for a major collector road. The upgrades did not propose to increase the physical (throughput) capacity of the Dudley Street/ Novar Street/ Adelaide Avenue/ Kent Street intersection. Rather, the primary benefits of the project included improved pedestrian and cycle facilities, as well as enabling a primary access to the CBP external to the local streets of Yarralumla.

Construction of the Dudley Street upgrade commenced in 2020 and concluded in early 2022.

Figure 2.11 – Canberra Brickworks Precinct access road and Dudley Street Upgrade (complete)



Source: Dudley Street Upgrade Cover Sheet and Locality Plan, Sheet Number 60533438-SHR-30-0000-CN-0001 Rev C, prepared by AECOM dated 11 May 2018

Figure 2.12 – Aerial Image of Dudley Street Upgrade and adjacent Adelaide Avenue Interchange with Novar Street and Kent Street Upgrade

Source: Nearmap

Kent Street / Adelaide Avenue Interchange Upgrade (Complete)

The Adelaide Avenue interchange with Novar and Kent Street in Yarralumla has recently been upgraded to reduce traffic congestion in the area and improve safety for vehicles, pedestrians and cyclists, with works completed in May 2023. The upgrades included signalisation of the following three priority-controlled intersections:

- Dudley Street/ Novar Street/ Kent Street/ Adelaide Avenue on-ramp
- Adelaide Avenue off-ramp/ Kent Street
- Kent Street/ Denison Street.

The updated intersection design and completed upgrades are shown at Figure 2.12.

2.9 Other Relevant Traffic and Transport Studies

A range of transport studies have been prepared to support the CBP access road and Adelaide Avenue interchange upgrade projects.

Canberra Brickworks Transport Study (2016) – CARDNO

Cardno prepared a transport study[5] for CMTEDD Capital Works and Infrastructure in 2016 to inform the land sale of the CBP. The analysis was based on traffic movement counts collected by AECOM, as well as Roads ACT projected 2021 and 2031 AM peak traffic volumes. Cardno estimated the CBP would generate 239 vehicle trips in the AM peak and 285 trips in the PM peak, with general directions of traffic to be 33 per cent to the south west (Tuggeranong Parkway), 28 per cent to the south east (Deakin), 22 per cent to the north east (Canberra City) and 17 per cent to the north (Yarralumla). Furthermore, it was assumed that 60 per cent of City bound traffic will depart and enter the site via the Dudley Street/ Cotter Road intersection and that the balance of 40 per cent City bound traffic will depart and enter the site the intersection of Kent Street, Novar Street, Dudley Street and Adelaide Avenue.

Key results pertaining to the study include:

- The proposed access points are expected to operate satisfactorily with the existing traffic volumes and expected CBP Development generated traffic.
- The Dudley Street approach to the Cotter Road Traffic Signals is recommended to be upgraded to two lanes to achieve suitable operation.
- The existing Cotter Road north west approach leg to Dudley Street signalised intersection experiences significant queuing during the AM peak period.

[5] CBP Access Road and Dudley Street Upgrade Concept Design Report, Cardno, October 2016

Canberra Brickworks Transport Study (2018) – AECOM

AECOM prepared a Traffic and Transport Assessment in February 2018 to support the Access Road and Dudley Street Upgrade to form part of a National Capital Authority (NCA) Works Approval[6]. It is noted that CBP development traffic modelling results for the future condition of any intersection were excluded from the report, however commentary around specific impacts were discussed. Key results from the study pertaining to the proposed development site include:

- CBP generated traffic is expected to place additional pressure on Dudley Street, in particular the nearby intersections at either end of the Kent Street Bridge, including the Dudley Street/ Novar Street/ Adelaide Avenue ramp, Kent Street/ Adelaide off ramp and Kent Street/ Denison Street intersections.
- Future traffic volumes added to these intersections were found to cause an exponential impact to delay in the AM peak period, with a similar but less severe result in the PM peak period.
- To alleviate the congestion, AECOM recommends the signalisation of each intersection. Key elements of the recommended upgrades include:
  - dedicated right turn lane from Dudley Street and a separate short shared through and left turn lane.
  - retention of and minor augmentation of the left slip lane form Kent Street to Dudley Street.
  - two southbound lanes on Novar Street – merging to one lane before the bridge due to geometric constraints over the bridge.
  - a separate right and left lane on the Adelaide Avenue off ramp.
  - two northbound lanes on approach to the Denison Street intersection.

Kent Street/ Novar Street Intersection Upgrade Traffic Options and Analysis Report (September 2021) – AECOM

AECOM prepared a Traffic Options and Analysis Report in September 2021 for upgrades to the Kent Street/ Novar Street intersection (upgrades complete as discussed above). As part of these works, AECOM prepared a microsimulation model of the Yarralumla Road network surrounding the subject site. The model relied on traffic data from both June 2017 and August 2020, including at the Dudley Street/ Cotter Road intersection. Key results from the study pertaining to the proposed development site include:

- It was found that through a more detailed assessment of geometry, and confirmation about bridge options, that a layout for the signalisation of the Kent Street Bridge could be developed that provided benefits over the earlier concept design proposed as part of the Dudley Street Upgrade Works (discussed above).
- In the AM peak, there is a significant improvement in the average network delays between the 2031 Do Nothing scenario and the proposed 2031 upgrade scenario.
- In the PM peak, there is also an improvement in the average intersection delay for the network overall in the 2031 PSP layout compared to the 2031 Do Nothing, however the improvement isn't as significant when compared with the AM peak. Currently, and under the existing configuration, the northbound movement along Kent Street is prioritised. Following the development, the northbound movement will be *'stopped'* through the provision of traffic signals to facilitate green time to other movements, resulting in impacts to performance for this movement. AECOM note *"it is expected that if there are large delays along Kent Street northbound, vehicles would utilise other routes outside of the modelled network."*

2.10 Road Network Crash Statistics

An analysis of the most recent five-year period of available crash data between 2015 and 2019 has been completed based on crash data supplied by Transport Canberra and City Services for key roads surrounding the site, shown at Figure 2.13.

[6] Access Road and Dudley Street Upgrade, Traffic and Transport Impact Assessment, AECOM, 5 February 2018

Figure 2.13 – Provided crash data from surrounding road network

Source: Nearmap

The crash data provided includes both property damage and casualty accidents, noting majority of the data (201 of 227 collisions, or 89 per cent) relate to property damage and with only a select number (26 of 227 collisions, or 11 per cent) relate to casualty accidents. The following statistics have been extracted from available crash data for the given study area (or investigated street links), between 2015 and 2019.

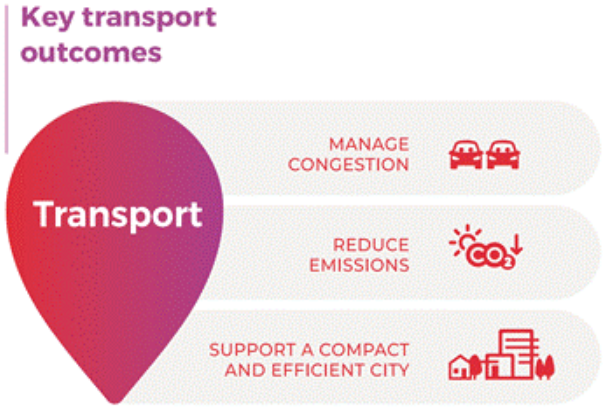
- 227 collisions occurred during the five-year period, including:
  - 201 resulting in property damage only.
  - 25 resulting in injury. One resulting in fatality due to a vehicle striking pedestrian along Mariner Place.
- The most common collision type were right angle and rear end collisions, representing 24 per cent and 22 per cent of total collisions, respectively.
- 82 collisions occurred within an intersection (36 per cent total collisions). The following intersections recorded the highest rate of collisions:
  - Adelaide Avenue/ Kent Street – Representing 12 per cent of crashes occurring at intersections.
  - Denison Street/ Kent Street – Representing 14 per cent of crashes occurring at intersections.
  - Dudley Street/ Novar Street – Representing 13 per cent of crashes occurring at intersections.
  - Bentham Street/ Loftus Street/ Mueller Street – Representing 5 per cent of crashes occurring at intersections.
- 20 per cent of total collisions occurred along Bentham Street between Banks and Mueller Street. This is likely a consequence of turnover of vehicles parking within the angled parking associated with the local shops and the friction created with these movements with general traffic activity in the area.

3. Strategic Planning and Policy Assessment

3.1 ACT Transport Strategy 2020

The strategy outlines a vision for a transport network that supports a compact, sustainable and vibrant city. These pillars are reproduced at Figure 3.1.

Figure 3.1 – ACT Transport Strategy key outcomes



Source: ACT Transport Strategy 2020

Under its statement of ambition, the strategy notes that:

"Transport has a critical role to play in this as highlighted in the 2016 Canberra: A Statement of Ambition, "Everywhere there is the demand from an increasingly time hungry workforce and community to live in the '30 minute city' – the city of short commutes and journeys that manages congestion with a first class public transport system at its heart." This is being driven by changing lifestyle preferences of modern families and workers in the global knowledge economy.

For many years, Canberra has met this desire through the building and widening of roads as the city expanded.

However, the future of the city is to contain outward expansion. To maintain our 30-minute travel status in a growing city we will need to refocus our investment to support a more compact and efficient city and provide the opportunities for the renewal and strengthening of suburbs envisioned in the Statement of Ambition.

By providing a choice of high-quality accessible transport options we also provide greater opportunities for people to better connect with services. In turn this connection leads to vibrant community spaces which support our evolving lifestyles and promote urban infill."

The strategy goes on to acknowledge a need to shift its focus from car based (private) transport to more sustainable modes which include public transport, walking and cycling. The delivery of new light rail services and a further expansion of those facilities is consistent with this policy position. The re-development of Forestry Place is also consistent with these principles to the extent that it proposes to deliver land use in areas which have access to existing developed, and newly planned services and infrastructure, rather than in fringe growth areas where services are either poor or non-existent.

As it relates to creating a compact city. The transport strategy states:

"The 30-minute city is as much about planning as it is about transport. It is a land use planning tool that is about creating mixed use neighbourhoods that allow people to have all their daily needs met – work, education, shopping, health, social or culture within 30-minutes of their home.

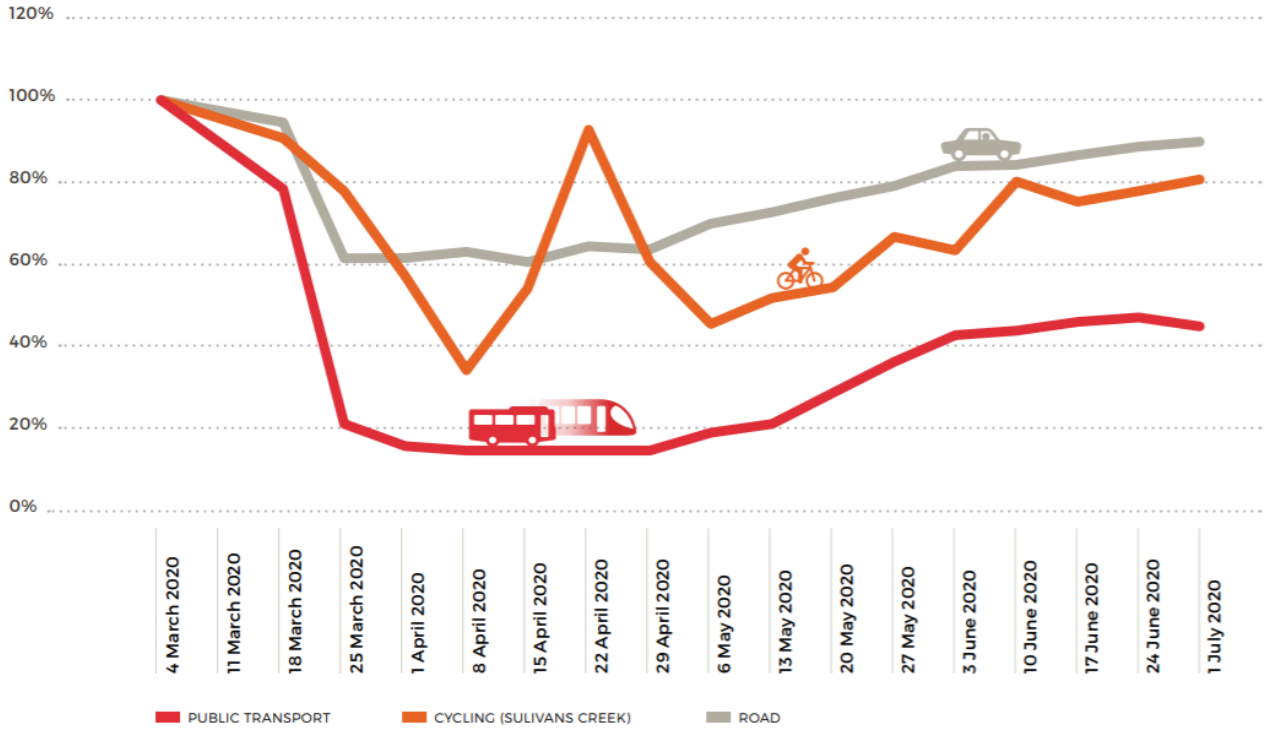
To manage growth and meet strategic objectives, our transport network will need to support a shift towards public transport, cycling and walking, while recognising the need for car trips for cross city journeys and freight movement.

The transport network will support all trips and all transport types, but to enable more efficient movement, it will focus movement according to location in reflection of the strategic directions set out in the ACT Planning Strategy 2018."

The Forestry Place re-development is consistent with these ambitions given its mixed-use nature and its proximity to nearby local activity centres which offer a range of services within a 30-minute walking or cycling trip.

Finally, the study provides a diagrammatic representation of changes in travel demand for the ACT during COVID-19, reproduced at Figure 3.2. As it relates to this study, surveys completed by Stantec internal to the Yarralumla area occurred in December 2020 and outside the period affected most by the COVID pandemic. The updated surveys completed around the Adelaide Avenue interchange with Novar Street and Kent Street in July 2023 are also naturally outside the period affected by COVID.

Figure 3.2 – ACT Change in Travel Behaviour during COVID-19



3.2 Regulatory Codes Relevant to Site Assessment

Two organisations are responsible for planning in the ACT:

- the Environment, Planning and Sustainable Development Directorate (EPSDD) – the ACT Government authority responsible for the Territory Plan
- the National Capital Authority - the Commonwealth Government agency responsible for the National Capital Plan.

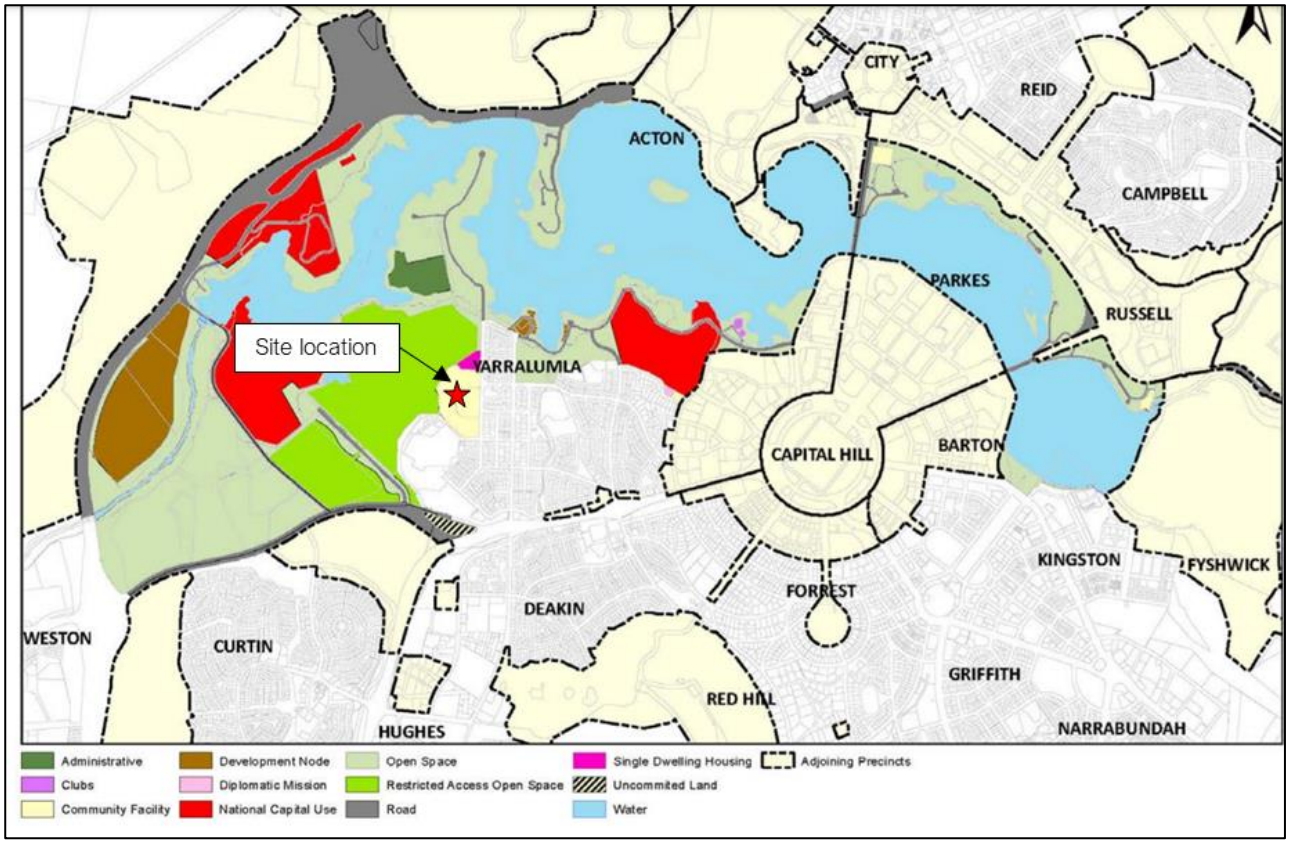
The site is located in a Designated Area, being an area of land that has the special characteristics of the National Capital. Development within Designated Areas require approval from the National Capital Authority. The National Capital Authority uses the National Capital Plan (NCP) to assess applications. The NCP sets out Precinct Codes and General Codes identifying planning and design controls for different precincts and development types within Designated Areas.

The site is located in the Lake Burley Griffin and Foreshores Precinct, illustrated at Figure 3.3. Land use for the Precinct is detailed in Figure 3.3 indicating community facility use is permitted on site.

Figure 3.3 – Lake Burley Griffin and Foreshore Precinct

Source: Figure 113: Lake Burley Griffin and Foreshore Precinct location, National Capital Plan

Figure 3.4 – Land use for the Lake Burley Griffin and Foreshores Precinct



Source: Figure 114: Land Use for the Lake Burley Griffin and Foreshore Precinct

No traffic or access related planning and design controls are outlined in the Precinct Code or General Code within the NCP relevant to the proposed development. For the purposes of estimating parking requirements of the masterplan, reference has been made to the general codes contained in the Territory Plan throughout this report.

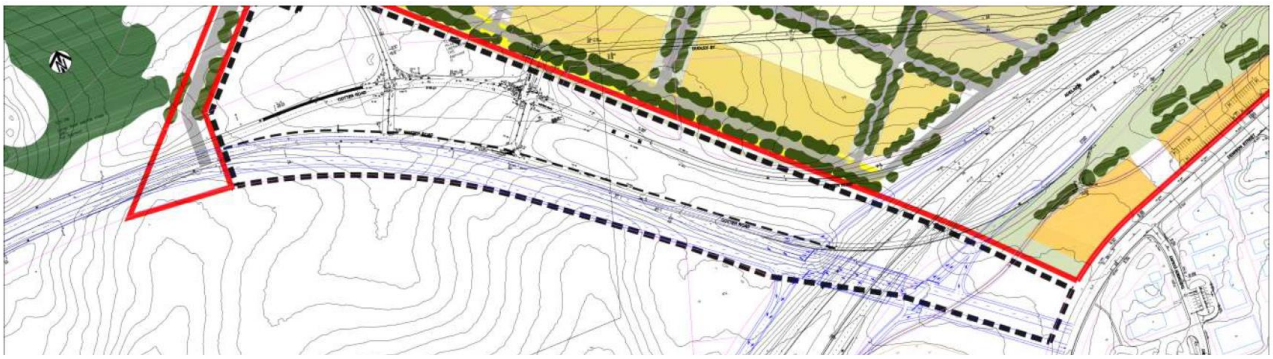
3.3 Relevant Transport Opportunities

3.3.1 Mint Interchange (Cotter Road Upgrade)

Significant traffic volumes travel between the residential areas of West Canberra and the employment cluster in Deakin during weekdays. It is understood there are plans for the potential delivery of a full diamond interchange between Adelaide Avenue and Cotter Road to provide a direct connection across Adelaide Avenue between Cotter Road and Denison Street.

A concept plan for the project, respectively sourced from work completed by SMEC Consulting and former Land Development Agency in association with the former Brickworks re-development are provided at Figure 3.5 and Figure 3.6 for reference.

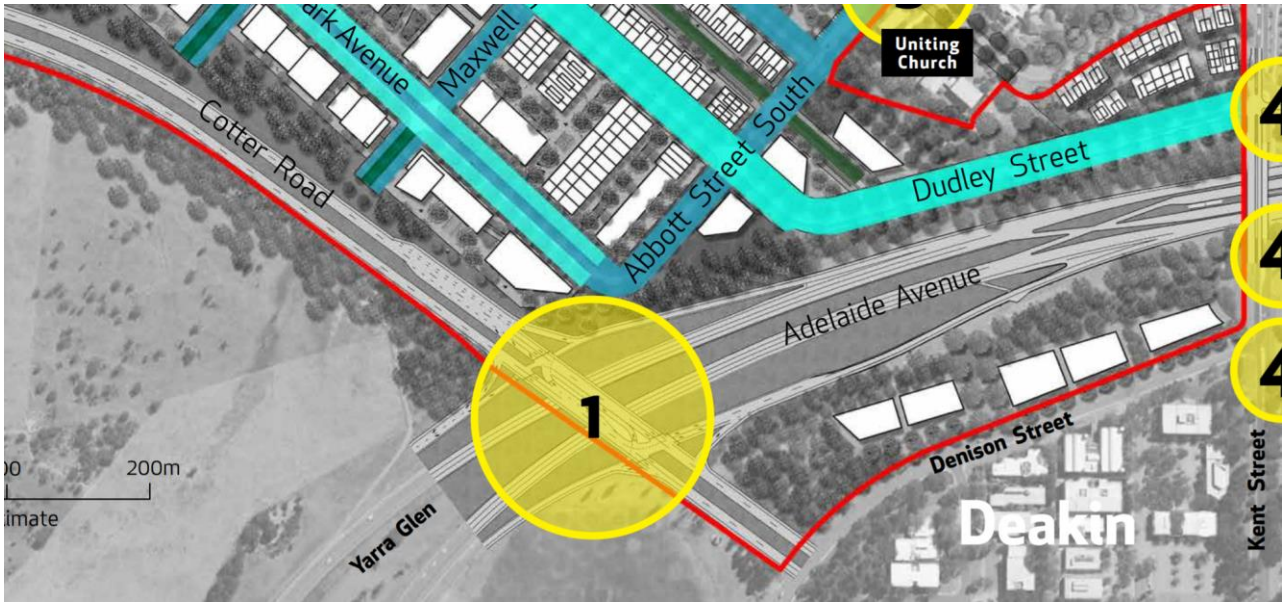
Figure 3.5 – Mint Interchange Concept Plan[7] [1]



Source: CB+E Traffic, Transport and Infrastructure Assessment Final Report 17 February 2015 (Figure 3.6)

[1] Concept road network north of Adelaide Avenue revised as discussed in Section 2.8.

Figure 3.6 – Mint Interchange Concept Plan[8] [1]



Source: https://suburbanland.act.gov.au/uploads/ckfinder/files/pdf/3_Commercial/Canberra_Brickworks/Consultation_Boards/CB%26E%20Consultation%20board%205_TRAFFIC.pdf

Whilst this upgrade has the potential to improve accessibility and ease congestion in and around the Yarralumla area, traffic analysis later in the report excludes allowance for its construction. Under this approach, it is evident that the Stantec analysis contemplates a pre-upgrade or potentially interim network arrangement, representing conditions prior to the delivery of an intervention which will assist with managing a range of matters identified through the course of studies and investigations completed to date.

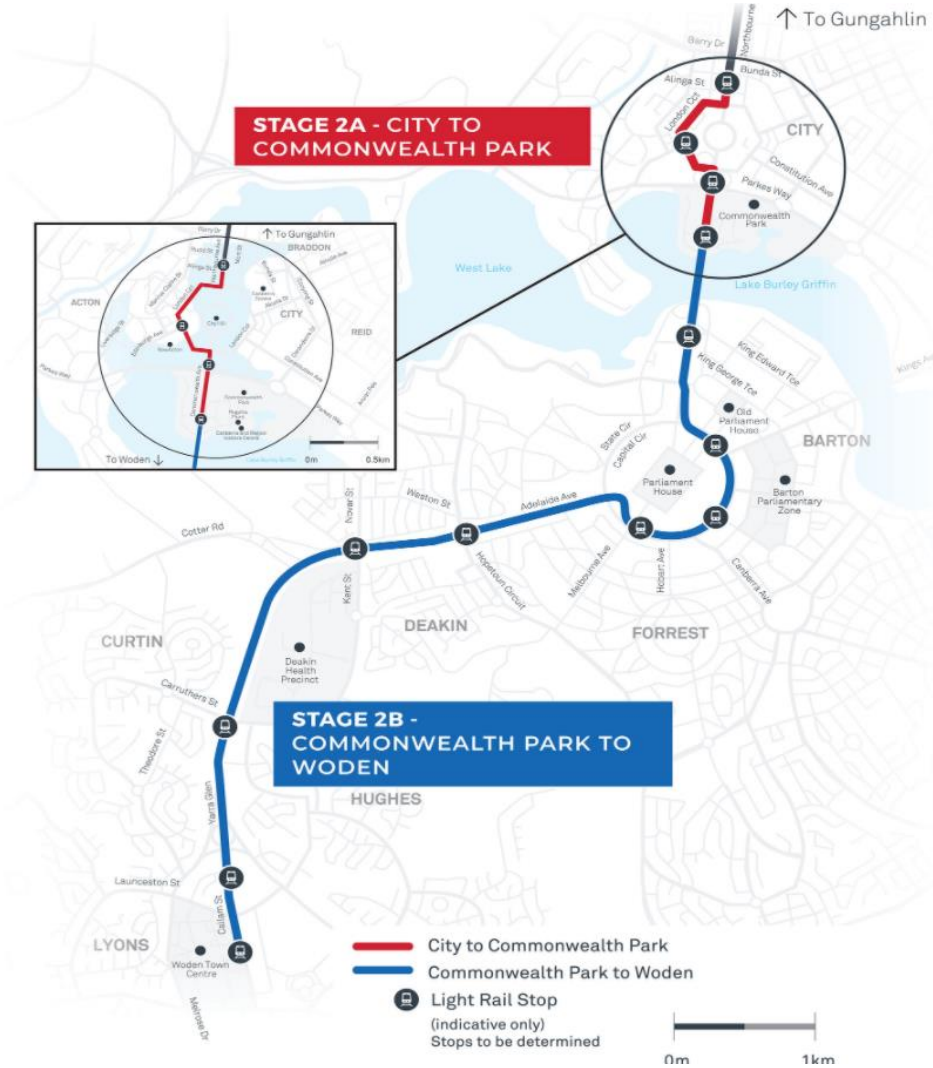
[7] Source: CB+E Traffic, Transport and Infrastructure Assessment Final Report 17 February 2015 (Figure 3.6)
[8] Source: CB+E Traffic, Transport and Infrastructure Assessment Final Report 17 February 2015 (Figure 3.6)

3.3.2 Woden Light Rail

The ACT government is foreshadowing a steady rise in population for Canberra over the next ten years. Governmental estimates indicate that the city of Canberra is expected to reach a population of 500,000 by 2030. In support of this population growth, the ACT government is investing in mass transit systems which will help modernise Canberra as well as sustain its foothold as one of the world's most liveable cities.

The currently established light rail network is planned to be expanded to Woden, which will occur in two stages – City to Commonwealth Park (Stage 2A) and Commonwealth Park to Woden (Stage 2B). Work has already commenced for Stage 2A, with commonwealth funding for the project committed in February 2021. The expansion to Woden will include an alignment along Adelaide Avenue. The proposed route is reproduced at Figure 3.7.

Figure 3.7 – Woden Alignment Route Map – planned light rail facilities



Source: https://www.transport.act.gov.au/__data/assets/pdf_file/0018/1412505/Stage-2-of-Light-Rail-Building-Light-Rail-to-Woden.pdf, accessed March 2021.

The impact of an expanded light rail network is likely to be advantageous to overall mode choice behaviours along the route. Generally, catchments within 800 metres of any light rail corridor exhibit the greatest level of relative change in mode shift. This catchment would include approximately two-thirds of the Yarralumla suburb. A light rail stop is proposed near the Novar Street/ Kent Street overpass, within 1.2 kilometres of the site (around a 14-minute walk). The advent and introduction of accessible light rail services to Yarralumla residents will in our experience support mode shift from private motor vehicle travel, resulting in a likely decrease in car-based travel (and congestion) during both the peak and inter-peak network operating periods.

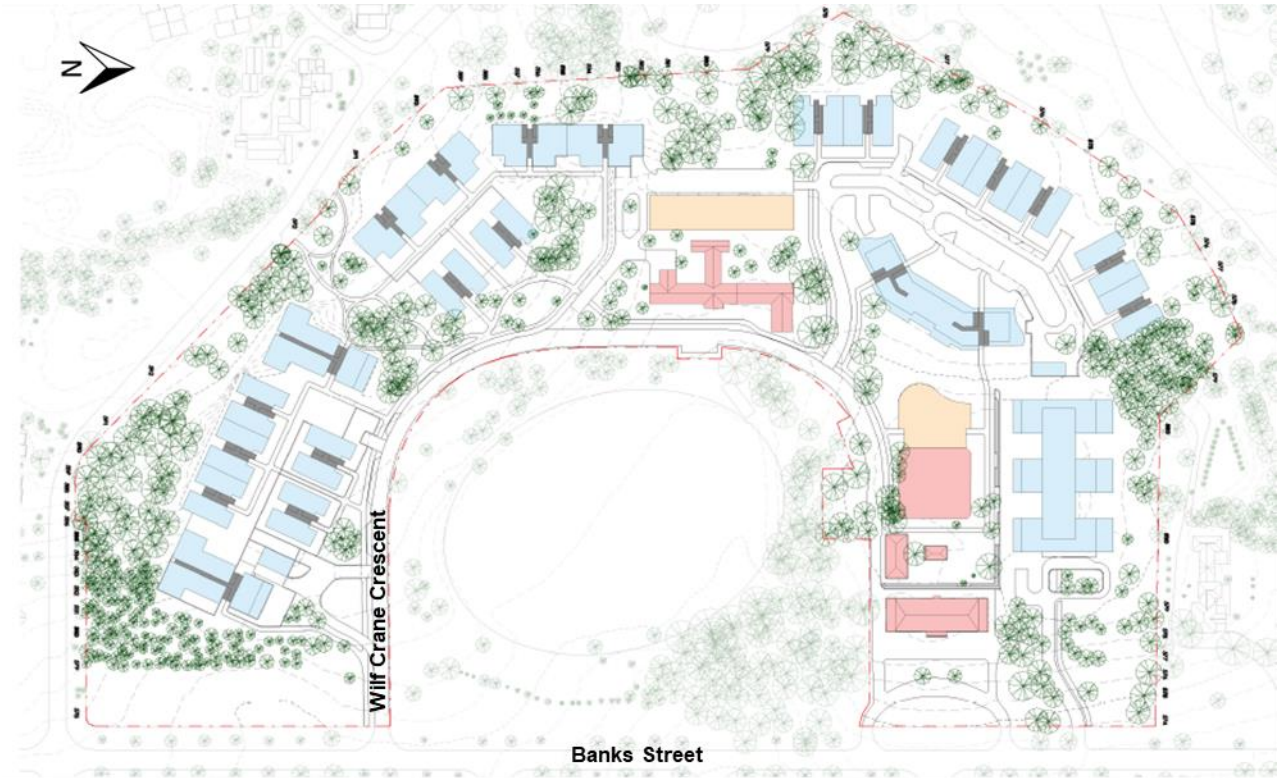
Despite these observations and noting the status of the proposal at present is that of a *'planned project'* or a project likely sometime in the foreseeable future, any analysis for the re-development of Forestry Place has sought to conservatively assume no change in travel behaviour proportions between modes. Accordingly, analysis presented in this study could be considered to represent a conservative, high side assessment of likely traffic impacts associated with the proposed re-development of Forestry Place.

4. Development Proposal

4.1 General Site Layout & Land Use

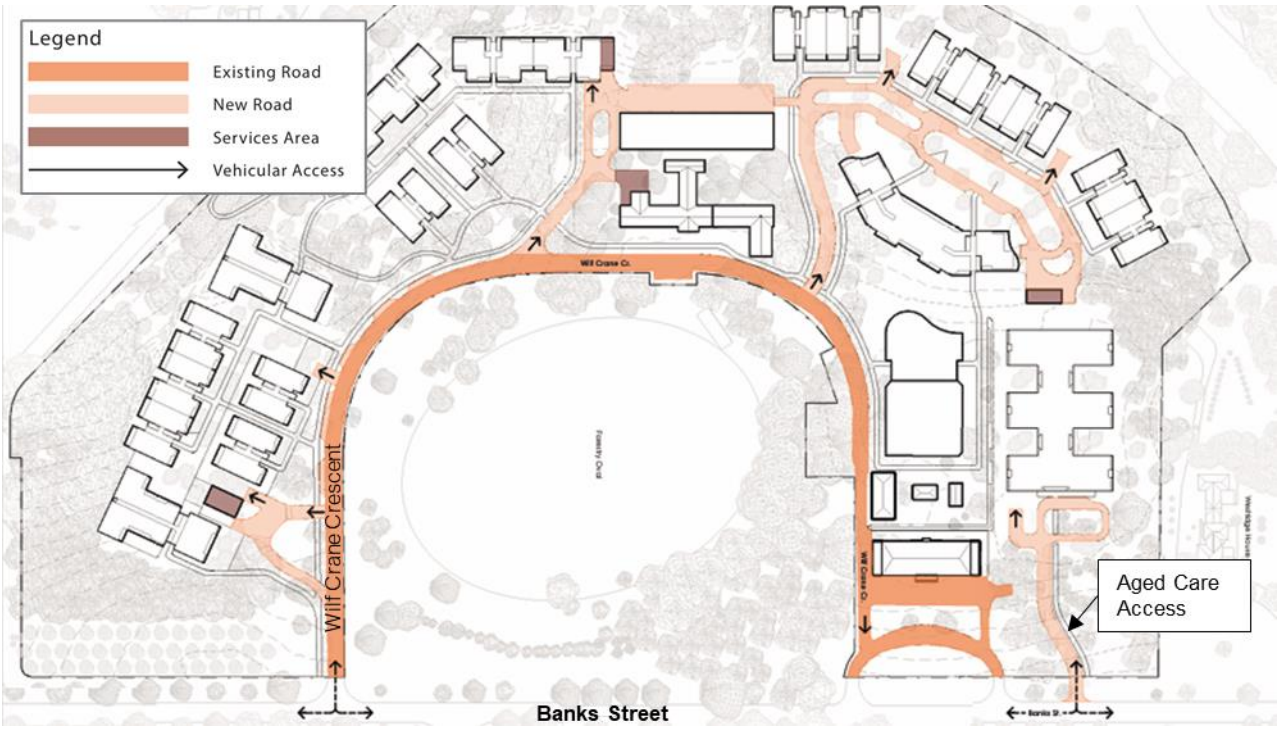
The proposed layout of the development and configuration of buildings and transport access is provided at Figure 4.1 and Figure 4.2.

Figure 4.1 – Proposed Site Layout



Source: Oakstand, March 2021

Figure 4.2 – Proposed Vehicular Access



Source: KANNFINCH, November 2023

An indicative land use summary for the development proposal, which includes a range of land uses including residential, aged care, commercial (office) and hotel land uses is provided at Table 4.1.

Table 4.1 – Indicative Land Use Development Schedule

Land Use	Description	Indicative Size / Scale
Residential	Apartment Living	266 units
Aged Care	Over 55's high care	130 units
Hotel	Boutique Hotel	80 keys
Commercial Office	White Collar Office	800sqm

4.2 Transport Access & Car Parking

Wilf Crane Crescent will continue to provide traffic and transport access to the subject site as part of the proposal re-development. The existing road cross-section will be developed to cater for forecast demand with more heavily trafficked areas incorporating indented parallel car parking to maintain operational and simultaneous two-way traffic flow. Preliminary investigation indicates it would qualify as a minor collector road under the Estate Development Code, discussed further in Section 5.4.2 of the report.

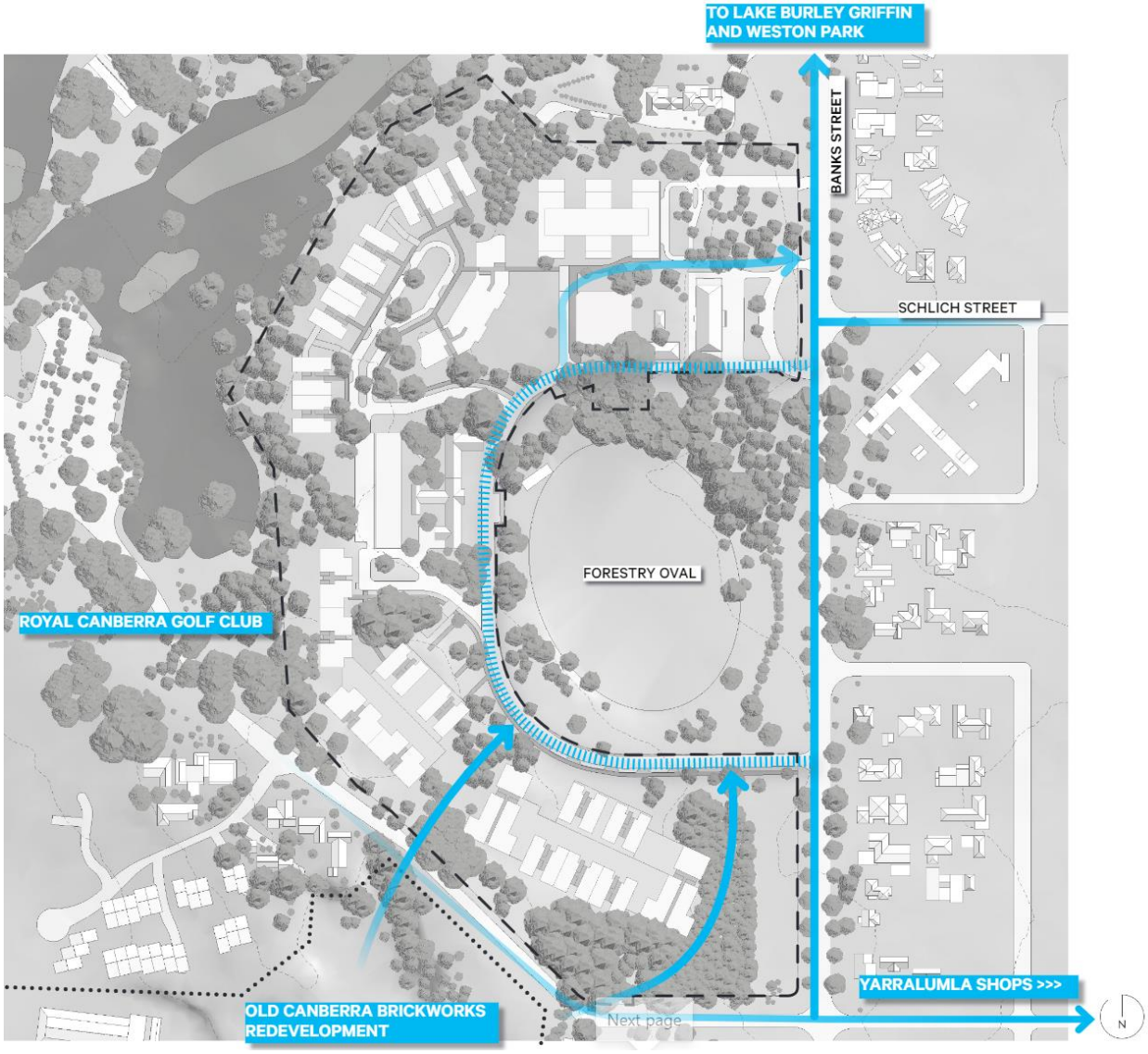
The two existing vehicle access roads to Banks Street will provide broader development access to the residential, hotel and commercial uses. An additional access road is proposed north of Banks Street for the Aged Care Precinct, as shown at Figure 4.1 and Figure 4.2.

Car parking for the development will be provided through a mixture of surface level and subterranean level car parking for residents, visitors and employees. Each car parking area will be contained to its respective precinct, with access provided via Wilf Crane Crescent except for the Aged Care use which will be accessed via Banks Street.

Specific design details of bicycle parking provision and design have not been developed. It is recommended that a provision consistent with Territory Plan End-of-Trip Facilities General Code be provided. This will be addressed in any future works approval application.

A new shared bicycle and pedestrian path is proposed along the western side of Banks Street between its intersection with Bentham Street and Brown Street to improve connectivity and accessibility to the lake and foreshore bicycle and walking tracks. Publicly accessible pedestrian paths are also proposed throughout the site, complementing the existing pedestrian network in the area and providing local residents with additional recreational walking opportunities. For diagrammatic purposes, a high-level connectivity plan is provided at Figure 4.3 for reference.

Figure 4.3 – High Level Pedestrian and Cycling Connectivity Plan



On-site loading and waste collection are proposed to occur via planned internal access roads.

5. Parking Assessment

5.1 Car Parking Requirements

5.1.1 NCP Code Requirements

The Lake Burley Griffin and Foreshores Precinct Code does not identify any specific requirements as it relates to the provision of car parking associated with this site.

The NCP General Codes do not identify any specific requirements as it relates to the provision of car parking associated with this site.

5.1.2 Parking Assessment

NCP does not include car parking rates for the site. Reference to the Territory Plan is therefore relevant in this regard. The Parking and Vehicular Access General Code within the Territory Plan outlines the requirements for the provision of car parking in new developments.

Despite currently planning being at master planning level, car parking requirements for the proposed land uses can be expected to be provided at the rates set out as follows:

Residential:

- Resident –
  - 1 per 1 bedroom apartment
  - 2 per 2 bedroom apartment
  - 2 per 3 bedroom or 4 bedroom apartment.
- Visitor – 1 per 4 apartments or part thereof.

Aged Care:

- Staff –
  - 1 per staff residential unit
  - 1 per non-resident peak shift employee.
- Visitor – 0.25 per unit

Hotel:

- Employee – 1 per 2 employees
- Visitors –
  - 25 spaces plus 0.3 per unit
  - 1 per 10m2 bars and function rooms
  - 1 per 10 restaurant seats
  - 3 per 100m2 retail floor area.

Commercial:

- Employee – 2.5 per 100m2 GFA

On the above rates, car parking requirements for land uses included in the development are shown at Table 5.1.

Table 5.1 – Car Parking Code Requirements (indicative land use schedule)

Land Use	Description	Size / Scale	Rate	Requirement (car spaces)		
				Resident / Staff	Visitor	Total
Residential	1 Bedroom	18 units	1 space per unit	18		18
	2 Bedroom	86 units	2 spaces per unit	172		172
	3 Bedroom	160 units	2 spaces per unit	320		320
	4 Bedroom	2 units	2 spaces per unit	4		
	Visitor	266 units	1 per 4 apartments		67	67
	Sub Total			**514**	**67**	**422**
Aged Care		130 units (assumes 26 staff)	1 per non-residential peak shift employee 1 per 4 beds after the first 10 beds.	26	33	**59**
Hotel		80 keys [1] (assumes 8 staff)	1 per 2 employees, 25 spaces plus 0.3 per unit	49	4	**53**
Commercial		800 sq.m	2.5 per 100m2 GFA	20		**20**
Sub Total				**95**	**37**	**132**
			Total	**609**	**104**	**712**

[1] Assumes any function rooms/ retail and restaurant area are ancillary to the development, with access not permitted to general public/ non-guests.

Based on the outputs from Table 5.1, the development is required to provide in the order of 712 car parking spaces, including 514 car spaces for residents, 95 for staff and 104 car spaces for visitors. This provision does not consider requirements for the hotel use should function rooms/ retail and restaurant area be available for use by non-hotel guests.

The code allows for some discretion on reducing the required provision. Any reduction would need to be sought in consultation and under agreement with the responsible planning authority.

Final car parking numbers for the project are expected to be determined at works approval stage of any future development. Notwithstanding, the current master plan can comply the parking requirements outlined at Table 5.1.

As part of further planning stages and as discussed further at Section 6.5, it is recommended a Resident or Green Travel Plan is prepared to minimise the reliance on single occupancy car journeys to and from the site. A Travel Plan is a package of measures aimed at promoting and encouraging sustainable travel and reducing reliance on the private car. This could consider features such as car share, community bus facilities and enhanced end of trip bicycle facilities.

5.2 Accessible Parking

5.2.1 NCP Code Requirements

The Lake Burley Griffin and Foreshores Precinct Code does not identify any specific requirements as it relates to the provision of accessible car parking associated with this site.

The NCP General Codes do not identify any specific requirements as it relates to the provision of accessible car parking associated with this site.

5.2.2 Accessible Parking Assessment

NCP does not include accessible car parking rates for the site. Reference to the Territory Plan is therefore relevant in this regard. The Access and Mobility General Code and Parking and Vehicular Access General Code within the Territory Plan outline the requirements for the provision of accessible car parking in new developments.

The Access and Mobility General Code uses the Building Code of Australia rates and classification to determine accessible parking requirements, outlining that two to three per cent of the total non-residential parking supply to be accessible (including residential visitor spaces). The Parking and Vehicular Access General Code recommends that three per cent of the total non-residential parking supply to be accessible (including residential visitor spaces).

As such, it is recommended that three per cent of the total non-residential parking supply to be accessible (including residential visitor spaces) unless otherwise agreed with the Responsible Authority. In this regard and assuming

approximately 199 non-residential spaces (including residential visitor spaces), the master plan would need to provide six accessible car spaces.

In addition to the above, the Access and Mobility General Code outlines a requirement for one accessible parking space to be provided per adaptable dwelling.

It is expected that these provisions will be incorporated during future design development.

5.3 Motorcycle Parking

5.3.1 NCP Code Requirements

The Lake Burley Griffin and Foreshores Precinct Code does not identify any specific requirements as it relates to the provision of motorcycle parking associated with this site.

The NCP General Codes do not identify any specific requirements as it relates to the provision of motorcycle parking associated with this site.

5.3.2 Parking Assessment

NCP does not include motorcycle parking rates for the site. Reference to the Territory Plan is therefore relevant in this regard. The Parking and Vehicular Access General Code within the Territory Plan outlines the requirements for the provision of motorcycle parking in new developments.

Section 2.4 of the Code requires that 3 dedicated motorcycle spaces per 100 car parking spaces are required with new developments, with a minimum provision of one space for carparks with a minimum of 30 car parking spaces. These spaces are to be provided in addition to the number of car parking spaces required under this code.

In this regard and assuming approximately 712 car parking spaces, the masterplan would need to consider the provision of 21 motorcycle parking spaces onsite.

5.4 Design Review

5.4.1 Car Park Layout

The car parking layout design would be progressed through future design stages to meet the requirements of the Australian Standard for Off Street Car Parking (AS2890.1:2004 and AS2890.6:2009) and the Australian Standard for Off Street Commercial Vehicle Facilities (AS2890.2:2018) to operate satisfactorily with ramp grades, height clearances, aisle widths and car space dimensions. Design of the car parking areas would be assessed as part of future works applications.

The basement levels would provide for resident parking with separate boom gates/ security roller doors providing for secure access at all times.

5.4.2 Wilf Crane Crescent

The masterplan is expected to generate around 2,320 vehicles per day, including a maximum of 2,060 vehicles per day along Wilf Crane Crescent and 260 vehicles per day along the aged care access road. In accordance with the Estate Development Code, Wilf Crane Crescent should allow for a road reserve width of 16.85 metres[9], minimum travel lane widths of 3.0 metres on two-way sections of road[10], a minimum parking lane width of 2.0 metres (note indented parking bays proposed, hence increased width of 2.3 metres recommended in accordance with AS2890.5:2020) and shared path width of 2.5 metres. The aged care access road should allow for a road reserve width of 19.5 metres[11] and a minimum road width of seven metres.

This assessment is preliminary and based on indicative land use schedule and associated traffic generating characteristics. Notwithstanding, the proposed road network within the masterplan is expected to be capable of meeting the requirements of the Estate Development Code.

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9 Reduced width to account for a single active frontage.

10 EDC requires a road width of 10 metres, assuming parking is provided on both sides of the road, resulting in two 3.0 metre wide travel lanes (total of 6.0 metres) and two 2.0 metre wide parking lanes.

11 Full width assumed for two active frontages.

6. Sustainable Transport Infrastructure

6.1 Trip Generation by Transport Mode

This section outlines the anticipated person trip generation associated with the masterplan and corresponding generation by transport mode, to understand the likely demand for public transport services and active travel facilities.

The anticipated person trip generation associated with the planning proposal are summarised at Table 6.1. In the absence of an ACT specific code, rates for person trip generation (rather than vehicular trip generation as discussed in Section 7.2), have been sourced from Transport for NSW Technical Direction 2013/04a (TDT 2013/4a) for residential, commercial and aged care uses.

Table 6.1 – Person Trip Generation (Network Peak Hours)

Land Use	Size	Person Trip Generation Rates		Person Trip Generation	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Residential	266 units	1.27 trips per unit [1]	1.21 trips per unit [1]	339	322
Aged Care	130 units	0.21 trips per unit [2]	0.21 trips per unit	43	43
Hotel	80 keys	1.27 trips per unit	1.21 trips per unit	54	50
Commercial Office	800 sqm	1.81 trips per 100sqm	1.30 trips per 100sqm	14	10
Total				**450 person trips per hour**	**425 person trips per hour**

[1] Land use proposed to be medium density. TDT 2013/04a provide rates for low or high density uses, noting that low density uses generate more trips during the peak hours. As such, analysis based on low density residential use to ensure a conservative assessment.
[2] Trip rates for morning peak not available hence afternoon peak rate adopted for purpose of assessment.

Table 6.1 indicates that the masterplan is expected to generate approximately 450 and 425 person trips in the AM and PM peak hours, across all transport modes, respectively.

Table 6.2 has been prepared to demonstrate the disaggregation of trip types across all modes of travel.

Table 6.2 – Trip Generation by Transport Mode

Land Use	Mode Split		Estimated Trips per Mode	
	Residential/ Hotel [1]	Commercial/ Care [2]	AM Peak Hour	PM Peak Hour
Vehicle (as driver)	49%	82%	241	227
Vehicle (as passenger)	19%	7%	80	75
Bus	3%	6%	13	13
Walking	22%	1%	87	82
Cycling	4%	3%	19	18
Other	3%	1%	10	10
		Total	**450 person trips per hour**	**425 person trips per hour**

[1] Based on mode share data for South Canberra residents for all trip purposes, extracted from household travel survey data https://www.transport.act.gov.au/about-us/planning-for-the-future/household-travel-survey, accessed March 2021
[2] Based on Journey to Work data for commuters working in Yarralumla, detailed in Table 2.7, noting that majority of aged care

Table 6.2 indicates that trips by vehicle (as driver) would likely account for approximately 241 and 227 person trips in the AM and PM peak hours respectively. The assessment also indicates that some 13 trips will occur via bus during both peak periods, with around 106 and 100 active travel trips in the AM and PM peak hours respectively.

6.2 Bicycle Parking Requirement

6.2.1 NCP Code Requirement

The Lake Burley Griffin and Foreshores Precinct Code does not identify any specific requirements as it relates to the provision of car parking associated with this site.

The NCP General Codes do not identify any specific requirements as it relates to the provision of car parking associated with this site.

6.2.2 Parking Assessment

NCP does not include bicycle parking rates for the site. Stantec have completed a review of bicycle parking rates outlined in the following guidelines/ plans:

- Territory Plan End-of-Trip Facilities General Code
- Cycling Aspects of Austroads Guides
- NSW Planning Guidelines for Walking and Cycling.

Upon review, Stantec recommend that the Territory Plan End-of-Trip Facilities General Code rates are applied to the site.

As such, this section of the report sets out a review of bicycle parking requirements under the End-of-Trip Facilities General Code for the masterplan. Bicycle parking requirements for the proposed land uses are set out as follows:

Residential apartments:

- Resident
  - 1 per one or two bedroom dwellings
  - 2 per three or more bedroom dwelling
  - 1 per bedroom for dwellings not allocated a parking space.
- Visitor – 1 per 10 dwellings.

Aged Care:

- Staff – 1 per 2,000m2 NLA
- Visitor – 1 per 1,000m2 NLA.

Hotel:

- Employee – 1 per 250m2 NLA
- Guests – 1 per 250m2 NLA.

Commercial:

- Employee – 1 per 200m2 NLA
- Visitor – 1 per 400m2 NLA.

Details of bicycle parking provision have not been developed at Master Plan stage. Consistency with the Territory Plan End of Trip Facilities General Code can be achieved and compliance will be demonstrated in any future Works Approval.

Bicycle parking facilities should be easy and convenient to access, ensure safe access to the development, be located such that they minimize conflict with pedestrians and other traffic, be co-located with end of trip facilities for staff and be visible from the ground floor public domain, increasing their visibility and encouraging their usage.

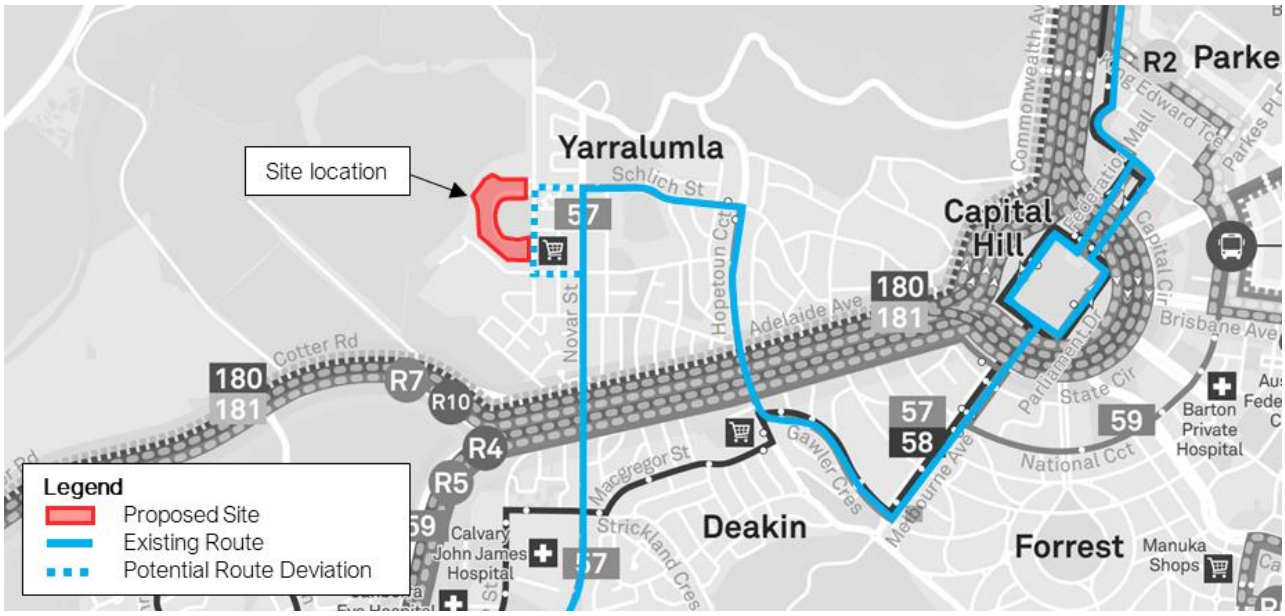
6.2.3 End of Trip Requirement

Based on a review of Element 5 of the End-of-Trip Facilities General Code, it is recommended that at least one shower and change room facility is provided for every five staff bicycle parking space, plus an additional shower for each 10 bicycle parking spaces thereafter. Further, at least two lockers should be provided for each staff bicycle parking space provided in close proximity to the showers.

6.3 Public Transport Opportunities

The development may be a catalyst for the re-alignment of existing bus route 57, with a potential route deviation illustrated in Figure 6.1 comprising the route traveling an additional 500 metres along Bentham Street, Banks Street and Shlich Street. This would provide improved connectivity for residents, staff and visitors between the site, Woden Town Centre, and the City Centre but most importantly follow a path which increases accessibility and convenience for a re-shaped residential precinct. Following construction of Light Rail stage 2B, bus route 57 would also provide interchange opportunities with the proposed light rail stop at the Novar Street/ Kent Street Adelaide Avenue overpass.

Figure 6.1 – Bus Route 57 Potential Realignment

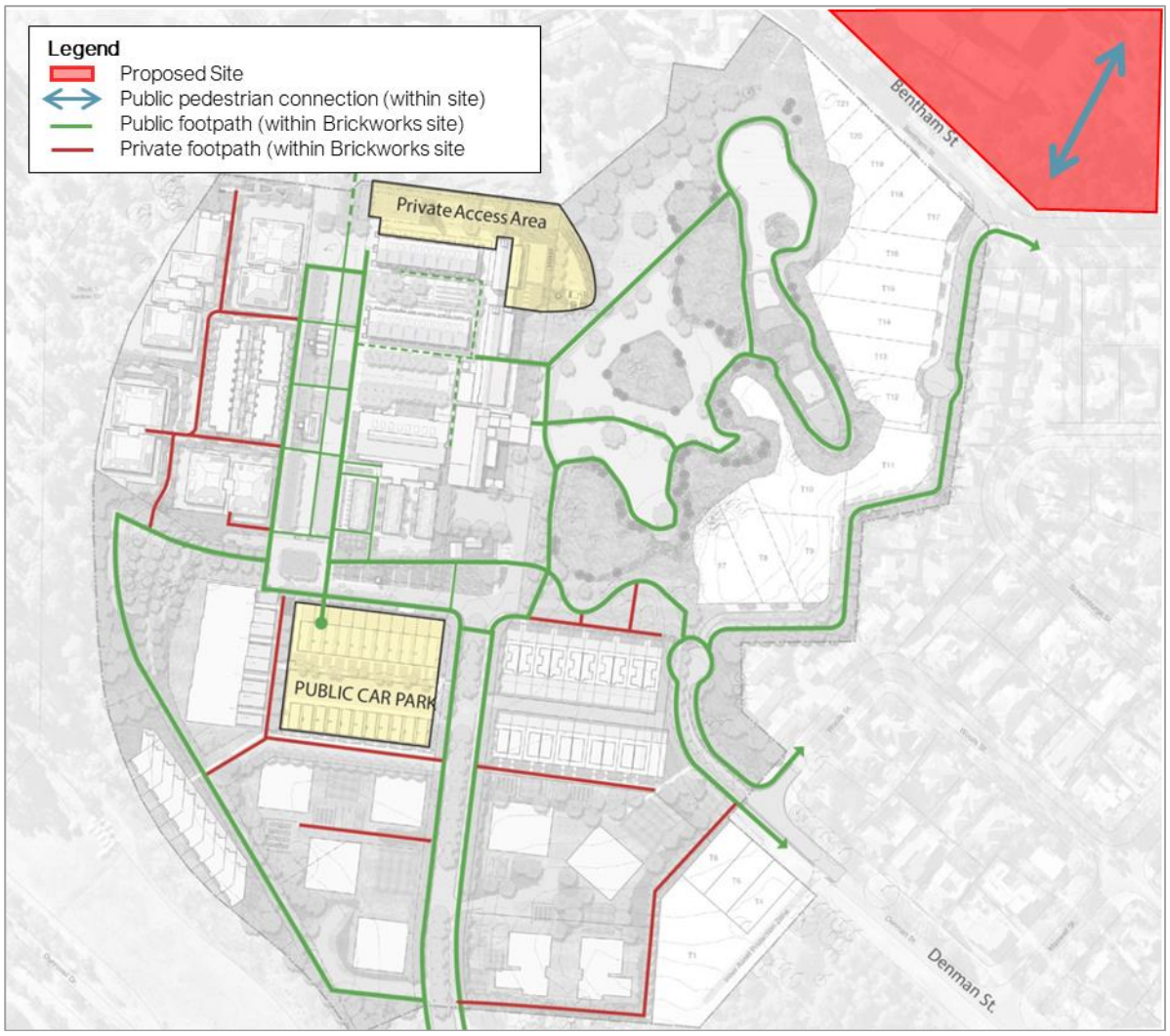


6.4 Active Transport Opportunities

The masterplan has been designed to deliver a high-quality pedestrian experience with site permeability, through site connectivity and pedestrian amenity ensured by provision of the following:

- a new shared bicycle and pedestrian path along the western side of Banks Street between its intersection with Bentham Street and Brown Street, to improve connectivity and accessibility to the lake and foreshore bicycle and walking tracks.
- a new shared bicycle and pedestrian path along the western side of Wilf Crane Crescent
- publicly accessible pedestrian paths throughout the site, providing key connections with Banks Street and Bentham Street, and through to the Brickworks Development, allowing for good integration with proposed public pedestrian network proposed through Brickworks Development, as shown at Figure 6.2.

Figure 6.2 – Brickworks and Broader Precinct Pedestrian Connectivity Map [1]



[1] CBP site layout has been undergone further design development, however principles of pedestrian access is understood to remain the same

6.5 Travel Plan

As noted at Section 5.1, as part of further planning stages it is recommended a Resident or Green Travel Plan is prepared. A Travel Plan is a package of measures aimed at promoting sustainable travel and reducing reliance on private vehicles. It is not adversarial to car-based travel, however aims to encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel plans can provide measures to:

- Restrict car use (disincentives or 'sticks')
- Encourage or support sustainable travel, reduce the need to travel or make travelling more efficient (incentives or 'carrots')

A site-specific Travel Plan would promote more sustainable and environmentally friendly travel choices for residents, employees and visitors. This could consider features such as car share, community bus facilities and enhanced end of trip bicycle facilities.

7. Traffic Impact Assessment

7.1 Overview

7.1.1 Background & Modelling Scenarios

Intersection capacity analysis has been conducted at key intersections near the site to assess the traffic implications of the masterplan, considering the cumulative impact of potential development of the Canberra Brickworks Precinct (CBP).

As discussed earlier at Section 2.1, the existing Forestry Place lease agreement permits up to 17,400sqm (GFA) of scientific research floor space, with 9,800sqm of that permissible gross floor area provided to date (facility currently unoccupied). As an amendment to the National Capital Plan is sought, the assessment compares what the additional impact would be as a result of the proposed change to the National Capital Plan. As the current development was not developed to the full extent permissible under the National Capital Plan nor occupied at the time of traffic surveys, the existing condition scenario does not accurately represent the traffic condition which can be reasonably and lawfully expected. As such, analysis has been conducted at key intersections near the site to assess the traffic implications of a (maximum) floor area provision consistent with that permissible under the lease to understand the **net change** in traffic conditions on the surrounding road network between the current permissible development and the proposed masterplan.

The modelling scenarios selected for analysis are described in Table 7.1.

Table 7.1 – Scenario Analysis for Modelling Traffic Impacts

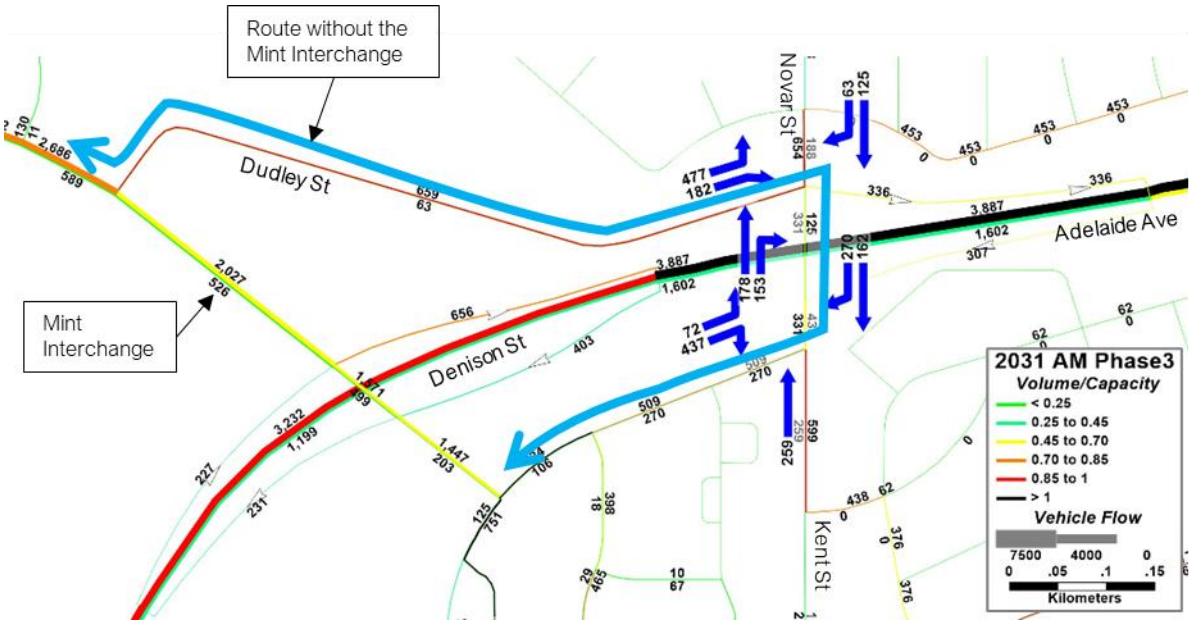
No.	Scenario	Description
1	Existing Condition	December 2020 traffic surveys.
2	Future Base Condition	Existing condition plus allowance for the approved **Canberra Brickworks Precinct** re-development
3	Future Base Condition with full development of CSIRO facility	Scenario 2 including allowance for full development of the current CSIRO facility at the maximum permissible GFA under existing lease, being 17,400 square metres.
4	Project Case or Post Development Condition	Scenario 2 including allowance for land use proposed under the masterplan.

7.1.2 Mint Interchange & Background Traffic Growth

Stantec have reviewed traffic volume plots from the Canberra Strategic Transport Model (CSTM), provided by request to Transport Canberra and City Service (TCCS) for the future year 2031 and 2041. Review of the plots indicates the road network within the CSTM includes the proposed Mint Interchange, discussed at Section 3.3.1. Whilst this upgrade is expected to improve accessibility and ease congestion in and around the Yarralumla area, discussions with TCCS indicates there is no current commitment to deliver the Mint Interchange by 2031.

An exert of the CSTM 2031 AM traffic volume plot is contained at Figure 7.1.

Figure 7.1 – CSTM 2031 AM Data



Source: TCCS provided 26 August 2021

As shown, the Mint Interchange is expected to carry around 2,500 vehicles (two-way)[12] during the AM peak hour period. Without the Mint Interchange, these vehicles would need to rely on other existing connections in the area, namely Dudley Street, Novar Street and Kent Street or alternatively seek alternate, broader precinct travels paths which potentially offer better levels of service and low levels of traffic delay.

The CSTM data plot reveals lower levels of traffic activity on Novar Street and Kent Street at Adelaide Avenue, consistent with expectations around delivering new and additional traffic and transport connections in the area for the 2031 design year.

In the absence of a commitment to delivering the Mint Interchange, this analysis has sought to conservatively assess the proposal using existing conditions traffic data, which represents higher levels of traffic demand and lower levels of traffic accessibility in the nearby area.

The final observation on the 2031 planning horizon with the Mint Interchange is that a review of the AM and PM plots reveals that Adelaide Avenue is expected to operate near or at practical capacity in 2031 (volume to capacity of 0.85 to 1.00 or over 1.00, respectively illustrated in red and black in Figure 7.1). This would indicate that other upgrade features are likely to be required to be delivered along with the Mint Interchange to ensure overall acceptable operating performance on the broader arterial road network including associated intersection interchanges.

On background traffic growth, Stantec has procured historic traffic data from 2012 through to 2023 at above intersection locations, including along Novar Street and Dudley Street. On review of the applicable data, it is observed that there was material traffic growth along Dudley Street and Hopetoun Crescent (north of Weston Street) prior to 2015 however since 2015 there has been limited, if any, recorded traffic growth on the road network.

A review of the traffic volumes surveyed in December 2020 indicate that across the entire network surveyed, while some select traffic movements are higher or lower than past, there is generally no or limited growth in peak hour traffic movement in the study area. In some cases, traffic demand has reduced. On our review of available data between November 2015 and December 2020, the following key trends can be observed:

- Overall traffic volumes at the Hopetoun Circuit/ Adelaide Avenue off-ramp intersection are within one per cent of volumes recorded in November 2015 during both peak periods.
- Overall traffic volumes at the Dudley Street/ Novar Street/ Adelaide Avenue entry ramp intersection are less in December 2020 than November 2015 during the AM peak period and within one per cent in the PM peak period.
- Overall traffic volumes at the Kent Street/ Adelaide Avenue exit ramp intersection are less in December 2020 than November 2015 during both peak periods.

[12] Note the type of intersections and operating environment are too detailed for a strategic transport model hence the CSTM is best used to determine differences in traffic flow between two scenarios rather than absolute traffic volumes.

- Overall traffic volumes at the Kent Street/ Denison Street intersection are less in December 2020 than November 2015 during both peak periods.

A further review of the traffic volumes surveyed in July 2023 as detailed in Table 2.2 and Table 2.3 indicates that traffic volumes have reduced across both the weekday AM/ PM and Saturday midday peak hours.

Based on the above, it is considered reasonable that no growth in through traffic volumes be assumed for the purposes of the following modelling assessments other than demands associated with the approved but yet to be constructed CBP.

7.2 Traffic Generation Rates

7.2.1 Overview

TCCS Guidelines for Transport Impact Assessments (version 3.1, TCCS, April 2020) state that for residential traffic generation, rates are to be sourced from the Estate Development Code and for all other land uses, estimates of traffic generation can be based on published trip generation databases or surveys of comparable developments. As such, traffic generation estimates for the proposed land uses have been sourced from the following:

- ESDD Estate Development Code
- Transport for NSW Guide to Traffic Generating Developments 2002 (the Guide 2002)
- Transport for NSW Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a (TDT 2013/04a)
- Stantec's own database of traffic generation surveys from like developments.

7.2.2 Masterplan

Residential

Traffic generation estimates for the residential land uses have been sourced from the ESDD Estate Development Code (EDP). This document provides for a rate of seven vehicles per day for blocks 360m^2 or smaller for estates in residential zones. As such, a total of 0.7 vehicles per peak hour has been adopted, based on a peak to daily ratio of 10 per cent.

The directional split of traffic is assumed to be 20:80 between inbound and outbound traffic in the AM peak and 60:40 between inbound and outbound traffic in the PM peak.

Commercial (office)

In the absence of an ACT specific code rate, traffic generation estimates for the commercial land uses have been sourced from Transport for NSW Guide 2002. The Guide 2002 provides for a rate of 1.6 and 1.2 trips per 100m^2 GFA respectively in the AM and PM peak hours for commercial developments.

The directional split of traffic is assumed to be 90:10 between inbound and outbound traffic in the AM peak. The reverse directional split is assumed in the PM peak.

Aged Care

In the absence of an ACT specific code rate, traffic generation estimates for the aged care use has been sourced from Transport for NSW TDT 2013/ 04a. TDT 2013/ 04a recommends a rate of 0.4 vehicle trips per dwelling in the PM peak hour for housing for seniors. A review of the aged care developments indicates a lower peak period traffic generation rate when compared to independent living facilities for seniors. As such, a rate of 0.2 vehicle trips per dwelling in eachpeak hour for housing for aged and disabled persons and includes trips by staff and visitors.

The directional split of traffic is assumed to be 80:20 between inbound and outbound traffic in the AM peak. The reverse directional split is assumed in the PM peak. This is conservatively reflective of staff (and some visitors) arriving in the morning for the day shift and departing in the afternoon.

Hotel

No ACT code or Transport for NSW guide provides a traffic generation rate for hotels, and instead recommends that analysis of proposed hotel developments be based on surveys of similar existing hotels. Stantec has previously completed surveys of similar suburban hotels. The surveys found an average peak hour vehicle generation rate of 0.19 trips per room.

The directional split of traffic is assumed to be 50:50 between inbound and outbound traffic in both peak periods

7.2.3 Canberra Brickworks Precinct

Commercial traffic generation rates adopted for CBP are consistent with the proposed masterplan.

As mentioned in Section 7.2.2, the EDP specifies traffic generation rates for residential housing types residential housing types. As such, the rates have been adopted for the following, based on a peak to daily ratio of 10 per cent:

- 0.6 vehicles per peak hour for multi-residential apartments
- 0.7 vehicles per peak hour for townhouses
- 0.8 vehicles per peak hour for single dwellings (houses)

In the absence of an ACT specific code rate, traffic generation estimates for the food and beverage land uses have been sourced from Transport for NSW Guide 2002. The Guide 2002 provides for a rate of 5 trips per 100m^2 GFA in the PM peak hour for restaurant developments. Review of anticipated parking demands and associated trip generation of food and beverage uses at the CBP as detailed at Figure 2.9 indicates that these uses are not expected to be open during the AM peak period and hence these uses are not expected to generate any parking or traffic demand.

In the absence of an ACT specific code rate, traffic generation estimates for the health and wellness land uses have been sourced from Transport for NSW Guide 2002. The Guide 2002 provides for a rate of nine trips per 100m^2 GFA for gymnasiums in metropolitan sub regional areas in the PM peak hour. A factor of 0.5 has been applied to account for the less intensive generation expected by day spa and consulting rooms. Review of anticipated parking demands as detailed at Figure 2.9 and associated trip generation of health and wellness uses indicates that demand for health and wellness uses are expected to be less in the AM peak period. For the purpose of this assessment, traffic generation is assumed to be consistent in the AM and PM peak periods.

In the absence of an ACT specific code rate, traffic generation estimates for the medical centre and retail land uses have been sourced from Transport for NSW Guide 2002. The Guide 2002 provides a traffic generation model for Thursday PM peak periods. As such, the Guide 2002 specifies the following rates:

- 2.2 trips per 100m^2 GFA for medical centres
- 4.6 trips per 100m^2 GFA for retail and specialty shops

Review of anticipated parking demands as detailed at Figure 2.9 and associated trip generation of medical centre and retail land uses indicates that demand for medical centre and retail land uses are expected to be similar too or less in the AM peak period. For the purpose of this assessment, traffic generation is assumed to be consistent in the AM and PM peak periods.

The Saturday midday peak hour is expected to generate the same level of traffic as the weekday PM peak, with exception of the commercial land use which is expected to generate no traffic.

7.2.4 Existing CSIRO Land Use (As of Right Development)

As discussed earlier at Section 2.1, the site is occupied by CSIRO under a crown lease which is operable until the year 2092. The existing lease agreement for the site executed on the 20 June 2002 for a 90-year period, permits a maximum gross floor area of 17,400sqm of floor space for scientific research purposes. For planning purposes, this threshold floor area for the specified land use constitutes an *'as-of-right'* outcome. It represents for planning purposes an appropriate development benchmark upon which the masterplan can be compared. The current buildings on the site total approximately 9,800sqm. These existing buildings are currently unoccupied.

In relation to this observation and as discussed earlier at Section 7.1, the additional floor space is currently a permitted use under both the National Capital Plan and the lease. Accordingly, Stantec have explored the likely traffic generation this permitted land use yield, assuming it was fully developed and occupied in accordance with the current planning and lease condition, for the purposes of a comparative assessment between the permitted, *'as-of-right'* development yield and the proposed master plan.

For estimating purposes, a scientific research occupancy of the subject site, would be expected to have a lower employee to floor area density than, say for example, a traditional white-collar office. The likely density assumed for analysis is approximately half that which could be expected for a traditional office. This would result in rates of 0.8 and 0.6 vehicle movements per 100sqm of floor space during the AM and PM road network peak hours. These rates are comparable with business park land uses, for regional areas, where RMS recommends rates of 0.70 and 0.78 for the AM and PM peak periods, respectively.

The directional split of traffic is assumed to be 90:10 between inbound and outbound traffic in the PM peak. The reverse directional split is assumed in the PM peak.

7.3 Traffic Generation Estimate

7.3.1 Canberra Brickworks Precinct

Using the adopted traffic generation rates as a basis to estimate the traffic generating potential of the CBP, the development is forecast to generate around 404 and 487 vehicle trips during the weekday AM and PM periods, and 462 vehicles trips during the Saturday midday period.

The Yarralumla Brickworks Traffic and Parking Report (Calibre Professional Services Pty Ltd, 2023) indicates the development is expected to generate up to 501 vehicle trips in each weekday peak period. This is considered a conservative high side assessment of traffic demand for the following reasons:

- The Traffic and Parking Report assumes that the food and beverage use's generate 92 vehicle trips in the AM peak period however review of anticipated parking demands for CBP as detailed in Figure 2.9 indicates these uses are not expected to be open to the public during the AM peak period (i.e., before 10:00am)
- The Traffic and Parking Report adopts commercial (office) traffic generation rates based on Transport for NSW Guide 2002. However, these rates have since been superseded by lower rates contained in Transport for NSW TDT 2013/04a

Based on the above, the forecasted number of trips (around 404, 487 and 462 vehicle trips during the weekday AM and PM and Saturday midday periods) are considered a reasonable representation of likely demand.

7.3.2 Existing CSIRO Land Use

Using the adopted traffic generation rates as a basis to estimate the traffic generating potential of a fully occupied CSIRO premises (circa 17,400sqm GFA) for scientific and research purposes, the development would likely generate around 139, 104 and 957 vehicle trips during a typical weekday AM, PM and daily traffic period. Further, the development would generate no vehicle trips during a Saturday midday peak period.

7.3.3 Forestry Place Masterplan Development

The traffic generation rates proposed to be adopted to the masterplan are summarised in Table 7.2, noting that the tabulated values make no allowance for demand likely to be removed from the transport network for those uses being replaced by the project or any trip discounts (discussed in Section 7.2.4). Further, weekend traffic demands are estimated as being consistent with those identified for the weekday with the exception that the commercial office is unlikely to generate any material level of traffic demand.

Table 7.2 – Traffic Generation by Land Use (indicative development schedule) – Traffic Rates

Land Use	Peak Hour			Weekday	Source
	Weekday AM Rate	Weekday PM Rate	Saturday Midday Rate [1]		
Residential	0.7 vph/ unit	0.7vph/ unit	0.7vph/ unit	7vph/ unit	Estate Development Code
Aged Care	0.2 vph/ unit	0.2 vph/ unit	0.2 vph/ unit	2.0 vph/ unit	Transport for NSW
Hotel	0.19 vph/ key	0.19 vph/ key	0.19 vph/ key	1.43 vph/ key	Stantec Database
Commercial Office	1.6 vph/ 100sqm GFA	1.2 vph/ 100sqm GFA	No trips	11 vph/ 100sqm GFA	Transport for NSW

[1] Weekend traffic demands are estimated as being consistent with those identified for the weekday with the exception that the commercial office is unlikely to generate any material level of traffic demand.

Using the adopted traffic generation rates as a basis to estimate the traffic generating potential of the masterplan, an estimate of weekday AM, PM, Saturday midday and daily traffic demands is set out at Table 7.3.

Table 7.3 – Traffic Generation by Land Use (indicative development schedule)

Land Use	Size Scale	Peak Hour			Daily Traffic Generation
		Weekday AM Peak	Weekday PM Peak	Saturday Midday Peak	Weekday
Residential	266 units	186	186	186	1,862
Aged Care	130 units	26	26	26	260
Hotel	80 keys	15	15	15	114
Commercial Office	800sqm	13	10	0	88
Total		**240**	**237**	**227**	**2,324**

Table 7.3 indicates that the masterplan is forecast to generate around 240, 237, 227 and 2,324 vehicle trips during the weekday AM, PM and Saturday midday periods, and daily respectively. This results in a net increase of 101, 104, 227 and 1,367 vehicle trips during the weekday AM, PM and Saturday midday periods and daily respectively compared to a fully occupied CSIRO premise.

7.4 Trip Types and Discounts

When projects are considered for evaluation as part of a broader suburb or district area, it is usual practice to consider those trips which might remain in the area as opposed to those likely to be attracted to broader suburban or regional area destinations.

Colloquially, these trips are often described as internal or external trips to the applicable district area or suburb. In this case, external trips would be those exiting the Yarralumla suburb, both as they access Adelaide Avenue or use either of the grade separated crossings into southerly suburb areas such as Deakin, Hughes and Woden Valley or rely on Cotter Street or Alexandrina Drive for access.

To ascertain the likely number of internal trips to Yarralumla, guidance has been sought from household travel surveys completed by the ACT government in 2017. The pretext regarding the completion and purpose of these surveys is reproduced below[13]:

"Transport Canberra and City Service Directorate and the Queanbeyan-Palerang Regional Council engaged Ipsos Social Research Institute in 2017 to undertake a survey that collected information about how, where and when members of a selected household travels over a single day. A total of 1,785 households and 4,611 people in both the ACT and Queanbeyan contributed to the survey and completed a travel diary for a single specified day.

Outcomes from the Household Travel Survey are being used to inform the transport planning and policy development for the ACT and Queanbeyan area."

From the completed surveys, trip types have been disaggregated to represent a range of activities including those involving retail purchases, education, and social recreation, amongst others. A review of the surveys for the district area of South Canberra for those trips which could be locally satisfied are provided in Figure 7.2.

[13] https://www.transport.act.gov.au/about-us/planning-for-the-future/household-travel-survey

Figure 7.2 – ACT Household Survey – Proportion of Trip Types Satisfied by Local Facilities

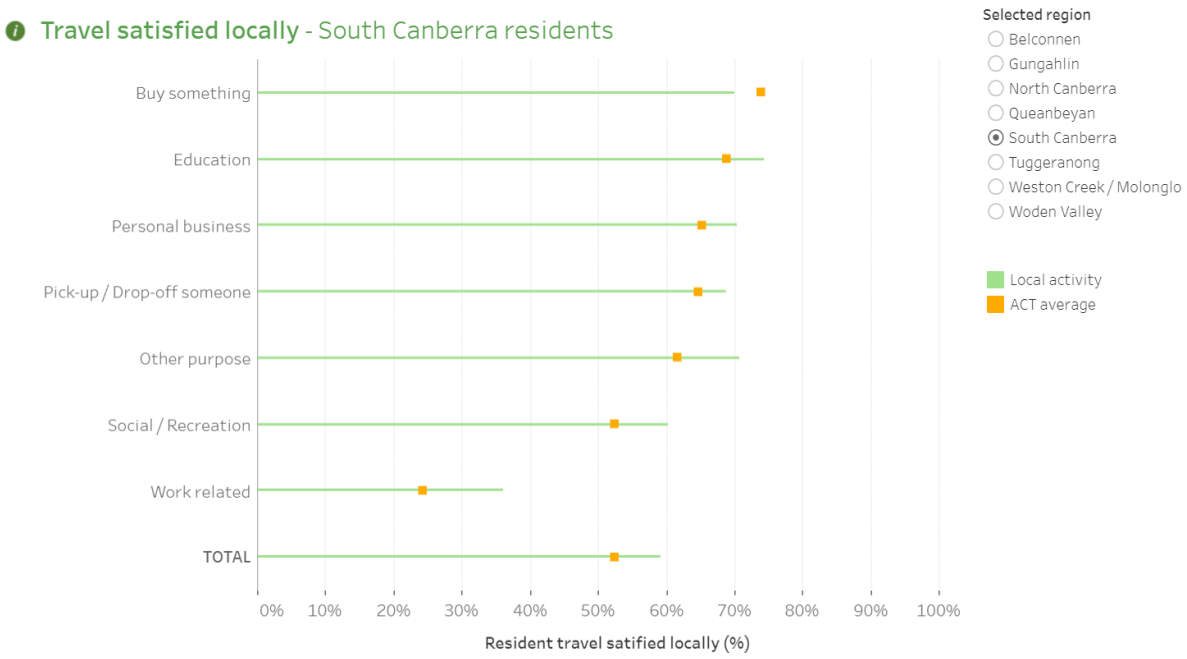


Figure 7.2 indicates that between 35 per cent and 75 per cent of all trip types can be serviced locally within the South Canberra district area. Given that the surveys cover the broader district area of South Canberra which includes suburb areas over Adelaide Avenue, some judgment is required to the extent that trips generated by the project may remain within the Yarralumla suburb area. These proportions are likely to be influenced by both the nature of the uses proposed as part of the development as well as the level of services and facilities available within the Yarralumla suburb itself. These proportions are likely to also be influenced by day of week and associated trip purpose, with greater level of recreational trips expected on weekends likely to be attracted to activities along the lake foreshore.

Based on the range of uses proposed as part of the development, notional (and conservatively low) estimates for trip discounts have been assumed for traffic generating purposes.

Table 7.4 – Scenario Analysis for Modelling Traffic Impacts

Land Use	Trip Discounts for Internal Trips to Yarralumla	
	Scenario	Description
Residential	15%	20%
Aged Care	0%	0%
Hotel	0%	20%
Commercial Office	0%	0%

The masterplan is forecast to generate around 28, 28 and 40 vehicle trips internal to Yarralumla during the weekday AM, PM and Saturday midday periods, respectively. Traffic trips internal to Yarralumla are illustrated at Appendix A with Turning Movement Diagrams for both the Canberra Brickworks Precinct and Masterplan scenarios.

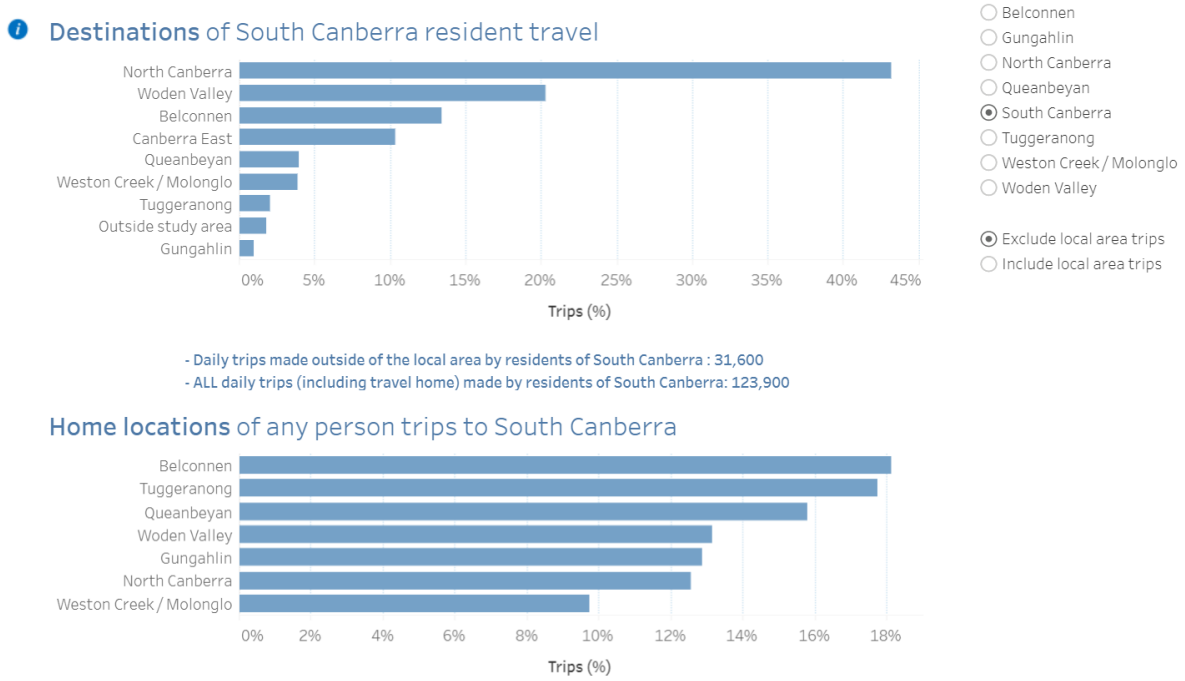
7.5 Traffic Distribution and Assignment

The directional distribution and assignment of traffic generated will be influenced by a number of factors, including the:

- configuration of the arterial road network in the immediate vicinity of the site
- existing operation of intersections providing access between the local and arterial road network
- surrounding employment centres, retail centres and schools in relation to the site
- likely distribution of staff residences in relation to the site
- configuration of access points to the site.

Traffic associated with the development will be distributed across the network by drawing on data collected from the ACT Government Household Transport Surveys. A summary of trip destinations and origins is reproduced at Figure 7.3.

Figure 7.3 – Household Survey Trip Destination & Origins (2017) – excluding local trips



These trips origins and destinations have been blended with established transport system performance during peak operating periods to inform estimated traffic demands at each of the following support access gateways:

1. Adelaide Avenue / Novar Street
2. Cotter Street / Dudley Street
3. Adelaide Avenue / Hopetoun Circuit
4. Alexandrina Drive.

Whilst other suburb links include Empire Circuit and Perth Avenue, these links are considered less direct and less convenient than those listed above as reasonable and reliable links likely to be used by traffic associated with the development proposal. The proportional use of individual links is informed by a combination of modelled network performance on established origin and destination locations.

Based on the foregoing, the AM and PM peak hour development generated traffic volumes for each development scenario are illustrated in Appendix A.

Consistent methodology to the directional distribution and assignment of traffic generated by CBP has been applied. Naturally, traffic would have a much greater reliance on those access gateways proximate to the site including Adelaide Avenue/ Novar Street and Cotter Street/ Dudley Street. It is also expected a greater proportion of visitors to the commercial components of the precinct would travel from Yarralumla.

7.6 Adelaide Avenue Interchange Upgrade

TCCS provided Stantec with the AIMSUN model files for the Kent Street/ Novar Street upgrades (discussed in Section 2.8.3 and 2.9) in September 2021. The package included the base year model, future year (2031) model, with and without the Adelaide Avenue Interchange Upgrade.

Masterplan development traffic has been superimposed into the AIMSUN future year model (2031 with road network upgrades) to understand the traffic impact of the masterplan on the Adelaide Avenue Interchange, based on AECOM modelling prepared to date. It is noted that Stantec do not propose to critique the model. It is noted that minor changes have occurred to the land use schedule since Stantec initially prepared this assessment. A review of changes to the traffic generating potential of the development indicates the revised land use schedule has only a small and immaterial effect on forecast traffic generation.

Based on the provision of this material, Section 7.7 of this report sets out an assessment of the traffic impact of the masterplan using both AIMSUN and SIDRA modelling software.

7.7 Traffic Impact on the Network

7.7.1 SIDRA Intersection Model

As noted in Section 2.4, the commonly used measure of intersection performance, as defined by Transport for NSW, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service. Table 7.5 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

Table 7.5: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but crash study required
D	43 to 56	Near capacity	Near capacity, crash study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Another commonly used measure of intersection performance is referred to as the *Degree of Saturation (DOS)*. The DOS represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection. For roundabout intersections, a DOS of around 0.95 has been typically considered the practical capacity, beyond which queues and delays increase disproportionately[14].

For other unsignalised intersections, the practical capacity is typically considered to be a DOS of 0.90.

Summary of Level of Service Results

Table 7.6 presents a summary of the anticipated future operation of each key intersection in the network in the AM and PM peak periods for each modelling scenario. As shown earlier in the report, Table 2.4 provides a summary of the overall Level of Service (LOS) estimated at each modelled intersection on the network. Full results per approach and SIDRA Intersection layouts, phasing and movement summaries are respectively presented in Appendix B and C of this report.

[14] SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

		Intersection Degree of Saturation (X)		
		Signals	Roundabouts	Unsignalised
A	Excellent	<=0.60	<=0.60	<=0.60
B	Very Good	0.60-0.70	0.60-0.70	0.60-0.70
C	Good	0.70-0.90	0.70-0.85	0.70-0.80
D	Acceptable	0.90-0.95	0.85-0.95	0.80-0.90
E	Poor	0.95-1.00	0.95-1.00	0.90-1.00
F	Very Poor	>=1.0	>=1.0	>=1.0

Table 7.6 – Summary of Network Results – AM and PM Peak Period Level of Service Estimates

Site	Peak	Level of Service			
		1 Existing	2 With CBP	3 2 with CSIRO Development	4 2 with masterplan
Banks St/ Wilf Crane Cres	AM	A	A	A	A
	PM	A	A	A	A
	Sat	A	A	A	A
Banks St/ Bentham St	AM	A	A	A	A
	PM	A	A	A	A
	Sat	A	A	A	A
Bentham St/ Novar St	AM	A	A	A	A
	PM	A	A	A	A
	Sat	A	A	A	A
Weston St/ Novar St	AM	A	A	A	A
	PM	A	A	A	A
	Sat	A	A	A	A
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB)	AM	C	C	D	D
	PM	B	B	B	B
	Sat	B	B	B	B
Kent Street/ Adelaide Ave exit ramp (WB)	AM	B	B	B	B
	PM	A	A	A	A
	Sat	A	A	A	A
Kent Street/ Denison St	AM	A	A	A	A
	PM	A	A	A	B
	Sat	A	A	A	A
Dudley St/ Cotter Rd (EB).	AM	B	C	C	C
	PM	B	B	B	B
	Sat	A	A	A	A
Dudley Street/ CBP Access	AM	A	B	B	B
	PM	A	A	A	A
	Sat	A	A	A	A

Figure 7.4 through to Figure 7.7 illustrate the level of service estimates for the various intersections.

Figure 7.4 – Existing Condition level of service

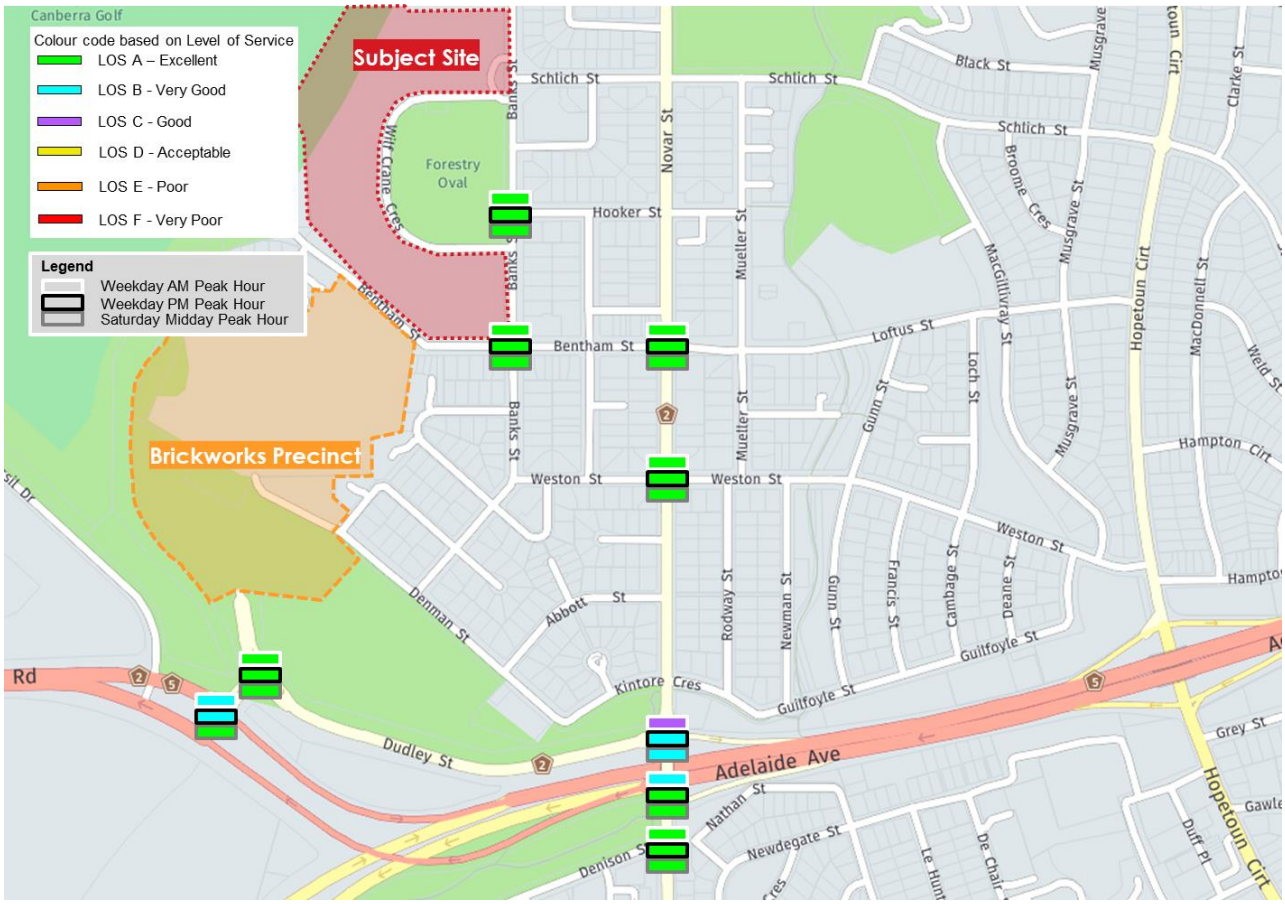


Figure 7.5 – Scenario 2 level of service

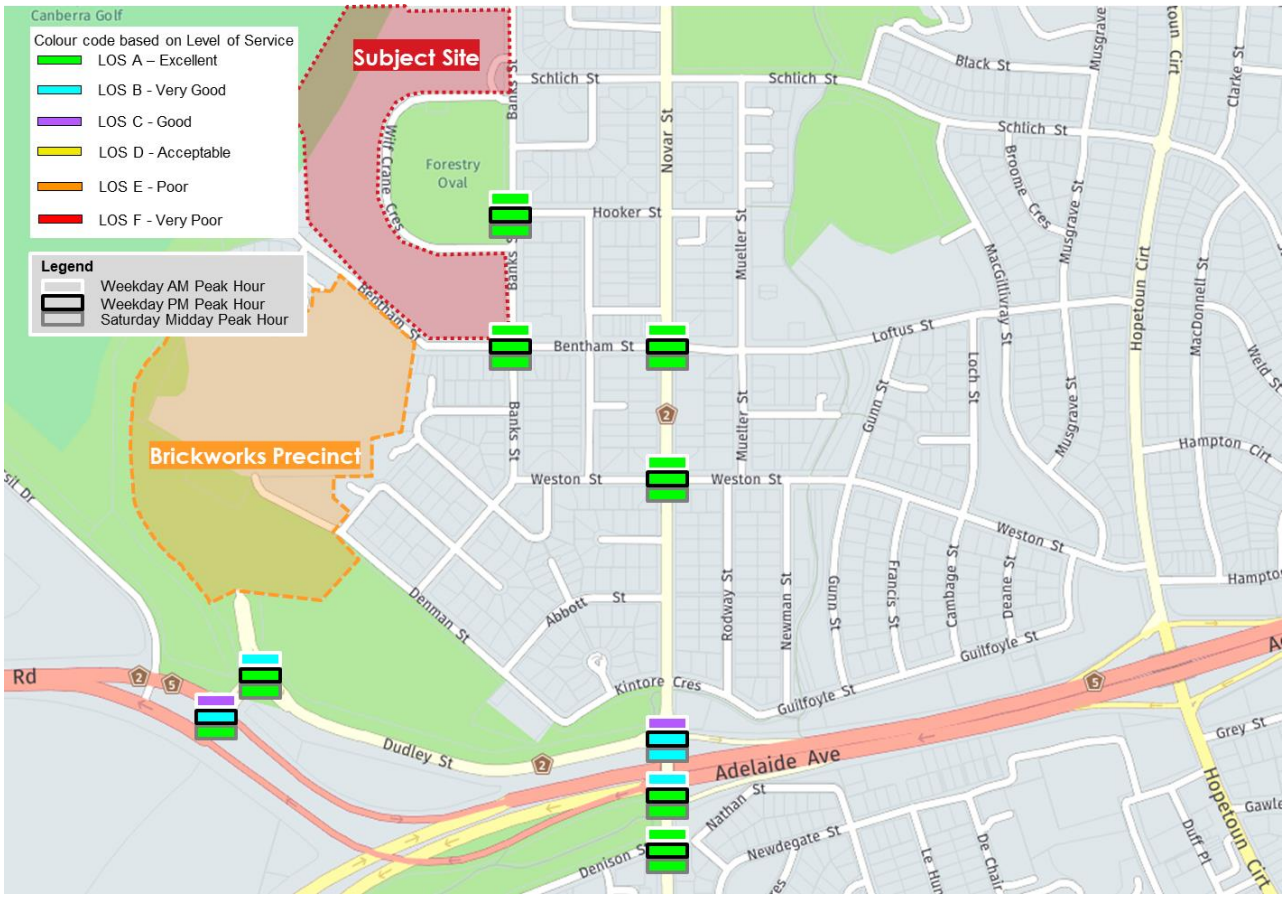


Figure 7.6 – Scenario 3 level of service

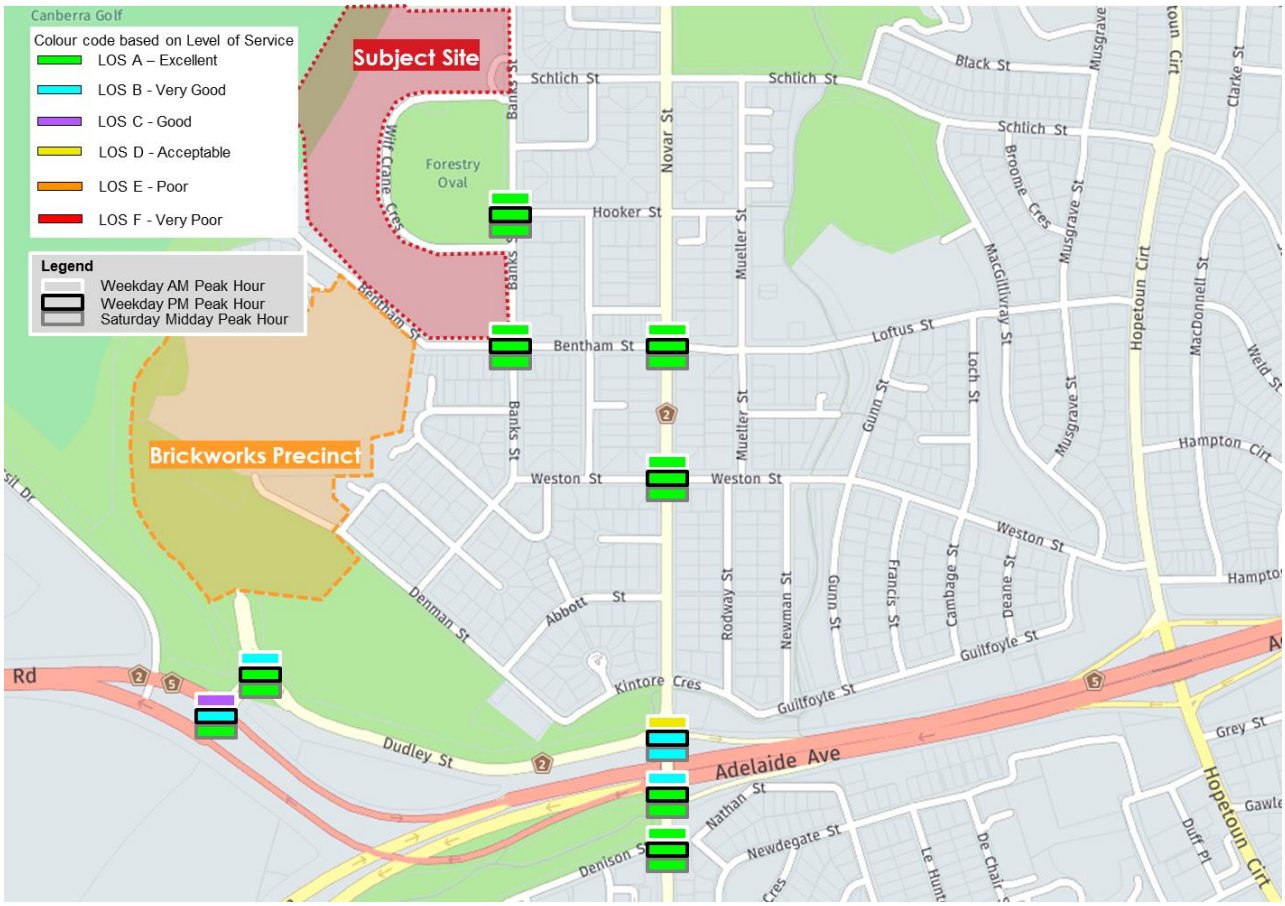


Figure 7.7 – Scenario 4 level of service

The traffic analysis indicates that intersections within Yarralumla (north of Dudley Street) will continue to (generally) operate within acceptable operating limits, with continuing spare capacity during each test scenario, including under post development conditions under the masterplan.

Analysis indicates that following full development of the current CSIRO facility at the maximum permissible GFA under the existing lease, the road network is expected to operate with a similar level of service to that expected following full development of the CBP, with exception of the Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp intersection that is expected to operate near capacity with a Level of Service D in the AM peak period.

Analysis further indicates that the masterplan will return intersection levels of service no worse than those which can be expected under a fully developed CSIRO site at 17,400sqm of GFA.

Scenario 2 Results

Table 7.7 presents a summary of the anticipated operation of the key study area intersections in the future base scenario, assuming full development of CBP and no development on the subject site. Full results per approach and SIDRA Intersection layouts, phasing and movement summaries are respectively presented at Appendix B and C of this report.

Table 7.7 – Scenario 2 Intersection Operation (Comparison with Existing Conditions)

Site	Peak	Existing				Scenario 2 (with CBP)			
		Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)	Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)
Banks St/ Wilf Crane Cres	AM	0.02	A	5	1	0.02	A	5	0
	PM	0.02	A	5	0	0.02	A	5	0
	Sat	0.05	A	5	0	0.05	A	5	0
Banks St/ Bentham St	AM	0.02	A	5	1	0.03	A	5	1
	PM	0.05	A	5	1	0.05	A	5	1
	Sat	0.04	A	5	1	0.04	A	5	1
Bentham St/ Novar St	AM	0.13	A	12	5	0.14	A	12	6
	PM	0.14	A	11	5	0.16	A	11	6
	Sat	0.06	A	12	2	0.07	A	12	3
Weston St/ Novar St [1]	AM	0.14	A	11	2	0.16	A	12	2
	PM	0.18	A	10	2	0.20	A	11	2
	Sat	0.05	A	11	1	0.06	A	11	1
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	0.94	C	41	98	0.87	C	34	86
	PM	0.69	B	19	46	0.81	B	21	50
	Sat	0.67	B	22	25	0.63	B	21	30
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	0.87	B	17	69	0.81	B	15	65
	PM	0.32	A	8	33	0.39	A	9	36
	Sat	0.23	A	9	15	0.25	A	10	21
Kent Street/ Denison St [1]	AM	0.59	A	12	45	0.81	B	15	65
	PM	0.65	A	13	50	0.69	A	14	52
	Sat	0.27	A	10	16	0.28	A	10	21
Dudley St/ Cotter Rd (EB) [1]	AM	0.9	B	16	270	0.99	C	38	455
	PM	0.75	B	15	58	0.75	B	15	60
	Sat	0.51	A	11	29	0.54	A	12	36
Dudley	AM	0.01	A	14	0	0.53	B	19	18

Site	Peak	Existing				Scenario 2 (with CBP)			
Street/ CBP Access [1]	PM	0.01	A	10	0	0.30	A	10	4
	Sat	0.01	A	10	0	0.21	A	11	4

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

Table 7.7 indicates that the development of the CBP will result in the road network generally operating similar to existing conditions. Intersections along the Adelaide Avenue interchange are expected to operate with lower average delays in the AM peak period as a result of a minor re-allocation of phase times as calculated by SIDRA to help balance average delays of each vehicle traveling through.

Scenario 3 Results

Table 7.8 presents a summary of the anticipated operation of the key study intersections (with modification), assuming full development of CSIRO facility at 17,400sqm of GFA. Full results per approach and SIDRA Intersection layouts, phasing and movement summaries are respectively presented at Appendix B and C of this report.

Table 7.8 – Scenario 3: CSIRO Development Intersection Operation (Comparison with Scenario 2) [2]

Site	Peak	Scenario 2 (Scenario 1 with CBP)				Scenario 3 (Scenario 2 with CSIRO development))			
		Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)	Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)
Banks St/ Wilf Crane Cres	AM	0.02	A	5	0	0.02	A	5	1
	PM	0.02	A	5	0	0.02	A	5	0
Banks St/ Bentham St	AM	0.03	A	5	1	0.03	A	5	1
	PM	0.05	A	5	1	0.07	A	5	2
Bentham St/ Novar St	AM	0.14	A	12	6	0.35	A	12	6
	PM	0.16	A	11	6	0.20	A	11	8
Weston St/ Novar St	AM	0.16	A	12	2	0.17	A	13	5
	PM	0.20	A	11	2	0.26	A	12	12
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	0.87	C	34	86	0.95	D	46	123
	PM	0.80	B	21	50	0.79	B	22	54
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	0.81	B	15	65	0.81	B	15	66
	PM	0.39	A	9	36	0.40	A	9	40
Kent Street/ Denison St [1]	AM	0.81	B	15	65	0.82	B	16	66
	PM	0.69	A	14	52	0.69	A	14	54
Dudley St/ Cotter Rd (EB). [1]	AM	0.99	C	38	455	0.95	C	29	361
	PM	0.75	B	15	60	0.75	B	15	60
Dudley Street/ CBP Access [1]	AM	0.53	B	19	18	0.56	B	21	18
	PM	0.30	A	10	4	0.30	A	11	4

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.
[2] CSIRO development scenario is not expected to generate any vehicle trips on weekends hence Saturday midday peak analysis has been excluded from this table.

Table 7.8 indicates conditions on the transport network between Scenario's 2 and 3 are similar, with typical increase in intersection delays of 0 to three seconds.

Scenario 4 Results

Table 7.9 presents a summary of the anticipated operation of the key study intersections (with modification), assuming full development of the masterplan in-lieu of a fully developed CSIRO precinct under the lease at 17,400sqm of GFA. For planning purposes, this scenario is perhaps the most important of all analytic scenarios tested under this study. Full results per approach and SIDRA Intersection layouts, phasing and movement summaries are respectively presented at Appendix B and C of this report.

Table 7.9 – Scenario 4: Post Masterplan Development Intersection Operation (Comparison with Scenario 3) [2]

Site	Peak	Scenario 3 (Scenario 2 with CSIRO development)				Scenario 4 (Scenario 2 with Masterplan)			
		Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)	Degree of Saturation	Level of Service	Average Delay (seconds)	95th Percentile/ Average Queue (metres)
Banks St/ Wilf Crane Cres	AM	0.02	A	5	1	0.02	A	5	0
	PM	0.02	A	5	0	0.04	A	5	1
	Sat	0.05	A	5	0	0.07	A	5	1
Banks St/ Bentham St	AM	0.03	A	5	1	0.06	A	6	1
	PM	0.07	A	5	2	0.09	A	5	2
	Sat	0.04	A	5	1	0.10	A	6	3
Bentham St/ Novar St	AM	0.35	A	12	6	0.16	A	13	6
	PM	0.20	A	11	8	0.21	A	11	9
	Sat	0.07	A	12	3	0.11	A	12	4
Weston St/ Novar St [1]	AM	0.17	A	13	2	0.23	A	13	3
	PM	0.26	A	12	3	0.26	A	12	3
	Sat	0.16	A	11	2	0.22	A	11	2
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	0.95	D	46	123	0.97	D	55	146
	PM	0.79	B	22	54	0.83	B	22	58
	Sat	0.63	B	21	30	0.66	B	22	35
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	0.81	B	15	66	0.83	B	16	73
	PM	0.40	A	9	34	0.45	A	10	41
	Sat	0.25	A	10	21	0.28	A	11	22
Kent Street/ Denison St [1]	AM	0.82	B	16	66	0.72	A	13	45
	PM	0.69	A	14	54	0.75	B	15	61
	Sat	0.28	A	10	21	0.29	A	10	17
Dudley St/ Cotter Rd (EB) [1]	AM	0.95	C	29	361	0.95	C	29	360
	PM	0.75	B	15	60	0.75	B	15	60
	Sat	0.54	A	12	36	0.55	A	12	37
Dudley Street/ CBP Access [1]	AM	0.56	B	21	18	0.54	B	20	18
	PM	0.30	A	11	4	0.30	A	11	4
	Sat	0.21	A	11	4	0.21	A	11	4

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.
[2] CSIRO development scenario is not expected to generate any vehicle trips on weekends hence Saturday midday peak analysis reflective of results from Scenario 2.

Table 7.9 indicates that the network will deliver similar levels of performance under a fully developed CSIRO facility (permissible under lease) in comparison to a development outcome consistent with the indicative land uses considered under this study. The only exception relates to the Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp intersection in

the AM peak period where average delay increases by nine seconds. Notwithstanding, sensitivity testing was completed where the cycle time increased from 70 to 80 seconds and indicating the intersection would operate with a Degree of Saturation and Average Delay reduced to 0.93 and 48 seconds, indicating similar if not better operation compared to under a fully developed CSIRO facility. As such, this indicates the current assessment has been conservative through retaining the same cycle time to existing however ultimately, the intersection clearly has more than adequate spare capacity to accommodate the development with a slight increase to cycle time unlocking such capacity.

Based on the foregoing comparative assessment for the documented developable options, it is evident that the proposed masterplan will broadly deliver network operating conditions which are no worse than those which could reasonably be expected under a fully realised floor area comprising 17,400sqm GFA of office floor area used to support scientific research activities.

7.7.2 AIMSUN Network Model

The study area extent considered in the model is illustrated at Figure 7.8.

As shown, the study area extends both from the Adelaide Avenue interchange to capture central Yarralumla.

Figure 7.8 – Kent Street/ Novar Street upgrades AIMSUN model extent (AECOM, 2021)

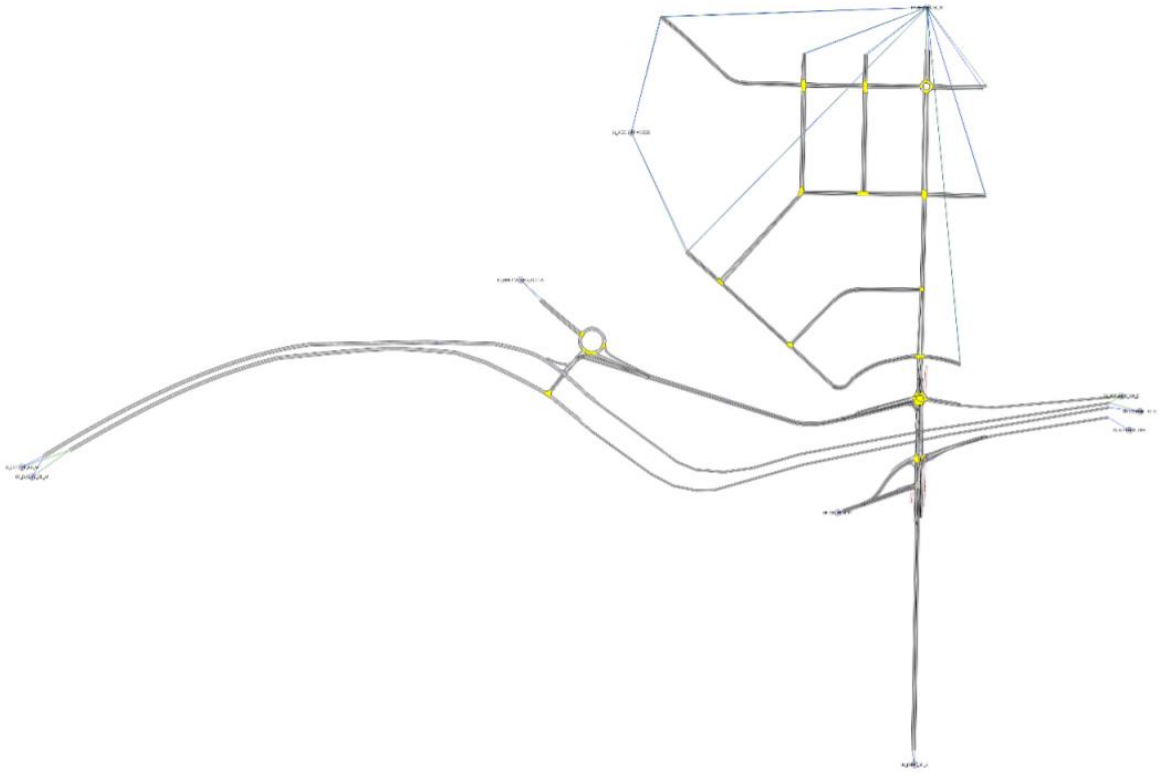


Table 7.10 and Table 7.11 present a summary of the anticipated future operations of the road network in the AM and PM peak periods for the 2031 base and 2031 post development (with masterplan) scenarios.

Table 7.10 – Summary of Network Results – AM peak period Network Statistics

Statistic	2031 Base	2031 Post Development (Masterplan)	Difference
VKT (km)	8,882	9,256	375
VHT (h)	372	413	41
Speed (km/h)	32	31	-2
Delay (sec/km)	93	103	10
Mean Travel Time (sec/km)	151	161	10

Table 7.11 – Summary of Network Results – PM peak period Network Statistics

Statistic	2031 Base	2031 Post Development (Masterplan)	Difference
VKT (km)	9,010	9,162	152
VHT (h)	241	273	32
Speed (km/h)	43	41	-2.1
Delay (sec/km)	46	58	12

Table 7.10 and Table 7.11 indicate indicates that that network characteristics are similar for the 2031 Base Scenario as the 2031 Post Development (With Masterplan) scenario.

7.7.3 Summary

From the above, Stantec's analysis comprising use of both SIDRA intersection and AIMSUN modelling software indicates that the traffic impacts of the master plan on the surrounding road network can be satisfactorily managed.

7.8 Road Network Capacity

An excerpt from the Estate Development Code 2013 (EDC) has been reproduced at Table 7.12 for reference, detailing the indicative traffic volume range accommodated by road types in Yarralumla. The thresholds provided in the EDC should not be interpreted as prescriptive threshold levels as not all design (i.e., spatial) attributes defined in the standard are met. In some cases, overall cross-sectional elements are exceeded and where it may be the case that one attribute is not met, other attributes can compensate to elevate a road length to a higher standard. An example of any such exceedance is more generous verge widths than those required in the standard. Where this is the case, planning judgment is required to develop or estimate daily traffic volume capabilities of individual street links.

For planning purposes, daily traffic volume thresholds provide a general guide on targeted traffic levels which are sought to support broader residential amenity aspirations. These aspirations relate to ambient noise and sleep disturbance thresholds. Peak hour traffic volumes on the other hand are generally used to assess network capacity and traffic safety implications associated with change.

Finally, the EDC provides a guide on the indicative traffic carrying capacity of residential street networks. In some cases, such as Bentham Street, street lengths can serve a mixed-use purpose. Streets which serve a mixed-use purpose must be categorised by having regard to their broader network function, particularly as commercial uses generally generate higher levels of traffic and transport demand per developable unit compared with low density residential land uses. We have had regard to this issue when classifying Bentham Street in the below summary tables.

Table 7.12 – Estate Development Code 2013 Daily Road Volume Indicative Threshold

Road Hierarchy Class	Traffic Volume Range (Vehicles Per Day)
Arterial	6,000+
Major Collector	3,001 – 6,000
Minor Collector	1,001 – 3,000
Access B	301 – 1,000
Access A	0 – 300
Rear Lane	0 – 160

In order to convert peak hour traffic volumes discussed in the body of this report and detailed at Appendix A to daily volumes, the peak to daily ratio must be established. In support of this process, Stantec organised SCAT's (induction loop) data for the intersection of Cotter Road and McCulloch Street in September and November 2020. For weekdays, the average peak volumes are taken as the AM and PM peak periods whereas for Saturdays, the average peak volumes are taken as the midday peak period. The peak to daily ratio based on SCAT's data is 12 per cent on weekdays and 10 per cent on Saturdays. Based on Table 7.3, a peak to daily ratio of 10 per cent has been adopted for development traffic. This is consistent with recognised *'rule-of-thumbs'* applied in the planning industry.

On this basis, a review of midblock capacities along key roads within Yarralumla is detailed at Table 7.13 and Table 7.14 respectively for a Weekday and Saturday against EDC classifications.

Table 7.13 – Weekday Daily Road Volume/ Traffic Capacity Mid-Block Threshold Review

Roads	Section	Road Type	EDC Indicative Capacity (vpd)	Weekday Daily Traffic Volumes (vpd)			
				1	2	3	4
				Existing Condition	Post CBP	CSIRO Development	Masterplan
Novar St	Between Denman St and Weston St	Major Collector [1]	6,000	3,200	4,000	4,300	4,600
	Between Denman St and Dudley St			4,800	5,700	6,300	6,500
Banks St	Between Bentham St and Wilf Crane Cres	Minor Collector [2]	3,000	500	500	1,500	2,300
Schlich St	Just west of Novar St	Minor Collector	3,000	400	400	600	1,000
Bentham St	Just east of Banks St	Minor Collector [3]	3,000	400	500	1,000	1,700
	Just west of Novar St			2,300	2,600	3,100	3,700
Weston Street	Just west of Novar St	Minor Collector [4]	3,000	1,500	1,500	2,000	2,100
	Just east of Novar St			1,400	1,400	1,500	1,800
	Just west of Hopetoun Cct			3,100	3,100	3,300	3,600

[1] As defined in Appendix A Table A.2, ACT Trunk Road Infrastructure Standard No. 3 Traffic Management, Supplement to Austroads Guide: Traffic Management, Edition No.1 Revision No.1, Territory and Municipal Services, October 2012
[2] Elevated from an Access Street to a Minor Collector having regard to the passive use of the site's frontage for car parking and the absence of regular staggered car parking along this road length.
[3] Elevated from an Access Street to a Minor Collector to reflect the operational function of the road as a mixed-use function which serves commercial development as well as residential access needs.
[4] Elevated from an Access Street to a Minor Collector having regard to the absence of regular staggered car parking along this road length.

Table 7.14 – Saturday Daily Road Volume/ Traffic Capacity Mid-Block Threshold Review

Roads	Section	Road Type	EDC Indicative Capacity (vpd)	Weekday Daily Traffic Volumes (vpd)			
				1	2	3	4
				Existing Condition	Post CBP	CSIRO Development	Masterplan
Novar St	Between Denman St and Weston St	Major Collector [1]	6,000	3,700	4,600	4,600	5,100
	Between Denman St and Dudley St			5,200	6,200	6,200	7,000
Banks St	Between Bentham St and Wilf Crane Cres	Minor Collector [2]	3,000	1,600	1,600	1,600	3,200
Schlich St	Just west of Novar St	Minor Collector	3,000	800	800	800	1,300
Bentham St	Just east of Banks St	Minor Collector [3]	3,000	800	900	900	1,900
	Just west of Novar St			2,900	3,200	3,200	4,100
Weston Street	Just west of Novar St	Minor Collector [4]	3,000	1,500	1,500	1,500	2,000
	Just east of Novar St			900	900	900	1,200
	Just west of Hopetoun Cct			2,200	2,200	2,200	2,500

[1] As defined in Appendix A Table A.2, ACT Trunk Road Infrastructure Standard No. 3 Traffic Management, Supplement to Austroads Guide: Traffic Management, Edition No.1 Revision No.1, Territory and Municipal Services, October 2012
[2] Elevated from an Access Street to a Minor Collector having regard to the passive use of the site's frontage for car parking and the absence of regular staggered car parking along this road length.
[3] Elevated from an Access Street to a Minor Collector to reflect the operational function of the road as a mixed-use function which serves commercial development as well as residential access needs.
[4] Elevated from an Access Street to a Minor Collector having regard to the absence of regular staggered car parking along this road length.

Results provided at Table 7.13 and Table 7.14 indicate the following:

- Novar Street adjacent to the Adelaide Avenue interchange carries daily traffic volumes within the EDC nominated road class south of Weston Street on weekdays and Saturdays. Following development of CBP, Novar Street is expected to carry daily traffic volumes near or in excess of the EDC nominated class operate at or near capacity south of Weston Street however will operate within the EDC nominated road class north of Weston Street. These

outcomes apply to all assessed scenario conditions with the masterplan development increasing demand by between 200vpd and 800vpd over a fully developed facility supporting up to 17,400sqm of scientific research uses. These exceedances along Novar Street, south of Weston Street, and further uplift anticipated by the masterplan, whilst not ideal, recognise the need for future intervention, logically in the form of the Mint Interchange to re-direct non-local traffic to other parts of the transport network. Whilst detail planning and traffic forecasting for the interchange has not been completed or is unavailable for public consideration, we expect that the delivery of that project will deliver daily traffic volume levels on Novar Street which are consistent with EDC targets.

- Banks Street carries lower levels of daily traffic during a weekday and a value marginally above the threshold on Saturdays. This marginal exceedance is considered acceptable.
- Schlich Street carries less daily traffic volumes than its road class based on road width on weekdays and Saturdays and is expected to continue carrying less following both the full CSIRO development and Masterplan.
- Bentham Street (west of Novar Street) carries daily traffic volumes in excess of the recommend EDC within the neighbourhood activity centre on both weekdays and Saturdays. These volumes represent a marginal exceedance over the residential traffic volume thresholds anticipated by the EDC which in our view should only be used as a guide given the mixed-use nature of land uses served by this street length.
- Weston Street carries daily traffic volumes consistent with the nominated EDC road class, except on weekdays when values exceed those recommended, west of Hopetoun Circuit. This is effectively an existing exceedance which will ultimately be resolved through broader, city shaping strategic projects which impact on regional traffic patterns and accessibility such as the Mint Interchange. The delivery of this interchange will ultimately, in our view, resolve this issue.

7.9 Traffic Impact of Mint Interchange

The CSTM provides an insight into the level of traffic activity expected on the transport network for identified planning horizons. It is a linked based model and it is usually applied by measuring the difference between scenario's or design years with the identified difference applied to existing condition (recorded) traffic volumes[15].

As discussed at Section 7.1.2, the 2031 model includes the Mint Interchange. Stantec, completed a review of CSTM midblock traffic volumes for two locations along Novar Street/ Kent Street between 2021 and 2031 to understand the potential of the Mint Interchange to improve accessibility and ease congestion in and around the Yarralumla area, summarised at Table 7.15.

Table 7.15 – CSTM Data Comparison 2031 to 2041 [1]

Description	Novar Street, north of Dudley Street		Kent Street, north of Denison Street	
	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period
2021	816	939	1088	1192
2031	456	588	764	963
Change	**-44%**	**-37%**	**-30%**	**-19%**

[1] Source: TCCS, provided 26 August 2021

Table 7.15 indicates that delivery of the Mint Interchange would have a meaningful impact to traffic volumes along Novar Street/ Kent Street, with traffic volume reductions of up to 40 per cent north of Dudley Street and 20 to 30 per cent south of Dudley Street during peak periods.

Reduced flows on the suburban road network will also enhance the performance and reliability of the public transport system i.e., namely bus services.

[15] Section 5, Red Hill Reserve Surrounds Update Transport Study Report, SMEC, 10 September 2019

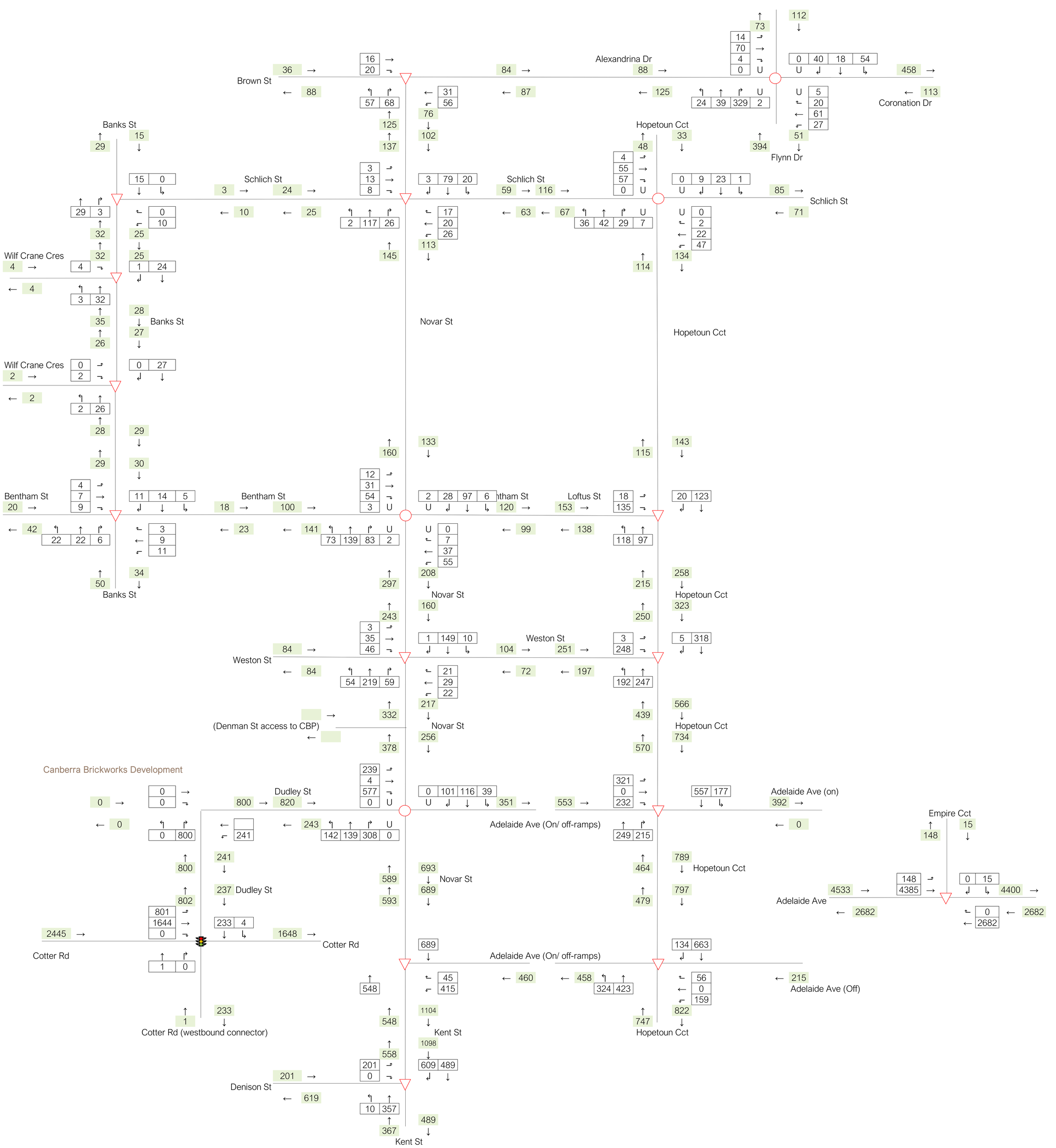
8. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- The indicative and combined land use yield forecast as part of delivering the proposed masterplan includes the following:
  - 266 residential apartments
  - 130 aged care units
  - 80-room hotel
  - 800 square metres of commercial/ office space.
- Final car parking numbers for the project are expected to be determined at works approval stage of any future development. Notwithstanding, the current master plan can provide parking consistent with the Territory Plan Parking and Vehicular Access General Code expectations.
- The proposed parking layout and loading areas will be progressed during the works approval stage of any future development to be consistent with the dimensional requirements as set out in Australian/New Zealand Standard for Off Street Car Parking (AS/NZS2890.1:2004, AS/NZS2890.2:2018 and AS/NZS2890.6:2009).
- Details of bicycle parking provision have not been developed at Master Plan stage. Consistency with the Territory Plan End of Trip Facilities General Code can be achieved and compliance will be demonstrated in any future Works Approval. The development has been designed to ensure a high level of pedestrian permeability and movement with provision of (amongst other things) a new shared bicycle and pedestrian path proposed along the western side of Banks Street between its intersection with Bentham Street and Brown Street. These facilities will improve connectivity and accessibility to the lake and foreshore bicycle and walking tracks, as well as provide publicly accessible pedestrian paths through the site.
- The access roads, including Wilf Crane Crescent and the aged care access, are expected to operate within acceptable operating parameters.
- The territory government have completed upgrades of the Adelaide Avenue interchange with Novar and Kent Street in Yarralumla, including signalisation of the three priority-controlled intersections.
- It is further anticipated that the interchange will be reviewed as part of the light rail Stage 2B works to achieve additional capacity improvements.
- The existing on-site 90year lease agreement permits up to 17,400sqm gross floor area of scientific research floor space, with approximately 9,800sqm of that permissible gross floor area developed to date. The site is currently unoccupied.
- As an amendment to the National Capital Plan is sought, the assessment compares what the additional impact would be as a result of the proposed change to the National Capital Plan. A fully occupied CSIRO premises (17,400sqm gross floor area) could potentially generate around 139 and 104 vehicle trips during the weekday AM and PM peak periods.
- The masterplan could potentially generate 240, 237 and 227 vehicle trips during the weekday AM, PM and Saturday midday peak periods, resulting in a net increase of 101, 104 and 227 vehicle trips during the weekday AM, PM and Saturday midday peak periods compared to the full development of scientific research floor space currently permissible on site.
- The operating performance of the road network post development of the masterplan is consistent with road network performance given full development permissible under the existing lease agreement, with an average increase across all intersections in Degree of Saturation of 0.02 and average delay of one second across all peak periods.
- Daily traffic volume estimates indicate that parts of Novar Street, between the Adelaide Avenue interchange and Weston Street will carry levels of activity at or outside the indicative thresholds contained in the Estate Development Code following development of the CBP. The level of estimated exceedance increases marginally between a fully developed scientific research facility on the subject site and the masterplan. The overall exceedance, including under the existing condition, will in our view be more appropriately managed through the future delivery of the Mint Interchange.
- The analysis in this report demonstrates that the masterplan subject to the proposed National Capital Plan Amendment will return similar levels of operational performance to those which can be expected under a fully developed CSIRO facility under the current lease terms, and only a minor impact on serviceability expected under the delivery of the Canberra Brickworks redevelopment.
- A review of Canberra Strategic Transport Model Data indicates that delivery of the mint interchange (included within the 2031 model) would have a meaningful impact to traffic volumes along Novar Street, with traffic volume reductions of up to 40 per cent north of Dudley Street between 2021 and 2031.
- Stantec's analysis comprising use of both SIDRA intersection and AIMSUN modelling software indicates that the traffic impacts of the masterplan on the surrounding road network can be satisfactorily managed.

Appendix A. Traffic Volumes

Stantec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Flynn Dr
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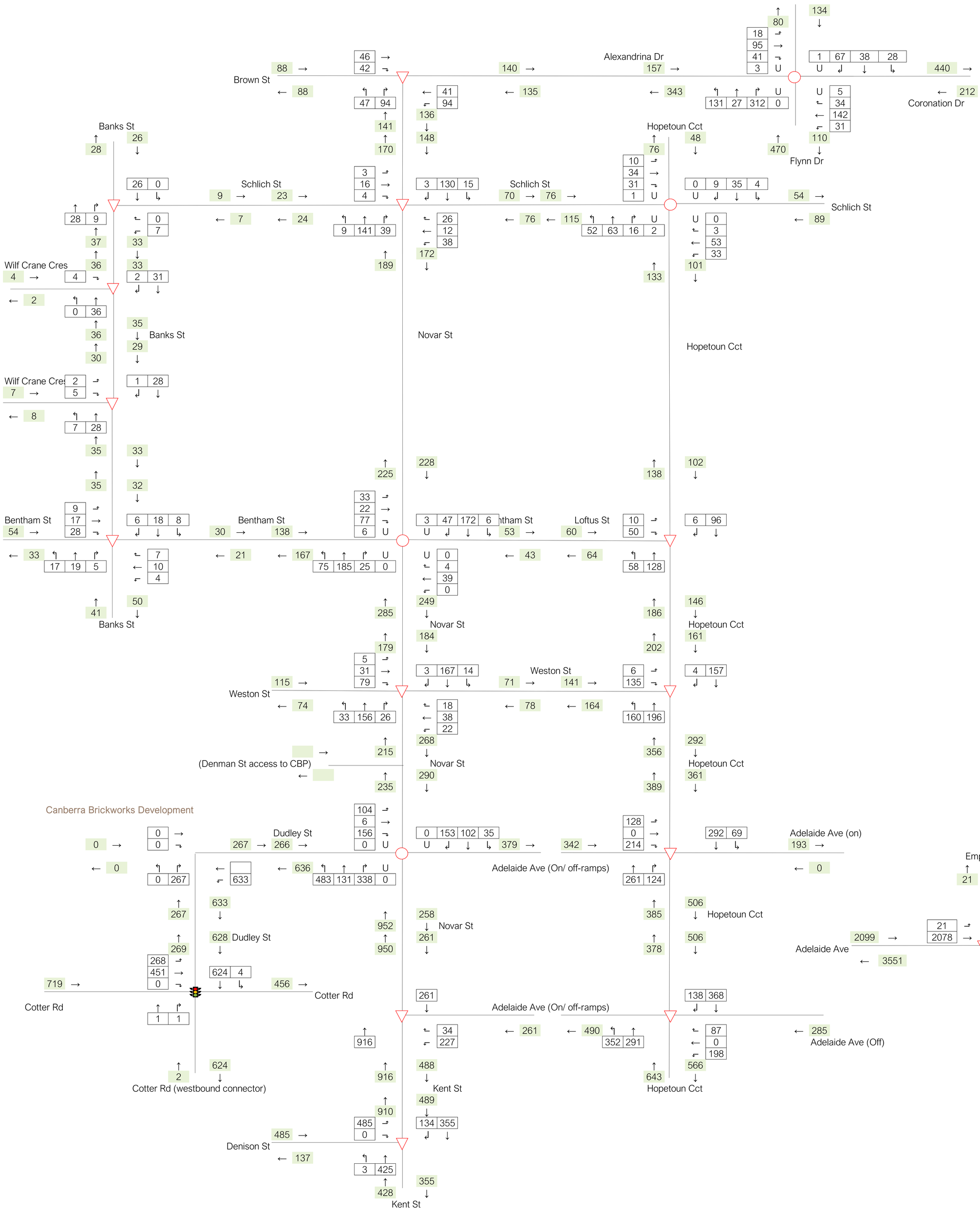
Schlich St
Hopetoun Cct
Wilf Crane Cres
Novar St
Bentham St
Loftus St
Weston St
(Denman St access to CBP)
Canberra Brickworks Development
Dudley St
Adelaide Ave (on)
Adelaide Ave (On/ off-ramps)
Empire Cct
Adelaide Ave
Cotter Rd
Cotter Rd (westbound connector)
Adelaide Ave (Off)
Denison St
Kent St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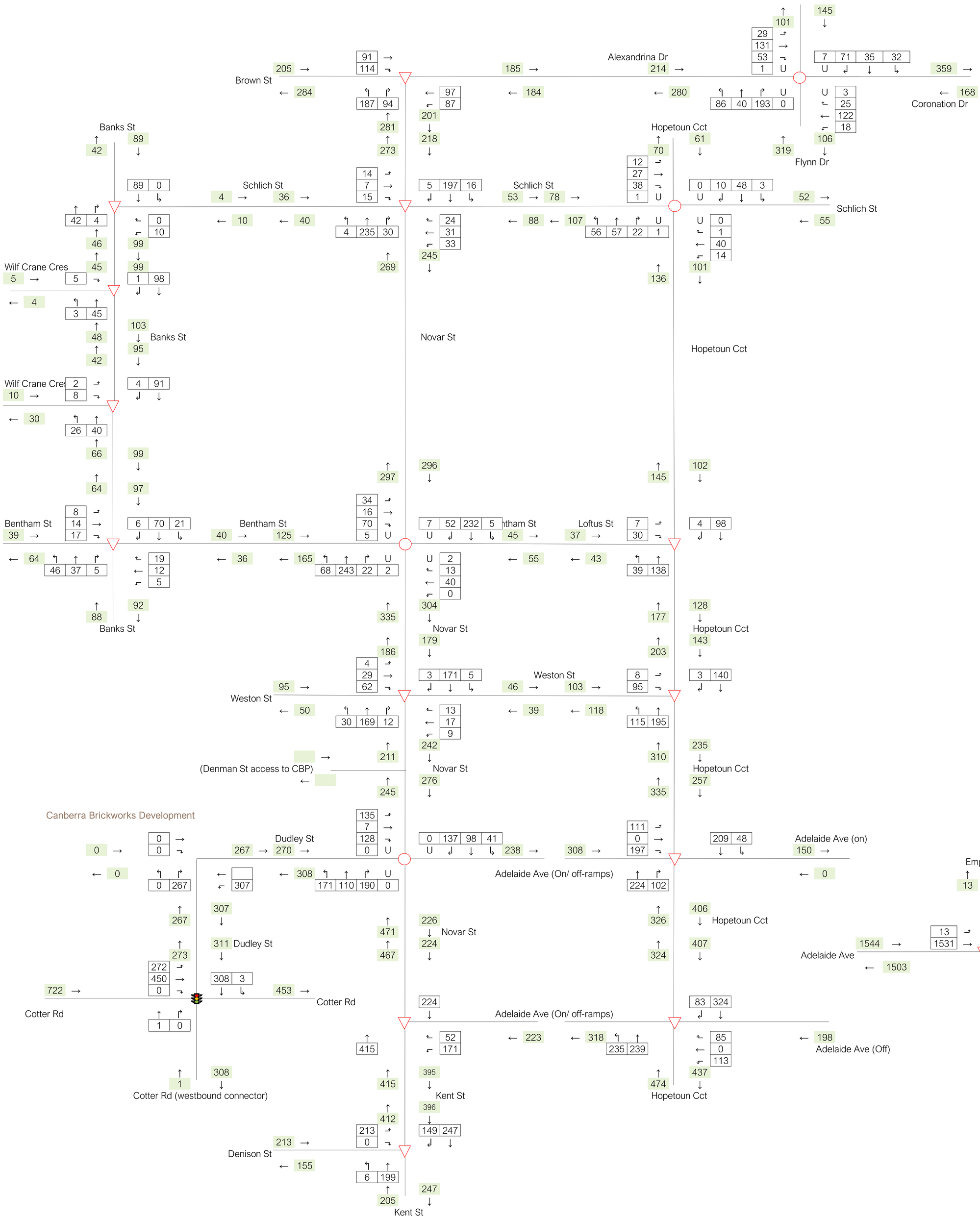
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Cotter Rd
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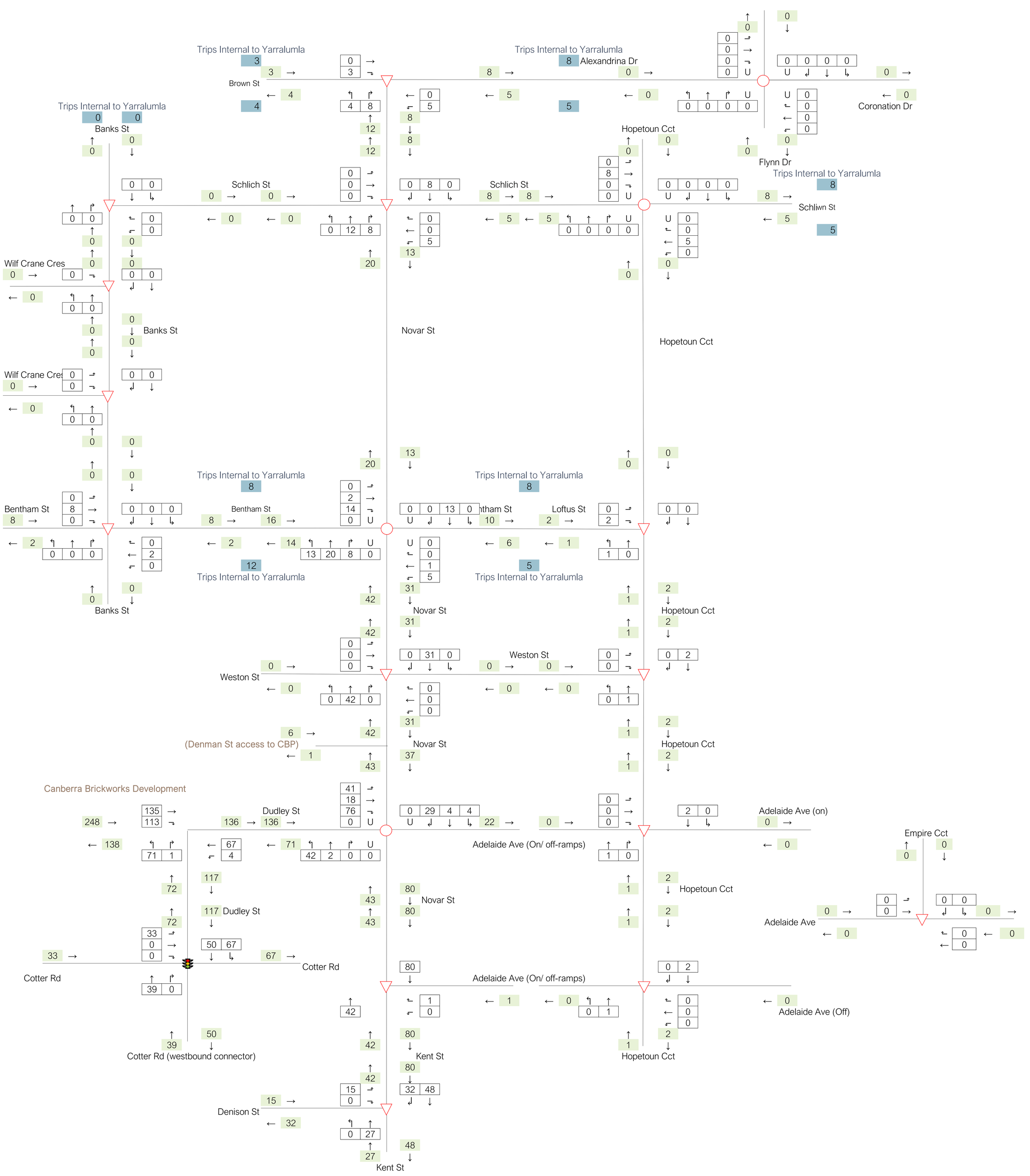
Denison St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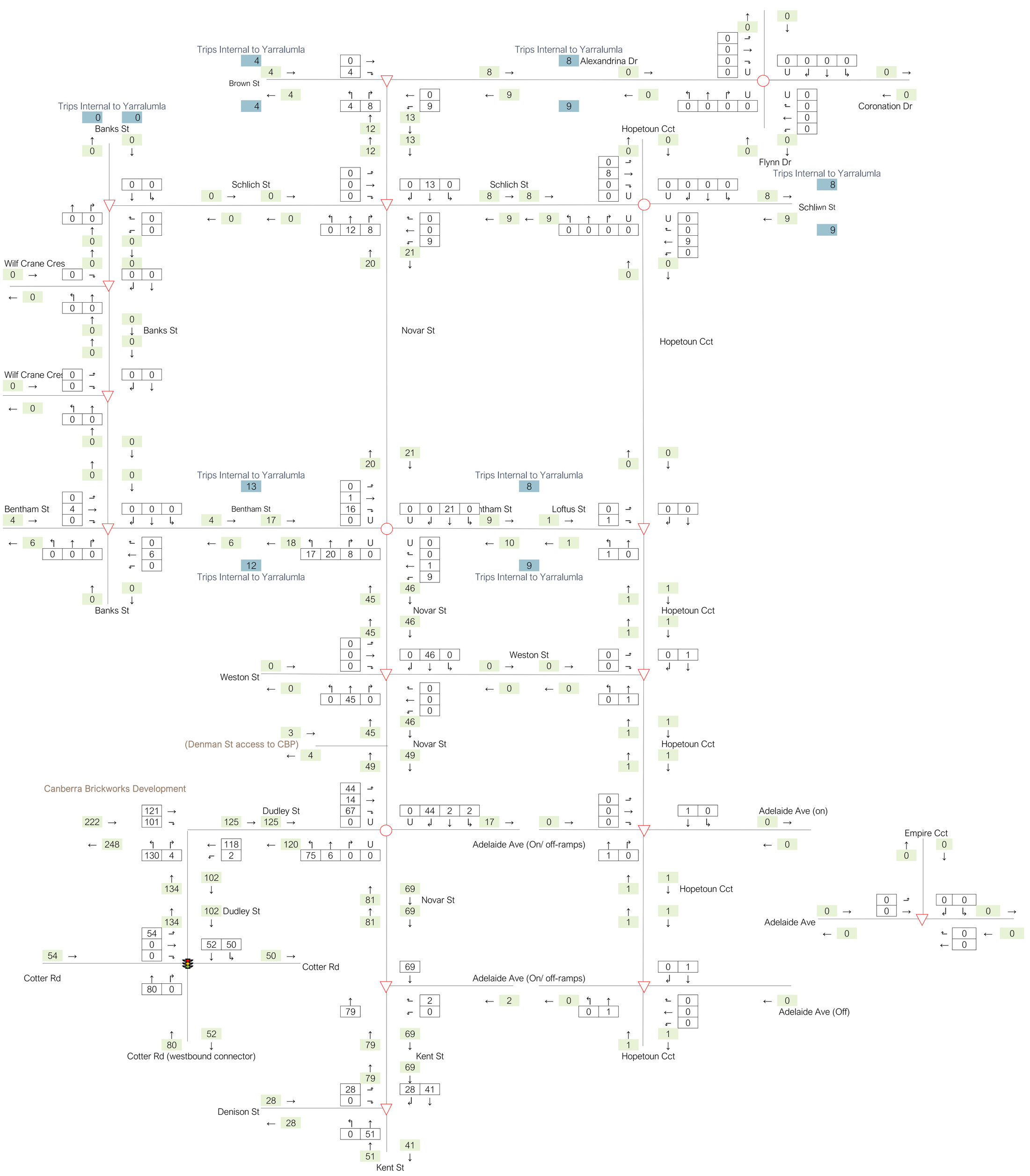
Denison St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Trips Internal to Yarralumla
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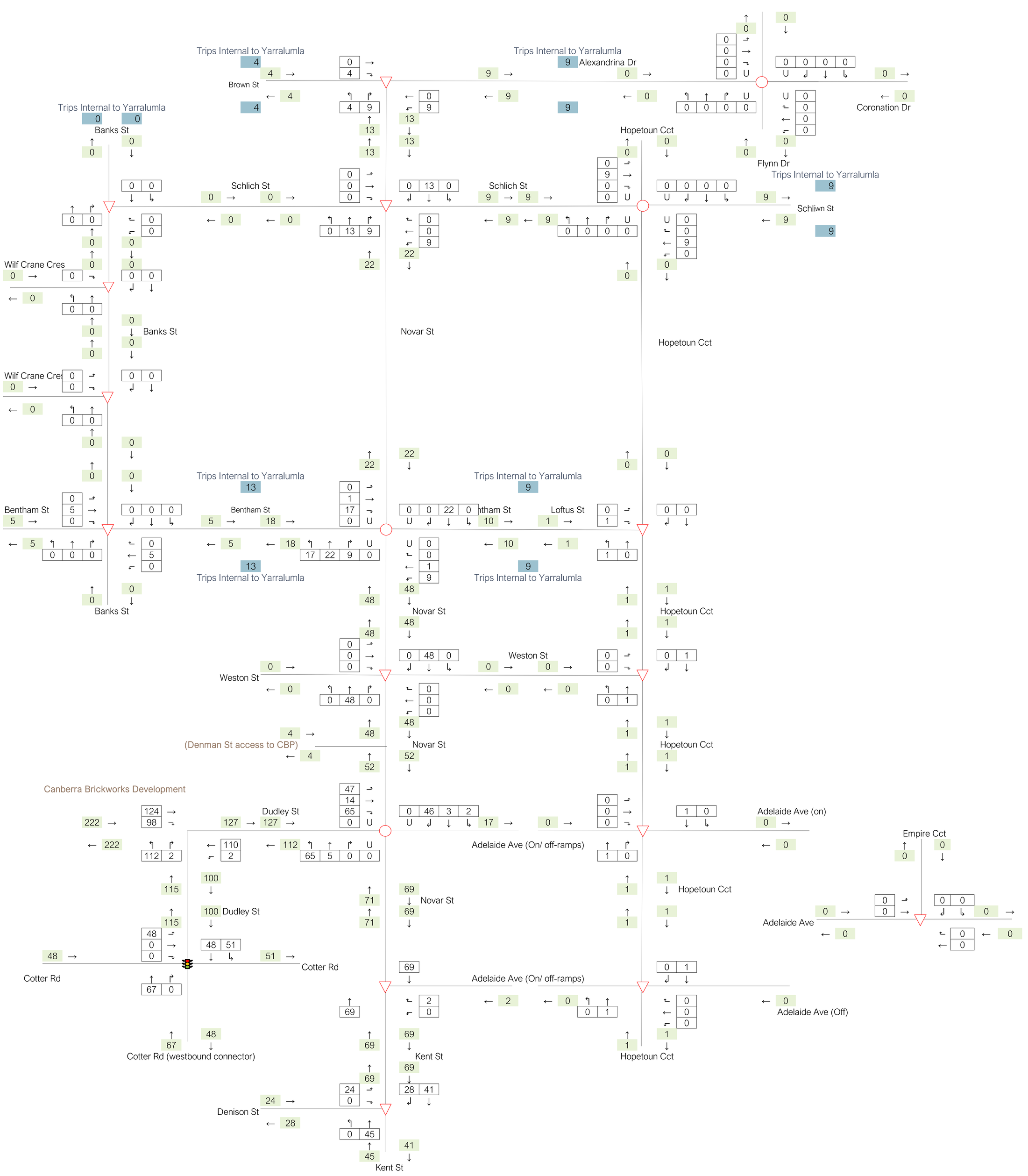
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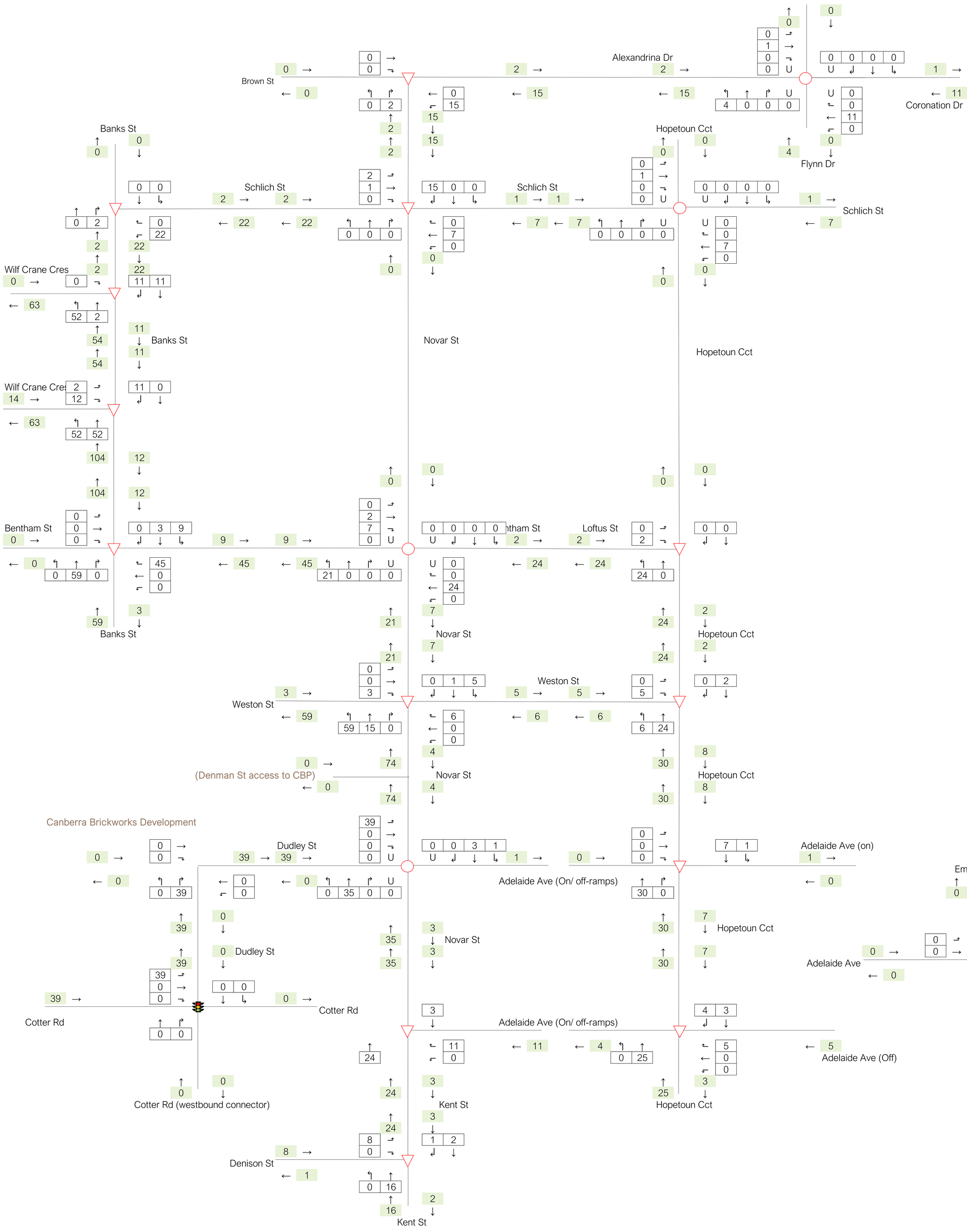
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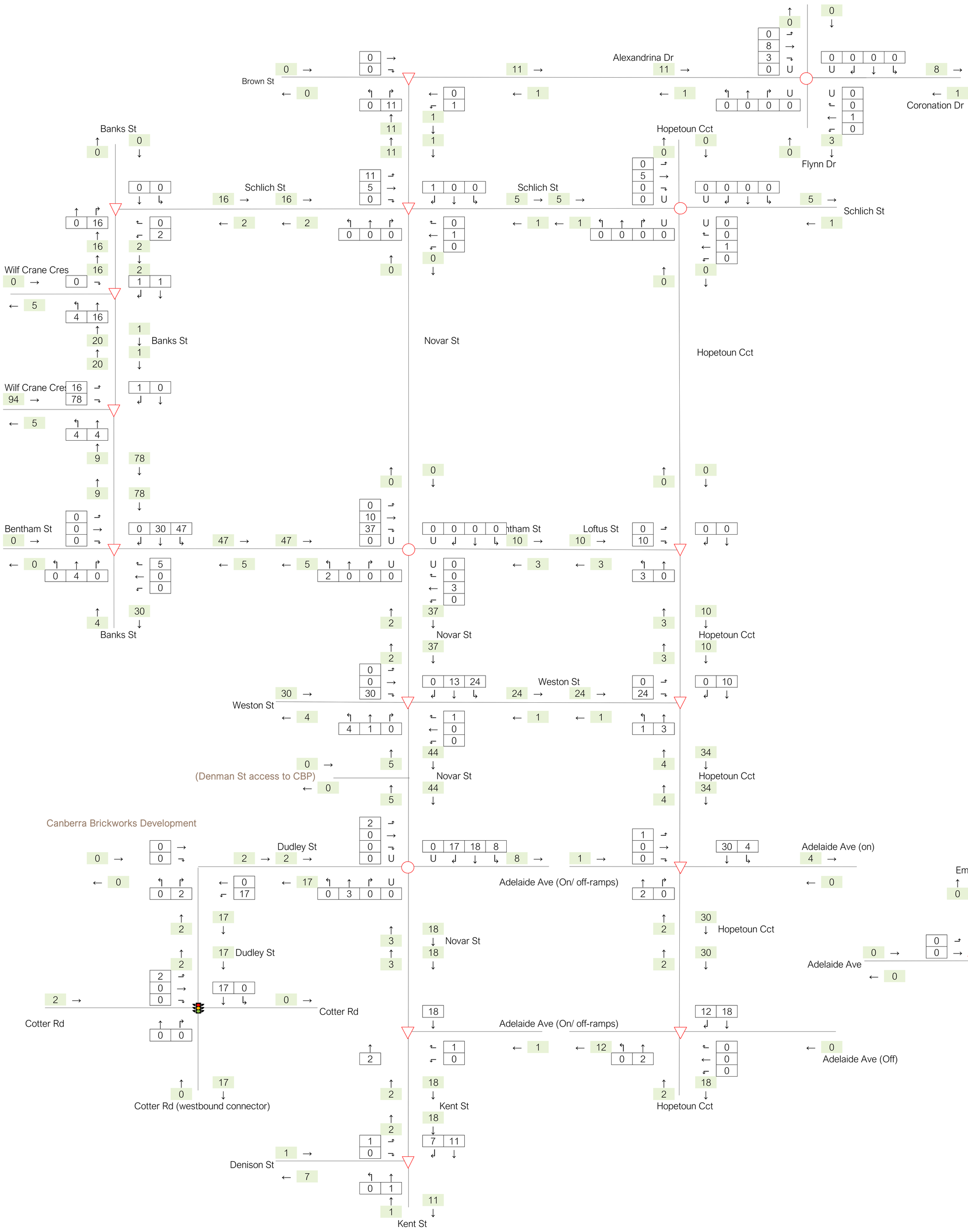
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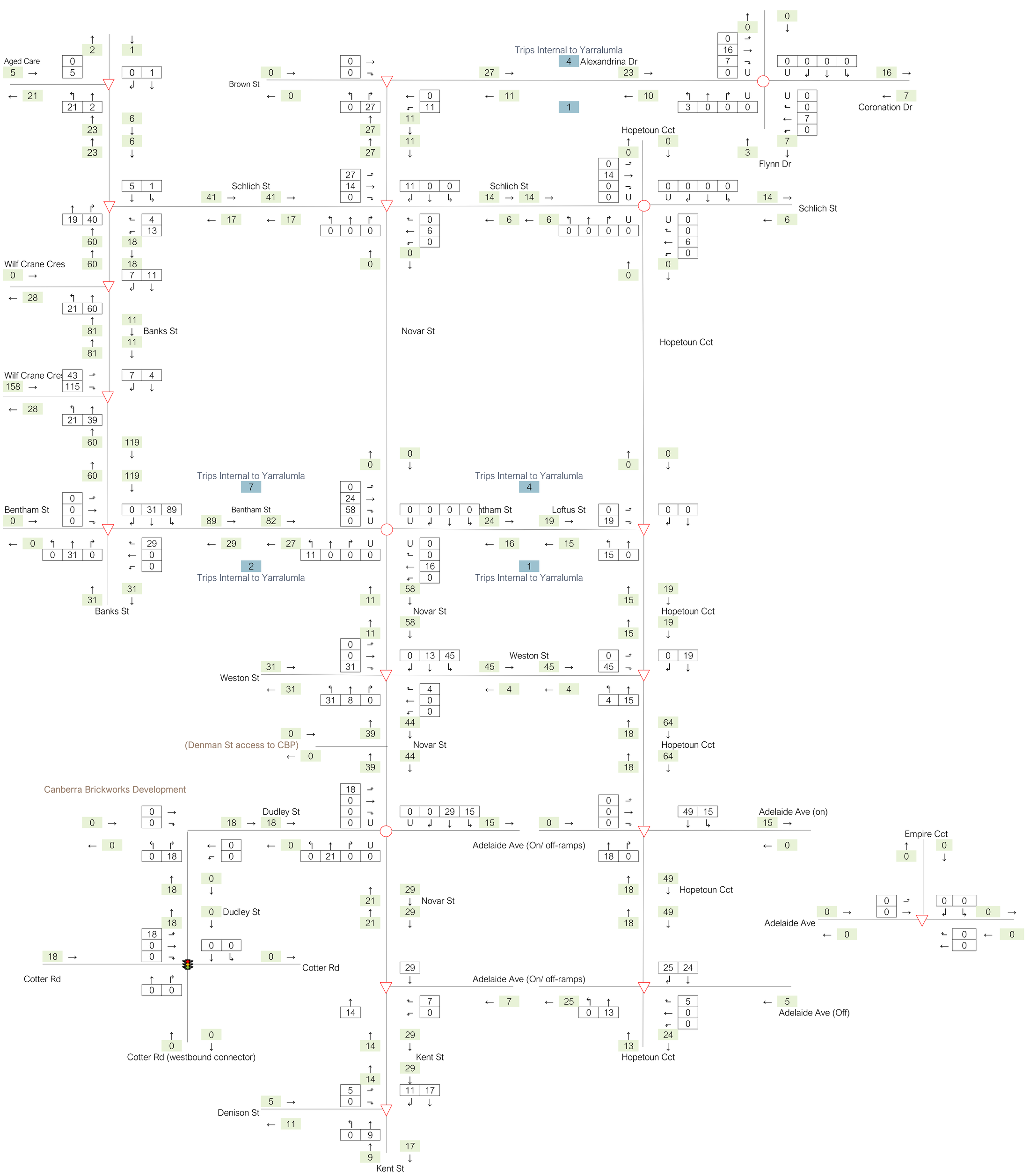
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Banks St
Novar St
Hopetoun Cct
Bentham St
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Trips Internal to Yarralumla
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Trips Internal to Yarralumla
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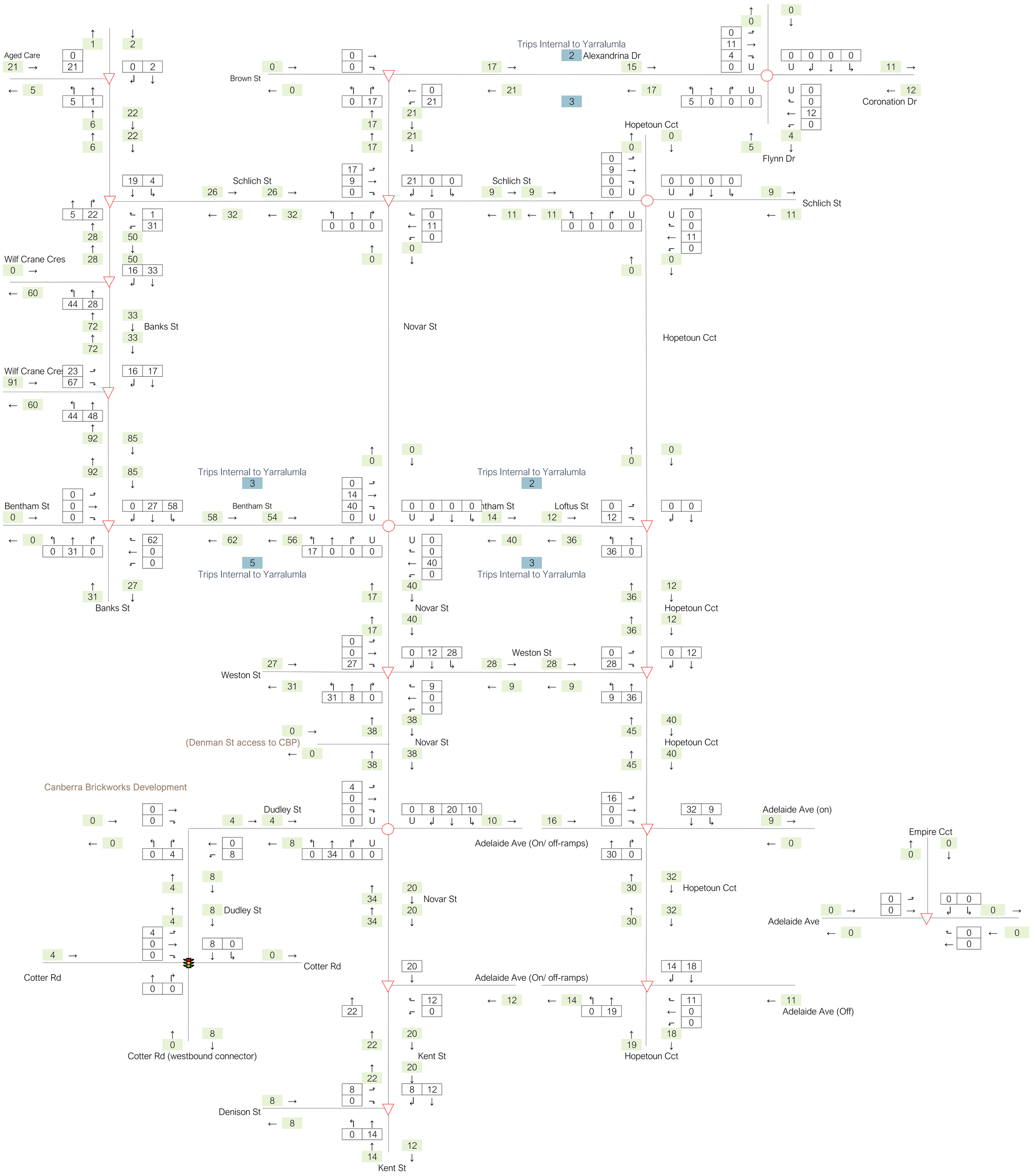
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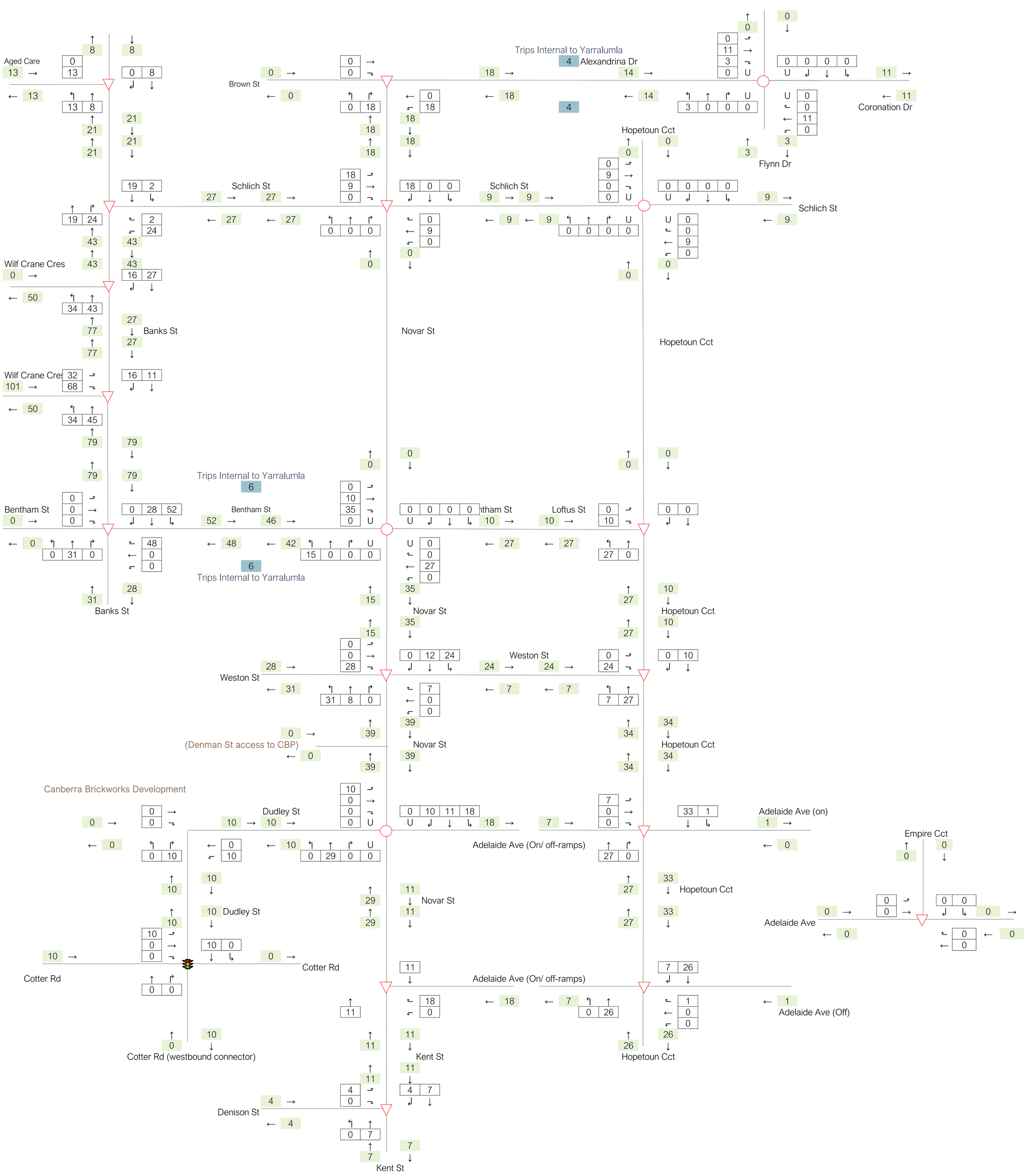
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Adelaide Ave (Off)
Cotter Rd (westbound connector)
Kent St
Hopetoun Cct
Denison St
Kent St

Appendix B. Detailed SIDRA Results

Scenario 1

Future Base Condition with Road Upgrades and full development of CSIRO facility

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Banks St/ Wilf Crane Cres	AM	Banks St (S)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Wilf Crane Cres	0.00	LOS A	4	0
		Overall	0.02	LOS A	5	0
	PM	Banks St (S)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Wilf Crane Cres	0.01	LOS A	4	0
		Overall	0.02	LOS A	5	0
	Sat	Banks St (S)	0.04	LOS A	5	0
		Banks St (N)	0.05	LOS A	5	0
		Wilf Crane Cres	0.01	LOS A	4	0
		Overall	0.05	LOS A	5	0
Banks St/ Bentham St	AM	Banks St (S)	0.03	LOS A	5	0
		Bentham St (E)	0.02	LOS A	5	1
		Banks St (N)	0.02	LOS A	5	1
		Bentham St (W)	0.02	LOS A	5	1
		Overall	0.02	LOS A	5	1
	PM	Banks St (S)	0.02	LOS A	5	0
		Bentham St (E)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Bentham St (W)	0.05	LOS A	5	1
		Overall	0.05	LOS A	5	1
	Sat	Banks St (S)	0.05	LOS A	5	0
		Bentham St (E)	0.04	LOS A	5	1
		Banks St (N)	0.05	LOS A	5	0
		Bentham St (W)	0.04	LOS A	5	1
		Overall	0.04	LOS A	5	1
Bentham St/ Novar St	AM	Novar St (S)	0.24	LOS A	10	10
		Bentham St (E)	0.09	LOS A	8	3
		Novar St (N)	0.13	LOS A	12	5
		Bentham St (W)	0.10	LOS A	12	4
		Overall	0.13	LOS A	12	5
	PM	Novar St (S)	0.24	LOS A	9	10
		Bentham St (E)	0.05	LOS A	9	2
		Novar St (N)	0.20	LOS A	11	8
		Bentham St (W)	0.14	LOS A	11	5
		Overall	0.14	LOS A	11	5

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
	Sat	Novar St (S)	0.29	LOS A	11	12
		Bentham St (E)	0.06	LOS A	12	2
		Novar St (N)	0.25	LOS A	11	11
		Bentham St (W)	0.13	LOS A	11	5
		Overall	0.29	LOS A	11	12
Weston St/ Novar St [1]	AM	Weston St (S)	0.20	LOS A	6	1
		Novar St (E)	0.10	LOS A	11	1
		Weston St (N)	0.09	LOS A	9	0
		Novar St (W)	0.14	LOS A	12	2
		Overall	0.14	LOS A	12	2
	PM	Weston St (S)	0.12	LOS A	6	1
		Novar St (E)	0.10	LOS A	10	1
		Weston St (N)	0.10	LOS A	6	0
		Novar St (W)	0.18	LOS A	10	2
		Overall	0.18	LOS A	10	108
	Sat	Weston St (S)	0.12	LOS A	6	0
		Novar St (E)	0.05	LOS A	11	1
		Weston St (N)	0.10	LOS A	6	0
		Novar St (W)	0.14	LOS A	10	2
		Overall	0.14	LOS A	11	1
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	Novar St (S)	0.65	LOS B	25	59
		Novar St (N)	0.91	LOS D	52	25
		Dudley St	0.91	LOS D	55	98
		Overall	0.94	LOS C	41	98
	PM	Novar St (S)	0.69	LOS B	20	46
		Novar St (N)	0.55	LOS C	29	15
		Dudley St	0.55	LOS C	31	16
		Overall	0.69	LOS B	19	46
	Sat	Novar St (S)	0.19	LOS A	3	15
		Novar St (N)	0.66	LOS C	31	16
		Dudley St	0.67	LOS C	31	17
		Overall	0.67	LOS B	22	25
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	Kent St (S)	0.32	LOS A	1	10
		Adelaide Ave	0.27	LOS C	38	7
		Kent St (N)	0.87	LOS B	24	69
		Overall	0.87	LOS B	17	69
	PM	Kent St (S)	0.32	LOS A	3	33
		Adelaide Ave	0.18	LOS C	34	4
		Kent St (N)	0.16	LOS A	11	11
		Overall	0.32	LOS A	8	33

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
	Sat	Kent St (S)	0.19	LOS A	3	15
		Adelaide Ave	0.23	LOS B	28	6
		Kent St (N)	0.15	LOS A	10	8
		Overall	0.23	LOS A	9	15
Kent Street/ Dennison St [1]	AM	Kent St (S)	0.46	LOS C	31	28
		Kent St (N)	0.59	LOS A	14	45
		Denison St	0.18	LOS A	13	15
		Overall	0.59	LOS A	12	45
	PM	Kent St (S)	0.50	LOS B	24	34
		Kent St (N)	0.16	LOS A	14	12
		Denison St	0.65	LOS B	19	50
		Overall	0.65	LOS A	13	50
	Sat	Kent St (S)	0.22	LOS B	19	11
		Kent St (N)	0.20	LOS A	14	10
		Denison St	0.27	LOS B	16	16
		Overall	0.27	LOS A	10	16
Dudley St/ Cotter Rd (EB) [1]	AM	Dudley St (S)	0.00	LOS D	44	0
		Dudley St (N)	0.75	LOS E	59	60
		Cotter Rd	0.90	LOS B	17	270
		Overall	0.65	LOS B	25	59
	PM	Dudley St (S)	0.00	LOS A	7	0
		Dudley St (N)	0.62	LOS B	15	58
		Cotter Rd	0.75	LOS B	25	45
		Overall	0.69	LOS B	20	46
	Sat	Dudley St (S)	0.00	LOS A	10	0
		Dudley St (N)	0.43	LOS A	13	26
		Cotter Rd	0.51	LOS A	14	29
		Overall	0.51	LOS A	11	29

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

Scenario 2

Existing condition plus allowance for the approved Canberra Brickworks Precinct re-development

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Banks St/ Wilf Crane Cres	AM	Banks St (S)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Wilf Crane Cres	0.00	LOS A	4	0
		Overall	0.02	LOS A	5	0
	PM	Banks St (S)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Wilf Crane Cres	0.01	LOS A	4	0
		Overall	0.02	LOS A	5	0
	Sat	Banks St (S)	0.04	LOS A	5	0
		Banks St (N)	0.05	LOS A	5	0
		Wilf Crane Cres	0.01	LOS A	4	0
		Overall	0.05	LOS A	5	0
Banks St/ Bentham St	AM	Banks St (S)	0.03	LOS A	5	0
		Bentham St (E)	0.02	LOS A	5	1
		Banks St (N)	0.02	LOS A	5	1
		Bentham St (W)	0.03	LOS A	5	1
		Overall	0.02	LOS A	5	1
	PM	Banks St (S)	0.02	LOS A	5	0
		Bentham St (E)	0.02	LOS A	5	1
		Banks St (N)	0.02	LOS A	5	0
		Bentham St (W)	0.05	LOS A	5	1
		Overall	0.05	LOS A	5	1
	Sat	Banks St (S)	0.05	LOS A	5	0
		Bentham St (E)	0.04	LOS A	5	1
		Banks St (N)	0.05	LOS A	5	0
		Bentham St (W)	0.04	LOS A	5	1
		Overall	0.04	LOS A	5	1
Bentham St/ Novar St	AM	Novar St (S)	0.27	LOS A	10	12
		Bentham St (E)	0.10	LOS A	8	4
		Novar St (N)	0.14	LOS A	12	6
		Bentham St (W)	0.12	LOS A	12	4
		Overall	0.14	LOS A	12	6
	PM	Novar St (S)	0.27	LOS A	9	12
		Bentham St (E)	0.06	LOS A	9	2
		Novar St (N)	0.23	LOS A	11	10
		Bentham St (W)	0.16	LOS A	11	6
		Overall	0.16	LOS A	11	6
	Sat	Novar St (S)	0.32	LOS A	11	14
		Bentham St (E)	0.07	LOS A	12	3
		Novar St (N)	0.28	LOS A	11	12
		Bentham St (W)	0.15	LOS A	12	6
		Overall	0.07	LOS A	12	3
Weston St/ Novar St [1]	AM	Weston St (S)	0.22	LOS A	6	2
		Novar St (E)	0.11	LOS A	12	1
		Weston St (N)	0.11	LOS A	9	0
		Novar St (W)	0.16	LOS A	12	2

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Overall	0.16	LOS A	12	2
	PM	Weston St (S)	0.15	LOS A	6	1
		Novar St (E)	0.11	LOS A	11	1
		Weston St (N)	0.13	LOS A	6	0
		Novar St (W)	0.20	LOS A	11	2
		Overall	0.20	LOS A	11	2
	Sat	Weston St (S)	0.14	LOS A	7	0
		Novar St (E)	0.06	LOS A	12	1
		Weston St (N)	0.12	LOS A	6	0
		Novar St (W)	0.16	LOS A	11	2
		Overall	0.16	LOS A	11	2
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	Novar St (S)	0.84	LOS C	37	78
		Novar St (N)	0.87	LOS D	48	27
		Dudley St	0.84	LOS C	36	86
		Overall	0.87	LOS C	34	86
	PM	Novar St (S)	0.73	LOS B	22	50
		Novar St (N)	0.80	LOS C	33	25
		Dudley St	0.79	LOS C	33	24
		Overall	0.80	LOS B	21	50
	Sat	Novar St (S)	0.60	LOS B	23	30
		Novar St (N)	0.58	LOS B	27	20
		Dudley St	0.63	LOS B	28	23
		Overall	0.63	LOS B	21	30
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	Kent St (S)	0.45	LOS A	2	13
		Adelaide Ave	0.53	LOS D	43	8
		Kent St (N)	0.81	LOS B	17	65
		Overall	0.81	LOS B	15	65
	PM	Kent St (S)	0.39	LOS A	4	36
		Adelaide Ave	0.19	LOS C	34	5
		Kent St (N)	0.19	LOS A	10	13
		Overall	0.39	LOS A	9	36
	Sat	Kent St (S)	0.25	LOS A	5	21
		Adelaide Ave	0.23	LOS B	28	6
		Kent St (N)	0.22	LOS A	12	12
		Overall	0.25	LOS A	10	21
Kent Street/ Dennison St [1]	AM	Kent St (S)	0.38	LOS B	26	27
		Kent St (N)	0.70	LOS B	18	45
		Denison St	0.22	LOS B	16	19
		Overall	0.70	LOS A	13	45
	PM	Kent St (S)	0.69	LOS C	29	45

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Kent St (N)	0.18	LOS A	13	14
		Denison St	0.68	LOS B	18	52
		Overall	0.69	LOS A	14	52
	Sat	Kent St (S)	0.28	LOS B	20	14
		Kent St (N)	0.23	LOS A	13	13
		Denison St	0.28	LOS B	15	17
		Overall	0.28	LOS A	10	17
Dudley St/ Cotter Rd (EB) [1]	AM	Dudley St (S)	0.10	LOS C	42	9
		Dudley St (N)	0.94	LOS F	78	60
		Cotter Rd	0.99	LOS D	47	455
		Overall	0.99	LOS C	38	455
	PM	Dudley St (S)	0.08	LOS A	7	5
		Dudley St (N)	0.71	LOS B	16	60
		Cotter Rd	0.75	LOS B	25	45
		Overall	0.75	LOS B	15	60
	Sat	Dudley St (S)	0.09	LOS A	10	5
		Dudley St (N)	0.54	LOS B	17	36
		Cotter Rd	0.54	LOS B	15	30
		Overall	0.54	LOS A	12	36

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

Scenario 3

Scenario 2 with full development of CSIRO facility

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Banks St/ Wilf Crane Cres	AM	Banks St (S)	0.07	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	1
		Wilf Crane Cres	0.02	LOS A	4	0
		Overall	0.07	LOS A	5	0
	PM	Banks St (S)	0.02	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Wilf Crane Cres	0.08	LOS A	4	2
		Overall	0.02	LOS A	5	0
Banks St/ Bentham St	AM	Banks St (S)	0.06	LOS A	5	0
		Bentham St (E)	0.07	LOS A	5	2
		Banks St (N)	0.03	LOS A	5	1
		Bentham St (W)	0.03	LOS A	5	1
		Overall	0.07	LOS A	5	2
	PM	Banks St (S)	0.03	LOS A	5	0
		Bentham St (E)	0.03	LOS A	5	1

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Banks St (N)	0.06	LOS A	5	0
		Bentham St (W)	0.05	LOS A	5	1
		Overall	0.03	LOS A	5	1
Bentham St/ Novar St	AM	Novar St (S)	0.30	LOS A	10	14
		Bentham St (E)	0.13	LOS A	8	5
		Novar St (N)	0.15	LOS A	12	6
		Bentham St (W)	0.13	LOS A	12	5
		Overall	0.15	LOS A	12	6
	PM	Novar St (S)	0.28	LOS A	9	12
		Bentham St (E)	0.06	LOS A	9	2
		Novar St (N)	0.24	LOS A	11	10
		Bentham St (W)	0.20	LOS A	11	8
		Overall	0.20	LOS A	11	8
Weston St/ Novar St [1]	AM	Weston St (S)	0.26	LOS A	6	2
		Novar St (E)	0.13	LOS A	12	1
		Weston St (N)	0.11	LOS A	10	0
		Novar St (W)	0.17	LOS A	13	2
		Overall	0.17	LOS A	13	2
	PM	Weston St (S)	0.15	LOS A	7	1
		Novar St (E)	0.11	LOS A	11	1
		Weston St (N)	0.15	LOS A	6	0
		Novar St (W)	0.26	LOS A	12	3
		Overall	0.26	LOS A	12	3
Novar St/ Dudley St/ Kent St/ Adelaide Ave entry ramp (EB) [1]	AM	Novar St (S)	0.95	LOS D	54	82
		Novar St (N)	0.90	LOS D	51	29
		Dudley St	0.93	LOS D	51	123
		Overall	0.95	LOS D	46	123
	PM	Novar St (S)	0.78	LOS B	25	54
		Novar St (N)	0.77	LOS C	31	26
		Dudley St	0.79	LOS C	33	25
		Overall	0.79	LOS B	22	54
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	Kent St (S)	0.50	LOS A	2	21
		Adelaide Ave	0.73	LOS D	46	11
		Kent St (N)	0.82	LOS B	17	66
		Overall	0.82	LOS B	16	66
	PM	Kent St (S)	0.41	LOS A	4	35
		Adelaide Ave	0.21	LOS C	34	5
		Kent St (N)	0.20	LOS A	10	14
		Overall	0.41	LOS A	9	35
	AM	Kent St (S)	0.41	LOS B	26	30

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Kent Street/ Dennison St [1]		Kent St (N)	0.70	LOS B	18	45
		Denison St	0.25	LOS B	16	20
		Overall	0.70	LOS A	13	45
	PM	Kent St (S)	0.65	LOS B	27	43
		Kent St (N)	0.19	LOS A	14	15
		Denison St	0.69	LOS B	19	54
		Overall	0.69	LOS A	14	54
Dudley St/ Cotter Rd (EB) [1]	AM	Dudley St (S)	0.10	LOS C	42	9
		Dudley St (N)	0.94	LOS F	78	60
		Cotter Rd	0.95	LOS C	31	361
		Overall	0.95	LOS C	29	361
	PM	Dudley St (S)	0.08	LOS A	7	5
		Dudley St (N)	0.73	LOS B	17	60
		Cotter Rd	0.75	LOS B	25	45
		Overall	0.75	LOS B	15	60

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

Scenario 4

Scenario 2 including allowance for land use proposed under the masterplan.

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Banks St/ Wilf Crane Cres	AM	Banks St (S)	0.05	LOS A	5	0
		Banks St (N)	0.02	LOS A	5	0
		Wilf Crane Cres	0.14	LOS A	4	4
		Overall	0.05	LOS A	5	0
	PM	Banks St (S)	0.07	LOS A	5	0
		Banks St (N)	0.04	LOS A	5	1
		Wilf Crane Cres	0.09	LOS A	4	2
		Overall	0.04	LOS A	5	1
	Sat	Banks St (S)	0.08	LOS A	5	0
		Banks St (N)	0.07	LOS A	5	1
		Wilf Crane Cres	0.10	LOS A	5	3
		Overall	0.07	LOS A	5	1
Banks St/ Bentham St	AM	Banks St (S)	0.05	LOS A	5	0
		Bentham St (E)	0.06	LOS A	6	1
		Banks St (N)	0.09	LOS A	5	1
		Bentham St (W)	0.03	LOS A	5	1
		Overall	0.06	LOS A	6	1
	PM	Banks St (S)	0.04	LOS A	5	0
		Bentham St (E)	0.09	LOS A	5	2

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Banks St (N)	0.07	LOS A	5	0
		Bentham St (W)	0.06	LOS A	5	1
		Overall	0.09	LOS A	5	2
	Sat	Banks St (S)	0.07	LOS A	5	0
		Bentham St (E)	0.10	LOS A	6	3
		Banks St (N)	0.10	LOS A	5	0
		Bentham St (W)	0.05	LOS A	6	1
		Overall	0.10	LOS A	6	3
Bentham St/ Novar St	AM	Novar St (S)	0.29	LOS A	10	13
		Bentham St (E)	0.12	LOS A	9	5
		Novar St (N)	0.16	LOS A	13	6
		Bentham St (W)	0.20	LOS A	12	8
		Overall	0.16	LOS A	13	6
	PM	Novar St (S)	0.30	LOS A	9	14
		Bentham St (E)	0.11	LOS A	9	4
		Novar St (N)	0.24	LOS A	11	10
		Bentham St (W)	0.21	LOS A	11	9
		Overall	0.21	LOS A	11	9
	Sat	Novar St (S)	0.35	LOS A	11	16
		Bentham St (E)	0.11	LOS A	12	4
		Novar St (N)	0.30	LOS A	11	13
		Bentham St (W)	0.20	LOS A	12	8
		Overall	0.11	LOS A	12	4
Weston St/ Novar St [1]	AM	Novar St (S)	0.24	LOS A	7	2
		Weston St (E)	0.12	LOS A	12	1
		Novar St (N)	0.14	LOS A	6	0
		Weston St (W)	0.23	LOS A	13	3
		Overall	0.23	LOS A	13	3
	PM	Novar St (S)	0.17	LOS A	7	1
		Weston St (E)	0.13	LOS A	11	1
		Novar St (N)	0.15	LOS A	7	0
		Weston St (W)	0.26	LOS A	12	3
		Overall	0.26	LOS A	12	3
	Sat	Novar St (S)	0.17	LOS A	7	0
		Weston St (E)	0.08	LOS A	12	1
		Novar St (N)	0.14	LOS A	7	0
		Weston St (W)	0.22	LOS A	11	2
		Overall	0.08	LOS A	12	1
Novar St/ Dudley St/	AM	Novar St (S)	0.97	LOS E	63	82
		Novar St (N)	0.92	LOS D	54	33

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
Kent St/ Adelaide Ave entry ramp (EB) [1]		Dudley St	0.97	LOS E	65	146
		Overall	0.97	LOS D	55	146
	PM	Novar St (S)	0.78	LOS B	24	58
		Novar St (N)	0.83	LOS C	34	27
		Dudley St	0.79	LOS C	33	25
		Overall	0.83	LOS B	22	58
	Sat	Novar St (S)	0.66	LOS B	24	35
		Novar St (N)	0.62	LOS B	28	22
		Dudley St	0.66	LOS B	28	24
		Overall	0.66	LOS B	22	35
Kent Street/ Adelaide Ave exit ramp (WB) [1]	AM	Kent St (S)	0.49	LOS A	2	27
		Adelaide Ave	0.68	LOS D	46	10
		Kent St (N)	0.84	LOS B	19	73
		Overall	0.84	LOS B	16	73
	PM	Kent St (S)	0.45	LOS A	6	41
		Adelaide Ave	0.21	LOS C	32	6
		Kent St (N)	0.22	LOS A	12	15
		Overall	0.45	LOS A	10	41
	Sat	Kent St (S)	0.28	LOS A	5	22
		Adelaide Ave	0.23	LOS B	26	7
		Kent St (N)	0.26	LOS A	14	13
		Overall	0.28	LOS A	11	22
Kent Street/ Dennison St [1]	AM	Kent St (S)	0.41	LOS B	26	29
		Kent St (N)	0.72	LOS B	18	45
		Denison St	0.25	LOS B	16	19
		Overall	0.72	LOS A	13	45
	PM	Kent St (S)	0.73	LOS C	30	49
		Kent St (N)	0.18	LOS A	14	15
		Denison St	0.75	LOS B	21	61
		Overall	0.75	LOS B	15	61
	Sat	Kent St (S)	0.29	LOS B	20	15
		Kent St (N)	0.23	LOS A	14	14
		Denison St	0.29	LOS B	15	17
		Overall	0.29	LOS A	10	17
Dudley St/ Cotter Rd (EB) [1]	AM	Dudley St (S)	0.10	LOS C	42	9
		Dudley St (N)	0.94	LOS F	78	60
		Cotter Rd	0.95	LOS C	31	360
		Overall	0.95	LOS C	29	360
	PM	Dudley St (S)	0.08	LOS A	7	5
		Dudley St (N)	0.73	LOS B	16	60

Site	Peak	Approach	Degree of Saturation	Level of Service	Average Delay (s)	95th Percentile/ Average Queue (m)
		Cotter Rd	0.75	LOS B	25	45
		Overall	0.75	LOS B	15	60
	Sat	Dudley St (S)	0.09	LOS A	10	5
		Dudley St (N)	0.55	LOS B	17	37
		Cotter Rd	0.54	LOS B	15	30
		Overall	0.55	LOS A	12	37

[1] Intersections assessed as a network hence average queue results reported in table rather than 95th percentile.

Appendix C. SIDRA Intersection Outputs

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_AM (Site Folder: existing)] **Network: 40 [AM (Network Folder: existing)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	57	1.9	57	1.9	0.195	6.0	LOS A	0.2	1.4	0.11	0.19	0.11	51.8
2	T1	231	5.5	231	5.5	0.195	0.2	LOS A	0.2	1.4	0.11	0.19	0.11	56.2
3	R2	62	1.7	62	1.7	0.195	6.1	LOS A	0.2	1.4	0.11	0.19	0.11	50.6
Approach		349	4.2	349	4.2	0.195	2.2	NA	0.2	1.4	0.11	0.19	0.11	54.0
East: Weston St														
4	L2	23	0.0	23	0.0	0.100	8.1	LOS A	0.1	1.1	0.39	0.94	0.39	40.4
5	T1	31	0.0	31	0.0	0.100	10.2	LOS A	0.1	1.1	0.39	0.94	0.39	42.1
6	R2	22	4.8	22	4.8	0.100	10.7	LOS A	0.1	1.1	0.39	0.94	0.39	42.3
Approach		76	1.4	76	1.4	0.100	9.7	LOS A	0.1	1.1	0.39	0.94	0.39	41.7
North: Novar St														
7	L2	11	20.0	11	20.0	0.090	6.1	LOS A	0.0	0.1	0.01	0.04	0.01	50.9
8	T1	157	2.7	157	2.7	0.090	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	58.2
9	R2	1	100.0	1	100.0	0.090	8.9	LOS A	0.0	0.1	0.01	0.04	0.01	46.8
Approach		168	4.4	168	4.4	0.090	0.5	NA	0.0	0.1	0.01	0.04	0.01	56.5
West: Weston St														
10	L2	3	66.7	3	66.7	0.141	11.7	LOS A	0.2	1.5	0.50	0.98	0.50	32.7
11	T1	37	0.0	37	0.0	0.141	10.1	LOS A	0.2	1.5	0.50	0.98	0.50	41.7
12	R2	48	4.3	48	4.3	0.141	11.2	LOS A	0.2	1.5	0.50	0.98	0.50	32.3
Approach		88	4.8	88	4.8	0.141	10.7	LOS A	0.2	1.5	0.50	0.98	0.50	38.1
All Vehicles		682	4.0	682	4.0	0.195	3.7	NA	0.2	1.5	0.17	0.34	0.17	49.9

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

Site: N [9_AM (Site Folder: existing)] Network: 40 [AM (Network Folder: existing)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	49.3	26.0	0.53
North: Novar Street											
P3	Full	11	29.3	LOS C	0.0	0.0	0.91	0.91	55.6	34.2	0.62
All Pedestrians		63	29.3	LOS C	0.1	0.1	0.92	0.92	50.4	27.4	0.54

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

Vehicle Movement Performance

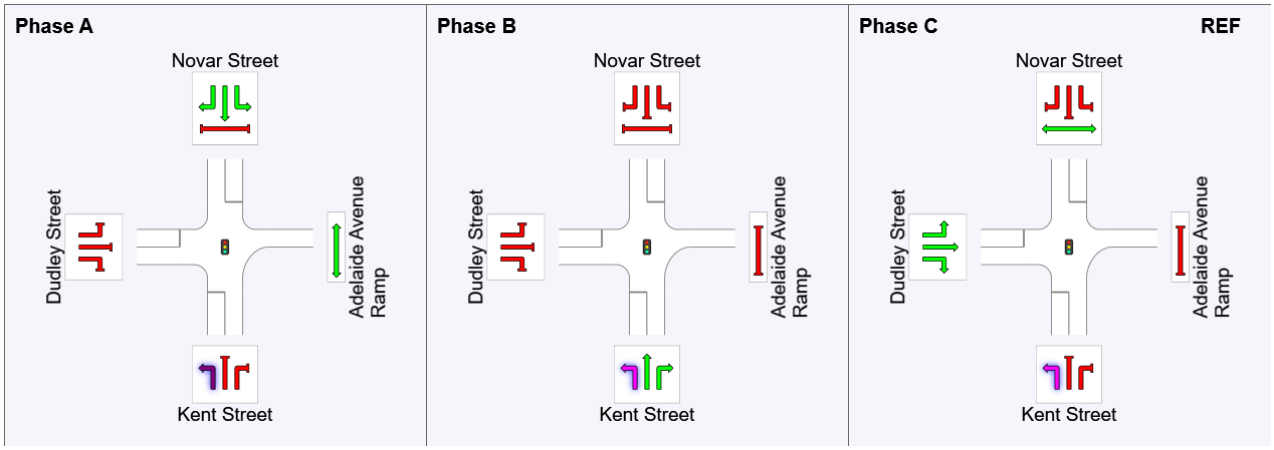
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	149	2.1	149	2.1	0.104	6.4	LOS A	0.5	3.7	0.25	0.61	0.25	29.4
2	T1	146	4.3	146	4.3	* 0.650	19.3	LOS B	8.2	58.5	0.88	0.82	0.88	11.9
3	R2	324	1.3	324	1.3	0.650	24.5	LOS B	8.2	58.5	0.88	0.82	0.88	27.6
Approach		620	2.2	620	2.2	0.650	18.9	LOS B	8.2	58.5	0.73	0.77	0.73	24.7
North: Novar Street														
7	L2	41	0.0	41	0.0	0.907	52.3	LOS D	3.5	24.8	1.00	1.06	1.74	26.4
8	T1	122	3.4	122	3.4	* 0.907	46.8	LOS D	3.5	25.5	1.00	1.06	1.74	19.5
9	R2	106	3.0	106	3.0	0.907	52.2	LOS D	3.5	25.5	1.00	1.06	1.74	19.0
Approach		269	2.7	269	2.7	0.907	49.8	LOS D	3.5	25.5	1.00	1.06	1.74	20.6
West: Dudley Street														
10	L2	252	3.3	252	3.3	0.940	53.9	LOS D	13.7	97.6	1.00	1.10	1.58	25.8
11	T1	4	0.0	4	0.0	* 0.940	48.3	LOS D	13.7	97.6	1.00	1.10	1.58	30.7
12	R2	607	0.7	607	0.7	0.940	55.3	LOS D	13.7	97.6	1.00	1.11	1.63	25.4
Approach		863	1.5	863	1.5	0.940	54.8	LOS D	13.7	97.6	1.00	1.11	1.61	25.5
All Vehicles		1753	1.9	1753	1.9	0.940	41.3	LOS C	13.7	97.6	0.90	0.98	1.32	24.6

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

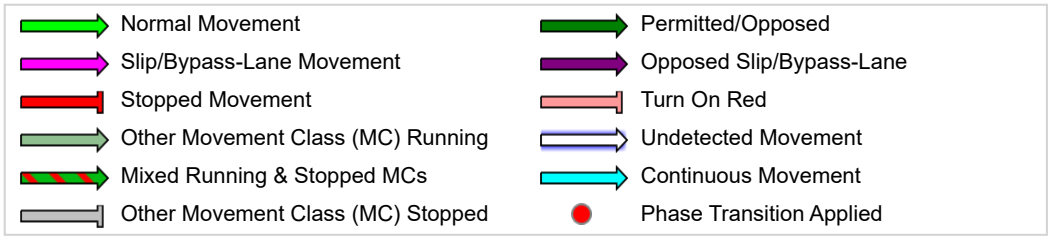
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	25	37	0
Green Time (sec)	6	27	19
Phase Time (sec)	12	33	25
Phase Split	17%	47%	36%

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

Site: 101 [19_AM (Site Folder: existing)] Network: 40 [AM (Network Folder: existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

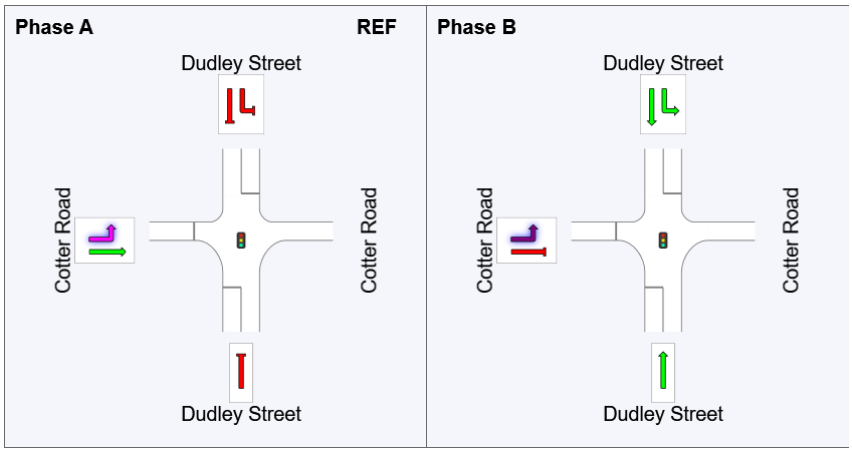
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	1	0.0	1	0.0	0.003	44.0	LOS D	0.0	0.2	0.85	0.51	0.85	20.5
Approach		1	0.0	1	0.0	0.003	44.0	LOS D	0.0	0.2	0.85	0.51	0.85	20.5
North: Dudley Street														
7	L2	4	25.0	4	25.0	0.754	58.9	LOS E	8.4	60.0	1.00	0.89	1.08	22.5
8	T1	245	2.1	245	2.1	* 0.754	54.3	LOS D	8.4	60.0	1.00	0.89	1.08	23.3
Approach		249	2.5	249	2.5	0.754	54.4	LOS D	8.4	60.0	1.00	0.89	1.08	23.3
West: Cotter Road														
10	L2	843	1.4	843	1.4	0.511	4.0	LOS A	3.6	25.7	0.24	0.52	0.24	36.7
11	T1	1731	1.8	1731	1.8	* 0.896	16.8	LOS B	37.9	269.6	0.74	0.71	0.77	42.2
Approach		2574	1.6	2574	1.6	0.896	12.6	LOS A	37.9	269.6	0.57	0.65	0.59	40.9
All Vehicles		2824	1.7	2824	1.7	0.896	16.3	LOS B	37.9	269.6	0.61	0.67	0.64	39.1

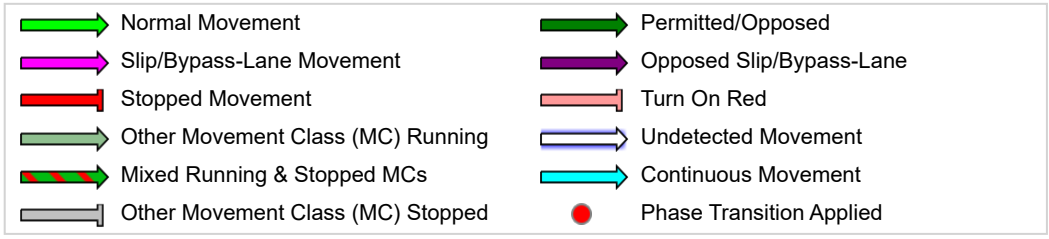
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	93
Green Time (sec)	86	20
Phase Time (sec)	93	27
Phase Split	78%	23%

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

Site: 101 [20_AM (Site Folder: existing)]

Network: 40 [AM (Network Folder: existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	1	0.0	1	0.0	0.485	2.5	LOS A	1.4	10.1	0.02	0.65	0.02	48.9
3	R2	842	1.4	842	1.4	0.485	7.8	LOS A	1.4	10.1	0.02	0.65	0.02	29.0
Approach		843	1.4	843	1.4	0.485	7.8	LOS A	1.4	10.1	0.02	0.65	0.02	29.0
East: Dudley St														
4	L2	254	2.5	254	2.5	0.281	3.9	LOS A	0.6	4.1	0.02	0.47	0.02	54.6
5	T1	1	0.0	1	0.0	0.001	3.7	LOS A	0.0	0.0	0.02	0.37	0.02	57.9
Approach		255	2.5	255	2.5	0.281	3.9	LOS A	0.6	4.1	0.02	0.47	0.02	54.6
West: Canberra Brickworks Precinct														
11	T1	1	0.0	1	0.0	0.004	8.8	LOS A	0.0	0.0	0.72	0.55	0.72	44.5
12	R2	1	0.0	1	0.0	0.004	14.3	LOS A	0.0	0.0	0.72	0.55	0.72	44.5
Approach		2	0.0	2	0.0	0.004	11.5	LOS A	0.0	0.0	0.72	0.55	0.72	44.5
All Vehicles		1100	1.6	1100	1.6	0.485	6.9	LOS A	1.4	10.1	0.02	0.61	0.02	41.1

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [AM (Network Folder: existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_AM]														
South: Kent St (s)														
2	T1	577	1.6	577	1.6	0.322	1.3	LOS A	1.5	10.4	0.14	0.12	0.14	44.4
Approach		577	1.6	577	1.6	0.322	1.3	LOS A	1.5	10.4	0.14	0.12	0.14	44.4
East: Adelaide Ave (EB off ramp)														
4	L2	437	1.2	437	1.2	* 0.474	23.7	LOS B	4.2	29.4	0.79	0.78	0.79	34.2
6	R2	47	8.9	47	8.9	0.268	38.2	LOS C	1.0	7.3	0.95	0.74	0.95	26.8
Approach		484	2.0	484	2.0	0.474	25.1	LOS B	4.2	29.4	0.80	0.78	0.80	33.3
North: Kent St (n)														
8	T1	725	1.2	725	1.2	* 0.866	24.3	LOS B	9.8	69.4	0.84	0.85	1.04	11.7
Approach		725	1.2	725	1.2	0.866	24.3	LOS B	9.8	69.4	0.84	0.85	1.04	11.7
All Vehicles		1786	1.5	1786	1.5	0.866	17.1	LOS B	9.8	69.4	0.60	0.59	0.68	24.9
Site: S [11_AM]														
South: Kent Street														
1	L2	11	0.0	11	0.0	0.458	30.5	LOS C	3.9	27.6	0.90	0.74	0.90	32.7
2	T1	376	1.4	376	1.4	0.458	24.7	LOS B	3.9	27.6	0.89	0.73	0.89	33.3
Approach		386	1.4	386	1.4	0.458	24.8	LOS B	3.9	27.6	0.89	0.73	0.89	33.3
North: Kent Street														
8	T1	515	1.6	515	1.6	0.319	0.8	LOS A	1.3	9.4	0.25	0.22	0.25	58.7
9	R2	641	0.8	641	0.8	0.587	13.6	LOS A	6.4	45.0	0.64	0.77	0.64	22.1
Approach		1156	1.2	1156	1.2	0.587	7.9	LOS A	6.4	45.0	0.47	0.52	0.47	41.1
West: Denison Street														
10	L2	212	2.0	212	2.0	0.181	12.7	LOS A	2.0	14.5	0.49	0.70	0.49	20.6
Approach		212	2.0	212	2.0	0.181	12.7	LOS A	2.0	14.5	0.49	0.70	0.49	20.6
All Vehicles		1754	1.3	1754	1.3	0.587	12.2	LOS A	6.4	45.0	0.56	0.59	0.56	36.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_AM]											
South: Kent St (s)											
P1	Full	26	29.3	LOS C	0.0	0.0	0.92	0.92	57.0	36.0	0.63

East: Adelaide Ave (EB off ramp)											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	50.1	27.0	0.54
P2B	Slip/ Bypass	53	29.3	LOS C	0.1	0.1	0.92	0.92	51.6	29.0	0.56
All Pedestrians		132	29.3	LOS C	0.1	0.1	0.92	0.92	52.1	29.6	0.57
Site: S [11_AM]											
West: Denison Street											
P4	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61
All Pedestrians		53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [PM (Network Folder: existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_PM]														
South: Kent St (s)														
2	T1	964	0.4	964	0.4	0.320	3.1	LOS A	4.7	33.0	0.44	0.39	0.44	32.5
Approach		964	0.4	964	0.4	0.320	3.1	LOS A	4.7	33.0	0.44	0.39	0.44	32.5
East: Adelaide Ave (EB off ramp)														
4	L2	239	0.0	239	0.0	0.260	19.9	LOS B	2.3	16.4	0.73	0.74	0.73	36.7
6	R2	36	0.0	36	0.0	0.177	33.8	LOS C	0.6	4.4	0.95	0.72	0.95	28.5
Approach		275	0.0	275	0.0	0.260	21.7	LOS B	2.3	16.4	0.75	0.74	0.75	35.4
North: Kent St (n)														
8	T1	275	0.8	275	0.8	0.164	11.2	LOS A	1.5	10.8	0.64	0.52	0.64	20.7
Approach		275	0.8	275	0.8	0.164	11.2	LOS A	1.5	10.8	0.64	0.52	0.64	20.7
All Vehicles		1514	0.4	1514	0.4	0.320	8.0	LOS A	4.7	33.0	0.54	0.48	0.54	32.0
Site: S [11_PM]														
South: Kent Street														
1	L2	3	100.0	3	100.0	0.503	24.4	LOS B	4.7	33.6	0.85	0.72	0.85	34.9
2	T1	447	0.7	447	0.7	* 0.503	17.2	LOS B	4.7	33.6	0.83	0.69	0.83	38.5
Approach		451	1.4	451	1.4	0.503	17.3	LOS B	4.7	33.6	0.83	0.69	0.83	38.5
North: Kent Street														
8	T1	374	0.6	374	0.6	0.238	0.5	LOS A	0.4	3.2	0.13	0.12	0.13	59.2
9	R2	141	0.0	141	0.0	0.161	14.4	LOS A	1.7	11.6	0.69	0.73	0.69	21.5
Approach		515	0.4	515	0.4	0.238	4.3	LOS A	1.7	11.6	0.29	0.28	0.29	50.7
West: Denison Street														
10	L2	511	0.2	511	0.2	* 0.645	18.9	LOS B	7.1	50.0	0.82	0.83	0.82	15.6
Approach		511	0.2	511	0.2	0.645	18.9	LOS B	7.1	50.0	0.82	0.83	0.82	15.6
All Vehicles		1476	0.6	1476	0.6	0.645	13.3	LOS A	7.1	50.0	0.63	0.60	0.63	36.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_PM]											
South: Kent St (s)											

P1	Full	26	24.3	LOS C	0.0	0.0	0.90	0.90	52.0	36.0	0.69
East: Adelaide Ave (EB off ramp)											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	45.1	27.0	0.60
P2B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	46.7	29.0	0.62
All Pedestrians		132	24.3	LOS C	0.1	0.1	0.90	0.90	47.1	29.6	0.63
Site: S [11_PM]											
West: Denison Street											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
All Pedestrians		53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [Sat (Network Folder: existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_Sat]														
South: Kent St (s)														
2	T1	437	1.0	437	1.0	0.194	2.9	LOS A	2.2	15.4	0.42	0.35	0.42	33.3
Approach		437	1.0	437	1.0	0.194	2.9	LOS A	2.2	15.4	0.42	0.35	0.42	33.3
East: Adelaide Ave (EB off ramp)														
4	L2	180	0.0	180	0.0	0.138	18.1	LOS B	0.9	6.6	0.73	0.72	0.73	38.0
6	R2	55	0.0	55	0.0	0.226	28.4	LOS B	0.8	5.5	0.94	0.73	0.94	31.2
Approach		235	0.0	235	0.0	0.226	20.5	LOS B	0.9	6.6	0.78	0.72	0.78	36.2
North: Kent St (n)														
8	T1	236	0.4	236	0.4	0.145	9.8	LOS A	1.1	7.8	0.65	0.52	0.65	22.6
Approach		236	0.4	236	0.4	0.145	9.8	LOS A	1.1	7.8	0.65	0.52	0.65	22.6
All Vehicles		907	0.6	907	0.6	0.226	9.3	LOS A	2.2	15.4	0.57	0.49	0.57	33.1
Site: S [11_Sat]														
South: Kent Street														
1	L2	6	33.3	6	33.3	0.220	18.9	LOS B	1.6	11.1	0.75	0.61	0.75	39.1
2	T1	209	1.0	209	1.0	* 0.220	12.8	LOS A	1.6	11.1	0.74	0.59	0.74	42.4
Approach		216	2.0	216	2.0	0.220	13.0	LOS A	1.6	11.1	0.74	0.59	0.74	42.2
North: Kent Street														
8	T1	260	0.4	260	0.4	0.174	0.5	LOS A	0.3	2.1	0.15	0.12	0.15	59.1
9	R2	157	0.7	157	0.7	0.200	13.8	LOS A	1.4	10.1	0.64	0.71	0.64	22.0
Approach		417	0.5	417	0.5	0.200	5.5	LOS A	1.4	10.1	0.33	0.35	0.33	47.5
West: Denison Street														
10	L2	224	0.5	224	0.5	* 0.265	15.9	LOS B	2.2	15.6	0.69	0.75	0.69	17.7
Approach		224	0.5	224	0.5	0.265	15.9	LOS B	2.2	15.6	0.69	0.75	0.69	17.7
All Vehicles		857	0.9	857	0.9	0.265	10.1	LOS A	2.2	15.6	0.53	0.51	0.53	40.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_Sat]											
South: Kent St (s)											
P1	Full	26	19.4	LOS B	0.0	0.0	0.88	0.88	47.1	36.0	0.76

East: Adelaide Ave (EB off ramp)											
P2	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	40.2	27.0	0.67
P2B	Slip/ Bypass	53	19.4	LOS B	0.1	0.1	0.88	0.88	41.7	29.0	0.70
All Pedestrians		132	19.4	LOS B	0.1	0.1	0.88	0.88	42.2	29.6	0.70
Site: S [11_Sat]											
West: Denison Street											
P4	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75
All Pedestrians		53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_PM (Site Folder: existing)] **Network: 41 [PM (Network Folder: existing)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	35	0.0	35	0.0	0.122	5.9	LOS A	0.1	0.6	0.08	0.16	0.08	52.5
2	T1	164	1.3	164	1.3	0.122	0.1	LOS A	0.1	0.6	0.08	0.16	0.08	57.0
3	R2	27	0.0	27	0.0	0.122	6.1	LOS A	0.1	0.6	0.08	0.16	0.08	51.1
Approach		226	0.9	226	0.9	0.122	1.7	NA	0.1	0.6	0.08	0.16	0.08	55.2
East: Weston St														
4	L2	23	0.0	23	0.0	0.098	8.2	LOS A	0.1	1.0	0.38	0.93	0.38	40.9
5	T1	40	0.0	40	0.0	0.098	9.4	LOS A	0.1	1.0	0.38	0.93	0.38	42.5
6	R2	19	0.0	19	0.0	0.098	9.6	LOS A	0.1	1.0	0.38	0.93	0.38	43.1
Approach		82	0.0	82	0.0	0.098	9.1	LOS A	0.1	1.0	0.38	0.93	0.38	42.3
North: Novar St														
7	L2	15	0.0	15	0.0	0.101	5.7	LOS A	0.0	0.1	0.02	0.05	0.02	51.2
8	T1	176	1.8	176	1.8	0.101	0.0	LOS A	0.0	0.1	0.02	0.05	0.02	57.3
9	R2	3	0.0	3	0.0	0.101	6.1	LOS A	0.0	0.1	0.02	0.05	0.02	50.8
Approach		194	1.6	194	1.6	0.101	0.5	NA	0.0	0.1	0.02	0.05	0.02	55.7
West: Weston St														
10	L2	5	0.0	5	0.0	0.175	8.1	LOS A	0.3	1.8	0.46	0.96	0.46	39.7
11	T1	33	0.0	33	0.0	0.175	9.4	LOS A	0.3	1.8	0.46	0.96	0.46	42.0
12	R2	83	0.0	83	0.0	0.175	10.1	LOS A	0.3	1.8	0.46	0.96	0.46	33.0
Approach		121	0.0	121	0.0	0.175	9.9	LOS A	0.3	1.8	0.46	0.96	0.46	37.5
All Vehicles		623	0.8	623	0.8	0.175	3.9	NA	0.3	1.8	0.18	0.38	0.18	48.8

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

Site: N [9_PM (Site Folder: existing)] — Network: 41 [PM (Network Folder: existing)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

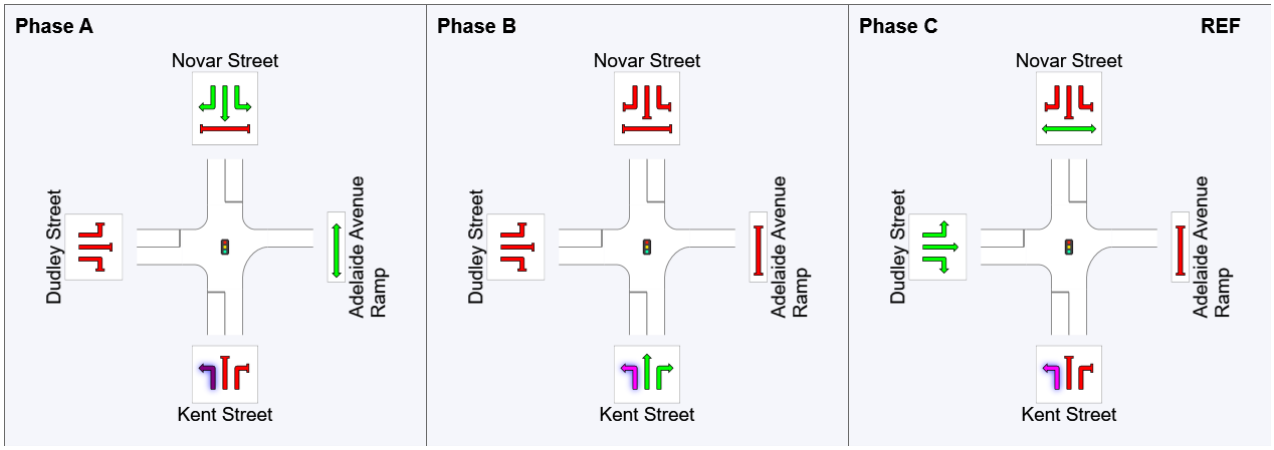
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	508	0.4	508	0.4	0.389	7.3	LOS A	2.1	14.6	0.43	0.67	0.43	27.5
2	T1	138	1.5	138	1.5	* 0.685	15.1	LOS B	6.6	46.1	0.89	0.84	0.94	13.9
3	R2	356	0.0	356	0.0	0.685	20.3	LOS B	6.6	46.1	0.89	0.84	0.94	30.4
Approach		1002	0.4	1002	0.4	0.685	13.0	LOS A	6.6	46.1	0.66	0.76	0.68	27.4
North: Novar Street														
7	L2	37	0.0	37	0.0	0.550	28.9	LOS C	2.2	15.4	0.98	0.79	1.00	35.9
8	T1	107	2.0	107	2.0	0.550	23.4	LOS B	2.2	15.4	0.98	0.79	1.00	29.3
9	R2	161	0.0	161	0.0	* 0.623	29.6	LOS C	2.5	17.5	0.99	0.83	1.09	26.7
Approach		305	0.7	305	0.7	0.623	27.3	LOS B	2.5	17.5	0.98	0.81	1.05	28.9
West: Dudley Street														
10	L2	109	0.0	109	0.0	0.626	30.6	LOS C	2.2	15.6	1.00	0.83	1.11	34.3
11	T1	6	0.0	6	0.0	* 0.626	25.1	LOS B	2.2	15.6	1.00	0.83	1.11	39.0
12	R2	164	0.0	164	0.0	0.626	30.7	LOS C	2.2	15.6	1.00	0.83	1.12	34.2
Approach		280	0.0	280	0.0	0.626	30.5	LOS C	2.2	15.6	1.00	0.83	1.12	34.3
All Vehicles		1587	0.4	1587	0.4	0.685	18.8	LOS B	6.6	46.1	0.78	0.78	0.83	30.0

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

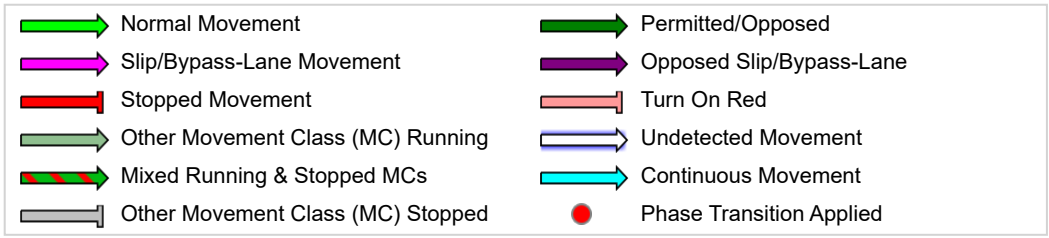
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	12	25	0
Green Time (sec)	7	19	6
Phase Time (sec)	13	25	12
Phase Split	26%	50%	24%

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

Site: 101 [19_PM (Site Folder: existing)] Network: 41 [PM (Network Folder: existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

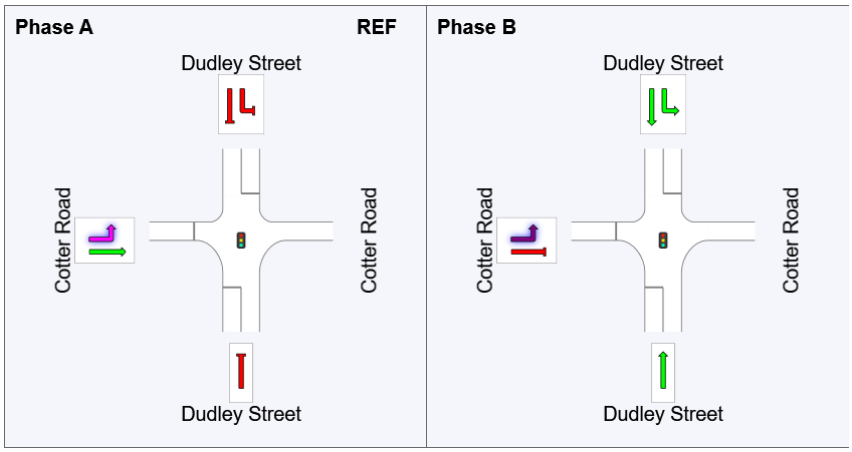
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	1	0.0	1	0.0	0.001	6.8	LOS A	0.0	0.1	0.48	0.29	0.48	49.1
Approach		1	0.0	1	0.0	0.001	6.8	LOS A	0.0	0.1	0.48	0.29	0.48	49.1
North: Dudley Street														
7	L2	4	0.0	4	0.0	0.615	14.9	LOS B	8.3	58.3	0.75	0.67	0.75	50.7
8	T1	657	0.5	657	0.5	* 0.615	10.5	LOS A	8.3	58.3	0.75	0.67	0.75	45.9
Approach		661	0.5	661	0.5	0.615	10.6	LOS A	8.3	58.3	0.75	0.67	0.75	45.9
West: Cotter Road														
10	L2	282	0.0	282	0.0	0.213	8.4	LOS A	0.7	5.0	0.29	0.68	0.29	58.5
11	T1	475	3.1	475	3.1	* 0.754	24.8	LOS B	6.2	44.7	0.95	0.84	1.06	51.8
Approach		757	1.9	757	1.9	0.754	18.7	LOS B	6.2	44.7	0.71	0.78	0.78	53.2
All Vehicles		1419	1.3	1419	1.3	0.754	14.9	LOS B	8.3	58.3	0.73	0.73	0.76	50.2

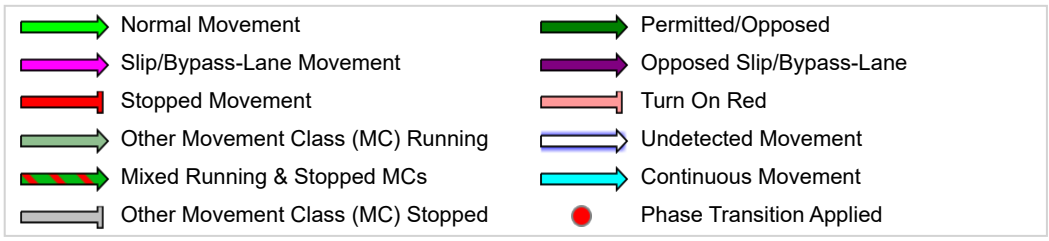
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	21
Green Time (sec)	14	32
Phase Time (sec)	21	39
Phase Split	35%	65%

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%.

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	1	0.0	1	0.0	0.162	2.5	LOS A	0.3	2.2	0.01	0.66	0.01	48.9
3	R2	281	0.0	281	0.0	0.162	7.8	LOS A	0.3	2.2	0.01	0.66	0.01	29.0
Approach		282	0.0	282	0.0	0.162	7.8	LOS A	0.3	2.2	0.01	0.66	0.01	29.2
East: Dudley St														
4	L2	666	0.5	666	0.5	0.691	3.9	LOS A	1.1	7.4	0.02	0.47	0.02	54.6
5	T1	1	0.0	1	0.0	0.001	3.7	LOS A	0.0	0.0	0.02	0.37	0.02	57.9
Approach		667	0.5	667	0.5	0.691	3.9	LOS A	1.1	7.4	0.02	0.47	0.02	54.6
West: Canberra Brickworks Precinct														
11	T1	1	0.0	1	0.0	0.003	4.5	LOS A	0.0	0.0	0.39	0.50	0.39	48.3
12	R2	1	0.0	1	0.0	0.003	10.1	LOS A	0.0	0.0	0.39	0.50	0.39	48.3
Approach		2	0.0	2	0.0	0.003	7.3	LOS A	0.0	0.0	0.39	0.50	0.39	48.3
All Vehicles		952	0.3	952	0.3	0.691	5.1	LOS A	1.1	7.4	0.02	0.52	0.02	51.4

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_Sat (Site Folder: existing)] **Network: 42 [Sat (Network Folder: existing)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	32	3.3	32	3.3	0.118	5.8	LOS A	0.0	0.3	0.04	0.12	0.04	53.1
2	T1	178	0.6	178	0.6	0.118	0.1	LOS A	0.0	0.3	0.04	0.12	0.04	58.0
3	R2	13	8.3	13	8.3	0.118	6.2	LOS A	0.0	0.3	0.04	0.12	0.04	51.4
Approach		222	1.4	222	1.4	0.118	1.2	NA	0.0	0.3	0.04	0.12	0.04	56.6
East: Weston St														
4	L2	9	0.0	9	0.0	0.053	8.1	LOS A	0.1	0.6	0.39	0.92	0.39	40.7
5	T1	18	0.0	18	0.0	0.053	9.2	LOS A	0.1	0.6	0.39	0.92	0.39	42.4
6	R2	14	15.4	14	15.4	0.053	10.5	LOS A	0.1	0.6	0.39	0.92	0.39	41.6
Approach		41	5.1	41	5.1	0.053	9.4	LOS A	0.1	0.6	0.39	0.92	0.39	41.8
North: Novar St														
7	L2	5	0.0	5	0.0	0.098	5.9	LOS A	0.0	0.1	0.02	0.03	0.02	51.5
8	T1	180	1.2	180	1.2	0.098	0.0	LOS A	0.0	0.1	0.02	0.03	0.02	58.5
9	R2	3	0.0	3	0.0	0.098	6.2	LOS A	0.0	0.1	0.02	0.03	0.02	51.2
Approach		188	1.1	188	1.1	0.098	0.3	NA	0.0	0.1	0.02	0.03	0.02	57.5
West: Weston St														
10	L2	4	0.0	4	0.0	0.140	8.2	LOS A	0.2	1.5	0.44	0.94	0.44	40.0
11	T1	31	0.0	31	0.0	0.140	9.3	LOS A	0.2	1.5	0.44	0.94	0.44	42.2
12	R2	65	0.0	65	0.0	0.140	9.8	LOS A	0.2	1.5	0.44	0.94	0.44	33.3
Approach		100	0.0	100	0.0	0.140	9.6	LOS A	0.2	1.5	0.44	0.94	0.44	38.1
All Vehicles		552	1.3	552	1.3	0.140	3.0	NA	0.2	1.5	0.13	0.30	0.13	50.7

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

Site: N [9_Sat (Site Folder: existing)]

Network: 42 [Sat (Network Folder: existing)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

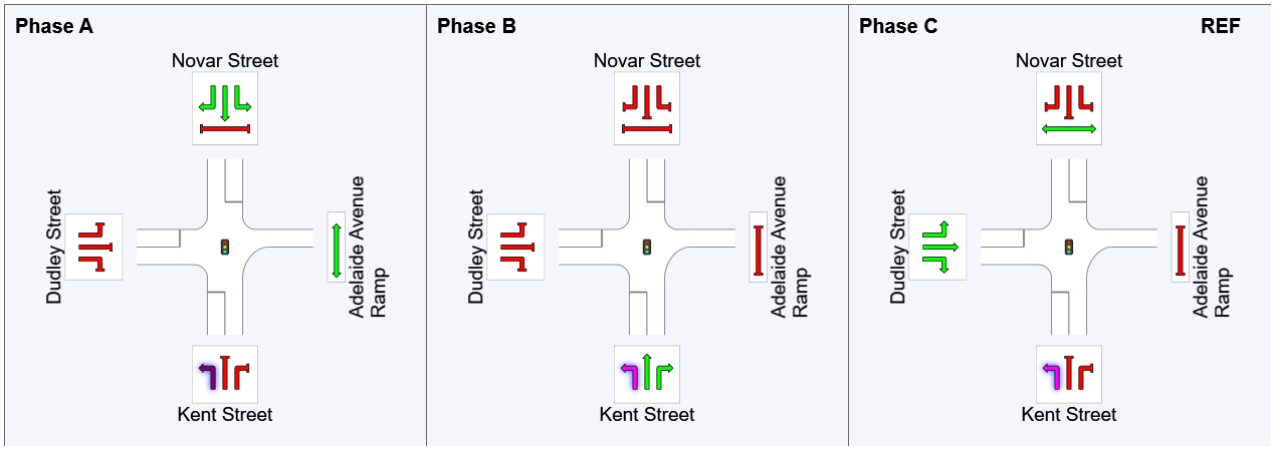
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	180	1.2	180	1.2	0.136	6.7	LOS A	0.6	4.1	0.34	0.63	0.34	28.7
2	T1	116	1.8	116	1.8	* 0.415	11.9	LOS A	3.5	24.5	0.76	0.74	0.76	16.3
3	R2	200	0.0	200	0.0	0.415	17.1	LOS B	3.5	24.5	0.76	0.74	0.76	33.2
Approach		496	0.8	496	0.8	0.415	12.1	LOS A	3.5	24.5	0.61	0.70	0.61	29.1
North: Novar Street														
7	L2	43	0.0	43	0.0	0.655	31.0	LOS C	2.3	16.4	1.00	0.85	1.15	34.7
8	T1	103	1.0	103	1.0	* 0.655	25.4	LOS B	2.3	16.4	1.00	0.85	1.15	28.0
9	R2	144	0.7	144	0.7	0.655	31.0	LOS C	2.3	16.3	1.00	0.85	1.16	26.0
Approach		291	0.7	291	0.7	0.655	29.0	LOS C	2.3	16.4	1.00	0.85	1.15	28.2
West: Dudley Street														
10	L2	142	0.7	142	0.7	0.666	31.1	LOS C	2.4	16.9	1.00	0.85	1.17	34.1
11	T1	7	0.0	7	0.0	* 0.666	25.5	LOS B	2.4	16.9	1.00	0.85	1.17	38.8
12	R2	135	0.0	135	0.0	0.608	30.5	LOS C	2.1	14.8	0.99	0.82	1.09	34.2
Approach		284	0.4	284	0.4	0.666	30.7	LOS C	2.4	16.9	1.00	0.84	1.13	34.3
All Vehicles		1071	0.7	1071	0.7	0.666	21.6	LOS B	3.5	24.5	0.82	0.78	0.90	31.0

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

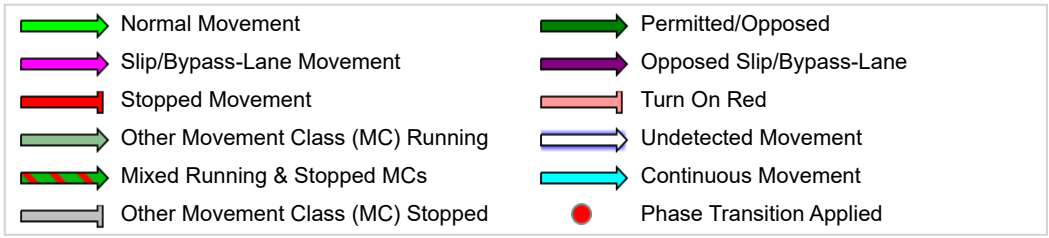
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	12	24	0
Green Time (sec)	6	20	6
Phase Time (sec)	12	26	12
Phase Split	24%	52%	24%

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

Site: 101 [19_Sat (Site Folder: existing)] Network: 42 [Sat (Network Folder: existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

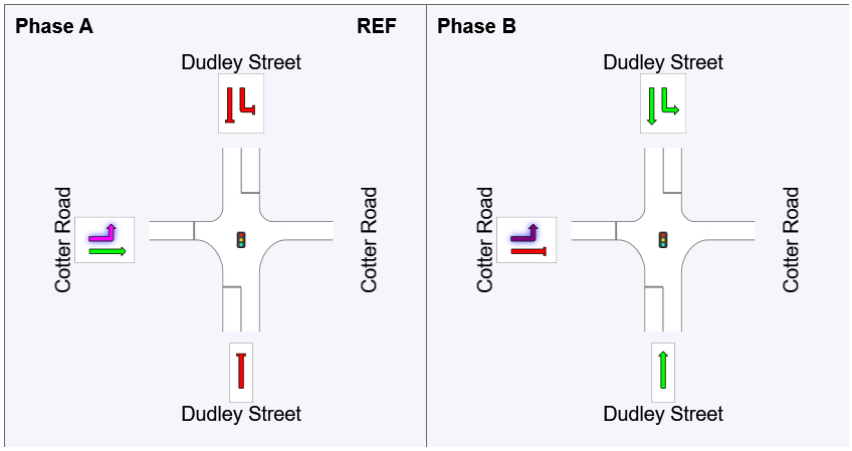
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	1	100.0	1	100.0	0.002	10.4	LOS A	0.0	0.1	0.63	0.39	0.63	32.7
Approach		1	100.0	1	100.0	0.002	10.4	LOS A	0.0	0.1	0.63	0.39	0.63	32.7
North: Dudley Street														
7	L2	3	0.0	3	0.0	0.428	17.0	LOS B	3.7	26.1	0.79	0.67	0.79	48.2
8	T1	324	0.6	324	0.6	* 0.428	12.7	LOS A	3.7	26.1	0.79	0.67	0.79	43.8
Approach		327	0.6	327	0.6	0.428	12.7	LOS A	3.7	26.1	0.79	0.67	0.79	43.9
West: Cotter Road														
10	L2	286	0.0	286	0.0	0.218	4.5	LOS A	0.7	5.2	0.35	0.56	0.35	36.3
11	T1	474	1.3	474	1.3	* 0.510	14.2	LOS A	4.1	29.3	0.82	0.68	0.82	43.1
Approach		760	0.8	760	0.8	0.510	10.5	LOS A	4.1	29.3	0.64	0.64	0.64	41.2
All Vehicles		1088	0.9	1088	0.9	0.510	11.2	LOS A	4.1	29.3	0.69	0.65	0.69	41.8

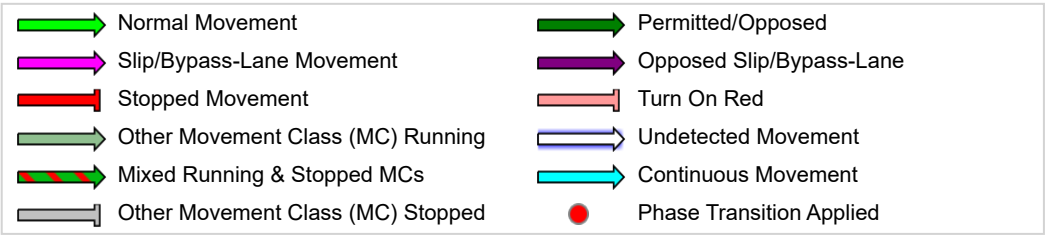
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	24
Green Time (sec)	17	19
Phase Time (sec)	24	26
Phase Split	48%	52%

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

Site: 101 [20_Sat (Site Folder: existing)]

Network: 42 [Sat (Network Folder: existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	1	0.0	1	0.0	0.162	2.5	LOS A	0.3	2.2	0.01	0.66	0.01	48.9
3	R2	281	0.4	281	0.4	0.162	7.8	LOS A	0.3	2.2	0.01	0.66	0.01	29.0
Approach		282	0.4	282	0.4	0.162	7.8	LOS A	0.3	2.2	0.01	0.66	0.01	29.2
East: Dudley St														
4	L2	323	1.0	323	1.0	0.177	3.9	LOS A	0.4	2.9	0.02	0.47	0.02	54.6
5	T1	1	0.0	1	0.0	0.001	3.7	LOS A	0.0	0.0	0.02	0.37	0.02	57.9
Approach		324	1.0	324	1.0	0.177	3.9	LOS A	0.4	2.9	0.02	0.47	0.02	54.6
West: Canberra Brickworks Precinct														
11	T1	1	0.0	1	0.0	0.002	4.5	LOS A	0.0	0.0	0.39	0.49	0.39	48.3
12	R2	1	0.0	1	0.0	0.002	10.1	LOS A	0.0	0.0	0.39	0.49	0.39	48.3
Approach		2	0.0	2	0.0	0.002	7.3	LOS A	0.0	0.0	0.39	0.49	0.39	48.3
All Vehicles		608	0.7	608	0.7	0.177	5.7	LOS A	0.4	2.9	0.02	0.56	0.02	48.8

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_AM (Site Folder: Scenario 2)] **Network: 52 [AM (Network Folder: Scenario 2)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	75	0.0	75	0.0	0.619	3.1	LOS A	2.5	17.5	0.34	0.59	0.34	48.1
3	R2	843	1.4	843	1.4	0.619	8.4	LOS A	2.5	17.5	0.34	0.59	0.34	27.1
Approach		918	1.3	918	1.3	0.619	8.0	LOS A	2.5	17.5	0.34	0.59	0.34	31.4
East: Dudley St														
4	L2	258	2.4	258	2.4	0.363	4.4	LOS A	5.5	39.6	0.32	0.49	0.32	53.0
5	T1	71	0.0	71	0.0	0.073	4.5	LOS A	0.2	1.1	0.33	0.42	0.33	56.4
Approach		328	1.9	328	1.9	0.363	4.4	LOS A	5.5	39.6	0.33	0.48	0.33	54.1
West: Canberra Brickworks Precinct														
11	T1	142	0.0	142	0.0	0.532	13.3	LOS A	2.6	17.9	0.91	0.96	1.10	40.5
12	R2	119	0.0	119	0.0	0.532	18.9	LOS B	2.6	17.9	0.91	0.96	1.10	40.5
Approach		261	0.0	261	0.0	0.532	15.9	LOS B	2.6	17.9	0.91	0.96	1.10	40.5
All Vehicles		1507	1.2	1507	1.2	0.619	8.6	LOS A	5.5	39.6	0.44	0.63	0.47	42.3

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

Site: 101 [19_AM (Site Folder: Scenario 2)]

Network: 52 [AM (Network Folder: Scenario 2)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

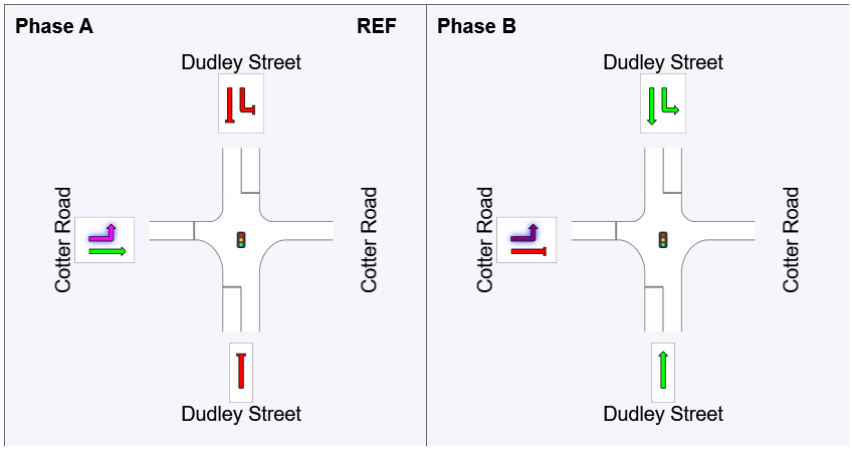
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
Approach		42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
North: Dudley Street														
7	L2	75	1.4	75	1.4	0.942	77.9	LOS F	8.4	60.0	1.00	1.13	1.40	19.7
8	T1	298	1.8	298	1.8	* 0.942	73.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.0
Approach		373	1.7	373	1.7	0.942	74.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.2
West: Cotter Road														
10	L2	878	1.3	878	1.3	0.547	4.4	LOS A	5.2	37.2	0.29	0.55	0.29	36.5
11	T1	1731	1.8	1731	1.8	* 0.985	47.1	LOS D	64.1	455.2	0.86	0.99	1.09	31.3
Approach		2608	1.6	2608	1.6	0.985	32.7	LOS C	64.1	455.2	0.67	0.84	0.82	32.2
All Vehicles		3023	1.6	3023	1.6	0.985	38.0	LOS C	64.1	455.2	0.71	0.87	0.89	30.3

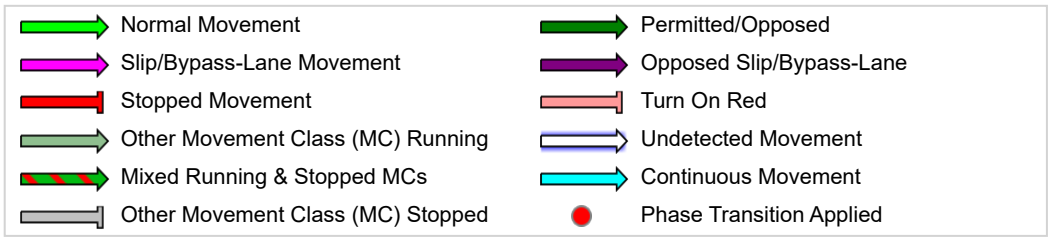
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	89
Green Time (sec)	82	24
Phase Time (sec)	89	31
Phase Split	74%	26%

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

Site: N [9_AM (Site Folder: Scenario 2)]

Network: 52 [AM (Network Folder: Scenario 2)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	49.3	26.0	0.53
North: Novar Street											
P3	Full	11	29.3	LOS C	0.0	0.0	0.91	0.91	55.6	34.2	0.62
All Pedestrians		63	29.3	LOS C	0.1	0.1	0.92	0.92	50.4	27.4	0.54

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

Vehicle Movement Performance

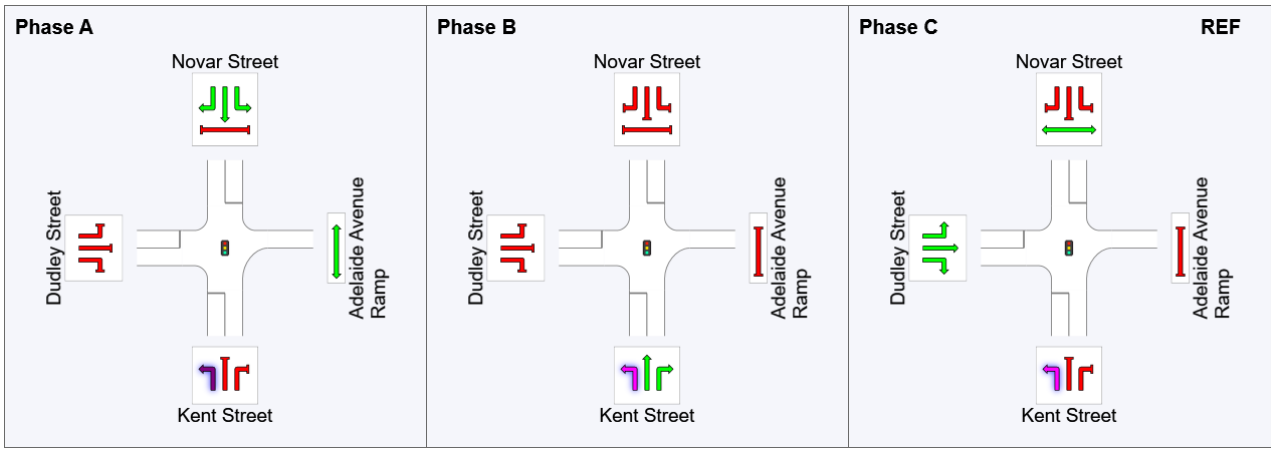
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	194	1.6	194	1.6	0.136	6.7	LOS A	0.8	5.4	0.27	0.61	0.27	28.9
2	T1	148	4.3	148	4.3	* 0.839	31.5	LOS C	10.9	77.5	1.00	0.99	1.23	8.4
3	R2	324	1.3	324	1.3	0.839	36.7	LOS C	10.9	77.5	1.00	0.99	1.23	21.9
Approach		666	2.1	666	2.1	0.839	26.8	LOS B	10.9	77.5	0.79	0.88	0.95	19.6
North: Novar Street														
7	L2	45	0.0	45	0.0	* 0.869	48.3	LOS D	3.8	27.0	1.00	1.01	1.55	27.7
8	T1	126	3.3	126	3.3	0.869	42.7	LOS D	3.9	27.7	1.00	1.01	1.55	20.7
9	R2	137	2.3	137	2.3	0.869	48.1	LOS D	3.9	27.7	1.00	1.01	1.54	20.0
Approach		308	2.4	308	2.4	0.869	45.9	LOS D	3.9	27.7	1.00	1.01	1.55	21.6
West: Dudley Street														
10	L2	295	2.9	295	2.9	0.839	35.2	LOS C	12.1	86.2	0.99	0.96	1.19	32.2
11	T1	23	0.0	23	0.0	* 0.839	29.6	LOS C	12.1	86.2	0.99	0.96	1.19	37.1
12	R2	687	0.6	687	0.6	0.839	35.7	LOS C	12.1	86.2	0.99	0.96	1.21	31.9
Approach		1005	1.3	1005	1.3	0.839	35.4	LOS C	12.1	86.2	0.99	0.96	1.21	32.1
All Vehicles		1980	1.7	1980	1.7	0.869	34.2	LOS C	12.1	86.2	0.92	0.94	1.17	27.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

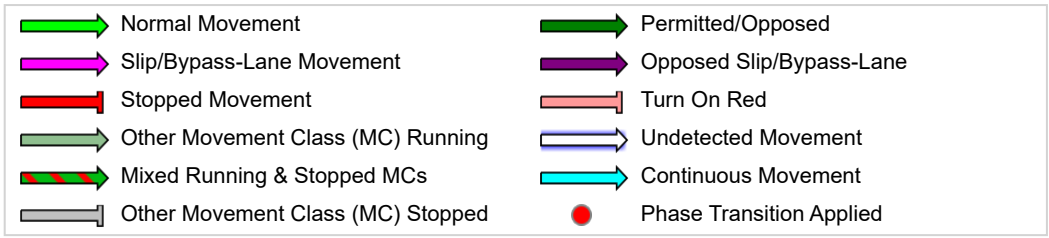
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	30	43	0
Green Time (sec)	7	21	24
Phase Time (sec)	13	27	30
Phase Split	19%	39%	43%

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

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	57	1.9	57	1.9	0.219	6.1	LOS A	0.2	1.5	0.11	0.17	0.11	52.0
2	T1	275	4.6	275	4.6	0.219	0.2	LOS A	0.2	1.5	0.11	0.17	0.11	56.5
3	R2	62	1.7	62	1.7	0.219	6.3	LOS A	0.2	1.5	0.11	0.17	0.11	50.8
Approach		394	3.7	394	3.7	0.219	2.0	NA	0.2	1.5	0.11	0.17	0.11	54.5
East: Weston St														
4	L2	23	0.0	23	0.0	0.108	8.2	LOS A	0.2	1.1	0.43	0.95	0.43	40.0
5	T1	31	0.0	31	0.0	0.108	10.8	LOS A	0.2	1.1	0.43	0.95	0.43	41.9
6	R2	22	4.8	22	4.8	0.108	11.5	LOS A	0.2	1.1	0.43	0.95	0.43	42.0
Approach		76	1.4	76	1.4	0.108	10.2	LOS A	0.2	1.1	0.43	0.95	0.43	41.4
North: Novar St														
7	L2	11	20.0	11	20.0	0.107	6.2	LOS A	0.0	0.1	0.01	0.03	0.01	51.0
8	T1	189	2.2	189	2.2	0.107	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	58.4
9	R2	1	100.0	1	100.0	0.107	9.4	LOS A	0.0	0.1	0.01	0.03	0.01	46.9
Approach		201	3.7	201	3.7	0.107	0.4	NA	0.0	0.1	0.01	0.03	0.01	57.0
West: Weston St														
10	L2	3	66.7	3	66.7	0.155	12.1	LOS A	0.2	1.7	0.54	1.00	0.54	32.2
11	T1	37	0.0	37	0.0	0.155	10.7	LOS A	0.2	1.7	0.54	1.00	0.54	41.2
12	R2	48	4.3	48	4.3	0.155	12.0	LOS A	0.2	1.7	0.54	1.00	0.54	31.5
Approach		88	4.8	88	4.8	0.155	11.5	LOS A	0.2	1.7	0.54	1.00	0.54	37.5
All Vehicles		759	3.6	759	3.6	0.219	3.5	NA	0.2	1.7	0.17	0.31	0.17	50.4

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

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [AM (Network Folder: Scenario 2)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_AM]														
South: Kent Street														
1	L2	11	0.0	11	0.0	0.380	26.0	LOS B	3.8	26.8	0.82	0.69	0.82	35.1
2	T1	404	1.3	404	1.3	0.380	20.2	LOS B	3.8	26.8	0.81	0.68	0.81	36.2
Approach		415	1.3	415	1.3	0.380	20.3	LOS B	3.8	26.8	0.81	0.68	0.81	36.2
North: Kent Street														
8	T1	565	1.5	565	1.5	0.350	0.5	LOS A	0.8	5.6	0.14	0.12	0.14	59.2
9	R2	675	0.8	675	0.8	0.703	17.9	LOS B	6.4	45.0	0.85	0.84	0.85	19.0
Approach		1240	1.1	1240	1.1	0.703	10.0	LOS A	6.4	45.0	0.53	0.51	0.53	38.6
West: Denison Street														
10	L2	227	1.9	227	1.9	0.222	15.5	LOS B	2.6	18.5	0.58	0.73	0.58	18.0
Approach		227	1.9	227	1.9	0.222	15.5	LOS B	2.6	18.5	0.58	0.73	0.58	18.0
All Vehicles		1882	1.2	1882	1.2	0.703	12.9	LOS A	6.4	45.0	0.60	0.58	0.60	36.2
Site: M [10_AM]														
South: Kent St (s)														
2	T1	621	1.5	621	1.5	0.450	1.5	LOS A	1.8	12.5	0.16	0.14	0.16	42.4
Approach		621	1.5	621	1.5	0.450	1.5	LOS A	1.8	12.5	0.16	0.14	0.16	42.4
East: Adelaide Ave (EB off ramp)														
4	L2	437	1.2	437	1.2	0.617	29.5	LOS C	4.8	33.9	0.90	0.82	0.92	30.9
6	R2	48	8.7	48	8.7	* 0.537	43.3	LOS D	1.1	8.4	1.00	0.78	1.09	24.9
Approach		485	2.0	485	2.0	0.617	30.9	LOS C	4.8	33.9	0.91	0.81	0.93	30.2
North: Kent St (n)														
8	T1	809	1.0	809	1.0	* 0.813	16.8	LOS B	9.2	65.0	0.75	0.73	0.86	15.6
Approach		809	1.0	809	1.0	0.813	16.8	LOS B	9.2	65.0	0.75	0.73	0.86	15.6
All Vehicles		1916	1.4	1916	1.4	0.813	15.4	LOS B	9.2	65.0	0.60	0.56	0.65	25.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_AM]											
West: Denison Street											
P4	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61

All Pedestrians	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61
Site: M [10_AM]										
South: Kent St (s)										
P1 Full	26	29.3	LOS C	0.0	0.0	0.92	0.92	57.0	36.0	0.63
East: Adelaide Ave (EB off ramp)										
P2 Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	50.1	27.0	0.54
P2B Slip/ Bypass	53	29.3	LOS C	0.1	0.1	0.92	0.92	51.6	29.0	0.56
All Pedestrians	132	29.3	LOS C	0.1	0.1	0.92	0.92	52.1	29.6	0.57

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [PM (Network Folder: Scenario 2)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_PM]														
South: Kent Street														
1	L2	3	100.0	3	100.0	0.685	28.7	LOS C	6.3	44.6	0.95	0.84	1.00	32.6
2	T1	501	0.6	501	0.6	0.685	21.3	LOS B	6.3	44.6	0.92	0.79	0.95	35.5
Approach		504	1.3	504	1.3	0.685	21.3	LOS B	6.3	44.6	0.92	0.79	0.95	35.5
North: Kent Street														
8	T1	417	0.5	417	0.5	* 0.265	0.5	LOS A	0.5	3.7	0.14	0.12	0.14	59.1
9	R2	169	0.0	169	0.0	0.175	13.2	LOS A	1.9	13.5	0.67	0.73	0.67	22.6
Approach		586	0.4	586	0.4	0.265	4.2	LOS A	1.9	13.5	0.29	0.30	0.29	50.7
West: Denison Street														
10	L2	540	0.2	540	0.2	* 0.678	17.5	LOS B	7.4	51.9	0.80	0.83	0.80	16.5
Approach		540	0.2	540	0.2	0.678	17.5	LOS B	7.4	51.9	0.80	0.83	0.80	16.5
All Vehicles		1631	0.6	1631	0.6	0.685	13.9	LOS A	7.4	51.9	0.65	0.63	0.67	36.1
Site: M [10_PM]														
South: Kent St (s)														
2	T1	1047	0.4	1047	0.4	0.390	4.2	LOS A	5.2	36.3	0.45	0.40	0.45	28.0
Approach		1047	0.4	1047	0.4	0.390	4.2	LOS A	5.2	36.3	0.45	0.40	0.45	28.0
East: Adelaide Ave (EB off ramp)														
4	L2	239	0.0	239	0.0	0.286	21.5	LOS B	2.5	17.3	0.76	0.75	0.76	35.6
6	R2	38	0.0	38	0.0	0.192	33.9	LOS C	0.7	4.7	0.95	0.72	0.95	28.5
Approach		277	0.0	277	0.0	0.286	23.2	LOS B	2.5	17.3	0.79	0.74	0.79	34.5
North: Kent St (n)														
8	T1	346	0.6	346	0.6	0.192	10.1	LOS A	1.8	13.0	0.62	0.51	0.62	22.1
Approach		346	0.6	346	0.6	0.192	10.1	LOS A	1.8	13.0	0.62	0.51	0.62	22.1
All Vehicles		1671	0.4	1671	0.4	0.390	8.6	LOS A	5.2	36.3	0.54	0.48	0.54	30.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_PM]											
West: Denison Street											

P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
All Pedestrians		53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
Site: M [10_PM]											
South: Kent St (s)											
P1	Full	26	24.3	LOS C	0.0	0.0	0.90	0.90	52.0	36.0	0.69
East: Adelaide Ave (EB off ramp)											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	45.1	27.0	0.60
P2B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	46.7	29.0	0.62
All Pedestrians		132	24.3	LOS C	0.1	0.1	0.90	0.90	47.1	29.6	0.63

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

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [Sat (Network Folder: Scenario 2)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_sat]														
South: Kent Street														
1	L2	6	33.3	6	33.3	0.284	20.0	LOS B	2.0	14.2	0.79	0.65	0.79	38.4
2	T1	256	0.8	256	0.8	0.284	13.8	LOS A	2.0	14.2	0.77	0.62	0.77	41.4
Approach		262	1.6	262	1.6	0.284	14.0	LOS A	2.0	14.2	0.77	0.62	0.77	41.3
North: Kent Street														
8	T1	303	0.3	303	0.3	0.203	0.5	LOS A	0.4	2.5	0.16	0.13	0.16	59.0
9	R2	185	0.6	185	0.6	0.225	13.4	LOS A	1.9	13.3	0.71	0.74	0.71	22.3
Approach		488	0.4	488	0.4	0.225	5.4	LOS A	1.9	13.3	0.36	0.36	0.36	47.6
West: Denison Street														
10	L2	249	0.4	249	0.4	0.281	15.3	LOS B	2.4	17.0	0.68	0.75	0.68	18.1
Approach		249	0.4	249	0.4	0.281	15.3	LOS B	2.4	17.0	0.68	0.75	0.68	18.1
All Vehicles		1000	0.7	1000	0.7	0.284	10.1	LOS A	2.4	17.0	0.55	0.53	0.55	40.3
Site: M [10_sat]														
South: Kent St (s)														
2	T1	508	0.8	508	0.8	0.253	4.7	LOS A	3.0	21.2	0.51	0.43	0.51	26.3
Approach		508	0.8	508	0.8	0.253	4.7	LOS A	3.0	21.2	0.51	0.43	0.51	26.3
East: Adelaide Ave (EB off ramp)														
4	L2	180	0.0	180	0.0	0.117	15.9	LOS B	0.9	6.0	0.66	0.71	0.66	39.8
6	R2	57	0.0	57	0.0	* 0.234	28.4	LOS B	0.8	5.8	0.94	0.74	0.94	31.1
Approach		237	0.0	237	0.0	0.234	18.9	LOS B	0.9	6.0	0.73	0.71	0.73	37.4
North: Kent St (n)														
8	T1	307	0.3	307	0.3	* 0.220	12.2	LOS A	1.7	11.6	0.73	0.59	0.73	19.5
Approach		307	0.3	307	0.3	0.220	12.2	LOS A	1.7	11.6	0.73	0.59	0.73	19.5
All Vehicles		1053	0.5	1053	0.5	0.253	10.1	LOS A	3.0	21.2	0.62	0.54	0.62	30.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_sat]											
West: Denison Street											
P4	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75

All Pedestrians	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75
Site: M [10_sat]										
South: Kent St (s)										
P1 Full	26	19.4	LOS B	0.0	0.0	0.88	0.88	47.1	36.0	0.76
East: Adelaide Ave (EB off ramp)										
P2 Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	40.2	27.0	0.67
P2B Slip/ Bypass	53	19.4	LOS B	0.1	0.1	0.88	0.88	41.7	29.0	0.70
All Pedestrians	132	19.4	LOS B	0.1	0.1	0.88	0.88	42.2	29.6	0.70

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_PM (Site Folder: Scenario 2)] **Network: 53 [PM (Network Folder: Scenario 2)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	136	0.0	136	0.0	0.316	3.2	LOS A	0.8	5.3	0.31	0.59	0.31	49.5
3	R2	284	0.0	284	0.0	0.316	8.5	LOS A	0.8	5.3	0.31	0.59	0.31	28.5
Approach		420	0.0	420	0.0	0.316	6.8	LOS A	0.8	5.3	0.31	0.59	0.31	41.3
East: Dudley St														
4	L2	668	0.5	668	0.5	0.875	4.5	LOS A	1.5	10.7	0.34	0.50	0.34	52.9
5	T1	124	0.0	124	0.0	0.130	4.5	LOS A	0.3	1.9	0.30	0.42	0.30	56.6
Approach		793	0.4	793	0.4	0.875	4.5	LOS A	1.5	10.7	0.34	0.48	0.34	53.8
West: Canberra Brickworks Precinct														
11	T1	127	0.0	127	0.0	0.298	4.9	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
12	R2	106	0.0	106	0.0	0.298	10.4	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
Approach		234	0.0	234	0.0	0.298	7.4	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
All Vehicles		1446	0.2	1446	0.2	0.875	5.6	LOS A	1.5	10.7	0.35	0.54	0.35	50.8

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

Site: 101 [19_PM (Site Folder: Scenario 2)]

Network: 53 [PM (Network Folder: Scenario 2)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

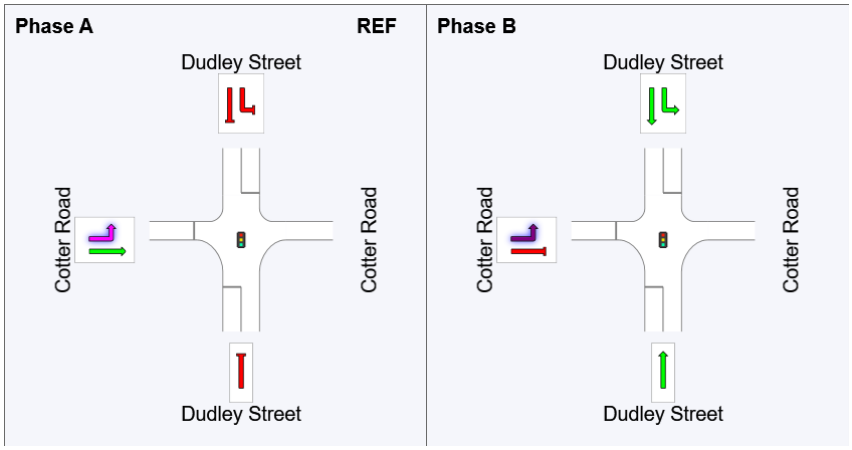
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	84	0.0	84	0.0	0.078	7.3	LOS A	0.7	5.1	0.51	0.40	0.51	48.5
Approach		84	0.0	84	0.0	0.078	7.3	LOS A	0.7	5.1	0.51	0.40	0.51	48.5
North: Dudley Street														
7	L2	57	0.0	57	0.0	0.709	15.8	LOS B	8.5	60.0	0.81	0.73	0.81	49.3
8	T1	702	0.4	702	0.4	* 0.709	11.4	LOS A	8.5	60.0	0.81	0.73	0.81	44.8
Approach		759	0.4	759	0.4	0.709	11.7	LOS A	8.5	60.0	0.81	0.73	0.81	45.1
West: Cotter Road														
10	L2	338	0.0	338	0.0	0.271	8.6	LOS A	1.1	7.4	0.33	0.69	0.33	58.2
11	T1	475	3.1	475	3.1	* 0.754	24.8	LOS B	6.2	44.7	0.95	0.84	1.06	51.8
Approach		813	1.8	813	1.8	0.754	18.1	LOS B	6.2	44.7	0.69	0.78	0.76	53.4
All Vehicles		1656	1.1	1656	1.1	0.754	14.6	LOS B	8.5	60.0	0.74	0.74	0.77	49.7

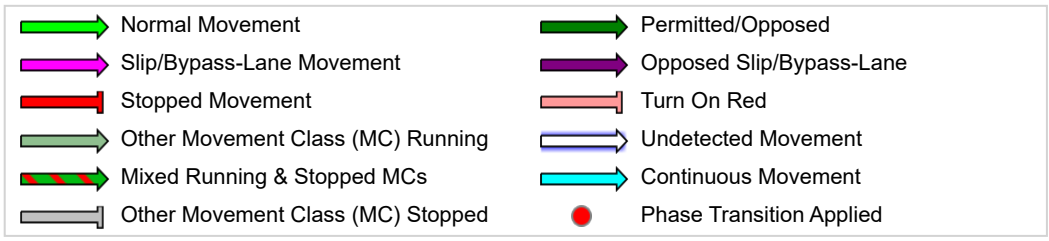
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	21
Green Time (sec)	14	32
Phase Time (sec)	21	39
Phase Split	35%	65%

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

Site: N [9_PM (Site Folder: Scenario 2)]

Network: 53 [PM (Network Folder: Scenario 2)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

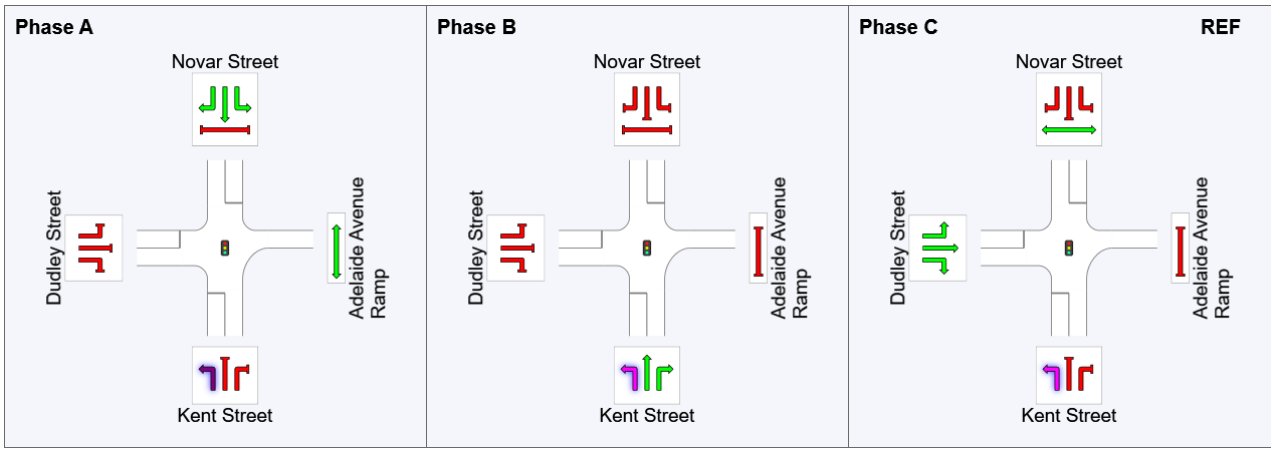
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	587	0.4	587	0.4	0.461	7.8	LOS A	2.6	18.4	0.47	0.69	0.47	26.6
2	T1	144	1.5	144	1.5	* 0.732	17.1	LOS B	7.1	50.2	0.93	0.89	1.03	12.9
3	R2	356	0.0	356	0.0	0.732	22.3	LOS B	7.1	50.2	0.93	0.89	1.03	29.1
Approach		1087	0.4	1087	0.4	0.732	13.8	LOS A	7.1	50.2	0.68	0.78	0.73	26.1
North: Novar Street														
7	L2	39	0.0	39	0.0	0.563	29.0	LOS C	2.2	15.8	0.98	0.79	1.02	35.8
8	T1	108	1.9	108	1.9	0.563	23.5	LOS B	2.2	15.8	0.98	0.79	1.02	29.2
9	R2	207	0.0	207	0.0	* 0.802	33.1	LOS C	3.5	24.8	1.00	0.96	1.38	25.0
Approach		355	0.6	355	0.6	0.802	29.7	LOS C	3.5	24.8	0.99	0.89	1.23	27.6
West: Dudley Street														
10	L2	155	0.0	155	0.0	0.786	32.5	LOS C	3.5	24.4	1.00	0.94	1.34	33.6
11	T1	21	0.0	21	0.0	* 0.786	26.9	LOS B	3.5	24.4	1.00	0.94	1.34	38.3
12	R2	235	0.0	235	0.0	0.786	32.5	LOS C	3.5	24.4	1.00	0.94	1.34	33.3
Approach		411	0.0	411	0.0	0.786	32.2	LOS C	3.5	24.4	1.00	0.94	1.34	33.7
All Vehicles		1853	0.3	1853	0.3	0.802	20.9	LOS B	7.1	50.2	0.81	0.84	0.96	29.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

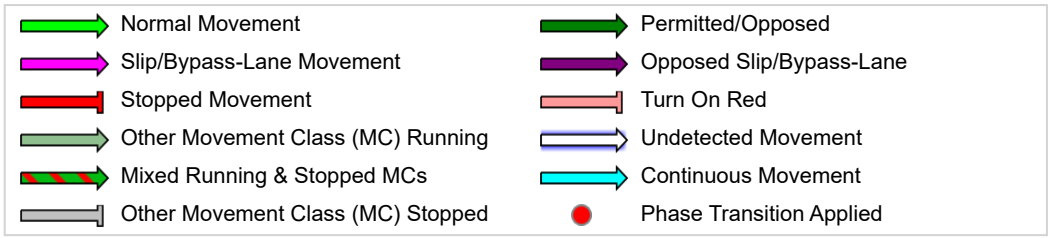
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	13	26	0
Green Time (sec)	7	18	7
Phase Time (sec)	13	24	13
Phase Split	26%	48%	26%

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

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	35	0.0	35	0.0	0.148	6.0	LOS A	0.1	0.7	0.08	0.13	0.08	52.8
2	T1	213	1.0	213	1.0	0.148	0.1	LOS A	0.1	0.7	0.08	0.13	0.08	57.4
3	R2	27	0.0	27	0.0	0.148	6.3	LOS A	0.1	0.7	0.08	0.13	0.08	51.3
Approach		275	0.8	275	0.8	0.148	1.5	NA	0.1	0.7	0.08	0.13	0.08	55.9
East: Weston St														
4	L2	23	0.0	23	0.0	0.108	8.4	LOS A	0.2	1.1	0.44	0.94	0.44	40.4
5	T1	40	0.0	40	0.0	0.108	10.1	LOS A	0.2	1.1	0.44	0.94	0.44	42.2
6	R2	19	0.0	19	0.0	0.108	10.5	LOS A	0.2	1.1	0.44	0.94	0.44	42.7
Approach		82	0.0	82	0.0	0.108	9.7	LOS A	0.2	1.1	0.44	0.94	0.44	41.9
North: Novar St														
7	L2	15	0.0	15	0.0	0.126	5.7	LOS A	0.0	0.1	0.02	0.04	0.02	51.3
8	T1	223	1.4	223	1.4	0.126	0.0	LOS A	0.0	0.1	0.02	0.04	0.02	57.7
9	R2	3	0.0	3	0.0	0.126	6.4	LOS A	0.0	0.1	0.02	0.04	0.02	50.9
Approach		241	1.3	241	1.3	0.126	0.5	NA	0.0	0.1	0.02	0.04	0.02	56.3
West: Weston St														
10	L2	5	0.0	5	0.0	0.196	8.4	LOS A	0.3	2.0	0.51	0.98	0.51	39.0
11	T1	33	0.0	33	0.0	0.196	10.2	LOS A	0.3	2.0	0.51	0.98	0.51	41.5
12	R2	83	0.0	83	0.0	0.196	11.1	LOS A	0.3	2.0	0.51	0.98	0.51	32.1
Approach		121	0.0	121	0.0	0.196	10.7	LOS A	0.3	2.0	0.51	0.98	0.51	36.7
All Vehicles		719	0.7	719	0.7	0.196	3.6	NA	0.3	2.0	0.17	0.34	0.17	49.6

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_Sat (Site Folder: Scenario 2)] **Network: 54 [Sat (Network Folder: Scenario 2)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	118	0.0	118	0.0	0.299	3.2	LOS A	0.7	4.9	0.28	0.59	0.28	49.5
3	R2	283	0.4	283	0.4	0.299	8.4	LOS A	0.7	4.9	0.28	0.59	0.28	28.5
Approach		401	0.3	401	0.3	0.299	6.9	LOS A	0.7	4.9	0.28	0.59	0.28	40.5
East: Dudley St														
4	L2	325	1.0	325	1.0	0.222	4.3	LOS A	0.5	3.7	0.27	0.47	0.27	53.3
5	T1	116	0.0	116	0.0	0.107	4.3	LOS A	0.2	1.5	0.28	0.41	0.28	56.7
Approach		441	0.7	441	0.7	0.222	4.3	LOS A	0.5	3.7	0.27	0.46	0.27	54.6
West: Canberra Brickworks Precinct														
11	T1	131	0.0	131	0.0	0.206	4.9	LOS A	0.5	3.6	0.48	0.59	0.48	48.1
12	R2	103	0.0	103	0.0	0.206	10.5	LOS A	0.5	3.6	0.48	0.59	0.48	48.1
Approach		234	0.0	234	0.0	0.206	7.3	LOS A	0.5	3.6	0.48	0.59	0.48	48.1
All Vehicles		1076	0.4	1076	0.4	0.299	5.9	LOS A	0.7	4.9	0.32	0.54	0.32	50.1

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

Site: 101 [19_Sat (Site Folder: Scenario 2)]

Network: 54 [Sat (Network Folder: Scenario 2)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

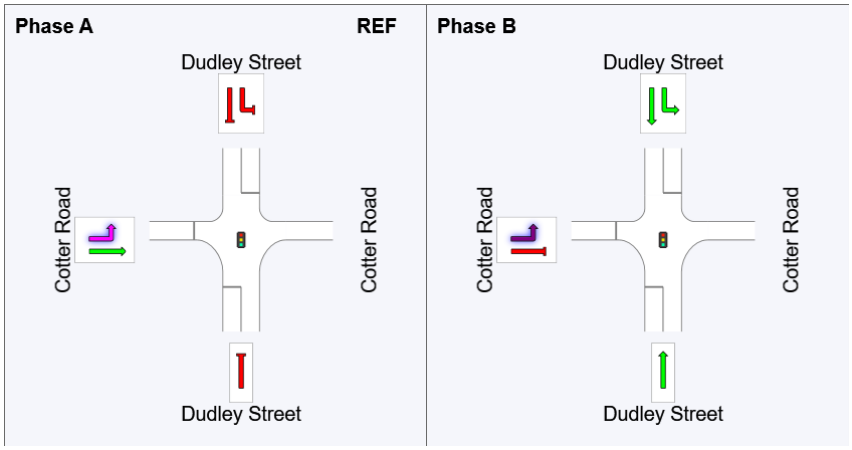
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	72	1.5	72	1.5	0.089	10.1	LOS A	0.7	4.8	0.65	0.50	0.65	32.8
Approach		72	1.5	72	1.5	0.089	10.1	LOS A	0.7	4.8	0.65	0.50	0.65	32.8
North: Dudley Street														
7	L2	57	0.0	57	0.0	0.539	17.0	LOS B	5.1	35.5	0.82	0.72	0.82	47.6
8	T1	375	0.6	375	0.6	* 0.539	12.7	LOS A	5.1	35.5	0.82	0.72	0.82	43.4
Approach		432	0.5	432	0.5	0.539	13.2	LOS A	5.1	35.5	0.82	0.72	0.82	43.9
West: Cotter Road														
10	L2	337	0.0	337	0.0	0.270	4.7	LOS A	1.0	7.3	0.39	0.58	0.39	36.2
11	T1	474	1.3	474	1.3	* 0.542	15.1	LOS B	4.3	30.2	0.84	0.70	0.84	42.6
Approach		811	0.8	811	0.8	0.542	10.8	LOS A	4.3	30.2	0.66	0.65	0.66	40.7
All Vehicles		1314	0.7	1314	0.7	0.542	11.6	LOS A	5.1	35.5	0.71	0.67	0.71	41.1

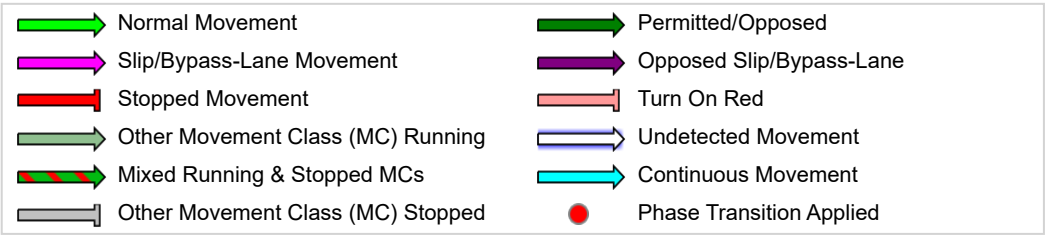
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	23
Green Time (sec)	16	20
Phase Time (sec)	23	27
Phase Split	46%	54%

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

Site: N [9_sat (Site Folder: Scenario 2)]

Network: 54 [Sat (Network Folder: Scenario 2)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

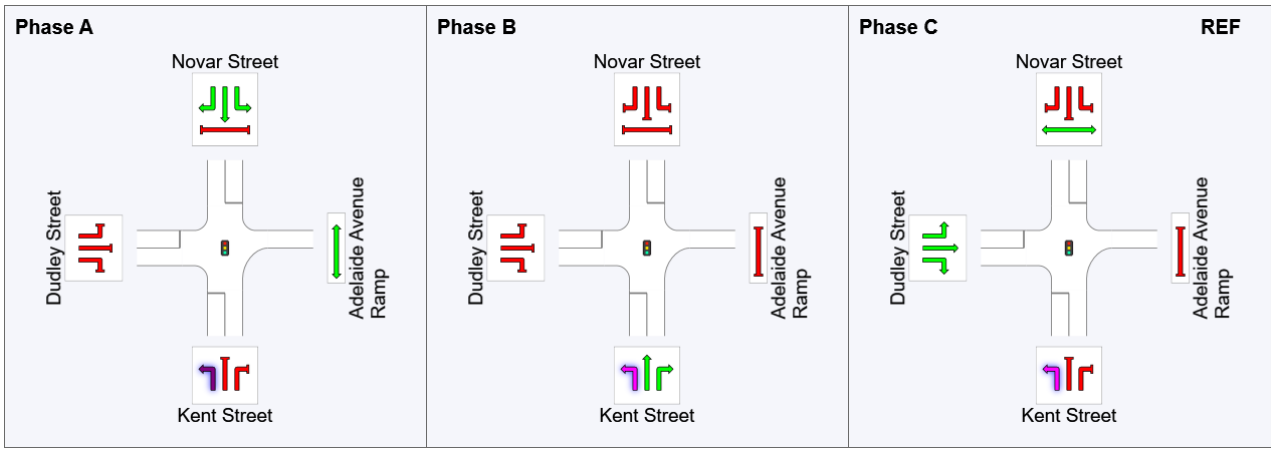
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	248	0.8	248	0.8	0.197	7.0	LOS A	0.9	6.6	0.39	0.65	0.39	28.0
2	T1	120	1.8	120	1.8	* 0.601	17.5	LOS B	4.3	30.4	0.92	0.80	0.92	12.9
3	R2	200	0.0	200	0.0	0.601	22.7	LOS B	4.3	30.4	0.92	0.80	0.92	29.1
Approach		568	0.7	568	0.7	0.601	14.8	LOS B	4.3	30.4	0.69	0.74	0.69	25.5
North: Novar Street														
7	L2	45	0.0	45	0.0	0.444	26.4	LOS B	2.1	15.0	0.94	0.76	0.94	37.2
8	T1	105	1.0	105	1.0	0.444	20.9	LOS B	2.1	15.0	0.94	0.76	0.94	30.7
9	R2	193	0.5	193	0.5	* 0.582	27.3	LOS B	2.8	19.9	0.96	0.82	1.00	27.9
Approach		343	0.6	343	0.6	0.582	25.2	LOS B	2.8	19.9	0.95	0.79	0.97	30.2
West: Dudley Street														
10	L2	192	0.5	192	0.5	0.632	27.8	LOS B	3.2	22.6	0.97	0.84	1.05	35.9
11	T1	22	0.0	22	0.0	* 0.632	22.3	LOS B	3.2	22.6	0.97	0.84	1.05	40.5
12	R2	203	0.0	203	0.0	0.611	27.6	LOS B	3.0	21.2	0.97	0.83	1.03	35.7
Approach		417	0.3	417	0.3	0.632	27.4	LOS B	3.2	22.6	0.97	0.84	1.04	36.1
All Vehicles		1328	0.6	1328	0.6	0.632	21.4	LOS B	4.3	30.4	0.84	0.78	0.87	31.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

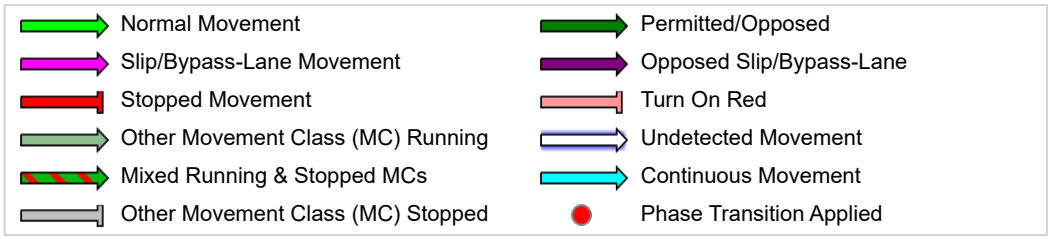
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	15	30	0
Green Time (sec)	9	14	9
Phase Time (sec)	15	20	15
Phase Split	30%	40%	30%

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

Site: 101 [8_Sat (Site Folder: Scenario 2)]

Network: 54 [Sat (Network Folder: Scenario 2)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	32	3.3	32	3.3	0.144	5.9	LOS A	0.0	0.3	0.04	0.10	0.04	53.4
2	T1	226	0.5	226	0.5	0.144	0.1	LOS A	0.0	0.3	0.04	0.10	0.04	58.3
3	R2	13	8.3	13	8.3	0.144	6.5	LOS A	0.0	0.3	0.04	0.10	0.04	51.6
Approach		271	1.2	271	1.2	0.144	1.1	NA	0.0	0.3	0.04	0.10	0.04	57.1
East: Weston St														
4	L2	9	0.0	9	0.0	0.059	8.4	LOS A	0.1	0.6	0.44	0.93	0.44	40.2
5	T1	18	0.0	18	0.0	0.059	9.9	LOS A	0.1	0.6	0.44	0.93	0.44	42.1
6	R2	14	15.4	14	15.4	0.059	11.5	LOS A	0.1	0.6	0.44	0.93	0.44	41.3
Approach		41	5.1	41	5.1	0.059	10.1	LOS A	0.1	0.6	0.44	0.93	0.44	41.5
North: Novar St														
7	L2	5	0.0	5	0.0	0.123	6.0	LOS A	0.0	0.1	0.02	0.02	0.02	51.5
8	T1	229	0.9	229	0.9	0.123	0.0	LOS A	0.0	0.1	0.02	0.02	0.02	58.7
9	R2	3	0.0	3	0.0	0.123	6.4	LOS A	0.0	0.1	0.02	0.02	0.02	51.3
Approach		238	0.9	238	0.9	0.123	0.2	NA	0.0	0.1	0.02	0.02	0.02	57.9
West: Weston St														
10	L2	4	0.0	4	0.0	0.156	8.4	LOS A	0.2	1.6	0.49	0.97	0.49	39.3
11	T1	31	0.0	31	0.0	0.156	10.0	LOS A	0.2	1.6	0.49	0.97	0.49	41.8
12	R2	65	0.0	65	0.0	0.156	10.6	LOS A	0.2	1.6	0.49	0.97	0.49	32.4
Approach		100	0.0	100	0.0	0.156	10.4	LOS A	0.2	1.6	0.49	0.97	0.49	37.4
All Vehicles		649	1.1	649	1.1	0.156	2.8	NA	0.2	1.6	0.13	0.26	0.13	51.6

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_AM (Site Folder: Scenario 3)] **Network: 55 [AM (Network Folder: Scenario 3)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	75	0.0	75	0.0	0.645	3.2	LOS A	2.7	19.3	0.36	0.58	0.36	48.0
3	R2	884	1.3	884	1.3	0.645	8.4	LOS A	2.7	19.3	0.36	0.58	0.36	27.0
Approach		959	1.2	959	1.2	0.645	8.0	LOS A	2.7	19.3	0.36	0.58	0.36	31.2
East: Dudley St														
4	L2	258	2.4	258	2.4	0.363	4.4	LOS A	5.5	39.6	0.33	0.49	0.33	53.0
5	T1	71	0.0	71	0.0	0.073	4.5	LOS A	0.2	1.1	0.33	0.42	0.33	56.4
Approach		328	1.9	328	1.9	0.363	4.4	LOS A	5.5	39.6	0.33	0.48	0.33	54.1
West: Canberra Brickworks Precinct														
11	T1	142	0.0	142	0.0	0.556	15.4	LOS B	2.6	17.9	0.94	1.00	1.20	38.8
12	R2	119	0.0	119	0.0	0.556	21.0	LOS B	2.6	17.9	0.94	1.00	1.20	38.8
Approach		261	0.0	261	0.0	0.556	18.0	LOS B	2.6	17.9	0.94	1.00	1.20	38.8
All Vehicles		1548	1.2	1548	1.2	0.645	8.9	LOS A	5.5	39.6	0.45	0.63	0.49	41.5

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

Site: 101 [19_AM (Site Folder: Scenario 3)] — Network: 55 [AM (Network Folder: Scenario 3)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

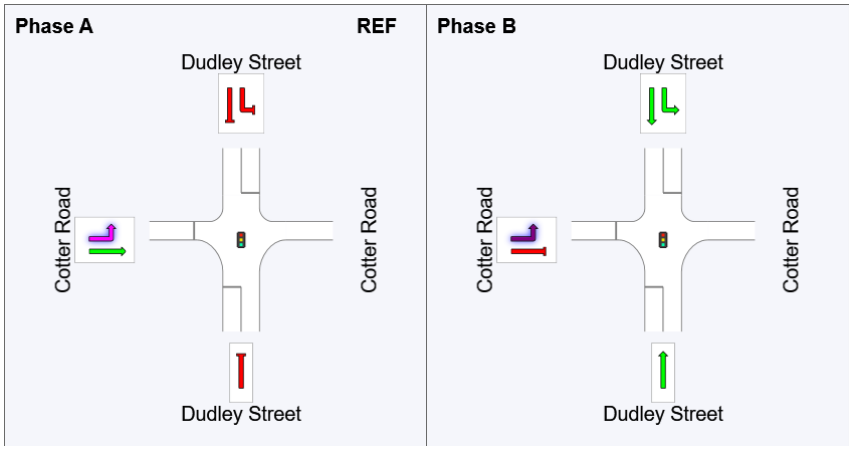
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
Approach		42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
North: Dudley Street														
7	L2	75	1.4	75	1.4	0.942	78.0	LOS F	8.4	60.0	1.00	1.13	1.40	19.7
8	T1	298	1.8	298	1.8	* 0.942	73.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.0
Approach		373	1.7	373	1.7	0.942	74.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.2
West: Cotter Road														
10	L2	919	1.3	919	1.3	0.572	4.4	LOS A	5.8	41.1	0.31	0.55	0.31	36.5
11	T1	1731	1.8	1731	1.8	* 0.946	31.2	LOS C	50.8	361.0	0.83	0.87	0.95	36.2
Approach		2649	1.6	2649	1.6	0.946	21.9	LOS B	50.8	361.0	0.65	0.76	0.73	36.3
All Vehicles		3064	1.6	3064	1.6	0.946	28.6	LOS C	50.8	361.0	0.70	0.81	0.81	33.5

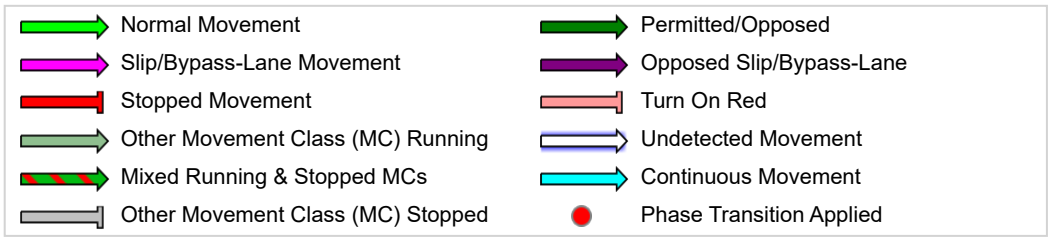
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	89
Green Time (sec)	82	24
Phase Time (sec)	89	31
Phase Split	74%	26%

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

Site: N [9_AM (Site Folder: Scenario 3)]

Network: 55 [AM (Network Folder: Scenario 3)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	49.3	26.0	0.53
North: Novar Street											
P3	Full	11	29.3	LOS C	0.0	0.0	0.91	0.91	55.6	34.2	0.62
All Pedestrians		63	29.3	LOS C	0.1	0.1	0.92	0.92	50.4	27.4	0.54

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

Vehicle Movement Performance

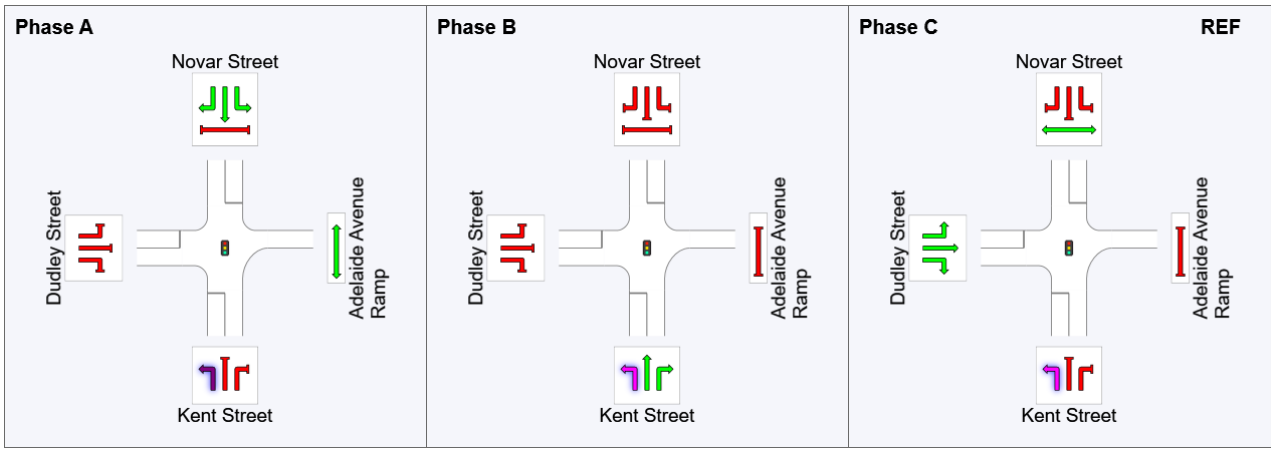
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	194	1.6	194	1.6	0.137	6.7	LOS A	0.8	5.4	0.28	0.61	0.28	28.9
2	T1	184	3.4	184	3.4	* 0.945	49.2	LOS D	11.5	82.0	1.00	1.19	1.59	5.9
3	R2	324	1.3	324	1.3	0.945	54.4	LOS D	11.5	82.0	1.00	1.19	1.59	16.9
Approach		702	1.9	702	1.9	0.945	39.9	LOS C	11.5	82.0	0.80	1.03	1.23	14.6
North: Novar Street														
7	L2	46	0.0	46	0.0	0.896	50.6	LOS D	4.0	28.7	1.00	1.05	1.65	27.0
8	T1	129	3.3	129	3.3	* 0.896	45.0	LOS D	4.0	28.7	1.00	1.05	1.65	20.1
9	R2	137	2.3	137	2.3	0.896	50.6	LOS D	4.0	28.6	1.00	1.05	1.65	19.3
Approach		313	2.4	313	2.4	0.896	48.3	LOS D	4.0	28.7	1.00	1.05	1.65	20.9
West: Dudley Street														
10	L2	336	2.5	336	2.5	0.927	48.0	LOS D	17.3	122.9	1.00	1.08	1.46	27.5
11	T1	23	0.0	23	0.0	* 0.927	42.4	LOS C	17.3	122.9	1.00	1.08	1.46	32.5
12	R2	687	0.6	687	0.6	0.927	50.8	LOS D	17.3	122.9	1.00	1.10	1.53	26.6
Approach		1046	1.2	1046	1.2	0.927	49.7	LOS D	17.3	122.9	1.00	1.09	1.51	27.1
All Vehicles		2061	1.6	2061	1.6	0.945	46.2	LOS D	17.3	122.9	0.93	1.06	1.43	23.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

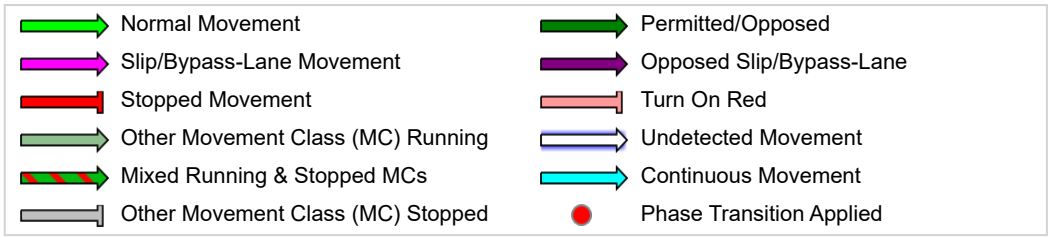
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	31	44	0
Green Time (sec)	7	20	25
Phase Time (sec)	13	26	31
Phase Split	19%	37%	44%

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

Site: 101 [8_AM (Site Folder: Scenario 3)]

Network: 55 [AM (Network Folder: Scenario 3)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	119	0.9	119	0.9	0.260	5.9	LOS A	0.2	1.7	0.11	0.21	0.11	51.6
2	T1	289	4.4	289	4.4	0.260	0.2	LOS A	0.2	1.7	0.11	0.21	0.11	55.9
3	R2	62	1.7	62	1.7	0.260	6.4	LOS A	0.2	1.7	0.11	0.21	0.11	50.5
Approach		471	3.1	471	3.1	0.260	2.5	NA	0.2	1.7	0.11	0.21	0.11	53.7
East: Weston St														
4	L2	23	0.0	23	0.0	0.126	8.2	LOS A	0.2	1.3	0.46	0.96	0.46	39.6
5	T1	31	0.0	31	0.0	0.126	11.6	LOS A	0.2	1.3	0.46	0.96	0.46	41.6
6	R2	28	3.7	28	3.7	0.126	11.7	LOS A	0.2	1.3	0.46	0.96	0.46	41.8
Approach		82	1.3	82	1.3	0.126	10.7	LOS A	0.2	1.3	0.46	0.96	0.46	41.2
North: Novar St														
7	L2	16	13.3	16	13.3	0.111	6.1	LOS A	0.0	0.1	0.01	0.05	0.01	51.0
8	T1	192	2.2	192	2.2	0.111	0.1	LOS A	0.0	0.1	0.01	0.05	0.01	57.7
9	R2	1	100.0	1	100.0	0.111	10.3	LOS A	0.0	0.1	0.01	0.05	0.01	46.7
Approach		208	3.5	208	3.5	0.111	0.6	NA	0.0	0.1	0.01	0.05	0.01	56.0
West: Weston St														
10	L2	3	66.7	3	66.7	0.171	12.2	LOS A	0.3	1.8	0.56	1.01	0.56	31.9
11	T1	37	0.0	37	0.0	0.171	11.2	LOS A	0.3	1.8	0.56	1.01	0.56	40.9
12	R2	52	4.1	52	4.1	0.171	12.6	LOS A	0.3	1.8	0.56	1.01	0.56	30.9
Approach		92	4.6	92	4.6	0.171	12.0	LOS A	0.3	1.8	0.56	1.01	0.56	36.9
All Vehicles		853	3.2	853	3.2	0.260	3.8	NA	0.3	1.8	0.17	0.33	0.17	50.0

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

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [AM (Network Folder: Scenario 3)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_AM]														
South: Kent Street														
1	L2	11	0.0	11	0.0	0.413	26.3	LOS B	4.2	29.5	0.83	0.70	0.83	34.9
2	T1	421	1.3	421	1.3	0.413	20.5	LOS B	4.2	29.5	0.82	0.69	0.82	36.0
Approach		432	1.2	432	1.2	0.413	20.6	LOS B	4.2	29.5	0.82	0.69	0.82	36.0
North: Kent Street														
8	T1	567	1.5	567	1.5	0.351	0.5	LOS A	0.8	5.6	0.14	0.12	0.14	59.2
9	R2	676	0.8	676	0.8	0.704	17.6	LOS B	6.4	45.0	0.81	0.83	0.81	19.2
Approach		1243	1.1	1243	1.1	0.704	9.8	LOS A	6.4	45.0	0.50	0.51	0.50	38.9
West: Denison Street														
10	L2	236	1.8	236	1.8	0.254	15.8	LOS B	2.8	19.6	0.59	0.73	0.59	17.8
Approach		236	1.8	236	1.8	0.254	15.8	LOS B	2.8	19.6	0.59	0.73	0.59	17.8
All Vehicles		1911	1.2	1911	1.2	0.704	13.0	LOS A	6.4	45.0	0.59	0.58	0.59	36.2
Site: M [10_AM]														
South: Kent St (s)														
2	T1	646	1.5	646	1.5	0.495	1.6	LOS A	3.0	21.3	0.17	0.15	0.17	41.9
Approach		646	1.5	646	1.5	0.495	1.6	LOS A	3.0	21.3	0.17	0.15	0.17	41.9
East: Adelaide Ave (EB off ramp)														
4	L2	437	1.2	437	1.2	0.617	29.5	LOS C	4.8	33.9	0.90	0.82	0.92	30.9
6	R2	60	7.0	60	7.0	* 0.727	46.4	LOS D	1.5	10.9	1.00	0.88	1.38	23.9
Approach		497	1.9	497	1.9	0.727	31.6	LOS C	4.8	33.9	0.91	0.83	0.97	29.9
North: Kent St (n)														
8	T1	813	1.0	813	1.0	* 0.816	17.0	LOS B	9.3	65.8	0.75	0.74	0.87	15.5
Approach		813	1.0	813	1.0	0.816	17.0	LOS B	9.3	65.8	0.75	0.74	0.87	15.5
All Vehicles		1956	1.4	1956	1.4	0.816	15.6	LOS B	9.3	65.8	0.60	0.56	0.66	25.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_AM]											
West: Denison Street											
P4	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61

All Pedestrians	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61
Site: M [10_AM]										
South: Kent St (s)										
P1 Full	26	29.3	LOS C	0.0	0.0	0.92	0.92	57.0	36.0	0.63
East: Adelaide Ave (EB off ramp)										
P2 Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	50.1	27.0	0.54
P2B Slip/ Bypass	53	29.3	LOS C	0.1	0.1	0.92	0.92	51.6	29.0	0.56
All Pedestrians	132	29.3	LOS C	0.1	0.1	0.92	0.92	52.1	29.6	0.57

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [PM (Network Folder: Scenario 3)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_PM]														
South: Kent Street														
1	L2	3	100.0	3	100.0	0.646	27.1	LOS B	6.0	42.6	0.92	0.80	0.94	33.4
2	T1	503	0.6	503	0.6	0.646	19.8	LOS B	6.0	42.6	0.89	0.76	0.90	36.5
Approach		506	1.2	506	1.2	0.646	19.9	LOS B	6.0	42.6	0.89	0.76	0.90	36.5
North: Kent Street														
8	T1	428	0.5	428	0.5	* 0.273	0.5	LOS A	0.5	3.8	0.14	0.12	0.14	59.1
9	R2	177	0.0	177	0.0	0.188	13.9	LOS A	2.1	14.6	0.69	0.74	0.69	22.0
Approach		605	0.3	605	0.3	0.273	4.4	LOS A	2.1	14.6	0.30	0.30	0.30	50.3
West: Denison Street														
10	L2	540	0.2	540	0.2	* 0.690	18.5	LOS B	7.7	53.9	0.82	0.84	0.84	15.8
Approach		540	0.2	540	0.2	0.690	18.5	LOS B	7.7	53.9	0.82	0.84	0.84	15.8
All Vehicles		1652	0.6	1652	0.6	0.690	13.8	LOS A	7.7	53.9	0.65	0.62	0.66	36.2
Site: M [10_PM]														
South: Kent St (s)														
2	T1	1049	0.4	1049	0.4	0.406	4.3	LOS A	5.0	35.4	0.46	0.41	0.46	27.7
Approach		1049	0.4	1049	0.4	0.406	4.3	LOS A	5.0	35.4	0.46	0.41	0.46	27.7
East: Adelaide Ave (EB off ramp)														
4	L2	239	0.0	239	0.0	0.286	21.5	LOS B	2.5	17.3	0.76	0.75	0.76	35.6
6	R2	39	0.0	39	0.0	0.206	34.1	LOS C	0.7	4.8	0.95	0.72	0.95	28.4
Approach		278	0.0	278	0.0	0.286	23.2	LOS B	2.5	17.3	0.79	0.74	0.79	34.4
North: Kent St (n)														
8	T1	365	0.6	365	0.6	0.202	10.2	LOS A	2.0	13.8	0.62	0.51	0.62	22.0
Approach		365	0.6	365	0.6	0.202	10.2	LOS A	2.0	13.8	0.62	0.51	0.62	22.0
All Vehicles		1693	0.4	1693	0.4	0.406	8.7	LOS A	5.0	35.4	0.55	0.49	0.55	30.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_PM]											
West: Denison Street											

P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
All Pedestrians		53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
Site: M [10_PM]											
South: Kent St (s)											
P1	Full	26	24.3	LOS C	0.0	0.0	0.90	0.90	52.0	36.0	0.69
East: Adelaide Ave (EB off ramp)											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	45.1	27.0	0.60
P2B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	46.7	29.0	0.62
All Pedestrians		132	24.3	LOS C	0.1	0.1	0.90	0.90	47.1	29.6	0.63

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

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [Sat (Network Folder: Scenario 3)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: S [11_sat]														
South: Kent Street														
1	L2	6	33.3	6	33.3	0.278	20.0	LOS B	1.9	13.9	0.79	0.64	0.79	38.4
2	T1	251	0.8	251	0.8	0.278	13.8	LOS A	1.9	13.9	0.77	0.62	0.77	41.4
Approach		257	1.6	257	1.6	0.278	13.9	LOS A	1.9	13.9	0.77	0.62	0.77	41.3
North: Kent Street														
8	T1	298	0.4	298	0.4	0.199	0.5	LOS A	0.3	2.4	0.15	0.13	0.15	59.0
9	R2	182	0.6	182	0.6	0.221	13.4	LOS A	1.8	13.0	0.70	0.74	0.70	22.4
Approach		480	0.4	480	0.4	0.221	5.4	LOS A	1.8	13.0	0.36	0.36	0.36	47.6
West: Denison Street														
10	L2	246	0.4	246	0.4	0.278	15.3	LOS B	2.4	16.8	0.68	0.75	0.68	18.2
Approach		246	0.4	246	0.4	0.278	15.3	LOS B	2.4	16.8	0.68	0.75	0.68	18.2
All Vehicles		983	0.7	983	0.7	0.278	10.1	LOS A	2.4	16.8	0.55	0.53	0.55	40.3
Site: M [10_sat]														
South: Kent St (s)														
2	T1	500	0.8	500	0.8	0.249	4.7	LOS A	3.0	20.8	0.51	0.43	0.51	26.3
Approach		500	0.8	500	0.8	0.249	4.7	LOS A	3.0	20.8	0.51	0.43	0.51	26.3
East: Adelaide Ave (EB off ramp)														
4	L2	180	0.0	180	0.0	0.117	15.9	LOS B	0.9	6.0	0.66	0.71	0.66	39.8
6	R2	57	0.0	57	0.0	* 0.234	28.4	LOS B	0.8	5.8	0.94	0.74	0.94	31.1
Approach		237	0.0	237	0.0	0.234	18.9	LOS B	0.9	6.0	0.73	0.71	0.73	37.4
North: Kent St (n)														
8	T1	299	0.4	299	0.4	* 0.214	12.2	LOS A	1.6	11.2	0.73	0.59	0.73	19.6
Approach		299	0.4	299	0.4	0.214	12.2	LOS A	1.6	11.2	0.73	0.59	0.73	19.6
All Vehicles		1036	0.5	1036	0.5	0.249	10.1	LOS A	3.0	20.8	0.62	0.54	0.62	30.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: S [11_sat]											
West: Denison Street											
P4	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75

All Pedestrians	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75
Site: M [10_sat]										
South: Kent St (s)										
P1 Full	26	19.4	LOS B	0.0	0.0	0.88	0.88	47.1	36.0	0.76
East: Adelaide Ave (EB off ramp)										
P2 Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	40.2	27.0	0.67
P2B Slip/ Bypass	53	19.4	LOS B	0.1	0.1	0.88	0.88	41.7	29.0	0.70
All Pedestrians	132	19.4	LOS B	0.1	0.1	0.88	0.88	42.2	29.6	0.70

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_PM (Site Folder: Scenario 3)] **Network: 56 [PM (Network Folder: Scenario 3)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	136	0.0	136	0.0	0.318	3.2	LOS A	0.8	5.4	0.31	0.59	0.31	49.5
3	R2	286	0.0	286	0.0	0.318	8.5	LOS A	0.8	5.4	0.31	0.59	0.31	28.5
Approach		422	0.0	422	0.0	0.318	6.8	LOS A	0.8	5.4	0.31	0.59	0.31	41.3
East: Dudley St														
4	L2	686	0.5	686	0.5	0.898	4.5	LOS A	2.3	15.9	0.34	0.50	0.34	52.9
5	T1	124	0.0	124	0.0	0.130	4.5	LOS A	0.3	1.9	0.30	0.42	0.30	56.6
Approach		811	0.4	811	0.4	0.898	4.5	LOS A	2.3	15.9	0.34	0.49	0.34	53.8
West: Canberra Brickworks Precinct														
11	T1	127	0.0	127	0.0	0.299	4.9	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
12	R2	106	0.0	106	0.0	0.299	10.5	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
Approach		234	0.0	234	0.0	0.299	7.4	LOS A	0.5	3.6	0.48	0.60	0.48	48.0
All Vehicles		1466	0.2	1466	0.2	0.898	5.6	LOS A	2.3	15.9	0.35	0.54	0.35	50.8

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

Site: 101 [19_PM (Site Folder: Scenario 3)]

Network: 56 [PM (Network Folder: Scenario 3)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

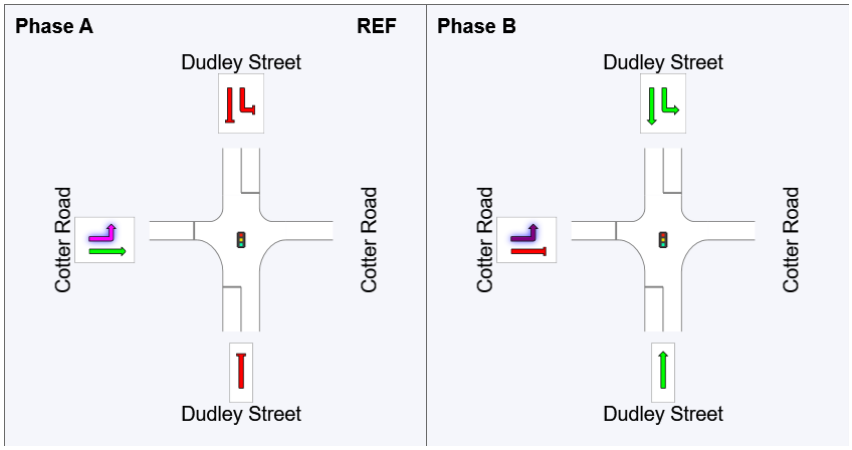
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	85	0.0	85	0.0	0.079	7.3	LOS A	0.7	5.2	0.51	0.40	0.51	48.5
Approach		85	0.0	85	0.0	0.079	7.3	LOS A	0.7	5.2	0.51	0.40	0.51	48.5
North: Dudley Street														
7	L2	57	0.0	57	0.0	0.734	16.5	LOS B	8.5	60.0	0.83	0.77	0.84	48.4
8	T1	729	0.4	729	0.4	* 0.734	12.2	LOS A	8.5	60.0	0.83	0.77	0.84	44.0
Approach		786	0.4	786	0.4	0.734	12.5	LOS A	8.5	60.0	0.83	0.77	0.84	44.3
West: Cotter Road														
10	L2	340	0.0	340	0.0	0.273	8.6	LOS A	1.1	7.4	0.33	0.69	0.33	58.2
11	T1	475	3.1	475	3.1	* 0.754	24.8	LOS B	6.2	44.7	0.95	0.84	1.06	51.8
Approach		815	1.8	815	1.8	0.754	18.0	LOS B	6.2	44.7	0.69	0.78	0.76	53.4
All Vehicles		1686	1.1	1686	1.1	0.754	14.9	LOS B	8.5	60.0	0.75	0.75	0.79	49.3

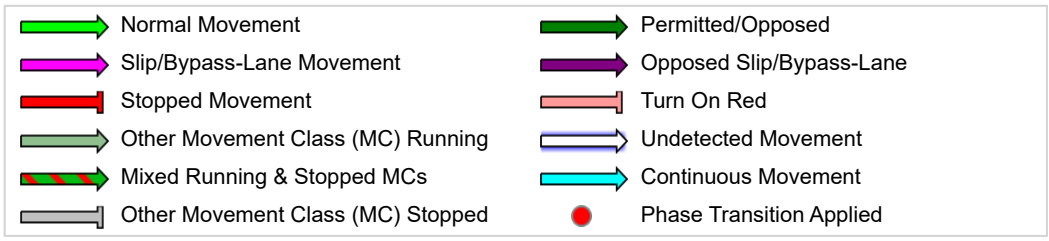
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	21
Green Time (sec)	14	32
Phase Time (sec)	21	39
Phase Split	35%	65%

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

Site: N [9_PM (Site Folder: Scenario 3)]

Network: 56 [PM (Network Folder: Scenario 3)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

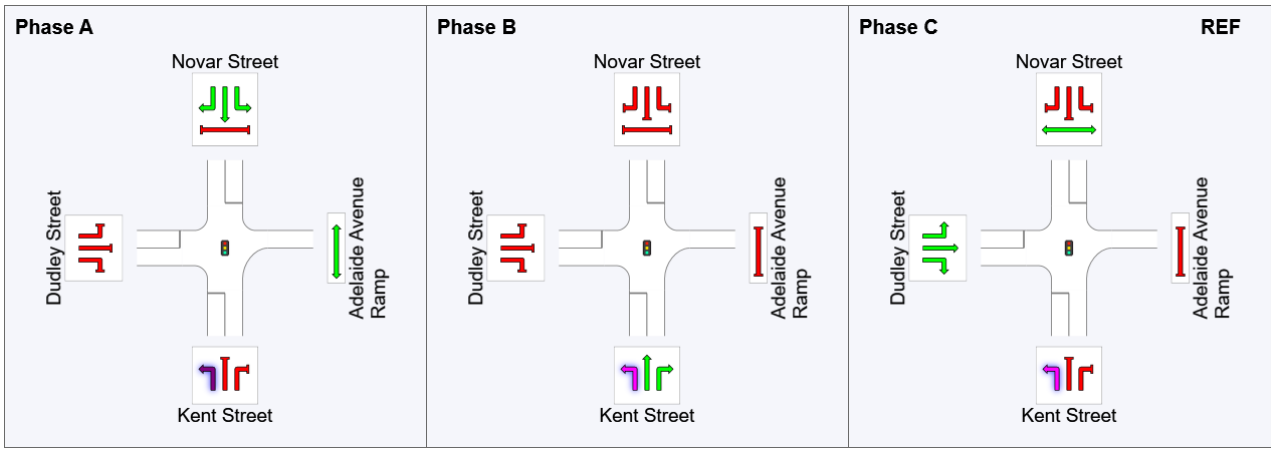
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	587	0.4	587	0.4	0.469	7.8	LOS A	2.8	19.8	0.49	0.70	0.49	26.4
2	T1	146	1.4	146	1.4	* 0.778	19.5	LOS B	7.7	54.2	0.96	0.93	1.13	11.8
3	R2	356	0.0	356	0.0	0.778	24.7	LOS B	7.7	54.2	0.96	0.93	1.13	27.6
Approach		1089	0.4	1089	0.4	0.778	14.9	LOS B	7.7	54.2	0.71	0.81	0.78	25.0
North: Novar Street														
7	L2	47	0.0	47	0.0	0.581	28.2	LOS B	2.6	18.5	0.97	0.80	1.02	36.3
8	T1	127	1.7	127	1.7	0.581	22.7	LOS B	2.6	18.5	0.97	0.80	1.02	29.7
9	R2	226	0.0	226	0.0	* 0.766	31.2	LOS C	3.7	26.1	1.00	0.93	1.28	25.9
Approach		401	0.5	401	0.5	0.766	28.1	LOS B	3.7	26.1	0.99	0.87	1.16	28.5
West: Dudley Street														
10	L2	157	0.0	157	0.0	0.790	32.6	LOS C	3.5	24.6	1.00	0.95	1.35	33.5
11	T1	21	0.0	21	0.0	* 0.790	27.1	LOS B	3.5	24.6	1.00	0.95	1.35	38.3
12	R2	235	0.0	235	0.0	0.790	32.6	LOS C	3.5	24.6	1.00	0.95	1.35	33.2
Approach		413	0.0	413	0.0	0.790	32.3	LOS C	3.5	24.6	1.00	0.95	1.35	33.7
All Vehicles		1903	0.3	1903	0.3	0.790	21.5	LOS B	7.7	54.2	0.83	0.85	0.99	29.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

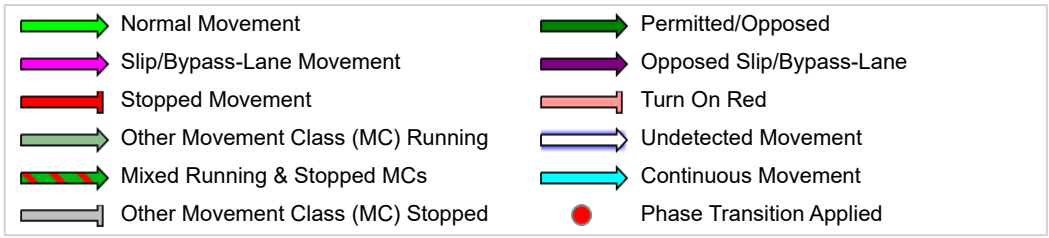
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	13	27	0
Green Time (sec)	8	17	7
Phase Time (sec)	14	23	13
Phase Split	28%	46%	26%

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

Site: 101 [8_PM (Site Folder: Scenario 3)]

Network: 56 [PM (Network Folder: Scenario 3)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	39	0.0	39	0.0	0.151	6.1	LOS A	0.1	0.7	0.09	0.14	0.09	52.7
2	T1	214	1.0	214	1.0	0.151	0.2	LOS A	0.1	0.7	0.09	0.14	0.09	57.3
3	R2	27	0.0	27	0.0	0.151	6.5	LOS A	0.1	0.7	0.09	0.14	0.09	51.2
Approach		280	0.8	280	0.8	0.151	1.6	NA	0.1	0.7	0.09	0.14	0.09	55.7
East: Weston St														
4	L2	23	0.0	23	0.0	0.113	8.4	LOS A	0.2	1.2	0.45	0.95	0.45	40.3
5	T1	40	0.0	40	0.0	0.113	10.3	LOS A	0.2	1.2	0.45	0.95	0.45	42.1
6	R2	20	0.0	20	0.0	0.113	10.8	LOS A	0.2	1.2	0.45	0.95	0.45	42.6
Approach		83	0.0	83	0.0	0.113	9.9	LOS A	0.2	1.2	0.45	0.95	0.45	41.8
North: Novar St														
7	L2	40	0.0	40	0.0	0.146	5.6	LOS A	0.0	0.1	0.02	0.09	0.02	50.9
8	T1	237	1.3	237	1.3	0.146	0.0	LOS A	0.0	0.1	0.02	0.09	0.02	55.9
9	R2	3	0.0	3	0.0	0.146	6.4	LOS A	0.0	0.1	0.02	0.09	0.02	50.2
Approach		280	1.1	280	1.1	0.146	0.9	NA	0.0	0.1	0.02	0.09	0.02	53.9
West: Weston St														
10	L2	5	0.0	5	0.0	0.258	8.6	LOS A	0.4	2.9	0.54	1.01	0.57	38.4
11	T1	33	0.0	33	0.0	0.258	10.8	LOS A	0.4	2.9	0.54	1.01	0.57	41.2
12	R2	115	0.0	115	0.0	0.258	11.6	LOS A	0.4	2.9	0.54	1.01	0.57	31.4
Approach		153	0.0	153	0.0	0.258	11.3	LOS A	0.4	2.9	0.54	1.01	0.57	35.4
All Vehicles		796	0.7	796	0.7	0.258	4.1	NA	0.4	2.9	0.19	0.37	0.19	48.7

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [20_Sat (Site Folder: Scenario 3)] **Network: 57 [Sat (Network Folder: Scenario 3)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	104	0.0	104	0.0	0.284	3.1	LOS A	0.7	4.6	0.26	0.59	0.26	49.4
3	R2	283	0.4	283	0.4	0.284	8.3	LOS A	0.7	4.6	0.26	0.59	0.26	28.5
Approach		387	0.3	387	0.3	0.284	6.9	LOS A	0.7	4.6	0.26	0.59	0.26	39.8
East: Dudley St														
4	L2	325	1.0	325	1.0	0.215	4.3	LOS A	0.5	3.6	0.25	0.47	0.25	53.4
5	T1	102	0.0	102	0.0	0.097	4.3	LOS A	0.2	1.4	0.26	0.40	0.26	56.8
Approach		427	0.7	427	0.7	0.215	4.3	LOS A	0.5	3.6	0.25	0.45	0.25	54.6
West: Canberra Brickworks Precinct														
11	T1	115	0.0	115	0.0	0.179	4.8	LOS A	0.4	3.1	0.47	0.58	0.47	48.2
12	R2	91	0.0	91	0.0	0.179	10.4	LOS A	0.4	3.1	0.47	0.58	0.47	48.2
Approach		205	0.0	205	0.0	0.179	7.3	LOS A	0.4	3.1	0.47	0.58	0.47	48.2
All Vehicles		1020	0.4	1020	0.4	0.284	5.9	LOS A	0.7	4.6	0.30	0.53	0.30	50.0

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

Site: 101 [19_Sat (Site Folder: Scenario 3)]

Network: 57 [Sat (Network Folder: Scenario 3)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

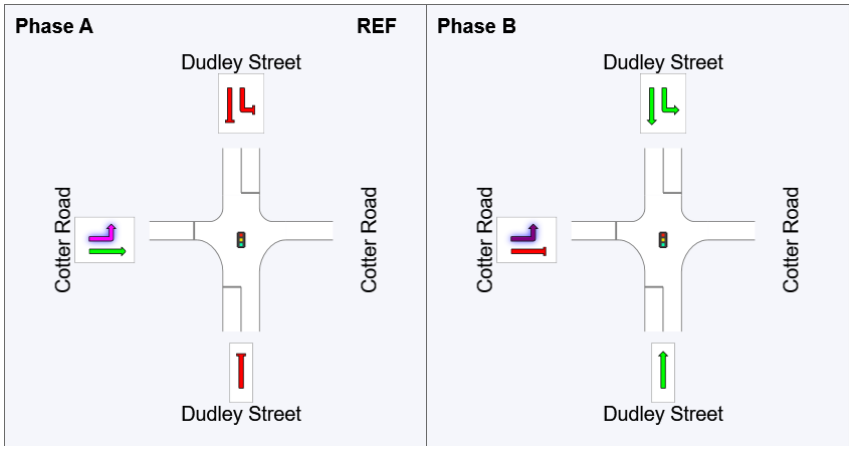
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	64	1.6	64	1.6	0.080	10.1	LOS A	0.6	4.3	0.65	0.50	0.65	32.8
Approach		64	1.6	64	1.6	0.080	10.1	LOS A	0.6	4.3	0.65	0.50	0.65	32.8
North: Dudley Street														
7	L2	52	0.0	52	0.0	0.524	16.9	LOS B	4.9	34.3	0.81	0.71	0.81	47.7
8	T1	368	0.6	368	0.6	* 0.524	12.6	LOS A	4.9	34.3	0.81	0.71	0.81	43.5
Approach		420	0.5	420	0.5	0.524	13.1	LOS A	4.9	34.3	0.81	0.71	0.81	44.0
West: Cotter Road														
10	L2	329	0.0	329	0.0	0.263	4.5	LOS A	0.9	6.3	0.37	0.57	0.37	36.3
11	T1	474	1.3	474	1.3	* 0.542	15.1	LOS B	4.3	30.2	0.84	0.70	0.84	42.6
Approach		803	0.8	803	0.8	0.542	10.8	LOS A	4.3	30.2	0.65	0.65	0.65	40.7
All Vehicles		1287	0.7	1287	0.7	0.542	11.5	LOS A	4.9	34.3	0.70	0.66	0.70	41.2

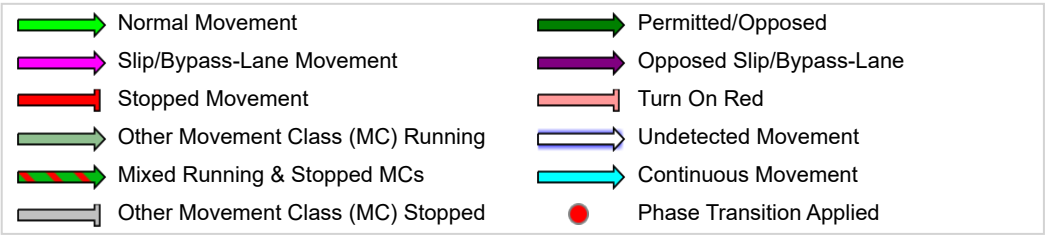
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	23
Green Time (sec)	16	20
Phase Time (sec)	23	27
Phase Split	46%	54%

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

Site: N [9_sat (Site Folder: Scenario 3)]

Network: 57 [Sat (Network Folder: Scenario 3)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

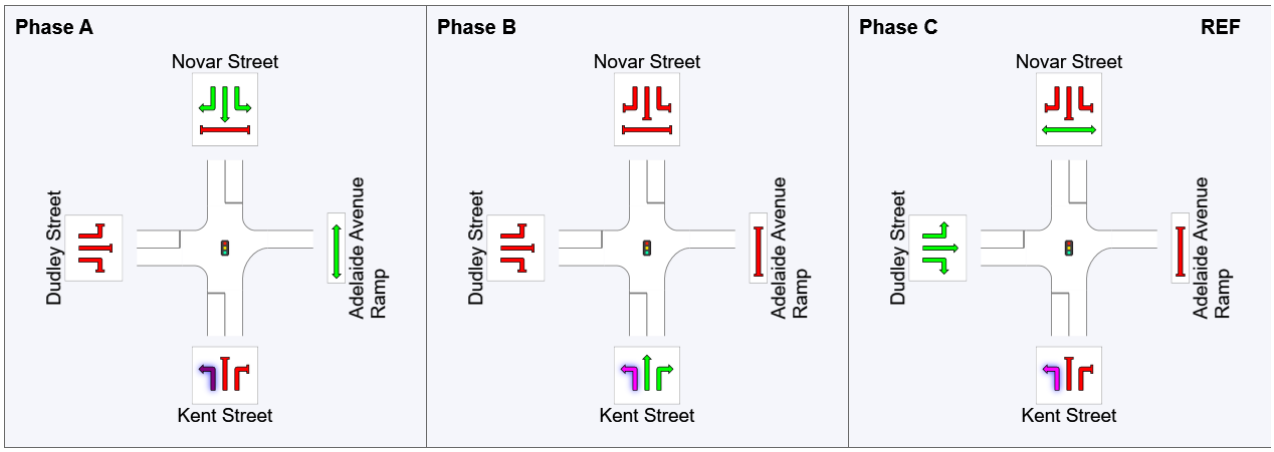
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	241	0.9	241	0.9	0.190	7.0	LOS A	0.9	6.3	0.38	0.65	0.38	28.0
2	T1	120	1.8	120	1.8	* 0.601	17.5	LOS B	4.3	30.4	0.92	0.80	0.92	12.9
3	R2	200	0.0	200	0.0	0.601	22.7	LOS B	4.3	30.4	0.92	0.80	0.92	29.1
Approach		561	0.8	561	0.8	0.601	14.9	LOS B	4.3	30.4	0.69	0.74	0.69	25.5
North: Novar Street														
7	L2	45	0.0	45	0.0	0.444	26.4	LOS B	2.1	15.0	0.94	0.76	0.94	37.2
8	T1	105	1.0	105	1.0	0.444	20.9	LOS B	2.1	15.0	0.94	0.76	0.94	30.7
9	R2	187	0.6	187	0.6	* 0.566	27.1	LOS B	2.7	19.3	0.96	0.81	0.98	28.0
Approach		338	0.6	338	0.6	0.566	25.1	LOS B	2.7	19.3	0.95	0.79	0.96	30.3
West: Dudley Street														
10	L2	186	0.6	186	0.6	0.613	27.6	LOS B	3.1	21.7	0.97	0.83	1.03	36.0
11	T1	21	0.0	21	0.0	* 0.613	22.1	LOS B	3.1	21.7	0.97	0.83	1.03	40.6
12	R2	196	0.0	196	0.0	0.589	27.3	LOS B	2.9	20.2	0.96	0.82	1.00	35.8
Approach		403	0.3	403	0.3	0.613	27.2	LOS B	3.1	21.7	0.97	0.82	1.02	36.2
All Vehicles		1302	0.6	1302	0.6	0.613	21.3	LOS B	4.3	30.4	0.84	0.78	0.86	31.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

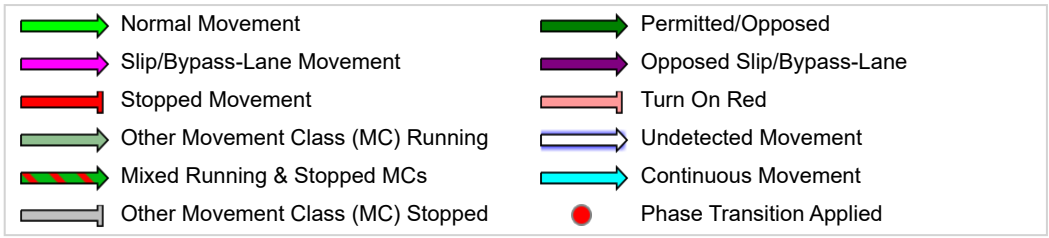
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	15	30	0
Green Time (sec)	9	14	9
Phase Time (sec)	15	20	15
Phase Split	30%	40%	30%

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

Site: 101 [8_Sat (Site Folder: Scenario 3)]

Network: 57 [Sat (Network Folder: Scenario 3)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	32	3.3	32	3.3	0.141	5.9	LOS A	0.0	0.3	0.04	0.10	0.04	53.4
2	T1	221	0.5	221	0.5	0.141	0.1	LOS A	0.0	0.3	0.04	0.10	0.04	58.2
3	R2	13	8.3	13	8.3	0.141	6.5	LOS A	0.0	0.3	0.04	0.10	0.04	51.6
Approach		265	1.2	265	1.2	0.141	1.1	NA	0.0	0.3	0.04	0.10	0.04	57.1
East: Weston St														
4	L2	9	0.0	9	0.0	0.058	8.3	LOS A	0.1	0.6	0.44	0.93	0.44	40.3
5	T1	18	0.0	18	0.0	0.058	9.8	LOS A	0.1	0.6	0.44	0.93	0.44	42.1
6	R2	14	15.4	14	15.4	0.058	11.3	LOS A	0.1	0.6	0.44	0.93	0.44	41.3
Approach		41	5.1	41	5.1	0.058	10.0	LOS A	0.1	0.6	0.44	0.93	0.44	41.5
North: Novar St														
7	L2	5	0.0	5	0.0	0.121	6.0	LOS A	0.0	0.1	0.02	0.02	0.02	51.5
8	T1	224	0.9	224	0.9	0.121	0.0	LOS A	0.0	0.1	0.02	0.02	0.02	58.7
9	R2	3	0.0	3	0.0	0.121	6.4	LOS A	0.0	0.1	0.02	0.02	0.02	51.3
Approach		233	0.9	233	0.9	0.121	0.2	NA	0.0	0.1	0.02	0.02	0.02	57.9
West: Weston St														
10	L2	4	0.0	4	0.0	0.154	8.4	LOS A	0.2	1.6	0.49	0.97	0.49	39.3
11	T1	31	0.0	31	0.0	0.154	10.0	LOS A	0.2	1.6	0.49	0.97	0.49	41.8
12	R2	65	0.0	65	0.0	0.154	10.5	LOS A	0.2	1.6	0.49	0.97	0.49	32.5
Approach		100	0.0	100	0.0	0.154	10.3	LOS A	0.2	1.6	0.49	0.97	0.49	37.5
All Vehicles		639	1.2	639	1.2	0.154	2.8	NA	0.2	1.6	0.13	0.26	0.13	51.5

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_AM (Site Folder: Scenario 4)] **Network: 48 [AM (Network Folder: Scenario 4)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	89	1.2	89	1.2	0.243	6.1	LOS A	0.2	1.7	0.13	0.20	0.13	51.7
2	T1	282	4.5	282	4.5	0.243	0.3	LOS A	0.2	1.7	0.13	0.20	0.13	56.0
3	R2	62	1.7	62	1.7	0.243	6.6	LOS A	0.2	1.7	0.13	0.20	0.13	50.5
Approach		434	3.4	434	3.4	0.243	2.4	NA	0.2	1.7	0.13	0.20	0.13	54.0
East: Weston St														
4	L2	23	0.0	23	0.0	0.124	8.3	LOS A	0.2	1.3	0.46	0.96	0.46	39.6
5	T1	31	0.0	31	0.0	0.124	11.6	LOS A	0.2	1.3	0.46	0.96	0.46	41.5
6	R2	26	4.0	26	4.0	0.124	12.0	LOS A	0.2	1.3	0.46	0.96	0.46	41.7
Approach		80	1.3	80	1.3	0.124	10.8	LOS A	0.2	1.3	0.46	0.96	0.46	41.1
North: Novar St														
7	L2	58	3.6	58	3.6	0.140	5.7	LOS A	0.0	0.1	0.01	0.13	0.01	50.4
8	T1	204	2.1	204	2.1	0.140	0.0	LOS A	0.0	0.1	0.01	0.13	0.01	54.4
9	R2	1	100.0	1	100.0	0.140	10.0	LOS A	0.0	0.1	0.01	0.13	0.01	45.6
Approach		263	2.8	263	2.8	0.140	1.3	NA	0.0	0.1	0.01	0.13	0.01	52.3
West: Weston St														
10	L2	3	66.7	3	66.7	0.231	12.3	LOS A	0.4	2.5	0.58	1.02	0.59	31.7
11	T1	37	0.0	37	0.0	0.231	11.8	LOS A	0.4	2.5	0.58	1.02	0.59	40.7
12	R2	81	2.6	81	2.6	0.231	12.6	LOS A	0.4	2.5	0.58	1.02	0.59	30.5
Approach		121	3.5	121	3.5	0.231	12.4	LOS A	0.4	2.5	0.58	1.02	0.59	35.6
All Vehicles		898	3.0	898	3.0	0.243	4.2	NA	0.4	2.5	0.19	0.36	0.19	49.3

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

Site: N [9_AM (Site Folder: Scenario 4)]

Network: 48 [AM (Network Folder: Scenario 4)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	49.3	26.0	0.53
North: Novar Street											
P3	Full	11	29.3	LOS C	0.0	0.0	0.91	0.91	55.6	34.2	0.62
All Pedestrians		63	29.3	LOS C	0.1	0.1	0.92	0.92	50.4	27.4	0.54

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

Vehicle Movement Performance

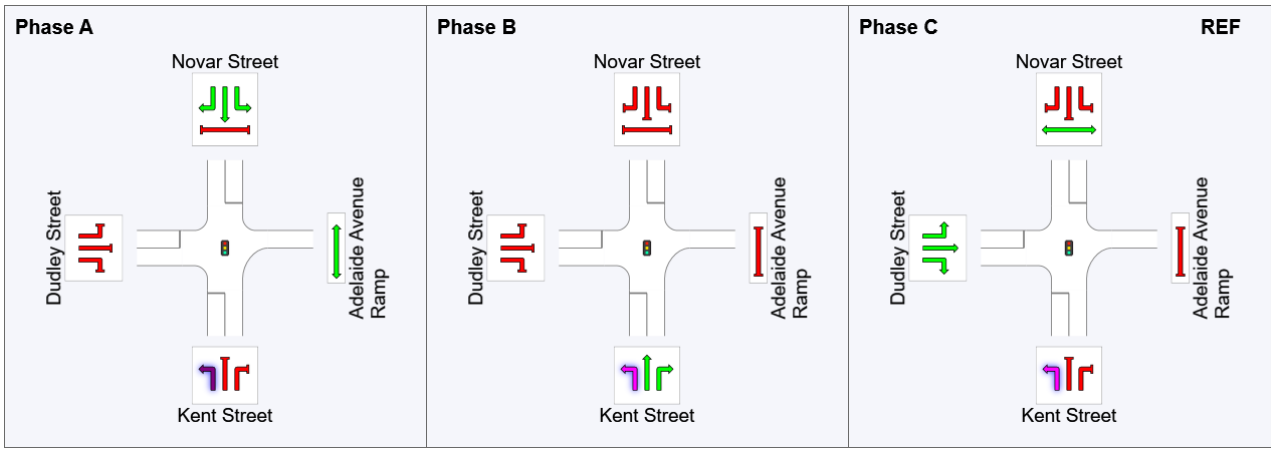
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	194	1.6	194	1.6	0.138	6.7	LOS A	0.8	5.5	0.28	0.62	0.28	28.9
2	T1	171	3.7	171	3.7	* 0.969	57.9	LOS E	11.5	82.0	1.00	1.26	1.74	5.1
3	R2	324	1.3	324	1.3	0.969	63.1	LOS E	11.5	82.0	1.00	1.26	1.74	15.2
Approach		688	2.0	688	2.0	0.969	45.9	LOS D	11.5	82.0	0.80	1.08	1.33	13.3
North: Novar Street														
7	L2	61	0.0	61	0.0	0.918	53.0	LOS D	4.9	34.9	1.00	1.10	1.71	26.2
8	T1	157	2.7	157	2.7	* 0.918	47.6	LOS D	4.9	34.9	1.00	1.10	1.72	19.3
9	R2	137	2.3	137	2.3	0.918	53.6	LOS D	4.6	32.7	1.00	1.10	1.74	18.6
Approach		355	2.1	355	2.1	0.918	50.9	LOS D	4.9	34.9	1.00	1.10	1.73	20.4
West: Dudley Street														
10	L2	314	2.7	314	2.7	0.965	60.1	LOS E	20.6	146.3	1.00	1.16	1.64	24.2
11	T1	23	0.0	23	0.0	* 0.965	54.5	LOS D	20.6	146.3	1.00	1.16	1.64	29.1
12	R2	687	0.6	687	0.6	0.965	64.5	LOS E	20.6	146.3	1.00	1.18	1.75	23.2
Approach		1024	1.2	1024	1.2	0.965	62.9	LOS E	20.6	146.3	1.00	1.18	1.71	23.6
All Vehicles		2067	1.6	2067	1.6	0.969	55.2	LOS D	20.6	146.3	0.93	1.13	1.59	20.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

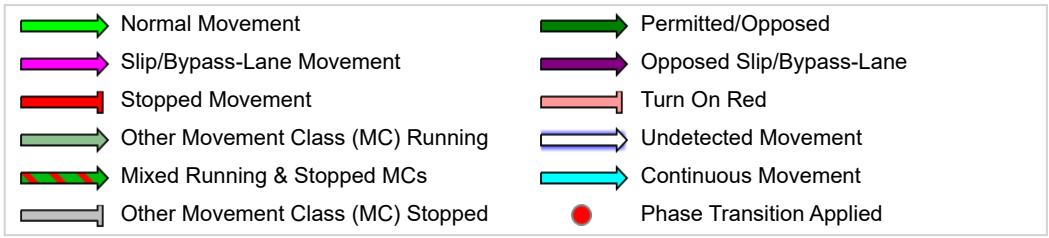
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	31	45	0
Green Time (sec)	8	19	25
Phase Time (sec)	14	25	31
Phase Split	20%	36%	44%

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

Site: 101 [19_AM (Site Folder: Scenario 4)]

Network: 48 [AM (Network Folder: Scenario 4)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

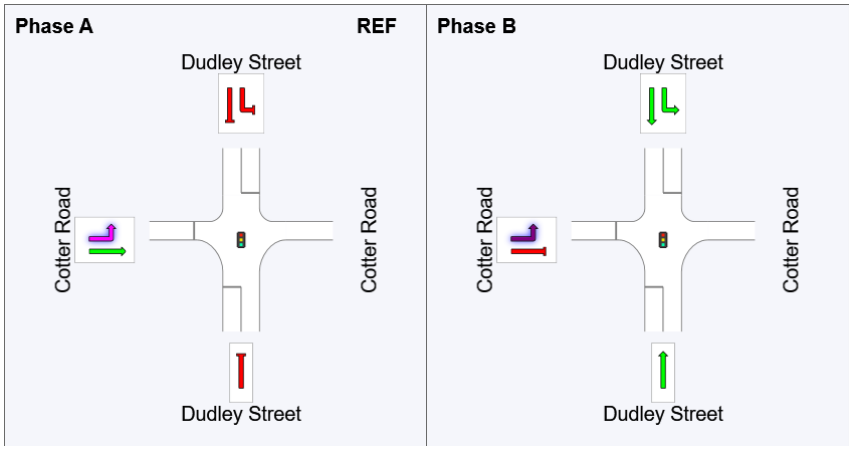
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
Approach		42	0.0	42	0.0	0.104	42.1	LOS C	1.2	8.6	0.85	0.64	0.85	20.9
North: Dudley Street														
7	L2	75	1.4	75	1.4	0.942	78.0	LOS F	8.4	60.0	1.00	1.13	1.40	19.7
8	T1	298	1.8	298	1.8	* 0.942	73.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.0
Approach		373	1.7	373	1.7	0.942	74.2	LOS F	8.4	60.0	1.00	1.13	1.40	19.2
West: Cotter Road														
10	L2	897	1.3	897	1.3	0.559	4.4	LOS A	5.5	38.9	0.30	0.55	0.30	36.5
11	T1	1731	1.8	1731	1.8	* 0.946	31.1	LOS C	50.7	360.2	0.83	0.87	0.95	36.3
Approach		2627	1.6	2627	1.6	0.946	22.0	LOS B	50.7	360.2	0.65	0.76	0.73	36.3
All Vehicles		3042	1.6	3042	1.6	0.946	28.7	LOS C	50.7	360.2	0.70	0.81	0.81	33.5

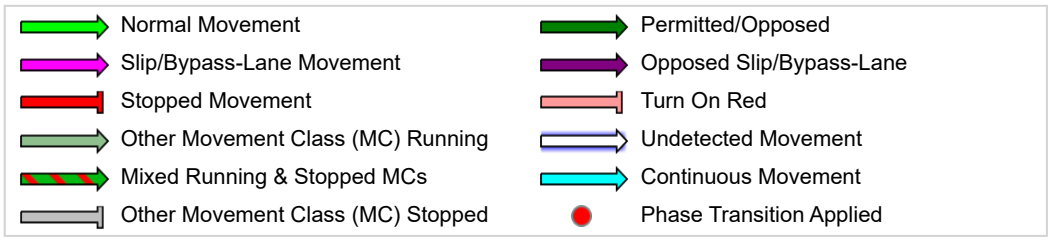
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	89
Green Time (sec)	82	24
Phase Time (sec)	89	31
Phase Split	74%	26%

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

Site: 101 [20_AM (Site Folder: Scenario 4)]

Network: 48 [AM (Network Folder: Scenario 4)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	75	0.0	75	0.0	0.631	3.2	LOS A	2.6	18.3	0.35	0.59	0.35	48.0
3	R2	862	1.3	862	1.3	0.631	8.4	LOS A	2.6	18.3	0.35	0.59	0.35	27.1
Approach		937	1.2	937	1.2	0.631	8.0	LOS A	2.6	18.3	0.35	0.59	0.35	31.3
East: Dudley St														
4	L2	258	2.4	258	2.4	0.363	4.4	LOS A	5.5	39.6	0.32	0.49	0.32	53.0
5	T1	71	0.0	71	0.0	0.073	4.5	LOS A	0.2	1.1	0.33	0.42	0.33	56.4
Approach		328	1.9	328	1.9	0.363	4.4	LOS A	5.5	39.6	0.33	0.48	0.33	54.1
West: Canberra Brickworks Precinct														
11	T1	142	0.0	142	0.0	0.543	14.2	LOS A	2.6	17.9	0.92	0.98	1.15	39.8
12	R2	119	0.0	119	0.0	0.543	19.8	LOS B	2.6	17.9	0.92	0.98	1.15	39.8
Approach		261	0.0	261	0.0	0.543	16.8	LOS B	2.6	17.9	0.92	0.98	1.15	39.8
All Vehicles		1526	1.2	1526	1.2	0.631	8.7	LOS A	5.5	39.6	0.44	0.63	0.48	41.9

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [AM (Network Folder: Scenario 4)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_AM]														
South: Kent St (s)														
2	T1	636	1.5	636	1.5	0.487	1.6	LOS A	3.8	26.7	0.16	0.15	0.16	42.0
Approach		636	1.5	636	1.5	0.487	1.6	LOS A	3.8	26.7	0.16	0.15	0.16	42.0
East: Adelaide Ave (EB off ramp)														
4	L2	437	1.2	437	1.2	0.617	29.5	LOS C	4.8	33.9	0.90	0.82	0.92	30.9
6	R2	56	7.5	56	7.5	* 0.679	45.5	LOS D	1.3	10.0	1.00	0.85	1.29	24.2
Approach		493	1.9	493	1.9	0.679	31.3	LOS C	4.8	33.9	0.91	0.82	0.96	30.0
North: Kent St (n)														
8	T1	840	1.0	840	1.0	* 0.843	18.9	LOS B	10.4	73.4	0.77	0.77	0.92	14.3
Approach		840	1.0	840	1.0	0.843	18.9	LOS B	10.4	73.4	0.77	0.77	0.92	14.3
All Vehicles		1968	1.4	1968	1.4	0.843	16.4	LOS B	10.4	73.4	0.61	0.58	0.68	24.8
Site: S [11_AM]														
South: Kent Street														
1	L2	11	0.0	11	0.0	0.407	26.2	LOS B	4.1	29.0	0.83	0.70	0.83	35.0
2	T1	415	1.3	415	1.3	0.407	20.4	LOS B	4.1	29.0	0.82	0.68	0.82	36.0
Approach		425	1.2	425	1.2	0.407	20.6	LOS B	4.1	29.0	0.82	0.68	0.82	36.0
North: Kent Street														
8	T1	583	1.4	583	1.4	0.361	0.5	LOS A	0.8	5.8	0.14	0.12	0.14	59.2
9	R2	687	0.8	687	0.8	0.716	17.5	LOS B	6.4	45.0	0.82	0.83	0.82	19.2
Approach		1271	1.1	1271	1.1	0.716	9.7	LOS A	6.4	45.0	0.51	0.51	0.51	39.0
West: Denison Street														
10	L2	233	1.8	233	1.8	0.251	15.7	LOS B	2.7	19.3	0.59	0.73	0.59	17.8
Approach		233	1.8	233	1.8	0.251	15.7	LOS B	2.7	19.3	0.59	0.73	0.59	17.8
All Vehicles		1928	1.2	1928	1.2	0.716	12.8	LOS A	6.4	45.0	0.59	0.57	0.59	36.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_AM]											
South: Kent St (s)											
P1	Full	26	29.3	LOS C	0.0	0.0	0.92	0.92	57.0	36.0	0.63

East: Adelaide Ave (EB off ramp)											
P2	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	50.1	27.0	0.54
P2B	Slip/ Bypass	53	29.3	LOS C	0.1	0.1	0.92	0.92	51.6	29.0	0.56
All Pedestrians		132	29.3	LOS C	0.1	0.1	0.92	0.92	52.1	29.6	0.57
Site: S [11_AM]											
West: Denison Street											
P4	Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61
All Pedestrians		53	29.3	LOS C	0.1	0.1	0.92	0.92	55.5	34.0	0.61

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [PM (Network Folder: Scenario 4)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_PM]														
South: Kent St (s)														
2	T1	1071	0.4	1071	0.4	0.448	5.8	LOS A	5.8	40.9	0.54	0.48	0.54	23.3
Approach		1071	0.4	1071	0.4	0.448	5.8	LOS A	5.8	40.9	0.54	0.48	0.54	23.3
East: Adelaide Ave (EB off ramp)														
4	L2	239	0.0	239	0.0	0.260	19.9	LOS B	2.3	16.4	0.73	0.74	0.73	36.7
6	R2	51	0.0	51	0.0	0.207	31.8	LOS C	0.9	6.0	0.93	0.74	0.93	29.4
Approach		289	0.0	289	0.0	0.260	22.0	LOS B	2.3	16.4	0.76	0.74	0.76	35.2
North: Kent St (n)														
8	T1	367	0.6	367	0.6	0.219	11.5	LOS A	2.1	14.8	0.66	0.54	0.66	20.3
Approach		367	0.6	367	0.6	0.219	11.5	LOS A	2.1	14.8	0.66	0.54	0.66	20.3
All Vehicles		1727	0.4	1727	0.4	0.448	9.7	LOS A	5.8	40.9	0.60	0.54	0.60	28.5
Site: S [11_PM]														
South: Kent Street														
1	L2	3	100.0	3	100.0	0.726	29.8	LOS C	6.9	49.1	0.96	0.88	1.05	32.1
2	T1	517	0.6	517	0.6	0.726	22.2	LOS B	6.9	49.1	0.93	0.83	1.00	34.9
Approach		520	1.2	520	1.2	0.726	22.3	LOS B	6.9	49.1	0.93	0.83	1.00	34.9
North: Kent Street														
8	T1	429	0.5	429	0.5	* 0.273	0.5	LOS A	0.5	3.8	0.14	0.12	0.14	59.1
9	R2	178	0.0	178	0.0	0.183	13.5	LOS A	2.1	14.7	0.69	0.74	0.69	22.2
Approach		607	0.3	607	0.3	0.273	4.3	LOS A	2.1	14.7	0.30	0.30	0.30	50.4
West: Denison Street														
10	L2	547	0.2	547	0.2	* 0.750	20.7	LOS B	8.7	60.9	0.85	0.88	0.94	14.6
Approach		547	0.2	547	0.2	0.750	20.7	LOS B	8.7	60.9	0.85	0.88	0.94	14.6
All Vehicles		1675	0.6	1675	0.6	0.750	15.2	LOS B	8.7	60.9	0.68	0.66	0.73	34.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_PM]											
South: Kent St (s)											

P1	Full	26	24.3	LOS C	0.0	0.0	0.90	0.90	52.0	36.0	0.69
East: Adelaide Ave (EB off ramp)											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	45.1	27.0	0.60
P2B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	46.7	29.0	0.62
All Pedestrians		132	24.3	LOS C	0.1	0.1	0.90	0.90	47.1	29.6	0.63
Site: S [11_PM]											
West: Denison Street											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67
All Pedestrians		53	24.4	LOS C	0.1	0.1	0.90	0.90	50.5	34.0	0.67

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

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Southern Intersections]

Network: N101 [Sat (Network Folder: Scenario 4)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: M [10_sat]														
South: Kent St (s)														
2	T1	520	0.8	520	0.8	0.276	5.2	LOS A	3.1	21.9	0.51	0.44	0.51	24.7
Approach		520	0.8	520	0.8	0.276	5.2	LOS A	3.1	21.9	0.51	0.44	0.51	24.7
East: Adelaide Ave (EB off ramp)														
4	L2	180	0.0	180	0.0	0.106	14.5	LOS B	0.8	5.6	0.62	0.70	0.62	41.0
6	R2	76	0.0	76	0.0	* 0.234	26.3	LOS B	1.0	7.3	0.91	0.75	0.91	32.3
Approach		256	0.0	256	0.0	0.234	18.0	LOS B	1.0	7.3	0.70	0.71	0.70	38.0
North: Kent St (n)														
8	T1	319	0.3	319	0.3	* 0.257	13.9	LOS A	1.8	12.9	0.78	0.63	0.78	17.8
Approach		319	0.3	319	0.3	0.257	13.9	LOS A	1.8	12.9	0.78	0.63	0.78	17.8
All Vehicles		1095	0.5	1095	0.5	0.276	10.8	LOS A	3.1	21.9	0.64	0.56	0.64	30.0
Site: S [11_sat]														
South: Kent Street														
1	L2	6	33.3	6	33.3	0.292	20.1	LOS B	2.1	14.6	0.79	0.65	0.79	38.3
2	T1	263	0.8	263	0.8	0.292	13.9	LOS A	2.1	14.6	0.78	0.63	0.78	41.4
Approach		269	1.6	269	1.6	0.292	14.0	LOS A	2.1	14.6	0.78	0.63	0.78	41.3
North: Kent Street														
8	T1	309	0.3	309	0.3	0.207	0.9	LOS A	0.7	4.7	0.29	0.24	0.29	58.4
9	R2	189	0.6	189	0.6	0.230	13.9	LOS A	2.0	14.2	0.74	0.75	0.74	21.9
Approach		499	0.4	499	0.4	0.230	5.9	LOS A	2.0	14.2	0.46	0.44	0.46	46.9
West: Denison Street														
10	L2	254	0.4	254	0.4	0.286	15.3	LOS B	2.5	17.3	0.68	0.75	0.68	18.1
Approach		254	0.4	254	0.4	0.286	15.3	LOS B	2.5	17.3	0.68	0.75	0.68	18.1
All Vehicles		1022	0.7	1022	0.7	0.292	10.4	LOS A	2.5	17.3	0.60	0.56	0.60	40.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: M [10_sat]											
South: Kent St (s)											
P1	Full	26	19.4	LOS B	0.0	0.0	0.88	0.88	47.1	36.0	0.76

East: Adelaide Ave (EB off ramp)											
P2	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	40.2	27.0	0.67
P2B	Slip/ Bypass	53	19.4	LOS B	0.1	0.1	0.88	0.88	41.7	29.0	0.70
All Pedestrians		132	19.4	LOS B	0.1	0.1	0.88	0.88	42.2	29.6	0.70
Site: S [11_sat]											
West: Denison Street											
P4	Full	53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75
All Pedestrians		53	19.4	LOS B	0.1	0.1	0.88	0.88	45.6	34.0	0.75

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_PM (Site Folder: Scenario 4)] **Network: 50 [PM (Network Folder: Scenario 4)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	67	0.0	67	0.0	0.170	5.9	LOS A	0.1	0.7	0.08	0.17	0.08	52.3
2	T1	221	1.0	221	1.0	0.170	0.2	LOS A	0.1	0.7	0.08	0.17	0.08	56.8
3	R2	27	0.0	27	0.0	0.170	6.5	LOS A	0.1	0.7	0.08	0.17	0.08	51.0
Approach		316	0.7	316	0.7	0.170	2.0	NA	0.1	0.7	0.08	0.17	0.08	55.0
East: Weston St														
4	L2	23	0.0	23	0.0	0.131	8.5	LOS A	0.2	1.4	0.47	0.96	0.47	40.0
5	T1	40	0.0	40	0.0	0.131	10.7	LOS A	0.2	1.4	0.47	0.96	0.47	41.9
6	R2	28	0.0	28	0.0	0.131	10.9	LOS A	0.2	1.4	0.47	0.96	0.47	42.4
Approach		92	0.0	92	0.0	0.131	10.2	LOS A	0.2	1.4	0.47	0.96	0.47	41.7
North: Novar St														
7	L2	44	0.0	44	0.0	0.148	5.6	LOS A	0.0	0.1	0.02	0.10	0.02	50.8
8	T1	235	1.3	235	1.3	0.148	0.0	LOS A	0.0	0.1	0.02	0.10	0.02	55.5
9	R2	3	0.0	3	0.0	0.148	6.6	LOS A	0.0	0.1	0.02	0.10	0.02	50.1
Approach		282	1.1	282	1.1	0.148	1.0	NA	0.0	0.1	0.02	0.10	0.02	53.5
West: Weston St														
10	L2	5	0.0	5	0.0	0.258	8.6	LOS A	0.4	2.9	0.55	1.01	0.58	38.2
11	T1	33	0.0	33	0.0	0.258	11.0	LOS A	0.4	2.9	0.55	1.01	0.58	41.1
12	R2	112	0.0	112	0.0	0.258	11.8	LOS A	0.4	2.9	0.55	1.01	0.58	31.2
Approach		149	0.0	149	0.0	0.258	11.5	LOS A	0.4	2.9	0.55	1.01	0.58	35.3
All Vehicles		839	0.6	839	0.6	0.258	4.2	NA	0.4	2.9	0.19	0.38	0.19	48.6

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

Site: N [9_PM (Site Folder: Scenario 4)]

Network: 50 [PM (Network Folder: Scenario 4)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

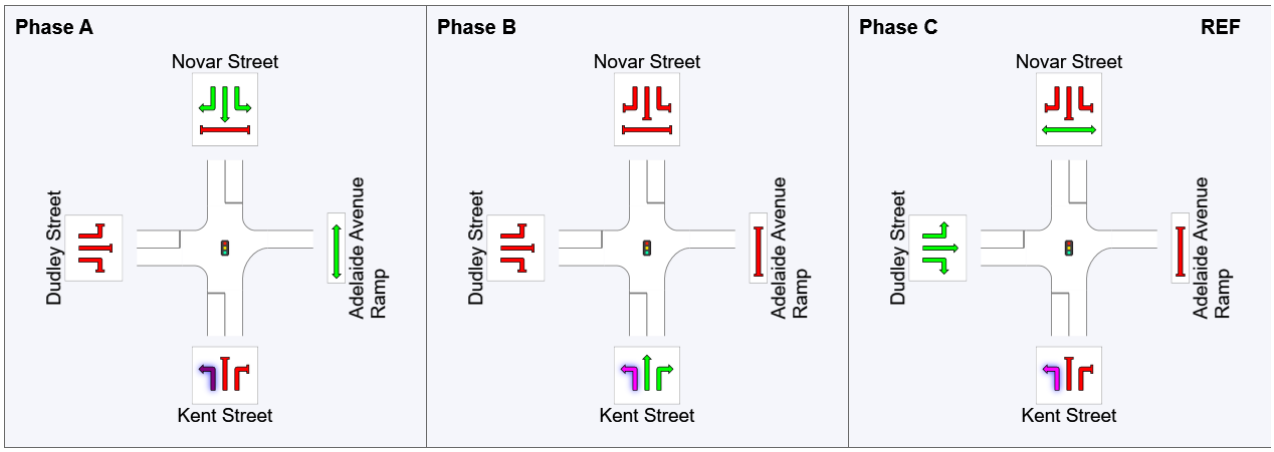
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	587	0.4	587	0.4	0.463	7.9	LOS A	2.6	18.5	0.48	0.70	0.48	26.4
2	T1	180	1.2	180	1.2	* 0.782	19.0	LOS B	8.2	57.6	0.95	0.94	1.12	12.1
3	R2	356	0.0	356	0.0	0.782	24.2	LOS B	8.2	57.6	0.95	0.94	1.12	28.0
Approach		1123	0.4	1123	0.4	0.782	14.8	LOS B	8.2	57.6	0.70	0.81	0.78	24.9
North: Novar Street														
7	L2	51	0.0	51	0.0	0.688	30.4	LOS C	2.9	20.3	1.00	0.87	1.17	35.0
8	T1	129	1.6	129	1.6	0.688	24.9	LOS B	2.9	20.3	1.00	0.87	1.17	28.3
9	R2	216	0.0	216	0.0	* 0.834	34.4	LOS C	3.8	26.5	1.00	1.00	1.48	24.5
Approach		396	0.5	396	0.5	0.834	30.8	LOS C	3.8	26.5	1.00	0.94	1.34	27.2
West: Dudley Street														
10	L2	159	0.0	159	0.0	0.794	32.7	LOS C	3.5	24.8	1.00	0.95	1.36	33.5
11	T1	21	0.0	21	0.0	* 0.794	27.2	LOS B	3.5	24.8	1.00	0.95	1.36	38.2
12	R2	235	0.0	235	0.0	0.794	32.8	LOS C	3.5	24.8	1.00	0.95	1.36	33.2
Approach		415	0.0	415	0.0	0.794	32.5	LOS C	3.5	24.8	1.00	0.95	1.36	33.6
All Vehicles		1934	0.3	1934	0.3	0.834	21.9	LOS B	8.2	57.6	0.83	0.87	1.02	28.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

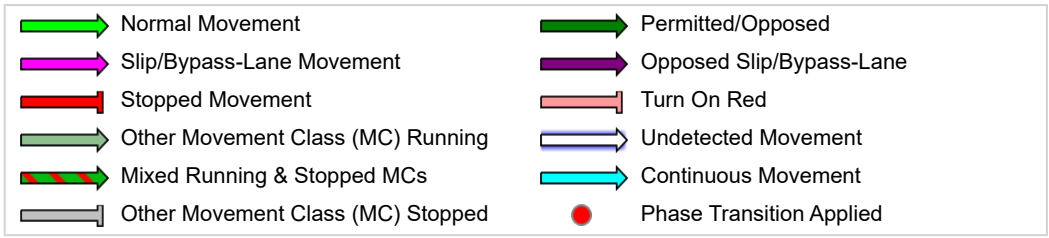
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	13	26	0
Green Time (sec)	7	18	7
Phase Time (sec)	13	24	13
Phase Split	26%	48%	26%

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

Site: 101 [19_PM (Site Folder: Scenario 4)]

Network: 50 [PM (Network Folder: Scenario 4)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

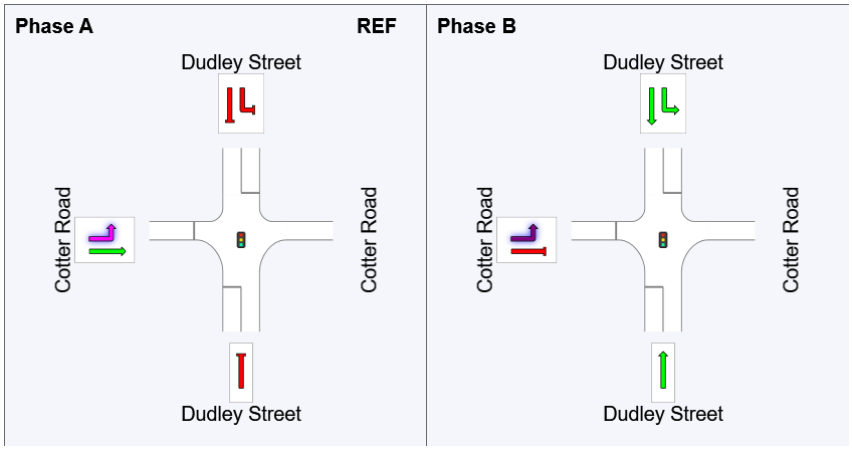
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	84	0.0	84	0.0	0.078	7.3	LOS A	0.7	5.1	0.51	0.40	0.51	48.5
Approach		84	0.0	84	0.0	0.078	7.3	LOS A	0.7	5.1	0.51	0.40	0.51	48.5
North: Dudley Street														
7	L2	57	0.0	57	0.0	0.725	16.2	LOS B	8.5	60.0	0.82	0.75	0.83	48.7
8	T1	720	0.4	720	0.4	* 0.725	11.9	LOS A	8.5	60.0	0.82	0.75	0.83	44.3
Approach		777	0.4	777	0.4	0.725	12.2	LOS A	8.5	60.0	0.82	0.75	0.83	44.6
West: Cotter Road														
10	L2	343	0.0	343	0.0	0.275	8.6	LOS A	1.1	7.5	0.33	0.69	0.33	58.2
11	T1	475	3.1	475	3.1	* 0.754	24.8	LOS B	6.2	44.7	0.95	0.84	1.06	51.8
Approach		818	1.8	818	1.8	0.754	18.0	LOS B	6.2	44.7	0.69	0.78	0.76	53.4
All Vehicles		1679	1.1	1679	1.1	0.754	14.8	LOS B	8.5	60.0	0.74	0.75	0.78	49.4

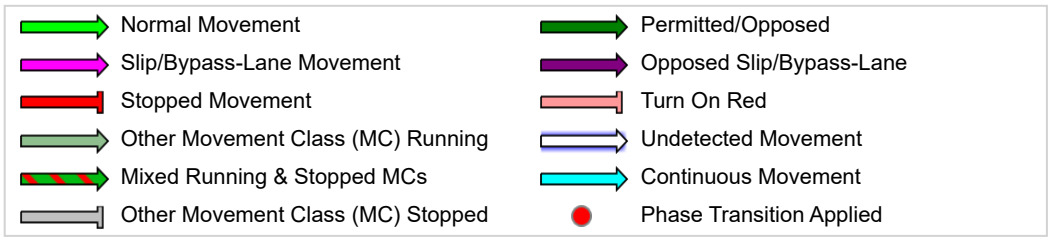
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	21
Green Time (sec)	14	32
Phase Time (sec)	21	39
Phase Split	35%	65%

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%.

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	136	0.0	136	0.0	0.319	3.2	LOS A	0.8	5.4	0.31	0.59	0.31	49.5
3	R2	288	0.0	288	0.0	0.319	8.5	LOS A	0.8	5.4	0.31	0.59	0.31	28.5
Approach		424	0.0	424	0.0	0.319	6.8	LOS A	0.8	5.4	0.31	0.59	0.31	41.2
East: Dudley St														
4	L2	677	0.5	677	0.5	0.886	4.5	LOS A	2.0	14.0	0.34	0.50	0.34	52.9
5	T1	124	0.0	124	0.0	0.130	4.5	LOS A	0.3	1.9	0.30	0.42	0.30	56.6
Approach		801	0.4	801	0.4	0.886	4.5	LOS A	2.0	14.0	0.34	0.49	0.34	53.8
West: Canberra Brickworks Precinct														
11	T1	127	0.0	127	0.0	0.299	4.9	LOS A	0.5	3.6	0.48	0.61	0.48	48.0
12	R2	106	0.0	106	0.0	0.299	10.5	LOS A	0.5	3.6	0.48	0.61	0.48	48.0
Approach		234	0.0	234	0.0	0.299	7.4	LOS A	0.5	3.6	0.48	0.61	0.48	48.0
All Vehicles		1459	0.2	1459	0.2	0.886	5.6	LOS A	2.0	14.0	0.35	0.54	0.35	50.8

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

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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: sid_231102_0218_2023_base_all_scenarios **Template: Movement and Phasing**

Site: 101 [8_Sat (Site Folder: Scenario 4)] **Network: 51 [Sat (Network Folder: Scenario 4)]**

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Novar St														
1	L2	63	1.7	63	1.7	0.165	5.8	LOS A	0.1	0.4	0.04	0.14	0.04	52.9
2	T1	235	0.4	235	0.4	0.165	0.1	LOS A	0.1	0.4	0.04	0.14	0.04	57.6
3	R2	13	8.3	13	8.3	0.165	6.7	LOS A	0.1	0.4	0.04	0.14	0.04	51.2
Approach		311	1.0	311	1.0	0.165	1.5	NA	0.1	0.4	0.04	0.14	0.04	56.1
East: Weston St														
4	L2	9	0.0	9	0.0	0.075	8.4	LOS A	0.1	0.8	0.47	0.95	0.47	39.9
5	T1	18	0.0	18	0.0	0.075	10.4	LOS A	0.1	0.8	0.47	0.95	0.47	41.8
6	R2	21	10.0	21	10.0	0.075	11.5	LOS A	0.1	0.8	0.47	0.95	0.47	41.4
Approach		48	4.3	48	4.3	0.075	10.5	LOS A	0.1	0.8	0.47	0.95	0.47	41.3
North: Novar St														
7	L2	31	0.0	31	0.0	0.144	5.7	LOS A	0.0	0.1	0.02	0.07	0.02	51.0
8	T1	242	0.9	242	0.9	0.144	0.0	LOS A	0.0	0.1	0.02	0.07	0.02	56.6
9	R2	3	0.0	3	0.0	0.144	6.6	LOS A	0.0	0.1	0.02	0.07	0.02	50.5
Approach		276	0.8	276	0.8	0.144	0.7	NA	0.0	0.1	0.02	0.07	0.02	54.7
West: Weston St														
10	L2	4	0.0	4	0.0	0.216	8.5	LOS A	0.3	2.3	0.53	1.00	0.53	38.7
11	T1	31	0.0	31	0.0	0.216	10.7	LOS A	0.3	2.3	0.53	1.00	0.53	41.4
12	R2	95	0.0	95	0.0	0.216	11.2	LOS A	0.3	2.3	0.53	1.00	0.53	31.8
Approach		129	0.0	129	0.0	0.216	11.0	LOS A	0.3	2.3	0.53	1.00	0.53	36.0
All Vehicles		764	1.0	764	1.0	0.216	3.4	NA	0.3	2.3	0.14	0.31	0.14	50.3

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

Site: N [9_sat (Site Folder: Scenario 4)]

Network: 51 [Sat (Network Folder: Scenario 4)]

Existing 2020 AM
Novar Street/ Dudley Street/ Kent Street/ Adelaide Avenue
Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Opposed Turns
Reference Phase: Phase C
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Adelaide Avenue Ramp											
P2	Full	32	19.4	LOS B	0.0	0.0	0.88	0.88	39.4	26.0	0.66
North: Novar Street											
P3	Full	11	19.4	LOS B	0.0	0.0	0.88	0.88	45.7	34.2	0.75
All Pedestrians		42	19.4	LOS B	0.0	0.0	0.88	0.88	41.0	28.1	0.68

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

Vehicle Movement Performance

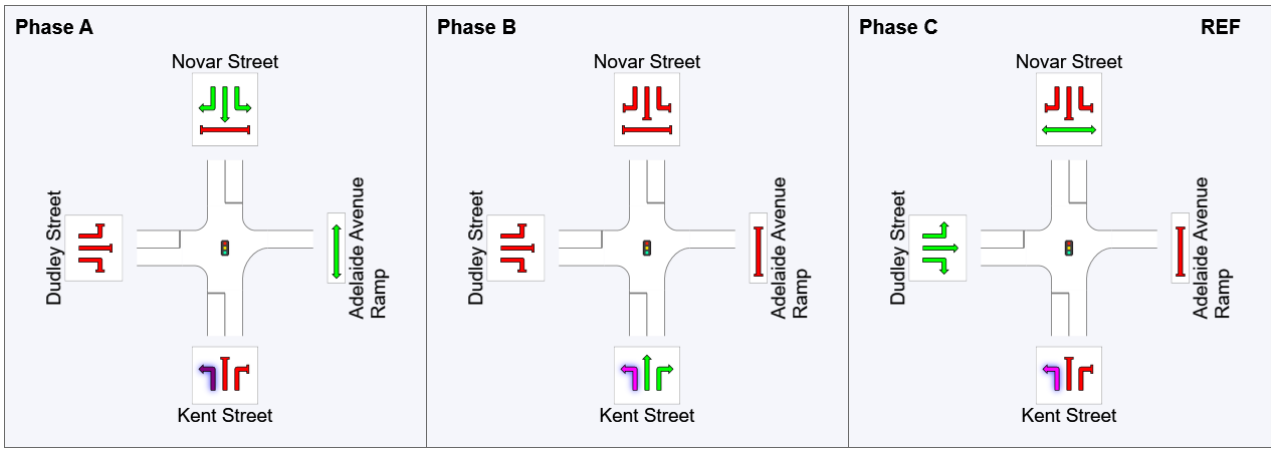
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Kent Street														
1	L2	248	0.8	248	0.8	0.198	7.3	LOS A	1.0	7.1	0.40	0.65	0.40	27.5
2	T1	151	1.4	151	1.4	* 0.656	18.4	LOS B	4.9	34.7	0.94	0.84	0.99	12.6
3	R2	200	0.0	200	0.0	0.656	23.6	LOS B	4.9	34.7	0.94	0.84	0.99	28.7
Approach		599	0.7	599	0.7	0.656	15.5	LOS B	4.9	34.7	0.72	0.76	0.74	24.5
North: Novar Street														
7	L2	64	0.0	64	0.0	0.538	26.9	LOS B	2.6	18.4	0.95	0.78	0.95	36.8
8	T1	117	0.9	117	0.9	0.538	21.3	LOS B	2.6	18.4	0.95	0.78	0.95	30.2
9	R2	204	0.5	204	0.5	* 0.616	27.7	LOS B	3.1	21.5	0.97	0.83	1.04	27.7
Approach		385	0.5	385	0.5	0.616	25.6	LOS B	3.1	21.5	0.96	0.81	1.00	30.2
West: Dudley Street														
10	L2	202	0.5	202	0.5	0.663	28.3	LOS B	3.4	24.1	0.98	0.86	1.09	35.6
11	T1	22	0.0	22	0.0	* 0.663	22.7	LOS B	3.4	24.1	0.98	0.86	1.09	40.2
12	R2	203	0.0	203	0.0	0.611	27.6	LOS B	3.0	21.2	0.97	0.83	1.03	35.7
Approach		427	0.2	427	0.2	0.663	27.7	LOS B	3.4	24.1	0.98	0.85	1.06	35.9
All Vehicles		1412	0.5	1412	0.5	0.663	21.9	LOS B	4.9	34.7	0.86	0.80	0.91	31.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

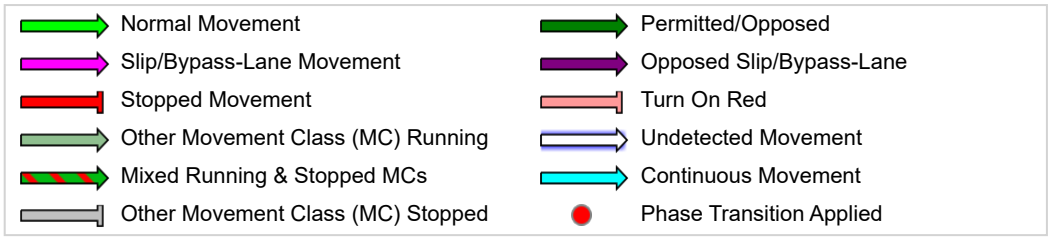
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	15	30	0
Green Time (sec)	9	14	9
Phase Time (sec)	15	20	15
Phase Split	30%	40%	30%

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

Site: 101 [19_Sat (Site Folder: Scenario 4)]

Network: 51 [Sat (Network Folder: Scenario 4)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

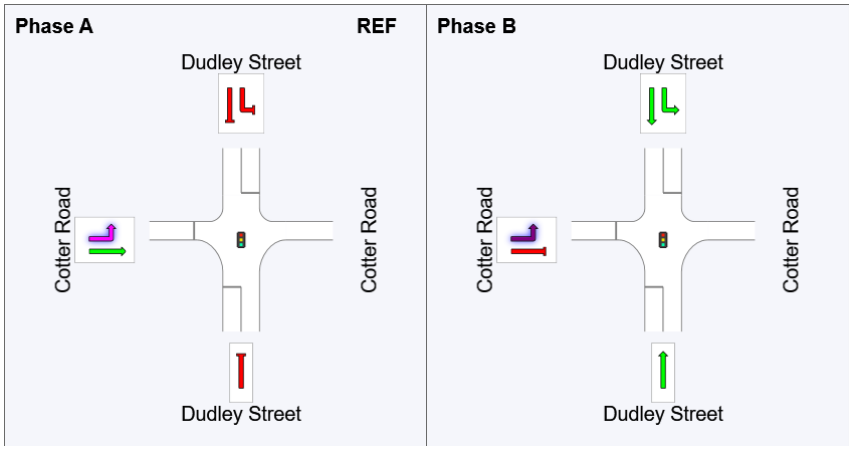
Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley Street														
2	T1	72	1.5	72	1.5	0.089	10.1	LOS A	0.7	4.8	0.65	0.50	0.65	32.8
Approach		72	1.5	72	1.5	0.089	10.1	LOS A	0.7	4.8	0.65	0.50	0.65	32.8
North: Dudley Street														
7	L2	57	0.0	57	0.0	0.553	17.1	LOS B	5.2	36.8	0.82	0.72	0.82	47.5
8	T1	386	0.5	386	0.5	* 0.553	12.8	LOS A	5.2	36.8	0.82	0.72	0.82	43.3
Approach		443	0.5	443	0.5	0.553	13.3	LOS A	5.2	36.8	0.82	0.72	0.82	43.8
West: Cotter Road														
10	L2	347	0.0	347	0.0	0.279	4.7	LOS A	1.1	7.6	0.40	0.58	0.40	36.2
11	T1	474	1.3	474	1.3	* 0.542	15.1	LOS B	4.3	30.2	0.84	0.70	0.84	42.6
Approach		821	0.8	821	0.8	0.542	10.7	LOS A	4.3	30.2	0.65	0.65	0.65	40.6
All Vehicles		1336	0.7	1336	0.7	0.553	11.5	LOS A	5.2	36.8	0.71	0.67	0.71	41.0

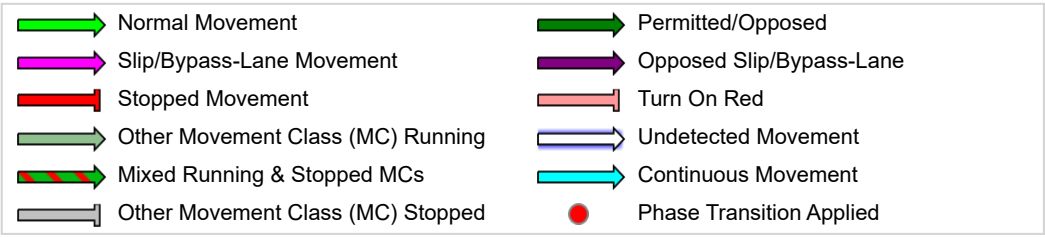
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA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

* Critical Movement (Signal Timing)

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	23
Green Time (sec)	16	20
Phase Time (sec)	23	27
Phase Split	46%	54%

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

Site: 101 [20_Sat (Site Folder: Scenario 4)]

Network: 51 [Sat (Network Folder: Scenario 4)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dudley St														
1	L2	118	0.0	118	0.0	0.308	3.2	LOS A	0.7	5.1	0.28	0.59	0.28	49.4
3	R2	295	0.4	295	0.4	0.308	8.4	LOS A	0.7	5.1	0.28	0.59	0.28	28.5
Approach		413	0.3	413	0.3	0.308	6.9	LOS A	0.7	5.1	0.28	0.59	0.28	40.3
East: Dudley St														
4	L2	336	0.9	336	0.9	0.237	4.3	LOS A	0.5	3.8	0.27	0.47	0.27	53.3
5	T1	116	0.0	116	0.0	0.108	4.3	LOS A	0.2	1.5	0.28	0.41	0.28	56.7
Approach		452	0.7	452	0.7	0.237	4.3	LOS A	0.5	3.8	0.27	0.46	0.27	54.5
West: Canberra Brickworks Precinct														
11	T1	131	0.0	131	0.0	0.210	5.0	LOS A	0.5	3.7	0.49	0.59	0.49	48.0
12	R2	103	0.0	103	0.0	0.210	10.5	LOS A	0.5	3.7	0.49	0.59	0.49	48.0
Approach		234	0.0	234	0.0	0.210	7.4	LOS A	0.5	3.7	0.49	0.59	0.49	48.0
All Vehicles		1098	0.4	1098	0.4	0.308	6.0	LOS A	0.7	5.1	0.32	0.54	0.32	50.0

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

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