

# Traffic Impact Assessment

BWC2/25 - Blacktown Workers Sports Club Seniors Living Village – 170 Reservoir Road, Arndell Park

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# **Document Verification**

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# Overview

TRAFFIX has been commissioned by Paynter Dixon Constructions Pty Ltd to undertake a Traffic Impact Assessment to accompany a Site Compatibility Certificate (SCC) application for the Blacktown Workers Sports Club site, situated in Arndell Park in New South Wales. This proposal envisages the development of a seniors living village on the existing sports field site.

The Blacktown Workers Sports Club is located approximately 3.0 kilometres south of Blacktown Railway Station and 30 kilometres west of the Sydney central business district. It covers approximately 21 hectares and is enclosed by Reservoir Road, Holbeche Road, Walters Road and Penny Lane.

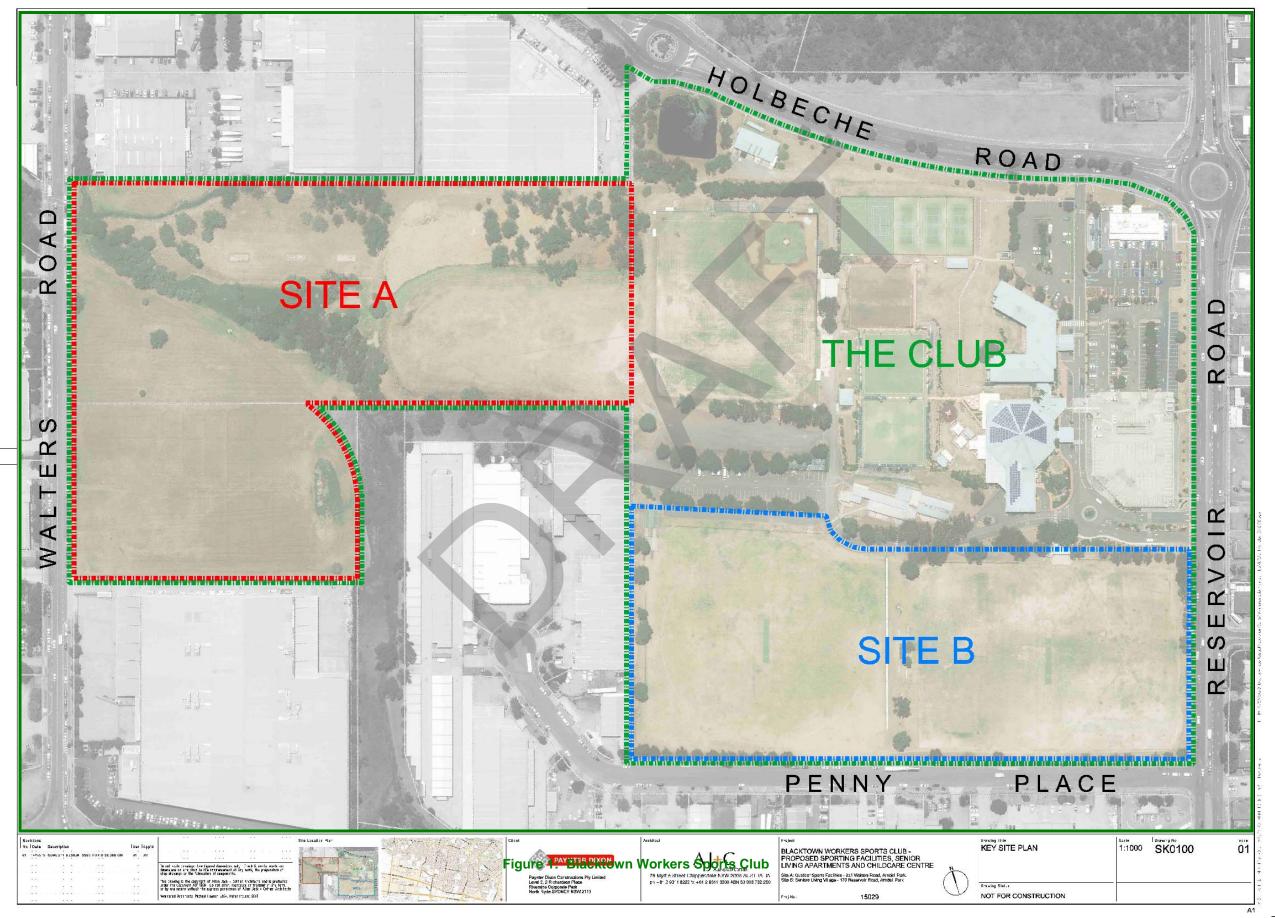
All existing development within the Blacktown Workers Sports Club is limited to an area known as *'The Club'*, which currently accommodates a registered club, hotel and restaurant. The division of areas within the master plan is shown in **Figure 1**, whereby land adjacent to the *'The Club'* forms the subject of the following submission:

#### Site B - Lot 201 DP8804404:

• Development of a Seniors Living Village on Lot 201 DP880404.

This assessment assesses the Site B proposal at a SCC application stage, however the assessment also accounts for the traffic impacts of other proposals including the approved 'Site A' (sports facilities) and works within 'The Club' section of the BSWC, as well as relying on a new proposed access at Holbeche Road.







# 1. Introduction

The SCC Application for the Blacktown Workers Sports Club shall propose a Seniors Living Village within Site B. Whilst the final layouts are still being resolved, it is understood that these applications will propose:

- Up to 480 Independent Living Units; and
- A Residential Aged Care Facility providing up to 160 beds.

This report documents the parking requirements and traffic impacts of the above development on the basis that 480 independent living units and 160 RACF beds are developed. As the site is located in the City of Blacktown local government area, it has been assessed under that Council's controls, in addition to the provisions of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

The development is expected to contain more than 200 car parking spaces and therefore requires referral to the Roads and Maritime Services (RMS) under the provisions of State Environmental Planning Policy (Infrastructure) 2007.

This report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed and permissible developments
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Describes the Access and Internal Design.
- Section 8: Presents the overall study conclusions.



# 2. Location and Site

The site for the Seniors Living estate, known as 'Site B' is located at 170 Reservoir Road in Arndell Park and is legally described as Lot 201 in DP880404. It occupies the south eastern portion of the Blacktown Workers Sports Club (BWSC)

Site B has a rectangular shaped configuration and with an area of approximately five hectares. It has an eastern frontage to Reservoir Road that measures approximately 140 metres and a southern frontage to Penny Lane that measures approximately 360 metres. The remainder of the site is bounded by the area within the BWSC known as 'The Club' to the north and by industrial developments to the west.

Site B currently comprises of two sports fields. Vehicular access is provided via an internal circulation road within 'The Club' area of BWSC that in turn, is most conveniently accessed from Reservoir Road.

A Location Plan is presented in **Figure 2**, with a Site Plan presented in **Figure 3**. Reference should also be made to the site photos included in **Appendix A**.



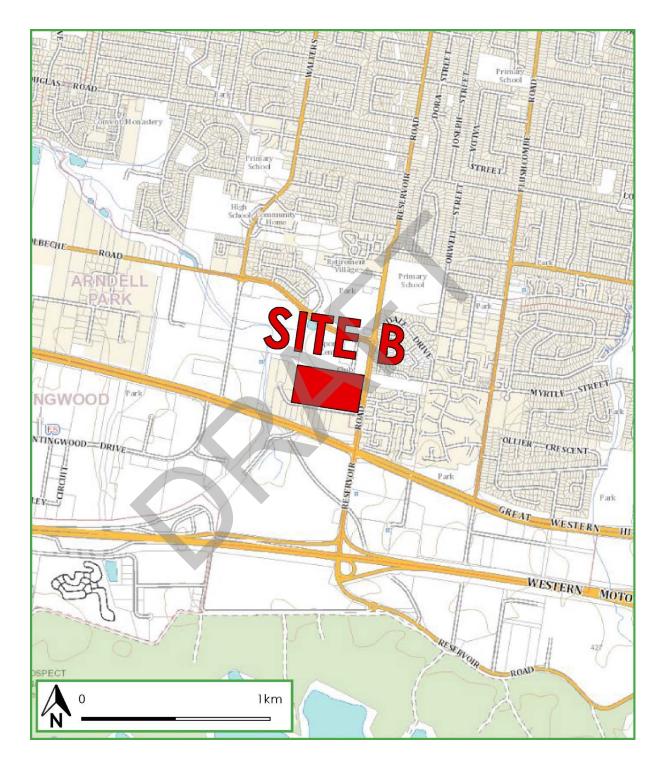


Figure 2: Location Plan





Figure 3: Site Plan



# 3. Existing Traffic Conditions

### 3.1 Road Hierarchy

The road hierarchy in the vicinity of the site is shown in **Figure 4** with the following roads of particular interest:

Great Western Highway:

a highway (HW5) that generally runs in an east-west direction between Broadway at Haymarket in the east and Brilliant Street at Bathurst to the west. In the vicinity of the site, it carries approximately 39,900 vehicles per day (2012 AADT) and has a posted speed limit of 80 km/h. The Great Western Highway accommodates three lanes of traffic in each direction within a divided carriageway on approach to Reservoir Road, whilst accommodating two lanes of traffic in each direction further west on approach to Walters Road.

Reservoir Road:

an RMS Main Road (MR683) that runs in a north-south direction between Bungarribee Road in the north and the M4 Western Motorway to the south (Reservoir Road continues as a local road south of the M4 Western Motorway). It carries approximately 21,900 vehicles per day (2005 AADT) and has a posted speed limit of 60 km/h. Between Holbeche Road and the Great Western Highway, Reservoir Road accommodates two lanes of traffic in each direction within a divided carriageway.

Holbeche Road:

a local road that runs in an east-west direction between Reservoir Road in the east and Doonside Road to the west. Between Reservoir Road and Walters Road, it has a posted speed limit of 50 km/h and accommodates two lanes of traffic in each direction within a divided carriageway.

Penny Place:

a local road that extends west of Reservoir Road and forms a cul-desac. It has a 50 km/h speed limit and accommodates a single lane of traffic within an undivided carriageway.



It can be seen from **Figure 3** that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

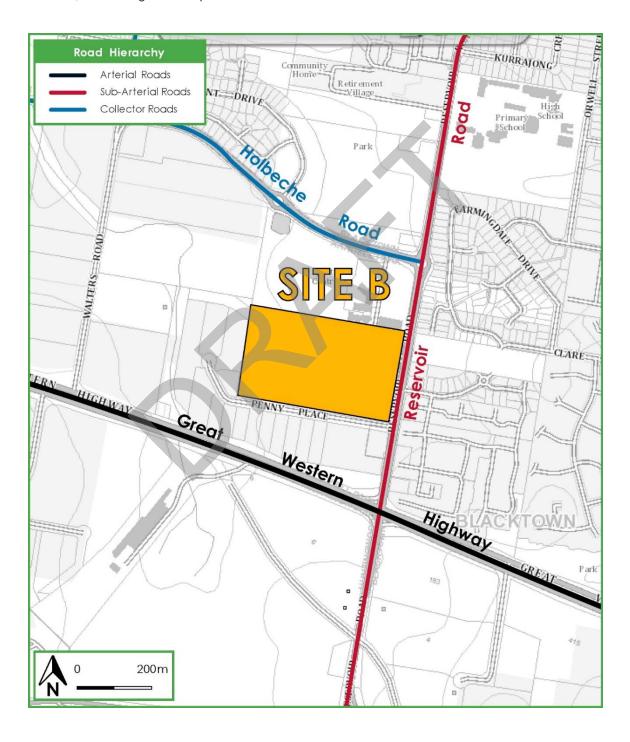


Figure 4: Road Hierarchy



# 3.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment:

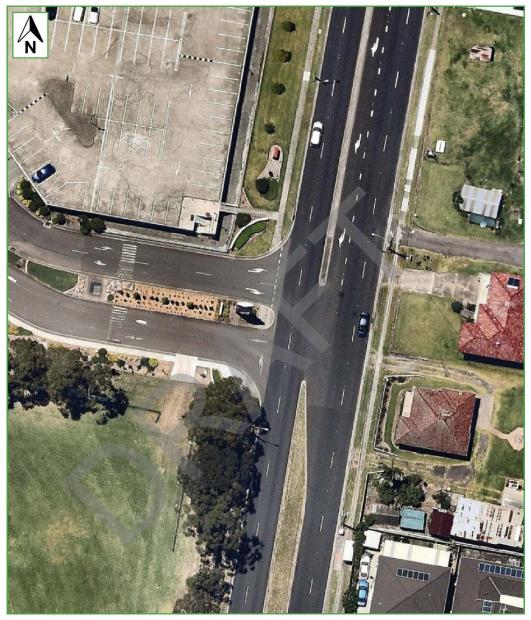


Source: Near Map

Figure 5: Intersection of Reservoir Road and Holbeche Road

It can be seen from **Figure 5** that Reservoir Road and Holbeche Road forms a two-lane roundabout, with two entry and exit lanes provided on each of the three legs of the intersection. Both lanes on the north and south approaches of Reservoir Road are permitted to proceed straight, whilst left turn only and right turn only lanes are provided on the Holbeche Road approach.





Source: Near Map

Figure 6: BWSC Access and Reservoir Road

It can be seen from **Figure 6** that Reservoir Road and the existing southern access for the BWSC forms a priority controlled 'T' seagull junction. An auxiliary lane is provided for vehicles to turn right from the north approach of Reservoir Road, whilst storage area for a single vehicle is provided for a vehicle when turning right from the BWSC access. A left turn only and right turn only lane is provided on the BWSC access approach.





Source: Near Map

Figure 7: BWSC Access and Holbeche Road

It can be seen from **Figure 7** that Holbeche Road and an existing access at 'The Club' section of BWSC forms a priority controlled 'T' junction. As Holbeche Road is divided, the intersection permits left-in / left-out movements only from the existing BWSC access. The intersection operates in a similar arrangement to a proposed BWSC access on Holbeche Road further west as shown in the master plan in **Appendix B**. That proposed intersection will be subject to a separate application.



# 3.3 Key Intersections

For the purposes of the assessment of traffic impacts of this development, surveys were undertaken of the following intersections related to the site:

- Reservoir Road / Site Access
- Reservoir Road / Penny Place
- Holbeche Road / (Existing) BWSC Access
- Reservoir Road / Holbeche Road

These surveys were undertaken on a typical weekday morning between 7:00am-9:00am and afternoon between 4:00pm-6:00pm which corresponds to the expected peak periods of the local road network. The results of the surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions.

The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

**DOS** - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

**AVD** - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

**LOS** - this is a comparative measure which provides an indication of the operating performance of an intersection as shown in **Table 1** below:



**Table 1: Intersection Performance Characteristics** 

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
А	less than 14	Good operation	Good operation
В	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
С	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results are provided in **Table 2** for the morning (AM) and afternoon (PM) peak hours. Reference should also be made to the SIDRA outputs provided in **Appendix C**, which provide detailed results for individual lanes and approaches.



Table 2: Existing Intersection Performance -SIDRA Network

Intersection Description	Control Type	Period	Degree of Saturation	Average Delay (secs)	Level of Service
Reservoir Road /	Priority (Seagull)	AM	0.111	29.9	С
Site Access	Site Access	PM	0.178	45.9	D
Reservoir Road /	Priority (Seagull)	AM	0.151	29.9	С
Penny Place	r nonly (Goagan)	PM	0.206	30.6	С
Holbeche Road /	Priority (Left-in	AM	0.179	5.4	А
BWSC Access	Left-out)	PM	0.163	5.4	А
Reservoir Road /	Roundabout	AM	0.316	11.2	А
Holbeche Road	rtouridabout	PM	0.319	10.4	А

<sup>\*</sup> Note: Results shown are for the movement with the highest delay, in accordance with RMS Guidelines.

It can be seen from **Table 2** that the key intersections around the site generally operate satisfactorily under the existing 'base case' scenario, with Level of Service of D or better and with moderate delays during both peak periods. The delays and queue lengths correlate with site observations, however it is noted that whilst the intersections at Reservoir Road / The Club and Reservoir Road / Penny Place are designed as seagull intersections a number of vehicles were observed to not make use of the right turn storage space when turning right onto Reservoir Road, that is these vehicles waited for a gap in both directions before pulling out increasing their delay rather than turning right in two stages.

However, the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in **Section 6**.



# 3.4 Public Transport

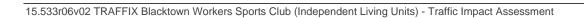
The existing public transport services that operate in the locality is shown in **Figure 7**. Bus stops within 400 metres of bus stops on Holbeche Road and Reservoir Road are serviced by the following routes:

722/4: Blacktown & Prospect / Arndell Park Loop

723: Blacktown & Prospect Loop

724: Blacktown to Mt Druitt

These bus services provide links to Blacktown Railway Station and other key regional bus services.





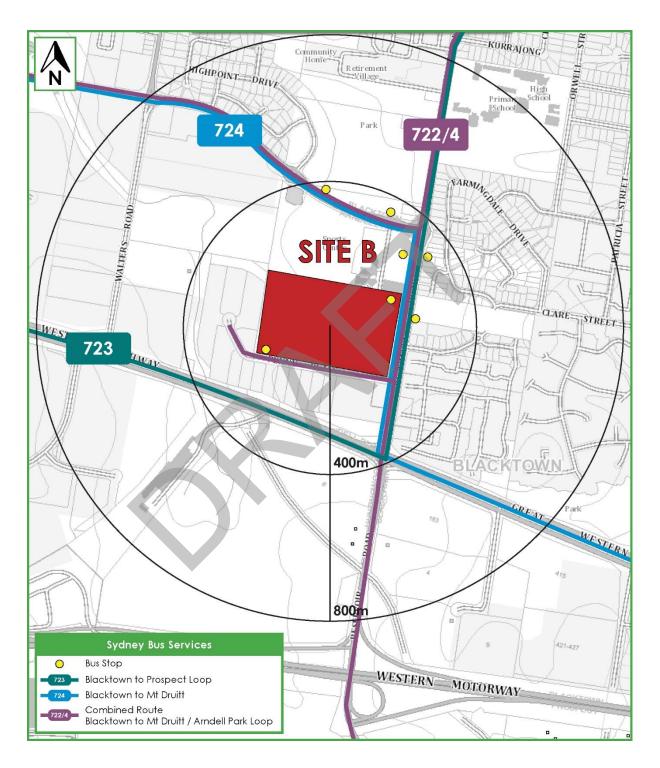


Figure 7: Public Transport



# 4. Description of Proposed Development

## 4.1 Proposal

A detailed description of the development scheme envisaged under the Site Compatibility Certificate is provided separately. In summary, the development scheme as assessed for the purpose of the Traffic Assessment comprises the following components:

- Onstruction of 12 buildings containing up to 480 Independent Living Units in the following manner:
  - 15% one bedroom units (up to 70);
  - 83% two bedroom units (up to 400); and
  - 2% three bedroom units (up to 10).
- Construction of a Residential Aged Care Facility (RACF) providing up to 160 beds serviced by 50 staff; and
- Provision of 652 parking spaces, accessed from a combination of Penny Place and 'The Club'

The parking requirements and traffic impacts arising from the development scheme are discussed in Sections 5 and 6 respectively.



# 5. Parking Requirements

### 5.1 Independent Living Units

The Blacktown Development Control Plan 2015 (DCP) refers car parking rates for Seniors Housing to State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 (Seniors Housing SEPP). Under this planning policy, a consent authority (Council) may not refuse consent to a development application for a self-contained dwelling on parking grounds if the development provides parking in accordance with the minimum provisions reproduced in **Table 3**.

Table 3: Seniors Housing SEPP Parking Rates and Provision

Туре	Number	Minimum Parking Rate	Minimum Provision Required <sup>1</sup>
Independent Living Unit	ts		
One Bedroom	70		35
Two Bedroom	400	0.5 spaces per bedroom	400
Three Bedroom	10		15
Residential Aged Care F	acility	>	
Beds	160	1 space per 10 beds	16
Staff	50	1 space per 2 staff	25
		Total	491

It can be seen from **Table 3**, that the Seniors Housing SEPP requires a minimum of 491 parking spaces to be provided for the above uses to guarantee consent by Council on parking related grounds. In response, the applicant advises that, when the site is developed for 480 independent living units and 160 residential aged care beds, indicatively 652 parking spaces shall be provided on-site which will be confirmed as the detailed design is finalised for submission in a future development application. In addition, the parking for Independent Living Units shall be designed as accessible spaces in accordance with the SEPP (further discussion on this is included in **Section 7**).



### 5.2 Disabled Parking

The DCP requires all parking areas to provide for disabled drivers in accordance with the provisions of the Building Code of Australia. In this respect, the proposed independent living units would fall under the definition for a Class 2 building, that is, a building "containing two or more sole occupancy units, each being a separate dwelling". Whilst no parking rates are provided within the code for this type of building, the DCP states that Council may require additional parking spaces for the disabled where it considers that the proposed land use warrants extra provision. As such, it is envisaged that the development will provide accessible parking in response to any condition of consent imposed by Council for a future development application.

### 5.3 Bicycle Facilities

The DCP states the following with respect to bicycle parking:

"Applicants are encouraged to incorporate, in the design of their buildings, safe storage/parking areas for bicycles, with adequate shower and change facilities provided for staff (where appropriate)."

In this regard, bicycle parking rates from 'Planning guidelines for walking and cycling', published by the NSW Department of Planning, have been adopted for aged or disabled self-contained housing. The guide recommends that bicycle parking be provided at a rate between 3-5% of the overall number of units for residents, and an additional 3-5% of the overall number of units for visitors. This translates into a requirement to provide between 27-45 bicycle parking spaces.

In response the development shall provide storage cages capable of storing a bicycle if desired by the residents.

# 5.4 Servicing

The DCP does not provide service vehicle parking rates however states that these areas should be provided off-street with convenient access. Furthermore in larger developments, service areas should operate independently of other parking areas.



In response the development proposes to collect waste on site using the internal road network proposed. The design vehicle used shall be a Council garbage vehicle. A swept path assessment shall be undertaken testing the design using a 10.5m vehicle prior to the lodgement of a future development application for the site.





# 6. Traffic Impacts

### 6.1 Trip Generation

#### Site B - Independent Living Units

The RMS *Technical Direction TDT 2013/4a* provides traffic generation rates for seniors housing, however it states that the 'site peak hour does not generally coincide with the network peak hour'. This is to be expected when considering an independent living unit whose residents have predominantly left full time employment and are no longer required to travel during the commuter peak hours. Appendix C2 of the Technical Direction provides a rate for PM trips per unit for five sites in the Sydney Metropolitan region. The average trip generation in the PM for these five sites was 0.18 trips per unit, whilst the AM peak is described as being outside of survey periods. However, in order to assess a rate for the AM peak a rate of 0.1 trips (approximately 50% of the PM peak) has been applied to ensure a conservative assessment.

The application of these rates to the 480 Independent Living Units results in the following traffic generation:

48 vehicle trips per hour during the AM peak period (10 in, 38 out); and

86 vehicle trips per hour during the PM peak period (69 in, 17 out).

#### Site B - Residential Aged Care Facility

It is assumed that residents of the Residential Aged Care Facility will have a reduced need for mobility and therefore a trip generation of 0.2 trips per bed has been adopted during AM and PM peak hourly periods associated with staff and visitor parking. Application of this rate to the 160 beds for the RACF facility results in the following traffic generation:

32 vehicle trips per hour during the AM peak period (26 in, 6 out); and

32 vehicle trips per hour during the PM peak period (6 in, 26 out).



#### Combined

In summary, all future development within 'Site B' has been estimated to generate the following traffic:

80 vehicle trips per hour during the AM peak period (36 in, 44 out); and

118 vehicle trips per hour during the PM peak period (75 in, 43 out).

#### **Total Traffic Generation for BWSC Master Plan**

In addition to the volume of traffic accounted for on 'Site B', the trip generation for other approved (but yet to be constructed) developments within in the BWSC master plan has been included in the assessment. This shall ensure the traffic generation for all future development on the wider site is captured under a cumulative assessment.

Reference has been made to the traffic reports supporting the approved Development Applications for 'The Club' (Proposed Alterations and Additions Blacktown Workers Sports Club - Assessment of Traffic and Parking Implications – TTPA Jan 2014) and for 'Site A' (Traffic Impact Assessment BWSC - New Sports Facilities – March 2017).

With regards to the Club DA is it noted that 695m² of the 3,455m² of additional floor area has been built to date and would be captured in the latest traffic count surveys. As such the predicted additional peak hour generation of the club has been reduced by this pro rata amount over the rate shown in the TTPA report.

The summery of the expected additional generation in the peak hour taken from these reports is therefore as follows:

#### 'The Club':

0 vehicle trips per hour during the AM peak period (0 in, 0 out); and

163 vehicle trips per hour during the PM peak period (91 in, 72 out).

#### 'Site A':

18 vehicle trips per hour during the AM peak period (9 in, 9 out); and



169 vehicle trips per hour during the PM peak period

(129 in, 40 out).

The above traffic generation forms the basis of the SIDRA modelling undertaken for key intersections impacted by these additional volumes. As the BWSC will have many existing and proposed site access, trip distributions for each development have been estimated as discussed below.

### 6.2 Trip Distribution

Having respect to the proximity of each development to site accesses and the general location of the site within the region, the following trip distributions have been adopted for the SIDRA intersection modelling undertaken in Section 6.3.

Site B: 50% Reservoir Road / 30% Penny Lane / 20% Holbeche Road

Site A: 30% Walters Road / 50% Holbeche Road (new) / 20% Reservoir Road

The Club: 50% Reservoir Road / 50% Holbeche Road (existing)

It is noted the new proposed Holbeche Road access will be left-in and left-out only and shall predominantly service the sports fields located as 'Site A' whilst the existing Holbeche Road access is maintained and predominately facilitates vehicles arriving from the north.

#### 6.3 Peak Period Intersection Performances

A summary of the modelling results provided in **Table 4** below. Reference should also be made to the detailed SIDRA outputs for the future scenario which are provided in **Appendix D**.



**Table 4: Intersection Performance SIDRA Network: Future** 

Intersection Description	Control Type	Model	Period	Degree of Saturation	Intersection Delay	Level of Service
		AM	Existing	0.111	29.9	С
Reservoir Road /	Priority	7	Future	0.185	32.3	С
Site Access	(Seagull) <sup>1</sup>	PM	Existing	0.178	45.9	D
		PIVI	Future	0.843	127	F
		AM	Existing	0.151	29.9	С
Reservoir Road /	Priority	7	Future	0.182	30.7	С
Penny Place	(Seagull) <sup>1</sup>	DM	Existing	0.206	30.6	С
		PM	Future	0.28	38.1	С
		AM	Existing	0.179	5.4	А
Holbeche Road /	Priority (Left-in		Future	0.183	5.4	А
BWSC Access	Left-out) <sup>1</sup>	PM	Existing	0.163	5.4	А
			Future	0.196	5.4	А
		AM	Existing	0.316	11.2	А
Reservoir Road /	Roundabout <sup>1</sup>	Alvi	Future	0.325	11.2	А
Holbeche Road	Roundabout		Existing	0.319	10.4	А
		PM	Future	0.372	10.5	А
		AM	Existing	0.917	60.7	Е
Reservoir Road /	0	AIVI	Future <sup>2</sup>	0.924	60.7	E
Great Western Highway	Signals		Existing	0.905	60.0	Е
		PM	Future <sup>2</sup>	0.900	57.7	Е



Note 1: Results shown are for the movement with the highest delay, in accordance with RMS Guidelines.

Note 2: Intersection of Great Western Highway / Reservoir Road modelled with additional westbound right turn bay, in accordance with proposed future upgrade works.

The results indicate that full development of BWSC will result in minimal increases in delays for all site accesses, with a Level of Service no worse than C experienced for any intersection with the exception of the Reservior Road Site access intersection.

A detailed interrogation of the modelling assessment reveals vehicles undertaking a right turn manoeuvre from the club onto Reservoir Road are likely to experience delays of approximately 2-3 minutes and queues of 30m when waiting for a gap to turn resulting in a Level of Service 'F' being presented. This is due to the high volumes of continuous traffic on Reservoir Road past the site.

#### **Intersection Upgrade**

In order to improve the operation of the intersection between the Club access and Reservoir Road for both vehicles and pedestrians upgrade scenarios were considered. During a meeting with the Roads and Maritime Service (11<sup>th</sup> December 2017) four upgrade scenarios were proposed. These upgrade scenarios are as follows:

Scenario 1: Roundabout control at Reservoir Road site access

Scenario 2: Increased seagull storage at Reservoir Road site access

Scenario 3: Signalisation of Reservoir Road site access

Scenario 4: Signalisation of Reservoir Road / Holbeche Road intersection

The strengths and weaknesses of each option are detailed in the following sections.

#### Scenario 1 - Roundabout control at Reservoir Road site access

A roundabout upgrade for the site access would improve the right turning movements at this intersection, however this option has two significant drawbacks. The geometry of the intersection would not permit the implementation of a two lane roundabout within the existing road reserve, making this option very much an impractical solution. In addition, a roundabout solution would not improve the pedestrian facilities in this location. As such, Scenario 1 has been dismissed as not practically viable.



#### Scenario 2 - Increased seagull storage at Reservoir Road site access

An increased seagull storage for vehicles turning right out of the site would improve the operation of this movement, allowing the right turn to be undertaken in two stages, significantly reducing the queue to leave the site. However, this option has not been favoured for two reasons. The increase in seagull storage shall do nothing to improve pedestrian facilities at this intersection. In addition, it was noted during the meeting that this arrangement is not favoured by the RMS as drivers potentially find the use of the seagull arrangement confusing.

#### Scenario 3 - Signalisation of Reservoir Road site access

It is noted this upgrade would provide two key benefits, the first being to improve access for the club precinct for vehicles whist the second important benefit is to provide much needed pedestrian facilities in this location, allowing safe crossing points for pedestrians to access public transport connections on both sides of Reservoir Road. It is anticipated this provision would benefit both residents and visitors to the precinct as well as the wider community generally.

In order to test this scenario a modelling assessment has been undertaken of the signal intersection, operating with a basic three phase arrangement (main road, side road and right turn arrow) and a 120 second cycle time, with the results presented in **Table 5** (The full outputs have been presented in **Appendix E**).

Table 5: Intersection Performance SIDRA Network: Future – Site Access Signal Upgrade

Intersection Description	Control Type	Model	Period	Degree of Saturation	Intersection Delay	Level of Service
	Reservoir Road / Signal Upgrade	AM	Existing	0.111	29.9	С
Reservoir Road /		7.00	Future	0.481	11.6	А
Site Access	Oignal Opgrade	DM	Existing	0.178	45.9	D
		PM	Future	0.588	11.2	А
		AM	Existing	0.151	29.9	С



			Future	0.177	29.9	С
Reservoir Road / Penny Place	Priority (Seagull) <sup>1</sup>		Existing	0.206	30.6	С
		PM	Future	0.271	36.5	С
		AM	Existing	0.179	5.4	А
Holbeche Road /	Priority (Left-in		Future	0.183	5.4	А
BWSC Access	BWSC Access Left-out) <sup>1</sup>	PM	Existing	0.163	5.4	А
		PIVI	Future	0.196	5.4	А
		АМ	Existing	0.316	11.2	А
Reservoir Road /	Roundabout <sup>1</sup>		Future	0.325	11.2	А
Holbeche Road		PM	Existing	0.319	10.4	А
			Future	0.372	10.5	А
Reservoir Road / Great Western		AM	Existing	0.917	60.7	Е
	Signals		Future <sup>2</sup>	0.929	61.1	E
Highway	Signals	PM	Existing	0.905	60.0	Е
		PM	Future <sup>2</sup>	0.968	66.9	E

Note 1: Results shown are for the movement with the highest delay, in accordance with RMS Guidelines.

Note 2: Intersection of Great Western Highway / Reservoir Road modelled with additional westbound right turn bay, in accordance with proposed future upgrade works.

It can be seen that the upgrade of the intersection produces good results with minimal delays and an excellent level of service.

On this basis, it is concluded that the traffic impacts of the proposed Seniors Living Village at Site B with the proposed upgrade are considered to be acceptable and the site shall operate satisfactorily whist providing an additional wider community benefit in the form of much needed pedestrian facilities at this location. This signal arrangement shall allow residents of the seniors living village, players accessing the sports fields and members and guests of the club to access the bus routes arriving from Blacktown



town centre which disembark on the eastern side of Reservoir Road. Currently, in order to make use of these routes to access the site, visitors are required to cross at the intersection of Reservoir Road and The Great Western Highway, a detour of approximately 600m.

#### Scenario 4 - Signalisation of Reservoir Road / Holbeche Road

A fourth scenario has been suggested by the RMS for modelling. It relates to the upgrade of the roundabout at Reservoir Road and Holbeche Road. This shall provide a benefit of creating gaps in the flow of traffic from the north, improving the likely hood of a vehicle finding a gap to exit site. This scenario has been modelled with the results presented in **Table 6** below (The full outputs have been presented in **Appendix F**):

Table 6: Intersection Performance SIDRA Network: Future – Signal Upgrade Holbeche Road

Intersection Description	Control Type	Model	Period	Degree of Saturation	Intersection Delay	Level of Service
		AM	Existing	0.111	29.9	С
Reservoir Road /	Priority		Future	0.185	32.3	С
Site Access	(Seagull) <sup>1</sup>	PM	Existing	0.178	45.9	D
		Pivi	Future	0.843	127.0	F
		AM Priority	Existing	0.151	29.9	С
Reservoir Road /	Priority		Future	0.182	30.7	С
Penny Place	(Seagull) <sup>1</sup>	DM	Existing	0.206	30.6	С
		PM	Future	0.283	38.1	С
		AM	Existing	0.179	5.4	А
Holbeche Road / P	Priority (Left-in	Aivi	Future	0.183	5.4	А
	Left-out) <sup>1</sup>	PM	Existing	0.163	5.4	А
		PIVI	Future	0.196	5.4	А



		AM	Existing	0.316	11.2	А
Reservoir Road /	Signal Upgrade	7 (101	Future	0.686	24.4	В
Holbeche Road	Oignal Opgrado	DM	Existing	0.319	10.4	А
		PM	Future	0.724	20.5	В
		АМ	Existing	0.917	60.7	E
Reservoir Road / Great Western Highway	Ciana ala		Future <sup>2</sup>	0.929	60.7	E
	Signals	РМ	Existing	0.905	60.0	E
			Future <sup>2</sup>	0.900	57.7	Е

Note 1: Results shown are for the movement with the highest delay, in accordance with RMS Guidelines.

Note 2: Intersection of Great Western Highway / Reservoir Road modelled with additional westbound right turn bay, in accordance with proposed future upgrade works.

The signalisation of the intersection of Reservoir Road and Holbeche Road does not result in an improvement in upstream performance for the intersection of Reservoir Road and the BWSC Access. Indeed, the movement parameters for the right turn approach at the BWSC Access during the PM peak period is identical to when there are no upgrades proposed at all. This indicates that the high delays are attributed to limited gap opportunities from the high number of northbound through movements on Reservoir Road during this peak period, rather than downstream queues from the Holbeche Road intersection preventing the right turn movements. On this basis, Scenario 3 remains the only option to achieve acceptable performance for the BWSC Access.

In addition, this proposal relies on the elderly residents of the ILUs being forced to quickly look left and right to judge a safe gap in the high volume traffic flow on Reservoir Road. This is considered an undesirable outcome as detailed further below.

Hence it is considered that of the four options considered, Scenario 3 is the preferred option for the upgrade of the precinct.



#### **Signal Warrants**

It is noted that the *RMS Traffic Signal Guide - Section 2 Warrants* provides a set of guidelines for the local traffic conditions that should be considered when assessing if a signal upgrade is warranted. The guide states that the warrants "should only be used as a guide" but provides the following set of criteria for consideration:

#### (a) Traffic Demand:

For each of four one-hour periods of an average day:

- (i) The major road flow exceeds 600 vehicles/hour in each direction; and
- (ii) The minor road flow exceeds 200 vehicles/hour in one direction

0R

#### (b) Continuous Traffic

For each of four one-hour periods of an average day

- (i) The major road flow exceeds 900 vehicles per/hour in each direction; and
- (ii) The minor road flow exceed 100 vehicle/hour in one direction; and
- (iii) The speed of traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and
- (iv) There is not any other nearby traffic control light site easily accessible to the minor road.

OR

#### (c) Pedestrian Safety:

For each of four one-hour periods of an average day

- (i) The pedestrian flow crossing the major road exceeds 150 persons/hour; and
- (ii) The major road flow exceeds 450 vehicles per/hour in each direction, or where there is a central median of at least 1.2m wide, 1000 vehicles per hour in each direction.

OR

#### (d) Pedestrian Safety - High Speed Road:

For each of four one-hour periods of an average day

- (i) The pedestrian flow crossing the major road exceeds 150 persons per hour; and
- (ii) The major road flow exceed 450 vehicles/ hour in each direction; and



(iii) The 85<sup>th</sup> percentile speed on the major road exceeds 75km/hr.

0R

#### (e) Crashes:

- (i) The intersection has been the site of an average of three or more reported two-away or casualty traffic accidents per year over a three year period, where the traffic accidents could have been prevented by a traffic control light; and
- (ii) The traffic flows are at least 80% of the appropriate flow warrants

In addition, the following RMS warrant for the installation of signalised pedestrian crossing facilities is considered relevant to this site:

If at least 50% of pedestrians using the crossing are elderly or people with disabilities and for each of two one-hour periods of an average day:

- (i) The pedestrian flow exceeds 50 persons/per hour; and
- (ii) The vehicular flow exceeds 600 vehicles per hour in each direction.

In order to assess the appropriateness of traffic signal at the intersection a survey of the access was undertaken under current conditions i.e. prior to the addition of the approved club expansion, the sports facilities at Site A and the Independent Living Units at Site B.

Under current conditions, on a typical Friday evening, over four separate hour periods, the traffic flows on Reservoir Road and the Site access were recorded as follows (the full survey results can be seen in **Appendix G**):

**Table 7: Existing Site Access Conditions** 

Time Period	Major Road SB Veh/hr	Major Road NB Veh/hr	Minor Road (One Direction)
16:00-17:00	1055	1370	111
17:00-18:00	967	1296	101
18:00-19:00	797	1140	88
19:00-20:00	616	839	92



It can be seen that even under the existing conditions the site meets the guidelines for *Warrant* (b) – *Continuous Traffic* in two of the four hours and is short by only a small number of vehicles in the latter two hours.

When the addition of the 540 trips per hour is added to the precinct following full development, as identified in Section 6.1, it is considered the traffic signals shall clearly be warranted at the site access under this provision.

In addition, it is considered noteworthy that the access shall be the main site access for up to 480 independent living units housing elderly residents.

Requiring these elderly residents to make use of an unsignalised access, forcing them to quickly judge gaps in oncoming traffic in both directions, is considered a highly unsafe outcome.

Furthermore as noted above, it is considered the ILU village, the expanded club and the sports facilities require pedestrian facilities to cross Reservoir Road in a convenient and practical location to make use of the public transport options on the eastern side of Reservoir Road connecting the site to Blacktown Town Centre.

Considering the high volume of elderly residents expected, the pedestrian crossing warrant listed above, requiring just 50 pedestrians crossing Reservoir Road in an hour is expected to easily be met in this location.

Hence the addition of traffic signals at this location is considered warranted due to the high volume of passing traffic at the site, the requirement for pedestrian facilities and the importance of a safe access arrangement for elderly drivers. It has been noted the existing site conditions meet the required warrants for signals in two of four hours whilst being marginally short in the following two hours. Hence the fully developed precinct shall meet the warrant guidelines for signals to be installed.

The installation of the signals shall be at the developer's expense and has been demonstrated to result in no adverse impacts on the network whilst providing a community benefit, as such the signalisation of the site access is recommended for adoption.



# 7. Access and Internal Design

#### 7.1 Access

The civil engineering design of the proposed signalised access arrangements shall be detailed at subsequent DA stage in conjunction with the RMS and Council. However, it is noteworthy that the geometry of the Reservoir Road intersection shall not require significant change to accommodate signal installation with large median islands in place.

### 7.2 Internal Design

The detailed design of the internal site layout shall be detailed at a subsequent DA stage. All internal roads and parking arrangements are to be designed in accordance with the requirements of AS2890 and SEPP Aged Care with the following characteristics are noteworthy:

# 7.3 Accessible Parking

It is noted Item 5 of Schedule 3 from SEPP (Housing for Seniors or People with a Disability) (2004) requires the following objects for car parking spaces for Seniors Living developments:

- Car parking spaces must comply with the requirements for parking for persons with a disability set out in AS 2890, and
- 5% of the total number of car parking spaces (or at least one space if there are fewer than 20 spaces) must be designed to enable the width of the spaces to be increased to 3.8 metres, and
- Any garage must have a power-operated roller door, or there must be a power point and an area for motor or control rods to enable a power-operated door to be installed at a later date.

The following aspects (and historiacal anomalies) are considered noteworthy when assessing the parking design against this requirement:



- AS2890.1 is referenced, and at the time when the SEPP (2004) was developed, TRAFFIX understands this to refer to the disabled access arrangements found in Clause 2.4.5 (and Appendix C) of AS2890.1 (1993). Hence, spaces with dimensions of 3.2 metres by 5.4 metres meet the requirement of AS2890.1 (1993) for people with disabilities as set out when the SEPP was developed;
- A 'shared area' as required of the current AS2890.6 (2009) was not required under the SEPP when applying the disabled space design referenced in AS2890.1 (1993).
- The application of the current design standard, AS2890.6 (2009) requires a disabled access space to have a designated shared spaces of 2.4m wide, protected by a bollard, alongside every vehicle space in the car park. TRAFFIX considers the application of this newer standard AS2890.6 (2009) to be an over design and unsuitable to the parking requirements of the SEPP (2004) when providing parking for independent living units.
- A strict application of the SEPP rates of 0.5 spaces per bedroom, designed to AS2890.6 (2009) standard would lead to the impractical arrangement of a requirement of an additional 'shared' spaces of dimensions 2.4m x 5.4m between every vehicle space.

In this regard it is considered the application of the disabled parking provisions of AS2890.1 (1993), as set out above, is the optimal arrangement for a development of this nature.

### 7.4 Parking Modules

In addition, the following aspects regarding the design are also considered noteworthy:

- The proposed design shows 12 additional spaces have been designed in accordance with a Class 3 user, being provided with a minimum space length of 5.4m a minimum width of 2.6m and a minimum aisle width of 5.8m, capable of accommodating additional visitors to site if required.
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Blind aisles are to extend a minimum of 1.0m beyond the last parking space.



### 7.5 Other Considerations

- All columns are required to be located outside of the parking space design envelope shown in Figure 5.2 of AS 2890.1 (2004).
- Appropriate visual splays are to be provided in accordance with the requirements of Figure 3.3 of AS2890.1 at all accesses.





## 8. Conclusion

#### In summary:

- A Site Compatibility Certificate is sought for a development scheme with potential for up to 480 Independent Living Units in 12 buildings and a Residential Aged Care Facility for up to 160 beds, all to be constructed on land designated as 'Site B' within the Blacktown Workers Sports Club site.
- A parking assessment taking into account the Blacktown Development Control Plan 2015 and State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 results in a requirement for a minimum of 491 parking spaces. The preliminary plans for the site indicates that sufficient area is available for basement level car parking with access to Penny Lane and other areas of the Blacktown Workers Sports Club.
- Future development on Site B has been estimated to generate 80 vehicle trips per hour during the AM peak period and 144 vehicle trips per hour during the PM peak period. Based on the distributions of these volumes across all site accesses, the traffic impacts of this assessment has been modelled using SIDRA for a worst case scenario involving other future developments on-site at the BWDC (the cumulative assessment), with the use of the proposed sports facilities at Site A and proposed developments at 'The Club' section taken into account.
- The results indicate that full development of Site B will result in minimal increases in delays for the wider network. An upgrade to the Reservoir Road access is proposed to provide traffic signals, including much needed pedestrian facilities. On this basis, the traffic impacts of the proposed Seniors Living Village at Site B are considered to be acceptable.

It is therefore concluded that the developments scheme on Site B envisaged under the Site Compatibility Certificate is supportable on traffic planning grounds and will operate satisfactorily with an upgraded site access on Reservoir Road.



# Appendix A

Site Photos



Intersection of Reservoir Road and Holbeche Road









Intersection of Reservoir Road and Penny Place



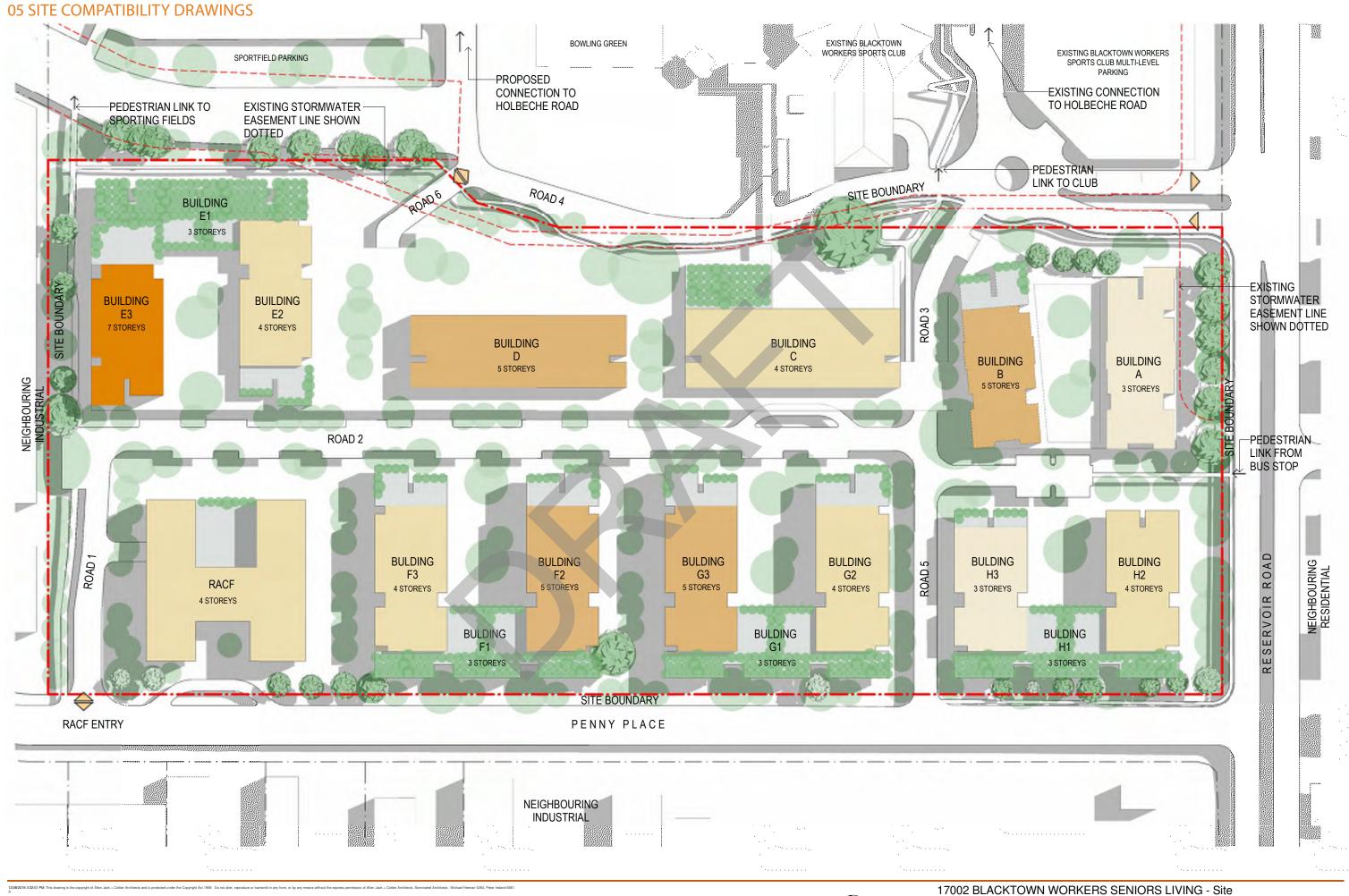








Masterplan









# Appendix C

SIDRA Intersection Modelling (Existing)

#### USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% E Qu	ack of eue	Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
South	: Site	Access	70	VCII/II	/0	V/C	300		VCII					KIII/II
1	L2	135	0.7	135	0.7	0.126	1.0	LOS A	0.5	3.4	0.32	0.21	0.32	29.9
Appro	ach	135	0.7	135	0.7	0.126	1.0	LOS A	0.5	3.4	0.32	0.21	0.32	29.9
East:	Holbed	che Road												
4	L2	116	0.0	116	0.0	0.179	5.4	LOS A	0.0	0.0	0.00	0.21	0.00	49.4
5	T1	534	12.2	534	12.2	0.179	0.0	LOSA	0.0	0.0	0.00	0.08	0.00	57.8
Appro	ach	650	10.0	650	10.0	0.179	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.3
West:	Holbe	che Road												
11	T1	456	11.6	456	11.6	0.126	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach	456	11.6	456	11.6	0.126	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1241	9.6	1241	9.6	0.179	0.6	NA	0.5	3.4	0.04	0.08	0.04	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.

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

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

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Move	ement	Perform	ance ·	- Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B: Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles   veh	Distance m		Rate	Cycles S	Speed km/h
South	: Rese	rvoir Road	t											
1	L2	414	10.4	414	10.4	0.370	4.2	LOS A	2.7	20.8	0.32	0.43	0.32	35.5
2	T1	673	7.1	673	7.1	0.370	4.2	LOS A	2.7	20.8	0.34	0.41	0.34	54.3
Appro	ach	1087	8.4	1087	8.4	0.370	4.2	LOS A	2.7	20.8	0.33	0.42	0.33	51.2
North	: Rese	rvoir Road												
8	T1	646	6.3	646	6.3	0.316	5.2	LOS A	2.0	14.7	0.47	0.54	0.47	48.7
9	R2	117	3.4	117	3.4	0.316	11.2	LOS A	1.8	13.5	0.48	0.61	0.48	47.5
Appro	ach	763	5.9	763	5.9	0.316	6.1	LOS A	2.0	14.7	0.47	0.55	0.47	48.5
West	Holbe	che Road												
10	L2	101	9.9	101	9.9	0.147	5.8	LOS A	0.6	4.9	0.58	0.67	0.58	49.2
12	R2	335	14.0	335	14.0	0.335	10.0	LOS A	1.8	14.3	0.62	0.78	0.62	26.1
Appro	ach	436	13.1	436	13.1	0.335	9.0	LOSA	1.8	14.3	0.61	0.75	0.61	34.5
All Ve	hicles	2286	8.4	2286	8.4	0.370	5.8	LOS A	2.7	20.8	0.43	0.53	0.43	47.5

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.

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

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

#### 

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1
Output Phase Sequence: A, D, E, G

Mov	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A	
טו		Total	HV	Total	HV	Salli	Delay	Service	Vehicles [		Queueu	Rate	Cycles S	e Speed
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
Sout	h: Rese	ervior Road	t											
1	L2	237	16.0	237	16.0	0.142	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	56.1
2	T1	555	10.5	555	10.5	0.912	73.5	LOS F	26.8	204.6	0.97	1.05	1.30	24.3
3	R2	221	11.3	221	11.3	0.900	84.3	LOS F	17.2	132.4	1.00	0.99	1.33	26.7
Appr	oach	1013	11.9	1013	11.9	0.912	60.0	LOS E	26.8	204.6	0.75	0.91	1.00	30.9
East	Great	Western H	łw											
4	L2	584	5.7	584	5.7	0.617	31.2	LOS C	22.0	161.7	0.75	0.91	0.98	42.7
5	T1	764	6.4	764	6.4	0.545	49.1	LOS D	15.2	112.4	0.92	0.78	0.92	38.7
6	R2	250	6.4	250	6.4	0.673	62.9	LOS E	15.9	117.2	0.98	0.84	0.98	15.0
Appr	oach	1598	6.1	1598	6.1	0.673	44.7	LOS D	22.0	161.7	0.87	0.84	0.95	37.1
North	n: Rese	rvior Road												
7	L2	155	6.5	155	6.5	0.898	76.3	LOS F	28.0	211.8	1.00	1.02	1.24	17.5
8	T1	577	11.8	577	11.8	0.898	70.6	LOS F	28.2	217.7	1.00	1.04	1.24	27.5
9	R2	176	8.0	176	8.0	0.705	69.8	LOS E	11.9	89.0	1.00	0.85	1.05	27.4
Appr	oach	908	10.1	908	10.1	0.898	71.4	LOS F	28.2	217.7	1.00	1.00	1.20	26.0
West	t: Great	: Western H	-lw											
10	L2	261	7.3	261	7.3	0.254	19.0	LOS B	7.7	57.6	0.50	0.73	0.50	50.5
11	T1	1296	7.0	1296	7.0	0.917	72.1	LOS F	34.0	252.3	1.00	1.04	1.26	31.2
12	R2	632	11.7	632	11.7	0.897	80.5	LOS F	24.6	189.6	1.00	0.96	1.27	33.9
Appr	oach	2189	8.4	2189	8.4	0.917	68.2	LOS E	34.0	252.3	0.94	0.98	1.17	33.2
All V	ehicles	5708	8.7	5708	8.7	0.917	60.7	LOS E	34.0	252.3	0.90	0.93	1.09	32.4

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.

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	51.5	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	50	59.6	LOS E	0.2	0.2	0.92	0.92
P3	North Full Crossing	50	50.7	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	50	64.3	LOS F	0.2	0.2	0.96	0.96

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.



Site: 206a [06a. Reservoir Road - Site Access EX AM]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total		Total	HV				Vehicles	Distance		Rate	Cycles S	
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Road	t											
1	L2	25	12.0	25	12.0	0.315	4.8	LOS A	0.0	0.0	0.00	0.03	0.00	29.5
2	T1	1127	9.8	1127	9.8	0.315	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.8
Appro	oach	1152	9.8	1152	9.8	0.315	0.1	NA	0.0	0.0	0.00	0.01	0.00	56.9
North	: Rese	rvoir Road	l											
9	R2	8	0.0	8	0.0	0.025	15.9	LOS B	0.1	0.6	0.78	0.91	0.78	18.4
Appro	oach	8	0.0	8	0.0	0.025	15.9	NA	0.1	0.6	0.78	0.91	0.78	18.4
West	: Site A	ccess												
10	L2	19	10.5	19	10.5	0.028	7.8	LOS A	0.1	0.8	0.54	0.91	0.54	13.0
11	T1	17	0.0	17	0.0	0.111	29.9	LOS C	0.4	2.5	0.88	1.00	0.88	7.1
Appro	oach	36	5.6	36	5.6	0.111	18.2	LOS B	0.4	2.5	0.70	0.95	0.70	9.4
All Ve	hicles	1196	9.6	1196	9.6	0.315	0.8	NA	0.4	2.5	0.03	0.05	0.03	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.

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

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

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles [	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Road	dName												
8	T1	1001	9.5	1001	9.5	0.272	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1001	9.5	1001	9.5	0.272	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Road	Name												
12	R2	17	0.0	17	0.0	0.032	6.8	LOS A	0.1	0.7	0.64	0.81	0.64	7.4
Appr	oach	17	0.0	17	0.0	0.032	6.8	LOS A	0.1	0.7	0.64	0.81	0.64	7.4
All Ve	ehicles	1018	9.3	1018	9.3	0.272	0.1	NA	0.1	0.7	0.01	0.01	0.01	58.9

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	n: Rese	rvoir Road												
7a	L1	1054	9.5	1054	9.5	0.296	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	33.2
9a	R1	8	0.0	8	0.0	0.296	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.2
Appr	oach	1062	9.4	1062	9.4	0.296	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.2
South	hWest:	Reservoir	Road											
30a	L1	1206	9.8	1206	9.8	0.337	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appr	oach	1206	9.8	1206	9.8	0.337	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	ehicles	2268	9.6	2268	9.6	0.337	5.0	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

•• Network: 1 [EX AM - Holbeche + Reservoir - Table 2]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand Total		Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Bac Queud Vehicles Di	е	Prop. Queued	Effective Stop Rate	Aver. A No. Cycles S	Averag e Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Road	t											
1	L2	57	14.0	57	14.0	0.309	5.7	LOS A	0.0	0.0	0.00	0.06	0.00	55.6
2	T1	1066	10.3	1066	10.3	0.309	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.6
Appro	oach	1123	10.5	1123	10.5	0.309	0.3	NA	0.0	0.0	0.00	0.03	0.00	58.1
North	: Rese	rvoir Road	l											
9	R2	71	7.0	71	7.0	0.169	13.0	LOS A	0.6	4.7	0.73	0.88	0.73	40.8
Appro	oach	71	7.0	71	7.0	0.169	13.0	NA	0.6	4.7	0.73	0.88	0.73	40.8
West	: Penn	y Lane												
10	L2	78	12.8	78	12.8	0.099	11.6	LOS A	0.4	3.4	0.53	0.91	0.53	44.2
11	T1	27	22.2	27	22.2	0.151	29.9	LOS C	0.5	4.4	0.85	1.01	0.85	30.4
Appro	oach	105	15.2	105	15.2	0.151	16.3	LOS B	0.5	4.4	0.61	0.93	0.61	39.6
All Ve	hicles	1299	10.7	1299	10.7	0.309	2.3	NA	0.6	4.7	0.09	0.15	0.09	51.9

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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place <sup>++</sup> Network: 1 [EX AM - Holbeche + Reservoir - Median Storage EX AM] Table 2]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance -	- Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	ervoir Road	RT St	orage										
8	T1	956	9.9	956	9.9	0.346	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appro	oach	956	9.9	956	9.9	0.346	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Rese	rvoir Road	RT Sto	orage										
12	R2	27	22.2	27	22.2	0.081	8.0	LOS A	0.2	1.5	0.67	0.84	0.67	6.4
Appro	oach	27	22.2	27	22.2	0.081	8.0	LOS A	0.2	1.5	0.67	0.84	0.67	6.4
All Ve	ehicles	983	10.3	983	10.3	0.346	0.2	NA	0.2	1.5	0.02	0.02	0.02	57.2

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.

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Perform	ance	- Vehi	cles									
Mov	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delav	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1006	9.9	1006	9.9	0.303	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
9a	R1	80	6.6	80	6.6	0.303	3.9	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
Appro	oach	1086	9.7	1086	9.7	0.303	4.5	NA	0.0	0.0	0.00	0.58	0.00	31.0
South	West:	Reservoir	Road											
30a	L1	1204	10.5	1204	10.5	0.338	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1204	10.5	1204	10.5	0.338	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	hicles	2291	10.1	2291	10.1	0.338	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.3

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.

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

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

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

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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:02:22 PM
Project: \\192.168.3.248\\tdata\Synergy\Projects\15\15.533\\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8

#### **USER REPORT FOR NETWORK SITE**

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles D	Distance m		Rate	Cycles S	Speed km/h
South	n: Site	Access												
1	L2	111	0.9	111	0.9	0.101	0.9	LOS A	0.4	2.7	0.30	0.18	0.30	29.9
Appro	oach	111	0.9	111	0.9	0.101	0.9	LOS A	0.4	2.7	0.30	0.18	0.30	29.9
East:	Holbe	che Road												
4	L2	108	1.9	108	1.9	0.163	5.4	LOS A	0.0	0.0	0.00	0.21	0.00	49.0
5	T1	493	9.1	493	9.1	0.163	0.0	LOSA	0.0	0.0	0.00	0.08	0.00	57.8
Appro	oach	601	7.8	601	7.8	0.163	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.3
West	: Holbe	che Road												
11	T1	392	4.8	392	4.8	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	oach	392	4.8	392	4.8	0.104	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1104	6.1	1104	6.1	0.163	0.6	NA	0.4	2.7	0.03	0.08	0.03	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.

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.

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

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

♥ Site: 205 [05. Reservoir Road - Holbeche Road EX PM]

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Mov	ement	t Performa	ince	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back Queue	of	Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total		Total	HV				Vehicles Dista	ance		Rate	Cycles S	
Caush	. Daar	veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
		ervoir Road												
1	L2	469	9.6	469	9.6	0.419	4.2	LOS A	3.3	24.5	0.31	0.43	0.31	35.7
2	T1	800	3.6	800	3.6	0.419	4.2	LOS A	3.3	24.5	0.33	0.40	0.33	54.5
Appro	oach	1269	5.8	1269	5.8	0.419	4.2	LOS A	3.3	24.5	0.32	0.41	0.32	51.5
North	: Rese	rvoir Road												
8	T1	767	3.1	767	3.1	0.319	4.5	LOS A	2.0	14.4	0.37	0.47	0.37	49.7
9	R2	107	1.9	107	1.9	0.319	10.4	LOS A	1.9	13.6	0.39	0.53	0.39	48.7
Appro	oach	874	3.0	874	3.0	0.319	5.2	LOS A	2.0	14.4	0.37	0.48	0.37	49.5
West	: Holbe	eche Road												
10	L2	154	1.9	154	1.9	0.183	5.4	LOS A	0.9	6.3	0.61	0.68	0.61	50.0
12	R2	212	7.5	212	7.5	0.213	10.0	LOS A	1.1	8.3	0.61	0.76	0.61	26.2
Appro	oach	366	5.2	366	5.2	0.213	8.0	LOSA	1.1	8.3	0.61	0.73	0.61	39.9
All Ve	hicles	2509	4.7	2509	4.7	0.419	5.1	LOS A	3.3	24.5	0.38	0.48	0.38	49.2

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.

Roundabout Capacity Model: SIDRA Standard.

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

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

#### 

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified Phase Sequence: Variable Phasing Reference Phase: Phase A Input Phase Sequence: A, D, E, G, G1 Output Phase Sequence: A, D, E, G, G1

Mov	/ement	Perform	ance	- Vehi	cles									
Mov	Turn	Demand	Flows	Arrival	Flows	Deg.	Average		95% Ba		Prop.	Effective	Aver. /	
ID		Total	ΗV	Total	HV	Satn	Delay	Service	Que Vehicles [		Queued	Stop Rate	No. Cycles S	e Sneed
		veh/h		veh/h	%	v/c	sec		veh	m		rato	Oyoloo C	km/h
Sout	th: Rese	ervior Road	t											
1	L2	180	21.1	180	21.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	55.9
2	T1	659	5.9	659	5.9	0.895	66.6	LOS E	28.3	208.1	0.97	1.01	1.23	25.8
3	R2	186	4.8	186	4.8	0.806	75.6	LOS F	13.3	97.1	1.00	0.90	1.17	28.5
Аррі	roach	1025	8.4	1025	8.4	0.895	57.6	LOS E	28.3	208.1	0.80	0.91	1.00	30.8
East	:: Great	Western H	łw											
4	L2	594	2.5	594	2.5	0.602	28.7	LOS C	22.9	164.1	0.73	0.87	0.89	43.9
5	T1	1169	4.0	1169	4.0	0.846	60.9	LOSE	27.6	200.1	1.00	0.95	1.13	34.4
6	R2	438	3.4	438	3.4	0.905	75.7	LOS F	33.7	243.0	1.00	0.96	1.22	12.8
Appı	roach	2201	3.5	2201	3.5	0.905	55.2	LOS D	33.7	243.0	0.93	0.93	1.08	32.9
Nort	h: Rese	rvior Road	l											
7	L2	141	2.1	141	2.1	0.817	62.1	LOS E	26.2	190.7	1.00	0.93	1.09	20.6
8	T1	634	6.2	634	6.2	0.817	56.8	LOS E	26.5	195.2	1.00	0.93	1.09	30.7
9	R2	197	7.6	197	7.6	0.874	81.6	LOS F	14.9	111.2	1.00	0.97	1.29	24.9
Аррі	roach	972	5.9	972	5.9	0.874	62.6	LOS E	26.5	195.2	1.00	0.94	1.13	28.3
Wes	t: Great	: Western I	Hw											
10	L2	247	5.3	247	5.3	0.291	27.1	LOS B	9.6	70.1	0.64	0.76	0.64	43.7
11	T1	924	2.6	924	2.6	0.890	72.6	LOS F	23.3	167.1	1.00	0.99	1.25	31.0
12	R2	578	9.2	578	9.2	0.835	72.6	LOS F	20.8	157.2	1.00	0.91	1.16	35.6
Appı	roach	1749	5.1	1749	5.1	0.890	66.2	LOS E	23.3	167.1	0.95	0.93	1.13	33.8
All V	ehicles	5947	5.2	5947	5.2	0.905	60.0	LOS E	33.7	243.0	0.92	0.93	1.09	32.0

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.

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	52.4	LOS E	0.2	0.2	0.87	0.87
P2	East Full Crossing	50	55.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	50	59.6	LOS E	0.2	0.2	0.92	0.92
P4	West Full Crossing	50	60.5	LOS F	0.2	0.2	0.93	0.93

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



Site: 206a [06a. Reservoir Road - Site Access EX PM]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand Total		Arrival Total	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Queu Vehicles D	ie	Prop. Queued	Effective Stop Rate	Aver. A No. Cycles S	Averag e Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Road	t											
1	L2	48	0.0	48	0.0	0.366	4.8	LOSA	0.0	0.0	0.00	0.04	0.00	29.5
2	T1	1322	6.6	1322	6.6	0.366	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.0
Appro	oach	1370	6.4	1370	6.4	0.366	0.2	NA	0.0	0.0	0.00	0.02	0.00	55.1
North	: Rese	rvoir Road												
9	R2	17	0.0	17	0.0	0.078	21.5	LOS B	0.2	1.7	0.86	0.94	0.86	15.6
Appro	oach	17	0.0	17	0.0	0.078	21.5	NA	0.2	1.7	0.86	0.94	0.86	15.6
West	: Site A	ccess												
10	L2	21	0.0	21	0.0	0.032	7.9	LOS A	0.1	0.8	0.56	0.92	0.56	12.8
11	T1	17	0.0	17	0.0	0.178	45.9	LOS D	0.6	3.9	0.93	1.01	0.95	4.8
Appro	oach	38	0.0	38	0.0	0.178	24.9	LOS B	0.6	3.9	0.73	0.96	0.74	7.4
All Ve	hicles	1425	6.1	1425	6.1	0.366	1.1	NA	0.6	3.9	0.03	0.06	0.03	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

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

++ Network: 6 [EX PM - Holbeche + Reservoir]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles [	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Road	dName												
8	T1	1043	4.3	1043	4.3	0.275	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1043	4.3	1043	4.3	0.275	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Road	Name												
12	R2	17	0.0	17	0.0	0.033	7.0	LOS A	0.1	0.7	0.65	0.82	0.65	7.2
Appr	oach	17	0.0	17	0.0	0.033	7.0	LOS A	0.1	0.7	0.65	0.82	0.65	7.2
All Ve	ehicles	1060	4.2	1060	4.2	0.275	0.1	NA	0.1	0.7	0.01	0.01	0.01	58.9

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1098	4.3	1098	4.3	0.300	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	33.2
9a	R1	18	0.0	18	0.0	0.300	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.3
Appro	oach	1116	4.2	1116	4.2	0.300	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.2
South	West:	Reservoir I	Road											
30a	L1	1414	6.5	1414	6.5	0.386	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appro	oach	1414	6.5	1414	6.5	0.386	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	hicles	2529	5.5	2529	5.5	0.386	4.9	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

Site: 207a [07a. Reservoir Road - Penny Lane EX PM]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand				Deg. Satn	Average Delay	Level of Service	95% Bad Queu	ie	Prop. Queued	Effective Stop	No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	000		Vehicles D veh			Rate	Cycles S	Speed km/h
South	n: Rese	ervoir Road		ven/m	70	V/C	sec	_	ven	m	_		_	KIII/II
1	L2	26	11.5	26	11.5	0.356	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.2
2	T1	1306	6.4	1306	6.4	0.356	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Appro	ach	1332	6.5	1332	6.5	0.356	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2
North	: Rese	rvoir Road												
9	R2	36	8.3	36	8.3	0.107	15.3	LOS B	0.4	2.9	0.78	0.90	0.78	38.9
Appro	ach	36	8.3	36	8.3	0.107	15.3	NA	0.4	2.9	0.78	0.90	0.78	38.9
West	Penny	y Lane												
10	L2	56	3.6	56	3.6	0.077	12.0	LOS A	0.3	2.4	0.58	0.90	0.58	43.5
11	T1	37	5.4	37	5.4	0.206	30.6	LOSC	0.7	5.5	0.87	1.01	0.91	29.6
Appro	ach	93	4.3	93	4.3	0.206	19.4	LOS B	0.7	5.5	0.69	0.95	0.71	36.7
All Ve	hicles	1461	6.4	1461	6.4	0.356	1.7	NA	0.7	5.5	0.06	0.09	0.06	53.2

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.

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.

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

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

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance ·	- Vehic	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles [	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	rvoir Road	RT St	orage										
8	T1	983	5.5	983	5.5	0.307	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	983	5.5	983	5.5	0.307	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Rese	rvoir Road	RT Sto	orage										
12	R2	37	5.4	37	5.4	0.083	7.0	LOS A	0.2	1.6	0.64	0.83	0.64	7.2
Appr	oach	37	5.4	37	5.4	0.083	7.0	LOS A	0.2	1.6	0.64	0.83	0.64	7.2
All Ve	ehicles	1020	5.5	1020	5.5	0.307	0.3	NA	0.2	1.6	0.02	0.03	0.02	56.8

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehic	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. <i>A</i> No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles I veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1035	5.5	1035	5.5	0.291	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	30.9
9a	R1	38	8.3	38	8.3	0.291	3.9	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
Appro	oach	1073	5.6	1073	5.6	0.291	4.5	NA	0.0	0.0	0.00	0.58	0.00	30.9
South	nWest:	Reservoir I	Road											
30a	L1	1437	6.3	1437	6.3	0.392	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1437	6.3	1437	6.3	0.392	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2509	6.0	2509	6.0	0.392	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.4

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.

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

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

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

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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 4:55:07 PM Project: \192.168.3.248\tdata\Synergy\Projects\15\15.533\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8



# Appendix D

SIDRA Intersection Modelling (Future – No Upgrades)

#### USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Perform	ance ·	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
South	n: Site	Access												
1	L2	148	0.7	148	0.7	0.137	1.8	LOS A	0.5	3.7	0.32	0.32	0.32	32.7
Appro	oach	148	0.7	148	0.7	0.137	1.8	LOS A	0.5	3.7	0.32	0.32	0.32	32.7
East:	Holbe	che Road												
4	L2	128	0.0	128	0.0	0.183	5.4	LOS A	0.0	0.0	0.00	0.23	0.00	49.1
5	T1	536	12.1	536	12.1	0.183	0.0	LOSA	0.0	0.0	0.00	0.09	0.00	57.7
Appro	oach	664	9.8	664	9.8	0.183	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.1
West	: Holbe	che Road												
11	T1	456	11.6	456	11.6	0.126	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	oach	456	11.6	456	11.6	0.126	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1268	9.4	1268	9.4	0.183	0.8	NA	0.5	3.7	0.04	0.10	0.04	51.0

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.

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

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

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Move	ement	Perform	ance ·	- Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles I veh	Distance m		Rate	Cycles S	Speed km/h
South	ı: Rese	rvoir Road	t											
1	L2	415	10.4	415	10.4	0.381	4.3	LOS A	2.9	21.6	0.34	0.44	0.34	35.2
2	T1	694	6.9	694	6.9	0.381	4.3	LOS A	2.9	21.6	0.36	0.42	0.36	54.2
Appro	ach	1109	8.2	1109	8.2	0.381	4.3	LOS A	2.9	21.6	0.35	0.43	0.35	51.1
North	: Rese	rvoir Road												
8	T1	650	6.3	650	6.3	0.325	5.2	LOS A	2.1	15.2	0.47	0.54	0.47	48.6
9	R2	129	3.1	129	3.1	0.325	11.2	LOS A	1.9	13.9	0.48	0.62	0.48	47.3
Appro	ach	779	5.8	779	5.8	0.325	6.2	LOS A	2.1	15.2	0.47	0.55	0.47	48.4
West	Holbe	che Road												
10	L2	101	9.9	101	9.9	0.150	5.8	LOS A	0.7	5.0	0.58	0.68	0.58	49.1
12	R2	337	13.9	337	13.9	0.342	10.0	LOS A	1.9	14.6	0.63	0.79	0.63	26.1
Appro	ach	438	13.0	438	13.0	0.342	9.1	LOSA	1.9	14.6	0.62	0.76	0.62	34.4
All Ve	hicles	2326	8.3	2326	8.3	0.381	5.8	LOS A	2.9	21.6	0.44	0.53	0.44	47.4

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.

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

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

Site: 206a [06a. Reservoir Road - Site Access FU AM]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	t Perform	nance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. A	Averag e
		Total	HV	Total	HV				Vehicles	Distance		Rate	Cycles S	Speed
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Roa	d											
1	L2	39	7.7	39	7.7	0.320	4.8	LOSA	0.0	0.0	0.00	0.04	0.00	29.4
2	T1	1135	9.7	1135	9.7	0.320	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
Appro	oach	1174	9.6	1174	9.6	0.320	0.2	NA	0.0	0.0	0.00	0.02	0.00	55.4
North	: Rese	rvoir Road	t											
9	R2	14	0.0	14	0.0	0.046	16.5	LOS B	0.2	1.1	0.80	0.91	0.80	21.1
Appro	oach	14	0.0	14	0.0	0.046	16.5	NA	0.2	1.1	0.80	0.91	0.80	21.1
West	: Site A	ccess												
10	L2	33	6.1	33	6.1	0.046	9.9	LOS A	0.2	1.2	0.54	0.92	0.54	15.8
11	T1	27	0.0	27	0.0	0.185	32.3	LOSC	0.6	4.3	0.89	1.01	0.92	6.6
Appro	oach	60	3.3	60	3.3	0.185	20.0	LOS B	0.6	4.3	0.70	0.96	0.71	9.8
All Ve	ehicles	1248	9.2	1248	9.2	0.320	1.3	NA	0.6	4.3	0.04	0.07	0.04	46.3

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.

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

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

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehic	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Road	Name												
8	T1	1001	9.5	1001	9.5	0.272	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1001	9.5	1001	9.5	0.272	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Road	Name												
12	R2	27	0.0	27	0.0	0.051	6.9	LOS A	0.2	1.1	0.64	0.83	0.64	7.3
Appr	oach	27	0.0	27	0.0	0.051	6.9	LOS A	0.2	1.1	0.64	0.83	0.64	7.3
All Ve	ehicles	1028	9.2	1028	9.2	0.272	0.2	NA	0.2	1.1	0.02	0.02	0.02	58.2

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.

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Turn Demand Flows Arrival Flows			Deg. Satn	Average Delay	Level of Service			Prop. Queued	Effective Stop	Aver. Averag No. e		
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles [	Distance m		Rate	Cycles S	Speed km/h
North: Reservoir Road														
7a	L1	1054	9.5	1054	9.5	0.298	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	33.2
9a	R1	15	0.0	15	0.0	0.298	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.3
Approach		1068	9.4	1068	9.4	0.298	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.2
SouthWest: Reservoir Road														
30a	L1	1229	9.6	1229	9.6	0.343	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appro	oach	1229	9.6	1229	9.6	0.343	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	ehicles	2298	9.5	2298	9.5	0.343	5.0	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

•• Network: 2 [FU AM - Holbeche + Reservoir -Table 4 ]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total	HV	Total	HV	Deg. Satn	Average Delay	Level of Service	95% Bac Queud Vehicles Di	e stance	Prop. Queued	Effective Stop Rate	Aver. A No. Cycles S	
South	n: Rese	veh/h ervoir Road		veh/h	%	v/c	sec		veh	m				km/h
1	L2	68	11.8	68	11.8	0.315	5.7	LOSA	0.0	0.0	0.00	0.07	0.00	55.6
2	T1	1080	10.2	1080	10.2	0.315	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.4
Appro	oach	1148	10.3	1148	10.3	0.315	0.4	NA	0.0	0.0	0.00	0.04	0.00	57.9
North: Reservoir Road														
9	R2	71	7.0	71	7.0	0.177	13.5	LOS A	0.7	4.9	0.75	0.89	0.75	40.4
Appro	oach	71	7.0	71	7.0	0.177	13.5	NA	0.7	4.9	0.75	0.89	0.75	40.4
West: Penny Lane														
10	L2	86	11.6	86	11.6	0.109	11.6	LOS A	0.5	3.7	0.54	0.91	0.54	44.2
11	T1	32	18.8	32	18.8	0.182	30.7	LOS C	0.6	5.2	0.86	1.01	0.87	29.9
Appro	oach	118	13.6	118	13.6	0.182	16.8	LOS B	0.6	5.2	0.62	0.94	0.63	39.1
All Ve	ehicles	1337	10.4	1337	10.4	0.315	2.5	NA	0.7	5.2	0.09	0.16	0.10	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.

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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place <sup>++</sup> Network: 2 [FU AM - Holbeche + Reservoir - Median Storage FU AM]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance -	· Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	rvoir Road	RT Sto	orage										
8	T1	966	9.8	966	9.8	0.346	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appro	oach	966	9.8	966	9.8	0.346	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Rese	rvoir Road	RT Sto	orage										
12	R2	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
Appro	oach	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
All Ve	ehicles	998	10.1	998	10.1	0.346	0.3	NA	0.2	1.7	0.02	0.03	0.02	56.8

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles I	Distance m		Rate	Cycles S	Speed km/h
North	n: Rese	rvoir Road												
7a	L1	1017	9.8	1017	9.8	0.306	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
9a	R1	80	6.6	80	6.6	0.306	3.9	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
Appro	oach	1097	9.6	1097	9.6	0.306	4.5	NA	0.0	0.0	0.00	0.58	0.00	31.0
South	nWest:	Reservoir	Road											
30a	L1	1227	10.3	1227	10.3	0.344	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1227	10.3	1227	10.3	0.344	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2324	10.0	2324	10.0	0.344	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.3

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.

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

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

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1 Output Phase Sequence: A, D, E, G

Mov	ement	t Perform	ance	- Vehi	cles									
Mov	Turn	Demand	Flows	Arrival	Flows	Deg.	Average		95% Ba		Prop.	Effective		Averag
ID		Total	LI\ /	Total	HV	Satn	Delay	Service	Queu Vehicles D		Queued	Stop	No.	e
		veh/h		veh/h	пv %	v/c	sec		venicies D	istance m		Rate	Cycles S	km/h
Sout	h: Rese	ervior Road				., -								
1	L2	237	16.0	237	16.0	0.142	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	56.1
2	T1	568	10.2	568	10.2	0.907	71.8	LOS F	27.0	205.3	0.97	1.04	1.28	24.7
3	R2	221	11.3	221	11.3	0.900	84.3	LOSF	17.2	132.4	1.00	1.00	1.33	26.8
Appr	oach	1026	11.8	1026	11.8	0.907	59.2	LOS E	27.0	205.3	0.75	0.91	1.00	31.1
East	Great	Western H	łw											
4	L2	584	5.7	584	5.7	0.617	31.2	LOS C	22.0	161.8	0.75	0.91	0.98	42.7
5	T1	764	6.4	764	6.4	0.545	49.1	LOSD	15.2	112.4	0.92	0.78	0.92	38.7
6	R2	256	6.3	256	6.3	0.356	59.5	LOS E	7.6	55.8	0.91	0.79	0.91	15.6
Appr	oach	1604	6.1	1604	6.1	0.617	44.2	LOS D	22.0	161.8	0.86	0.83	0.94	37.2
North	n: Rese	rvior Road	l											
7	L2	158	6.3	158	6.3	0.884	73.1	LOS F	27.8	209.9	1.00	1.00	1.21	18.0
8	T1	586	11.6	586	11.6	0.884	67.4	LOS E	28.0	215.6	1.00	1.02	1.21	28.2
9	R2	179	7.8	179	7.8	0.716	70.2	LOS E	12.2	90.9	1.00	0.85	1.06	27.3
Appr	oach	923	10.0	923	10.0	0.884	68.9	LOS E	28.0	215.6	1.00	0.98	1.18	26.6
West	: Great	Western I	Hw											
10	L2	267	7.1	267	7.1	0.238	15.1	LOS B	6.4	47.8	0.42	0.71	0.42	54.4
11	T1	1296	7.0	1296	7.0	0.917	72.1	LOS F	34.0	252.3	1.00	1.04	1.26	31.2
12	R2	632	11.7	632	11.7	0.929	88.4	LOS F	26.0	200.5	1.00	0.99	1.35	32.3
Appr	oach	2195	8.4	2195	8.4	0.929	69.9	LOS E	34.0	252.3	0.93	0.98	1.18	32.7
All V	ehicles	5748	8.6	5748	8.6	0.929	60.7	LOS E	34.0	252.3	0.89	0.93	1.08	32.4

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.

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	51.5	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	50	59.6	LOS E	0.2	0.2	0.92	0.92
P3	North Full Crossing	50	50.7	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	50	63.3	LOS F	0.2	0.2	0.95	0.95

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.

#### SIDRA INTERSECTION 8.0 | Copyright © 2000-2018 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:03:41 PM
Project: \\192.168.3.248\tdata\Synergy\Projects\15\15.533\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8



### USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles	Speed km/h
South	: Site	Access												
1	L2	144	0.7	144	0.7	0.124	2.5	LOS A	0.5	3.3	0.25	0.37	0.25	36.6
Appro	ach	144	0.7	144	0.7	0.124	2.5	LOS A	0.5	3.3	0.25	0.37	0.25	36.6
East:	Holbe	che Road												
4	L2	224	0.9	224	0.9	0.196	5.4	LOS A	0.0	0.0	0.00	0.36	0.00	46.4
5	T1	499	9.0	499	9.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	57.4
Appro	ach	723	6.5	723	6.5	0.196	1.7	NA	0.0	0.0	0.00	0.18	0.00	54.0
West:	Holbe	che Road												
11	T1	392	4.8	392	4.8	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach	392	4.8	392	4.8	0.104	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1259	5.3	1259	5.3	0.196	1.2	NA	0.5	3.3	0.03	0.15	0.03	51.3

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.

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

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

# Site: 205 [05. Reservoir Road - Holbeche Road FU PM]

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Mov	ement	Performa	nce	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles	Speed km/h
South	n: Rese	ervoir Road												
1	L2	474	9.5	474	9.5	0.482	4.9	LOS A	4.0	29.9	0.48	0.50	0.48	33.4
2	T1	852	3.4	852	3.4	0.482	5.0	LOS A	4.0	29.9	0.50	0.50	0.50	53.1
Appro	oach	1326	5.6	1326	5.6	0.482	4.9	LOS A	4.0	29.9	0.49	0.50	0.49	50.0
North	: Rese	rvoir Road												
8	T1	789	3.0	789	3.0	0.372	4.6	LOS A	2.5	18.0	0.40	0.49	0.40	49.2
9	R2	223	0.9	223	0.9	0.372	10.5	LOS A	2.4	16.8	0.41	0.59	0.41	47.4
Appro	oach	1012	2.6	1012	2.6	0.372	5.9	LOS A	2.5	18.0	0.40	0.51	0.40	48.8
West	: Holbe	che Road												
10	L2	154	1.9	154	1.9	0.198	5.5	LOS A	1.0	7.0	0.65	0.72	0.65	49.7
12	R2	221	7.2	221	7.2	0.237	10.1	LOS A	1.3	9.5	0.66	0.80	0.66	25.9
Appro	oach	375	5.1	375	5.1	0.237	8.2	LOSA	1.3	9.5	0.65	0.77	0.65	39.4
All Ve	ehicles	2713	4.4	2713	4.4	0.482	5.8	LOSA	4.0	29.9	0.48	0.54	0.48	48.2

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.

Roundabout Capacity Model: SIDRA Standard.

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

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

Site: 206a [06a. Reservoir Road - Site Access FU PM]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand Total		Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Ba Queu Vehicles D	ie	Prop. Queued	Effective Stop Rate	Aver. A No. Cycles S	Averag e Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Road	t											
1	L2	136	0.0	136	0.0	0.392	4.8	LOSA	0.0	0.0	0.00	0.11	0.00	28.5
2	T1	1330	6.5	1330	6.5	0.392	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	55.4
Appro	oach	1466	5.9	1466	5.9	0.392	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.0
North	: Rese	rvoir Road												
9	R2	47	0.0	47	0.0	0.261	28.1	LOS B	0.9	6.0	0.90	0.98	1.00	14.4
Appro	oach	47	0.0	47	0.0	0.261	28.1	NA	0.9	6.0	0.90	0.98	1.00	14.4
West	: Site A	ccess												
10	L2	70	0.0	70	0.0	0.099	10.4	LOS A	0.4	2.6	0.56	0.96	0.56	16.7
11	T1	66	0.0	66	0.0	0.843	127.0	LOS F	4.0	27.8	0.99	1.23	1.97	1.8
Appro	oach	136	0.0	136	0.0	0.843	67.0	LOS E	4.0	27.8	0.77	1.09	1.24	3.3
All Ve	hicles	1649	5.3	1649	5.3	0.843	6.7	NA	4.0	27.8	0.09	0.17	0.13	25.5

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.

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

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

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Road	dName												
8	T1	1044	4.3	1044	4.3	0.275	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1044	4.3	1044	4.3	0.275	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Road	Name												
12	R2	66	0.0	66	0.0	0.127	7.3	LOS A	0.4	2.7	0.67	0.84	0.67	6.2
Appr	oach	66	0.0	66	0.0	0.127	7.3	LOS A	0.4	2.7	0.67	0.84	0.67	6.2
All Ve	ehicles	1110	4.1	1110	4.1	0.275	0.4	NA	0.4	2.7	0.04	0.05	0.04	55.9

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F				Deg. Satn	Average Delav	Level of Service	95% E Qu		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1099	4.3	1099	4.3	0.309	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	33.3
9a	R1	49	0.0	49	0.0	0.309	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.4
Appro	oach	1148	4.1	1148	4.1	0.309	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.3
South	West:	Reservoir I	Road											
30a	L1	1474	6.2	1474	6.2	0.402	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appro	oach	1474	6.2	1474	6.2	0.402	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	hicles	2622	5.3	2622	5.3	0.402	4.9	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

Site: 207a [07a. Reservoir Road - Penny Lane FU PM]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. A	Averag e
		Total		Total	HV					Distance		Rate	Cycles S	
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Roa	d											
1	L2	46	6.5	46	6.5	0.384	5.6	LOSA	0.0	0.0	0.00	0.04	0.00	56.4
2	T1	1394	6.0	1394	6.0	0.384	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.0
Appro	oach	1440	6.0	1440	6.0	0.384	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.7
North	: Rese	rvoir Road	ť											
9	R2	37	8.1	37	8.1	0.131	17.7	LOS B	0.5	3.4	0.82	0.92	0.82	37.1
Appro	oach	37	8.1	37	8.1	0.131	17.7	NA	0.5	3.4	0.82	0.92	0.82	37.1
West	: Penn	y Lane												
10	L2	64	3.1	64	3.1	0.092	12.3	LOS A	0.4	2.9	0.59	0.92	0.59	43.1
11	T1	42	4.8	42	4.8	0.283	38.1	LOS C	1.0	7.6	0.90	1.03	1.02	26.1
Appro	oach	106	3.8	106	3.8	0.283	22.5	LOS B	1.0	7.6	0.72	0.97	0.76	34.3
All Ve	ehicles	1583	5.9	1583	5.9	0.384	2.1	NA	1.0	7.6	0.07	0.10	0.07	52.0

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.

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

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

## V Site: 207b [07b. Reservoir Road Penny Place <sup>♣♠</sup> Network: 7 [FU PM - Holbeche + Reservoir ] Median Storage FU PM]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance ·	- Vehic	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quet		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	rvoir Road	RT St	orage										
8	T1	1032	5.2	1032	5.2	0.327	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1032	5.2	1032	5.2	0.327	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Rese	rvoir Road	RT Sto	orage										
12	R2	42	4.8	42	4.8	0.102	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
Appr	oach	42	4.8	42	4.8	0.102	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
All Ve	ehicles	1074	5.2	1074	5.2	0.327	0.4	NA	0.3	1.9	0.03	0.03	0.03	55.4

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.

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

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

## V Site: 101 [07c Seagull Reservoir Road - Penny Lane FU PM]

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Mov	ement	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles [ veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	ervoir Road												
7a	L1	1086	5.2	1086	5.2	0.305	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	30.9
9a	R1	39	8.1	39	8.1	0.305	3.9	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
Appro	oach	1125	5.3	1125	5.3	0.305	4.5	NA	0.0	0.0	0.00	0.58	0.00	30.9
South	nWest:	Reservoir I	Road											
30a	L1	1538	5.9	1538	5.9	0.419	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1538	5.9	1538	5.9	0.419	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2663	5.7	2663	5.7	0.419	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.4

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.

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

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

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1 Output Phase Sequence: A, D, E, G

Mov	ement	t Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Bad Queu		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles D veh	istance m		Rate	Cycles S	Speed km/h
South	h: Rese	ervior Road	t											
1	L2	180	21.1	180	21.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	55.9
2	T1	713	5.5	713	5.5	0.888	63.0	LOS E	29.4	215.4	0.96	0.99	1.18	26.6
3	R2	186	4.8	186	4.8	0.763	72.6	LOS F	13.0	94.5	1.00	0.88	1.11	29.2
Appr	oach	1079	8.0	1079	8.0	0.888	55.2	LOS D	29.4	215.4	0.80	0.89	0.97	31.3
East:	Great	Western H	łw											
4	L2	594	2.5	594	2.5	0.608	29.2	LOSC	23.2	166.0	0.74	0.88	0.89	43.7
5	T1	1169	4.0	1169	4.0	0.899	69.9	LOS E	29.9	216.6	1.00	1.01	1.23	31.8
6	R2	464	3.2	464	3.2	0.681	65.2	LOS E	15.0	107.8	0.99	0.84	0.99	14.5
Appr	oach	2227	3.5	2227	3.5	0.899	58.1	LOS E	29.9	216.6	0.93	0.94	1.09	31.8
North	n: Rese	ervior Road	l											
7	L2	152	2.0	152	2.0	0.794	58.5	LOS E	26.7	193.8	0.99	0.90	1.04	21.4
8	T1	666	5.9	666	5.9	0.794	52.9	LOS D	26.9	198.0	0.99	0.90	1.04	31.8
9	R2	208	7.2	208	7.2	0.872	80.7	LOS F	15.7	116.6	1.00	0.96	1.28	25.0
Appr	oach	1026	5.6	1026	5.6	0.872	59.4	LOS E	26.9	198.0	0.99	0.92	1.09	29.0
West	: Great	t Western I	Hw											
10	L2	275	4.7	275	4.7	0.267	19.4	LOS B	8.3	60.7	0.52	0.73	0.52	49.4
11	T1	924	2.6	924	2.6	0.695	53.5	LOS D	19.4	138.6	0.98	0.83	0.98	37.0
12	R2	578	9.2	578	9.2	0.900	82.5	LOS F	22.6	170.7	1.00	0.96	1.29	33.5
Appr	oach	1777	5.1	1777	5.1	0.900	57.7	LOS E	22.6	170.7	0.91	0.86	1.01	36.2
All Ve	ehicles	6109	5.1	6109	5.1	0.900	57.7	LOS E	29.9	216.6	0.91	0.90	1.05	32.6

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.

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	54.1	LOS E	0.2	0.2	0.88	0.88
P2	East Full Crossing	50	54.1	LOS E	0.2	0.2	0.88	0.88
P3	North Full Crossing	50	53.3	LOS E	0.2	0.2	0.87	0.87
P4	West Full Crossing	50	57.7	LOS E	0.2	0.2	0.91	0.91

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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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:04:58 PM
Project: \\192.168.3.248\tdata\Synergy\Projects\15\15.533\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8





## Appendix E

SIDRA Intersection Modelling (Future Scenario 3 – Site Access Signals)

### USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
South	n: Site	Access												
1	L2	148	0.7	148	0.7	0.137	1.8	LOS A	0.5	3.7	0.32	0.32	0.32	32.7
Appro	oach	148	0.7	148	0.7	0.137	1.8	LOS A	0.5	3.7	0.32	0.32	0.32	32.7
East:	Holbe	che Road												
4	L2	128	0.0	128	0.0	0.183	5.4	LOS A	0.0	0.0	0.00	0.23	0.00	49.1
5	T1	536	12.1	536	12.1	0.183	0.0	LOSA	0.0	0.0	0.00	0.09	0.00	57.7
Appro	oach	664	9.8	664	9.8	0.183	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.1
West	: Holbe	che Road												
11	T1	456	11.6	456	11.6	0.126	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	oach	456	11.6	456	11.6	0.126	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1268	9.4	1268	9.4	0.183	0.8	NA	0.5	3.7	0.04	0.10	0.04	51.0

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.

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

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

•• Network: 4 [FU AM - Holbeche + Reservoir (Signal Access) - Table 5]

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Mov	ement	Perform	ance	- Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles	Speed km/h
South	n: Rese	ervoir Road	t											
1	L2	415	10.4	415	10.4	0.381	4.3	LOS A	2.9	21.6	0.34	0.44	0.34	35.2
2	T1	694	6.9	694	6.9	0.381	4.3	LOS A	2.9	21.6	0.36	0.42	0.36	54.2
Appro	oach	1109	8.2	1109	8.2	0.381	4.3	LOS A	2.9	21.6	0.35	0.43	0.35	51.1
North	: Rese	rvoir Road												
8	T1	650	6.3	650	6.3	0.325	5.2	LOS A	2.1	15.2	0.47	0.54	0.47	48.6
9	R2	129	3.1	129	3.1	0.325	11.2	LOS A	1.9	13.9	0.48	0.62	0.48	47.3
Appro	oach	779	5.8	779	5.8	0.325	6.2	LOS A	2.1	15.2	0.47	0.55	0.47	48.4
West	: Holbe	che Road												
10	L2	101	9.9	101	9.9	0.150	5.8	LOS A	0.7	5.0	0.58	0.68	0.58	49.1
12	R2	337	13.9	337	13.9	0.342	10.0	LOS A	1.9	14.6	0.63	0.79	0.63	26.1
Appro	oach	438	13.0	438	13.0	0.342	9.1	LOSA	1.9	14.6	0.62	0.76	0.62	34.4
All Ve	ehicles	2326	8.3	2326	8.3	0.381	5.8	LOSA	2.9	21.6	0.44	0.53	0.44	47.4

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.

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

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

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1
Output Phase Sequence: A, D, E, G

Mov	ement	t Perform	ance	- Vehic	cles									
Mov ID	Turn	Demand				Deg. Satn	Average Delay	Level of Service	95% Ba Que	ue	Prop. Queued	Effective Stop	Aver. A No.	e
		Total		Total	HV				Vehicles [			Rate	Cycles S	
South	n. Basa	veh/h ervior Road		veh/h	%	v/c	sec		veh	m				km/h
1	L2	237	16.0	237	16.0	0.142	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	56.1
2	T1	568	10.0	568	10.0	0.142	71.8	LOS F	27.0		0.00	1.04	1.28	24.7
3	R2	221		221	-					205.3			_	
_			11.3		11.3	0.900	84.3	LOSF	17.2	132.4	1.00	0.99	1.33	26.7
Appro	oach	1026	11.8	1026	11.8	0.907	59.2	LOS E	27.0	205.3	0.75	0.91	1.00	31.0
East:	Great	Western H	lw											
4	L2	584	5.7	584	5.7	0.617	31.2	LOS C	22.0	161.8	0.75	0.91	0.98	42.7
5	T1	764	6.4	764	6.4	0.545	49.1	LOS D	15.2	112.4	0.92	0.78	0.92	38.7
6	R2	256	6.3	256	6.3	0.713	64.8	LOS E	16.7	122.9	0.99	0.85	1.01	14.6
Appro	oach	1604	6.1	1604	6.1	0.713	45.1	LOS D	22.0	161.8	0.87	0.84	0.96	36.9
North	n: Rese	rvior Road												
7	L2	158	6.3	158	6.3	0.884	73.1	LOS F	27.8	209.9	1.00	1.00	1.21	18.0
8	T1	586	11.6	586	11.6	0.884	67.4	LOS E	28.0	215.6	1.00	1.02	1.21	28.2
9	R2	179	7.8	179	7.8	0.716	70.2	LOS E	12.2	90.9	1.00	0.85	1.06	27.3
Appro	oach	923	10.0	923	10.0	0.884	68.9	LOS E	28.0	215.6	1.00	0.98	1.18	26.6
West	: Great	Western H	-lw											
10	L2	267	7.1	267	7.1	0.261	19.5	LOS B	8.1	60.2	0.51	0.73	0.51	49.9
11	T1	1296	7.0	1296	7.0	0.917	72.1	LOS F	34.0	252.3	1.00	1.04	1.26	31.2
12	R2	632	11.7	632	11.7	0.929	88.4	LOS F	26.0	200.5	1.00	0.99	1.35	32.3
Appro	oach	2195	8.4	2195	8.4	0.929	70.4	LOS E	34.0	252.3	0.94	0.99	1.19	32.6
All Ve	ehicles	5748	8.6	5748	8.6	0.929	61.1	LOS E	34.0	252.3	0.90	0.93	1.09	32.2

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.

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

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

Move	ement Performance - Pede	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	51.5	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	50	58.6	LOS E	0.2	0.2	0.92	0.92
P3	North Full Crossing	50	50.7	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	50	63.3	LOS F	0.2	0.2	0.95	0.95

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.



Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time 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

Green Split Priority has been specified Phase Sequence: Opposed Turns Reference Phase: Phase B Input Phase Sequence: A, B, C Output Phase Sequence: A, B, C

Move	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
South	n: Rese	rvoir Road												
1	L2	39	7.7	39	7.7	0.481	15.1	LOS B	15.1	114.2	0.53	0.50	0.53	24.0
2	T1	1135	9.7	1135	9.7	0.481	10.4	LOS A	15.1	114.2	0.53	0.49	0.53	19.8
Appro	oach	1174	9.6	1174	9.6	0.481	10.5	LOSA	15.1	114.2	0.53	0.49	0.53	20.0
North	: Rese	rvoir Road												
8	T1	105	90.8	105	90.8	0.056	3.6	LOS A	0.7	9.1	0.26	0.20	0.26	46.8
9	R2	14	0.0	14	0.0	0.046	12.1	LOS A	0.2	1.4	0.46	0.64	0.46	32.5
Appro	oach	119	80.1	119	80.1	0.056	4.6	LOSA	0.7	9.1	0.28	0.26	0.28	44.0
West	: Site A	ccess												
10	L2	33	6.1	33	6.1	0.079	41.6	LOS C	1.5	11.1	0.81	0.69	0.81	4.9
12	R2	27	0.0	27	0.0	0.109	52.6	LOS D	1.4	9.9	0.91	0.70	0.91	4.0
Appro	oach	60	3.3	60	3.3	0.109	46.6	LOS D	1.5	11.1	0.86	0.69	0.86	4.4
All Ve	hicles	1353	15.5	1353	15.5	0.481	11.6	LOS A	15.1	114.2	0.52	0.48	0.52	20.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

Move	ement Performance - Pede	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	12.2	LOS B	0.1	0.1	0.45	0.45
All Pe	destrians	150	40.2	LOS E			0.78	0.78

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.

•• Network: 4 [FU AM - Holbeche + Reservoir (Signal Access) - Table 5]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	: Perform	nance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. A	Averag e
		Total		Total	HV					Distance		Rate	Cycles S	
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Roa	d											
1	L2	68	11.8	68	11.8	0.315	5.7	LOSA	0.0	0.0	0.00	0.07	0.00	55.6
2	T1	1080	10.2	1080	10.2	0.315	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.4
Appro	oach	1148	10.3	1148	10.3	0.315	0.4	NA	0.0	0.0	0.00	0.04	0.00	57.9
North	: Rese	rvoir Road	t											
9	R2	71	7.0	71	7.0	0.174	13.3	LOS A	0.7	4.8	0.74	0.89	0.74	40.5
Appro	oach	71	7.0	71	7.0	0.174	13.3	NA	0.7	4.8	0.74	0.89	0.74	40.5
West	: Penn	y Lane												
10	L2	86	11.6	86	11.6	0.108	11.6	LOS A	0.5	3.7	0.54	0.91	0.54	44.2
11	T1	32	18.8	32	18.8	0.177	29.9	LOSC	0.6	5.1	0.85	1.01	0.86	30.3
Appro	oach	118	13.6	118	13.6	0.177	16.5	LOS B	0.6	5.1	0.62	0.94	0.62	39.3
All Ve	hicles	1337	10.4	1337	10.4	0.315	2.5	NA	0.7	5.1	0.09	0.16	0.09	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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place Median Storage FU AM]

•• Network: 4 [FU AM - Holbeche + Reservoir (Signal Access) - Table 5]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance ·	- Vehic	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Quei		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	ervoir Road	RT St	orage										
8	T1	966	9.8	966	9.8	0.346	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	966	9.8	966	9.8	0.346	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Rese	rvoir Road	RT Sto	orage										
12	R2	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
Appr	oach	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
All Ve	ehicles	998	10.1	998	10.1	0.346	0.3	NA	0.2	1.7	0.02	0.03	0.02	56.8

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1017	9.8	1017	9.8	0.306	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
9a	R1	80	6.6	80	6.6	0.306	3.9	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
Appro	oach	1097	9.6	1097	9.6	0.306	4.5	NA	0.0	0.0	0.00	0.58	0.00	31.0
South	West:	Reservoir	Road											
30a	L1	1227	10.3	1227	10.3	0.688	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1227	10.3	1227	10.3	0.688	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	hicles	2324	10.0	2324	10.0	0.688	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.3

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.

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

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

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

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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:06:09 PM
Project: \\192.168.3.248\\tdata\Synergy\Projects\15\15.533\\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8

### USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles	Speed km/h
South	: Site	Access												
1	L2	144	0.7	144	0.7	0.124	2.5	LOS A	0.5	3.3	0.25	0.37	0.25	36.6
Appro	ach	144	0.7	144	0.7	0.124	2.5	LOS A	0.5	3.3	0.25	0.37	0.25	36.6
East:	Holbe	che Road												
4	L2	224	0.9	224	0.9	0.196	5.4	LOS A	0.0	0.0	0.00	0.36	0.00	46.4
5	T1	499	9.0	499	9.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	57.4
Appro	ach	723	6.5	723	6.5	0.196	1.7	NA	0.0	0.0	0.00	0.18	0.00	54.0
West:	Holbe	che Road												
11	T1	392	4.8	392	4.8	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach	392	4.8	392	4.8	0.104	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1259	5.3	1259	5.3	0.196	1.2	NA	0.5	3.3	0.03	0.15	0.03	51.3

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.

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

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

\*\* Network: 9 [FU PM - Holbeche + Reservoir (Signal Access)]

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Roundabout

Mov	ement	t Performa	ince	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back Queue		Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total		Total	HV				Vehicles Dis			Rate	Cycles S	
South	r Rese	veh/h ervoir Road	%	veh/h	%	v/c	sec		veh	m				km/h
1	1.000 L2	474	9.5	474	9.5	0.482	4.9	LOS A	4.0	29.9	0.48	0.50	0.48	33.4
2	T1	852	3.4	852	3.4	0.482	5.0	LOSA	4.0	29.9	0.50	0.50	0.50	53.1
Appro	oach	1326	5.6	1326	5.6	0.482	4.9	LOSA	4.0	29.9	0.49	0.50	0.49	50.0
North	: Rese	rvoir Road												
8	T1	789	3.0	789	3.0	0.372	4.6	LOS A	2.5	18.0	0.40	0.49	0.40	49.2
9	R2	223	0.9	223	0.9	0.372	10.5	LOS A	2.4	16.8	0.41	0.59	0.41	47.4
Appro	oach	1012	2.6	1012	2.6	0.372	5.9	LOS A	2.5	18.0	0.40	0.51	0.40	48.8
West	: Holbe	eche Road								7				
10	L2	154	1.9	154	1.9	0.198	5.5	LOS A	1.0	7.0	0.65	0.72	0.65	49.7
12	R2	221	7.2	221	7.2	0.237	10.1	LOS A	1.3	9.5	0.66	0.80	0.66	25.9
Appro	oach	375	5.1	375	5.1	0.237	8.2	LOSA	1.3	9.5	0.65	0.77	0.65	39.4
All Ve	hicles	2713	4.4	2713	4.4	0.482	5.8	LOS A	4.0	29.9	0.48	0.54	0.48	48.2

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.

Roundabout Capacity Model: SIDRA Standard.

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

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

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified Phase Sequence: Variable Phasing Reference Phase: Phase A Input Phase Sequence: A, D, E, G, G1 Output Phase Sequence: A, D, E, G, G1

Мо	vement	t Perform	ance	- Vehi	cles									
	v Turn	Demand	Flows	Arrival	Flows	Deg.	Average		95% Ba		Prop.	Effective	Aver.	
ID		Total	Н\/	Total	HV	Satn	Delay	Service	Que Vehicles [		Queued	Stop Rate	No. Cycles S	e Speed
		veh/h		veh/h	%	v/c	sec		verlicies	m		Maic	Cycles	km/h
So	uth: Rese	ervior Road	t											
1	L2	180	21.1	180	21.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	55.9
2	T1	713	5.5	713	5.5	0.952	82.7	LOS F	34.1	250.2	0.98	1.13	1.38	22.7
3	R2	186	4.8	186	4.8	0.806	75.6	LOS F	13.3	97.1	1.00	0.90	1.17	28.5
Ap	oroach	1079	8.0	1079	8.0	0.952	68.7	LOS E	34.1	250.2	0.82	0.99	1.11	28.0
Eas	st: Great	Western F	łw											
4	L2	594	2.5	594	2.5	0.615	30.3	LOS C	23.1	164.9	0.75	0.89	0.94	43.1
5	T1	1169	4.0	1169	4.0	0.846	60.9	LOS E	27.6	200.1	1.00	0.95	1.13	34.4
6	R2	464	3.2	464	3.2	0.939	83.7	LOSF	38.1	274.2	1.00	0.99	1.31	11.8
Ap	oroach	2227	3.5	2227	3.5	0.939	57.5	LOSE	38.1	274.2	0.93	0.94	1.11	32.0
No	rth: Rese	rvior Road	l											
7	L2	152	2.0	152	2.0	0.861	67.2	LOS E	29.2	212.0	1.00	0.97	1.15	19.4
8	T1	666	5.9	666	5.9	0.861	61.6	LOS E	29.5	216.9	1.00	0.98	1.15	29.5
9	R2	208	7.2	208	7.2	0.921	89.0	LOS F	16.7	123.9	1.00	1.02	1.40	23.5
Apı	oroach	1026	5.6	1026	5.6	0.921	68.0	LOS E	29.5	216.9	1.00	0.99	1.20	27.0
We	st: Great	Western I	Hw											
10	L2	275	4.7	275	4.7	0.341	30.5	LOS C	11.7	85.0	0.69	0.77	0.69	40.8
11	T1	924	2.6	924	2.6	0.968	93.9	LOS F	26.8	192.0	1.00	1.10	1.47	26.3
12	R2	578	9.2	578	9.2	0.835	72.6	LOS F	20.8	157.2	1.00	0.91	1.16	35.6
Ap	oroach	1777	5.1	1777	5.1	0.968	77.1	LOS F	26.8	192.0	0.95	0.99	1.25	30.9
All	Vehicles	6109	5.1	6109	5.1	0.968	66.9	LOS E	38.1	274.2	0.93	0.97	1.17	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.

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

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

Move	ement Performance - Peo	destrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	52.4	LOS E	0.2	0.2	0.87	0.87
P2	East Full Crossing	50	55.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	50	61.4	LOS F	0.2	0.2	0.94	0.94
P4	West Full Crossing	50	60.5	LOS F	0.2	0.2	0.93	0.93

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



Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time 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

Green Split Priority has been specified Phase Sequence: Opposed Turns Reference Phase: Phase B Input Phase Sequence: A, B, C Output Phase Sequence: A, B, C

Mov	ement	: Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival		Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles I veh	Distance m		Rate	Cycles	Speed km/h
South	n: Rese	ervoir Road												
1	L2	136	0.0	136	0.0	0.588	16.3	LOS B	15.6	114.2	0.59	0.59	0.59	14.1
2	T1	1330	6.5	1330	6.5	0.588	11.6	LOS A	15.6	114.2	0.59	0.56	0.59	18.1
Appro	oach	1466	5.9	1466	5.9	0.588	12.0	LOSA	15.6	114.2	0.59	0.57	0.59	17.4
North	: Rese	rvoir Road												
8	T1	999	4.5	999	4.5	0.344	4.7	LOS A	9.0	65.7	0.34	0.31	0.34	43.9
9	R2	47	0.0	47	0.0	0.201	14.9	LOS B	0.9	6.3	0.57	0.70	0.57	28.4
Appro	oach	1046	4.3	1046	4.3	0.344	5.1	LOSA	9.0	65.7	0.35	0.32	0.35	42.6
West	: Site A	ccess												
10	L2	70	0.0	70	0.0	0.162	43.3	LOS D	3.3	22.8	0.83	0.74	0.83	4.9
12	R2	66	0.0	66	0.0	0.267	55.2	LOS D	3.5	24.8	0.94	0.75	0.94	3.9
Appro	oach	136	0.0	136	0.0	0.267	49.1	LOSD	3.5	24.8	0.88	0.74	0.88	4.4
All Ve	hicles	2648	5.0	2648	5.0	0.588	11.2	LOS A	15.6	114.2	0.51	0.48	0.51	24.5

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.

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

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	12.2	LOS B	0.1	0.1	0.45	0.45
All Pe	destrians	150	40.2	LOS E			0.78	0.78

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.

\*\* Network: 9 [FU PM - Holbeche + Reservoir (Signal Access)]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand				Deg. Satn	Average Delay	Level of Service	95% Ba Que	ue	Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles E veh	Distance m		Rate	Cycles	Speed km/h
South	n: Rese	ervoir Road		ven/m	/0	V/C	360		Ven	- '''				NIII/II
1	L2	46	6.5	46	6.5	0.384	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	56.4
2	T1	1394	6.0	1394	6.0	0.384	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.0
Appro	oach	1440	6.0	1440	6.0	0.384	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.7
North	: Rese	rvoir Road												
9	R2	37	8.1	37	8.1	0.127	17.3	LOS B	0.4	3.3	0.81	0.92	0.81	37.4
Appro	oach	37	8.1	37	8.1	0.127	17.3	NA	0.4	3.3	0.81	0.92	0.81	37.4
West	Penny	y Lane												
10	L2	64	3.1	64	3.1	0.091	12.3	LOS A	0.4	2.9	0.59	0.92	0.59	43.1
11	T1	42	4.8	42	4.8	0.271	36.5	LOSC	1.0	7.3	0.89	1.03	1.00	26.8
Appro	oach	106	3.8	106	3.8	0.271	21.9	LOS B	1.0	7.3	0.71	0.96	0.76	34.8
All Ve	hicles	1583	5.9	1583	5.9	0.384	2.1	NA	1.0	7.3	0.07	0.10	0.07	52.2

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.

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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place Median Storage FU PM]

\*\* Network: 9 [FU PM - Holbeche + Reservoir (Signal Access)]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehic	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Queu		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	istance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	ervoir Road	RT St	orage										
8	T1	1032	5.2	1032	5.2	0.362	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1032	5.2	1032	5.2	0.362	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Rese	rvoir Road	RT St	orage										
12	R2	42	4.8	42	4.8	0.113	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
Appr	oach	42	4.8	42	4.8	0.113	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
All Ve	ehicles	1074	5.2	1074	5.2	0.362	0.4	NA	0.3	1.9	0.03	0.03	0.03	55.4

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.

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

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

Seagull Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	: Rese	rvoir Road												
7a	L1	1086	5.2	1086	5.2	0.305	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	30.9
9a	R1	39	8.1	39	8.1	0.305	3.9	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
Appr	oach	1125	5.3	1125	5.3	0.305	4.5	NA	0.0	0.0	0.00	0.58	0.00	30.9
South	nWest:	Reservoir	Road											
30a	L1	1538	5.9	1538	5.9	0.838	3.9	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appr	oach	1538	5.9	1538	5.9	0.838	3.9	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2663	5.7	2663	5.7	0.838	4.2	NA	0.0	0.0	0.00	0.56	0.00	32.4

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.

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

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

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

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# Appendix F

SIDRA Intersection Modelling (Future Scenario 4 – Holbeche Signals)

#### **USER REPORT FOR NETWORK SITE**

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Mov	ement	Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		ack of eue	Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
Sout	h: Site /		,0	V 011/11	70	*,0	000		7011					1(11)/11
1	L2	148	0.7	148	0.7	0.135	1.8	LOS A	0.6	4.1	0.32	0.30	0.32	32.7
Appr	oach	148	0.7	148	0.7	0.135	1.8	LOS A	0.6	4.1	0.32	0.30	0.32	32.7
East	Holbed	che Road												
4	L2	128	0.0	128	0.0	0.183	5.4	LOS A	0.0	0.0	0.00	0.23	0.00	49.1
5	T1	536	12.1	536	12.1	0.183	0.0	LOSA	0.0	0.0	0.00	0.09	0.00	57.7
Appr	oach	664	9.8	664	9.8	0.183	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.1
West	:: Holbe	che Road												
11	T1	456	11.6	456	11.6	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	456	11.6	456	11.6	0.167	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	ehicles	1268	9.4	1268	9.4	0.183	0.8	NA	0.6	4.1	0.04	0.10	0.04	51.0

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.

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

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

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time 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

Green Split Priority has been specified Phase Sequence: Opposed Turns Reference Phase: Phase B Input Phase Sequence: A, B, C Output Phase Sequence: A, B, C

Move	ement	t Perform	ance ·	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
South	n: Rese	ervoir Road	l											
1	L2	415	10.4	415	10.4	0.686	29.2	LOS C	16.7	127.2	0.74	0.80	0.74	11.5
2	T1	694	6.9	694	6.9	0.469	22.4	LOS B	16.7	123.9	0.70	0.61	0.70	36.6
Appro	oach	1109	8.2	1109	8.2	0.686	24.9	LOS B	16.7	127.2	0.72	0.68	0.72	29.8
North	: Rese	rvoir Road												
8	T1	650	6.3	650	6.3	0.306	13.0	LOS A	9.8	72.5	0.58	0.48	0.58	41.3
9	R2	129	3.1	129	3.1	0.349	20.0	LOS B	3.2	23.3	0.71	0.75	0.71	35.5
Appro	oach	779	5.8	779	5.8	0.349	14.2	LOSA	9.8	72.5	0.60	0.52	0.60	40.2
West	: Holbe	eche Road												
10	L2	101	9.9	101	9.9	0.130	26.3	LOS B	3.5	26.5	0.63	0.70	0.63	32.0
12	R2	337	13.9	337	13.9	0.679	46.0	LOS D	17.6	138.1	0.95	0.84	0.95	7.2
Appro	oach	438	13.0	438	13.0	0.679	41.4	LOSC	17.6	138.1	0.87	0.81	0.87	13.7
All Ve	hicles	2326	8.3	2326	8.3	0.686	24.4	LOS B	17.6	138.1	0.71	0.65	0.71	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.

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

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow	Average Delay		Average Bac Pedestrian	Distance	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	ped/h 50	sec 44.3	LOS E	ped 0.1	0.1	0.86	0.86
P3	North Full Crossing	50	44.3	LOS E	0.1	0.1	0.86	0.86
P4	West Full Crossing	50	25.4	LOS C	0.1	0.1	0.65	0.65
All Pe	edestrians	150	38.0	LOS D			0.79	0.79

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.

•• Network: 3 [FU AM - Holbeche + Reservoir (Signals at Holbeche) - Table 6 ]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. A	Averag e
		Total		Total	HV					Distance		Rate	Cycles S	
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	h: Rese	ervoir Road												
1	L2	39	7.7	39	7.7	0.320	4.8	LOSA	0.0	0.0	0.00	0.04	0.00	29.4
2	T1	1135	9.7	1135	9.7	0.320	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
Appro	oach	1174	9.6	1174	9.6	0.320	0.2	NA	0.0	0.0	0.00	0.02	0.00	55.4
North	n: Rese	rvoir Road												
9	R2	14	0.0	14	0.0	0.046	16.5	LOS B	0.2	1.1	0.80	0.91	0.80	21.1
Appro	oach	14	0.0	14	0.0	0.046	16.5	NA	0.2	1.1	0.80	0.91	0.80	21.1
West	: Site A	ccess												
10	L2	33	6.1	33	6.1	0.046	9.9	LOS A	0.2	1.2	0.54	0.92	0.54	15.8
11	T1	27	0.0	27	0.0	0.185	32.3	LOS C	0.6	4.3	0.89	1.01	0.92	6.6
Appro	oach	60	3.3	60	3.3	0.185	20.0	LOS B	0.6	4.3	0.70	0.96	0.71	9.8
All Ve	ehicles	1248	9.2	1248	9.2	0.320	1.3	NA	0.6	4.3	0.04	0.07	0.04	46.3

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.

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

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

V Site: 206b [06b. Reservoir Road Site Access Median Storage FU AM]

•• Network: 3 [FU AM - Holbeche + Reservoir (Signals at Holbeche) - Table 6 ]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	Movement Performance - Vehicles														
Mov Turn ID		Demand Flows Arrival Flows				Deg. Satn	Average Delay	Level of Service					Aver. Averag No. e		
		Total	HV	Total	HV				Vehicles Distance			Rate	Cycles S	peed	
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h	
North: RoadName															
8	T1	1001	9.5	1001	9.5	0.272	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9	
Appr	oach	1001	9.5	1001	9.5	0.272	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9	
West: RoadName															
12	R2	27	0.0	27	0.0	0.051	6.9	LOS A	0.2	1.1	0.64	0.83	0.64	7.3	
Appr	oach	27	0.0	27	0.0	0.051	6.9	LOS A	0.2	1.1	0.64	0.83	0.64	7.3	
All V	ehicles	1028	9.2	1028	9.2	0.272	0.2	NA	0.2	1.1	0.02	0.02	0.02	58.2	

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.

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.

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

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

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles I	Distance m		Rate	Cycles S	Speed km/h
North	n: Rese	ervoir Road												
7a	L1	1054	9.5	1054	9.5	0.298	5.4	LOS A	0.0	0.0	0.00	0.59	0.00	33.2
9a	R1	15	0.0	15	0.0	0.298	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.3
Appro	oach	1068	9.4	1068	9.4	0.298	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.2
South	nWest:	Reservoir	Road											
30a	L1	1229	9.6	1229	9.6	0.462	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appro	oach	1229	9.6	1229	9.6	0.462	4.6	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	ehicles	2298	9.5	2298	9.5	0.462	5.0	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

hetwork: 3 [FU AM - Holbeche + Reservoir (Signals at Holbeche) - Table 6 ]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	emen	t Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A	Averag e
		Total		Total	HV				Vehicles	Distance		Rate	Cycles S	Speed
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
Sout	h: Rese	ervoir Road	t											
1	L2	68	11.8	68	11.8	0.315	5.7	LOSA	0.0	0.0	0.00	0.07	0.00	55.6
2	T1	1080	10.2	1080	10.2	0.315	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.4
Appr	oach	1148	10.3	1148	10.3	0.315	0.4	NA	0.0	0.0	0.00	0.04	0.00	57.9
North	n: Rese	ervoir Road								,				
9	R2	71	7.0	71	7.0	0.177	13.5	LOS A	0.7	4.9	0.75	0.89	0.75	40.4
Appr	oach	71	7.0	71	7.0	0.177	13.5	NA	0.7	4.9	0.75	0.89	0.75	40.4
West	t: Penn	y Lane												
10	L2	86	11.6	86	11.6	0.109	11.6	LOS A	0.5	3.7	0.54	0.91	0.54	44.2
11	T1	32	18.8	32	18.8	0.182	30.7	LOS C	0.6	5.2	0.86	1.01	0.87	29.9
Appr	oach	118	13.6	118	13.6	0.182	16.8	LOS B	0.6	5.2	0.62	0.94	0.63	39.1
All Ve	ehicles	1337	10.4	1337	10.4	0.315	2.5	NA	0.7	5.2	0.09	0.16	0.10	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.

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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place Median Storage FU AM]

hetwork: 3 [FU AM - Holbeche + Reservoir (Signals at Holbeche) - Table 6 ]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Perform	ance ·	- Vehic	eles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Bad Queu		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total		Total	HV				Vehicles D	istance		Rate	Cycles S	peed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Rese	ervoir Road	RT St	orage										
8	T1	966	9.8	966	9.8	0.346	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	966	9.8	966	9.8	0.346	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	: Rese	rvoir Road	RT Sto	orage										
12	R2	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
Appr	oach	32	18.8	32	18.8	0.093	7.9	LOS A	0.2	1.7	0.67	0.84	0.67	6.5
All V	ehicles	998	10.1	998	10.1	0.346	0.3	NA	0.2	1.7	0.02	0.03	0.02	56.8

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.

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

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

Mov	emen	t Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles I	Distance m		Rate	Cycles S	Speed km/h
North	n: Rese	rvoir Road												
7a	L1	1017	9.8	1017	9.8	0.306	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
9a	R1	80	6.6	80	6.6	0.306	3.9	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
Appro	oach	1097	9.6	1097	9.6	0.306	4.5	NA	0.0	0.0	0.00	0.58	0.00	31.0
South	nWest:	Reservoir	Road											
30a	L1	1227	10.3	1227	10.3	0.344	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1227	10.3	1227	10.3	0.344	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2324	10.0	2324	10.0	0.344	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.3

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.

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

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

#### 

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1 Output Phase Sequence: A, D, E, G

Mov	ement	t Perform	ance	- Vehic	cles									
Mov ID	Turn	Demand				Deg. Satn	Average Delay	Level of Service	95% Ba Que	ue	Prop. Queued	Effective Stop	Aver. A No.	e
		Total		Total	HV				Vehicles [			Rate	Cycles S	
South	n. Basa	veh/h ervior Road		veh/h	%	v/c	sec		veh	m				km/h
1	L2	237	16.0	237	16.0	0.142	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	56.1
2	T1	568	10.0	568	10.0	0.142		LOS F			0.00		1.28	24.7
-			-		-		71.8		27.0	205.3		1.04	_	
3	R2	221	11.3	221	11.3	0.900	84.3	LOSF	17.2	132.4	1.00	1.00	1.33	26.8
Appro	oach	1026	11.8	1026	11.8	0.907	59.2	LOS E	27.0	205.3	0.75	0.91	1.00	31.1
East:	Great	Western H	lw											
4	L2	584	5.7	584	5.7	0.617	31.2	LOS C	22.0	161.8	0.75	0.91	0.98	42.7
5	T1	764	6.4	764	6.4	0.545	49.1	LOS D	15.2	112.4	0.92	0.78	0.92	38.7
6	R2	256	6.3	256	6.3	0.356	59.5	LOSE	7.6	55.8	0.91	0.79	0.91	15.6
Appro	oach	1604	6.1	1604	6.1	0.617	44.2	LOS D	22.0	161.8	0.86	0.83	0.94	37.2
North	: Rese	rvior Road												
7	L2	158	6.3	158	6.3	0.884	73.1	LOS F	27.8	209.9	1.00	1.00	1.21	18.0
8	T1	586	11.6	586	11.6	0.884	67.4	LOS E	28.0	215.6	1.00	1.02	1.21	28.2
9	R2	179	7.8	179	7.8	0.716	70.2	LOS E	12.2	90.9	1.00	0.85	1.06	27.3
Appro	oach	923	10.0	923	10.0	0.884	68.9	LOS E	28.0	215.6	1.00	0.98	1.18	26.6
West	: Great	Western H	-lw											
10	L2	267	7.1	267	7.1	0.238	15.1	LOS B	6.4	47.8	0.42	0.71	0.42	54.4
11	T1	1296	7.0	1296	7.0	0.917	72.1	LOS F	34.0	252.3	1.00	1.04	1.26	31.2
12	R2	632	11.7	632	11.7	0.929	88.4	LOS F	26.0	200.5	1.00	0.99	1.35	32.3
Appro	oach	2195	8.4	2195	8.4	0.929	69.9	LOS E	34.0	252.3	0.93	0.98	1.18	32.7
All Ve	ehicles	5748	8.6	5748	8.6	0.929	60.7	LOS E	34.0	252.3	0.89	0.93	1.08	32.4

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.

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	51.5	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	50	59.6	LOS E	0.2	0.2	0.92	0.92
P3	North Full Crossing	50	50.7	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	50	63.3	LOS F	0.2	0.2	0.95	0.95

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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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:21:19 PM
Project: \\192.168.3.248\tdata\Synergy\Projects\15\15.533\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8



## USER REPORT FOR NETWORK SITE

Project: 15.533m02v7 Blacktown Workers Sports Club ILUs Template: Movement Summary Future (Signals)- Sidra 8

Intersection: Holbeche Road and Site Access

Scenario: Existing Peak PM

Site Category: (None) Giveway / Yield (Two-Way)

Move	ement	: Perform	ance	- Vehi	cles									
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% E Qu		Prop. Queued	Effective Stop	Aver No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles	Speed km/h
South	: Site	Access												
1	L2	144	0.7	144	0.7	0.122	2.5	LOS A	0.5	3.8	0.25	0.36	0.25	36.6
Appro	ach	144	0.7	144	0.7	0.122	2.5	LOS A	0.5	3.8	0.25	0.36	0.25	36.6
East:	Holbe	che Road												
4	L2	224	0.9	224	0.9	0.196	5.4	LOS A	0.0	0.0	0.00	0.36	0.00	46.4
5	T1	499	9.0	499	9.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	57.4
Appro	ach	723	6.5	723	6.5	0.196	1.7	NA	0.0	0.0	0.00	0.18	0.00	54.0
West:	Holbe	che Road												
11	T1	392	4.8	392	4.8	0.112	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach	392	4.8	392	4.8	0.112	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Ve	hicles	1259	5.3	1259	5.3	0.196	1.2	NA	0.5	3.8	0.03	0.15	0.03	51.3

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.

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

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

Intersection: Holbeche Road and Reservoir Road

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time 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

Green Split Priority has been specified Phase Sequence: Opposed Turns Reference Phase: Phase B Input Phase Sequence: A, B, C Output Phase Sequence: A, B, C

Mov	ement	t Performa	nce	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival		Deg. Satn	Average Delay	Level of Service	95% Ba Que	ue	Prop. Queued	Effective Stop	Aver. A	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles [ veh	Distance m		Rate	Cycles S	Speed km/h
South	n: Rese	ervoir Road												
1	L2	474	9.5	474	9.5	0.720	25.8	LOS B	18.0	136.0	0.71	0.79	0.71	12.7
2	T1	852	3.4	852	3.4	0.521	19.3	LOS B	20.3	146.2	0.68	0.60	0.68	38.7
Appro	oach	1326	5.6	1326	5.6	0.720	21.6	LOS B	20.3	146.2	0.69	0.67	0.69	32.2
North	: Rese	rvoir Road												
8	T1	789	3.0	789	3.0	0.314	6.9	LOS A	9.0	64.7	0.46	0.39	0.46	48.3
9	R2	223	0.9	223	0.9	0.459	17.4	LOS B	5.8	41.0	0.76	0.79	0.76	37.5
Appro	oach	1012	2.6	1012	2.6	0.459	9.2	LOSA	9.0	64.7	0.53	0.48	0.53	45.4
West	: Holbe	eche Road												
10	L2	154	1.9	154	1.9	0.212	31.0	LOS C	6.0	42.5	0.71	0.74	0.71	30.0
12	R2	221	7.2	221	7.2	0.724	58.2	LOS E	12.8	95.4	1.00	0.87	1.07	5.9
Appro	oach	375	5.1	375	5.1	0.724	47.0	LOSD	12.8	95.4	0.88	0.81	0.92	16.0
All Ve	hicles	2713	4.4	2713	4.4	0.724	20.5	LOS B	20.3	146.2	0.66	0.62	0.66	33.0

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.

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

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

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

Move	ement Performance - Ped	estrians						
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	21.6	LOS C	0.1	0.1	0.60	0.60
All Pe	destrians	150	43.4	LOS E			0.84	0.84

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.

\*\* Network: 8 [FU PM - Holbeche + Reservoir (Signals at Holbeche)]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Move	ement	Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service		Back of eue	Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total		Total	HV					Distance		Rate	Cycles S	
		veh/h		veh/h	%	v/c	sec		veh	m				km/h
South	n: Rese	ervoir Road												
1	L2	136	0.0	136	0.0	0.392	4.8	LOSA	0.0	0.0	0.00	0.11	0.00	28.5
2	T1	1330	6.5	1330	6.5	0.392	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	55.4
Appro	oach	1466	5.9	1466	5.9	0.392	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.0
North	n: Rese	rvoir Road												
9	R2	47	0.0	47	0.0	0.261	28.1	LOS B	0.9	6.0	0.90	0.98	1.00	14.4
Appro	oach	47	0.0	47	0.0	0.261	28.1	NA	0.9	6.0	0.90	0.98	1.00	14.4
West	: Site A	ccess												
10	L2	70	0.0	70	0.0	0.099	10.4	LOS A	0.4	2.6	0.56	0.96	0.56	16.7
11	T1	66	0.0	66	0.0	0.843	127.0	LOS F	4.0	27.8	0.99	1.23	1.97	1.8
Appro	oach	136	0.0	136	0.0	0.843	67.0	LOS E	4.0	27.8	0.77	1.09	1.24	3.3
All Ve	ehicles	1649	5.3	1649	5.3	0.843	6.7	NA	4.0	27.8	0.09	0.17	0.13	25.5

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.

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

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

V Site: 206b [06b. Reservoir Road Site Access Median Storage FU PM]

\*\* Network: 8 [FU PM - Holbeche + Reservoir (Signals at Holbeche)]

Intersectoion: Reservoir Road and Site Access

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand F	lows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Ba Queu		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total	HV	Total	HV				Vehicles D	istance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	n: Road	dName												
8	T1	1044	4.3	1044	4.3	0.275	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1044	4.3	1044	4.3	0.275	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	:: Road	Name												
12	R2	66	0.0	66	0.0	0.127	7.3	LOS A	0.4	2.7	0.67	0.84	0.67	6.2
Appr	oach	66	0.0	66	0.0	0.127	7.3	LOS A	0.4	2.7	0.67	0.84	0.67	6.2
All Ve	ehicles	1110	4.1	1110	4.1	0.275	0.4	NA	0.4	2.7	0.04	0.05	0.04	55.9

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.

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

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

Mov	emen	t Performa	ance	- Vehi	cles									
Mov ID	Turn	Demand I	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% B Que		Prop. Queued	Effective Stop	Aver. A No.	Averag e
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		Rate	Cycles S	Speed km/h
North	n: Rese	rvoir Road												
7a	L1	1099	4.3	1099	4.3	0.309	5.3	LOS A	0.0	0.0	0.00	0.59	0.00	33.3
9a	R1	49	0.0	49	0.0	0.309	4.7	LOS A	0.0	0.0	0.00	0.59	0.00	33.4
Appr	oach	1148	4.1	1148	4.1	0.309	5.3	NA	0.0	0.0	0.00	0.59	0.00	33.3
South	hWest:	Reservoir	Road											
30a	L1	1474	6.2	1474	6.2	0.632	4.7	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
Appr	oach	1474	6.2	1474	6.2	0.632	4.7	LOS A	0.0	0.0	0.00	0.55	0.00	34.7
All Ve	ehicles	2622	5.3	2622	5.3	0.632	4.9	NA	0.0	0.0	0.00	0.57	0.00	34.0

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.

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

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

\*\* Network: 8 [FU PM - Holbeche + Reservoir (Signals at Holbeche)]

Intersection: Reservoir Road and Penny Lane

Scenario: Existing PM Peak Site Category: (None) Stop (Two-Way)

Mov	Movement Performance - Vehicles													
Mov ID	Turn	Demand I	lows	Arrival		Deg. Satn	Average Delay	Level of Service	95% Back Queue	of	Prop. Queued	Effective Stop	Aver. / No.	Averag e
		Total veh/h		Total veh/h	HV %	v/c	sec		Vehicles Dis	tance m		Rate	Cycles S	Speed km/h
South	South: Reservoir Road												1311/11	
1	L2	46	6.5	46	6.5	0.384	5.6	LOSA	0.0	0.0	0.00	0.04	0.00	56.4
2	T1	1394	6.0	1394	6.0	0.384	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.0
Appr	oach	1440	6.0	1440	6.0	0.384	0.2	NA	0.0	0.0	0.00	0.02	0.00	58.7
North	n: Rese	rvoir Road												
9	R2	37	8.1	37	8.1	0.131	17.7	LOS B	0.5	3.4	0.82	0.92	0.82	37.1
Appr	oach	37	8.1	37	8.1	0.131	17.7	NA	0.5	3.4	0.82	0.92	0.82	37.1
West	:: Penn	y Lane												
10	L2	64	3.1	64	3.1	0.092	12.3	LOS A	0.4	2.9	0.59	0.92	0.59	43.1
11	T1	42	4.8	42	4.8	0.283	38.1	LOS C	1.0	7.6	0.90	1.03	1.02	26.1
Appr	oach	106	3.8	106	3.8	0.283	22.5	LOS B	1.0	7.6	0.72	0.97	0.76	34.3
All Ve	ehicles	1583	5.9	1583	5.9	0.384	2.1	NA	1.0	7.6	0.07	0.10	0.07	52.0

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.

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

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

V Site: 207b [07b. Reservoir Road Penny Place Median Storage FU PM]

\*\* Network: 8 [FU PM - Holbeche + Reservoir (Signals at Holbeche)]

Intersection: Reservoir Road and Penny Lane with Median Storage

Scenario: Existing PM Peak Site Category: (None) Giveway / Yield (Two-Way)

Mov	Movement Performance - Vehicles													
Mov ID			Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop	Aver. Averag No. e				
		Total	HV	Total	HV				Vehicles D	istance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	North: Reservoir Road RT Storage													
8	T1	1032	5.2	1032	5.2	0.327	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appr	oach	1032	5.2	1032	5.2	0.327	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West	t: Rese	rvoir Road	RT Sto	orage										
12	R2	42	4.8	42	4.8	0.102	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
Appr	oach	42	4.8	42	4.8	0.102	10.0	LOS A	0.3	1.9	0.66	0.87	0.66	17.8
All Ve	ehicles	1074	5.2	1074	5.2	0.327	0.4	NA	0.3	1.9	0.03	0.03	0.03	55.4

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.

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

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

Mov	Movement Performance - Vehicles													
Mov	Turn	Demand F	lows	Arrival	Flows	Deg. Average Le					Effective	Aver. A	Averag	
ID						Satn	Delay	Service	Que		Queued	Stop	No.	е
		Total	HV	Total	HV				Vehicles	Distance		Rate	Cycles S	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
North	: Rese	rvoir Road												
7a	L1	1086	5.2	1086	5.2	0.305	4.5	LOS A	0.0	0.0	0.00	0.58	0.00	30.9
9a	R1	39	8.1	39	8.1	0.305	3.9	LOS A	0.0	0.0	0.00	0.58	0.00	31.0
Appro	oach	1125	5.3	1125	5.3	0.305	4.5	NA	0.0	0.0	0.00	0.58	0.00	30.9
South	nWest:	Reservoir I	Road											
30a	L1	1538	5.9	1538	5.9	0.419	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
Appro	oach	1538	5.9	1538	5.9	0.419	3.8	LOS A	0.0	0.0	0.00	0.54	0.00	33.5
All Ve	ehicles	2663	5.7	2663	5.7	0.419	4.1	NA	0.0	0.0	0.00	0.56	0.00	32.4

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.

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

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

#### 

Signalized inersection: Reservior Road - Great Western Hwy

Scenario: Existing PM Peak Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 140 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

Green Split Priority has been specified

Phase Sequence: Variable Phasing (phase reduction applied)

Reference Phase: Phase A

Input Phase Sequence: A, D, E, G, G1
Output Phase Sequence: A, D, E, G

Mov	Movement Performance - Vehicles													
Mov	Turn	Demand	Flows	Arrival	Flows	Deg.	Average		95% B		Prop.	Effective		Averag
ID		Total	H\/	Total	HV	Satn	Delay	Service	Que Vehicles		Queued	Stop Rate	No. Cycles	e Sneed
		veh/h		veh/h	%	v/c	sec		verlicies	m		Male	Cycles	km/h
Sout	South: Reservior Road													
1	L2	180	21.1	180	21.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	55.9
2	T1	713	5.5	713	5.5	0.888	63.0	LOS E	29.4	215.4	0.96	0.99	1.18	26.6
3	R2	186	4.8	186	4.8	0.763	72.6	LOS F	13.0	94.5	1.00	0.88	1.11	29.2
Appr	oach	1079	8.0	1079	8.0	0.888	55.2	LOS D	29.4	215.4	0.80	0.89	0.97	31.3
East	East: Great Western Hw													
4	L2	594	2.5	594	2.5	0.608	29.2	LOS C	23.2	166.0	0.74	0.88	0.89	43.7
5	T1	1169	4.0	1169	4.0	0.899	69.9	LOSE	29.9	216.6	1.00	1.01	1.23	31.8
6	R2	464	3.2	464	3.2	0.681	65.2	LOS E	15.0	107.8	0.99	0.84	0.99	14.5
Appr	oach	2227	3.5	2227	3.5	0.899	58.1	LOS E	29.9	216.6	0.93	0.94	1.09	31.8
North	n: Rese	ervior Road	l											
7	L2	152	2.0	152	2.0	0.794	58.5	LOS E	26.7	193.8	0.99	0.90	1.04	21.4
8	T1	666	5.9	666	5.9	0.794	52.9	LOS D	26.9	198.0	0.99	0.90	1.04	31.8
9	R2	208	7.2	208	7.2	0.872	80.7	LOS F	15.7	116.6	1.00	0.96	1.28	25.0
Appr	oach	1026	5.6	1026	5.6	0.872	59.4	LOS E	26.9	198.0	0.99	0.92	1.09	29.0
West	t: Great	t Western I	Hw											
10	L2	275	4.7	275	4.7	0.267	19.4	LOS B	8.3	60.7	0.52	0.73	0.52	49.4
11	T1	924	2.6	924	2.6	0.695	53.5	LOS D	19.4	138.6	0.98	0.83	0.98	37.0
12	R2	578	9.2	578	9.2	0.900	82.5	LOS F	22.6	170.7	1.00	0.96	1.29	33.5
Appr	oach	1777	5.1	1777	5.1	0.900	57.7	LOS E	22.6	170.7	0.91	0.86	1.01	36.2
All V	ehicles	6109	5.1	6109	5.1	0.900	57.7	LOS E	29.9	216.6	0.91	0.90	1.05	32.6

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.

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

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

Move	Movement Performance - Pedestrians												
Mov ID	Description	Demand Flow ped/h	Average Delay sec		Average Back Pedestrian ped	of Queue Distance m	Prop. Queued	Effective Stop Rate					
P1	South Full Crossing	50	54.1	LOS E	0.2	0.2	0.88	0.88					
P2	East Full Crossing	50	54.1	LOS E	0.2	0.2	0.88	0.88					
P3	North Full Crossing	50	53.3	LOS E	0.2	0.2	0.87	0.87					
P4	West Full Crossing	50	57.7	LOS E	0.2	0.2	0.91	0.91					

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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Organisation: TRAFFIX PTY LTD | Created: Tuesday, 17 September 2019 5:23:22 PM
Project: \\192.168.3.248\tdata\Synergy\Projects\15\15.533\Modelling\15.533m02v7 Blacktown Workers Sports Club ILUs Future (Signals)-Sidra 8.sip8





# Appendix G

Traffic Count Survey to Check Warrants



PEAK HR

25

17

## R.O.A.R. DATA Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

All Vehicles	WE	ST	NO	RTH	SO	JTH	
	Club A	ccess	Reserv	∕oir Rd	Reserv	oir Rd	
Time Per	Ŀ	<u>R</u>	<u>R</u>	<u>T</u>	<u>L</u>	<u>T</u>	TOTAL
1600 - 1615	11	7	5	223	17	287	550
1615 - 1630	7	7	5	315	14	362	710
1630 - 1645	8	3	14	294	27	394	740
1645 - 1700	5	5	14	223	15	327	589
1700 - 1715	5	2	2	245	14	323	591
1715 - 1730	8	3	9	275	14	374	683
1730 - 1745	9	2	14	215	12	287	539
1745 - 1800	8	3	16	232	21	312	592
1800 - 1815	8	5	7	241	18	349	628
1815 - 1830	19	5	14	221	10	296	565
1830 - 1845	3	8	14	168	9	250	452
1845 - 1900	7	8	8	167	8	245	443
1900 - 1915	2	2	5	169	14	230	422
1915 - 1930	6	5	7	158	10	221	407
1930 - 1945	25	12	5	140	12	194	388
1945 - 2000	25	15	9	149	7	194	399
Period End	156	92	148	3435	222	4645	8698

	WE	ST	NO	RTH	SO	UTH	
	Club A	ccess	Reserv	oir Rd	Reserv	oir Rd	
Peak Per	<u>L</u>	<u>R</u>	<u>R</u>	I	L	I	TOTAL
1600 - 1700	31	22	38	1055	73	1370	2589
1615 - 1715	25	17	35	1077	70	1406	2630
1630 - 1730	26	13	39	1037	70	1418	2603
1645 - 1745	27	12	39	958	55	1311	2402
1700 - 1800	30	10	41	967	61	1296	2405
1715 - 1815	33	13	46	963	65	1322	2442
1730 - 1830	44	15	51	909	61	1244	2324
1745 - 1845	38	21	51	862	58	1207	2237
1800 - 1900	37	26	43	797	45	1140	2088
1815 - 1915	31	23	41	725	41	1021	1882
1830 - 1930	18	23	34	662	41	946	1724
1845 - 1945	40	27	25	634	44	890	1660
1900 - 2000	58	34	26	616	43	839	1616

35

1077

70

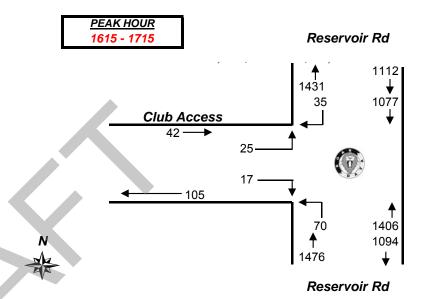
1406

2630

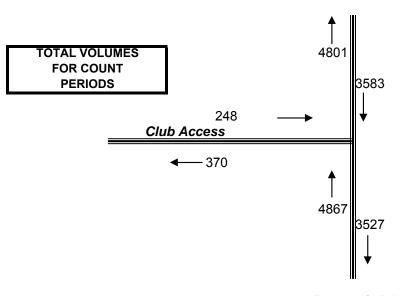
Client : Traffix

Job No/Name : 6680 BLACKTOWN Workers Club Access

Day/Date : Friday 19th January 2018



### Reservoir Rd



Reservoir Rd