PROPOSED RESIDENTIAL PLANNING PROPOSAL

26 TUPIA STREET, BOTANY

Transport, Traffic and Parking Assessment Report

3rd February 2023

Ref: 19025

Prepared by

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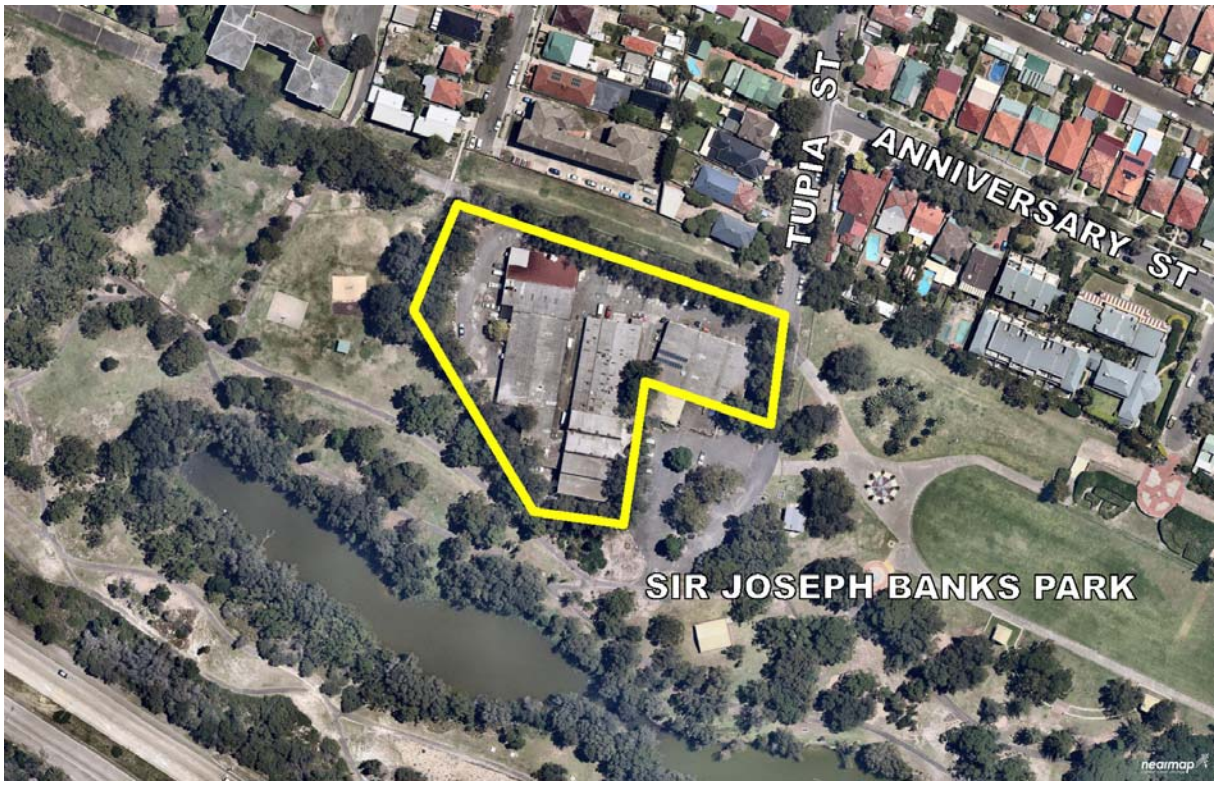
1. INTRODUCTION

This report has been prepared to accompany a Planning Proposal to Bayside Council for a proposed residential development at 26 Tupia Street, Botany (Figures 1 and 2).

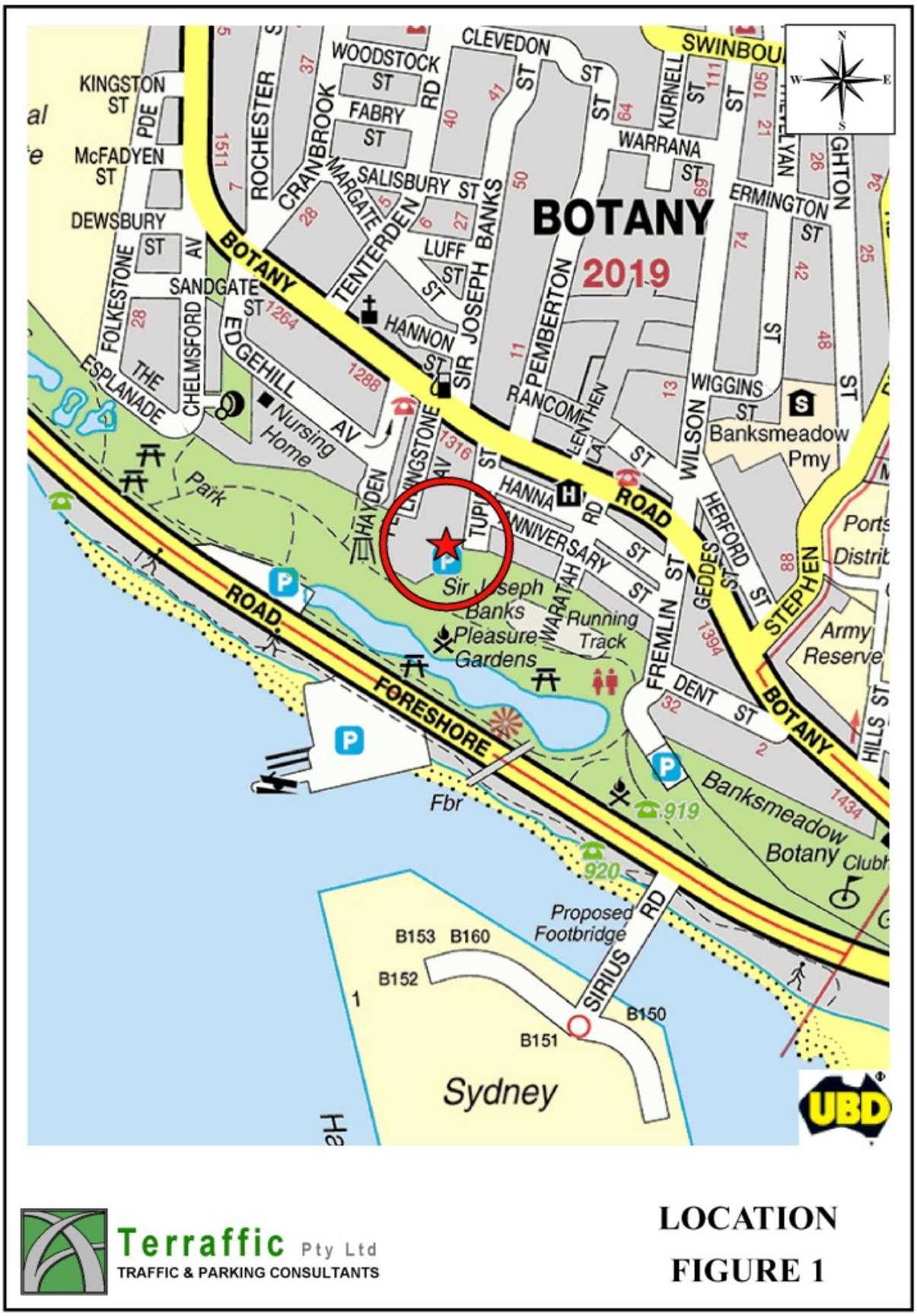
The subject site is located adjacent to Sir Joseph Banks Park and has a total site area of 8,000m^2. The existing site development comprises 18 industrial units with a combined floor area of approximately 3,650m^2. The site has vehicular access to Tupia Street is via a 5.0m wide combined entry/exit driveway located at the end of Tupia Street.



Aerial photograph of the site

Proposed Development

The planning proposal seeks to facilitate a future Development Application that comprises the demolition of the existing industrial units on the site and construction of 3 residential flat buildings containing a total of 109 apartments comprising 27 x 1 bedroom units, 73 x 2 bedroom units and 9 x 3 bedroom units.



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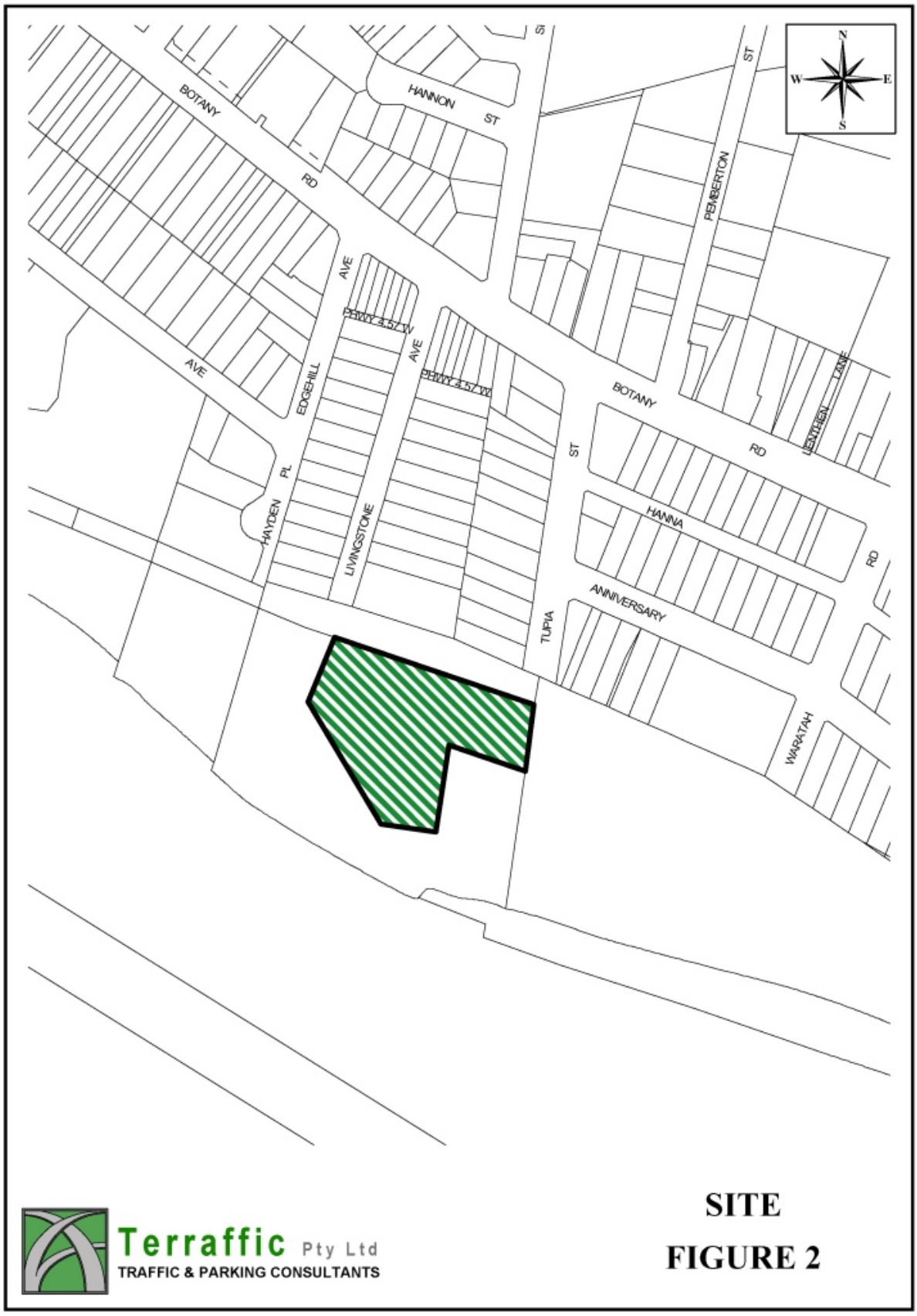
LOCATION
FIGURE 1



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SITE

FIGURE 2

The residential development will be served by a 2 level basement carpark with an overall capacity of 222 vehicles comprising 200 resident spaces and 22 visitor spaces. Vehicular access to the site will be via a 6.1m wide combined entry/exit driveway off Tupia Street.

An on-site loading bay capable of accommodating the Australian Standard 8.8m long Medium Rigid Vehicle (MRV) is proposed on Basement Level 1. The MRV is similar in size to a typical waste collection vehicle and will be able to enter and exit the site in a forward direction by using a vehicle turntable.

Public Transport Accessibility

The development site is served by the following bus service that operates along Botany Road to the north of the site:

Route 309 Banksmeadow to Central Railway Square via Botany, Mascot, Rosebery, Zetland, Redfern, and Surry Hills. Service operates daily.

Bus Zones are located on the northern side of Botany Road on the approach to Sir Joseph Banks Street (at the BP Service Station) and on the southern side of Botany Road on the approach to Tupia Street.

Services operate every 5 to 8 minutes in each direction during weekday peaks and then generally every 10 minutes throughout the day. On Saturdays services generally operate every 10 minutes while services are generally every 20 minutes on Sundays.

Plans of the planning proposal are reproduced in Appendix A.

The purpose of this report is to assess the traffic, transport and parking implications of the proposed development.

2. PARKING AND SERVICING ASSESSMENT

Off-Street Parking Requirement

Table 1 in Part 3A of the Botany Bay DCP 2013 (Amendment 8) specifies the following off-street car parking requirements for residential flat buildings:

1 space/ studio or one (1) bedroom dwelling;
2 spaces / two (2) or more bedrooms dwelling;
1 designated visitor space / 5 dwellings; and
1 car wash bay (visitor parking may be equipped with cold water tap and sewer connection and used as a car wash bay)

Application of those requirements to the proposed development yields a parking requirement of 213 spaces calculated as follows:

27 x 1 bedroom dwellings @ 1 space per dwelling	27 spaces
73 x 2 bedroom dwellings @ 2 spaces per dwelling	146 spaces
9 x 3 bedroom dwellings @ 2 spaces per dwelling	18 spaces
Total Resident	*191 spaces*
109 dwellings @ 1 visitor space per 5 dwellings	22 spaces
Total	**213 spaces**

The proposed development satisfies the DCP requirement with the provision of 222 off-street parking spaces comprising 200 resident spaces and 22 visitor spaces.

Carpark Compliance

Should the planning proposal and future Development Application be approved, the off-street carparking arrangements will be designed to satisfy the following requirements of the Australian Standard AS/NZS2890.1-2004 – "*Off-Street Car Parking*":

- Parking spaces have a minimum length of 5.4m and width of 2.4m
- An additional 0.3m has been provided for spaces adjacent to a wall or obstruction
- The access/manoeuvring aisles satisfies the minimum width requirement of 5.8m
- Pavement cross-falls at parking spaces do not exceed 5% (1 in 20) in any direction necessary

- Structural columns are set back 750mm from the access aisle
- 1.0m wide dead-end aisle extensions are provided where necessary
- Maximum ramp grades do not exceed 12.5% (1 in 8)
- Ramp transitions do not exceed 6.25% (1 in 16) over a distance of 7.0m in accordance with AS/NZS2890.2:2018 for MRV access
- The gradient of the access ramp at the site boundary does not exceed 5% (1 in 20) for the first 6.0m into the site
- The two-way access ramp is 6.1m wall to wall and complies with Clause 2.5.2(a)(ii) of the Standard
- A minimum headroom clearance of 2.2m has been provided throughout the basement carpark
- Pedestrian sight lines in accordance with Figure 3.3 of the Standard have been provided at the exit driveway

Servicing Assessment

As noted in the Introduction of this report, the planning proposal contains a dedicated loading bay capable of accommodating Medium Rigid Vehicles (MRV's). The loading bay is 11.0m long and 8.0m wide and clearly exceeds the requirements specified in Table 4.1 of the Australian Standard AS/NZS2890.2-2018 – *"Off-Street Commercial Vehicles"*.

In addition, the loading dock and access ramp will have a minimum headroom clearance of 4.5m for MRV access. A commercial vehicle turntable is proposed to facilitate forward egress from the loading bay.

In the circumstances, it can be concluded that the proposed development has no unacceptable parking or servicing implications.

3. TRAFFIC ASSESSMENT

Road Hierarchy

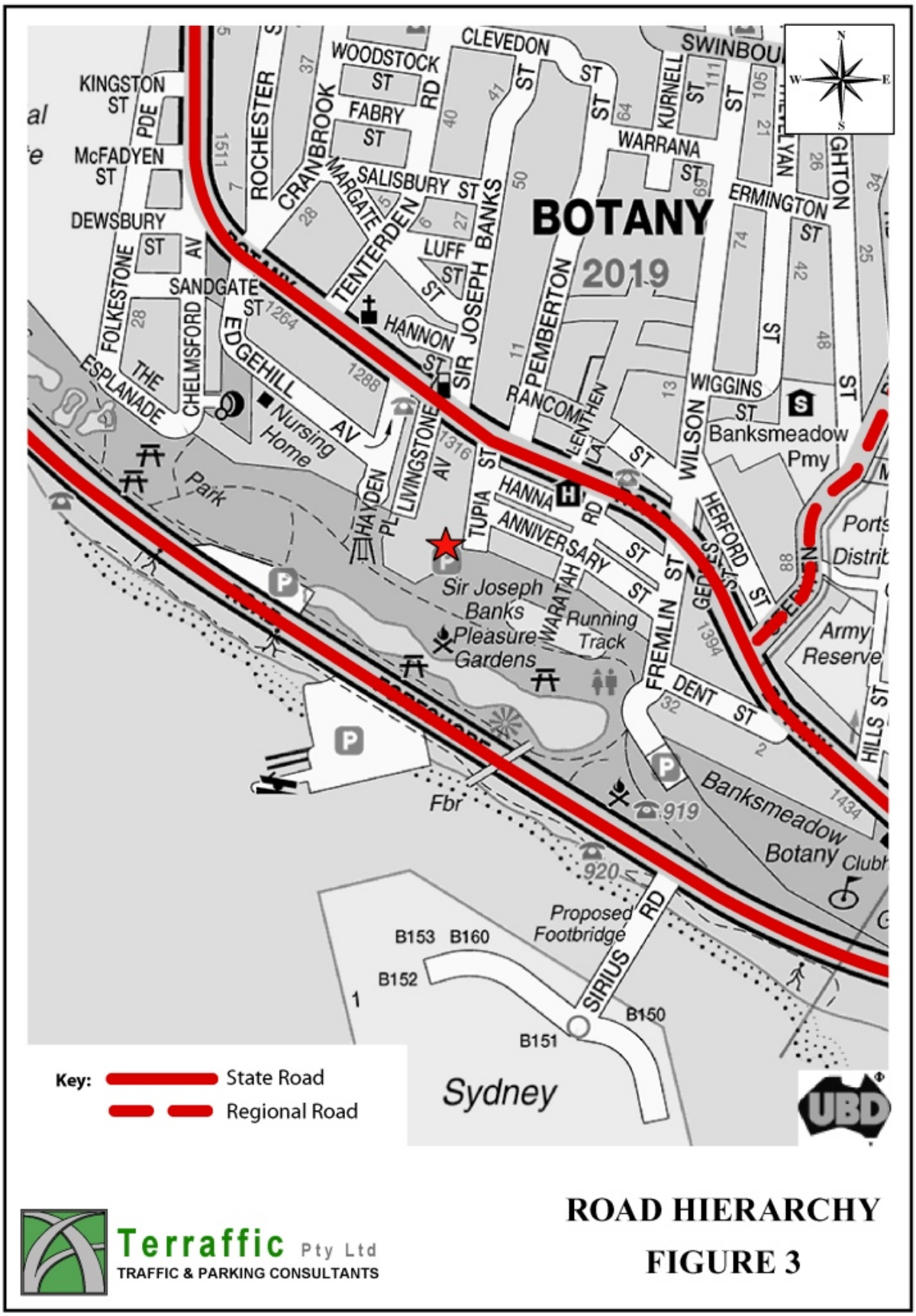
The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services (RMS) is illustrated on Figure 3 and comprises the following:

State Roads	**Regional Roads**
Botany Road	Stephen Road
Foreshore Drive	

As can be seen, the development site is located to the south of Botany Road, a classified *State Road* performing an arterial road function. Botany Road has a 13m sealed pavement width and is restricted to a speed limit of 50km/h. Un-restricted kerbside parking is generally available along both sides of Botany Road.

Tupia Street is an unclassified local road connecting the site to Botany Road. It has a sealed pavement width of 9.5m and is subject to a speed limit of 50km/h. Kerbside parking is also available along both sides of Tupia Street.

Looking north along Tupia Street from the subject site



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ROAD HIERARCHY

FIGURE 3

Existing Traffic Conditions

An indication of existing traffic conditions on the road network serving the site is provided by a count of traffic activity at the intersection of Botany Road and Tupia Street conducted between 7.00 – 9.00am and 4.00 – 6.00pm on Monday 17th October 2022. The results of the survey are reproduced in Appendix B revealing that:

- The weekday morning peak period occurred between 8.00 – 9.00am. At that time, two-way traffic flows on Botany Road on the eastbound approach to Tupia Street were in the order of 998vtph comprising 619vtph heading eastbound and 379vtph heading westbound (note these volumes include the traffic accessing Tupia Street)

- The two-way traffic flow on Tupia Street on the approach to Botany Road during the morning peak was in the order of 42vtph comprising 24vtph heading northbound and 18vtph heading southbound.

- The weekday evening peak period occurred between 4.45 – 5.45pm. At that time, two-way traffic flows on Botany Road at Tupia Street were in the order of 1,033vtph comprising 540vtph heading eastbound and 493vtph heading westbound

- The two-way traffic flows on Tupia Street at Botany Road were in the order of 52vph comprising 22vtph heading northbound and 30vtph heading southbound

Future 2032 Botany Road Traffic Flows

In order to determine a growth factor to apply to the through movements on Botany Road, it is possible to compare the current flows with a previous survey of the Botany Road/Tupia Street intersection. A survey of the intersection was carried out on Tuesday 18th June 2019 and revealed the following:

- the weekday morning peak period occurred between 8.00 – 9.00am. At that time, two-way traffic flows on Botany Road at Tupia Street were in the order of 1,074vtph comprising 652vtph heading eastbound and 422vtph heading westbound.

- the weekday evening peak period occurred between 5.00 – 6.00pm. At that time, two-way traffic flows on Botany Road at Tupia Street were in the order of 1,255vtph comprising 476vtph heading eastbound and 779vtph heading westbound.

Based on the comparison between the 2 surveys, it appears that traffic flows have decreased on Botany Road over the 3 year period as follows:

	AM Peak Period	**PM Peak Period**
2019 Survey	1,074vph	1,255vph
2022 Survey	998vph	1,033vph
Decrease in traffic	**76vph (7.1%)**	**222vph (17.7%)**

For the purposes of preparing a conservative assessment, this report will assume a 2% annual increase in traffic flows on Botany Road. Based on this very conservative increase in flows, this sensitivity test will adopt the following through volumes on Botany Road for the year 2032:

	AM Peak Period		**PM Peak Period**	
	Eastbound	Westbound	Eastbound	Westbound
Current 2022 Volumes	607vph	364vph	518vph	480vph
Future 2032 Volumes	740vph	444vph	631vph	585vph

Projected Traffic Generation Potential

An indication of the traffic generation potential of the proposed development is provided by reference to the Roads and Maritime Services (RMS) *"Guide to Traffic Generating Developments"* (October 2002).

The RMS Guidelines are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the existing and proposed development:

Existing Development	
Factories	1vtph per 100m^2
Warehouses	0.5vtph per 100m^2
Proposed Development	
High Density Residential Flat Buildings (20 or more dwellings)	
Metropolitan sub-regional centres	0.29 peak hour vehicle trips per unit

For the purposes of providing a conservative approach, this assessment will adopt the lower traffic generating rate of 0.5vtph per 100m^2 for warehouses rather than the higher rate of 1vtph per 100m^2 for factories.

Application of this traffic generation rate to the ***existing site development*** yields a traffic generation potential of approximately 18vtph during peak periods as follows:

3,650m^2 industrial units @ 0.5vtph per 100m^2	18vtph

Application of the RMS traffic generation rate to the ***proposed development*** yields a traffic generation potential of approximately 32vtph during peak periods as follows:

109 apartments @ 0.29vtph per unit	32vtph

Based on the RMS rates, the proposed development will generate in the order of 14 additional vehicle trips during peak periods as follows:

Proposed Development	32vtph
Existing Development	18vtph
Additional Traffic	**14vtph**

While it is standard practice to discount the traffic generation of the planning proposal from the traffic generation of the existing industrial units on the site, no such discount has been applied for the purposes of this assessment. The traffic generated by the proposal will generally approach and depart the site as follows:

Landuse	Morning Peak	Evening Peak
Residential Apartments (32vtph)	6 in / 26 out	26 in / 6 out

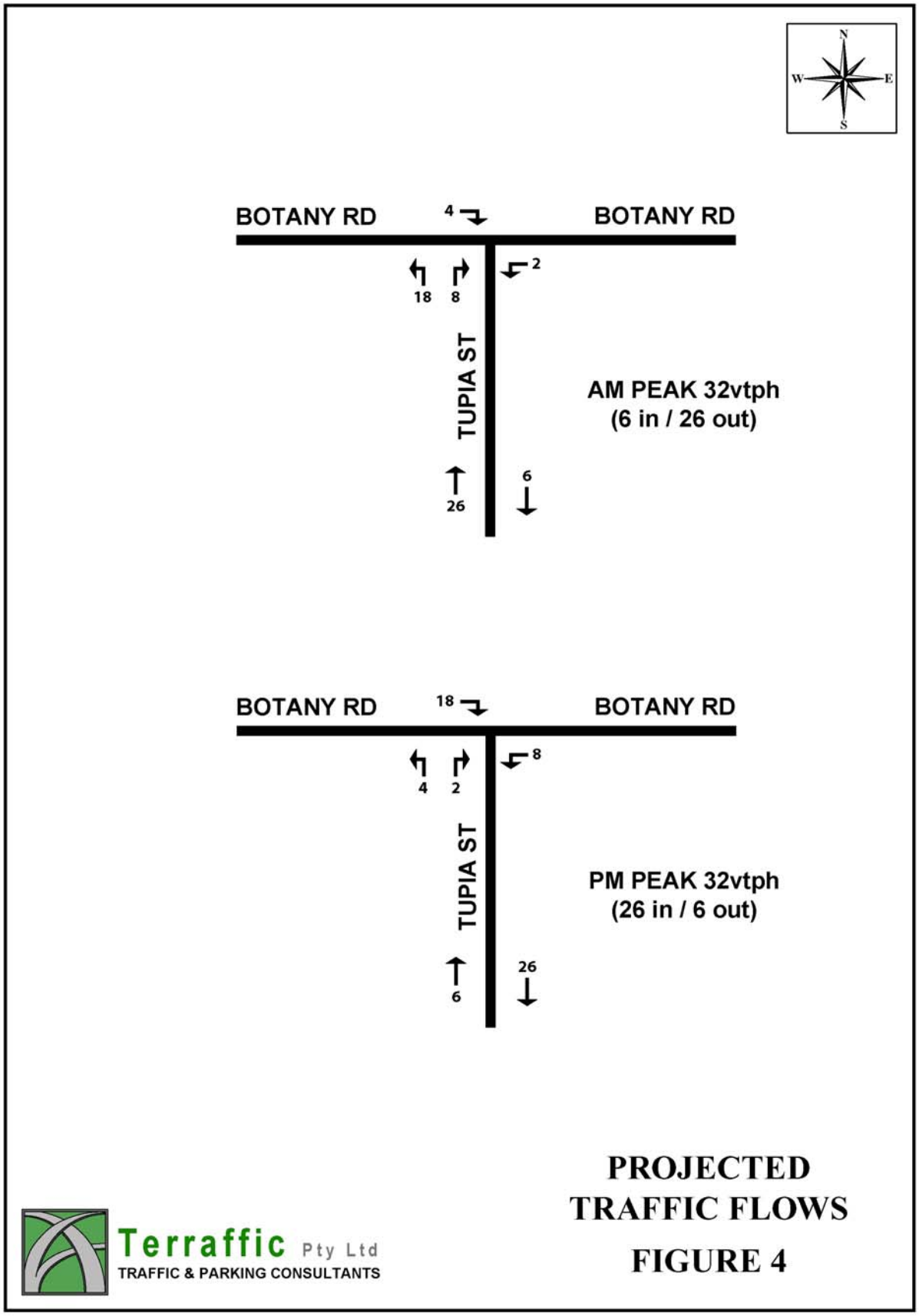
The assignment of traffic accessing the subject site is illustrated on Figure 4 and assumes all vehicles will access the site via the Botany Road/Tupia Street intersection. In addition, 70% of traffic will approach/depart to the west while the remaining 30% will approach/depart to the east (as per current flows).

Traffic Implications – Road Network Capacity

The main traffic implication of the proposed development in terms of road network capacity concerns the effect of the additional traffic demand that it generates on the operating performance of the Botany Road/Tupia Street intersection. That effect can be assessed using the SIDRA traffic model and criteria for interpreting the results of SIDRA analysis are set out on the schedule reproduced in the following pages.

The operating performance of the Botany Road/Tupia Street intersection has been assessed under the following scenarios
:

- Under current 2022 traffic volumes
- The future 2032 traffic volumes (sensitivity test)
- The future 2032 flows plus the traffic generation of the planning proposal (with no discount for the existing factory flows)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26
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PROJECTED
TRAFFIC FLOWS
FIGURE 4

The results of the SIDRA analysis of the operating performance of the Botany Road/Tupia Street intersections under those scenarios are set out in Table 3.1 and on the SIDRA MOVEMENT SUMMARY SHEETS reproduced in Appendix C revealing that the intersection will continue to operate satisfactorily with a high level of service and minimal delays.

TABLE 3.1 – RESULTS OF SIDRA ANALYSIS OF BOTANY ROAD / TUPIA STREET INTERSECTION

	Level of Service	Degree of Saturation	Total Average Vehicle Delay (sec)
Existing AM Peak	B	0.332	0.4
Existing PM Peak	B	0.297	0.6
Future 2032 AM Peak	B	0.401	0.4
Future 2032 PM Peak	B	0.359	0.6
Projected 2032 AM Peak	B	0.406	0.7
Projected 2032 PM Peak	B	0.385	1.0

Note: The LOS for sign controlled intersections is based on the delay for the worst turn, in this case it's the right turn from Tupia Street into Botany Road

In the circumstances, it can be concluded that the proposed development has no unacceptable traffic implications in terms of road network capacity. Furthermore, the sensitivity test for 2032 reveals that the intersection will continue to operate with a high level of service.

Traffic-Related Environmental Effect

Section 4 of the RTA Guidelines defines *'environmental capacity performance standards on residential streets'* as indicated on the following table:

Road Class	Road Type	Maximum Speed (km/h)	Maximum peak hour volume (veh/hr)
Local	Access Way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

The existing and projected post development traffic flows on Tupia Street are as follows:

	Tupia Street (south of Botany Road)	
	AM Peak	**PM Peak**
Existing Traffic Flow	42	52
Additional Traffic Flow	32	32
Total Traffic Flow	**74**	**84**

As can be seen, the traffic generated by the planning proposal will not cause traffic flows on Tupia Street to exceed the environmental capacity of 200 vehicles per hour for a local street. In the circumstances, the proposal will have no adverse traffic-related environmental effect.

It can therefore be concluded that the planning proposal has no unacceptable traffic implications.

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD=s listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
B	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory but 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.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

4. TRANSPORT AND MOVEMENT ASSESSMENT

Travel to Work Characteristics

The Australian Bureau of Statistics "Census of Population and Housing 2021" data has been assessed to determine the journey to work characteristics of residents in the suburb of Botany. There were a total of 6,995 respondents which included people aged 15 years and over who travelled to work on the day of the census (10th August 2021). The detailed results of the Census data are reproduced in Appendix D revealing the following:

Travel Mode									No Travel	
Car (as driver)	**Car (as passenger)**	**Walked only**	**Bus**	**Train and bus**	**Motor cycle / scooter**	**Truck**	**Bicycle**	**Other modes**	**Worked at home**	**Did not go to work**
2,742	219	159	133	78	66	50	33	174	2,479	862
39.2%	3.1%	2.3%	1.9%	1.1%	0.9%	0.7%	0.5%	2.5%	35.4%	12.3%

If an assumption was made that each of the 109 units in the planning proposal contained 2 residents that could work, the proposal would generate the following:

218 residents @ 39.2% car driver	85 residents drive to work
218 residents @ 35.4% work from home	77 residents do not travel to work
218 residents @ 12.3% no work	27 residents will not go to work
218 residents @ 3.1% car passenger	7 residents are car passengers to work
218 residents @ 3% public transport	7 residents catch public transport to work
218 residents @ 2.3% walk	5 residents walk to work
218 residents @ 0.9% motorcycle	2 residents will drive a motorcycle/scooter to work
218 residents @ 0.5% bicycle	1 resident will bicycle to work

Public Transport Connectivity

As noted in the Introduction of this report, the development site is served by the following bus service that operates along Botany Road to the north of the site:

Route 309 Banksmeadow to Central Railway Square via Botany, Mascot, Rosebery, Zetland, Redfern, and Surry Hills. Service operates daily.

Public transport users accessing the Light Rail at Kingsford are required to catch the 309 bus easterly to Matraville before changing to Route 392 which travels northerly along Bunnerong Road to Kingsford. The trip from Tupia Street to Kingsford takes approximately 35 minutes.

The Light rail journey from South Juniors in Kingsford to Central Station takes approximately 20 minutes.

The Bus Zone for the eastbound service is located on the northern side of Botany Road on the approach to Sir Joseph Banks Street (at the BP Service Station). The location represents a 4 minute (290m) walk from the subject site. As can be seen in the photograph below, the bus zone is uncovered and has a seating capacity for 3 adults.

The Bus Zone for the westbound service is located on the southern side of Botany Road on the approach to Tupia Street. The location represents a 2 minute (200m) walk from the subject site. As shown in the photograph below, it has sheltered seating for up to 6 adults (3 per seat).

Photograph of the Bus Zone on the northern side of Botany Road

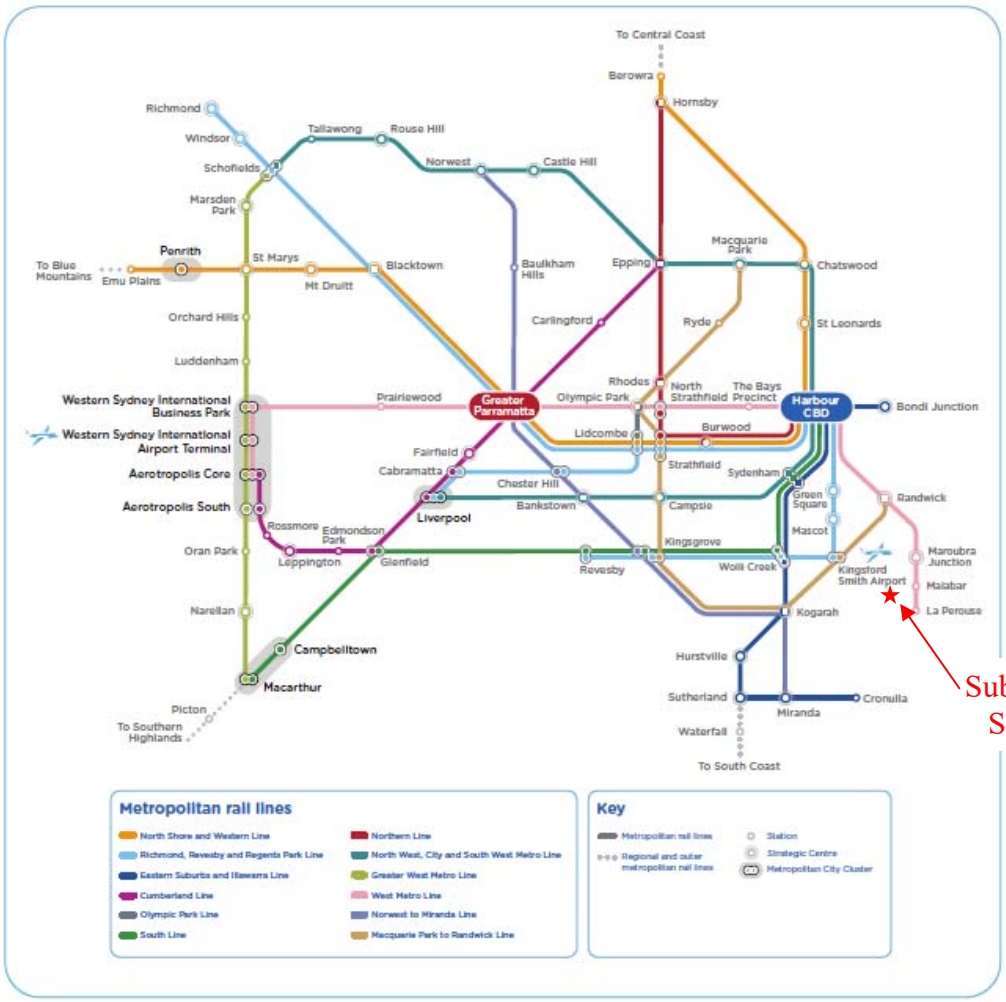
Photograph of the Bus Zone on the southern side of Botany Road

Future Transport 2056

The NSW Governments "Future Transport 2056" was released in 2018 and is an overarching strategy, supported by a suite of plans to achieve a 40 year vision for the NSW transport system. The strategy considers:

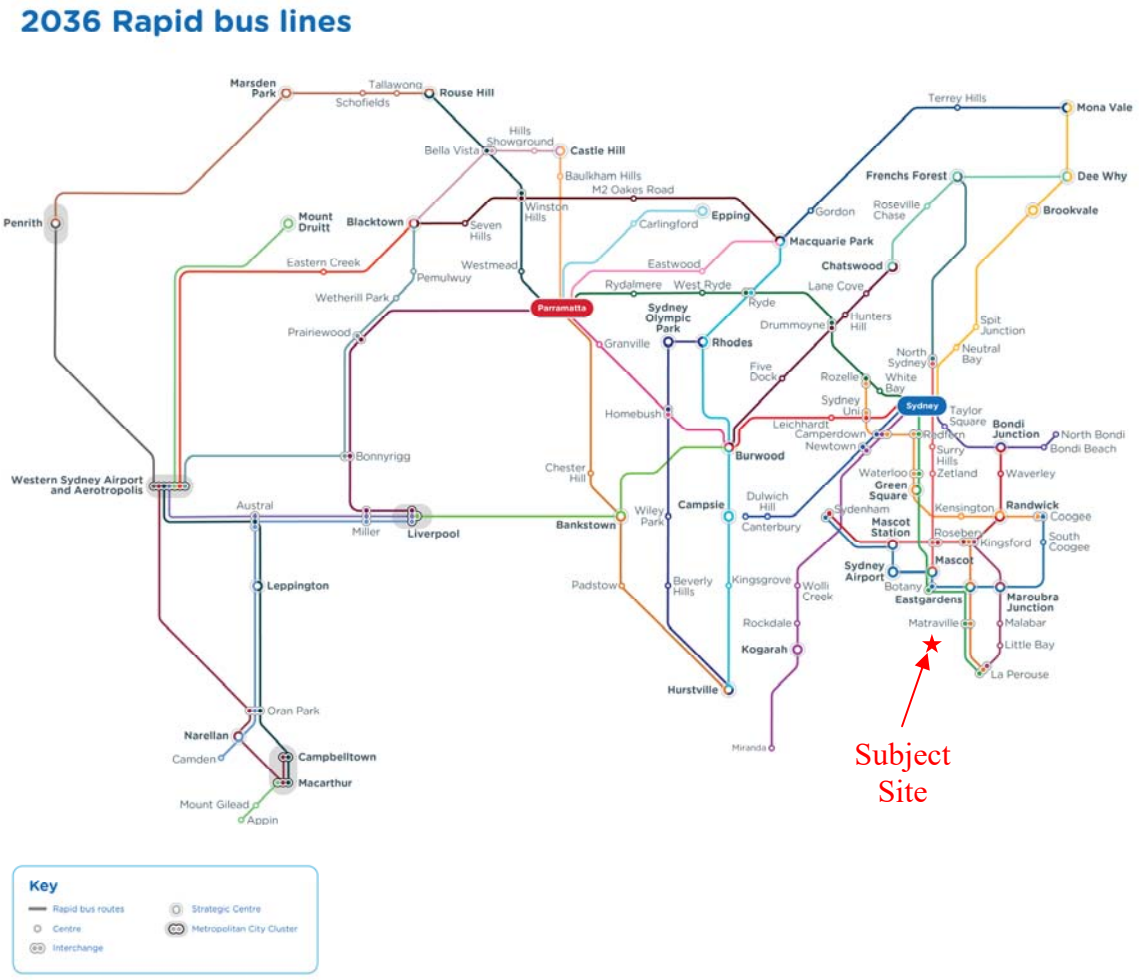
- the future road network throughout Sydney
- future light and heavy rail networks
- a future rapid bus and ferry network
- bicycle network, and
- freight network

A copy of the indicative future rail network plan showing a potential future metro line to La Perouse is reproduced below. Any future rail lines will be supported by integrated bus services that would provide convenient access to the subject site.



Greater Sydney 2056 Indicative Future Rail Network

In addition to a potential rail service operating from La Perouse, the site will have convenient access to the 2036 rapid bus network that includes services operating from La Perouse, Matraville, Eastgardens and Botany.



Greater Sydney 2056 Indicative Future Rapid Bus Network

Pedestrian Connectivity

Inspections of the development site revealed a high level of pedestrian connectivity within the vicinity of the site. Concrete pathways are in place along both sides of Tupia Street with the exception of the following:

1. A 20m long section of footpath along the western side of Tupia Street between the subject site and 24A Tupia Street.

2. A 65m long section of footpath along the eastern side of Tupia Street between Sir Joseph Banks Park and Anniversary Street

Photograph of the footpath along the western side of Tupia Street

Photograph of the footpath along the western side of Tupia Street

In order to provide a safe passage for future residents to access the Bus Zones on Botany Road, it is recommended that Council construct the missing 20m long section of footpath along the western alignment of Tupia Street.

Bicycle Connectivity

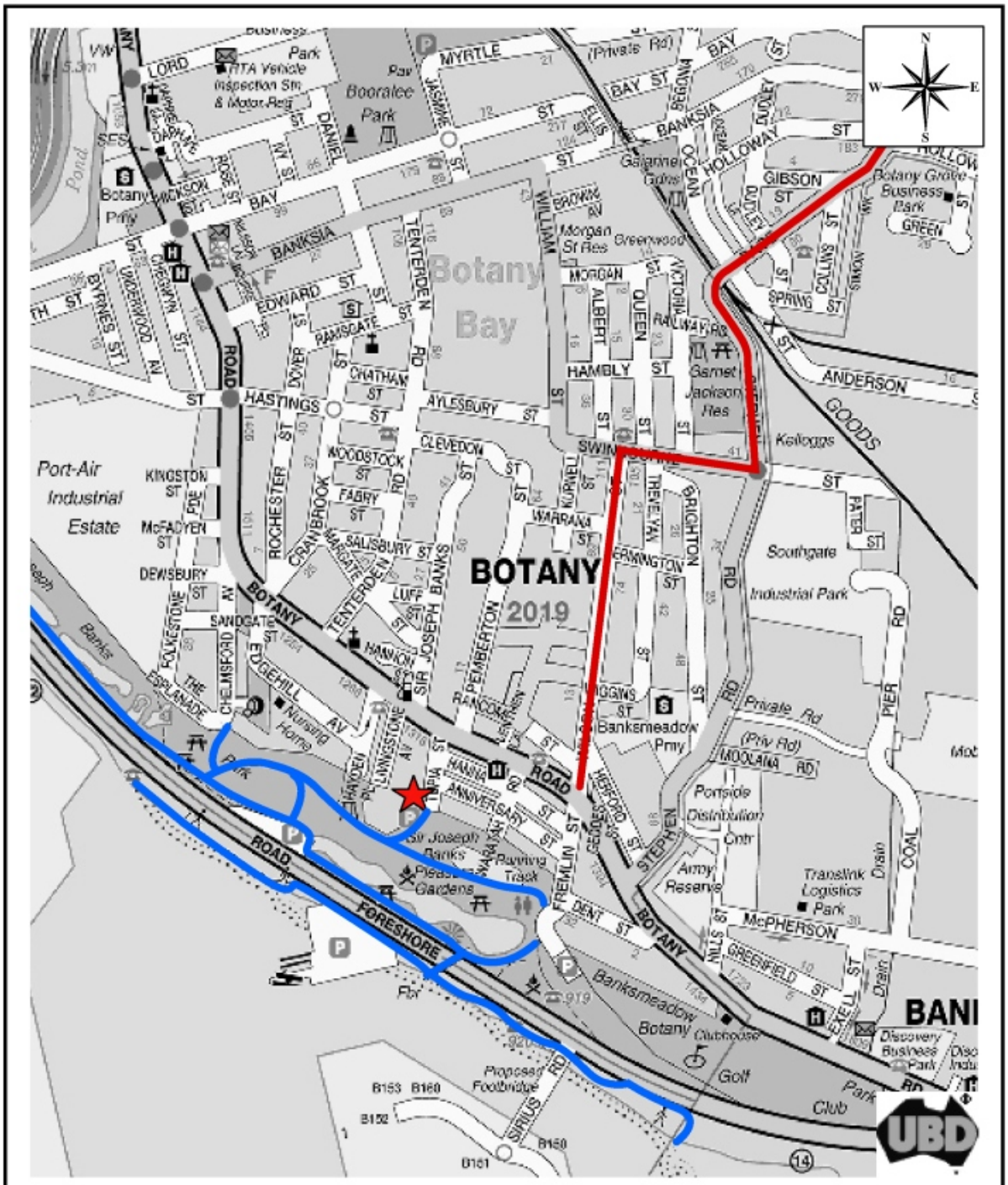
Bayside Council is currently in the process of developing their Bayside Bike Plan which will be their blueprint for a more connected and easy to navigate bicycle network across the area. The development site is located in close proximity to the following bicycle routes that are listed on Council's website and illustrated on Figure 5:

- The Sir Joseph Banks Park shared pedestrian/bicycle path. Sir Joseph Banks Park is Bayside Council's largest park. It contains playgrounds, pedal parks, BBQs, off-leash dog areas and a 4.0km long asphalted shared path that takes riders on a loop through the native Banksia scrub and sand dunes that are synonymous with the Botany Bay foreshore.

- The Port Botany – Botany Bay Foreshore shared pedestrian/bicycle path. This route starts from Sir Joseph Banks Park, travels across the Foreshore Road overpass and extends to the Lady Penrhyn bird watching estuary, the Port Botany boat ramp, and to the Mill Pond airport lookout.

- The Wilson Street – Swinbourne Street – Stephen Road – Page Street – Heffron Road – Banks Avenue link. Council's website nominates this link is an on-road line-marked cycleway / shared traffic lane however only Wilson Street and Swinbourne Street contain road markings. The remaining roads do not appear to be linemarked.

Aerial photograph of the Swinbourne Street / Wilson Street intersection showing the bicycle linemarking



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BICYCLE ROUTES

FIGURE 5

Nearby Approved Developments

The following list of development sites have been collated from Council's DA Tracker and are located within a 1km radius of the subject site. As can be seen, all of these developments are located on the northern side of Botany Road or to the north of Botany Road.

Address	DA number	DA Description
9 Coal Pier Road, Banksmeadow	DA-2020/417 (modified once via MDA-2021/15)	Construction of an industrial warehouse estate with associated site offices, hardstand and parking areas; tree and vegetation removal; landscaping works; and signage, operating 24 hours / 7 days
1637, 1639 & 1647 Botany Road, BOTANY NSW	DA-2017/1243 (modified once via MDA-2022/125)	Integrated Development for the demolition of all existing structures and construction of six (6) storey mixed use development, comprising of 48 residential units, 3 commercial units, and 2 levels of basement car parking.
23 Wilson Street, Botany	DA-2014/193 (modified twice via DA-2014/293/A and MDA-2022/72)	Integrated Development for multi dwelling housing Integrated Development Application for the demolition of the existing buildings and construction of 9 x 2 part 3 storey terrace houses with basement car park.
19 Rochester Street BOTANY NSW 2019	DA-2018/1057 (modified once via DA-2018/1057/A)	Construction of new office building with associated parking & storage of goods made off-site
5 Margate Street BOTANY NSW 2019	DA-2020/254 (modified three time via DA-2020/254/A, DA-2020/254/B and MDA-2022/37)	Demolition of existing structures and construction of an industrial warehouse building with mezzanine floor and ancillary offices
1455 Botany Road, BOTANY NSW 2019	DA-2017/1108 (modified twice via MDA-2021/22 and MDA-2021/65)	Demolition and construction of two (2) new commercial tenancies and thirty-three (33) room boarding house.
1537 Botany Road BOTANY NSW 2019	DA-2017/1058	Demolition of the existing commercial building and erection of a new three storey boarding house comprising of 24 rooms and at grade parking.
1449 Botany Road BOTANY NSW 2019	DA-2018/368 (modified once via MDA-2021/19)	Demolition of existing building and construction of a four storey mixed use development containing nine (9) dwellings with basement parking and associated landscaping

As can be appreciated, these developments will have no adverse traffic related impacts on the local road network serving the subject site which is located on the southern side of Botany Road.

Furthermore, traffic surveys carried out by Terraffic show a significant reduction in traffic flows along Botany Road over the last 3 years. This assessment has however assumed a 2% annual increase to the year 2032 which would include any potential traffic generated by the approved developments on the northern side of the Botany Road.

5. CONCLUSION

In conclusion, this assessment has determined that the planning proposal will have no unacceptable traffic, parking or transport related implications as:

1. The proposal can satisfy the DCP parking requirement with the provision of 222 off-street parking spaces comprising 200 resident spaces and 22 visitor spaces

2. The design of the basement carpark and vehicular access arrangements can satisfy the relevant Australian Standards

3. The site can be serviced by Australian Standard Medium Rigid Vehicles

4. Traffic flows along Botany Road for the 3 year period between June 2019 and October 2022 have decreased by 7.1% during the morning peak and 17.7% during the evening peak period

5. When adopting a 2% annual increase in traffic along Botany Road between 2022 and 2032, the traffic modelling undertaken to support the planning proposal indicates the intersection of Botany Road and Tupia Street will continue to operate at a high Level of Service

6. The traffic generation of the planning proposal will have no adverse traffic related environmental effect on the residents of Tupia Street

7. The Journey to Work characteristics of Botany residents collated during the 2021 Census indicate that 39.2% of residents will drive to work while 35.4% of residents will work from home

8. The site is serviced by bus Route 309 that operates between Banksmeadow and Central Railway Station via Botany, Rosebery, Mascot, Zetland and Redfern.

9. The Bus Zone for the eastbound service is located on the northern side of Botany Road on the approach to Sir Joseph Banks Street (at the BP Service Station). The location represents a 4 minute (290m) walk from the subject site

10. The Bus Zone for the westbound service is located on the southern side of Botany Road on the approach to Tupia Street. The location represents a 2 minute (200m) walk from the subject site.

11. The NSW Governments "Future Transport 2056" plans indicate there is the potential for a future metro line to La Perouse. Any future light or heavy rail lines will be supported by integrated bus services that would provide convenient access to the subject site

12. In addition to a potential metro service operating from La Perouse, the site will have convenient access to the 2036 rapid bus network that includes services operating from La Perouse, Matraville, Eastgardens and Botany

13. The development site has a high level of pedestrian connectivity with concrete pathways in place along both sides of Tupia Street. A 20m long section of footpath along the western side of Tupia Street between the subject site and 24A Tupia Street will however need to be constructed

14. The development site is located in close proximity to the several bicycle routes including the Sir Joseph Banks Park shared pedestrian/bicycle path

15. A search of Council's DA Tracker does not show any future developments within a 1km radius of the site that have the potential to create any adverse traffic related impacts, particularly as traffic flows have significantly reduced on Botany Road over the last 3 years.

APPENDIX A

PLANS OF THE PROPOSED DEVELOPMENT

1 FLOOR PLAN - BASEMENT 02

COTTEEPARKER Φ

SYDNEY

T +61 2 9356 1133

COTTEE PARKER ARCHITECTS PTY LTD

ABN 77 010 824 136

COTTEEPARKER.COM.AU

N

TUPIA ST - RESIDENTIAL FLAT BUILDING OPTION

26 TUPIA STREET, BOTANY

CLIENT - ARCHICORP

TITLE

FLOOR PLAN - BASEMENT 02

JOB No.	DWG No.	ISSUE
6641	SK2001	

SK

TERRAFFIC PTY LTD

1 FLOOR PLAN - BASEMENT 01
SCALE 1:400 @ A3

0 4 8 12 16 20 SCALE 1:400 @ A3

COTTEEPARKER Φ

SYDNEY
T +61 2 9356 1133
COTTEE PARKER ARCHITECTS PTY LTD
ABN 77 010 824 136
COTTEEPARKER.COM.AU

TUPIA ST - RESIDENTIAL FLAT BUILDING OPTION
26 TUPIA STREET, BOTANY
CLIENT - ARCHICORP
TITLE
FLOOR PLAN - BASEMENT 01

SK	JOB No.	DWG No.	ISSUE
	6641	SK2002	01

TERRAFFIC PTY LTD


TUPIA STREET
TUPIA STREET
SETBACK 3.000
SETBACK 9.000
RAMP TO BASEMENT
BUILDING A RL 4.20
BUILDING B RL 1.20
BUILDING C RL 4.20
COMMUNAL OPEN SPACE 1,233 m²
RL 4.350
NOM RL 4.950.0
NOM RL 4.450.0
EASEMENT
SETBACK 9.000
SETBACK 3.000
SETBACK 9.000
LINK TO PARK
SIR JOSEPH BANKS PARK
LEGEND
1 BED APARTMENTS
2 BED APARTMENTS
3 BED APARTMENTS
LIFTS & STAIRS
BALCONY
CORRIDOR
SCALE 1:400 @ A3
TUPIA ST - RESIDENTIAL FLAT BUILDING OPTION
26 TUPIA STREET, BOTANY
CLIENT - ARCHICORP ITLC
FLOOR PLAN - GROUND FLOOR
JOB NO 6641
DWG NO SK2003
ISSUE 01
SK
1 FLOOR PLAN - GROUND FLOOR
SCALE 1:400 @ A3
COTTEEPARKER Φ
SYDNEY
COTTEEPARKER.COM.AU

APPENDIX B

TRAFFIC COUNT DATA

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph. Mob.0418-239019

Client : Terrasffic Pty. Ltd

Job No/Name : 7760 BOTANY Tupia St

Day/Date : Monday 17th October 2022

Lights

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	130	2	3	0	2	81	**218**
0715 - 0730	98	4	6	0	1	80	**189**
0730 - 0745	89	4	3	2	1	86	**185**
0745 - 0800	119	2	9	3	3	93	**229**
0800 - 0815	132	1	5	2	1	105	**246**
0815 - 0830	132	3	5	5	1	109	**255**
0830 - 0845	143	7	4	1	2	54	**211**
0845 - 0900	176	1	1	1	2	76	**257**
Per End	**1019**	**24**	**36**	**14**	**13**	**684**	**1790**

Heavies

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	3	0	0	0	0	7	**10**
0715 - 0730	8	0	0	0	0	8	**16**
0730 - 0745	7	0	0	0	0	9	**16**
0745 - 0800	11	0	0	0	0	6	**17**
0800 - 0815	3	0	0	0	0	8	**11**
0815 - 0830	9	0	0	0	0	6	**15**
0830 - 0845	8	0	0	0	0	3	**11**
0845 - 0900	4	0	0	0	0	3	**7**
Per End	**53**	**0**	**0**	**0**	**0**	**50**	**103**

Combined

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	133	2	3	0	2	88	**228**
0715 - 0730	106	4	6	0	1	88	**205**
0730 - 0745	96	4	3	2	1	95	**201**
0745 - 0800	130	2	9	3	3	99	**246**
0800 - 0815	135	1	5	2	1	113	**257**
0815 - 0830	141	3	5	5	1	115	**270**
0830 - 0845	151	7	4	1	2	57	**222**
0845 - 0900	180	1	1	1	2	79	**264**
Per End	**1072**	**24**	**36**	**14**	**13**	**734**	**1893**

Lights

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	436	12	21	5	7	340	**821**
0715 - 0815	438	11	23	7	6	364	**849**
0730 - 0830	472	10	22	12	6	393	**915**
0745 - 0845	526	13	23	11	7	361	**941**
0800 - 0900	583	12	15	9	6	344	**969**
PEAK HR	**583**	**12**	**15**	**9**	**6**	**344**	**969**

Heavies

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	29	0	0	0	0	30	**59**
0715 - 0815	29	0	0	0	0	31	**60**
0730 - 0830	30	0	0	0	0	29	**59**
0745 - 0845	31	0	0	0	0	23	**54**
0800 - 0900	24	0	0	0	0	20	**44**
PEAK HR	**24**	**0**	**0**	**0**	**0**	**20**	**44**

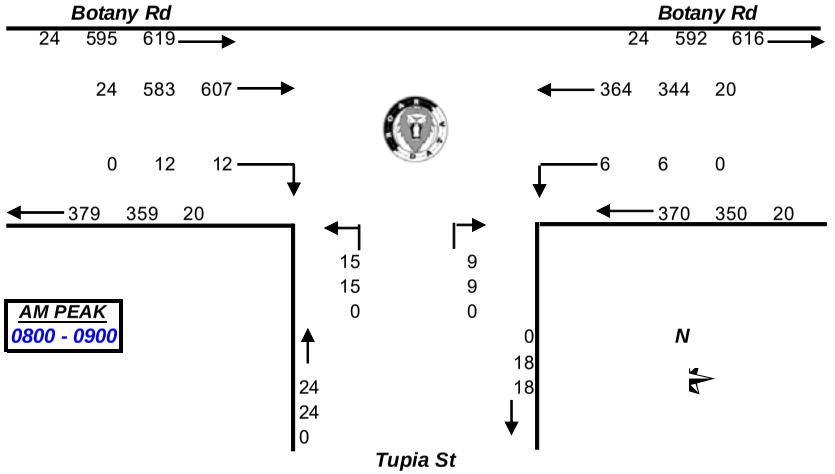
Combined

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	465	12	21	5	7	370	**880**
0715 - 0815	467	11	23	7	6	395	**909**
0730 - 0830	502	10	22	12	6	422	**974**
0745 - 0845	557	13	23	11	7	384	**995**
0800 - 0900	607	12	15	9	6	364	**1013**
PEAK HR	**607**	**12**	**15**	**9**	**6**	**364**	**1013**

Peds

	WEST	SOUTH	EAST	
Time Per	Botany Rd	Tupia St	Botany Rd	TOT
0700 - 0715	0	0	0	**0**
0715 - 0730	0	1	0	**1**
0730 - 0745	0	*4*	1	**5**
0745 - 0800	0	*3*	1	**4**
0800 - 0815	0	0	0	**0**
0815 - 0830	0	0	0	**0**
0830 - 0845	0	0	0	**0**
0845 - 0900	1	5	0	**6**
Per End	**1**	**13**	**2**	**16**

	WEST	SOUTH	EAST	
Peak Per	Botany Rd	Tupia St	Botany Rd	TOT
0700 - 0800	0	8	2	**10**
0715 - 0815	0	8	2	**10**
0730 - 0830	0	7	2	**9**
0745 - 0845	0	3	1	**4**
0800 - 0900	1	5	0	**6**
PEAK HR	**1**	**5**	**0**	**6**



TERRAFFIC PTY LTD

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph. Mob.0418-239019

Client : Terrasffic Pty. Ltd

Job No/Name : 7760 BOTANY Tupia St

Day/Date : Monday 17th October 2022

Lights

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	113	2	8	1	0	107	**231**
1615 - 1630	110	3	6	1	2	119	**241**
1630 - 1645	116	9	3	0	0	102	**230**
1645 - 1700	131	5	4	2	4	113	**259**
1700 - 1715	114	7	3	6	0	107	**237**
1715 - 1730	129	4	2	1	3	120	**259**
1730 - 1745	131	6	4	0	1	123	**265**
1745 - 1800	119	1	4	3	2	97	**226**
Per End	**963**	**37**	**34**	**14**	**12**	**888**	**1948**

Heavies

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	4	0	0	0	0	2	**6**
1615 - 1630	3	0	0	0	0	6	**9**
1630 - 1645	5	0	0	0	0	5	**10**
1645 - 1700	4	0	0	0	0	6	**10**
1700 - 1715	2	0	0	0	0	5	**7**
1715 - 1730	4	0	0	0	0	4	**8**
1730 - 1745	3	0	0	0	0	2	**5**
1745 - 1800	4	0	0	0	0	5	**9**
Per End	**29**	**0**	**0**	**0**	**0**	**35**	**64**

Combined

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	117	2	8	1	0	109	**237**
1615 - 1630	113	3	6	1	2	125	**250**
1630 - 1645	121	9	3	0	0	107	**240**
1645 - 1700	135	5	4	2	4	119	**269**
1700 - 1715	116	7	3	6	0	112	**244**
1715 - 1730	133	4	2	1	3	124	**267**
1730 - 1745	134	6	4	0	1	125	**270**
1745 - 1800	123	1	4	3	2	102	**235**
Per End	**992**	**37**	**34**	**14**	**12**	**923**	**2012**

Lights

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	470	19	21	4	6	441	**961**
1615 - 1715	471	24	16	9	6	441	**967**
1630 - 1730	490	25	12	9	7	442	**985**
1645 - 1745	505	22	13	9	8	463	**1020**
1700 - 1800	493	18	13	10	6	447	**987**
PEAK HR	**505**	**22**	**13**	**9**	**8**	**463**	**1020**

Heavies

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	16	0	0	0	0	19	**35**
1615 - 1715	14	0	0	0	0	22	**36**
1630 - 1730	15	0	0	0	0	20	**35**
1645 - 1745	13	0	0	0	0	17	**30**
1700 - 1800	13	0	0	0	0	16	**29**
PEAK HR	**13**	**0**	**0**	**0**	**0**	**17**	**30**

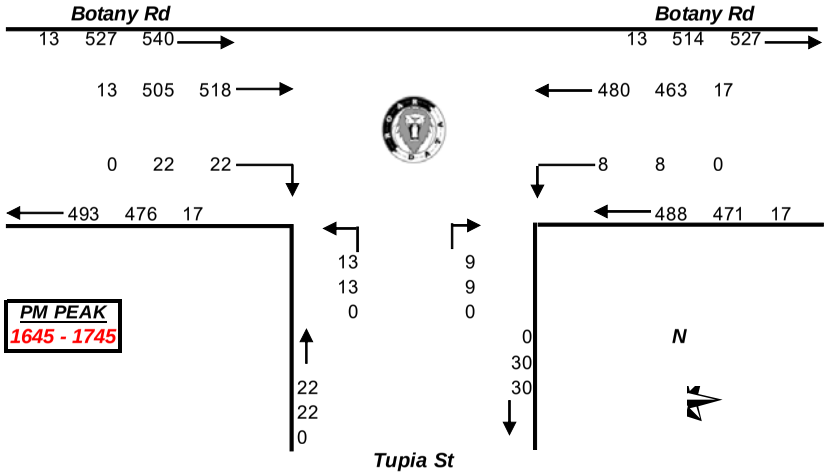
Combined

	WEST		SOUTH		EAST		
	Botany Rd		*Tupia St*		*Botany Rd*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	486	19	21	4	6	460	**996**
1615 - 1715	485	24	16	9	6	463	**1003**
1630 - 1730	505	25	12	9	7	462	**1020**
1645 - 1745	518	22	13	9	8	480	**1050**
1700 - 1800	506	18	13	10	6	463	**1016**
PEAK HR	**518**	**22**	**13**	**9**	**8**	**480**	**1050**

Peds

	WEST	SOUTH	EAST	
Time Per	Botany Rd	Tupia St	Botany Rd	TOT
1600 - 1615	0	3	1	**4**
1615 - 1630	2	2	1	**5**
1630 - 1645	1	2	0	**3**
1645 - 1700	1	3	2	**6**
1700 - 1715	0	3	0	**3**
1715 - 1730	1	4	0	**5**
1730 - 1745	0	5	0	**5**
1745 - 1800	0	8	0	**8**
Per End	**5**	**30**	**4**	**39**

	WEST	SOUTH	EAST	
Peak Per	Botany Rd	Tupia St	Botany Rd	TOT
1600 - 1700	4	10	4	**18**
1615 - 1715	4	10	3	**17**
1630 - 1730	3	12	2	**17**
1645 - 1745	2	15	2	**19**
1700 - 1800	1	20	0	**21**
PEAK HR	**2**	**15**	**2**	**19**



TERRAFFIC PTY LTD

APPENDIX C

SIDRA MOVEMENT SUMMARY SHEETS

MOVEMENT SUMMARY

Site: [Botany Road and Tupia Street, Botany - Existing AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	15	0.0	15	0.0	0.044	5.8	LOS A	0.2	1.1	0.60	0.68	0.60	43.2
3	R2	All MCs	9	0.0	9	0.0	0.044	16.1	LOS B	0.2	1.1	0.60	0.68	0.60	43.1
Approach			24	0.0	24	0.0	0.044	9.7	LOS A	0.2	1.1	0.60	0.68	0.60	43.2
East: Botany Road															
4	L2	All MCs	6	0.0	6	0.0	0.003	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	364	5.5	364	5.5	0.193	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			370	5.4	370	5.4	0.193	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Botany Road															
11	T1	All MCs	607	4.0	607	4.0	0.332	0.0	LOS A	0.1	1.1	0.03	0.03	0.03	49.9
12	R2	All MCs	12	0.0	12	0.0	0.332	9.8	LOS A	0.1	1.1	0.03	0.03	0.03	48.4
Approach			619	3.9	619	3.9	0.332	0.2	NA	0.1	1.1	0.03	0.03	0.03	49.8
All Vehicles			1013	4.3	1013	4.3	0.332	0.4	NA	0.2	1.1	0.03	0.04	0.03	49.7

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

MOVEMENT SUMMARY

Site: 1 [Botany Road and Tupia Street, Botany - Future 2032 AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future 2032 AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	15	0.0	15	0.0	0.062	6.2	LOS A	0.2	1.4	0.68	0.76	0.68	41.7
3	R2	All MCs	9	0.0	9	0.0	0.062	23.2	LOS B	0.2	1.4	0.68	0.76	0.68	41.7
Approach			24	0.0	24	0.0	0.062	12.6	LOS A	0.2	1.4	0.68	0.76	0.68	41.7
East: Botany Road															
4	L2	All MCs	6	0.0	6	0.0	0.003	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	444	4.5	444	4.5	0.234	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			450	4.4	450	4.4	0.234	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Botany Road															
11	T1	All MCs	740	3.2	740	3.2	0.401	0.0	LOS A	0.2	1.2	0.03	0.03	0.03	49.9
12	R2	All MCs	12	0.0	12	0.0	0.401	12.2	LOS A	0.2	1.2	0.03	0.03	0.03	48.4
Approach			752	3.2	752	3.2	0.401	0.2	NA	0.2	1.2	0.03	0.03	0.03	49.8
All Vehicles			1226	3.6	1226	3.6	0.401	0.4	NA	0.2	1.4	0.03	0.04	0.03	49.6

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

MOVEMENT SUMMARY

Site: 1 [Botany Road and Tupia Street, Botany - Projected 2032 AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future 2032 AM Peak Period + Planning Proposal
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	33	0.0	33	0.0	0.122	6.3	LOS A	0.4	2.9	0.69	0.80	0.69	41.8
3	R2	All MCs	17	0.0	17	0.0	0.122	24.3	LOS B	0.4	2.9	0.69	0.80	0.69	41.8
Approach			50	0.0	50	0.0	0.122	12.4	LOS A	0.4	2.9	0.69	0.80	0.69	41.8
East: Botany Road															
4	L2	All MCs	8	0.0	8	0.0	0.004	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	444	4.5	444	4.5	0.234	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			452	4.4	452	4.4	0.234	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Botany Road															
11	T1	All MCs	740	3.2	740	3.2	0.406	0.0	LOS A	0.2	1.7	0.04	0.04	0.04	49.8
12	R2	All MCs	16	0.0	16	0.0	0.406	13.3	LOS A	0.2	1.7	0.04	0.04	0.04	48.3
Approach			756	3.2	756	3.2	0.406	0.3	NA	0.2	1.7	0.04	0.04	0.04	49.8
All Vehicles			1258	3.5	1258	3.5	0.406	0.7	NA	0.4	2.9	0.05	0.06	0.05	49.4

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

MOVEMENT SUMMARY

Site: [Botany Road and Tupia Street, Botany - Existing PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	13	0.0	13	0.0	0.044	6.4	LOS A	0.2	1.1	0.62	0.74	0.62	42.8
3	R2	All MCs	9	0.0	9	0.0	0.044	16.2	LOS B	0.2	1.1	0.62	0.74	0.62	42.7
Approach			22	0.0	22	0.0	0.044	10.4	LOS A	0.2	1.1	0.62	0.74	0.62	42.8
East: Botany Road															
4	L2	All MCs	8	0.0	8	0.0	0.004	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	480	3.5	480	3.5	0.252	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			488	3.5	488	3.5	0.252	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Botany Road															
11	T1	All MCs	518	2.5	518	2.5	0.297	0.0	LOS A	0.3	2.2	0.07	0.08	0.07	49.6
12	R2	All MCs	22	0.0	22	0.0	0.297	13.4	LOS A	0.3	2.2	0.07	0.08	0.07	48.2
Approach			540	2.4	540	2.4	0.297	0.5	NA	0.3	2.2	0.07	0.08	0.07	49.6
All Vehicles			1050	2.9	1050	2.9	0.297	0.6	NA	0.3	2.2	0.05	0.06	0.05	49.5

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

MOVEMENT SUMMARY

Site: 1 [Botany Road and Tupia Street, Botany - Future 2032 PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future 2032 PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	13	0.0	13	0.0	0.062	7.0	LOS A	0.2	1.4	0.71	0.83	0.71	41.3
3	R2	All MCs	9	0.0	9	0.0	0.062	23.2	LOS B	0.2	1.4	0.71	0.83	0.71	41.2
Approach			22	0.0	22	0.0	0.062	13.6	LOS A	0.2	1.4	0.71	0.83	0.71	41.2
East: Botany Road															
4	L2	All MCs	8	0.0	8	0.0	0.004	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	585	2.9	585	2.9	0.306	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			593	2.9	593	2.9	0.306	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Botany Road															
11	T1	All MCs	631	2.1	631	2.1	0.359	0.0	LOS A	0.4	2.6	0.07	0.08	0.07	49.6
12	R2	All MCs	22	0.0	22	0.0	0.359	17.5	LOS B	0.4	2.6	0.07	0.08	0.07	48.2
Approach			653	2.0	653	2.0	0.359	0.6	NA	0.4	2.6	0.07	0.08	0.07	49.5
All Vehicles			1268	2.4	1268	2.4	0.359	0.6	NA	0.4	2.6	0.05	0.06	0.05	49.5

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

MOVEMENT SUMMARY

Site: 1 [Botany Road and Tupia Street, Botany - Projected 2032 PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future 2032 PM Peak Period + Planning Proposal
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tupia Street															
1	L2	All MCs	17	0.0	17	0.0	0.080	7.0	LOS A	0.3	1.8	0.71	0.85	0.71	41.2
3	R2	All MCs	11	0.0	11	0.0	0.080	24.3	LOS B	0.3	1.8	0.71	0.85	0.71	41.1
Approach			28	0.0	28	0.0	0.080	13.8	LOS A	0.3	1.8	0.71	0.85	0.71	41.1
East: Botany Road															
4	L2	All MCs	16	0.0	16	0.0	0.009	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	585	2.9	585	2.9	0.306	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach			601	2.8	601	2.8	0.306	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.7
West: Botany Road															
11	T1	All MCs	631	2.1	631	2.1	0.385	0.1	LOS A	0.8	5.3	0.12	0.14	0.13	49.2
12	R2	All MCs	40	0.0	40	0.0	0.385	17.8	LOS B	0.8	5.3	0.12	0.14	0.13	47.8
Approach			671	1.9	671	1.9	0.385	1.1	NA	0.8	5.3	0.12	0.14	0.13	49.2
All Vehicles			1300	2.3	1300	2.3	0.385	1.0	NA	0.8	5.3	0.08	0.10	0.08	49.2

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

APPENDIX D

TRAVEL TO WORK CENSUS DATA

G62 METHOD OF TRAVEL TO WORK(a) BY SEX

Count of employed persons aged 15 years and over

	Males	*Females*	*Persons*
One method:			
Train	5	12	10
Bus	71	64	133
Ferry	0	0	0
Tram/light rail	0	0	0
Taxi/ride-share service	3	7	9
Car, as driver	1,591	1,147	2,742
Car, as passenger	92	131	219
Truck	50	0	50
Motorbike/scooter	64	4	66
Bicycle	31	8	33
Other	33	18	51
Walked only(b)	83	71	159
Total one method	*2,016*	*1,451*	*3,471*
Two methods:			
Train and:			
Bus	34	46	78
Ferry	0	0	0
Tram/light rail	0	0	0
Car, as driver	5	0	4
Car, as passenger	3	0	5
Other(c)	0	0	0
Total	*41*	*49*	*92*
Bus and:			
Ferry	0	0	0
Tram/light rail	3	0	3
Car, as driver	4	6	9
Car, as passenger	0	5	9
Other(c)	0	0	0
Total	*8*	*11*	*24*
Other two methods	34	16	47
Total two methods	*78*	*82*	*152*
Three methods:			
Train and two other methods	0	0	0
Bus and two other methods (excludes train)	0	0	0
Other three methods	*0*	*0*	*3*
Total three methods	0	4	9
Worked at home	1,065	1,419	2,479
Did not go to work	327	530	862
Method of travel to work not stated	15	5	25
Total	**3,497**	**3,492**	**6,995**

This table is based on place of enumeration.

(a) Records the methods of travel to work on 10 August 2021 and may not reflect the usual travel pattern.

(b) Walked only cannot be reported in combination with another method of travel to work.

(c) Includes taxi/ride-share service, truck, motorbike/scooter, bicycle and other.

Please note that there are small random adjustments made to all cell values to protect the confidentiality of data. These adjustments may cause the sum of rows or columns to differ by small amounts from table totals.