

Taronga Zoo

Taronga Reptile and Amphibian Conservation Centre
Transport Impact Assessment



Prepared by: GTA Consultants (Group) Pty Ltd for Taronga Conservation Society Australia

on 25/06/2021

Reference: N210960

Issue #: A

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	25/06/2021	Final	Raymond Zhang	Ashish Modessa	Kane Williams	

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1. INTRODUCTION

1.1. Background

The Reptile and Amphibian Conservation Centre (RACC) project involves the construction of a new reptile and amphibian exhibit for Taronga Zoo visitors. The existing reptile exhibit is proposed to be demolished via a separate and future State Significant Development Application (SSDA) for Taronga Wildlife Hospital, which will be constructed on the existing reptile exhibit site. The new precinct will inspire excitement, encourage visitation, provide opportunities for connection and reflection, and facilitate learning experiences.

It is understood that a traffic and transport report is required to accompany an Environmental Impact Statement (EIS) for this State Significant Development (SSD-17483577).

Taronga Conservation Society Australia commissioned GTA, now Stantec to undertake a transport impact assessment for the proposal.

Previous feedback from Transport for NSW for the Upper Australia Precinct SSDA lodged in 2020 has been considered in the preparation of the transport impact assessment given the similarities of the two projects.

The location of the Reptile and Amphibian Conservation Centre is presented in Figure 1.1.

Figure 1.1: Site location



Base Image Source: Nearthmap, June 2020

1.2. Development Proposal

The site for the new RACC animal exhibit is currently occupied by a temporary meerkat exhibition, which will be demolished, and the meerkats will be relocated into the approved African Savannah Precinct.

The existing reptiles and amphibians will be relocated from their current location to a new exhibit once completed. The proposal includes the following works.

- demolition of the existing temporary meerkat exhibition
- construction of a two storey building with a new forecourt and entrance along the eastern entrance to the site.

The development aims to improve an existing experience and will not include an increase in the use of the site. Accordingly, it is anticipated that visitation resultant from this proposal will be largely consistent with the historical circumstances, except for the first few weeks of an exhibit opening where there may be an increase in local visitor volumes. No additional car parking will be provided as part of this proposal.

It is proposed that all deliveries to and from the new exhibit will be provided via the Whiting Beach Road access through the security portal. Figure 1.2 shows the ground level of the proposed RACC, which is back of house and includes a loading dock for delivers and waste collection for vehicles up to 6.4 metres Small Rigid Vehicles. There are two levels of exhibit area above this back of house level.

Figure 1.2: Ground plan of the RACC



Source: dwp drawing no AA1201 Issue E, dated 23 June 2021

1.3. Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposal during operation and construction stages, including consideration of the following:

- existing traffic and parking conditions at the site
- suitability of the proposed parking in terms of supply (quantum)
- pedestrian and bicycle requirements
- the traffic generating characteristics of the proposal
- the transport impact of the proposal on the surrounding road network
- construction traffic impact during the construction stages.

1.4. Secretary's Environmental Assessment Requirements

GTA, now Stantec has reviewed the Secretary's Environmental Assessment Requirements (SEARs) in regard to traffic, parking and access. As per the requirements, the following items are evaluated in the chapters specified below in Table 1.1.

Table 1.1: SEARs on Traffic, Parking and Access

SEARs	Addressed in Report
<ul style="list-style-type: none"> • A transport and accessibility impact assessment, prepared in consultation with Transport for NSW and Council with comments addressed prior to lodgement, which provides: <ul style="list-style-type: none"> ○ The predicted transport mode share split for the proposed development ○ An analysis of the existing traffic network, including the road hierarchy, current daily and peak hour vehicle movements and existing performance levels of nearby intersections ○ A forecast of additional daily and peak hour vehicle movements as a result of the proposal (using SIDRA modelling or similar at 5-year intervals) and identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cycle conflict) ○ Proposals to mitigate any traffic impacts, including intersection upgrades to achieve acceptable performance ○ Details of car parking provision, having regard to relevant parking rates, specifications and standards, and identify opportunities to decrease car parking in areas with good public transport accessibility ○ Details of proposed vehicular access, loading, deliveries and servicing arrangements, and any proposed infrastructure improvements or measures to reduce potential conflicts with pedestrians and cyclists ○ Proposals to improve walking and cycling, such as connections into existing walking and cycling networks, high equality end-of-trip facilities and adequate bicycle parking for visitors, employees and residents (provided in accordance with the relevant rates, specifications and standards) ○ Measures to promote sustainable travel choices for employees, residents or visitors, such as minimising car parking provision, encouraging car share and public transport, cycling and walking, implementing a green travel plan and providing end of trip facilities. 	
	Section 6.4.2
	Sections 2.2, 2.4 and 4.3
	Section 4.3
	Sections 4.3 and 4.4
	Chapter 3
	Section 6.3
	Section 6.1
	Section 6.4
<ul style="list-style-type: none"> • A Construction Traffic Management Plan, prepared in consultation with Transport for NSW and Council with comments addressed prior to lodgement, providing details of predicted construction traffic movements, routes and access arrangements, and outline how construction traffic impacts on existing traffic, pedestrian and cycle networks would be appropriately managed and mitigated (including cumulative impacts). 	Chapter 5

1.5. References

In preparing this report, the following documents have been reviewed and where appropriate reference has been made to the following:

- Mosman Council Development Control Plan (DCP) 2012, amended 2018
- Mosman Municipal Council Local Environmental Plan (LEP) 2012
- Transport for NSW (TfNSW) Guide to Traffic Generating Development
- Transport for NSW Traffic Control at Work Site manual
- site layout plans prepared by dwp
- other documents and data as referenced in this report.

2. EXISTING CONDITIONS

2.1. Location

Taronga Zoo is located west of Bradleys Head Road, Mosman and it bound by Whiting Beach Road to the north, Athol Wharf Road to the south and Little Sirius Cove to the west. The location of the zoo and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject site and its environs



Base source: Sydway Publishing Pty Ltd

2.2. Road Network

Bradleys Head Road

Bradleys Head Road functions as a local collector road and is aligned in a north-south direction linking the area with Military Road and Spit Junction in the heart of Mosman. At the entrance of the zoo, it is a two-way road configured with a two-lane, nine-metre wide carriageway, including a right turn lane to access the Taronga Zoo multistorey and at-grade car parks.

Unrestricted kerbside parking is permitted north of Whiting Beach Road and time-restricted/ ticketed angled parking is provided south of Whiting Beach Road.

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Whiting Beach Road

Whiting Beach Road is a local road and is generally aligned in an east-west direction. It is a two-way road configured with a two-lane, eight-metre wide carriageway. Whiting Beach Road provides staff and delivery access to Taronga Zoo car parking and the back-of-house area of the zoo via the northern access.

Unrestricted kerbside parking is permitted on the northern side of the road.

2.3. Car Parking

Table 2.1 provides a breakdown of the location and type of parking spaces provided on-site within Taronga Zoo.

Table 2.1: Summary of on-site parking supply

Location	General car spaces	Accessible car spaces	Motorcycle spaces	Total
Multistorey	639	14	12	665
Overflow area	176	5	-	181
Total	815	19	12	846

It is noted that the overflow parking area is typically made available once the multistorey car park approaches its capacity. The total car park capacity including the multistorey car park and overflow area is 834 spaces, with a further 12 motorcycle spaces.

Historical car park occupancy data (pre-COVID) has been provided by Taronga Zoo showing typical parking usage throughout the year. Figure 2.2 presents the peak daily parking occupancy profile over about a two-year period, which would represent typical demand in any year.

A summary of the historical parking data is provided below:

- The parking data has been collected for a total of 653 days.
- Over this period, parking occupancy exceeded the total car park capacity for only 10 days, or on average five to six days per year.
- The 85th percentile peak parking occupancy is 618 spaces. In simple terms, for 85 per cent of the time, the parking demand is less than 618 spaces. This equates to a minimum of 216 available car parking spaces.

Figure 2.2: Peak daily car park occupancy

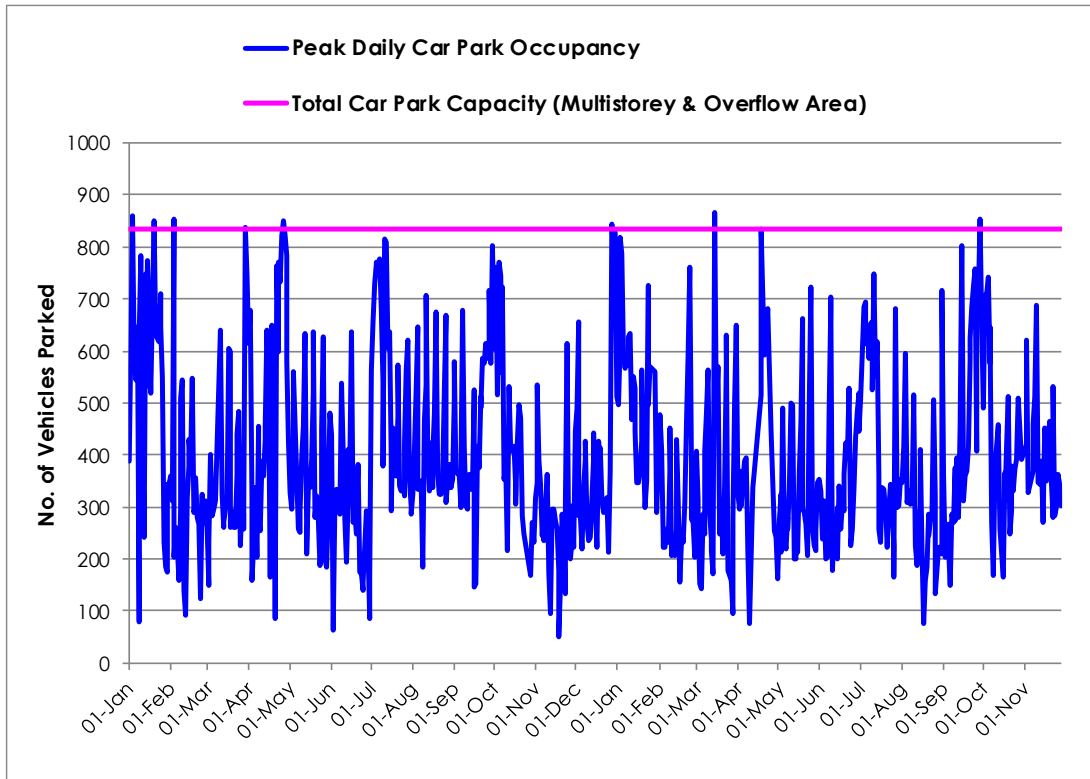


Figure 2.3 also presents historical hourly parking occupancy profile over the first two weeks for a typical January.

Figure 2.3: Hourly parking occupancy (first two weeks in January)

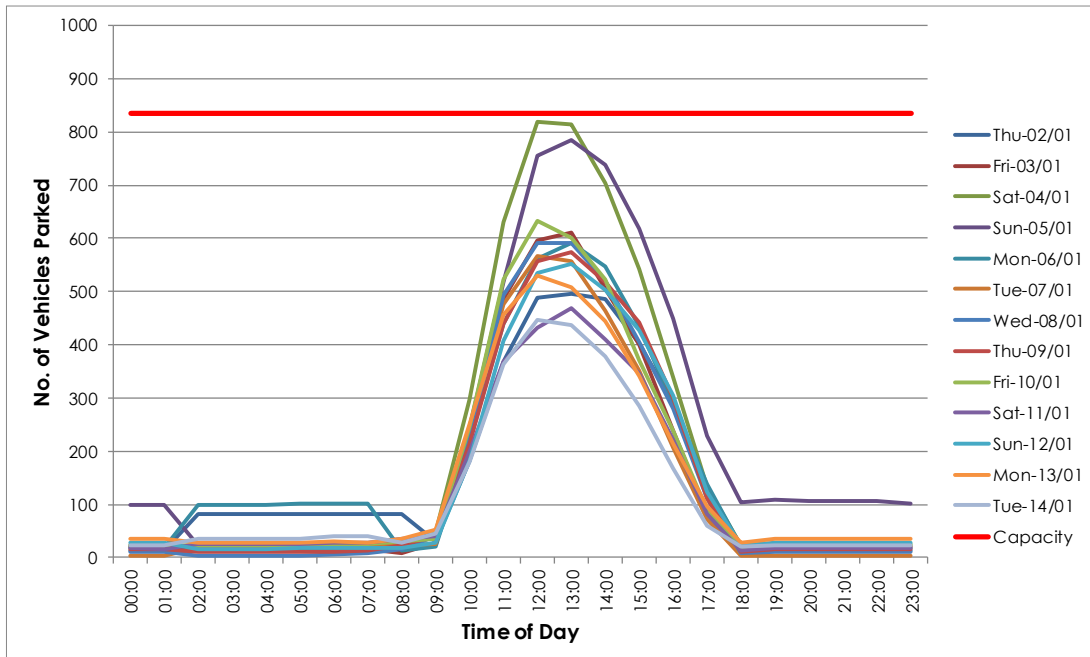


Figure 2.3 indicates that peak parking occupancy generally occurred between 12:00pm and 1:00pm and the parking occupancy decreases significantly after 2:00pm.

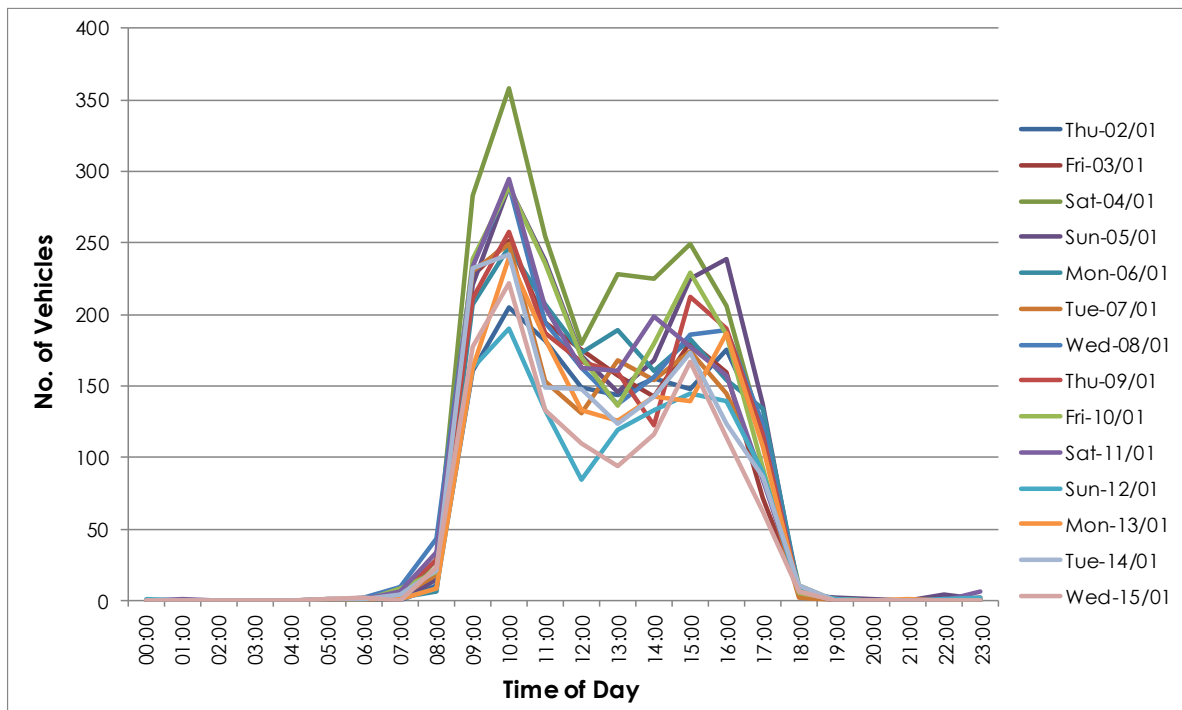
2.4. Traffic Generation

The traffic generation of the Taronga Zoo can be estimated from the number of vehicles entering and exiting the multistorey car park. Figure 2.4 presents historical hourly traffic generation (i.e. sum of total vehicles entering and exiting the car park) profile over the first two weeks in January.

A summary of the historical hourly traffic generation is provided below:

- weekday peak hour traffic generation of the zoo was 290 vehicles per hour, which occurred at 10:00am to 11:00am
- weekend peak hour traffic generation was 358 vehicles per hour, which occurred at 10:00am to 11:00am
- the majority of vehicles entered the car park between 9:00am and 12:00pm
- profile of vehicles exiting the car park was more spread out i.e. between 1:00pm and 6:00pm
- during the surrounding commuter peak hours, the zoo generates in average of 20 vehicles (between 8:00am to 9:00am) and 100 vehicles (between 5:00pm to 6:00pm)
- average daily traffic generation is approximately 1,550 and 1,900 vehicles during the weekdays and weekends, respectively.

Figure 2.4: Hourly traffic generation (first two weeks in January)



2.5. Public Transport

The site is accessible by bus and ferry. Bus stops are located at the main entrance off Bradleys Head Road and the ferry wharf is located at southern entrance of the zoo (at the end of Bradleys Head Road).

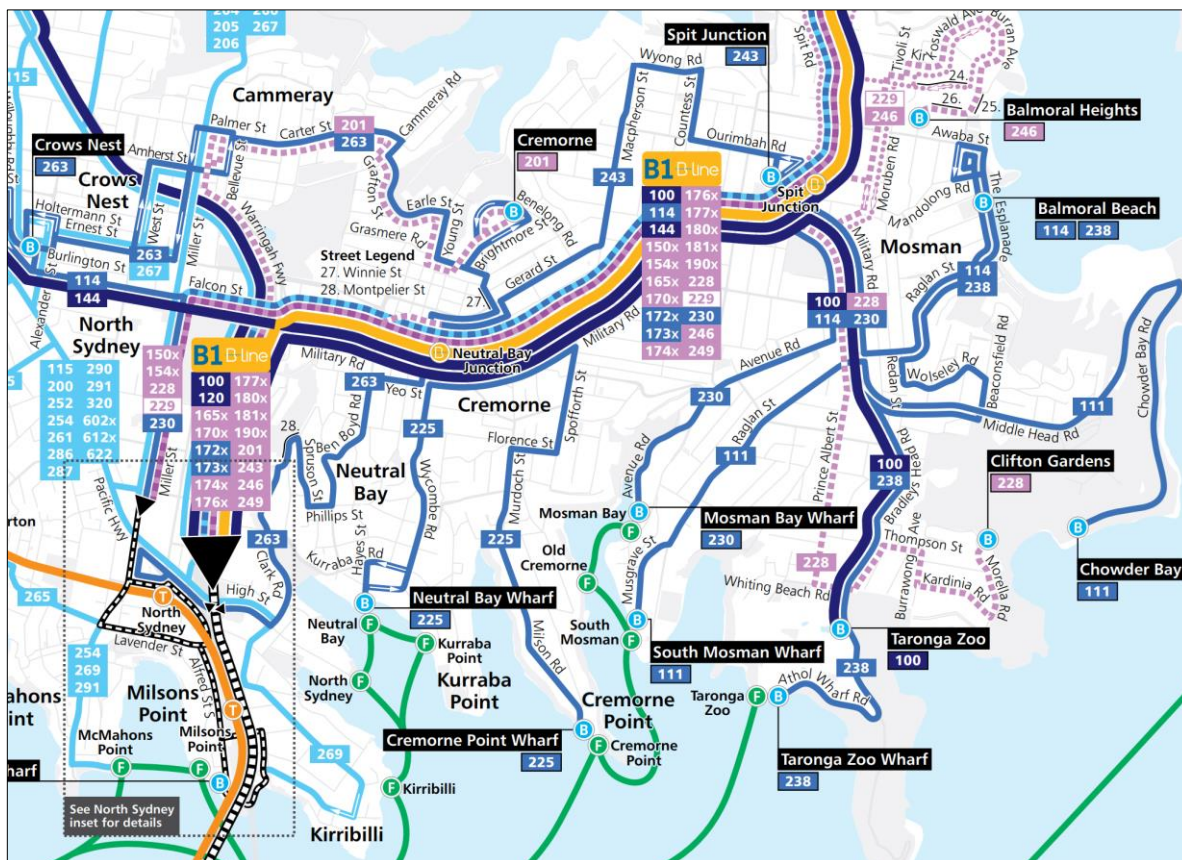
A review of the public transport available near the site is summarised in Table 2.2 and a bus route map is provided in Figure 2.5.

EXISTING CONDITIONS

Table 2.2: Public transport provision

Service	Route #	Route description	Location of stop	Distance to nearest stop	Frequency on/off peak
Bus	100	Taronga Zoo to City QVB (Loop Service)	Taronga Zoo	on site	10 minutes peak and off peak
Bus	228	Milsons Point to Clifton Gardens	Bradleys Head Road	150 m	1 service during AM peak and 4 services during PM peak
Bus	238	Taronga Zoo Wharf to Balmoral	Taronga Zoo	on site	30 minutes peak and off peak
Ferry	F2	Circular Quay to Taronga Zoo	Taronga Zoo Wharf	on site	30 minutes peak and off peak

Figure 2.5: Sydney bus network map



Source: <https://transportnsw.info/travel-info/waysto-get-around/bus/bus-operator-maps> accessed 14/05/2021

2.6. Pedestrian and Cycle Infrastructure

Pedestrian footpaths are provided at the following locations:

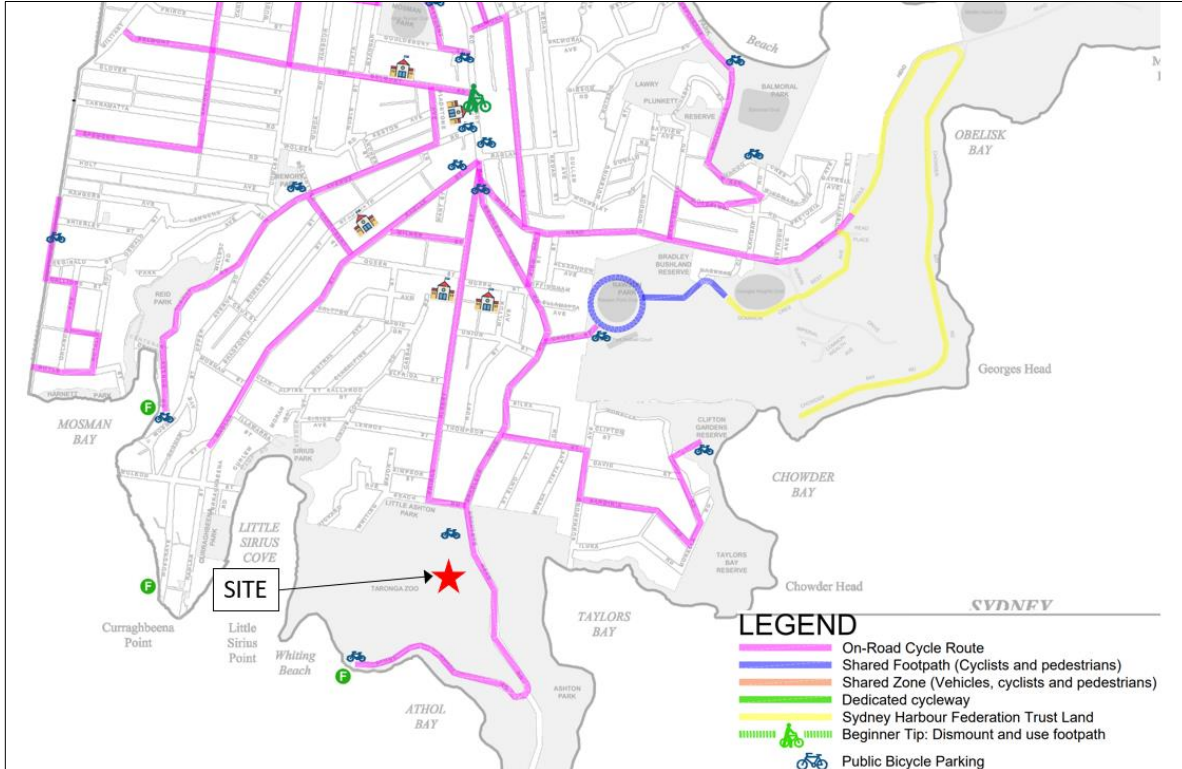
- Both sides of Bradleys Head Road, north of the main zoo entrance.
- Eastern side of Bradleys Head Road, south of the main zoo entrance for approximately 300 metres.
- Western side of Bradleys Head Road, south of the main zoo entrance for approximately 100 metres.
- Northern side of Whiting Beach Road.

A raised pedestrian crossing is provided across the Bradleys Head Road, at the main entrance.

EXISTING CONDITIONS

The nearest cycle route to the site runs along the Bradleys Head Road-Athol Wharf Road. The cycle network surrounding the subject site is illustrated in Figure 2.6, which shows the site has a good connectivity to on/ off road cycle routes.

Figure 2.6: Mosman cycle map



Source: <https://mosman.nsw.gov.au/recreation/cycling> accessed 14/05/2021

2.7. Travel Behaviour

The site is generally well serviced by established and frequent public transport services. Based on available information and historical data from the zoo, approximately 60 per cent of zoo visitors travel to and from the zoo by ferry or bus, with the remaining 40 per cent using private vehicles.

3. PARKING ASSESSMENT

3.1. Car Parking Requirements

Mosman Council's Open Space and Infrastructure Development Control Plan (DCP) 2012 and Business Centres Development Control Plan (DCP) 2012 does not specify a car parking rate for zoos or similar uses. Similarly, the Roads and Maritime Guide to Traffic Generating Developments does not specify a parking rate for the proposed uses. Notwithstanding, it is reiterated that the proposal involves relocation and upgrade of an existing exhibit.

The site area for the zoo will not increase to upgrade the exhibits and therefore would not intensify the existing visitation numbers. Therefore, additional on-site car parking is not required for the proposal.

3.2. Adequacy of Parking Supply

As presented in Section 2.3, Taronga Zoo currently provides in total of 834 car parking and 12 motorcycle spaces in its multistorey and overflow parking areas.

The historical peak daily parking occupancy profile is presented in Figure 2.2. The results of the parking analysis indicates that the historical 85th percentile peak parking occupancy is 618 spaces with a minimum of 216 car parking spaces available. The number of days which the parking demand exceeded the capacity was on average five to six days a year.

Therefore, the existing multistorey car park would have capacity to accommodate any temporary increase in parking demand during the initial weeks following the opening of the relocated exhibit. The increase is expected to be no more than 10 per cent and is based on previous operational experiences of the zoo. Applying the 10 percent visitation surge to the 85th percentile demand of 618 spaces equates to an additional parking demand of approximately 62 spaces. Based on the availability of 216 spaces, this temporary increase can be easily accommodated within the existing multistorey car park.

The proposed reptile and amphibian exhibit is not expected to generate any increase in parking demand over the long term. This is due to the fact that most of the animals that will inhabit the RACC are already present in the zoo's existing exhibit. As such, the effect of any 'new' appeal is anticipated to be low.

Further, the zoo is not increasing in size. Rather, just redeveloping and relocating existing exhibits within the zoos existing property.

It is noted that the parking data provided predates the opening of the Australia Habitat and Taronga Wildlife Retreat, as such parking demand from the Retreat has not been accounted for. GTA's Transport Impact Assessment for the Australia Habitat and Taronga Wildlife Retreat¹ indicated that retreat guests would typically require 62 car spaces. An additional nine spaces would be required for use by staff and accommodated within the staff carpark. A subsequent modification² to the approved Australia Habitat and Taronga Wildlife Retreat prepared by GTA now Stantec is under assessment, which proposes to open the facilities of the retreat to the broader Zoo patrons and general public. The assessment assumed a car occupancy of 2 to 2.5 person per car, which is able to cater for 400 to 500 additional visitors to the Zoo and

¹ Transport Impact Assessment – Taronga Zoo – Proposed Australia Habitat & Taronga Wildlife Retreat – Transport Impact Assessment, GTA Consultants, 07 March 2016

² Taronga Wildlife Retreat – Modification to Approved SSD 15_7419, GTA Consultants now Stantec, 7 May 2021

also the venues at Taronga Centre based on the available 200 spaces during the peak period (12:00pm to 1:00pm).

Guest arrival typically occurs between 3:30pm and 5:30pm and departures between 10:00am and 11:00am. With peak parking demand generally between 12:00pm and 1:00pm and decreasing significantly after 2:00pm, the existing on-site car parking provision will be sufficient to accommodate the additional demand arising from the retreat. That said, it is conservatively assessed that 50 per cent of the parking demand will occur during the peak parking occupancy period, equivalent to 31 spaces.

Considering the proposed RACC's temporary surge in demand in combination with the retreat, the additional total parking demand could equate to 93 spaces. This would be able to be accommodated on an 85th percentile day when there is availability for 216 spaces, as presented in Table 3.1.

Table 3.1: Anticipated peak parking demand

Taronga Zoo parking	Peak parking occupancy	Percentage
Total parking available	834	100%
85 th percentile parking demand	618	74%
Wildlife Retreat parking demand	31	4%
RACC additional parking demand (initial opening)	62	7%
Total anticipated peak parking demand	711	85%

It is worth noting that Taronga Zoo is very conscious of the potential impacts associated with the opening of new animal facilities. As such, the zoo will ensure a 'soft' opening during non-peak periods to assist the animals in adjusting to the redeveloped exhibits. The soft opening will also allow the zoo to better manage any such surge in visitation and keep this period outside the school holiday periods.

Noting the above, it is believed that the current parking supply at the zoo is considered more than sufficient to accommodate any temporary surge in demand that the zoo may experience due to the opening of the redeveloped exhibit even when considering normal operating situations. Following the first few weeks of opening, visitation numbers are expected to settle and largely remain as per historic and hence, additional parking is not required.

4. TRAFFIC ASSESSMENT

4.1. Overview

Similar to parking demand, the proposed RACC is not expected to generate additional visitation numbers of traffic to Taronga Zoo. This is because, visitors and members generally visit the zoo for the overall experience and not just a redeveloped exhibit.

However, it is acknowledged that during the first few weeks following the opening of the RACC, visitation to the zoo is likely to increase by up to about 10 per cent by additional local visitors before settling down to normal visitation numbers.

Based on the historic usage data obtained for the existing multistorey car park during the first two weeks in January (i.e. busiest period of the year), the average daily traffic generation of the zoo is approximately 1,550 and 1,900 vehicles during the weekdays and weekends, respectively. Therefore, the temporary increase in daily traffic flows during the opening periods is expected to increase to approximately by approximately 160 to 190 additional vehicles per day.

Transport for NSW has indicated during discussions in mid-2020 that their preference is for traffic surveys and intersection modelling of the adjacent intersections of the zoo to be undertaken with appropriate assumptions made to represent typical conditions. Therefore, the traffic impact of the opening of the RACC has been documented in the following sections.

4.2. Traffic Generation

4.2.1. Zoo's Weekday and Weekend Peaks

The average site peak hour traffic generation of the zoo has historically been approximately 250 and 310 vehicles during the peak period between 1:00pm and 2:00pm on weekdays and weekends, respectively. The temporary increase in traffic generation by the RACC is then expected to be some 25 to 30 additional vehicles per hour during the site peak hours.

Similarly, as the traffic data also predates the opening of the Retreat, such traffic impacts associated with the Retreat must also be considered. Based on GTA's Transport Impact Assessment³, the Australia Habitat and Taronga Wildlife Retreat is expected to generate up to 25 vehicle trips per hour during the busiest peak. However, available information (i.e. historical knowledge of Roar and Snore) indicates that guest arrivals and departures typically fall outside of the traffic peak periods. As discussed, it is anticipated that retreat guest arrivals will typically occur between 3:30pm and 5:30pm, with departures between 10:00am and 11:00am. Based on this, a conservative approach was adopted by assuming half of the peak hour 25 vehicle trips (13 vehicle trips) will occur in the site peak hour (1:00pm to 2:00pm).

Considering the retreat and the initial surge in visitation generated by the RACC, the additional traffic generation is expected to be some 38 to 43 vehicles per hour during the typical site peak hour. For this temporary period, this equates to less than one additional vehicle per minute.

³ Transport Impact Assessment – Taronga Zoo – Proposed Australia Habitat & Taronga Wildlife Retreat – Transport Impact Assessment, GTA Consultants, 07 March 2016

4.2.2. Morning and Afternoon Commuter Peak

The average traffic generated by the zoo during the commuter peak period has historically been approximately 210 and 160 vehicles per hour during the morning and afternoon commuter peak hours, respectively. Hence, the temporary increase in peak hour traffic flows after the RACC opening period is expected to be up to 21 vehicles during the road network peak hour. This is equivalent to one additional vehicle every three minutes.

The retreat does not typically generate any trips during the morning commuter peak hour. With retreat guest arrivals for the retreat typically occurring between 3:30pm and 5:30pm, it is assumed 70 per cent of the 25 vehicle trips, equivalent to 18 vehicle trips could occur during the afternoon commuter peak hour for the purposes of this assessment.

Based on the above, the additional traffic generation is expected to be between 21 and 39 vehicles per hour during any road network peak hours. This is equivalent to one additional vehicle every two to three minutes.

4.3. Traffic Impacts

4.3.1. Base Data

At the request of Transport for NSW, traffic surveys were previously completed at the two Whiting Beach Road intersections with Bradleys Head Road and Prince Albert Street during the following peak periods:

- Thursday 2 July 2020 from 7:30am to 11:30am and 2:30pm to 6:30pm
- Saturday 4 July 2020 from 9:00am to 11:00am.

It is noted that the surveys occurred in the last week of Term 2 for NSW schools.

The morning and afternoon peak hours on the Thursday were found to occur from 9:30am to 10:30am and 3:30pm to 4:30pm respectively. The Saturday peak occurred from 9:15am to 10:15am. Full survey results are included in Appendix A.

Taronga Zoo advised that 2,125 and 4,580 visitors attended the zoo on the surveyed days in 2020 and that 60 per cent of staff returned on site at the time. In comparison, there were on average 3,150 and 4,900 visitors that attended the zoo on the same days in June and July 2019 (excluding the NSW school holiday period). This suggests there has been an approximately 30 per cent reduction in visitation on the Thursday and a seven per cent reduction on Saturday compared to 2019.

Notwithstanding this, there has been a significant impact on interstate/ overseas visitors recently who typically account for 30 to 40 per cent of total visitors and travel by public transport (i.e. some 2,000 and 3,100 visitors being locals on Thursdays and Saturday typically). When this is considered and noting visitors on the surveyed days were predominantly locals that drove, the traffic conditions surveyed would not represent a typical day as there were more vehicles in 2020 than typically, particularly on the Saturday. These non-typical traffic conditions are expected to remain as current conditions as overseas visitors are still impacted.

It was also advised that visitors could only purchase tickets online at the time of the surveyed period, so the arrival patterns are atypical as visitors arrive closer to opening time and not spread across the day to avoid long queues at the ticket booth. This would suggest the site peaks would have been more concentrated on the surveyed days than typical, which is evident in the Saturday results that show the peak hour occurred from 9:15am.

Therefore, a conservative approach has been adopted for the purposes of this study using the peak hours recorded from the surveys with no adjustments, noting traffic conditions were higher than typical and is expected to reflect existing conditions. The site and commuter peak traffic generations for the development, determined in Section 5.2, have been applied to the surveyed peak hours to assess the impact.

4.3.2. Intersection Operation

The operation of the key intersections has been assessed using SIDRA INTERSECTION⁴, a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by TfNSW, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 4.1 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

Table 4.1: SIDRA INTERSECTION level of service criteria

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

Table 4.2 presents a summary of the existing and post development operation of the study intersections, with full results presented in Appendix B. The results for these priority-controlled intersections are based on the movement with highest delay.

For the post development scenario, it was assumed that 80 per cent of the additional traffic would use Bradley Head Road and 20 per cent via Whiting Beach Road in either direction.

Table 4.2: Intersection operating conditions

Intersection	Scenario	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Whiting Beach Road/ Bradleys Head Road	2020	Weekday AM	0.14	6	4	A
		Weekday PM	0.03	5	1	A
		Saturday	0.11	6	3	A
	Post Development	Weekday AM	0.14	6	4	A
		Weekday PM	0.03	6	1	A

⁴ Program used under license from Akcelik & Associates Pty Ltd.

Intersection	Scenario	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
		Saturday	0.11	6	3	A
Whiting Beach Road/ Prince Albert Street	2020	Weekday AM	0.11	5	3	A
		Weekday PM	0.03	5	1	A
		Saturday	0.02	5	1	A
	Post Development	Weekday AM	0.11	5	3	A
		Weekday PM	0.04	5	1	A
		Saturday	0.02	5	1	A

Table 4.2 indicates that the study intersections operate satisfactorily, with acceptable delays and queues during the surveyed peak periods and that the additional traffic generated in the initial weeks of opening of the RACC would not change the operation.

4.4. Summary

It is expected that the local traffic conditions near the site would not be affected by this proposal and as such it is not anticipated that mitigation measures are necessary.

5. CONSTRUCTION TRAFFIC MANAGEMENT

5.1. Overview

This chapter provides some preliminary details and assessment of the construction traffic management required for the RACC. A detailed Construction Traffic Management Plan will be developed by the appointed contractor prior to the commencement of any works.

5.2. Proposed Works

The RACC is expected to be constructed in the following stages:

- Stage 1 – demolition of the existing meerkat exhibits
- Stage 2 – detailed excavation for the proposed exhibit
- Stage 3 – construction of redeveloped exhibit.

5.3. Work Hours

It is proposed that construction works will be carried out between the following hours:

- Mondays to Fridays: 7:00am to 5:00pm
- Saturdays: 8:00am to 1:00pm
- Sundays: No work.

No construction vehicle access is to be permitted on public holidays.

Any work outside the proposed construction hours will be subject to specific prior approval from Mosman Council or Department of Planning, Industry and Environment (DPIE).

5.4. Construction Traffic Vehicle Type

Construction vehicles likely to be generated by the proposed construction activities include:

- articulated trucks for the delivery of machinery (including mobile cranes, diggers)
- trucks to collect demolition and excavated materials
- general vehicles such as concrete trucks, medium rigid trucks, small rigid trucks, tradespeople's utilities and courier vans.

5.5. Construction Vehicle Access

The construction vehicles will use the existing Taronga Zoo's service vehicle access from Bradleys Head Road to access the construction site.

The access will be manned by an accredited traffic controller to manage the interaction of construction vehicle access and pedestrian, cyclist, and general traffic movements along Bradleys Head Road. Where practical, the traffic controller would not stop through traffic along Bradleys Head Road to assist with

CONSTRUCTION TRAFFIC MANAGEMENT

construction vehicle access, however, find an appropriate gap in traffic flow prior to releasing a construction vehicle. Construction vehicles entering the site will be required to give way to vehicles, pedestrians, and cyclists under normal road rules. A traffic control plan that shows required traffic and pedestrian control signage will be prepared and implemented by accredited personnel prior to works commencing.

Figure 5.1 presents the construction vehicle path.

Figure 5.1: Internal Construction Vehicle Path



Base Image Source: Nearmap, accessed 28 May 2021

Taronga Zoo also implements a strict vehicle policy within the zoo grounds, which is applicable for the proposed construction works. Vehicle policy is as follows:

1. Restrict movements of vehicles to the minimum requirements for executing the Works;
2. Main site entry will be external to the zoo property. Any deliveries requiring access to the site from within the zoo will need to comply with the zoo policy listed below:
 - o Do not exceed 10 kilometres per hour;
 - o Do not drive vehicles including suppliers' delivery vehicles within the zoo between the hours of 9:30am to 4:30pm during school holidays and at other times;
3. Between 6:30am and 9:30am and between 4:30pm and 6:00pm during school holidays and at other times, up to 15 vehicle movements are permitted per day;
4. Escort larger vehicles to the construction site;
5. Use a route as directed by zoo staff;
6. The Contractor is responsible for any damage caused by its and its Subcontractors' vehicles using the roads and must repair any such damage at Contractor's costs;
7. Keep access roads and adjacent footpaths, gutters and drains clear of construction waste, debris and mud, clean as required and remove waste, debris and mud from the zoo, all at the Contractor's cost;
8. There are physical limitations on the height of vehicles using some roads, this should be discussed with Taronga Zoo before work commences;

CONSTRUCTION TRAFFIC MANAGEMENT

9. Where it is necessary to remove fences within the zoo to enable access to be gained to work areas, keep the areas secure at all times and reinstate the fences as soon as practical.
10. Park vehicles on site within the site compound or at locations as directed by zoo staff; and
11. The zoo is a pedestrian park and pedestrians have right of way.

As listed above, the construction vehicles accessing the zoo grounds are restricted to occur outside of the busy zoo operating period. Vehicle access within the zoo grounds would generally be limited to 6:30am to 9:30am and 4:30pm to 6:00pm.

5.6. Construction Vehicle Routes

The designated truck routes to/ from the arterial road network includes the use of Military Road and Bradley Head Road. The approach and departure routes on the external road network are shown in Figure 5.2.

All construction vehicles accessing the site would do so in full compliance with the required clearway and parking restrictions. No queuing of trucks would be permitted on public roads. Truck arrivals would be coordinated to ensure incoming trucks are not required to wait for a truck space to be available on-site.

Figure 5.2: External Approach and Departure Routes



Base map Source: Sydway

5.7. Expected Traffic and Parking Demands

5.7.1. Expected Peak Periods

The zoo's peak operating periods occur between 11:00am and 3:00pm. It is understood that construction activities are typically carried out from 7:00am to 5:00pm Monday to Friday and 8:00am to 1:00pm on Saturdays with peak vehicle movements relating to the construction works generally occurring an hour before construction activities start as well as an hour after construction activities ends, as workers enter and leave the site. As such, given the peak vehicle movements relating to the construction works will only overlap with the zoo's peak operation on a Saturday midday, i.e. between 1:00pm and 2:00pm, this assessment will focus on this period only.

The assessment for parking and traffic impacts in the surrounding neighbourhood considers the traffic and parking generation associated with the following overlapping activities:

- movement of construction related workers
- movement of staff members
- movement of zoo visitors.

5.7.2. Existing Traffic and Parking Circumstance

The analysis detailed in Section 2.4 reported a surveyed traffic generation of 358 vehicles per hour (vph) during the weekend peak, which is 10:00am to 11:00am. Corresponding to this period, the carpark occupancy survey revealed spare capacity of 216 available car parking spaces for 85 per cent of the year (based on 85th percentile demand). Considering the peak construction traffic is envisaged to occur within the hour after construction activities end at 1:00pm, it is noted that both the peak visitation and construction traffic would not coincide.

5.7.3. Heavy Vehicle Generation

Heavy vehicle traffic would mainly be generated by activities associated with the following:

- delivery of construction materials
- delivery and removal of construction equipment and machinery.

The number of daily truck movements will vary depending on the works being conducted on the specific day or timeframe in the construction programme. At periods where timing is critical, the worst-case assessment is estimated as 15 truck movements per day on a typical Saturday, which is coinciding with the peak visitation period of the zoo. This would result in up to three truck movements in the peak hour, conservatively assuming 20 per cent of daily generation arriving within the peak periods.

It is noted that the RACC will be constructed simultaneously with the Zoo's proposed Upper Australia exhibit (SSD-10456 lodged in 2020).

The heavy vehicle generation for Taronga Upper Australia exhibit is also estimated as 10 truck movements per day on a typical Saturday⁵. This would also result in up to two trucks movements in the peak hour using the same assumption as the RACC.

There is a likelihood that a portion of the truck movements generated from the construction of the RACC site will also service the Upper Australia construction site. As a conservative approach, it is assumed that this would only account for 20 per cent of trucks generated, as such the cumulative truck movements generated by the construction of RACC and Upper Australia exhibits is expected to be 16 trucks movements per day on a typical Saturday.

Therefore, the cumulative hourly heavy vehicle movements for the construction of RACC and Upper Australia exhibits would be up to four truck movements in the peak hour.

No parking demand is expected of heavy vehicles.

⁵ Transport Impact Assessment – Taronga Zoo Redeveloped Upper Australia Exhibit – Transport Impact Assessment, Issue B, GTA Consultants, 21 July 2020

5.7.4. Light Vehicle Generation

Light vehicle traffic generation would be largely generated by construction worker traffic movements to and from the site.

It is expected in the worst-case scenario there could be up to 30 construction workers on the typical Saturday, with an average of 20 workers. It is assumed that some of the construction workers will be also servicing the Upper Australia construction site. Construction workers will be encouraged to carpool and to use public transport where possible to ensure that parking can be accommodated wholly within the zoo. Based on the above, a cumulated 40 light vehicles per day could be expected during peak construction.

5.7.5. Summary of Construction Traffic Generation

The cumulative Saturday peak traffic generation and parking demand for the works associated with the RACC and Upper Australia construction are indicated in Table 5.1. The following only indicates peak site traffic generation (between 1:00pm and 2:00pm) when workers leave the site at the end of the workday. It should be noted that outside this period, traffic generation will only include construction vehicles, which would equate to up to six vehicles per hour.

Table 5.1: Cumulative Saturday Peak Hour (1:00pm-2:00pm) Traffic Generation and Parking Demand

Vehicle Type	Construction Site	Hourly Traffic Generation	Parking Demand
Workers (Cars)	RACC	Up to +40 vph [1]	Up to 40 required
	Upper Australia exhibit		
Trucks	RACC	Up to +4 vph	No parking demand
	Upper Australia exhibit		

[1] worst case if all workers leave in the Saturday peak hour.

5.7.6. Traffic Impact

Based on the assessment above, the expected cumulative Saturday construction traffic generation is expected to be up to 44 vehicles per hour.

It is noted that not all the workers would arrive and depart at the same time as some are likely to remain at site to pack up after shutting down for the day and some might have left earlier depending on their work schedule. As such, the worker traffic would likely be further distributed over the space of a few hours, thereby reducing the hourly traffic impact.

Furthermore, the peak Saturday operational traffic occurs between 10:00am and 11:00am, which hence does not coincide with the peak construction traffic, which normally occurs between 1:00pm and 2:00pm.

Therefore, the overall traffic impact during construction period is expected to be nominal with the Taronga Zoo site and the adjacent roads expected to accommodate the peak construction traffic generation.

5.7.7. Parking Impact

The extensive parking survey demonstrated spare capacity of 216 spaces for 85 per cent of the collection periods of 22 months (i.e. 85th percentile demand), thus takes into consideration seasonal effects. The

anticipated peak parking demand during construction, which sums to a total of 40 spaces, will be comfortably accommodated within the 85th percentile car parking capacity.

5.8. Pedestrian and Cyclists

Depending on the appointed contractors agreed construction methodology, pedestrian movements adjacent to the site may be closed, at minimum during construction vehicle movements. Class A and/ or Class B hoarding will be provided around the work site at all times to ensure separation of pedestrians from the work site when access is available.

5.9. Public Transport

The construction activities are not expected to impact existing bus services near the site.

5.10. Management of On-Street Parking Demand

Based on the findings presented in the previous section with respect to the available capacity outside of the peak times, it is assessed that the management of carpark usage and in particular, its impact on surrounding on street parking, is the subject of choice rather than capacity.

Initiatives to encourage on-site parking, include:

- It is understood that the zoo has continually issued internal communications amongst staff members to avoid using on street parking.
- It is understood that the zoo has implemented various strategies including discounted night time parking rates and 'staggered session' tickets for Vivid Sydney to avoid the concurrent arrival and departure of large number of crowd.
- Promotion of public transport.

5.11. Emergency Access

Emergency vehicle access to the construction site and the broader zoo grounds should not be affected by the construction activities.

In addition, access to neighbouring sites by emergency vehicles should not be affected by the works as the roads and footpaths near the site are unaffected.

6. OTHER TRANSPORT CONSIDERATIONS

6.1. Pedestrian and Cyclist Implications

Pedestrian and cyclist access to the zoo will remain the same as current arrangement during both construction and operation of the RACC.

It is anticipated that proposal may attract some additional walking and cycling trips during the first few weeks after the opening of the RACC. However, the additional trips will not impact on the existing pedestrian and cycling facilities in the area.

The impact of the additional vehicular traffic arising from the development during construction and first few weeks of the exhibit opening would have minimal impact on existing walking and cycling in the area.

6.2. Public Transport Implications

Similarly, the proposal would generate some additional trips utilising the existing public transport system during construction and the initial weeks after the opening of the RACC. It is expected that these trips would be modest and are unlikely to result in any additional capacity stress on current public transport systems in the area.

6.3. Loading and Servicing Arrangements

As the proposed new RACC is effectively an upgrade of existing exhibits, the operational and servicing requirements of the exhibit will remain the same as the current exhibitions with loading, servicing and other delivery management practices in place not expected to materially alter and to remain fully self-contained within the zoo's site. A loading dock is proposed for the RACC, with swept path analysis verifying the design can accommodate a 6.4 metre small rigid vehicle and is included in Appendix C.

6.4. Green Travel Plan

6.4.1. Overview

A GTP is a package of measures aimed at promoting sustainable travel and reducing reliance on the private car. It is not designed to be 'anti-car' however will encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel plans can provide both:

- measures which restrict car use (disincentives or 'sticks')
- measures which encourage or support sustainable travel, reduce the need to travel or make travelling more efficient (incentives or 'carrots').

The travel plan would promote the use of transport, other than the private car, provide choice for staff and visitors to travel to and from the site, which is more sustainable and environmentally friendly.

Indeed, there are a range of "non-car" transport options that are available at the site which have been described in this report.

The aim of GTPs is to bring about better transport arrangements for working and visiting a site. The key objectives of GTPs are:

- to encourage walking
- to encourage cycling
- to encourage the use of public transport
- to reduce the use of the car, in particular single car occupancy
- where it is necessary to use the car, encourage more efficient use.

It is the intention therefore that the travel plan will deliver the following benefits:

- enable higher public and active travel mode share targets to be achieved
- contribute to greenhouse gas emission reductions and carbon footprint minimisation
- contribute to healthy living for all
- contribute to social equity and reduction in social exclusion
- improve knowledge and contribute to learning.

6.4.2. Site Specific Application

The RACC is not expected to increase trips to Taronga Zoo in the long-term or have the capability to change travel patterns to/ from Taronga Zoo which is accessible by established bus/ coach and ferry services. Furthermore, the proposal will not increase staff numbers at the zoo, with only a 10 per cent increase in visitation expected in the first few weeks after exhibit opening before normalising.

On this basis, the proposal does not alone warrant a GTP, with any need for a GTP required for the overall zoo operation.

Notwithstanding, Taronga Zoo has implemented a GTP for staff and visitors (primarily primary and secondary school students that arrive by coach) to the Taronga Institute of Science and Learning (TISL) that was prepared by Traffix and dated 4 July 2018.

The GTP investigated travel modes for TISL staff in 2015 and set targets and measures to increase use of public transport and carpooling for the new facility. The GTP included targets to reduce staff trips by vehicle from 48 per cent to 40 per cent, at the same time increase public transport trips from 32 per cent to 39 per cent. The target for walking only was 14 per cent (one per cent increase), whilst cycling was proposed to remain at seven per cent.

A Transport Access Guide (TAG) was also prepared by Traffix that requires updating every six months. This TAG is recommended to be distributed to all zoo staff and visitors, including integrating into the Taronga Zoo website within the 'Getting to the Zoo' page.

It is expected that similar travel patterns and behaviours apply to all staff at Taronga Zoo and therefore the GTP and its strategies and transport initiatives, such as the TAG and use the TISL carpooling service called Comovee would apply and should be available for all zoo staff.

As such, it is recommended that the GTP is updated to account for all zoo staff once operation and staff numbers are normalised following the current health situation based on a new travel mode and staff residence survey to reset mode share targets and adjust strategies and transport initiatives accordingly.

7. CONCLUSION

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

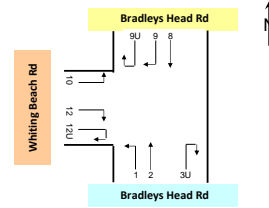
1. The proposal involves construction of a new reptile and amphibian exhibit (RACC) to replace an existing reptile exhibit at the zoo and therefore will not generate any additional parking demand outside of the initial opening weeks of the exhibit. On this basis, additional parking is not proposed to be provided on site.
2. However, it is acknowledged that there would be some increase in additional parking demand during the first few weeks following the opening of the new RACC exhibit. Any temporary increase in demand can be accommodated within the existing on-site car parking provision.
3. The results of the parking analysis indicated that the 85th percentile peak parking occupancy for existing on-site car parking was 618 spaces, being equivalent to a minimum of 216 car parking spaces available.
4. The existing multistorey car park would have sufficient capacity to accommodate the anticipated 85th percentile additional peak parking demand of 93 spaces associated with the temporary increase in parking demand associated with the initial opening weeks visitation surge and when accounting for the guests of the Taronga Wildlife Retreat.
5. It is proposed that all deliveries to and from the RACC will be provided via the existing Whiting Beach Road access.
6. During the first few weeks following the opening of the RACC, increase in peak hour traffic flows is expected to be up to 30 vehicles per hour.
7. Considering this temporary increase, in combination with the 13 vehicle trips associated with retreat guests, the additional traffic generation is anticipated to be up to 43 vehicles per hour during the typical zoo peak hour.
8. Traffic modelling confirmed the existing road network would absorb this minor increase without any such traffic related implications given the zoo is the primary traffic generator in the area.
9. The construction of the RACC will occur simultaneously with the Upper Australia exhibit. It is estimated that the cumulative traffic generation for the two sites will be in the order of four construction vehicle deliveries per hour and up to 40 light vehicles per hour. At this frequency, it is unlikely that the surrounding road capacity is adversely impacted. This accounts for a portion of the construction vehicles and workers servicing the other two sites.
10. Whilst the proposal itself does not warrant a Green Travel Plan, Taronga Zoo has a Green Travel Plan and Transport Access Guide for staff and visitors (primarily primary and secondary school students that arrive by coach) to the Taronga Institute of Science and Learning; which is recommended to be updated for all zoo staff based on a new travel mode and staff residence survey to reset mode share targets and adjust strategies and transport initiatives accordingly.

A. TRAFFIC SURVEYS



Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 1. Bradleys Head Rd / Whiting Beach Rd

Day/Date : Thu, 2nd July 2020
Weather : Fine
Description : Classified Intersection Count
 : 15 mins Data



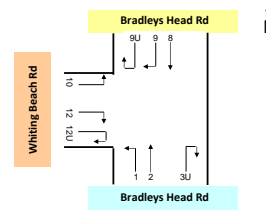
Classifications
 Class 1 : Lights
 Class 2 : Heavies

Approach	Bradleys Head Rd									
	Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)		
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period										
7:30 to 7:45	1	0	1	4	2	6	0	0	0	
7:45 to 8:00	0	1	1	1	4	5	0	0	0	
8:00 to 8:15	3	0	3	3	2	5	0	0	0	
8:15 to 8:30	0	0	0	4	2	6	0	0	0	
8:30 to 8:45	4	0	4	6	2	8	0	0	0	
8:45 to 9:00	3	0	3	9	2	11	0	0	0	
9:00 to 9:15	3	0	3	6	5	11	0	0	0	
9:15 to 9:30	2	1	3	9	1	10	0	0	0	
9:30 to 9:45	4	2	6	14	4	18	0	0	0	
9:45 to 10:00	2	0	2	12	2	14	0	0	0	
10:00 to 10:15	3	0	3	12	5	17	0	0	0	
10:15 to 10:30	4	0	4	11	2	13	0	0	0	
10:30 to 10:45	4	0	4	8	4	12	0	0	0	
10:45 to 11:00	5	1	6	13	1	14	0	0	0	
11:00 to 11:15	5	0	5	15	3	18	0	0	0	
11:15 to 11:30	4	0	4	18	1	19	0	0	0	
AM Totals	47	5	52	145	42	187	0	0	0	
14:30 to 14:45	12	0	12	43	3	46	0	0	0	
14:45 to 15:00	4	0	4	34	1	35	0	0	0	
15:00 to 15:15	10	0	10	44	2	46	0	0	0	
15:15 to 15:30	11	0	11	21	2	23	0	0	0	
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16:15 to 16:30	7	0	7	22	2	24	0	0	0	
16:30 to 16:45	7	0	7	25	4	29	0	0	0	
16:45 to 17:00	8	0	8	13	2	15	0	0	0	
17:00 to 17:15	5	0	5	13	4	17	0	0	0	
17:15 to 17:30	1	0	1	6	1	7	0	0	0	
17:30 to 17:45	5	0	5	8	5	13	0	0	0	
17:45 to 18:00	1	0	1	7	1	8	0	0	0	
18:00 to 18:15	0	0	0	8	2	10	0	0	0	
18:15 to 18:30	2	0	2	7	2	9	0	0	0	
PM Totals	113	0	113	333	40	373	0	0	0	

Approach	Bradleys Head Rd									Whiting Beach Rd									
	Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period																			
7:30 to 7:45	12	3	15	7	0	7	1	0	1	2	0	2	2	0	2	0	0	0	
7:45 to 8:00	3	1	4	6	1	7	0	1	1	0	1	1	1	0	1	1	0	0	
8:00 to 8:15	6	4	10	3	1	4	2	0	2	2	0	2	3	0	3	0	0	0	
8:15 to 8:30	6	2	8	6	0	6	1	0	1	7	0	7	6	0	6	0	0	0	
8:30 to 8:45	11	2	13	4	0	4	0	0	0	6	1	7	5	0	5	0	0	0	
8:45 to 9:00	9	1	10	6	0	6	1	0	1	4	0	4	2	0	2	0	0	0	
9:00 to 9:15	17	6	23	6	1	7	2	0	2	4	0	4	2	0	2	0	0	0	
9:15 to 9:30	31	3	34	13	1	14	0	0	0	11	2	13	21	0	21	0	0	0	
9:30 to 9:45	60	1	61	12	0	12	0	0	0	11	0	11	17	0	17	0	0	0	
9:45 to 10:00	63	4	67	13	1	14	0	0	0	13	0	13	28	0	28	0	0	0	
10:00 to 10:15	52	2	54	14	0	14	0	0	0	5	0	5	28	0	28	0	0	0	
10:15 to 10:30	45	2	47	11	0	11	0	0	0	6	0	6	28	0	28	1	0	1	
10:30 to 10:45	43	2	45	10	0	10	0	0	0	7	0	7	34	1	35	0	0	0	
10:45 to 11:00	54	4	58	11	0	11	2	0	2	10	0	10	15	1	16	0	0	0	
11:00 to 11:15	31	1	32	4	0	4	0	0	0	9	0	9	20	1	21	0	0	0	
11:15 to 11:30	31	3	34	9	0	9	1	0	1	3	0	3	16	0	16	0	0	0	
AM Totals	474	41	515	135	5	140	10	1	11	100	4	104	228	4	232	1	0	1	
14:30 to 14:45	14	1	15	4	0	4	1	0	1	3	0	3	7	0	7	0	0	0	
14:45 to 15:00	14	2	16	1	0	1	0	0	0	5	0	5	3	0	3	0	0	0	
15:00 to 15:15	6	1	7	3	0	3	1	0	1	5	0	5	3	0	3	0	0	0	
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15:45 to 16:00	12	2	14	0	0	0	0	0	0	5	0	5	3	0	3	0	0	0	
16:00 to 16:15	8	5	13	6	0	6	2	0	2	4	1	5	3	0	3	0	0	0	
16:15 to 16:30	11	4	15	3	0	3	0	0	0	8	0	8	2	0	2	0	0	0	
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17:00 to 17:15	9	3	12	3	0	3	0	0	0	1	0	1	4	0	4	0	0	0	
17:15 to 17:30	6	3	9	3	0	3	0	0	0	2	1	3	0	0	0	0	0	0	
17:30 to 17:45	6	4	10	0	1	1	0	0	0	2	0	2	1	0	1	0	0	0	
17:45 to 18:00	3	1	4	1	1	2	0	0	0	2	1	3	0	0	0	0	0	0	
18:00 to 18:15	7	2	9	1	0	1	0	0	0	2	0	2	2	0	2	0	0	0	
18:15 to 18:30	3	2	5	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	
PM Totals	122	39	161	36	4	40	6	0	6	65	6	71	35	0	35	0	0	0	

Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 1. Bradleys Head Rd / Whiting Beach Rd

Day/Date : Thu, 2nd July 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



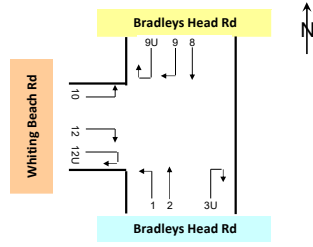
Approach	Bradleys Head Rd									
	Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)		
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 8:30	4	1	5	12	10	22	0	0	0	
7:45 to 8:45	7	1	8	14	10	24	0	0	0	
8:00 to 9:00	10	0	10	22	8	30	0	0	0	
8:15 to 9:15	10	0	10	25	11	36	0	0	0	
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8:45 to 9:45	12	3	15	38	12	50	0	0	0	
9:00 to 10:00	11	3	14	41	12	53	0	0	0	
9:15 to 10:15	11	3	14	47	12	59	0	0	0	
9:30 to 10:30	13	2	15	49	13	62	0	0	0	
9:45 to 10:45	13	0	13	43	13	56	0	0	0	
10:00 to 11:00	16	1	17	44	12	56	0	0	0	
10:15 to 11:15	18	1	19	47	10	57	0	0	0	
10:30 to 11:30	18	1	19	54	9	63	0	0	0	
AM Totals	47	5	52	145	42	187	0	0	0	
14:30 to 15:30	37	0	37	142	8	150	0	0	0	
14:45 to 15:45	38	0	38	127	7	134	0	0	0	
15:00 to 16:00	51	0	51	118	9	127	0	0	0	
15:15 to 16:15	51	0	51	103	11	114	0	0	0	
15:30 to 16:30	47	0	47	104	11	115	0	0	0	
15:45 to 16:45	41	0	41	101	13	114	0	0	0	
16:00 to 17:00	32	0	32	89	12	101	0	0	0	
16:15 to 17:15	27	0	27	73	12	85	0	0	0	
16:30 to 17:30	21	0	21	57	11	68	0	0	0	
16:45 to 17:45	19	0	19	40	12	52	0	0	0	
17:00 to 18:00	12	0	12	34	11	45	0	0	0	
17:15 to 18:15	7	0	7	29	9	38	0	0	0	
17:30 to 18:30	8	0	8	30	10	40	0	0	0	
PM Totals	113	0	113	333	40	373	0	0	0	

Approach	Bradleys Head Rd												Whiting Beach Rd						
	Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 8:30	27	10	37	22	2	24	4	1	5	11	1	12	12	1	13	0	0	0	
7:45 to 8:45	26	9	35	19	2	21	3	1	4	15	2	17	15	1	16	0	0	0	
8:00 to 9:00	32	9	41	19	1	20	4	0	4	19	1	20	16	0	16	0	0	0	
8:15 to 9:15	43	11	54	22	1	23	4	0	4	21	1	22	15	0	15	0	0	0	
8:30 to 9:30	68	12	80	29	2	31	3	0	3	25	3	28	30	0	30	0	0	0	
8:45 to 9:45	117	11	128	37	2	39	3	0	3	30	2	32	42	0	42	0	0	0	
9:00 to 10:00	171	14	185	44	3	47	2	0	2	39	2	41	68	0	68	0	0	0	
9:15 to 10:15	206	10	216	52	2	54	0	0	0	40	2	42	94	0	94	0	0	0	
9:30 to 10:30	220	9	229	50	1	51	0	0	0	35	0	35	101	0	101	1	0	1	
9:45 to 10:45	203	10	213	48	1	49	0	0	0	31	0	31	118	1	119	1	0	1	
10:00 to 11:00	194	10	204	46	0	46	2	0	2	28	0	28	105	2	107	1	0	1	
10:15 to 11:15	173	9	182	36	0	36	2	0	2	32	0	32	97	3	100	1	0	1	
10:30 to 11:30	159	10	169	34	0	34	3	0	3	29	0	29	85	3	88	0	0	0	
AM Totals	474	41	515	135	5	140	10	1	11	100	4	104	228	4	232	1	0	1	
14:30 to 15:30	37	7	44	10	0	10	2	0	2	18	2	20	15	0	15	0	0	0	
14:45 to 15:45	30	8	38	10	1	11	2	0	2	23	2	25	10	0	10	0	0	0	
15:00 to 16:00	28	8	36	9	1	10	2	0	2	23	2	25	10	0	10	0	0	0	
15:15 to 16:15	30	12	42	12	1	13	3	0	3	22	3	25	10	0	10	0	0	0	
15:30 to 16:30	38	13	51	13	1	14	3	0	3	25	1	26	10	0	10	0	0	0	
15:45 to 16:45	38	13	51	11	1	12	2	0	2	22	1	23	10	0	10	0	0	0	
16:00 to 17:00	32	13	45	14	1	15	3	0	3	23	1	24	8	0	8	0	0	0	
16:15 to 17:15	33	11	44	11	1	12	1	0	1	20	0	20	9	0	9	0	0	0	
16:30 to 17:30	28	10	38	11	1	12	1	0	1	14	1	15	7	0	7	0	0	0	
16:45 to 17:45	27	12	39	9	1	10	1	0	1	11	1	12	6	0	6	0	0	0	
17:00 to 18:00	24	11	35	7	2	9	0	0	0	7	2	9	5	0	5	0	0	0	
17:15 to 18:15	22	10	32	5	2	7	0	0	0	8	2	10	3	0	3	0	0	0	
17:30 to 18:30	19	9	28	2	2	4	0	0	0	8	2	10	3	0	3	0	0	0	
PM Totals	122	39	161	36	4	40	6	0	6	65	6	71	35	0	35	0	0	0	

Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 1. Bradleys Head Rd / Whiting Beach Rd

Day/Date : Sat, 4th July 2020
Weather : Fine
Description : Classified Intersection Count
 : 15 mins Data

Classifications
 Class 1 : Lights
 Class 2 : Heavies

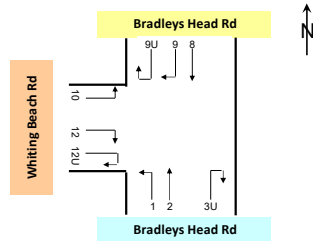


Approach	Bradleys Head Rd								
	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)		
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period									
9:00 to 9:15	3	0	3	10	1	11	0	0	0
9:15 to 9:30	3	1	4	8	3	11	0	0	0
9:30 to 9:45	5	0	5	14	1	15	0	0	0
9:45 to 10:00	1	0	1	6	2	8	0	0	0
10:00 to 10:15	1	0	1	6	1	7	0	0	0
10:15 to 10:30	3	0	3	3	3	6	0	0	0
10:30 to 10:45	2	0	2	5	1	6	0	0	0
10:45 to 11:00	1	0	1	13	1	14	0	0	0
Total	19	1	20	65	13	78	0	0	0

Approach	Bradleys Head Rd									Whiting Beach Rd								
	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period																		
9:00 to 9:15	18	3	21	4	0	4	0	0	0	3	0	3	5	0	5	0	0	0
9:15 to 9:30	47	1	48	8	1	9	3	0	3	5	0	5	20	0	20	0	0	0
9:30 to 9:45	74	2	76	11	0	11	1	0	1	4	0	4	21	0	21	1	0	1
9:45 to 10:00	55	3	58	8	0	8	0	0	0	5	0	5	18	0	18	0	0	0
10:00 to 10:15	51	1	52	3	0	3	0	0	0	4	1	5	27	0	27	0	0	0
10:15 to 10:30	36	1	37	2	0	2	0	0	0	1	0	1	28	0	28	0	0	0
10:30 to 10:45	49	2	51	2	0	2	0	0	0	3	1	4	29	0	29	0	0	0
10:45 to 11:00	45	2	47	3	0	3	0	0	0	7	0	7	27	0	27	0	0	0
Total	375	15	390	41	1	42	4	0	4	32	2	34	175	0	175	1	0	1

Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 1. Bradleys Head Rd / Whiting Beach Rd

Day/Date : Sat, 4th July 2020
Weather : Fine
Description : Classified Intersection Count
 : Hourly Summary

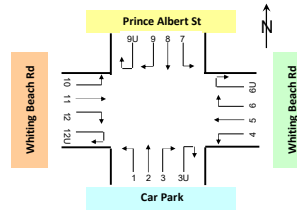


Approach	Bradleys Head Rd								
	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)		
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period									
9:00 to 10:00	12	1	13	38	7	45	0	0	0
9:15 to 10:15	10	1	11	34	7	41	0	0	0
9:30 to 10:30	10	0	10	29	7	36	0	0	0
9:45 to 10:45	7	0	7	20	7	27	0	0	0
10:00 to 11:00	7	0	7	27	6	33	0	0	0
Total	19	1	20	65	13	78	0	0	0

Approach	Bradleys Head Rd									Whiting Beach Rd								
	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
Time Period																		
9:00 to 10:00	194	9	203	31	1	32	4	0	4	17	0	17	64	0	64	1	0	1
9:15 to 10:15	227	7	234	30	1	31	4	0	4	18	1	19	86	0	86	1	0	1
9:30 to 10:30	216	7	223	24	0	24	1	0	1	14	1	15	94	0	94	1	0	1
9:45 to 10:45	191	7	198	15	0	15	0	0	0	13	2	15	102	0	102	0	0	0
10:00 to 11:00	181	6	187	10	0	10	0	0	0	15	2	17	111	0	111	0	0	0
Total	375	15	390	41	1	42	4	0	4	32	2	34	175	0	175	1	0	1

Job No. : NS812
Client : GTA
Suburb : Mosman
Location : 2. Whiting Beach Rd / Prince Albert St / Car Park

Day/Date : Thu, 2nd July 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



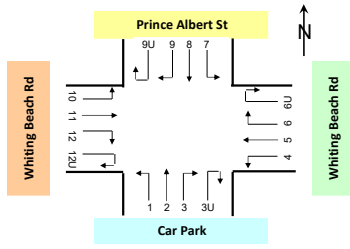
Approach	Car Park												Whiting Beach Rd													
	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)				
	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's
7:30 to 8:30	0	0	0	1	1	2	3	1	4	0	0	0	13	1	14	4	0	4	8	2	10	1	0	1		
7:45 to 8:45	0	0	0	2	1	3	5	1	6	0	0	0	13	1	14	2	0	2	8	2	10	1	0	1		
8:00 to 9:00	0	0	0	2	2	4	6	0	6	0	0	0	15	0	15	5	0	5	9	1	10	0	0	0		
8:15 to 9:15	0	0	0	2	2	4	5	0	5	0	0	0	15	0	15	4	0	4	10	2	12	2	0	2		
8:30 to 9:30	0	0	0	2	3	5	6	0	6	0	0	0	11	0	11	8	0	8	13	2	15	5	1	6		
8:45 to 9:45	1	0	1	1	4	5	7	0	7	0	0	0	11	2	13	11	0	11	20	2	22	5	1	6		
9:00 to 10:00	1	0	1	3	3	6	10	0	10	0	0	0	8	2	10	9	0	9	27	3	30	7	1	8		
9:15 to 10:15	1	0	1	4	3	7	12	0	12	0	0	0	8	2	10	12	0	12	35	2	37	6	1	7		
9:30 to 10:30	1	0	1	4	3	7	11	0	11	0	0	0	8	2	10	13	0	13	41	1	42	3	0	3		
9:45 to 10:45	0	0	0	5	5	10	10	0	10	0	0	0	6	0	6	16	0	16	35	1	36	5	0	5		
10:00 to 11:00	0	0	0	7	4	11	8	1	9	0	0	0	6	0	6	19	0	19	32	1	33	5	0	5		
10:15 to 11:15	0	0	0	7	4	11	8	2	10	0	0	0	5	0	5	16	0	16	27	1	28	5	0	5		
10:30 to 11:30	0	0	0	10	3	13	7	2	9	0	0	0	5	0	5	13	0	13	25	1	26	5	0	5		
AM Totals	1	0	1	17	10	27	27	3	30	0	0	0	37	2	40	38	0	38	87	6	93	14	1	15		
14:30 to 15:30	0	0	0	50	0	50	4	0	4	0	0	0	1	0	1	5	0	5	39	0	39	0	0	0		
14:45 to 15:45	0	0	0	54	0	54	6	0	6	0	0	0	1	0	1	5	0	5	43	1	44	0	0	0		
15:00 to 16:00	0	0	0	48	0	48	5	0	5	0	0	0	1	0	1	4	0	4	55	1	56	0	0	0		
15:15 to 16:15	0	0	0	58	0	58	4	0	4	0	0	0	1	0	1	5	0	5	55	1	56	0	0	0		
15:30 to 16:30	0	0	0	67	0	67	4	0	4	0	0	0	1	0	1	6	0	6	53	1	54	0	0	0		
15:45 to 16:45	0	0	0	58	0	58	4	0	4	0	0	0	0	0	0	4	0	4	46	1	47	0	0	0		
16:00 to 17:00	0	0	0	63	0	63	6	0	6	0	0	0	0	0	0	8	0	8	37	1	38	0	0	0		
16:15 to 17:15	0	0	0	59	1	60	5	0	5	0	0	0	0	0	0	9	0	9	29	1	30	0	0	0		
16:30 to 17:30	0	0	0	51	1	52	5	0	5	0	0	0	0	0	0	9	0	9	21	1	22	0	0	0		
16:45 to 17:45	0	0	0	45	1	46	3	0	3	0	0	0	0	0	0	9	0	9	19	1	20	0	0	0		
17:00 to 18:00	0	0	0	41	1	42	2	0	2	0	0	0	0	0	0	6	1	7	13	1	14	0	0	0		
17:15 to 18:15	0	0	0	27	0	27	3	0	3	0	0	0	0	0	0	3	1	4	9	1	10	0	0	0		
17:30 to 18:30	0	0	0	17	0	17	2	0	2	0	0	0	0	0	0	2	1	3	10	1	11	0	0	0		
PM Totals	0	0	0	185	1	186	15	0	15	0	0	0	2	0	2	22	1	23	123	3	126	0	0	0		

Approach	Prince Albert St												Whiting Beach Rd													
	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)				
	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's	Total	Lights	Heavy's
7:30 to 8:30	13	1	14	36	3	39	15	0	15	9	0	9	5	0	5	7	0	7	0	0	0	0	0	0	0	
7:45 to 8:45	16	2	18	35	2	37	13	0	13	10	0	10	6	0	6	7	0	7	0	0	0	0	0	0	0	
8:00 to 9:00	22	1	23	47	3	50	13	0	13	10	0	10	6	0	6	7	0	7	0	0	0	0	0	0	0	
8:15 to 9:15	23	1	24	45	4	49	18	0	18	8	0	8	11	0	11	6	0	6	0	0	0	0	0	0	0	
8:30 to 9:30	40	2	42	36	4	40	20	0	20	4	0	4	11	0	11	4	0	4	1	0	1	0	0	0	0	
8:45 to 9:45	56	1	57	31	3	34	21	0	21	8	0	8	11	0	11	3	0	3	1	0	1	0	0	0	0	
9:00 to 10:00	90	1	91	17	2	19	25	0	25	11	1	12	12	0	12	3	0	3	1	0	1	0	0	0	0	
9:15 to 10:15	111	1	112	10	2	12	19	0	19	21	1	22	10	0	10	5	0	5	1	0	1	0	0	0	0	
9:30 to 10:30	119	0	119	5	3	8	22	1	23	21	1	22	10	0	10	6	0	6	0	0	0	0	0	0	0	
9:45 to 10:45	133	1	134	2	4	6	23	1	24	20	1	21	12	0	12	7	0	7	0	0	0	0	0	0	0	
10:00 to 11:00	110	1	111	0	4	4	19	1	20	19	0	19	11	0	11	9	0	9	0	0	0	0	0	0	0	
10:15 to 11:15	110	1	111	3	3	6	20	1	21	11	0	11	11	0	11	7	0	7	0	0	0	0	0	0	0	
10:30 to 11:30	93	1	94	3	1	4	22	0	22	11	0	11	12	0	12	6	0	6	1	0	1	0	0	0	0	
AM Totals	265	4	269	80	11	91	79	1	80	45	1	46	38	0	38	23	0	23	2	0	2	0	0	0	0	
14:30 to 15:30	16	2	18	3	1	4	19	0	19	9	0	9	13	1	14	8	0	8	0	0	0	1	0	1	0	
14:45 to 15:45	17	2	19	1	1	2	18	0	18	9	0	9	13	1	14	8	0	8	0	0	0	0	0	0	0	
15:00 to 16:00	18	2	20	0	1	1	17	0	17	9	0	9	13	1	14	8	0	8	0	0	0	0	0	0	0	
15:15 to 16:15	19	3	22	1	1	2	11	0	11	9	0	9	14	1	15	7	0	7	0	0	0	0	0	0	0	
15:30 to 16:30	22	1	23	1	0	1	17	0	17	10	0	10	15	1	16	6	0	6	0	0	0	0	0	0	0	
15:45 to 16:45	18	1	19	2	0	2	17	0	17	14	0	14	13	1	14	3	0	3	0	0	0	0	0	0	0	
16:00 to 17:00	18	1	19	2	0	2	24	0	24	10	0	10	18	1	19	3	0	3	0	0	0	0	0	0	0	
16:15 to 17:15	14	0	14	1	0	1	28	0	28	9	0	9	13	0	13	5	0	5	1	0	1	0	0	0	0	
16:30 to 17:30	9	1	10	1	0	1	23	0	23	6	0	6	11	0	11	4	0	4	1	0	1	0	0	0	0	
16:45 to 17:45	9	1	10	0	0	0	23	0	23	3	0	3	11	0	11	4	0	4	1	0	1	0	0	0	0	
17:00 to 18:00	4	2	6	1	0	1	24	0	24	6	0	6	5	0	5	5	0	5	1	0	1	0	0	0	0	
17:15 to 18:15	5	2	7	1	0	1	25	0	25	7	0	7	6	0	6	3	0	3	0	0	0	0	0	0	0	
17:30 to 18:30	7	2	9	1	0	1	25	0	25	8	0	8	7	0	7	2	0	2	0	0	0	0	0	0	0	
PM Totals	54	6	60	6	1	7	84	0	84	33	0	33	46	2	48	20	0	20	1	0	1	1	0	0	1	

Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 2. Whiting Beach Rd / Prince Albert St / Car Park

Day/Date : Sat, 4th July 2020
Weather : Fine
Description : Classified Intersection Count
 : 15 mins Data

Classifications
 Class 1 : Lights
 Class 2 : Heavies

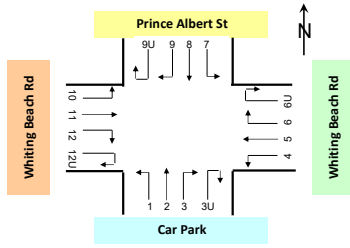


Approach	Car Park												Whiting Beach Rd														
	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)					
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total			
9:00 to 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6	0	6	0	0	0	0	0	0
9:15 to 9:30	0	0	0	1	0	1	2	0	2	0	0	0	1	1	2	4	1	5	2	0	2	2	0	2	0	0	0
9:30 to 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	3	13	0	13	0	0	0
9:45 to 10:00	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6	0	6	1	0	1
10:00 to 10:15	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4	0	4	0	0	0	0	0	0
10:15 to 10:30	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	6	0	6	0	0	0	0	0	0
10:30 to 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0
10:45 to 11:00	0	0	0	1	0	1	1	0	1	0	0	0	1	0	1	1	0	1	4	0	4	0	0	0	0	0	0
Total	1	0	1	4	1	5	3	0	3	0	0	0	4	1	5	15	1	16	46	0	46	0	0	0	3	0	3

Approach	Prince Albert St												Whiting Beach Rd														
	Direction 7 (Through)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)					
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total			
9:00 to 9:15	7	0	7	1	0	1	4	0	4	3	0	3	2	0	2	1	0	1	0	0	0	0	0	0	0	0	0
9:15 to 9:30	19	0	19	2	0	2	3	0	3	3	0	3	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
9:30 to 9:45	27	0	27	2	0	2	4	0	4	4	0	4	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
9:45 to 10:00	21	0	21	2	0	2	3	0	3	3	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
10:00 to 10:15	34	1	35	1	0	1	8	0	8	3	0	3	2	0	2	2	0	2	0	0	0	0	0	0	0	0	0
10:15 to 10:30	40	0	40	0	0	0	4	0	4	6	0	6	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0
10:30 to 10:45	25	1	26	2	0	2	8	0	8	5	0	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
10:45 to 11:00	47	0	47	1	0	1	6	0	6	2	0	2	4	0	4	1	0	1	0	0	0	0	0	0	0	0	0
Total	220	2	222	11	0	11	40	0	40	29	0	29	17	0	17	6	0	6	0	0	0	0	0	0	0	0	0

Job No. : N5812
Client : GTA
Suburb : Mosman
Location : 2. Whiting Beach Rd / Prince Albert St / Car Park

Day/Date : Sat, 4th July 2020
Weather : Fine
Description : Classified Intersection Count
 : Hourly Summary



Approach	Car Park												Whiting Beach Rd											
	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
9:00 to 10:00	1	0	1	1	1	2	2	0	2	0	0	0	2	1	3	10	1	11	27	0	27	3	0	3
9:15 to 10:15	1	0	1	2	1	3	2	0	2	0	0	0	2	1	3	11	1	12	25	0	25	3	0	3
9:30 to 10:30	1	0	1	2	1	3	0	0	0	0	0	0	2	0	2	8	0	8	29	0	29	1	0	1
9:45 to 10:45	1	0	1	2	1	3	0	0	0	0	0	0	1	0	1	5	0	5	21	0	21	1	0	1
10:00 to 11:00	0	0	0	3	0	3	1	0	1	0	0	0	2	0	2	5	0	5	19	0	19	0	0	0
Total	1	0	1	4	1	5	3	0	3	0	0	0	4	1	5	15	1	16	46	0	46	3	0	3

Approach	Prince Albert St												Whiting Beach Rd														
	Direction 7 (Through)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)					
	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total			
9:00 to 10:00	74	0	74	7	0	7	14	0	14	13	0	13	5	0	5	3	0	3	0	0	0	0	0	0	0	0	0
9:15 to 10:15	101	1	102	7	0	7	18	0	18	13	0	13	5	0	5	4	0	4	0	0	0	0	0	0	0	0	0
9:30 to 10:30	122	1	123	5	0	5	19	0	19	16	0	16	10	0	10	3	0	3	0	0	0	0	0	0	0	0	0
9:45 to 10:45	120	2	122	5	0	5	23	0	23	17	0	17	11	0	11	2	0	2	0	0	0	0	0	0	0	0	0
10:00 to 11:00	146	2	148	4	0	4	26	0	26	16	0	16	12	0	12	3	0	3	0	0	0	0	0	0	0	0	0
Total	220	2	222	11	0	11	40	0	40	29	0	29	17	0	17	6	0	6	0	0	0	0	0	0	0	0	0

B.SIDRA RESULTS

B

USER REPORT FOR SITE

 Project: 2007013sid-N192210 Taronga Zoo

Template: Default Site User Report

Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - AM]

Site Category: -
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	Turn	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	of Queue Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	v/c	sec		veh	m				km/h	
South: Bradleys Head Road													
1	L2	16	13.3	0.047	4.7	LOS A	0.0	0.0	0.00	0.11	0.00	47.4	
2	T1	65	21.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.1	
Approach		81	19.5	0.047	0.9	NA	0.0	0.0	0.00	0.11	0.00	48.8	
North: Bradleys Head Road													
8	T1	241	3.9	0.160	0.1	LOS A	0.4	2.6	0.08	0.10	0.08	48.9	
9	R2	54	2.0	0.160	4.9	LOS A	0.4	2.6	0.08	0.10	0.08	45.1	
Approach		295	3.6	0.160	1.0	NA	0.4	2.6	0.08	0.10	0.08	48.5	
West: Whiting Beach Road													
10	L2	37	0.0	0.141	4.8	LOS A	0.5	3.5	0.24	0.59	0.24	39.8	
12	R2	106	0.0	0.141	6.3	LOS A	0.5	3.5	0.24	0.59	0.24	43.0	
Approach		143	0.0	0.141	5.9	LOS A	0.5	3.5	0.24	0.59	0.24	42.4	
All Vehicles		519	5.1	0.160	2.3	NA	0.5	3.5	0.11	0.24	0.11	47.0	

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

▼ Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - AM - Post Dev]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bradleys Head Road												
1	L2	16	13.3	0.047	4.7	LOS A	0.0	0.0	0.00	0.11	0.00	47.4
2	T1	65	21.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.1
Approach		81	19.5	0.047	0.9	NA	0.0	0.0	0.00	0.11	0.00	48.8
North: Bradleys Head Road												
8	T1	259	3.7	0.169	0.1	LOS A	0.4	2.6	0.08	0.10	0.08	49.0
9	R2	54	2.0	0.169	4.9	LOS A	0.4	2.6	0.08	0.10	0.08	45.2
Approach		313	3.4	0.169	0.9	NA	0.4	2.6	0.08	0.10	0.08	48.6
West: Whiting Beach Road												
10	L2	37	0.0	0.143	4.8	LOS A	0.5	3.6	0.24	0.59	0.24	39.7
12	R2	106	0.0	0.143	6.4	LOS A	0.5	3.6	0.24	0.59	0.24	42.9
Approach		143	0.0	0.143	6.0	LOS A	0.5	3.6	0.24	0.59	0.24	42.3
All Vehicles		537	4.9	0.169	2.3	NA	0.5	3.6	0.11	0.23	0.11	47.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

▼ Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - PM]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bradleys Head Road												
1	L2	49	0.0	0.093	4.6	LOS A	0.0	0.0	0.00	0.16	0.00	47.7
2	T1	121	9.6	0.093	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	48.7
Approach		171	6.8	0.093	1.3	NA	0.0	0.0	0.00	0.16	0.00	48.4
North: Bradleys Head Road												
8	T1	54	25.5	0.042	0.2	LOS A	0.1	0.8	0.13	0.12	0.13	48.5
9	R2	15	7.1	0.042	5.2	LOS A	0.1	0.8	0.13	0.12	0.13	43.9
Approach		68	21.5	0.042	1.3	NA	0.1	0.8	0.13	0.12	0.13	47.9
West: Whiting Beach Road												
10	L2	27	3.8	0.029	5.0	LOS A	0.1	0.8	0.22	0.52	0.22	40.3
12	R2	11	0.0	0.029	5.4	LOS A	0.1	0.8	0.22	0.52	0.22	43.4
Approach		38	2.8	0.029	5.1	LOS A	0.1	0.8	0.22	0.52	0.22	41.4
All Vehicles		277	9.9	0.093	1.8	NA	0.1	0.8	0.06	0.20	0.06	47.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

▼ Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - PM - Post Dev]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bradleys Head Road												
1	L2	49	0.0	0.102	4.6	LOS A	0.0	0.0	0.00	0.14	0.00	47.9
2	T1	139	8.3	0.102	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	48.8
Approach		188	6.1	0.102	1.2	NA	0.0	0.0	0.00	0.14	0.00	48.6
North: Bradleys Head Road												
8	T1	73	18.8	0.052	0.2	LOS A	0.1	0.8	0.11	0.10	0.11	48.8
9	R2	15	7.1	0.052	5.3	LOS A	0.1	0.8	0.11	0.10	0.11	44.4
Approach		87	16.9	0.052	1.0	NA	0.1	0.8	0.11	0.10	0.11	48.4
West: Whiting Beach Road												
10	L2	27	3.8	0.030	5.0	LOS A	0.1	0.8	0.24	0.52	0.24	40.2
12	R2	11	0.0	0.030	5.5	LOS A	0.1	0.8	0.24	0.52	0.24	43.3
Approach		38	2.8	0.030	5.2	LOS A	0.1	0.8	0.24	0.52	0.24	41.4
All Vehicles		314	8.7	0.102	1.6	NA	0.1	0.8	0.06	0.18	0.06	47.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

▼ Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - Sat]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bradleys Head Road												
1	L2	12	9.1	0.031	4.6	LOS A	0.0	0.0	0.00	0.11	0.00	47.6
2	T1	43	17.1	0.031	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.0
Approach		55	15.4	0.031	1.0	NA	0.0	0.0	0.00	0.11	0.00	48.8
North: Bradleys Head Road												
8	T1	246	3.0	0.149	0.0	LOS A	0.2	1.6	0.04	0.07	0.04	49.3
9	R2	33	3.2	0.149	4.8	LOS A	0.2	1.6	0.04	0.07	0.04	45.8
Approach		279	3.0	0.149	0.6	NA	0.2	1.6	0.04	0.07	0.04	49.1
West: Whiting Beach Road												
10	L2	20	5.3	0.109	4.8	LOS A	0.4	2.6	0.21	0.58	0.21	39.8
12	R2	91	0.0	0.109	6.0	LOS A	0.4	2.6	0.21	0.58	0.21	43.1
Approach		111	1.0	0.109	5.7	LOS A	0.4	2.6	0.21	0.58	0.21	42.7
All Vehicles		444	4.0	0.149	1.9	NA	0.4	2.6	0.08	0.20	0.08	47.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

▼ Site: 1 [1. Whiting Beach Rd/ Bradleys Head Rd - Sat - Post Dev]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bradleys Head Road												
1	L2	12	9.1	0.038	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	47.8
2	T1	57	13.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.3
Approach		68	12.3	0.038	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.0
North: Bradleys Head Road												
8	T1	278	2.7	0.165	0.0	LOS A	0.2	1.6	0.04	0.06	0.04	49.4
9	R2	33	3.2	0.165	4.8	LOS A	0.2	1.6	0.04	0.06	0.04	45.9
Approach		311	2.7	0.165	0.5	NA	0.2	1.6	0.04	0.06	0.04	49.2
West: Whiting Beach Road												
10	L2	20	5.3	0.113	4.8	LOS A	0.4	2.7	0.25	0.60	0.25	39.5
12	R2	91	0.0	0.113	6.2	LOS A	0.4	2.7	0.25	0.60	0.25	42.9
Approach		111	1.0	0.113	6.0	LOS A	0.4	2.7	0.25	0.60	0.25	42.5
All Vehicles		489	3.7	0.165	1.8	NA	0.4	2.7	0.08	0.18	0.08	47.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - AM]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.021	0.0	LOS A	0.1	0.6	0.16	0.15	0.16	33.9
2	T1	7	42.9	0.021	0.4	LOS A	0.1	0.6	0.16	0.15	0.16	42.6
3	R2	12	0.0	0.021	1.6	LOS A	0.1	0.6	0.16	0.15	0.16	31.6
Approach		20	15.8	0.021	1.1	LOS A	0.1	0.6	0.16	0.15	0.16	38.5
East: Whiting Beach Road												
4	L2	11	20.0	0.039	4.8	LOS A	0.2	1.3	0.07	0.42	0.07	31.4
5	T1	14	0.0	0.039	0.0	LOS A	0.2	1.3	0.07	0.42	0.07	40.9
6	R2	44	2.4	0.039	4.6	LOS A	0.2	1.3	0.07	0.42	0.07	44.6
Approach		68	4.6	0.039	3.7	NA	0.2	1.3	0.07	0.42	0.07	43.4
North: Prince Albert Street												
7	L2	125	0.0	0.109	4.6	LOS A	0.4	3.2	0.03	0.52	0.03	44.7
8	T1	8	37.5	0.109	4.8	LOS A	0.4	3.2	0.03	0.52	0.03	42.5
9	R2	24	4.3	0.109	5.0	LOS A	0.4	3.2	0.03	0.52	0.03	43.9
Approach		158	2.7	0.109	4.7	LOS A	0.4	3.2	0.03	0.52	0.03	44.4
West: Whiting Beach Road												
10	L2	11	0.0	0.010	4.6	LOS A	0.0	0.1	0.02	0.34	0.02	46.2
11	T1	6	0.0	0.010	0.0	LOS A	0.0	0.1	0.02	0.34	0.02	42.7
12	R2	1	0.0	0.010	4.6	LOS A	0.0	0.1	0.02	0.34	0.02	38.3
Approach		18	0.0	0.010	3.0	NA	0.0	0.1	0.02	0.34	0.02	45.3
All Vehicles		264	4.0	0.109	4.0	NA	0.4	3.2	0.05	0.46	0.05	44.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - AM - Post Dev]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.021	0.0	LOS A	0.1	0.6	0.16	0.15	0.16	33.8
2	T1	7	42.9	0.021	0.4	LOS A	0.1	0.6	0.16	0.15	0.16	42.6
3	R2	12	0.0	0.021	1.6	LOS A	0.1	0.6	0.16	0.15	0.16	31.6
Approach		20	15.8	0.021	1.1	LOS A	0.1	0.6	0.16	0.15	0.16	38.5
East: Whiting Beach Road												
4	L2	11	20.0	0.039	4.8	LOS A	0.2	1.3	0.07	0.42	0.07	31.4
5	T1	14	0.0	0.039	0.0	LOS A	0.2	1.3	0.07	0.42	0.07	40.9
6	R2	44	2.4	0.039	4.6	LOS A	0.2	1.3	0.07	0.42	0.07	44.6
Approach		68	4.6	0.039	3.7	NA	0.2	1.3	0.07	0.42	0.07	43.4
North: Prince Albert Street												
7	L2	125	0.0	0.112	4.6	LOS A	0.5	3.3	0.03	0.52	0.03	44.7
8	T1	13	25.0	0.112	4.6	LOS A	0.5	3.3	0.03	0.52	0.03	42.5
9	R2	24	4.3	0.112	5.0	LOS A	0.5	3.3	0.03	0.52	0.03	43.9
Approach		162	2.6	0.112	4.7	LOS A	0.5	3.3	0.03	0.52	0.03	44.4
West: Whiting Beach Road												
10	L2	11	0.0	0.010	4.6	LOS A	0.0	0.1	0.02	0.34	0.02	46.2
11	T1	6	0.0	0.010	0.0	LOS A	0.0	0.1	0.02	0.34	0.02	42.7
12	R2	1	0.0	0.010	4.6	LOS A	0.0	0.1	0.02	0.34	0.02	38.3
Approach		18	0.0	0.010	3.0	NA	0.0	0.1	0.02	0.34	0.02	45.3
All Vehicles		268	3.9	0.112	4.0	NA	0.5	3.3	0.05	0.46	0.05	44.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - PM]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.062	0.0	LOS A	0.2	1.6	0.16	0.07	0.16	35.1
2	T1	71	0.0	0.062	0.3	LOS A	0.2	1.6	0.16	0.07	0.16	44.2
3	R2	4	0.0	0.062	1.0	LOS A	0.2	1.6	0.16	0.07	0.16	32.8
Approach		76	0.0	0.062	0.4	LOS A	0.2	1.6	0.16	0.07	0.16	43.9
East: Whiting Beach Road												
4	L2	1	0.0	0.037	4.7	LOS A	0.2	1.2	0.09	0.48	0.09	30.3
5	T1	6	0.0	0.037	0.1	LOS A	0.2	1.2	0.09	0.48	0.09	39.8
6	R2	57	1.9	0.037	4.6	LOS A	0.2	1.2	0.09	0.48	0.09	44.1
Approach		64	1.6	0.037	4.2	NA	0.2	1.2	0.09	0.48	0.09	43.9
North: Prince Albert Street												
7	L2	24	4.3	0.034	4.6	LOS A	0.1	0.9	0.02	0.53	0.02	44.3
8	T1	1	0.0	0.034	4.3	LOS A	0.1	0.9	0.02	0.53	0.02	42.3
9	R2	18	0.0	0.034	5.2	LOS A	0.1	0.9	0.02	0.53	0.02	43.9
Approach		43	2.4	0.034	4.9	LOS A	0.1	0.9	0.02	0.53	0.02	44.1
West: Whiting Beach Road												
10	L2	17	6.3	0.013	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	45.8
11	T1	6	0.0	0.013	0.0	LOS A	0.0	0.1	0.01	0.39	0.01	42.0
12	R2	1	0.0	0.013	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	37.5
Approach		24	4.3	0.013	3.4	NA	0.0	0.1	0.01	0.39	0.01	45.1
All Vehicles		207	1.5	0.062	2.8	NA	0.2	1.6	0.09	0.33	0.09	44.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - PM - Post Dev]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.065	0.0	LOS A	0.2	1.7	0.16	0.07	0.16	35.1
2	T1	75	0.0	0.065	0.3	LOS A	0.2	1.7	0.16	0.07	0.16	44.2
3	R2	4	0.0	0.065	1.1	LOS A	0.2	1.7	0.16	0.07	0.16	32.7
Approach		80	0.0	0.065	0.4	LOS A	0.2	1.7	0.16	0.07	0.16	43.9
East: Whiting Beach Road												
4	L2	1	0.0	0.037	4.7	LOS A	0.2	1.2	0.09	0.48	0.09	30.3
5	T1	6	0.0	0.037	0.1	LOS A	0.2	1.2	0.09	0.48	0.09	39.8
6	R2	57	1.9	0.037	4.6	LOS A	0.2	1.2	0.09	0.48	0.09	44.1
Approach		64	1.6	0.037	4.2	NA	0.2	1.2	0.09	0.48	0.09	43.9
North: Prince Albert Street												
7	L2	24	4.3	0.035	4.6	LOS A	0.1	0.9	0.02	0.53	0.02	44.2
8	T1	1	0.0	0.035	4.3	LOS A	0.1	0.9	0.02	0.53	0.02	42.3
9	R2	18	0.0	0.035	5.3	LOS A	0.1	0.9	0.02	0.53	0.02	43.9
Approach		43	2.4	0.035	4.9	LOS A	0.1	0.9	0.02	0.53	0.02	44.1
West: Whiting Beach Road												
10	L2	17	6.3	0.013	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	45.8
11	T1	6	0.0	0.013	0.0	LOS A	0.0	0.1	0.01	0.39	0.01	42.0
12	R2	1	0.0	0.013	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	37.5
Approach		24	4.3	0.013	3.4	NA	0.0	0.1	0.01	0.39	0.01	45.1
All Vehicles		212	1.5	0.065	2.8	NA	0.2	1.7	0.09	0.33	0.09	44.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - Sat]

Site Category: -
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.006	0.0	LOS A	0.0	0.2	0.09	0.07	0.09	34.9
2	T1	3	33.3	0.006	0.2	LOS A	0.0	0.2	0.09	0.07	0.09	43.3
3	R2	2	0.0	0.006	1.3	LOS A	0.0	0.2	0.09	0.07	0.09	32.6
Approach		6	16.7	0.006	0.6	LOS A	0.0	0.2	0.09	0.07	0.09	40.7
East: Whiting Beach Road												
4	L2	3	33.3	0.023	4.9	LOS A	0.1	0.8	0.05	0.38	0.05	32.2
5	T1	13	8.3	0.023	0.0	LOS A	0.1	0.8	0.05	0.38	0.05	41.8
6	R2	26	0.0	0.023	4.6	LOS A	0.1	0.8	0.05	0.38	0.05	45.1
Approach		42	5.0	0.023	3.2	NA	0.1	0.8	0.05	0.38	0.05	44.2
North: Prince Albert Street												
7	L2	107	1.0	0.090	4.6	LOS A	0.4	2.6	0.02	0.52	0.02	44.6
8	T1	7	0.0	0.090	4.2	LOS A	0.4	2.6	0.02	0.52	0.02	42.5
9	R2	19	0.0	0.090	4.8	LOS A	0.4	2.6	0.02	0.52	0.02	44.1
Approach		134	0.8	0.090	4.6	LOS A	0.4	2.6	0.02	0.52	0.02	44.5
West: Whiting Beach Road												
10	L2	5	0.0	0.006	4.6	LOS A	0.0	0.1	0.02	0.32	0.02	46.4
11	T1	4	0.0	0.006	0.0	LOS A	0.0	0.1	0.02	0.32	0.02	43.1
12	R2	1	0.0	0.006	4.6	LOS A	0.0	0.1	0.02	0.32	0.02	38.9
Approach		11	0.0	0.006	2.7	NA	0.0	0.1	0.02	0.32	0.02	45.3
All Vehicles		193	2.2	0.090	4.1	NA	0.4	2.6	0.03	0.47	0.03	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Site: 2 [2. Whiting Beach Rd/ Prince Albert St - Sat - Post Dev]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Taronga Zoo Access												
1	L2	1	0.0	0.006	0.0	LOS A	0.0	0.2	0.09	0.07	0.09	34.9
2	T1	3	33.3	0.006	0.2	LOS A	0.0	0.2	0.09	0.07	0.09	43.3
3	R2	2	0.0	0.006	1.3	LOS A	0.0	0.2	0.09	0.07	0.09	32.6
Approach		6	16.7	0.006	0.6	LOS A	0.0	0.2	0.09	0.07	0.09	40.7
East: Whiting Beach Road												
4	L2	3	33.3	0.023	4.9	LOS A	0.1	0.8	0.05	0.38	0.05	32.2
5	T1	13	8.3	0.023	0.0	LOS A	0.1	0.8	0.05	0.38	0.05	41.8
6	R2	26	0.0	0.023	4.6	LOS A	0.1	0.8	0.05	0.38	0.05	45.1
Approach		42	5.0	0.023	3.2	NA	0.1	0.8	0.05	0.38	0.05	44.2
North: Prince Albert Street												
7	L2	107	1.0	0.090	4.6	LOS A	0.4	2.6	0.02	0.52	0.02	44.6
8	T1	7	0.0	0.090	4.2	LOS A	0.4	2.6	0.02	0.52	0.02	42.5
9	R2	19	0.0	0.090	4.8	LOS A	0.4	2.6	0.02	0.52	0.02	44.1
Approach		134	0.8	0.090	4.6	LOS A	0.4	2.6	0.02	0.52	0.02	44.5
West: Whiting Beach Road												
10	L2	5	0.0	0.006	4.6	LOS A	0.0	0.1	0.02	0.32	0.02	46.4
11	T1	4	0.0	0.006	0.0	LOS A	0.0	0.1	0.02	0.32	0.02	43.1
12	R2	1	0.0	0.006	4.6	LOS A	0.0	0.1	0.02	0.32	0.02	38.9
Approach		11	0.0	0.006	2.7	NA	0.0	0.1	0.02	0.32	0.02	45.3
All Vehicles		193	2.2	0.090	4.1	NA	0.4	2.6	0.03	0.47	0.03	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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Organisation: GTA CONSULTANTS | Created: Tuesday, 14 July 2020 10:53:15 AM

Project: \\gta.com.au\projectfiles\ProjectFilesSyd\N19200-19299\N192210 Taronga Zoo - Upper Australia TIA\Modelling\2007013sid-N192210 Taronga Zoo.sip8

C. SWEEP PATH ASSESSMENT



VEHICLE ENTRY

VEHICLE EXIT

ENSURE A MINIMUM HEIGHT CLEARANCE (TO SERVICES AND STRUCTURE) OF 3.5m IS MAINTAINED ABOVE FOR LOADING DOCKS AND ACCESS ROADWAYS FOR SERVICE VEHICLES UP TO 6.4m SMALL RIGID VEHICLES.

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

SRV

Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.0

EXISTING SITE PLAN IN GREEN
DRAWING AA0100
REVISION C
BY dwp
DATED 27.05.2021

ARCHITECTURAL BASE IN BLUE
DRAWING AA1201
REVISION C
BY dwp
DATED 27.05.2021

N:\GTA\AU\PROJECTFILES\PROJECTLESS\N210960-21095\N210960-01-P1.DWG - PLOTTED BY RAYMOND ZHANG ON 01/06/2021 AT 13:01



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

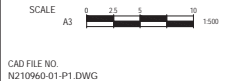
WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE
APPROXIMATE ONLY AND THEIR EXACT POSITION
SHOULD BE PROVIDED ON SITE. NO GUARANTEE IS
GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED
R.ZHANG

APPROVED BY
K.WILLIAMS

DESIGN CHECK
A.MODESSA

DATE ISSUED
1 JUNE 2021



TARONGA ZOO
REPTILE AND AMPHIBIAN CONSERVATION CENTRE

VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N210960-01-01 SHEET 01 OF 01 ISSUE P1



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