Traffic Assessment

11 Gibbons Street, Redfern - Affordable Housing

St George Community Housing

Revision Record

No.	Author	Reviewed/Approved		Description	Date
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Contents

Table Index

Figure Index

1 Introduction

1.1 Background

TTM Consulting was engaged by St George Community Housing (SGCH) to prepare a traffic assessment report investigating a proposed development at 11 Gibbons Street, Redfern. The proposal involves the development of an eighteen-storey building comprising social and affordable housing units, ground floor commercial/retail space.

1.2 Scope

Planning NSW has specified the Secretary's Environmental Assessment Requirements in relation to the proposed development in their document issued 2 August 2016. Details of the SEARS requirements are presented below. Table 1-1 identifies how the requirements have been addressed.

The requirements of the SEARs include:

- provide existing and future development daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic and transport facilities provided on the road network;
- detail the proposed number of car parking spaces and bicycle parking provision and compliance with relevant parking controls;
- assess the impact of additional traffic generated by the proposed development on the existing road, pedestrian and bicycle network and operation of bus services;
- include details of service vehicle movements and site access arrangements (including vehicle type and likely arrival and departure times of service vehicles;
- demonstrate how users of the development will be able to make travel choices that support the achievement of State Plan targets. This includes describing the measures to be implemented to promote sustainable means of transport including public transport usage, car sharing scheme, pedestrian and bicycle linkages, end of trip facilities and parking provisions;
- demonstrate appropriate provision, design and location of on-site bicycle parking and end of trip facilities as per Austroads Cycling Aspects of Australian Guide; and
- prepare a draft Construction Traffic Management Pan which details the access arrangements at all stages of construction, and measures to mitigate any associated pedestrian, cyclists, public transport and traffic impacts. This Plan shall include truck routes, truck movements, hours of operation, access arrangements, parking arrangements and traffic control measures for all demolition/construction activities. Should the development require the closure of walking and/or cycling facilities, adequate safety and diversion measures should be installed to limit time delay and detour distances.

Table 1-1: SEARS requirements

Issue	Response
Provide existing and future development daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic and transport facilities provided on the road network	See section 4.2 See section 2.1 See section 2.2
detail the proposed number of car parking spaces and bicycle parking provision and compliance with relevant parking controls	See section 3.1 See section 3.3
assess the impact of additional traffic generated by the proposed development on the existing road, pedestrian and bicycle network and operation of bus services	See section 4.3
include details of service vehicle movements and site access arrangements (including vehicle type and likely arrival and departure times of service vehicles	See section 3.5
demonstrate how users of the development will be able to make travel choices that support the achievement of State Plan targets. This includes describing the measures to be implemented to promote sustainable means of transport including public transport usage, car sharing scheme, pedestrian and bicycle linkages, end of trip facilities and parking provisions	See section 2.2 See section 3.3 Transport Access Guide attached
demonstrate appropriate provision, design and location of on-site bicycle parking and end of trip facilities as per Austroads Cycling Aspects of Australian Guide; and	See section 3.3
prepare a draft Construction Traffic Management Pan which details the access arrangements at all stages of construction, and measures to mitigate any associated pedestrian, cyclists, public transport and traffic impacts. This Plan shall include truck routes, truck movements, hours of operation, access arrangements, parking arrangements and traffic control measures for all	Prepared as a separate document

demolition/construction activities. Should the development require the closure of walking and/or cycling facilities, adequate safety and diversion measures should be installed to limit time delay and detour distances	

1.3 Site location

The site is located at 11 Gibbons Street, Redfern, NSW within the City of Sydney Council. It is located south-east of the Redfern train station and south of Redfern police station.

The site has frontages to Gibbons Street, Marian Street and William Lane. The location of the site is shown in Figure 1.1 whereas the aerial image of the site is shown in Figure 1.2.

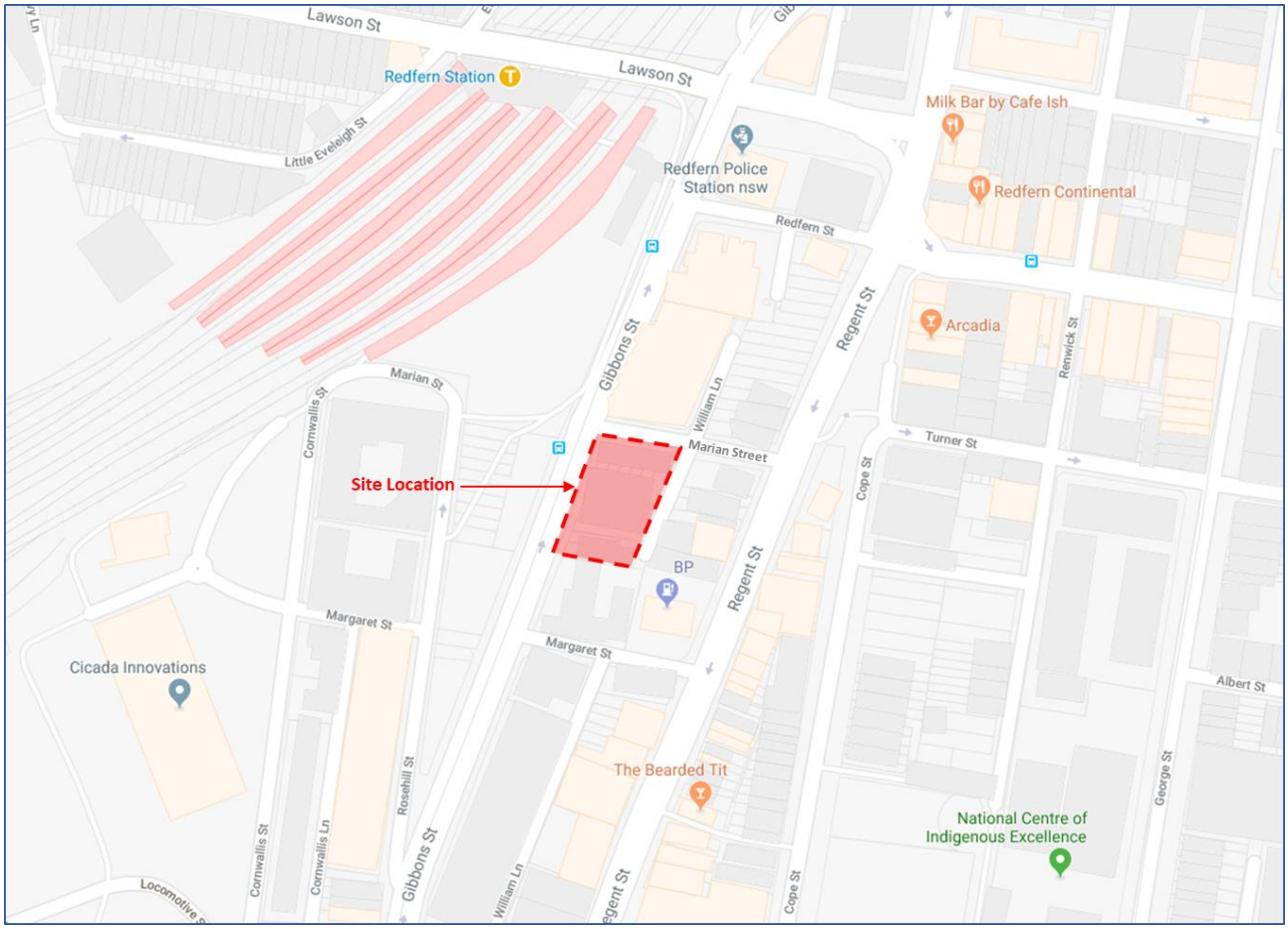


Figure 1.1: Site location

Figure 1.2: Aerial image of the site

1.4 Development profile

The proposed development is an affordable housing development having

- an 18 storey building with 160 social and affordable housing units
- a retail/commercial space, a community hub, St George Community Housing office space and a communal open space area on the ground floor
- bicycle parking
- public domain works

1.5 Access and parking

The development will have shop frontages and access for pedestrians from Gibbons Street and Marian Street. There are no car parking spaces provided for this development. The development is provided with up to 92 bicycle parking spaces accessible from William Lane.

Waste collection will be done on a private driveway south of the development between William Lane and Gibbons Street. General delivery and removalist trucks will most likely access the site through William Lane.

2 Existing Transport Infrastructure

2.1 Road network details

Gibbons Street and Regent Street are state roads administered by NSW Roads and Maritime Services (RMS). Marian Street and William Lane are administered by City of Sydney Council. The characteristics of roads near the site are shown below in Table 2-1.

Table 2-1: Road Characteristics

Road	Speed Limit	Lanes	Road Authority
Gibbons Street	60kph	4 (one-way)	RMS
Regent Street	60kph	4 (one-way)	RMS
Marian Street	50kph	1 (one-way)	Council
William Lane	40kph	laneway	Council

Gibbons Street is a one-way four lane street with unrestricted parking on the western side of Gibbons Street. There is a bus zone and a taxi zone on the western side. Clearway restrictions (6am-10am, 3pm-7pm; Mon-Fri) and 2P parking restrictions (10am-3pm, Mon-Fri; 8:30am-12:30pm, Sat) apply on the eastern side of the street.

Regent Street is a one-way four lane street with parking areas on both side of the street. There is an indented layby for buses along with bus stops. A small area is reserved for motor bikes parking opposite Marian Street. 1P parking restrictions (8:30am-6pm, Mon-Fri; 8:30am-12:30pm, Sat) apply along both sides of the street.

Marian Street is a one lane street which acts as a connector between Gibbons Street and Regent Street. It forms Right-In-Right-Out intersections with Regent Street and Gibbons Street respectively. There are approximately four 1P parking spaces on one side and 'No Stopping" restrictions on the other side. There is a GoGet car share spot near Gibbons-Marian Street intersection.

William Lane is a narrow laneway running across Marian Street. It provides rear access to developments for parking and loading/unloading purposes. 'No Stopping' and 'No Parking' restrictions apply throughout the laneway.

The surrounding street views are shown in Figure 2.1 to Figure 2.4.

Figure 2.1: Gibbons Street view

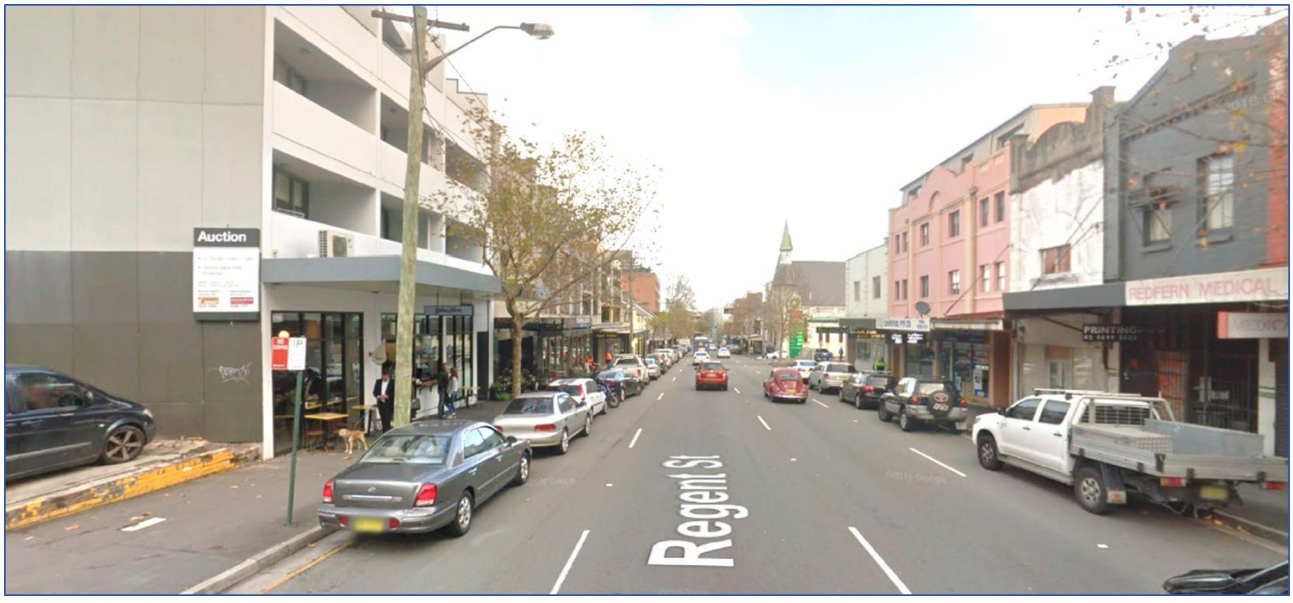


Figure 2.2: Regent Street view

Figure 2.3: Marian Street view

Figure 2.4: William Lane view

2.2 Public transport and pedestrian facilities

2.2.1 Public transport

The development has good access to public transport facilities. Redfern train station is located less than 150 metres from the site. It provides access to T1 (North Shore, Northern & Western Line), T2 (Inner West & Leppington Line), T3 (Bankstown Line), T4 (Eastern Suburbs & Illawarra Line) and T8 (Airport & South Line).

There are three bus stops located within 300 metres of the site. The bus stops are present along Gibbons Street and Regent Street. The services stopping at this bus stop include:

- Route 305 running between Stamford Hotel to Central Railway Square
- Route 308 running between Marrickville Metro to City Gresham St via Redfern
- Route 309 running between Port Botany Depot to Central Railway Square
- Route 310 running between Eastgardens to Central Railway Square via Botany Rd
- Route L09 running between Port Botany to Redfern (Limited Stops)
- Route N11 running between Cronulla to City Town Hall
- Route N20 running between Riverwood to City Town Hall via Airport

The locations of the train station and bus stops are shown in Figure 2.5.

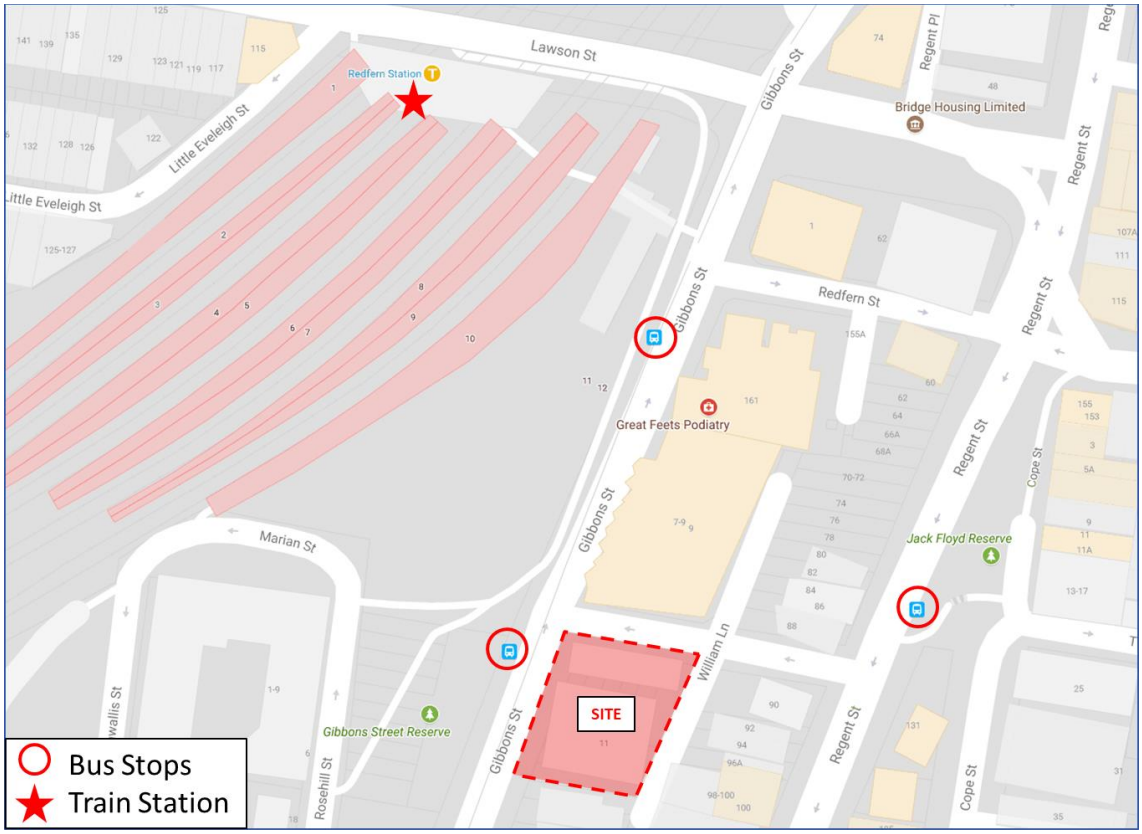


Figure 2.5: Location of train station and bus stops

2.2.2 Pedestrian facilities

Pedestrian footpaths are located along the site frontage on Gibbons Street and Marian Street. The footpaths are approximately two metres wide. There is good connectivity for pedestrians across streets with kerb ramps provided. Figure 2.6 shows the pedestrian footpaths near the site.

Figure 2.6: Pedestrian footpaths on Gibbons & Marian Street

2.2.3 Bicycle facilities

The proposed development site does not have direct access to bicycle paths or lanes. There are some bicycle paths present near the site. The location of bicycle facilities is shown in Figure 2.7.

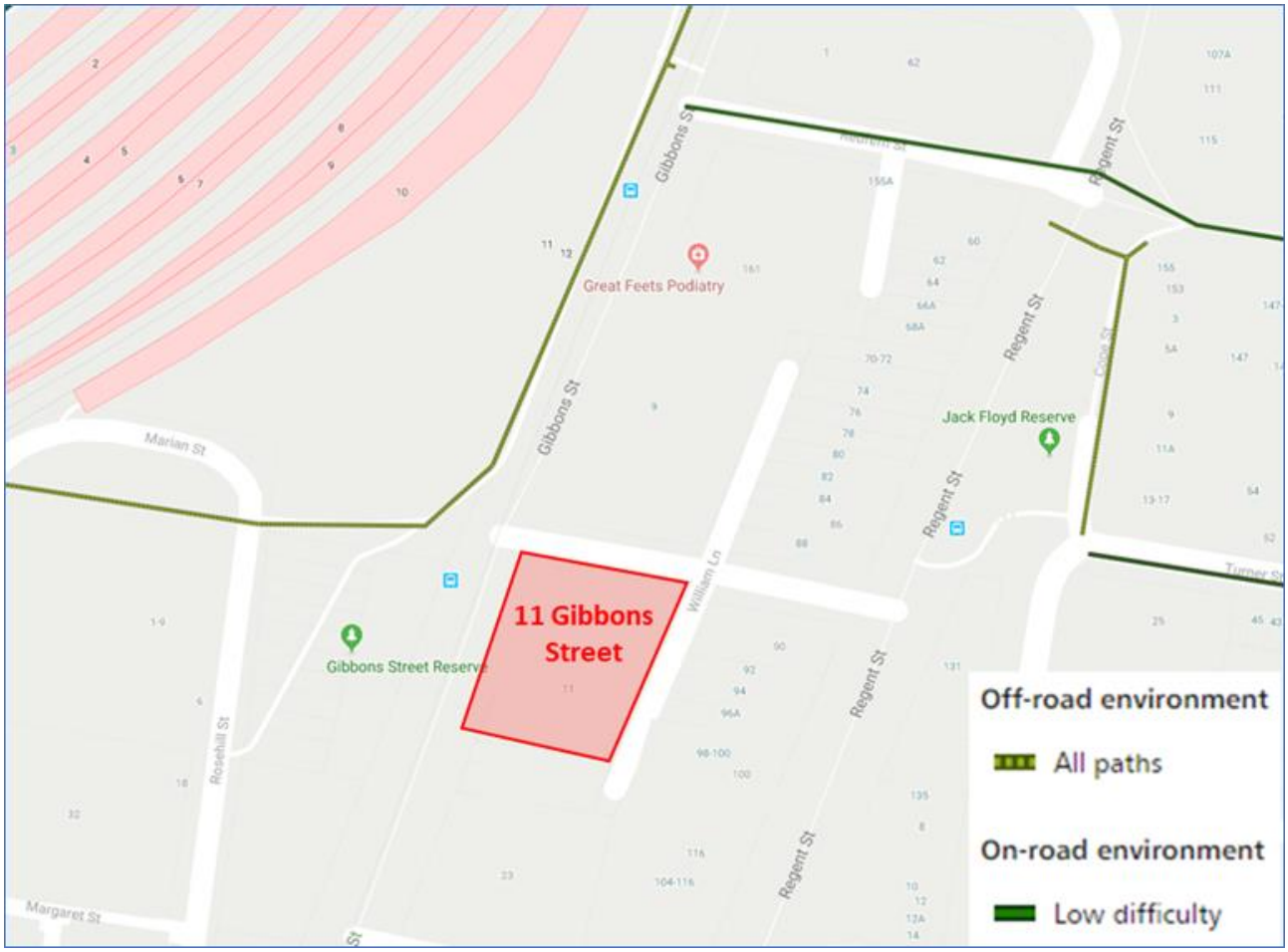


Figure 2.7: Bicycle facilities near site

3 Parking Arrangements

3.1 Car parking supply requirement

The proposed development includes social and affordable housing units and retail/commercial space on the ground floor.

State Environmental Planning Policy (Affordable Rental Housing) 2009 applies to the development. It is a Division 5 Residential flat building being developed by a social housing provider. The development is within the Sydney region and within 300 metres of Redfern railway station.

Part 2, Division 1, Clause 14 of the SEPP states that development cannot be refused consent on the following standards related to parking:

a) parking

if:

(i) in the case of a development application made by a social housing provider for development on land in an accessible area—at least 0.4 parking spaces are provided for each dwelling containing 1 bedroom, at least 0.5 parking spaces are provided for each dwelling containing 2 bedrooms and at least 1 parking space is provided for each dwelling containing 3 or more bedrooms, or

(ii) in any other case—at least 0.5 parking spaces are provided for each dwelling containing 1 bedroom, at least 1 parking space is provided for each dwelling containing 2 bedrooms and at least 1.5 parking spaces are provided for each dwelling containing 3 or more bedrooms

The parking requirements for office/business premises and retail premises are contained in Sydney Local Environmental Plan 2012. The parking provisions identified here are the maximum number of car parking spaces that can be provided for each land use. The parking requirements for office/business premises and retail premises are mentioned in Part 7, Division 1, Clause 7.6 and Clause 7.7 respectively.

7.6 Office premises and business premises

The maximum number of car parking spaces for a building used for the purposes of office premises or business premises is as follows:

(a) if the building is on land in category D and has a floor space ratio of no more than 3.5:1—1 space for each 175 square metres of gross floor area of the building used for those purposes,

(b) if the building is on land in category E and has a floor space ratio of no more than 2.5:1—1 space for each 125 square metres of gross floor area of the building used for those purposes,

(c) if the building is on land in category F and has a floor space ratio of no more than 1.5:1—1 space for each 75 square metres of gross floor area of the building used for those purposes,

(d) if the building is on land in category D, E or F and has a floor space ratio greater than that specified in paragraph (a), (b) or (c) respectively, the following formula is to be used:

$$M = (G \times A) \div (50 \times T)$$

where:

M is the maximum number of parking spaces, and

G is the gross floor area of all office premises and business premises in the building in square metres, and

A is the site area in square metres, and

T is the total gross floor area of all buildings on the site in square metres.

7.7 Retail premises

(1) This clause does not apply to a building if the building has more than 2,000 square metres of gross floor area used for the purposes of retail premises.

(2) The maximum number of car parking spaces for a building used for the purposes of retail premises is as follows:
(a) if the building is on land in category E—1 space for each 60 square metres of gross floor area of the building used for those purposes,

(b) if the building is on land in category F—1 space for each 50 square metres of gross floor area of the building used for those purposes,

(c) if the building is on land in category D and has a floor space ratio of no more than 3.5:1—1 space for each 90 square metres of gross floor area of the building used for those purposes,

(d) if the building is on land in category D and has a floor space ratio greater than 3.5:1, the following formula is to be used:

$$M = (G \times A) \div (50 \times T)$$

where:

M is the maximum number of parking spaces, and

G is the gross floor area of all retail premises in the building in square metres, and

A is the site area in square metres, and

T is the total gross floor area of all buildings on the site in square metres

The area details for the proposed development are shown in Figure 3.1.

	Controls	Proposed
Site Area	1578 m²	
FSR	7.00	
Max. Allowable GFA	11046 m²	
ARHSEPP 20% Bonus FSR	8.40	8.39
Max. Allowable GFA	13255 m²	13238 m²

Apartment Mix Breakdown

	Studio	1 Bed	1Bed+S	2 Bed	3 Bed	Dual Key	Subtotal	NLA	NSA	GFA
Ground Floor							0	574		760
Level 1	0	2	0	6	1	1	10		803	992
Level 2	0	2	0	6	1	1	10		803	992
Level 3	0	3	0	3	0	0	6	50	380	521
Level 4	0	2	0	4	0	0	6		395	472
Level 5	0	3	1	6	0	0	10		649	741
Level 6	0	3	1	6	0	0	10		649	741
Level 7	0	3	1	6	0	0	10		649	741
Level 8	0	3	1	6	0	0	10		649	741
Level 9	0	3	1	6	0	0	10		649	741
Level 10	0	3	1	6	0	0	10		649	741
Level 11	0	3	1	6	0	0	10		649	741
Level 12	0	3	1	6	0	0	10		649	741
Level 13	0	3	1	6	0	0	10		649	741
Level 14	0	3	1	6	0	0	10		649	741
Level 15	0	3	1	6	0	0	10		649	741
Level 16	0	3	1	6	0	0	10		649	741
Level 17	0	2	1	5	0	0	8		526	609
Subtotal	0	47	13	96	2	2	**160**	624	10695	13238
Percentage Mix	*0%*	*29%*	*8%*	*60%*	*1%*	*1%*	*100%*			

1 Bed	47	*29%*
1Bed+S	13	*8%*
2 Bed	96	*60%*
3 Bed	2	1%
Dual Key	2	1%
Total Units	160	

Figure 3.1: Area details for the proposed development

The development is not categorized according to Sydney Local Environmental Plan 2012 Public Transport Accessibility Level Sheet 09. The developments in the surrounding area are in category E. The maximum car parking spaces which can be provided for commercial/business and retail areas if the development is considered in category E is shown in Table 1-1.

Table 3-1: Parking spaces requirement Sydney LEP

Land use	Category	Parking Rate	GFA (sq.m)	Max Parking Spaces
Office/Business	E	0.008	341	2.72
Retail	E	0.0167	163	2.72
Total				6.00

The maximum parking that can be provided for commercial and retail land use has been calculated to be six parking spaces.

3.2 Car parking provision

The development is in a central location in Sydney. It is also in an excellent location with regards to accessibility to public transport. Trains at Redfern station and buses at nearby bus stops provide travel options to throughout the Sydney region.

The proposed development is also visioned to say something about future with less dependency on cars and more on sustainable transport. This development aligns with this vision and aims to rely on sustainable transport.

SGCH have advised that car ownership within their tenants is typically low as residents are on low incomes. Given the high level of accessibility of the site to public transport car parking is not proposed on site.

A meeting was held for this project with representatives the City of Sydney and State Government agencies. It was proposed in the meeting that the development will not be provided with any resident car parking spaces within the development. There was general consensus that this was in line with the planned use and proximity to public transport.

It is our advice that the development can satisfactorily operate without any car parking spaces. SGCH will ensure during the allocation process that tenants that are offered housing at this site do not require off street parking.

3.3 Bike parking requirement and provision

The parking requirement for bike parking spaces is presented in Sydney Development Control Plan 2012, Section 3 General Provisions, 3.11 Transport and Parking, Table 3.5: On-site bike parking rates. Bike parking rates relevant to the proposed development are presented in Table 3-2.

Table 3-2: Bike parking rates

Proposed Use	Residents/Employees	Customers/ Visitors
Residential accommodation	1 per dwelling	1 per 10 dwellings
Office premises or business premises	1 per 150sqm GFA	1 per 400sqm GFA
Shop, Restaurant or café	1 per 250sqm GFA	2 plus 1 per 100sqm over 100sqm GFA

Bike parking requirements for the proposed land uses is presented in Table 3-3.

Table 3-3: Bike parking spaces required

Land use	Category	Parking Rate	Unit	Required Bicycle Parking
Residential accommodation	Residents	1 per dwelling	160 apartments	160
	Visitors	1 per 10 dwellings		16
	Employees	1 per 150 sqm GFA	341 GFA (sq.m)	3

Office or Business premises	Visitors	1 per 400 sqm GFA		1
Retail/Cafe	Employees	1 per 250 sqm GFA	163 GFA (sq.m)	1
	Visitors	2 plus 1 per 100sqm over 100 sqm GFA		3
Total				**184**

The design of bike parking spaces is to be provided in accordance with AS 2890.3. Typical bike parking dimensions are shown in Figure 3.2.

There is latitude for variation of the dimensions when vertical staggered racks are used. The width of the spaces can be reduced to 450 mm.

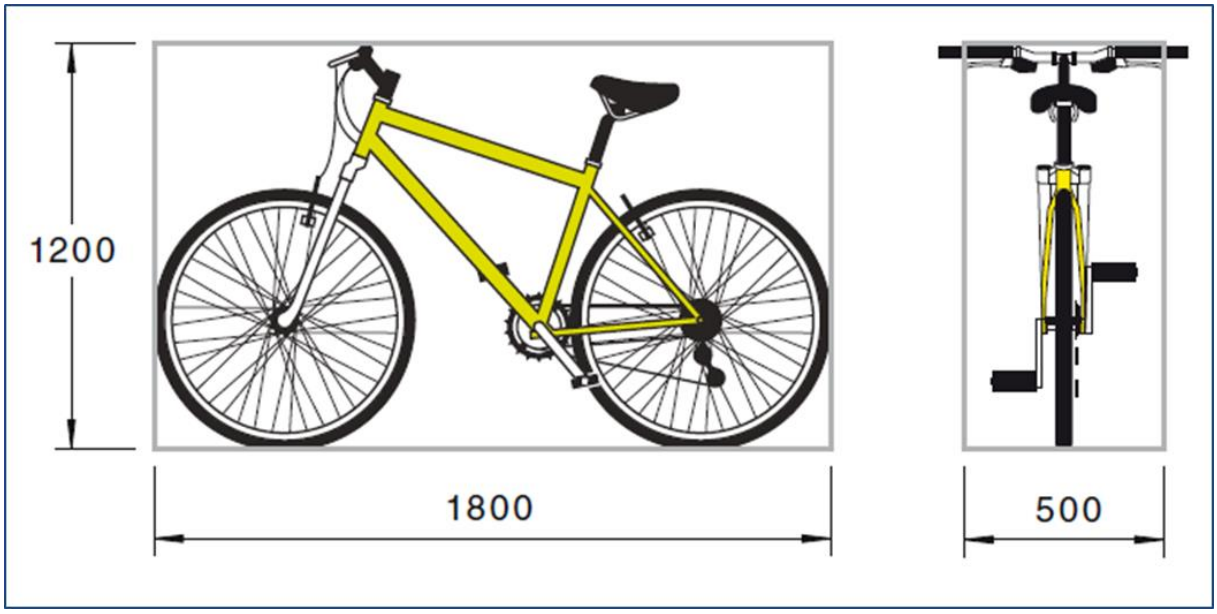


Figure 3.2: Typical bicycle parking dimensions in mm

92 resident bike parking spaces have been provided on the ground floor of the development. The bike parking area is accessible from William Lane and from inside the development.

The 92 spaces does not strictly comply with the DCP guideline which, if applied literally, would require around 160 resident and 16 visitor bicycle spaces. 8 spaces for the commercial/retail would also be required. We recommend that the bicycle spaces are not allocated to individual apartments or other uses. By sharing the parking area this provides the opportunity to reduce the overall parking requirement.

3.4 Motorcycle parking requirement

The parking requirement for motorcycle parking spaces is presented in Sydney Development Control Plan 2012 Schedule 7 Transport, parking and access, 7.8.4 Motorcycle parking spaces, and is as follows:

(1) In all buildings that provide onsite parking, 1 motorcycle parking space for every 12 car parking spaces is to be provided as separate parking for motorcycles. Each motorcycle parking space is to be designated and located so that parked motorcycles are not vulnerable to being struck by a manoeuvring vehicle.

It is noted that as this application is a State Significant development the provisions of the DCP do not strictly apply to this development.

The development is not provided with any car parking spaces and as a result there is no calculated requirement for motorcycle parking spaces.

3.5 Waste & service vehicles

Waste collection will be accommodated on an extension of William Lane towards Gibbons Street. The private driveway is six metres wide and will be secured by gates on either side. A 9.54-metre rear loading waste collection truck will be accessing the private laneway. Swept path analysis has been performed for the waste collection truck and shown in Appendix B.

Service vehicles will access the site from William Lane and the private driveway connecting William Lane and Gibbons Street. Deliveries will be limited to 8.8 metre length medium rigid vehicles.

4 Impact of Proposed Development

4.1 Traffic Surveys

TTM Data conducted traffic surveys at the intersections of Gibbons-Marian Street and Regent-Marian Street from 07:00am to 10:00am and 04:00pm to 07:00pm on Thursday, 17th May 2018.

Peak hour details of the surveyed intersections were found to be:

- Morning Peak; Gibbons-Marian Street; 08:00am to 09:00am
- Evening Peak; Gibbons-Marian Street; 05:30pm to 06:30pm
- Morning Peak; Regent-Marian Street; 07:00am to 08:00am
- Evening Peak; Regent-Marian Street; 04:00pm to 05:00pm

The peak hour traffic survey data for the surveyed intersection is presented in Appendix C.

4.2 Assessment of existing traffic conditions

TTM has assessed the performance of the intersections using the SIDRA Intersection Analysis Software. Performance criteria for intersections are based on the RTA (RMS) Guide to Traffic Generating Developments. A qualitative rating and its corresponding Level of Service (LoS) are applied to the average delay per vehicle as shown in Table 4.1.

Table 4.1: Level of Service Criteria or Intersections

Level of Service (LoS)	Average Delay per Vehicle (seconds)	Traffic Signals, Roundabouts
A	Less than 15	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity; at signals incidents will cause excessive delays

For signals, average delays per vehicle are for the intersection as a whole. If the average delay for the worst movement is greater than the cycle time, a Level of Service F is assigned, regardless of the average delay for the intersection as a whole. For Roundabouts / Give Way / Stop Signs, average delay per vehicle is for the worst movement.

4.2.1 Analysis of Gibbons Street / Marian Street intersection

Table 4.2 and Table 4.3 give a summary of the SIDRA results for the current volumes applied to the existing intersection configuration.

Table 4.2: Summary of SIDRA Outputs for Gibbons Street / Marian Street intersection – Morning Peak

Direction	Degree of Saturation (%)	Average Delay (sec)	Level of Service (LoS)
South: Gibbons Street	0.268	0.0	NA
East: Marian Street	0.227	36.0	C

Table 4.3: Summary of SIDRA Outputs for Gibbons Street / Marian Street intersection – Evening Peak

Direction	Degree of Saturation (%)	Average Delay (sec)	Level of Service (LoS)
South: Gibbons Street	0.253	0.0	NA
East: Marian Street	0.279	30.5	C

The Gibbons Street has LoS as Not Applicable (NA) since the average delay is not a good LoS measure due to zero delays associated with major road movements.

The results for Marian Street indicate that the approach operates at a satisfactory level.

4.2.2 Analysis of Regent Street / Marian Street intersection

Table 4.4 and Table 4.5 give a summary of the SIDRA results for the current volumes applied to the existing intersection configuration.

Table 4.4: Summary of SIDRA Outputs for Regent Street / Marian Street intersection – Morning Peak

Direction	Degree of Saturation (%)	Average Delay (sec)	Level of Service (LoS)
North: Street	0.279	0.2	NA

Table 4.5: Summary of SIDRA Outputs for Regent Street / Marian Street intersection – Evening Peak

Direction	Degree of Saturation (%)	Average Delay (sec)	Level of Service (LoS)
North: Street	0.288	0.1	NA

The LoS results for the Regents Street and Marian Street intersection is Not Applicable. This is because Regent Street and Marian Street operate as one-way approach movements and therefore do not experience any opposing flow delays.

4.3 Assessment of future impact

As per the car parking analysis in section 3.1, the development will not be provided with any car parking spaces. This prevents any impact of development trips taking place.

Some of the residents of the proposed development might rely on taxis or car share as a mode of transport. These trips would not adversely impact existing traffic conditions.

It can be deduced that the proposed development will not have any adverse traffic impacts on the existing intersection configurations.

5 Summary and Conclusions

5.1 Development Access

The proposed egress onto Gibbons Street is satisfactory.

5.2 Parking Arrangements

Car parking spaces are not provided for this development considering its excellent access to public transport options and keeping in view State Plan targets to promote sustainable modes of transport.

98 bicycle parking spaces have been provided.

5.3 Impact on Surrounding Road Network

The proposed development will not have a significant impact on the road network. No mitigating road works are required.

5.4 Service Vehicle Arrangements

Servicing for this development will be facilitated through private driveway connecting William Lane and Gibbons Street. The service vehicle arrangement is considered acceptable for the development.

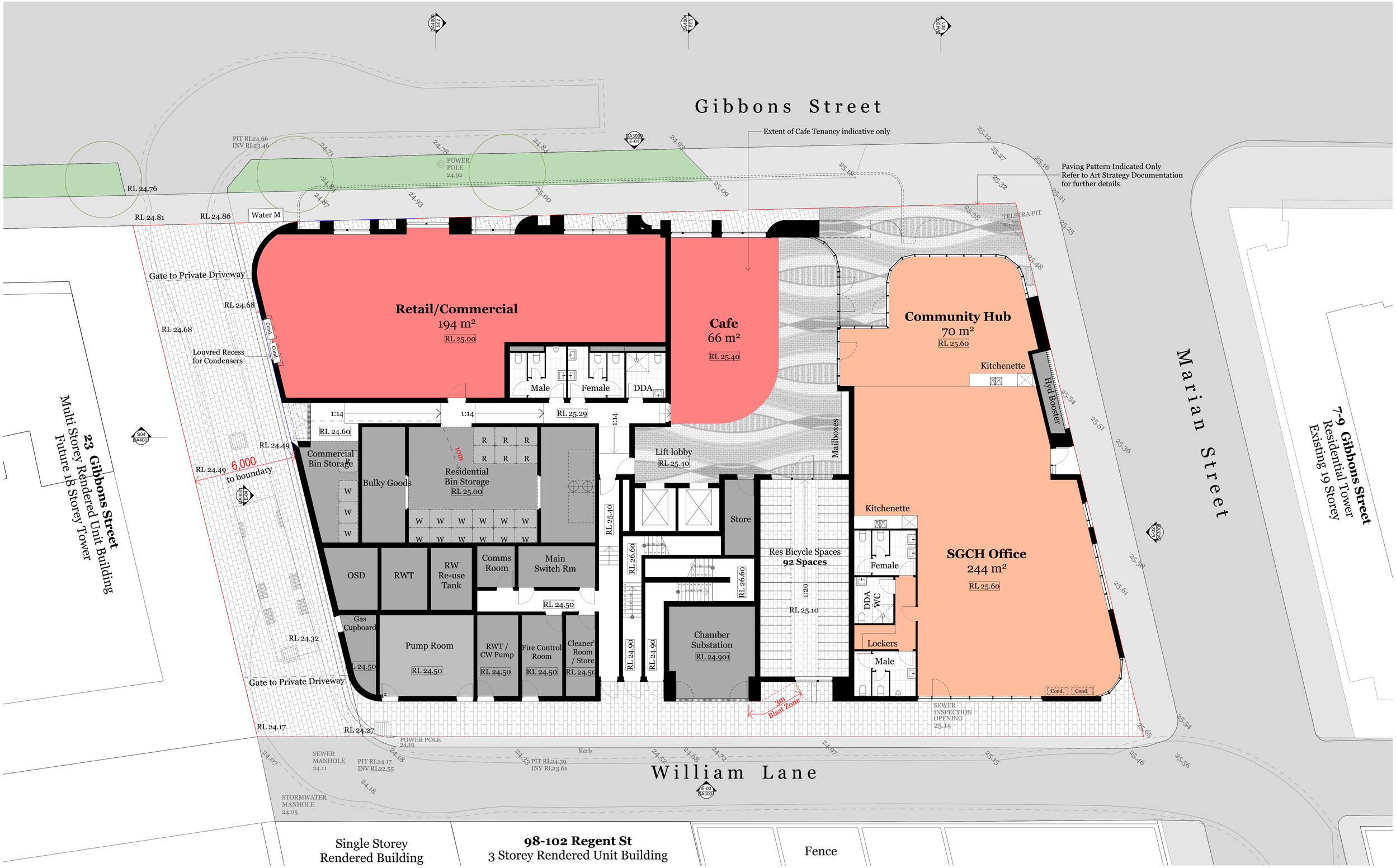
5.5 Active Transport Facilities

The current public transport infrastructure and proposed site provisions for pedestrian facilities is acceptable.

5.6 Conclusion

TTM see no traffic engineering reason why the relevant approvals should not be granted.

Appendix A Proposed Site Plan



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Rev.	Date	By	Ckd	Description
P1	07/09/18	RY	KL	Plans for Review
P2	18/09/18	RY	SO	Arch Set for Review
A	27/09/18	RY	SO	Arch Set for DA Submission

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Project Name	11 Gibbons street
Project Address	11 Gibbons Street, Redfern, NSW 2016
Client	SGCH

Project Number	11929
Drawing Name	Ground Level
Scale	1:100@A1
Date	September 2018

Issue for Approval

Drawing Number **DA2000**
Revision **A**

11 Gibbons St Redfern
Development Summary

	Controls	Proposed
Site Area	1578 m²	
FSR	7.00	
Max. Allowable GFA	11046 m²	
ARHSEPP 20% Bonus FSR	8.40	**8.39**
Max. Allowable GFA	13255 m²	**13238 m²**

Apartment Mix Breakdown

	Studio	1 Bed	1Bed+S	2 Bed	3 Bed	Dual Key	Subtotal	NLA	NSA	GFA
Ground Floor							0	574		760
Level 1	0	2	0	6	1	1	10		803	992
Level 2	0	2	0	6	1	1	10		803	992
Level 3	0	3	0	3	0	0	6	50	380	521
Level 4	0	2	0	4	0	0	6		395	472
Level 5	0	3	1	6	0	0	10		649	741
Level 6	0	3	1	6	0	0	10		649	741
Level 7	0	3	1	6	0	0	10		649	741
Level 8	0	3	1	6	0	0	10		649	741
Level 9	0	3	1	6	0	0	10		649	741
Level 10	0	3	1	6	0	0	10		649	741
Level 11	0	3	1	6	0	0	10		649	741
Level 12	0	3	1	6	0	0	10		649	741
Level 13	0	3	1	6	0	0	10		649	741
Level 14	0	3	1	6	0	0	10		649	741
Level 15	0	3	1	6	0	0	10		649	741
Level 16	0	3	1	6	0	0	10		649	741
Level 17	0	2	1	5	0	0	8		526	609
Subtotal	0	47	13	96	2	2	**160**	624	10695	13238
Percentage Mix	*0%*	*29%*	*8%*	*60%*	*1%*	*1%*	*100%*			

1 Bed	47	*29%*
1Bed+S	13	*8%*
2 Bed	96	*60%*
3 Bed	2	1%
Dual Key	2	1%
Total Units	160	

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St George Community Housing

Rev.	Date	By	Ckd	Description
P1	07/09/18	RY	KL	Plans for Review
P2	18/09/18	RY	SO	Arch Set for Review
A	27/09/18	RY	SO	Arch Set for DA Submission

DKO Architecture (NSW) Pty Ltd
119 Redfern Street
Redfern, NSW 2016
T +61 2 8346 4500
info@DKO.com.au
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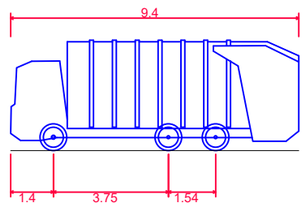
ABN: 81956706590

Project Name	11 Gibbons street
Project Address	11 Gibbons Street, Redfern, NSW 2016
Client	SGCH
Project Number	11929
Drawing Name	Development Summary
Scale	
Date	September 2018
	Issue for Approval
Drawing Number	**DA1006**
Revision	**A**

Appendix B Swept Path Garbage Truck



Refuse Truck Strathfield

Overall Length	9.400m
Overall Width	2.500m
Overall Body Height	3.600m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	9.000m

RCV - FULL SITE MANOEUVRE

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
B	30-08-18	ORIGINAL ISSUE	LD	BH	CH
A	31-05-18	ORIGINAL ISSUE	BH	CH	CH

SCALE 0 4 8 12 16 20m
SCALE 1:400 AT ORIGINAL SIZE

NORTH

CLIENT: SGCH

TTM CONSULTING PTY LTD
ABN 65 010 868 621
LEVEL 5, Suite 501, 174 Pacific Highway
Greenwich NSW 2065
T: (02) 9418 3033 F: (02) 9418 3112
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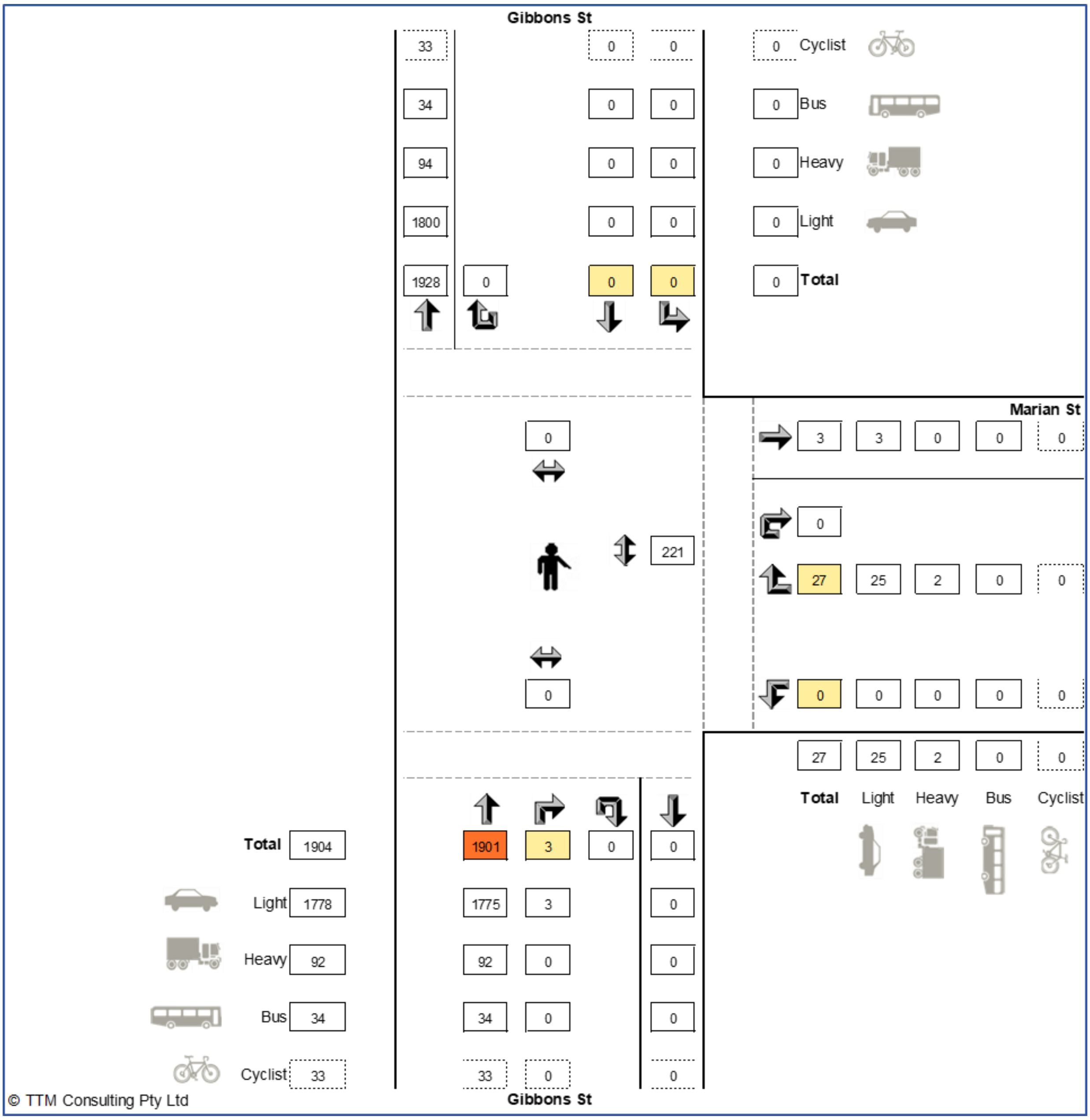
PROJECT: **11 GIBBONS STREET, REDFERN AFFORDABLE HOUSING**

DRAWING TITLE: **SWEPT PATH ANALYSIS**
DESIGN VEHICLES - RCV

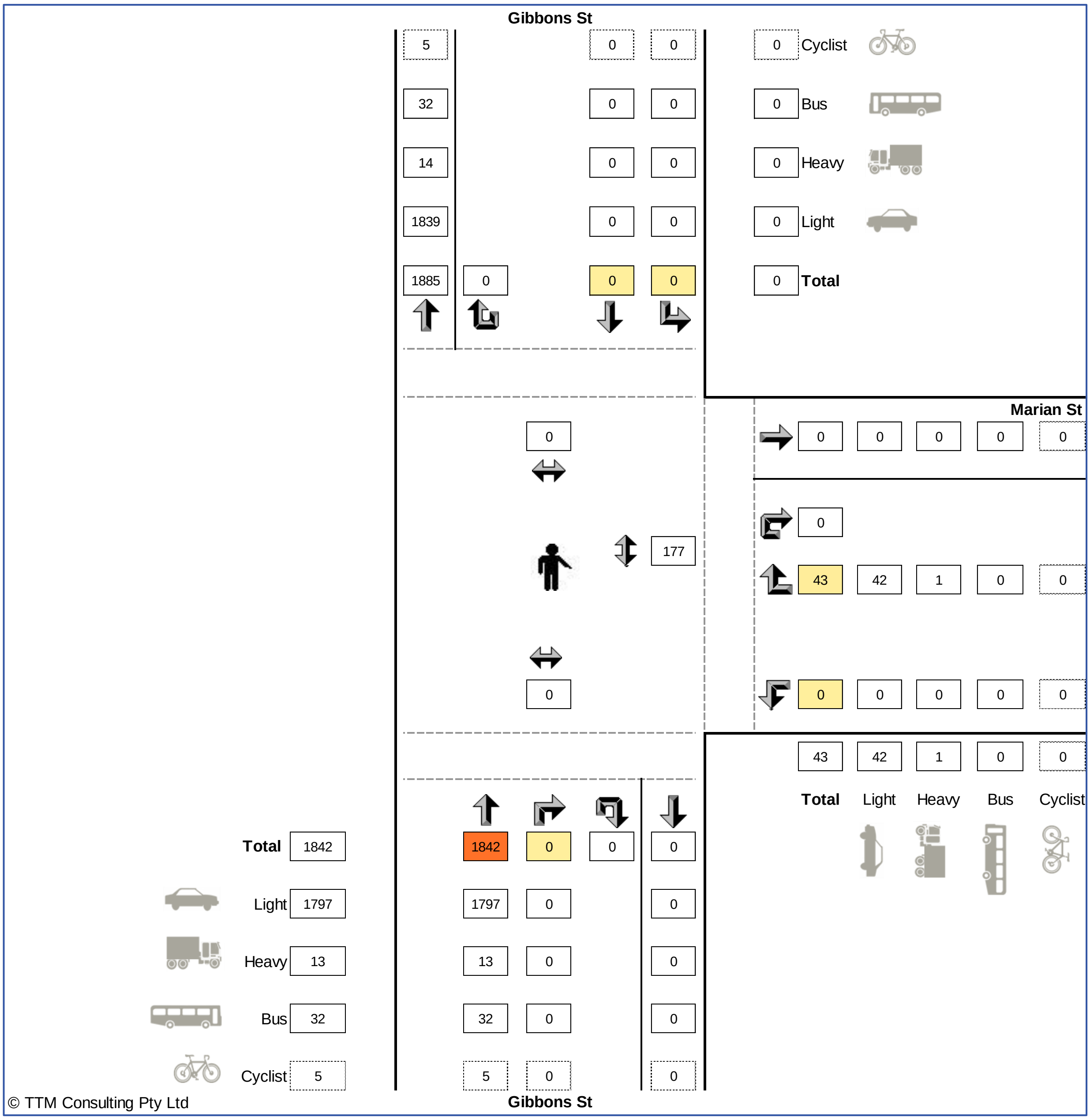
PROJECT NUMBER	ORIGINAL SIZE
18SYT0040	A3
DRAWING NUMBER	REVISION
18SYT0040-01	A
DATE	SHEET
30 Aug 2018	1 OF 1

\\ttmfps01\synergy\sy\synergy\projects\18syt\18syt0040 11 gibbons street, redfern affordable housing\3 - plans\ttm\180830 - rev b - updated plans\18syt0040 rev b.dwg

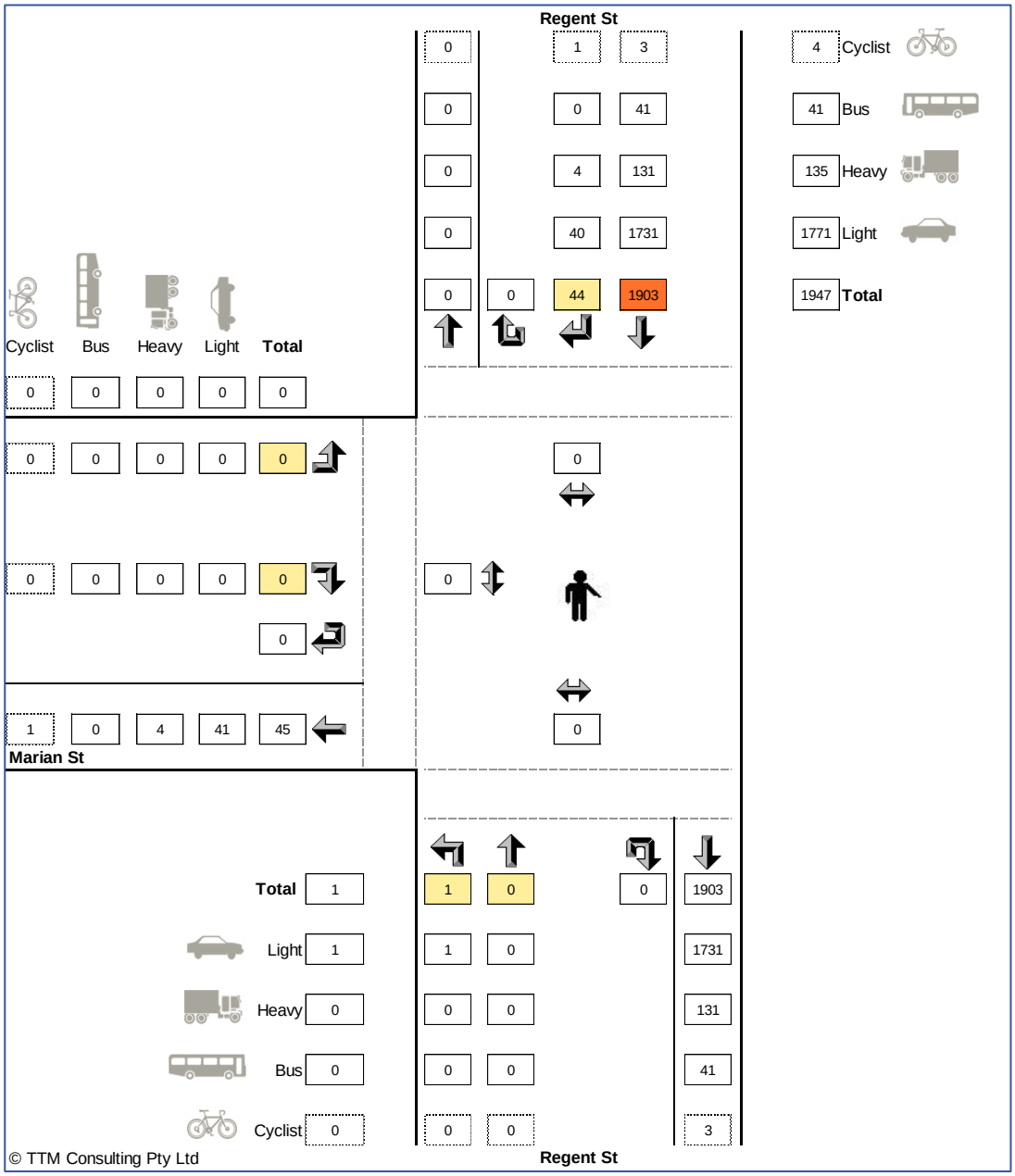
Appendix C Peak Hour Traffic Survey Data



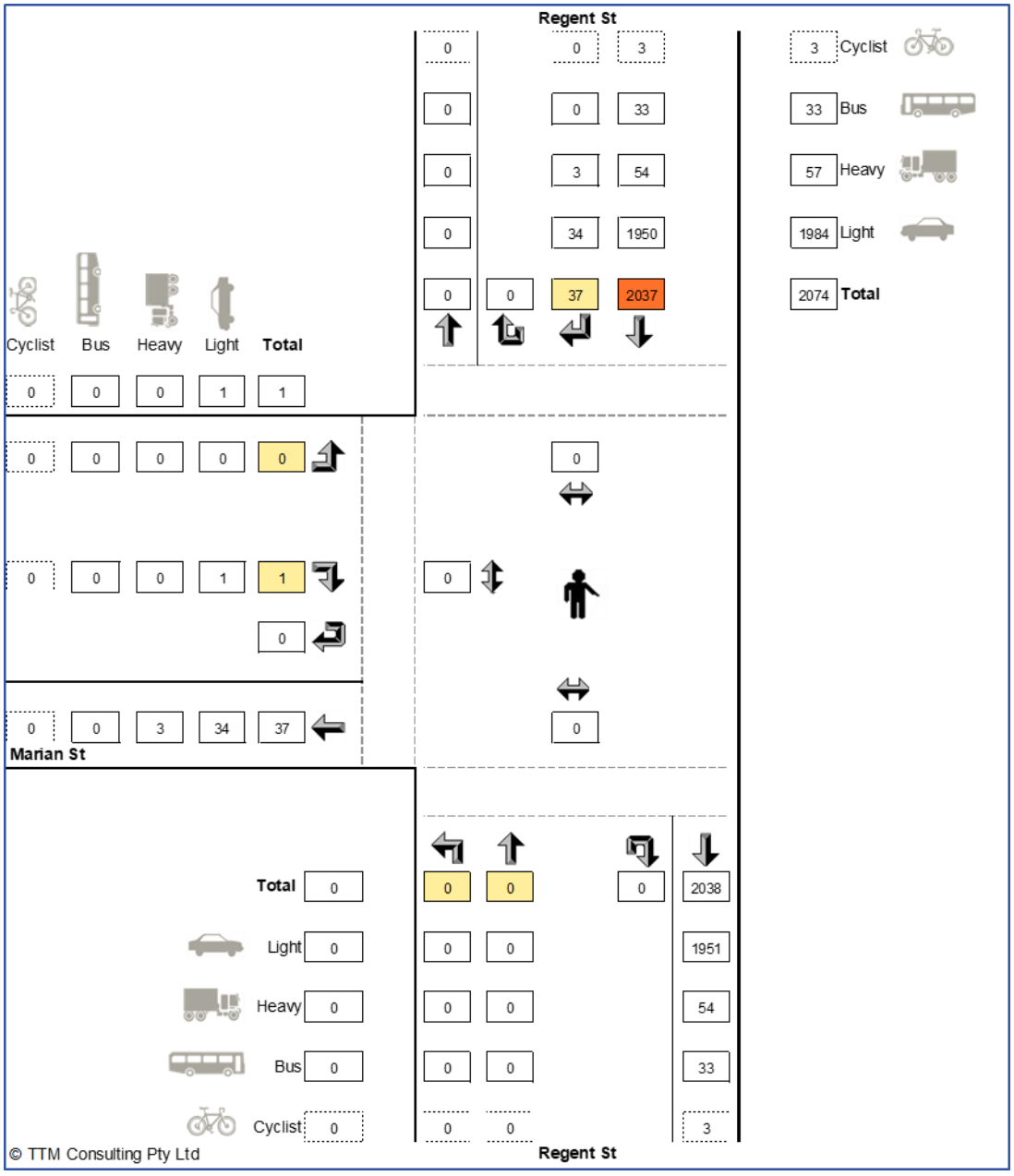
Morning Peak – Gibbons Street / Marian Street intersection (08:00 to 09:00 am)



Evening Peak – Gibbons Street / Marian Street intersection (05:30 to 06:30 pm)



Morning Peak – Regent Street / Marian Street intersection (07:00 to 08:00 am)



Evening Peak – Regent Street / Marian Street intersection (04:00 to 05:00 pm)

Appendix D SIDRA Intersection Analysis

MOVEMENT SUMMARY

Site: 101 [Base Case: Gibbon - Marian Street Intersection Morning Peak]

Gibbon - Marian Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gibbons Street											
2	T1	2001	6.6	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		2001	6.6	0.268	0.0	NA	0.0	0.0	0.00	0.00	59.9
East: Marian Street											
6	R2	28	7.4	0.227	36.0	LOS C	0.7	5.0	0.93	0.99	36.5
Approach		28	7.4	0.227	36.0	LOS C	0.7	5.0	0.93	0.99	36.5
All Vehicles		2029	6.6	0.268	0.5	NA	0.7	5.0	0.01	0.01	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

MOVEMENT SUMMARY

Site: 101 [Base Case: Gibbon - Marian Street Intersection Evening Peak]

Gibbon - Marian Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gibbons Street											
2	T1	1939	2.4	0.253	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1939	2.4	0.253	0.0	NA	0.0	0.0	0.00	0.00	59.9
East: Marian Street											
6	R2	45	2.3	0.279	30.5	LOS C	0.9	6.2	0.92	1.00	38.8
Approach		45	2.3	0.279	30.5	LOS C	0.9	6.2	0.92	1.00	38.8
All Vehicles		1984	2.4	0.279	0.7	NA	0.9	6.2	0.02	0.02	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

MOVEMENT SUMMARY

Site: 101 [Base Case: Regent - Marian Street Intersection Morning Peak]

Regent - Marian Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: Regents Street											
8	T1	2003	9.0	0.279	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
9	R2	46	9.1	0.279	5.9	LOS A	0.0	0.0	0.00	0.06	56.6
Approach		2049	9.0	0.279	0.2	NA	0.0	0.0	0.00	0.01	59.7
All Vehicles		2049	9.0	0.279	0.2	NA	0.0	0.0	0.00	0.01	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

MOVEMENT SUMMARY

Site: 101 [Base Case: Regent - Marian Street Intersection Evening Peak]

Regent - Marian Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: RoadName											
8	T1	2144	4.3	0.288	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
9	R2	39	8.1	0.288	5.8	LOS A	0.0	0.0	0.00	0.05	56.8
Approach		2183	4.3	0.288	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		2183	4.3	0.288	0.1	NA	0.0	0.0	0.00	0.01	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.