Transport for NSW

Oatley Station Accessibility Upgrade

Preliminary Design

Traffic, Transport and Access Impact Assessment

TAP-1822-TR-1001

April 2014

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1. Introduction

1.1 Background

The accessibility upgrade of the Oatley Station Precinct forms part of Transport for NSW's (TfNSW) Transport Access Program which aims to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure at stations where it is required the most. The aims of the program include:

- Making stations accessible to the disabled, ageing and parents with prams.
- Providing modern facilities for all modes to provide for potential population growth and seamless transfer between modes.
- Improving safety of all public transport facilities (e.g. car parks, kiss and ride and interchange).
- Improving signage.
- Undertaking other necessary maintenance and improvements around the interchange and station (e.g. painting).

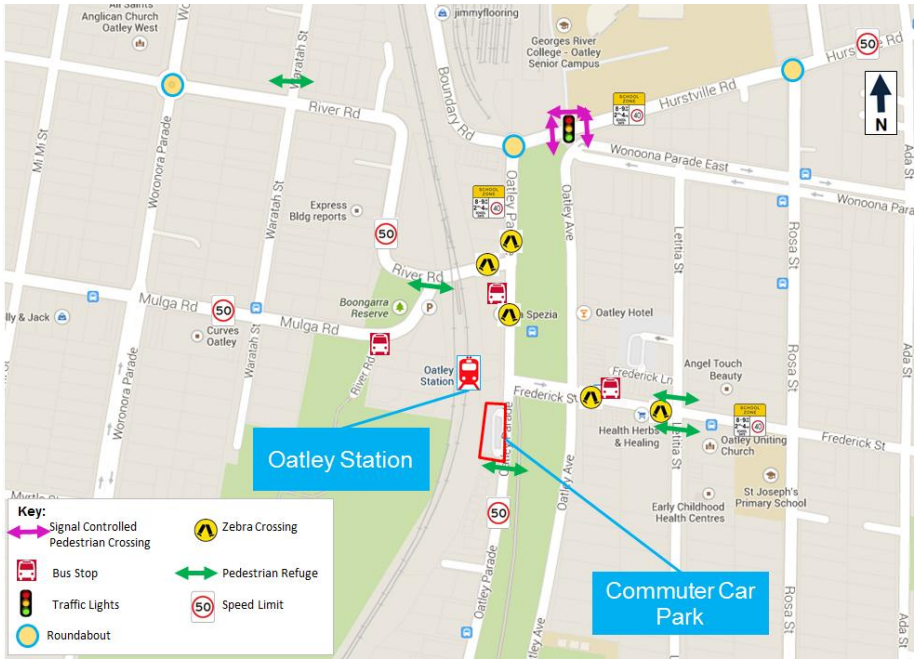
The proposed building works comprise a new pedestrian overbridge providing access to the station from Oatley Parade and Mulga Road. Three lifts would be provided to the pedestrian overbridge, provided from the station platform and at either end of the overbridge at Oatley Parade and Mulga Road. Stairs to the overbridge will also be provided at these three locations.

The proposed station upgrade includes related precinct works for interchange facilities and an extension to the existing commuter car park at Oatley Parade.

1.2 Study area

Oatley Station is located in a primarily residential area, with the Oatley Village Centre located to the east of the station along Frederick Street. The location of the site is shown on Figure 1-1.

Figure 1-1 Site location



Source: Google Maps (2014), modified by GHD

1.3 Study scope

The purpose of this Traffic, Transport and Access Impact Assessment is to determine the potential traffic and transport impacts that the proposed commuter car park and interchange upgrade will have on the adjoining road network. In that regard, the intent of this assessment is to:

- Broadly assess existing traffic conditions and surrounding road network in terms of traffic volumes and road capacity;
- Review the traffic generation potential of the project and its impacts on the surrounding road network;
- Review of the geometry and layout of the preliminary design for the proposed car park and interchange arrangements; and
- Broadly assess the likely traffic implications during construction.

1.4 Study limitations

The study has been limited by the following:

- Stakeholder consultation was not undertaken for this study;
- Assumptions made by GHD on construction activities, include vehicular access arrangements, light and heavy vehicle traffic generation and construction work programme;
- Traffic, pedestrian and parking surveys were undertaken for the weekday AM and PM peak only; and
- No strategic or microsimulation traffic modelling was undertaking for this study.

1.5 Assumptions

The following assumptions were made as part of this study:

- Proposed construction arrangements including:
  - 9-12 month construction programme;
  - Standard working hours to be between 0730 – 1700, Monday to Friday;
  - Two construction sites would be required in total, on Oatley Parade and Mulga Road;
  - Up to 10 heavy vehicles accessing the site per day;
  - Haulage routes to the site would generally be via Hurstville Road and Oatley Parade;
  - Up to 20 workers during peak construction periods, with an average of 10 workers on site during normal construction periods; and
  - Construction staff would not be allowed to park on site. Most construction staff would access the site by train with some parking on the surrounding streets.

1.6 Report structure

This report is developed and explained through the following sections:

- **Section 2 – Existing Conditions:** reviews the existing site characteristics and the immediate surrounds of the study area that will influence the proposed commuter car park;
- **Section 3 – Proposed Development:** provides a description of the proposal;
- **Section 4 – Traffic Impact Appraisal:** discusses the results of the traffic impact assessment for both construction and operational impacts; and
- **Section 5 – Conclusions:** presents a summary of the study findings.

2. Existing Conditions

This section reviews the existing traffic, transport and land use conditions that influence the study area. For the purposes of this assessment, it is important to understand the operation of the existing transport network serving the proposed study area.

The existing car parking and interchange arrangements at Oatley Station Precinct are shown in Figure 2-2. The following sections provide a description of the existing transport infrastructure in the vicinity of the station.

2.1 Existing road network

The classification of roads on the existing road network can be used as an indication of the functional role each road plays with respect to the volume of traffic they should appropriately carry. The Roads and Maritime Services (RMS) have developed a set of road hierarchy classifications detailed in Table 2-1 indicating typical nominal volumes expressed in terms of average annual daily traffic (AADT) serviced by various classes of roads.

Table 2-1 Functional classification of roads

Type of Road	Traffic Volume (vpd*)	Peak Hour Volume (vph**)
Arterial Road	>20,000	>2,000
Sub-Arterial Road	10,000 – 20,000	1,000 – 2,000
Collector Road	2,000 – 10,000	200 – 1,000
Local Road	<2,000	0 – 200

Note: * vpd – vehicles per day

** vph – vehicles per hour

The existing road network within the vicinity of the study area comprises Oatley Parade, River Road, Mulga Road, Frederick Street and Hurstville Road. The existing road network in relation to Oatley Station is shown at Figure 1-1, with a description of each read provided below.

Oatley Parade

Oatley Parade runs along the eastern perimeter of the site and functions as a collector road, providing one traffic lane in either direction. Footpaths are generally provided on both sides of Main Road, with the exception of the section of Main Road between Margaret Street and the station entrance, where a footpath is only provided along the northern side of the street.

Oatley Parade forms the northern and southern legs of a priority controlled T-intersection with River Road. To the east of the site, Oatley Parade forms the northern and southern legs of a priority controlled T-intersection with Frederick Street. At its northern end, Oatley Parade forms a three-leg roundabout with Hurstville Road and Boundary Road.

The speed limit along Oatley Parade to the south of River Road is 50 km/hr. To the north of River Road, Oatley Parade is a 40 km/hr school zone.

Mulga Road

Mulga Road is located to the west of Oatley Station and functions as a local road, providing one traffic lane in either direction. Mulga Road forms the minor leg of a priority controlled T-intersection with River Road.

Footpaths are provided along both sides of Mulga Road. On-street car parking is also currently provided along Mulga Road adjacent to the site.

The speed limit along Mulga Road is 50 km/hr, A central median is provided along Mulga Road adjacent to the site.

River Road

River Road passes beneath the rail line to the north of Oatley Station and functions as a local road, providing one traffic lane in either direction. Light vehicles can pass each other beneath the rail bridge, although the road is not wide enough for heavy vehicles, including buses, to pass each other. The underpass also has a clearance height of 4.5 metres. The rail bridge at River Road is shown at Figure 2-1

A footpath is provided along the southern side of River Road, which also continues beneath the rail bridge. Pedestrian access Oatley Station is provided via steps from River Road beneath the rail bridge.

The speed limit along River Road is 50 km/hr,

Figure 2-1 Rail bridge at River Road

Viewed eastward from Mulga Road.Photo shows that the road narrows under the bridge. As such, heavehy vehicles cannot to pass each other beneath the bridge.

Frederick Street

Fredrick Street is the main shopping street in Oatley Village Centre and functions as a local road, providing one traffic lane in either direction. Footpaths are provided on both sides of Frederick Street.

At its eastern end, Fredrick Street forms the minor leg of a priority controlled T-intersection with Oatley Parade. A wide central median is provided along Frederick Street between Oatley parade and Oatley Avenue.

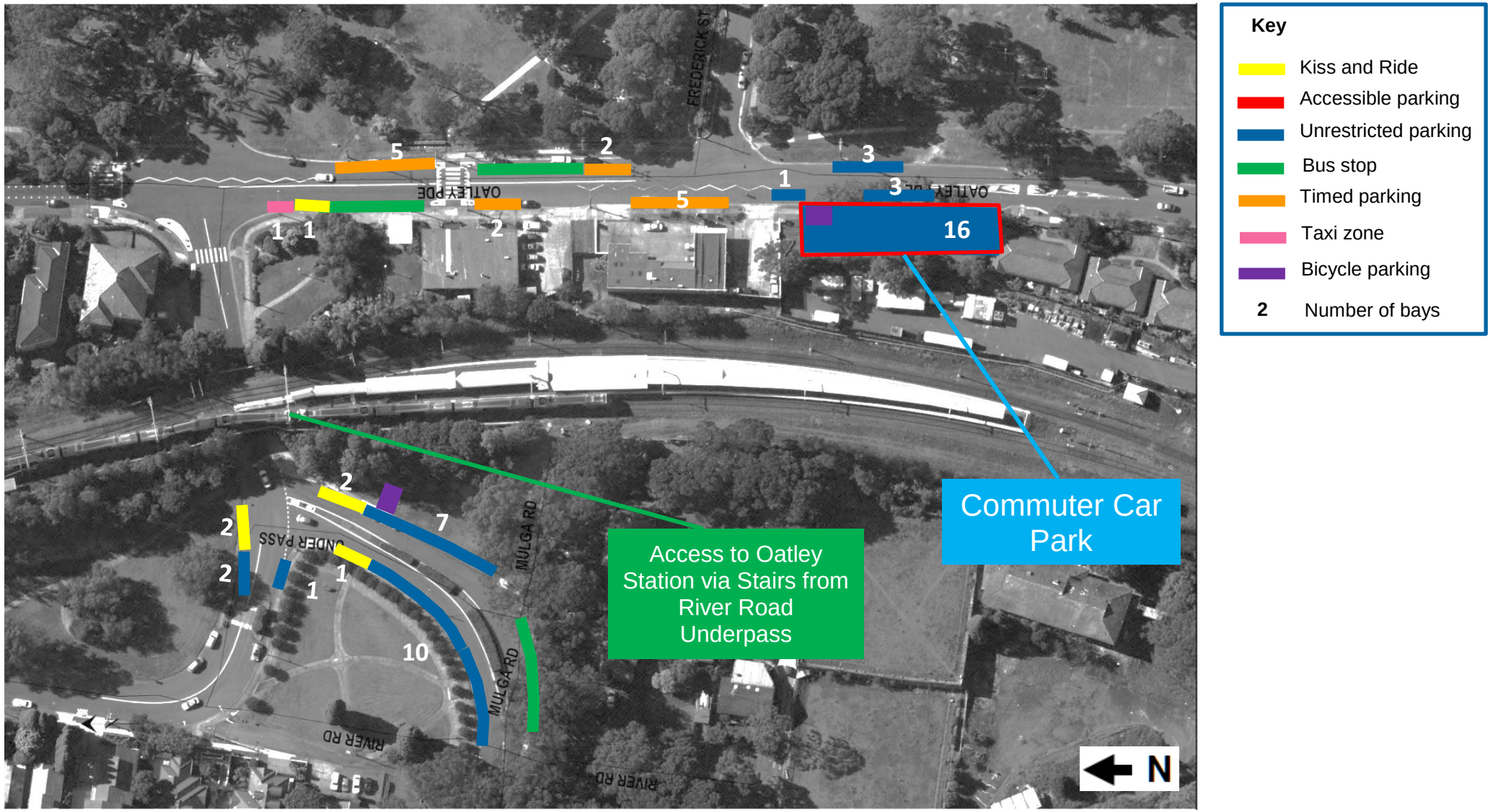
The speed limit along Frederick Street is 50 km/hr to the west of Rosa Street, with a 40 km/hr school zone provided to the east.

Hurstville Road

Hurstville Road functions as a sub-arterial road, providing one traffic lane in either direction. To the north of Oatley Station, Hurstville Road forms a roundabout with Oatley Parade and Boundary Road.

Hurstville Road becomes Hillcrest Avenue at its north-eastern end, providing access towards Hurstville and the A3 King Georges Road arterial road.

Figure 2-2 Existing transport infrastructure



Source: TfNSW, modified by GHD

2.2 2013 traffic surveys

GHD commissioned Roar Data Pty. Ltd. to undertake weekday AM and PM peak traffic counts at the following intersections:

- Oatley Parade/River Road priority controlled T-intersection;
- Oatley Parade/Frederick Street priority controlled T-intersection;
- Mulga Road/River Road priority controlled T-intersection; and
- Oatley Parade/Hurstville Road/Boundary Road roundabout.

The intersection traffic surveys were undertaken on Wednesday 13th November 2013 between 0600 and 0900, and between 1600 and 1900.

Analysis of the traffic survey data identified the network AM peak hour to occur between 0800 and 0900, with the weekday PM peak hour occurring between 1700 and 1800. Peak hour traffic volumes are summarised in Table 2-2 with the full survey data provided in Appendix A.

Table 2-2 2013 Surveyed traffic volumes (two-way)

Location	AM Peak Hour (vph) 0800-0900	PM Peak Hour (vph) 1700-1800
Oatley Parade (north of River Road)	634	805
Oatley Parade (south of River Road)	631	755
Oatley Parade (south of Frederick Street)	309	383
Mulga Road	331	450
River Road (west of Oatley Parade)	489	612
Frederick Street (east of Oatley Parade)	442	442
Hurstville Road (east of Oatley Parade)	1,165	1,247

Based on the existing traffic volumes shown in Table 2-2, all roads in the study area are within the expected functional classification outlined in Table 2-1.

2.3 Assessment criteria

2.3.1 Intersection assessment criteria

The 'Level of Service' (or LoS) is the standard measure used to assess the operational performance of the network and intersections. This is defined as the qualitative assessment of the quantitative effect of factors such as speed, traffic volume, geometric features, delays and freedom of movement. The level of service concept is applied to intersections through measures of effectiveness, as summarised in Table 2-3.

Table 2-3 Measures of effectiveness for level of service definition for intersections

Intersection Control	Measure of Effectiveness
Priority controlled	Degree of Saturation Delay to critical movements (sec/vehicle) Queue length for critical movements
Traffic Signals	Average Delay (sec/vehicle) Delay to critical movements Degree of Saturation Cycle Length Queue length for critical movements
Roundabout	Average Delay (sec/vehicle) Delay to critical movements Degree of Saturation Queue length for critical movements

The assessment of intersection operation is based on criteria outlined in Table 2-4**,** as defined by the NSW Roads and Traffic Authority (*Guide to Traffic Generating Developments*, RTA 2002).

Table 2-4 Intersection LoS assessment criteria

LoS	Average Delay/ Vehicle (seconds)	Traffic Signals & Roundabouts	Give-way & Stop signs
A	Less than 15	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 to 42	Satisfactory	Satisfactory, but accident study required
D	42 to 56	Operating near capacity	Near capacity, accident study required
E	56 to 70	At capacity, excessive delays; roundabout requires other control mode	At capacity; requires other control mode
F	exceeding 70	Unsatisfactory; requires additional capacity	Unsatisfactory, requires other control mode.

Source: Guide to Traffic Generating Developments (RMS 2002)
Note:

- *The average delay assessed for signalised intersections is over all movements.*
- *For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule), the critical criterion for assessment is the movement with the highest delay per vehicle.*
- *Average delay is expressed in seconds per vehicle.*

The operational performance of intersections has been assessed using SIDRA Intersection analysis software. The Level of Service criteria set by the RMS is outlined in Table 2-4 and it is noted that Level of Service (LoS) 'D' is generally an accepted operating condition along urban roads.

2.4 Intersection capacity assessments

The capacity and Level of Service (LoS) analysis has been carried out for key intersections during AM and PM weekday peak period conditions (AM and PM peak) using the SIDRA intersection model. SIDRA model calculates capacities, queue lengths and delays for traffic signals, roundabouts and priority controlled intersections.

The following section discusses the results of the SIDRA analysis for the existing situation.

2.4.1 2013 intersection capacity assessments

The results of the SIDRA intersection modelling for each intersection within the study area are shown in Table 2-5, with detailed SIDRA outputs provided at Appendix B. As shown, all of the intersections within the study area currently operate with an acceptable level of service during both the AM and PM peak periods.

Table 2-5 SIDRA Results - 2013 Surveyed Traffic Flows

Intersection	AM Peak		PM Peak	
	Ave Delay (s)	LoS	Ave Delay (s)	LoS
Oatley Parade/Frederick Street	10.3	B	10.8	B
Oatley Parade/Hurstville Road/Boundary Parade	14.1	B	14.1	B
Oatley Parade/River Road	10.4	B	11.5	B
River Road/Mulga Road	9.7	A	10.1	B

2.5 Public transport

2.5.1 Trains

Oatley Station is on the Eastern Suburbs and Illawarra Line (Bondi Junction to Cronulla) via Sydney Central. Train service frequencies operating during the weekday AM, PM and Saturday peak hour are shown in Table 2-6.

Table 2-6 Train services from Oatley Station

Direction	AM Peak (0800-0900)	PM Peak (1700-1800)	Saturday Peak (1200-1300)
Towards Sydney	15 mins	12 mins	30 mins
Towards Cronulla	15 mins	10 mins	30 mins

2.5.2 Travel characteristics for Oatley Station

GHD commissioned Roar Data Pty Ltd to undertake pedestrian surveys at the entrance to Oatley Station between 1600 and 1900 on Wednesday 13th November 2013. A summary of the entries and exists at Oatley Station is provided in Table 2-7, with the survey data provided in full at Appendix D. As shown, the peak hour for pedestrians accessing the station was between 1700 and 1800, with 360 pedestrians accessing the station. Of these, 88% were exiting the station during the PM peak hour.

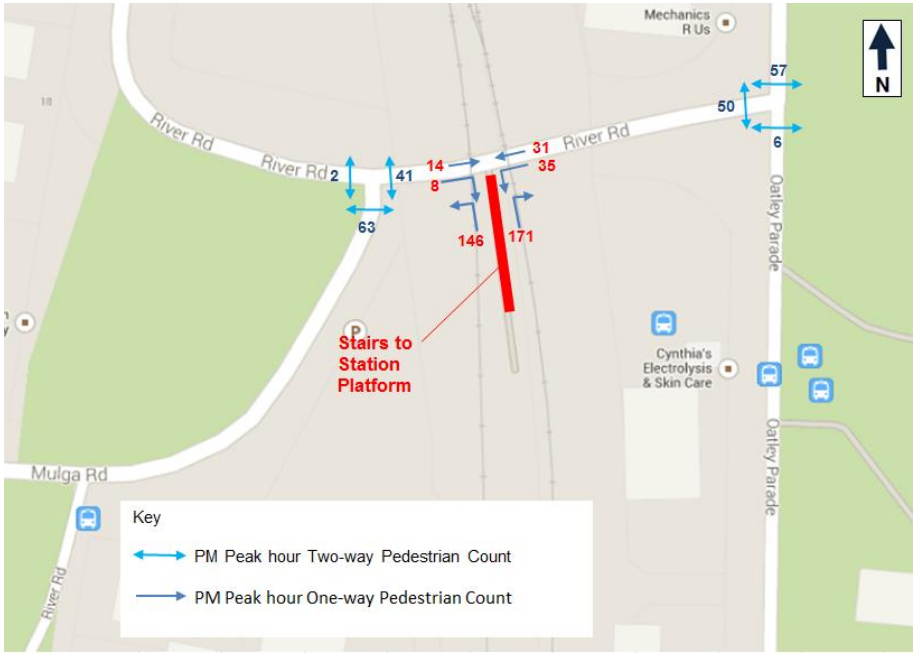
Table 2-7 2013 Surveyed entries/exists at Oatley Station

Time Period	In	Out	Total
1600 - 1700	58	72	130
1700 - 1800	43	317	360
1800 - 1900	26	264	290

The 2013 pedestrian surveys at Oatley Station Precinct entrance also recorded pedestrians movements along River Road. These are shown for the PM peak hour (1700-1800) at Figure 2-3. Two-way pedestrian crossing movements at the Oatley Parade/River Road and Mulga Road/River Road intersections, recorded during the intersection traffic surveys on Wednesday 13th November 2013, are also shown.

As shown at Figure 2-3, the pedestrian counts indicate that 57% of passengers accessed the station from/to the west, with 43% accessing the station from the east during the weekday PM peak hour.

Figure 2-3 PM peak hour (1700-1800) surveyed pedestrian movements

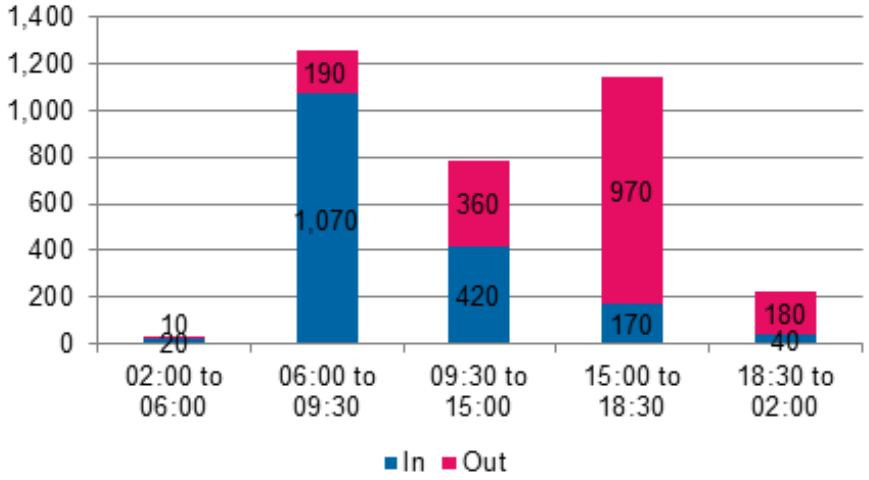


Source: Google Maps (2014), modified by GHD

Figure 2-4 shows train patronage for Oatley Station from the RailCorp 2011 Ticket Barrier Count. The data is presented in terms of average weekday entries and exits. It can be seen from the data that there are

primarily boarding's in a sharp morning peak period, with the number of entries generally decreasing throughout the day.

Figure 2-4 Oatley Station weekday entries and exits

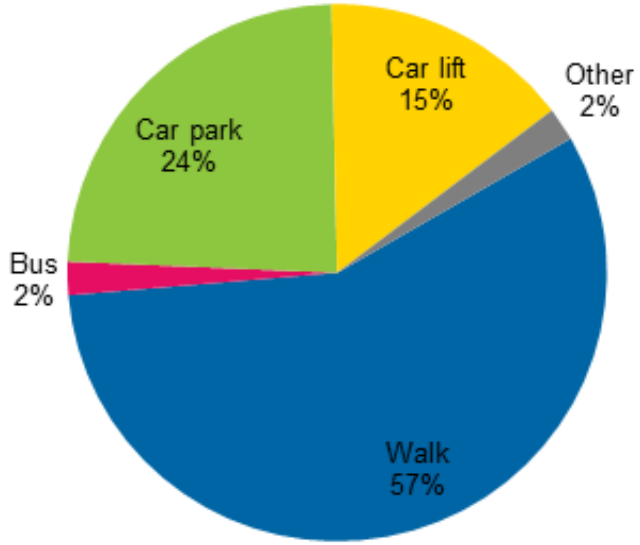


2011 Barrier List TfNSW, 2011

Weekday morning peak travel mode data for trips to Oatley station were obtained from the *Compendium of CityRail Travel Statistics Seventh Edition* (RailCorp, 2010) and is provided in Figure 2-5. The data indicates that:

- Walking was the main mode of travel in the Travel Zones accounting for 57% of the total mode share;
- Private car travel was the second most popular mode of travel accounting for 39% of the total mode share (comprised of 24% car driver and 15% car passenger);
- Bus trips made up 2% of the mode share(a very low proportion of the mode share which is comparable to the JTW data shown in Table 3-2); and
- 'Other' modes made up the remaining 2% of trips.

Figure 2-5 Oatley Station morning peak station access mode



Source: RailCorp, 2010

2.5.3 Buses

Bus zones are provided adjacent to the station on Oatley Parade in the southbound and northbound directions, and on Mulga Road in the westbound direction only. The location of bus stops and the routes of bus services operating within the vicinity of the site as shown at Figure 2-7. As shown, bus route 955 operates along Mulga Road, River Road, Oatley Parade and Frederick Street.

A bus shelter is provided at the northbound bus stop on Oatley Parade. The southbound bus stop is accessible from Oatley Station via a zebra crossing. Photographs of the existing bus stops on Oatley Parade and Mulga Road are shown at Figure 2-11.

Table 2-8 shows the frequencies of bus services operating from bus stops adjacent to the station on Oatley Parade and Mulga Road.

Table 2-8 Oatley Station Precinct bus route frequencies

Bus Service	Route	No. of Services AM Peak (0800-9000)	No. of Services PM Peak (1700–1800)
955	Hurstville to Mortdale	1	1
955	Mortdale to Hurstville	1	1
Total		**2**	**2**

In addition to the public buses operating within the study area, Telfords Tours buses pick up private school students from the bus zone in Oatley Parade. This bus waits at the bus stop for around 15 mins during the weekday morning, departing at 0750.

Based on the low number peak hour of bus services shown in Table 2-8, there is limited opportunity for bus/rail interchange at Oatley Station Precinct, with only one bus service per hour operating in each direction in the vicinity of the station.

Photographs of the existing bus stops on Oatley Parade and Mulga Road are shown at Figure 2-6.

Figure 2-6 Existing bus stops

Southbound bus stop on Oatley Parade. Public toilet shown on the left of the photo.

Northbound bus stop on Oatley Parade, bus shelter shown on the left of the photo.

Westbound bus zone on Mulga Road. No shelter is provided at this location

Figure 2-7 Bus stop locations and bus routes

2.6 Taxis

A taxi zone for one taxi is provided on the western side of Oatley Parade, located to the south of the intersection with River Road.

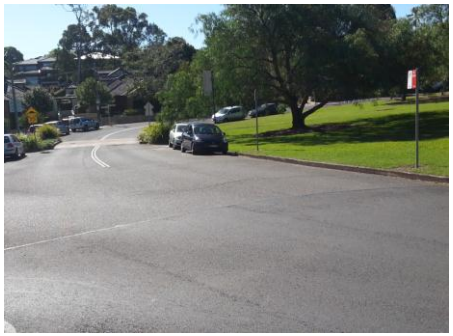
2.7 Kiss and Ride

No formal Kiss and Ride facilities are provided near the station, however informal Kiss and Ride zones are provided in the form of non-sheltered "No Parking" zones on River Road, Mulga Road and Oatley Parade (refer to Figure 2-2).

As discussed in Section 2.5.3, there is limited opportunity for bus/rail interchange at Oatley Station Precinct, with only one bus service per hour operating in each direction in the vicinity of the station. Oatley is also located on a peninsula, and as such, demand for Kiss and Ride at Oatley Station is relatively high.

During the site inspection, informal Kiss and Ride was also observed to occur within the no stopping zone on eastern side of Oatley Parade, adjacent to the River Road intersection. The informal Kiss and Ride locations are shown at Figure 2-8.

Figure 2-8 Kiss and Ride at Oatley Station



No parking zone on northern side of River Road

Informal Kiss and Ride within the no stopping zone on eastern side of Oatley Parade.

2.8 Active transport

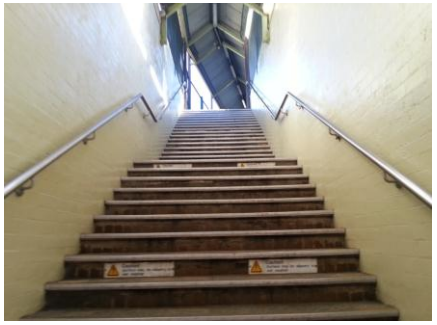
Key access routes and pathways serving the station precinct are shown in Figure 2-12. The locations of bus stops are also shown in Figure 2-7.

2.8.1 Pedestrian access to Oatley Station Precinct

There are multiple pedestrian routes to access the station due to highly connective structure of the surrounding local street network. Pedestrians can access Oatley Station via Oatley Parade, River Road and Mulga Road. The existing access to Oatley Station at River Road is shown at Figure 2-9.

Figure 2-9 Pedestrian access to Oatley Station

Pedestrian access to Oatley Station is provided via stairs leading from beneath the rail bridge at River Road



Stairs to the station platform from River Road.

Figure 2-10 Pedestrian Crossings

Zebra crossing at Oatley Parade. Provides safe access between the northbound and southbound bus stops at Oatley Parade.

Pedestrian refuge on Mulga Road at the intersection with River Road. Pedestrians are required to cross wide traffic lanes at this location. Photo also shows 'no-parking' zone on the northern side of River Road, used for Kiss and Ride.

Key weaknesses in the pedestrian network in the vicinity of Oatley Station Precinct include:

- Conflicts between pedestrians and vehicles on River Road, with pedestrians crossing at an informal crossing location using the central median;
- The pedestrian crossing provided at Mulga Road at the intersection with River Road. Pedestrians are required to cross a wide section of road between the footpath and pedestrian refuge at this location.
- Pedestrians crossing River Road from the informal Kiss and Ride (No Parking zone) and the path leading through the park to the western side of the rail bridge. Drivers travelling westbound beneath the bridge have a restricted view of pedestrians crossing

from the north of River Road, immediately to the west of the bridge where the footpath meets River Road.

2.8.2 Cycling

Non-sheltered bicycle racks for five bikes are provided adjacent to the station on Mulga Road. Non-sheltered bicycle racks are also provided within the commuter car park off Oatley Parade, which can accommodate six bikes. The existing bike racks are shown at Figure 2-11.

Figure 2-11 Bicycle parking at Oatley Station

Bike rack in commuter car park for 10 bikes. However, only 6 are currently accessible

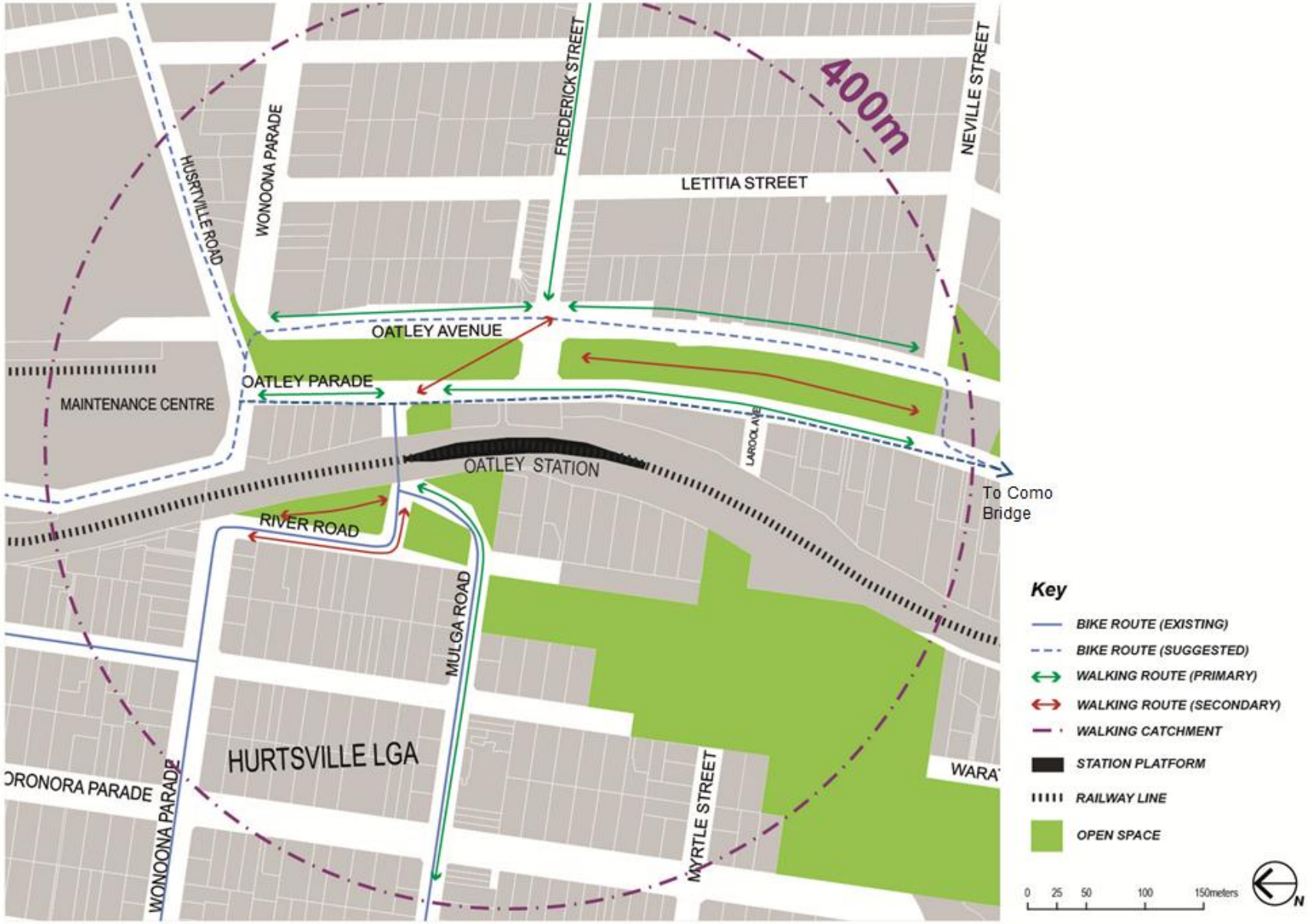
Bike rack on Mulga Road for 5 bikes

Cyclist access to the station is via Oatley Parade, River Road and Mulga Road, with bicycle parking provided on Mulga Road and Oatley Parade.

It is noted that Mulga Road and River Road (including beneath the rail bridge) are shown as on-street bicycle routes on the *Hurstville City Bike Plan* (URAP/TTW, 2009) map, whilst Oatley Avenue and Oatley Parade are shown as suggested bicycle routes on the *Botany Bay Trail to Oatley Cycleway Feasibility Study (GTA Consultants*, 2011) 'Additional Routes' map. Each of these roads are popular routes for cyclists.

The southern end of Oatley Parade also leads to a shared pedestrian/cycleway which runs along the eastern side of the rail line to Como Bridge, which provides a cycle connection over the Georges River to Como.

Figure 2-12 Walking and cycling routes



2.9 Car parking

A commuter car park for 16 cars is provided on Oatley Parade on the east side of the station approximately 200 metres from the existing station entrance. The existing commuter car park is shown at Figure 2-13.

Unrestricted kerbside parking is also available along River Road and Mulga Road, closer to the station. On-street parking along Oatley Parade between River Road and Frederick Street is generally is time restricted and not suitable for use by commuters as Park and Ride. However some on-street unrestricted parking is provided on Oatley Parade near the commuter car park.

Figure 2-13 Existing commuter car park

Viewed southward from car park exit on Oatley Parade. Photo shows the existing angled parking within the car park.

2.9.1 Parking surveys

Car parking surveys were undertaken by Roar Data Pty Ltd on Wednesday 13th November 2013 to determine the current demand for car parking in the Oatley station precinct. The car parking analysis included:

- Number of available parking spaces;
- Existing parking demand; and
- Areas, time and location of high intensity parking demand.

The parking surveys involved parking "beat" surveys of the commuter car park on street car parking in the vicinity of the station. The car parking occupancy was recorded at hourly intervals between 0600 and 0900 and between 1600 and 1900. The following street sections were included in the parking surveys:

- Oatley Parade between Hurstville Road and Larpool Avenue;
- River Road between Oatley Parade and Waratah Street;
- Mulga Road between River Road and Waratah Street;
- Frederick Street between Oatley Parade and Oatley Avenue; and
- Hurstville Road between Oatley Avenue and the rail line.

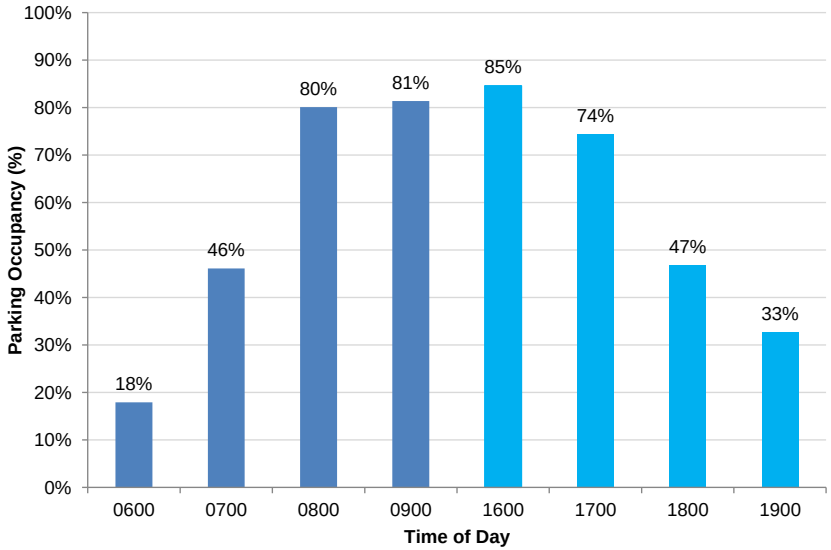
The car parking survey data is provided in full at Appendix C. The parking surveys identified that car parking within the study area consists of:

- 16 car parking spaces within the off street commuter car park; and
- 146 on-street car parking spaces.

It is also noted that there are approximately 16 angle parking spaces on Oatley Parade which are 2 hour time restricted, which serve Oatley Village Centre. Further to the south, unrestricted on-street parking for around 50 vehicles is also provided along Oatley Avenue. These parking spaces on Oatley Parade were not included in the parking survey.

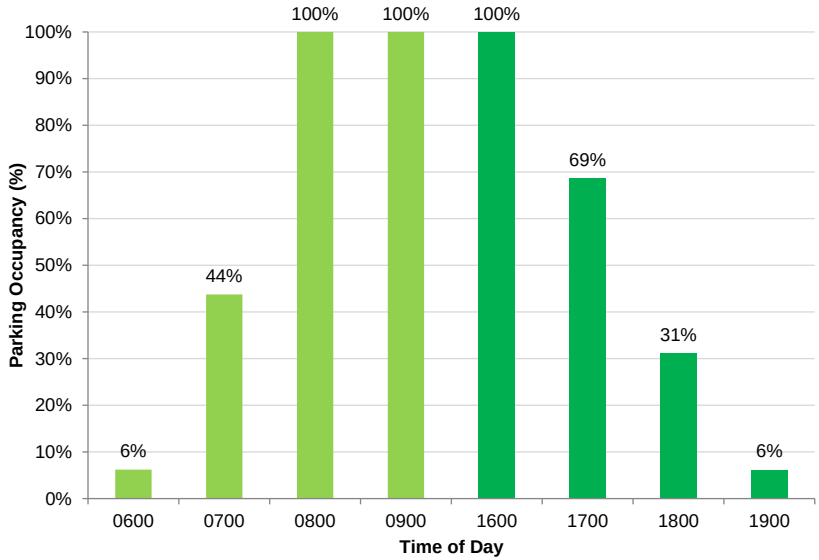
Based on the above, there are 156 parking spaces within the study area. The total car parking occupancy rates per hour during the AM and PM peak parking surveys are shown in Figure 2-14. As shown, the maximum parking occupancy rate during the survey was 85%. This indicates that parking was available within study area at all times during the parking survey.

Figure 2-14 Car parking occupancy (156 parking spaces)



The parking survey of the 16 space commuter car park at Oatley Parade found that the car park was fully occupied by 0800 and before 1600. The car parking occupancy rates at the commuter car park during the AM and PM peak parking surveys are shown in Figure 2-15.

Figure 2-15 Commuter car park occupancy (16 Spaces)



2.10 Travel pattern characteristics for Oatley

2.10.1 Travel characteristics for Oatley

Transport Data Centre (TDC) Journey to Work (JTW) data (from the 2006 census) provides an overview of the origin, destination and mode of travel for trips originating and ending in Oatley predominately during the peak. The data indicates that Hurstville and Kogarah are the primary trip generators and attractors each accounting for approximately 40% of both outgoing and incoming journeys. Table 2-9 on the following page provides a summary for the trip origins and destinations for Oatley.

Table 2-9 Oatley JTW trip origins and destinations

Origin/Destination	Outgoing	Incoming
Hurstville	15%	25%
Kogarah	14%	23%
Sutherland Shire	4%	22%
Sydney - Inner	17%	0%
Rockdale	6%	3%
Bankstown	0%	7%
Canterbury	3%	2%
Sydney - West	3%	0%
Botany Bay	3%	0%
Sydney - South	3%	0%
Sydney - East	2%	0%
Campbelltown	0%	1%
Other	29%	16%

Table 2-10 provides a summary of JTW travel modes for journeys to and from Oatley. The data indicates that travel by car accounts for 57% of outgoing and 69% of incoming journeys, whilst train accounts for 22% of outgoing and 4% of incoming journeys respectively. The low bus usage suggests minimal interchange between bus and rail modes.

Table 2-10 Oatley JTW trip travel mode

Mode	Outgoing	Incoming
Vehicle driver	53%	64%
Worked at Home or Did not go to Work	15%	20%
Train	22%	4%
Vehicle passenger	4%	5%
Other mode	3%	6%
Not stated	2%	0.5%
Bus	0.2%	0.4%

2.11 Future demand

2.11.1 Strategic travel model

The Sydney Strategic Travel Model (STM) provides patronage forecasts for public transport usage and future travel trends. Data from the STM was been obtained for Oatley Station from TfNSW (BTS) and is summarised in Table 2-11 together with data from past CityRail compendiums. The data indicates that there is minimal patronage growth expected at Oatley Station by 2036.

Table 2-11 STM Oatley Station 24 hour entries and exits

Year	06:00 to 09:30		24 Hours	
	In	Out	In	Out
2007 [1]	960	270	1,550	1,550
2008 [1]	990	270	1,600	1,600
2009 [1]	1,000	270	1,630	1,630
2010 [1]	990	270	1,600	1,600
2011 [1]	1,070	190	1,720	1,720
2016 [2]	1,000	270	1,610	1,610
2021 [2]	970	280	1,590	1,590
2036 [2]	1,020	280	1,650	1,650

Source:
(1) CityRail Statistics Compendium
(2) STM (BTS) Patronage Projections

In 2011, 1,070 passengers arrived at the station in the morning peak, with 270 passengers departing. By 2021, this is expected to decrease to 970 passengers boarding trains in the morning peak, with a minor increase to 1,020 passengers by 2036. These estimates indicate that patronage will remain fairly constant over the next 25 years.

A similar pattern is observed for 24-hour passenger forecasts. Existing numbers indicate that in 2011 there were 3,440 passengers over a 24-hour period. This is expected to remain fairly constant, with a minor decrease in patronage to 3,300 passengers possible between 2011 and 2036.

2.11.2 Population and employment

Data from the *Population and Employment Travel Zone Forecasts - August 2012 Release* (NSW Bureau of Transport Statistics (BTS)) was assessed for the travel zones TZ0667, TZ0684, TZ0676 and TZ0650, which related to the travel zones for Oatley and surrounding area. A summary of the data is provided in Table 2-12.

Table 2-12 Population and Employment Growth

Year	2011	2036	Growth (%)
Population	8,998	9,915	10.2%
Employment	1,885	2,176	15.4%

Source: Population and Employment Travel Zone Forecasts - August 2012 Release, BTS

The data indicates that there is 10% population growth and 15% employment growth forecast up to 2036 in the travel zones immediately adjacent to the station.

2.11.3 Hurstville and Kogarah LEP

It should be noted that zoning for both Hurstville and Kogarah Councils consists mostly medium to low density residential dwellings which does not promote any significant growth in the area. Refer to Section 2.2.2. No major developments are proposed in the area, with the exception of the possible aged care facility on the former Bowling Green, which will have a negligible impact in terms of future patronage demand for Oatley Station Precinct.

Overall, this assessment has assumed that there will be no significant growth in patronage to Oatley Station, and this is in line with council projections for development within the catchment of Oatley Station Precinct.

2.12 Existing road safety trends

The RMS Crash Analysis Department supplied GHD with crash statistics for a five-year period from January 2008 to December 2012 for the following roads within the vicinity Oatley Station:

- Oatley Parade;
- River Road; and
- Mulga Road.

The location of crashes within the vicinity of Oatley Station Precinct recorded during the five year periods are shown at Figure 2-16. The crash statistics for each location are summarised below, with the crash data provided in full at Appendix E.

Oatley Parade

In total, there were 5 crashes recorded along Oatley Parade within the study area during the recorded 5-year period. Of these:

- Two (40%) of crashes occurred at the Oatley Parade/ River Road intersection;
- Two (40%) of crashes occurred at the pedestrian crossing located on Oatley Parade;
- Four (80%) of incidents resulted in injuries; and
- Three (60%) of incidents involved collisions with pedestrians crossing the carriageway.

River Road

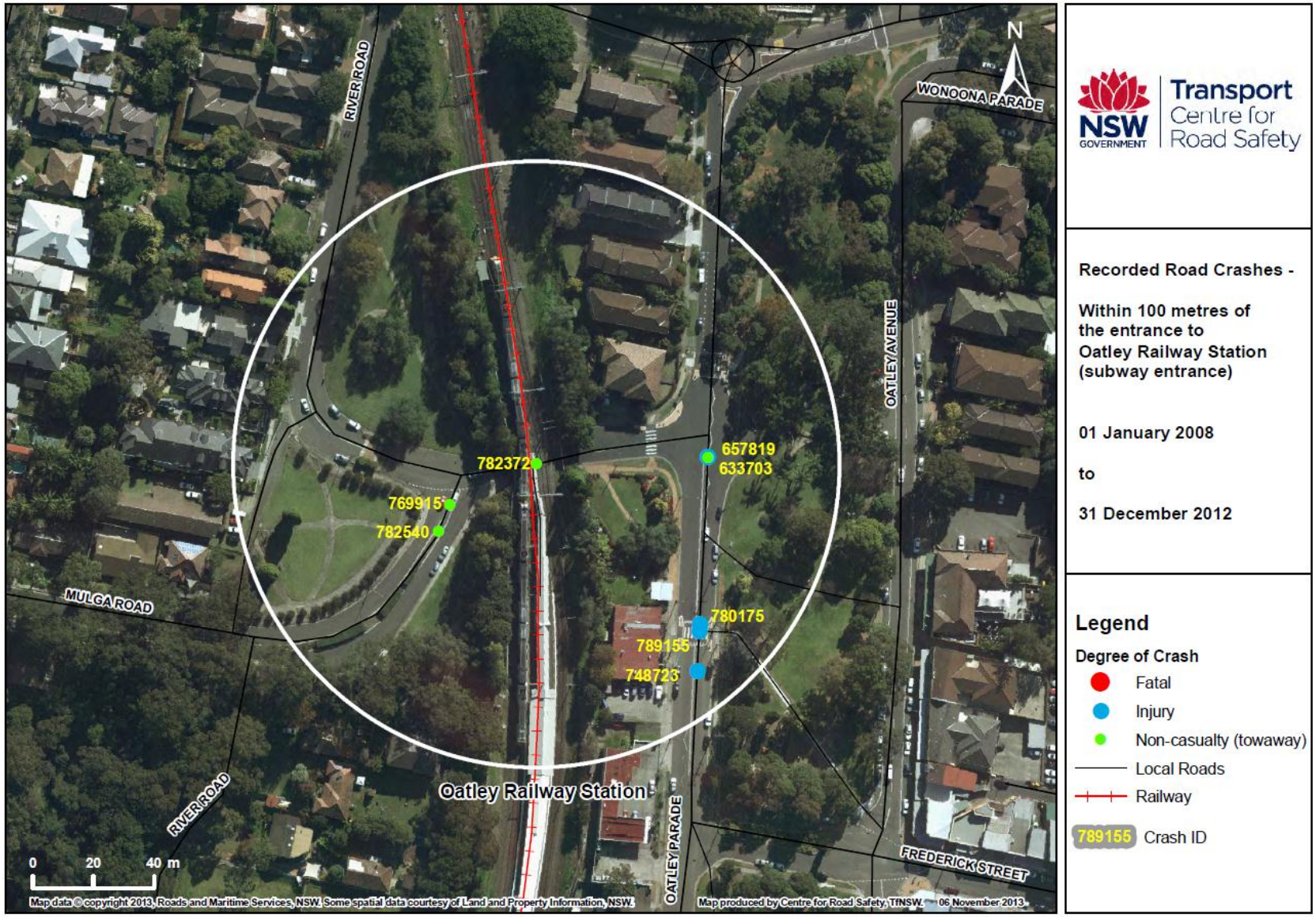
In total, there was one crash recorded along River Road within the study area during the recorded 5-year period. This crash occurred near the River Road/Mulga Road intersection which involved a vehicle colliding with a parked object. It was determined that fatigue was a contributing factor in this crash.

Mulga Road

In total, there were two crashes recorded along Mulga Road within the study area during the recorded 5-year period. Of these:

- Both incidents (100%) occurred near the River Road/Mulga Road intersection;
- Both incidents (100%) involved a vehicle colliding with a parked vehicle or object on a left-hand bend; and
- It was determined that speeding was a contributing factor in both (100%) crashes.

Figure 2-16 Crash locations



Source: TfNSW (2013)

2.13 Key findings

The key strengths of the transport network include:

- Intersections within the vicinity of Oatley Station Precinct currently operate with acceptable levels of service during both the week AM and PM peak hour.
- Low crash history on roads in the vicinity of Oatley Station Precinct, with 8 crashes recorded on the surrounding streets over a five year period; all non-fatal.
- Car parking surveys indicate that there is available timed on-street car parking through the weekday AM and PM peak periods.

The key weaknesses of the transport network include:

- Unsheltered bicycle parking provided to the west of the station at Mulga Road is of poor quality and provides poor security for cyclists.
- Unsheltered bicycle parking provided in the commuter car park, on the west side of the station is of poor quality and is located approximately 200 metres from the station entrance.
- There is no eastbound bus stop provided near the station on Mulga Road. The westbound boarding bus stop on Mulga Road is located approximately 100 metres from the station entrance and is unsheltered.
- The pedestrian crossing refuge at Mulga Road at the intersection with River Road is of poor quality, providing a long crossing distance between the refuge and the footpath on the western side of Mulga Road.
- A 16 space commuter car park is provided on Oatley Parade on the east side of the station. This car park is located approximately 200 metres from the station entrance.
- Pedestrians have been observed exhibiting unsafe behaviour to the west of the station, crossing towards the existing station entrance in a straight line from the park to the west of Mulga Road. In addition, there is currently unsafe pedestrian access between the station entrance and the Kiss and Ride parking on the northern side of River Road as pedestrians cross at the mid-point of the River Road/Mulga Road intersection.
- Limited opportunity for bus/rail interchange with only one bus service in operating in each direction from bus stops in Oatley. Bus services in the vicinity of the site run between Oatley Parade and Mulga Road via River Road.
- The 16 space commuter car park is fully occupied on weekdays.

3. Proposed Development

3.1 Station access

The proposed station upgrade would provide pedestrian access to Oatley Station via a new footbridge between Oatley Parade and Mulga Road. Steps and lifts would be provided at either end of the proposed footbridge at Oatley Parade and Mulga Road, and also from the bridge to the station platform. The existing pedestrian access from River Road would be closed as part of the development proposal.

The proposed station access arrangements and interchange arrangements at Oatley Parade and Mulga Road are shown at Figure 3-1.

3.2 Commuter car parking

The proposal for the station upgrade includes an extension to the existing commuter car park, which would increase the number of parking spaces at the car park from 16 spaces to 33 spaces, including one accessible space.

The proposed car park extension will be provided by extending into RailCorp land to the west of the car park. Access to the car park will remain as existing, with a separate ingress and egress provided from Oatley Parade. A new pedestrian access will be provided at the shared zone next to the disabled parking space. This will improve safety for pedestrians by reducing pedestrian and vehicle conflict at the car park egress driveway.

3.2.1 Accessible parking

A total of three accessible parking spaces will be provided at Oatley Station. One accessible space is proposed to be provided within the commuter car park, with one on-street space provided on Oatley Parade and one on-street space provided on Mulga Road.

Kerb ramps would be provided at both of the proposed on-street car parking spaces. These on street car parking spaces will be 3.2 metres wide and 7.8 metres long, in accordance with standards provided in AS2890.6 (2009).

3.3 Interchange facilities

3.3.1 Eastern side of Oatley Station

The location of the bus stops on Oatley Parade will remain as existing. However, it is proposed to re-locate the bus shelter on the western side of Oatley Parade. Access between the proposed station entrance and the southbound bus stop on Oatley Parade would be via the existing zebra crossing, which provides a safe and convenient crossing located adjacent to the station entrance.

The existing “No Parking” zone currently used for Kiss and Ride on the western side of Oatley Parade will be upgraded to provide a formal Kiss and Ride parking zone. It is also proposed to provide a kerb ramp at this location to an access path.

A new Kiss and Ride space is proposed to be provided on the eastern side of Oatley Parade, to the north of the pedestrian crossing.

The existing taxi bay on Oatley Parade would be relocated to the south of the existing pedestrian crossing on the western side of Oatley Parade. This would provide an accessible taxi bay serving the Oatley Station Precinct. The existing taxi bay would become a time restricted parking bay.

The existing un-sheltered cycle parking provided within the commuter car park at Oatley Parade would be removed. New covered bike racks for up to 10 bicycles would be provided at the proposed station access at Oatley Parade.

3.3.2 Western side of Oatley Station

The proposal for station upgrade includes the relocation of the westbound bus stop on Mulga Road adjacent to the proposed station entrance. A new westbound bus stop on Mulga Road is also proposed to be provided adjacent to the proposed station entrance.

A Kiss and Ride parking space will be provided on the both the eastern and western sides of Mulga Road, to the south of the proposed station entrance. A dropped kerb will be provided at each of these Kiss and Ride spaces to provide an accessible path. The existing Kiss and Ride spaces ("No Parking" zones) will need to be removed.

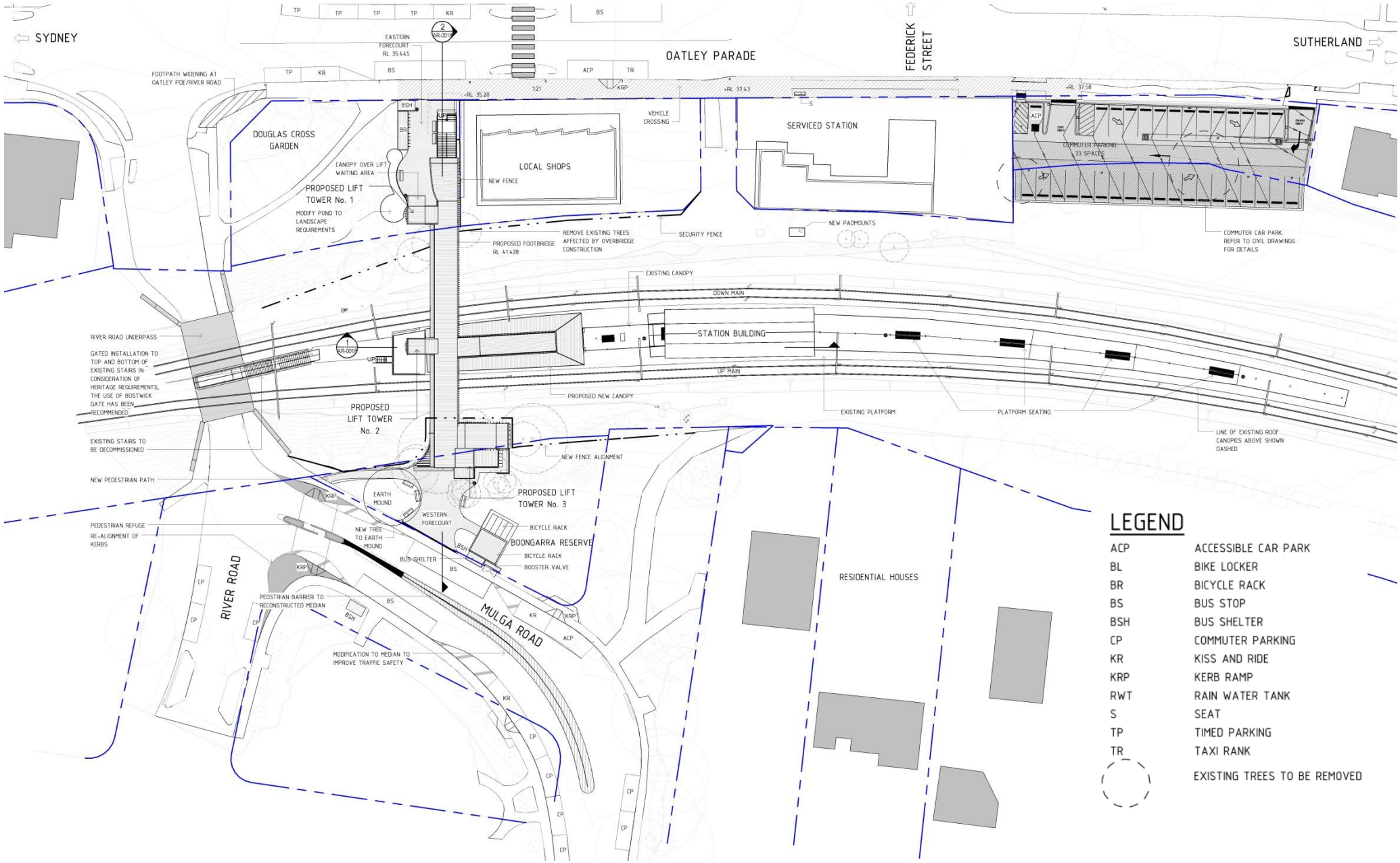
The existing pedestrian refuge on Mulga Road at the intersection with River Road is proposed to be upgraded to provide safe access for pedestrians between the station entrance and the western side of Mulga Road. This would also provide a safe crossing to the proposed bus stop and Kiss and Ride parking on the western side of Mulga Road.

Traffic calming will be provided at the proposed crossing on Mulga Road in the form of a raised platform. The proposed pedestrian refuge would provide "chicane" style kerbs, so that pedestrians and cyclists are required to face the direction of traffic before crossing the traffic lane.

It is proposed to extend the central median along Mulga Road to the proposed pedestrian refuge and provide a barrier within the median (either by providing a fence or extend the existing hedge within the median) in order to prevent pedestrians crossing Mulga Road directly adjacent to the proposed station entrance. This would improve safety for pedestrians by reducing conflict between pedestrians and buses/Kiss and Ride at adjacent to the proposed station entrance.

New covered bike racks for up to 10 bicycles will be provided at the proposed station access at Mulga Road. Bike lockers to accommodate four bicycles will also be provided at the proposed station access at Mulga Road.

Figure 3-1 Proposed access and interchange arrangements



4. Construction Impacts

4.1 Proposed construction arrangements

Construction of the proposed pedestrian bridge would require the following two construction sites:

- At Oatley Parade, located near the existing northbound bus shelter; and
- At Mulga Road, located on the existing grassed area on the eastern side of Mulga Road.

A construction site could also be located at the commuter car park for a limited period of the construction programme in order to provide the proposed car park extension.

Construction of the proposal has been assumed to occur over a 9 to 12 month period which, subject to approval, is likely to occur in 2014. Hours of construction for the proposal would be:

- 0730 – 1700, Monday to Friday.

A crane would be required on either side of the station during the construction of the footbridge. The landing points for each crane would be located within the construction sites off Mulga Road and Oatley Parade. As such, it is assumed that the provision of each crane is unlikely to require any road closures. However, the closure of a section of footpath on the western side of Oatley Parade may be required to accommodate the crane on the eastern side of the station.

4.1.1 Construction traffic generation

Heavy vehicles

The number of heavy vehicles accessing the site has been assumed to be up to 10 heavy vehicles per day. Heavy vehicles are expected to access the site outside of the AM and PM peak hours. As a conservative approach, it has been assumed that 20% of construction heavy vehicle traffic would access the site during the weekday AM and PM peak hours (i.e. 2 vehicles).

It is proposed that all construction storage containment will be within the construction sites.

Light vehicles

There are expected to be up to 20 construction workers at the site during peak periods, with around 10 workers at the site on a typical day.

It is likely that a high proportion of workers would access the site by train. However, it has been assumed for a worst case scenario that there would be a typical car driver rate of 100% (i.e. each worker driving a car). Application of this car driver rate to the assumed workforce yields a traffic generation in the order of 20 light vehicles per day.

It is expected that the arrival of workers would occur before the observed road network AM peak hour (0800-0900) and depart during the PM peak hour (1700-1800). As a conservative approach, 100% of worker light vehicles have been assumed to arrive in the AM peak and depart in the PM peak.

Total construction traffic

The expected construction traffic generation which has been assumed for this assessment is summarised in Table 4-1.

Table 4-1 Peak hour construction traffic generation

Proposed Construction Works	AM Peak hour traffic		PM Peak hour traffic	
	In	Out	In	Out
Heavy vehicles	2	0	0	2
Construction workers (light vehicles)	20	0	0	20
Total	22	0	0	22

In order to reduce impacts to commuter parking at Oatley Station Precinct during the construction of the proposed development, it is expected that most construction workers who drive to work would be required to park their vehicles off site, at a location which would be identified by the Construction Traffic Management Plan (CTMP). Workers would then either walk to the site or would be bussed to the site from a designated worker parking area, to be identified by the CTMP. As a consequence, the number of light vehicles accessing the construction site is expected to be around 10 to 20 vehicle movements per day.

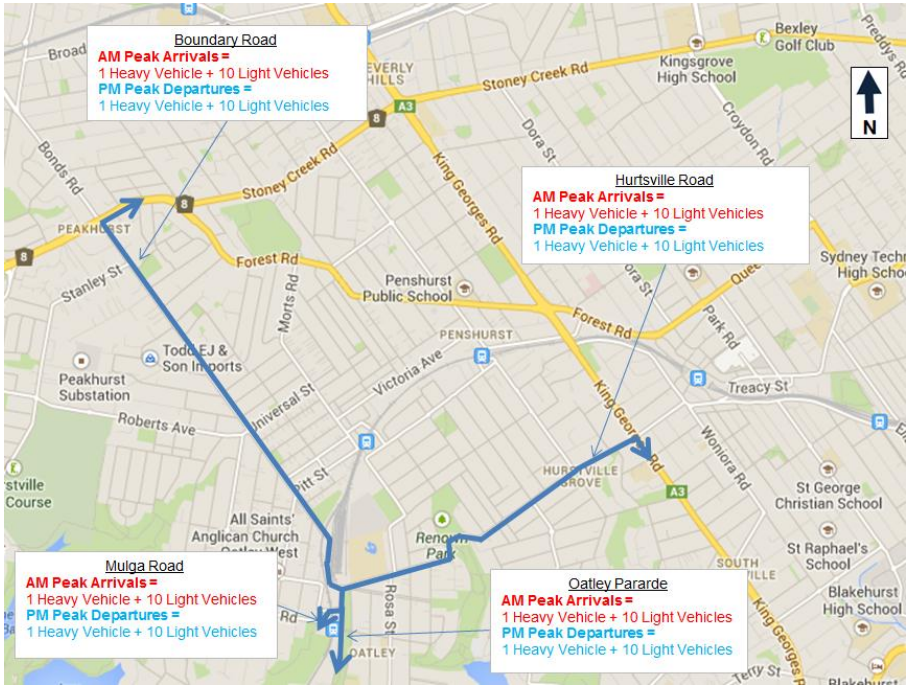
1.1.1 Construction traffic access routes

It is expected that both heavy vehicles and light vehicles would access the site via Hurstville Road, Boundary Road and Oatley Parade. Vehicles accessing the construction site on Mulga Road would do so from Oatley Parade via River Road.

The clearance height of the rail bridge at River Road is 4.5 metres. This is sufficient to accommodate a 12.5 metre articulated vehicle accessing the construction sites. Any oversized vehicles that would not be able to access the Mulga Road construction site beneath rail line on River Road would access the site via Boundary Road, Gungah Bay Road and Mulga Road.

The construction routes to the proposed construction sites on Oatley Parade and Mulga Road are shown at Figure 4-1. Also shown is the worst case construction traffic generation during the weekday AM and PM peak hour.

Figure 4-1 Construction access routes



Source: Google Maps (2013), modified by GHD

4.2 Construction parking impacts

Construction of the proposed commuter car park extension would require the closure of the commuter car park. However, this is expected to occur for over a short period of around 3-4 months, to be determined by the CTMP provided by the Contractor.

During this time, commuters would be required to park at unrestricted on-street parking at Oatley Parade, Mulga Road, Oatley Avenue and other streets in the vicinity of the site. On-site observations during the site inspection found that although parking was always available in the

vicinity of the, the majority of unrestricted parking spaces were occupied. Some commuters may be required to park at unrestricted parking locations on streets further away, although within an acceptable walking distance from Oatley Station.

Construction of proposed bus stops and the proposed upgrade of the pedestrian refuge at the Mulga Road/River Road intersection will result in a loss of approximately ten on-street car parking spaces on Mulga Road. However, this is expected to occur for over a short period, and is to be determined by the CTMP provided by the Contractor.

In order to reduce impacts to commuter parking at Oatley Station during the construction of the proposed development, it is expected that construction workers who drive to work would be required to park their vehicles off site , at a location which would be identified by the CTMP. Workers would then either walk to the site or would be bussed to the site from a designated parking area. This should be confirmed as part of the CTMP.

4.3 Construction traffic impacts

4.3.1 Increase in traffic

Table 4-2 and Table 4-3 outline the potential increases in traffic volume on the surrounding road network during the construction period in 2014. No growth in background traffic has been assumed as there is very little development proposed in the vicinity of the Oatley Station Precinct over the period between 2013 and 2014.

Table 4-2 2014 Construction traffic impact (vph) – AM peak (two-way)

Location	2013 AM Peak Hour (vph)	AM Construction Traffic	2014 AM Peak (vph) with Construction	% Increase
Oatley Parade (north of River Road)	634	22	656	3.5%
Oatley Parade (south of River Road)	631	12	643	1.9%
Oatley Parade (south of Frederick Street)	309	12	321	3.9%
Mulga Road	331	12	343	3.6%
River Road (west of Oatley Parade)	489	12	501	2.5%
Frederick Street (east of Oatley Parade)	442	0	0	0%
Hurstville Road (east of Oatley Parade)	1,165	22	1,187	1.9%

Table 4-3 2014 Construction traffic impact (vph) – PM peak (two-way)

Location	2013 AM Peak Hour (vph)	AM Construction Traffic	2014 AM Peak (vph) with Construction	% Increase
Oatley Parade (north of River Road)	805	22	827	2.7%
Oatley Parade (south of River Road)	755	12	767	2.0%
Oatley Parade (south of Frederick Street)	383	12	395	3.1%
Mulga Road	450	12	462	2.7%
River Road (west of Oatley Parade)	612	12	624	2.0%
Frederick Street (east of Oatley Parade)	442	0	0	0%
Hurstville Road (east of Oatley Parade)	1,247	22	1,269	1.8%

The maximum likely increase in traffic associated with the proposed construction of the site would be up to 3.9% during the AM peak and 3.1% during the PM peak. This low increase in traffic would be minor without imposing any adverse traffic impacts on the surrounding road network.

4.3.2 Intersection operation – during construction

A summary of the SIDRA intersection capacity assessments of the key intersections in the vicinity of the site under 2014 'with construction' traffic conditions is provided in Table 4-4. SIDRA outputs are provided at Appendix B. As shown, all intersections are expected to operate satisfactorily during the construction period.

Table 4-4 SIDRA results - 2014 construction traffic Flows

Intersection	AM Peak		PM Peak	
	Ave Delay (s)	LoS	Ave Delay (s)	LoS
Oatley Parade/Frederick Street	10	B	11	B
Oatley Parade/Hurstville Road/Boundary Parade	14	B	15	B
Oatley Parade/River Road	11	B	12	B
River Road/Mulga Road	10	A	10	B

4.4 Impacts to other users

4.4.1 Pedestrians

During construction of the site, pedestrians would continue to access the station platform via the existing station access on River Road.

Impacts to pedestrians during the construction of the site include the following:

- Closure of a section of the footpath along the western side of Oatley Parade during construction of the pedestrian bridge, footpath upgrade and relocation of the bus shelter;
- Closure of a section the footpath on the eastern side of Mulga Road for short periods during construction of the proposed pedestrian bridge, bus stop and upgrade to the pedestrian refuge. Pedestrians will be required to walk along the footpath on the western side of Mulga Road or along the footpath within the park to the west of Mulga Road. Impacts to pedestrians would be managed through the development of the CTMP.
- Location of the crane landing point on the western side of the station would be located within the grassed area on the eastern side of Mulga Road. This is unlikely to require the closure of the footpath on Mulga Road, except for short periods of up to three hours during the arrival and departure of the crane.
- Location of the crane on the eastern side of the station would be within the construction site off Oatley Parade. However, this may require the closure of a short section of footway on the western side of Oatley Parade in order to accommodate the crane. Impacts to pedestrians would be managed through the development of the CTMP.

Based on the above, the construction of the site would have minimal impacts to pedestrians.

4.4.2 Bus services

The northbound bus stop on the western side of Oatley Parade will need to be temporarily relocated to allow for construction of the proposed pedestrian bridge to Oatley Station. This temporary bus zone could be located further to the north on Oatley Parade at the existing Kiss and Ride parking area, or to the south of the pedestrian crossing where there are two time parking bays. This would be managed through the development of a CTMP provided by the Contractor.

There would be no other impacts to bus services in the vicinity of the site, which would continue operate between Oatley Parade and Mulga Road via River Road.

4.4.3 Taxis

The construction arrangements would have minimal impacts to taxis. The existing taxi rank on Oatley Parade would be utilised during the majority of construction period. Taxis would then use the proposed accessible taxi bay on western side of Oatley Parade located to the south of the pedestrian crossing. As such, a taxi bay would be available throughout the construction period.

4.4.4 Kiss and Ride

The temporary relocation of the northbound bus stop on Oatley Parade may require the removal of the Kiss and Ride during construction the construction period. However, this is expected to occur over a short period, and would be managed through the development of a CTMP provided by the Contractor.

A temporary Kiss and Ride space could also be provided on the western side of Oatley Parade to the north of the Oatley Parade/River Road intersection. This parking area is currently unrestricted parking, and provides safe access to the existing station entrance on River Road via the zebra crossing on River Road at the intersection with Oatley Parade.

The “No Parking” zone on Mulga Road, which is currently used for Kiss and Ride, would be removed during construction of the pedestrian footbridge and upgrade to the pedestrian refuge on Mulga Road. This would be managed through the development of a CTMP provided by the Contractor.

Based on the above, there would be minor impacts to Kiss and Ride during the construction of the site.

4.4.5 Cyclists

Cycle parking located within the existing commuter car park would be relocated to the proposed station access. The existing cycle parking on Mulga Road would also be relocated during construction of the site.

It was noted during the site inspection that one bicycle was parked at the existing cycle parking at Oatley Station Precinct.

There would be no impacts to cycle routes following the development of the site, which will remain as existing (refer to Figure 2-12).

Based on the above, there would be minimal impacts to cyclists during construction of the site.

4.4.6 Motorcycle parking

There is currently no dedicated motorcycle parking at Oatley Station Precinct. As such, there would no impacts to motorcycle parking during the construction of the site.

5. Operational Impacts

This section broadly examines the road network impacts based on both post-development traffic and parking demand generated by the proposed interchange upgrade and car park extension outlined in Section 3.

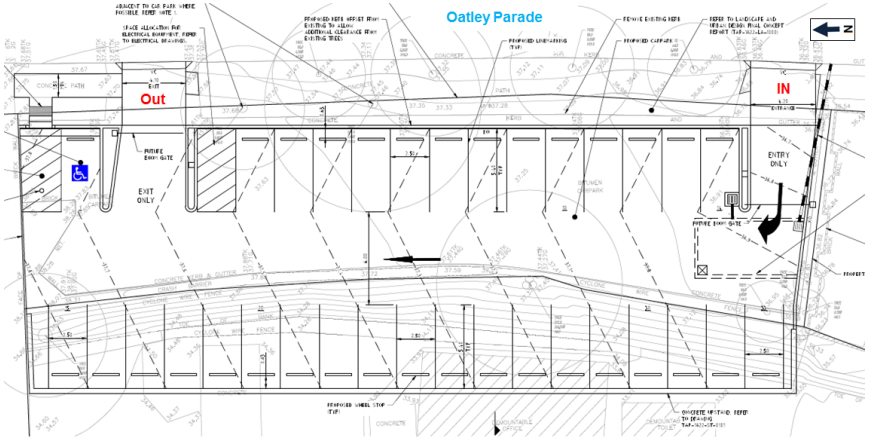
5.1 Car parking

Commuter car park

The proposed development will extend the existing 16 space commuter car park to provide 33 parking spaces in total, including one accessible parking space. This will provide an additional 17 off-street commuter car parking spaces at Oatley Station Precinct.

The proposed commuter car park will retain the existing separate entry/exit access onto Oatley Parade. The car park design allows for the provision of boom gates at the car park entry and exit points, if required in the future. The proposed car park is shown at Figure 5-1, with a detailed plan provided at Appendix F.

Figure 5-1 Proposed commuter car park layout



Oatley Parade

One accessible parking bay is proposed to be provided on the western side of Oatley Parade to the south of the zebra crossing, replacing a timed parking space.

It is also proposed to convert an existing timed parking space on the on the eastern side of Oatley Parade to provide a new Kiss and Ride space to the north of the zebra crossing. Pedestrians would be able to safely access this Kiss and Ride space from the proposed station entry on Oatley Parade via the zebra crossing.

Mulga Road

The proposed development will provide a new accessible parking space on the eastern side of Mulga Road adjacent to the proposed station entrance.

The relocation of the proposed bus stop and Kiss and Ride on the eastern side of Mulga Road will result in the loss of approximately two unrestricted parking spaces at this location, with around five unrestricted parking spaces to be re-located at the existing bus zone.

The provision of a new bus zone and relocation of the existing "No Parking" zone to provide a new Kiss and Ride parking on the western side of Mulga Road will result in the loss of around three unrestricted parking spaces.

River Road

The existing "No Parking" zone on the northern side of River Road, currently used for Kiss and Ride is considered an unsafe location for Kiss and Ride to the proposed station entry at Mulga Road. It is proposed to remove this "No Parking" zone by extending the "No Stopping" zone. A new Kiss and Ride zone would be provided on the eastern side of Oatley Parade adjacent to the proposed station entrance, accessed via the existing zebra crossing.

Total parking provision

Based on the above, the proposed development would provide the following impacts to parking:

- 17 additional off-street parking spaces at the commuter car park off Oatley Parade, including one accessible space.
- Provision of a new accessible parking bay and a new Kiss and Ride bay on Oatley Parade would result in the loss of two timed parking bays.
- Relocation of the existing bus stop and Kiss and Ride on the eastern side of Oatley Parade will result in a loss of around two unrestricted parking spaces.
- Provision of a new bus stop and relocation of the Kiss and Ride on the western side of Oatley Parade will result in a loss of around three unrestricted parking spaces.

Based on the above, there would be a net increase of 12 parking spaces for commuters at Oatley Station. There will also be a loss of two timed parking spaces in the vicinity of the site.

5.1.1 Car parking design requirements

The Australian Standards AS 2890.1:2004 Parking Facilities, Part 1: Off-street Car Parking provides standards for off-street car parking space measurements. A comparison of the proposed car parking space dimensions with the standards provided in AS2890.1 is summarised in Table 5-1. As shown, the proposed car parking space measurements comply with AS 2890.1:2004 standards.

Table 5-1 Proposed parking spaces dimensions

Description	Proposed Design Parameters	AS 2890.1 and AS 2890.6 Standards
Parking Spaces and Aisles		
Standard Parking Space (90° to aisle) [1]	2.5 m wide 5.4 m long	2.4 m wide 5.4 m long
Disabled Parking Space (90° to aisle)[2]	2.5 m wide 5.4 m long 2.5 m wide and 5.4 m long shared space	2.5 m wide 5.4 m long 2.4 m wide and 5.4 m long shared space
Parking aisles (one-way) [1]	6.0 m	6.2 m

Notes:

1:- AS 2890.6 – Parking Facilities-Part 1: Off-street car parking

2:- AS 2890.6 – Parking Facilities-Part 6: Off-Street parking for people with disabilities

The proposed car parking space measurements generally comply with AS 2890.1:2004 standards with the exception of the proposed 6 metre parking aisle. However, it is noted that the aisle is proposed to be one-

way only, minimising conflict, and that the proposed car parking spaces are 100mm wider than the 2.4 metre wide space required by AS 2890.1:2004. The increase in parking space width would improve manoeuvrability to/from the parking spaces and the provision of a 6 metre wide aisle width in this case is considered acceptable in this circumstance. In addition, Auto Turn was also used to assess turning movement requirement, which showed that a large car can easily access the parking spaces and manoeuvre within the car park based on the proposed parking space and aisle dimensions (attached at Appendix F).

5.1.2 Accessible parking

There is currently no accessibility parking in terms of Disability Discrimination Act (DDA) provided at Oatley Station. The proposed development will provide one on-street accessible space on Oatley Parade and one accessible space within the commuter car park. However, because of the existing footpath gradients along Oatley Parade, these spaces do not meet Building Code of Australia (BCA) requirements for DDA parking spaces.

However, a new DDA compliant on-street parking space is proposed to be provided on Mulga Road. This equates to 3% of the total 33 car parking spaces for commuters within the vicinity of Oatley Station. Based on this, the proposed provision of one DDA parking space is in accordance with BCA requirements, which requires 3% of the total parking spaces for commuter parking to be allocated to DDA parking.

5.2 Traffic Impacts

5.2.1 Traffic generation

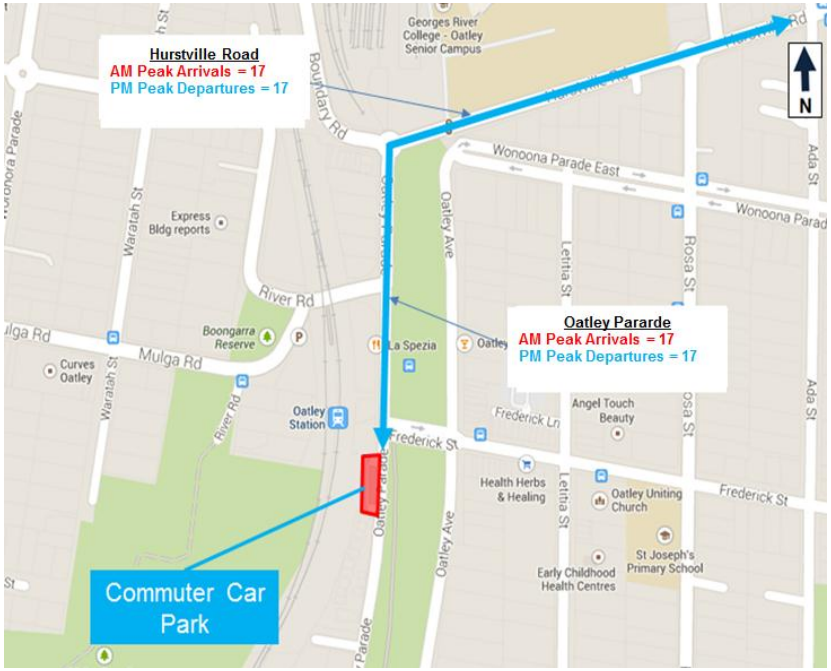
The proposed development will increase the commuter car park by 16 spaces, to provide 33 spaces in total. For a worst case assessment of the proposed traffic generation, it has been assumed that the proposal would generate an additional 17 arrivals during the morning peak hour and 18 departures during the evening peak hour, as shown in Table 5-2.

Table 5-2 Commuter car park traffic generation

Commuter Car Park Trip Generation	AM Peak (0800-0900)		PM Peak (1700-1800)	
	In	Out	In	Out
Proposed Commuter Car Park Trips	17	0	0	17

For a worst case assessment of the traffic impacts relating to the proposed car park extension, it has been assumed that the additional traffic will access the car park from Hurstville Road via Oatley Parade. This traffic distribution is shown at Figure 5-2.

Figure 5-2 Commuter Car Park Traffic Generation



Source: Google Maps (2014), modified by GHD

5.2.2 Intersection operation – during construction

A summary of the SIDRA intersection capacity assessments of the key intersections in the vicinity of the site under 2014 'with development' traffic conditions is provided in Table 5-3. SIDRA outputs are provided at Appendix B. As shown, all intersections are expected to operate satisfactorily.

Table 5-3 SIDRA results - 2014 with development traffic flows

Intersection	AM Peak		PM Peak	
	Ave Delay (s)	LoS	Ave Delay (s)	LoS
Oatley Parade/Frederick Street	10	B	11	B
Oatley Parade/Hurstville Road/Boundary Parade	14	B	15	B
Oatley Parade/River Road	11	B	12	B
River Road/Mulga Road	10	A	10	B

The existing car park egress is located approximately 6.5 metres to the south of the service station access on Oatley Parade. The proposed car park layout would not change the location of this car park egress. The small number of additional vehicles exiting the proposed car park expansion (up to 17 vehicles exiting during the PM peak hour) would have minimal impacts to the service station.

5.3 Impacts to other users

5.3.1 Pedestrians

Pedestrian access to the station will be provided via a new footbridge between Oatley Parade and Mulga Road, with lifts and stairs provided to the pedestrian bridge at Oatley Parade and Mulga Road. The existing pedestrian access on River Road will be closed off. Pedestrians would access the station platform from the new pedestrian bridge via the steps, or a lift which would be provided between the platform and pedestrian footbridge.

The rail line currently acts as a barrier for pedestrians in Oatley, with access between the east and west currently provided via a narrow footpath along the southern side of River Road only. The new pedestrian bridge would provide a new DDA compliant access to the station from both Mulga Road and Oatley Parade. As such, the proposed pedestrian bridge would provide an additional pedestrian route between Oatley Parade and Oatley Village Centre and Mulga Road. The 2013 pedestrian surveys at River Road showed that there were 45 pedestrians walking past the existing station entrance during the PM peak hour (refer to Figure 2-3). Following the proposed station upgrade, some of these trips may be undertaken via the proposed pedestrian bridge rather than along River Road.

It is also proposed to improve pedestrian safety on Mulga Road by upgrading the existing pedestrian crossing refuge at the intersection with River Road. This upgrade includes providing traffic calming in the form of a raised platform, providing narrower traffic lanes for pedestrians to cross. The proposed kerb arrangement at the pedestrian refuge would encourage pedestrians to face towards oncoming traffic before crossing the traffic lanes.

It is also proposed to provide a continuous fence along the central median along Mulga Road adjacent to the proposed station entry to River Road. This would encourage pedestrians to cross Mulga Road at the upgraded pedestrian refuge to access the station.

There is an existing path which cuts through a reserve between River Road and the western side of the railway corridor. The path joins River Road immediately before the eastern portal of the underpass. There is limited sight available for westbound vehicles to be able to appreciate pedestrians crossing at the above mentioned location. The removal of this footpath on the northern side of River Road is not within the scope of the Oatley Station Precinct Accessibility Upgrade Project. However, it is recommended that Council investigate options for realigning the footpath to existing speed cushion on River Road located to the north of Mulga Road, and converting this speed cushion to provide a wombat crossing. This is likely to have minimal impacts to parking on River Road, as kerb blisters are already provided at the speed cushion.

The proposed removal of the “no parking” zone on the northern side of River Road is also likely to reduce the number of pedestrians crossing River Road immediately to the west of the rail bridge, as Kiss and Ride activity would be relocated to Oatley Parade and Mulga Road.

5.3.2 Bus services

The proposed development will result in the relocation of the existing bus stop on the eastern side of Mulga Road adjacent to the proposed station entrance, approximately 60 metres north of its existing location. The bus stop will therefore be located closer to the proposed station access.

A new bus stop is proposed to be provided on the western side of Mulga Road. There is currently no bus stop provided at this location and provision of the proposed bus stop would improve rail/bus interchange on the western side of the station following the development of the proposed footbridge.

A new bus shelter will be provided at the bus stop on the western side of Oatley Parade.

5.3.3 Taxis

The existing taxi bay on Oatley Parade would be relocated to the south of the existing pedestrian crossing on the western side of Oatley Parade. This would provide an accessible taxi bay serving the Oatley Station Precinct. As such, there would be an improvement to taxis by providing a new accessible taxi bay.

5.3.4 Kiss and Ride

The proposed development would provide a formal Kiss and Ride space on either side of Oatley Parade adjacent to the proposed entrance. Pedestrians can cross Oatley Parade to access the proposed Kiss and Ride space, on the eastern side of Oatley Parade, via the existing zebra crossing.

A Kiss and Ride space will be provided on either side of Mulga Road, located adjacent to the proposed station entrance. Pedestrians will cross Mulga Road using the pedestrian refuge at the River Road intersection, which will be upgraded as part of the development proposals.

The existing “No Parking” zone on River Road, which is currently used for Kiss and Ride at Oatley Station would be removed as part of the development proposals. This Kiss and Ride space is considered to be unsuitable as it requires pedestrians to cross River Road at an unsafe location (within an intersection) in order access the station.

No change to the number of Kiss and Ride spaces at Oatley Station Precinct is proposed.

5.3.5 Cyclists

The proposed development would provide covered cycle racks for 10 bicycles located at the proposed station access on Mulga Road adjacent to the proposed station entrance. Bike lockers for four bicycles would also be provided at this location.

Cycle parking on the eastern side of the station would be relocated from the commuter car park and provided at the proposed station access at Oatley Parade, where covered cycle parking for up to 10 bikes would be provided.

No change to existing cycle routes is proposed in the vicinity of the Oatley Station. Cyclists can access the station along Oatley Parade, River Road and Mulga Road, which are on-street bicycle routes with low traffic volumes.

As shown in Table 5-2, the proposed car park expansion will generate an additional 17 vehicles in the morning and evening peak hour periods. This small increase in traffic would result in a minimal impact to cyclists along in the vicinity of Oatley Station.

Based on the above, the proposed development would have a positive impact to pedestrians.

5.3.6 Motorcycle parking

There is currently no dedicated motorcycle parking at Oatley Station. The proposed development would not provide any additional dedicated motorcycle parking. As such, there would no impacts to motorcycle parking.

6. Conclusions

The following conclusions are made based on the above investigations:

6.1 Existing situation

The key strengths of the transport network include:

- Intersections within the vicinity of Oatley Station currently operate with acceptable levels of service during both the week AM and PM peak hour.
- Low crash history on roads in the vicinity of Oatley Station, with eight crashes recorded on the surrounding streets over a 5 year period.
- Car parking surveys indicate that there is available on-street car parking through the weekday AM and PM peak periods.

The key weaknesses of the transport network include:

- Unsheltered bicycle parking to the west of the station at Mulga Road is of poor quality and provides poor security for cyclists.
- Unsheltered bicycle parking provided in the commuter car park, on the west side of the station is of poor quality and is located approximately 200 metres from the station entrance.
- There is no eastbound bus stop provided near the station on Mulga Road. The westbound boarding bus stop on Mulga Road is located approximately 100 metres from the station entrance and is unsheltered.
- The pedestrian crossing refuge at Mulga Road at the intersection with River Road is of poor quality, providing a long crossing distance between the refuge and the footpath on the western side of Mulga Road.
- A 16 space commuter car park is provided on Oatley Parade on the east side of the station. This car park is located approximately 200 metres from the station entrance.
- Pedestrians have been observed to exhibit unsafe behaviors to the west of the Station, crossing towards the existing station entrance in a straight line from the park to the west of Mulga Road. In addition, there is currently unsafe pedestrian between the station entrance and the Kiss and Ride parking on the northern side of River Road as pedestrians cross at the mid-point of the River Road/Mulga Road intersection.
- Limited opportunity for bus/rail interchange with only one bus service in operating in each direction from bus stops in Oatley. Bus services in the vicinity of the site run between Oatley Parade and Mulga Road via River Road.
- The 16 space commuter car park is fully occupied on weekdays.

6.2 Construction impacts

- Based on a worst case scenario, the proposed construction arrangements would generate two additional heavy vehicle and 20 additional light vehicle trips during the weekday AM and the PM peak hour.
- It is likely that some of the construction workforce would use alternative means of transport to access the site, including by train to Oatley Station or by bus to the existing bus stops on Oatley Parade.
- The additional traffic associated with construction activities for the proposed development can be accommodated on the surrounding road network.

- Construction of the site is would require the closure of the existing 16 space commuter car park for some short periods. However, this is expected to be for limited periods only.
- The northbound bus stop on the western side of Oatley Parade will need to be temporarily relocated to allow for construction of the proposed pedestrian bridge to Oatley Station.
- The temporary relocation of the northbound bus stop on Oatley Parade during the construction periods may require the relocation of the existing Kiss and Ride space on the western side of Oatley Parade. However, this is only expected to occur for a short period.
- The construction of the site would have minimal impacts to pedestrians, cyclists and taxis.

6.3 Operational impacts

- The Proposal would result in an increase of 12 parking spaces for commuters at Oatley Station. There would also be a loss of two timed parking spaces in the vicinity of the site.
- The proposed car parking space measurements generally comply with AS 2890.1:2004 standards.
- Access to the proposed 33 space commuter car park at Oatley Parade will be as existing, providing separate ingress and egress driveways at Oatley Parade.
- The proposed development will have minimal traffic impacts to the operation of the surrounding road network.
- The proposed development will improve pedestrian environment in the vicinity of the site by providing a new pedestrian connection over the rail line between Mulga Road and Oatley Parade.
- The proposed development will provide cycle parking for approximately 16 bicycles at Mulga Road and cycle parking for approximately 10 bicycles at Oatley Parade. This cycle parking will be located adjacent to the lifts/stairs to the footbridge.
- The existing taxi bay on Oatley Parade would be relocated to the south of the existing pedestrian crossing on the western side of Oatley Parade. This would provide an accessible taxi bay serving the Oatley Station Precinct. As such, there would be an improvement to taxis by providing a new accessible taxi bay.
- The proposed development will provide a formal Kiss and Ride space to on either side of Oatley Parade and also on either side of Mulga Road adjacent to the proposed station entrances.

6.4 Mitigations measures

In order to mitigate the construction of the proposed pedestrian bridge, car park expansion and interchange facilities on Oatley Parade and Mulga Road it is recommended that a CTMP be developed to incorporate the following:

- A strategy for managing construction vehicles on site in order to minimise impact on local amenity and existing on street parking.
- Promotion of alternative means of transport to and from the site for construction workers, encourage the use of public transport , car share or use shuttle bus services in order to minimise the number of staff vehicles likely to access the site.
- The Contractor should designate an area to accommodate construction workers vehicles in order to minimise the impact on commuter and residential parking operations during the construction period, which would be serviced by the above proposed shuttle bus.
- Provide details of a community awareness plan in order to increase awareness to commuters of closure of the lower car

park during construction and the provision of alternative parking. This should be initiated prior to construction commencing and during the construction period to ensure that the local community is fully aware of the construction activities and identify communication protocols for community feedback on issues relating to construction traffic.

- Provide general signposting along access roads with appropriate heavy vehicle and construction warning signs.
- The Contractor should schedule deliveries outside of peak periods to minimise construction traffic during both the AM and PM peak.
- Establish and monitor safe access points to work areas from the adjacent road network including safety measures such as barriers, maintaining sight distance requirements and signage.

It is therefore concluded the proposed footbridge, car park expansion and interchange facilities will have acceptable traffic impacts.

Appendices

Appendix A – Traffic Survey Data

R□O□A□R□ DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS	NORT□	EAST	SO□T□	
T□□ □P□r	*Oatley Pde*	*Frederick St*	*Oatley Pde*	TOT
0600 - 0615	0	0	1	**1**
0615 - 0630	0	0	1	**1**
0630 - 0645	0	1	1	**2**
0645 - 0700	0	0	0	**0**
0700 - 0715	1	2	2	□
0715 - 0730	1	0	2	□
0730 - 0745	0	0	2	**2**
0745 - 0800	0	2	3	□
0800 - 0815	0	1	0	**1**
0815 - 0830	0	0	1	**1**
0830 - 0845	0	0	2	**2**
0845 - 0900	0	0	0	**0**
P□r E□d	**2**	□	**1□**	**2□**

PEDS	NORT□	EAST	SO□T□	
P□□□P□r	*Oatley Pde*	*Frederick St*	*Oatley Pde*	TOT
0600 - 0700	0	1	3	□
0615 - 0715	1	3	4	□
0630 - 0730	2	3	5	**10**
0645 - 0745	2	2	6	**10**
0700 - 0800	2	4	9	**1□**
0715 - 0815	1	3	7	**11**
0730 - 0830	0	3	6	**9**
0745 - 0845	0	3	6	**9**
0□00 - 0900	0	1	3	□
PEA□ □R	**0**	**1**	□	□

L□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	4	15	14	2	3	13	**□1**
0615 - 0630	9	9	12	3	1	25	**□9**
0630 - 0645	13	10	11	0	0	35	**□9**
0645 - 0700	22	30	16	3	3	40	**11□**
0700 - 0715	26	36	28	2	2	61	**1□□**
0715 - 0730	21	29	33	2	3	51	**1□9**
0730 - 0745	32	44	29	4	2	56	**1□7**
0745 - 0800	34	46	32	3	3	45	**1□□**
0800 - 0815	31	40	41	6	8	57	**1□□**
0815 - 0830	17	36	32	4	10	19	**11□**
0830 - 0845	26	56	40	7	4	37	**170**
0845 - 0900	20	83	52	3	17	38	**21□**
P□r E□d	**2□□**	**□□□**	**□□0**	**□9**	**□□**	**□77**	**1□01**

□□□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	0	0	0	0	0	0	**0**
0615 - 0630	0	0	0	0	0	0	**0**
0630 - 0645	0	0	0	1	0	0	**1**
0645 - 0700	0	2	1	0	0	0	□
0700 - 0715	0	0	0	0	0	1	**1**
0715 - 0730	0	2	0	0	0	0	**2**
0730 - 0745	0	1	2	0	0	0	□
0745 - 0800	0	1	0	0	0	0	**1**
0800 - 0815	1	0	0	0	0	1	**2**
0815 - 0830	0	0	0	0	0	0	**0**
0830 - 0845	0	1	0	0	0	0	**1**
0845 - 0900	1	0	1	0	1	1	□
P□r E□d	**2**	**7**	□	**1**	**1**	□	**1□**

C□□ □□□d	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	4	15	14	2	3	13	**□1**
0615 - 0630	9	9	12	3	1	25	**□9**
0630 - 0645	13	10	11	1	0	35	**70**
0645 - 0700	22	32	17	3	3	40	**117**
0700 - 0715	26	36	28	2	2	62	**1□□**
0715 - 0730	21	31	33	2	3	51	**1□1**
0730 - 0745	32	45	31	4	2	56	**170**
0745 - 0800	34	47	32	3	3	45	**1□□**
0800 - 0815	32	40	41	6	8	58	**1□□**
0815 - 0830	17	36	32	4	10	19	**11□**
0830 - 0845	26	57	40	7	4	37	**171**
0845 - 0900	21	83	53	3	18	39	**217**
P□r E□d	**2□7**	**□□1**	**□□□**	**□0**	**□7**	**□□0**	**1□19**

L□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	48	64	53	8	7	113	**29□**
0615 - 0715	70	85	67	8	6	161	**□97**
0630 - 0730	82	105	88	7	8	187	**□77**
0645 - 0745	101	139	106	11	10	208	**□7□**
0700 - 0800	113	155	122	11	10	213	**□2□**
0715 - 0815	118	159	135	15	16	209	**□□2**
0730 - 0830	114	166	134	17	23	177	**□□1**
0745 - 0845	108	178	145	20	25	158	□□□
0□00 - 0900	94	215	165	20	39	151	□□□
PEA□ □R	**9□**	**21□**	**1□□**	**20**	**□9**	**1□1**	□□□

□□□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	0	2	1	1	0	0	□
0615 - 0715	0	2	1	1	0	1	□
0630 - 0730	0	4	1	1	0	1	**7**
0645 - 0745	0	5	3	0	0	1	**9**
0700 - 0800	0	4	2	0	0	1	**7**
0715 - 0815	1	4	2	0	0	1	□
0730 - 0830	1	2	2	0	0	1	□
0745 - 0845	1	2	0	0	0	1	□
0□00 - 0900	2	1	1	0	1	2	**7**
PEA□ □R	**2**	**1**	**1**	**0**	**1**	**2**	**7**

C□□ □□□d	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	48	66	54	9	7	113	**297**
0615 - 0715	70	87	68	9	6	162	**□02**
0630 - 0730	82	109	89	8	8	188	□□□
0645 - 0745	101	144	109	11	10	209	□□□
0700 - 0800	113	159	124	11	10	214	**□□1**
0715 - 0815	119	163	137	15	16	210	**□□0**
0730 - 0830	115	168	136	17	23	178	**□□7**
0745 - 0845	109	180	145	20	25	159	□□□
0□00 - 0900	96	216	166	20	40	153	**□91**
PEA□ □R	**9□**	**21□**	**1□□**	**20**	**□0**	**1□□**	**□91**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.
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Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS	NORT□	EAST	SO□T□	
T□□ □P□r	*Oatley Pde*	*Frederick St*	*Oatley Pde*	TOT
0600 - 0615	0	0	1	**1**
0615 - 0630	0	0	1	**1**
0630 - 0645	0	1	1	**2**
0645 - 0700	0	0	0	**0**
0700 - 0715	1	2	2	□
0715 - 0730	1	0	2	□
0730 - 0745	0	0	2	**2**
0745 - 0800	0	2	3	□
0800 - 0815	0	1	0	**1**
0815 - 0830	0	0	1	**1**
0830 - 0845	0	0	2	**2**
0845 - 0900	0	0	0	**0**
P□r E□d	**2**	□	**1□**	**2□**

PEDS	NORT□	EAST	SO□T□	
P□□□P□r	*Oatley Pde*	*Frederick St*	*Oatley Pde*	TOT
0600 - 0700	0	1	3	□
0615 - 0715	1	3	4	□
0630 - 0730	2	3	5	**10**
0645 - 0745	2	2	6	**10**
0700 - 0800	2	4	9	**1□**
0715 - 0815	1	3	7	**11**
0730 - 0830	0	3	6	**9**
0745 - 0845	0	3	6	**9**
0□00 - 0900	0	1	3	□
PEA□ □R	**0**	**1**	□	□

L□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	4	15	14	2	3	13	**□1**
0615 - 0630	9	9	12	3	1	25	**□9**
0630 - 0645	13	10	11	0	0	35	**□9**
0645 - 0700	22	30	16	3	3	40	**11□**
0700 - 0715	26	36	28	2	2	61	**1□□**
0715 - 0730	21	29	33	2	3	51	**1□9**
0730 - 0745	32	44	29	4	2	56	**1□7**
0745 - 0800	34	46	32	3	3	45	**1□□**
0800 - 0815	31	40	41	6	8	57	**1□□**
0815 - 0830	17	36	32	4	10	19	**11□**
0830 - 0845	26	56	40	7	4	37	**170**
0845 - 0900	20	83	52	3	17	38	**21□**
P□r E□d	**2□□**	**□□□**	**□□0**	**□9**	**□□**	**□77**	**1□01**

□□□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	0	0	0	0	0	0	**0**
0615 - 0630	0	0	0	0	0	0	**0**
0630 - 0645	0	0	0	1	0	0	**1**
0645 - 0700	0	2	1	0	0	0	□
0700 - 0715	0	0	0	0	0	1	**1**
0715 - 0730	0	2	0	0	0	0	**2**
0730 - 0745	0	1	2	0	0	0	□
0745 - 0800	0	1	0	0	0	0	**1**
0800 - 0815	1	0	0	0	0	1	**2**
0815 - 0830	0	0	0	0	0	0	**0**
0830 - 0845	0	1	0	0	0	0	**1**
0845 - 0900	1	0	1	0	1	1	□
P□r E□d	**2**	**7**	□	**1**	**1**	□	**1□**

C□□ □□□d	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
T□□ □P□r	T	L	R	L	R	T	TOT
0600 - 0615	4	15	14	2	3	13	**□1**
0615 - 0630	9	9	12	3	1	25	**□9**
0630 - 0645	13	10	11	1	0	35	**70**
0645 - 0700	22	32	17	3	3	40	**117**
0700 - 0715	26	36	28	2	2	62	**1□□**
0715 - 0730	21	31	33	2	3	51	**1□1**
0730 - 0745	32	45	31	4	2	56	**170**
0745 - 0800	34	47	32	3	3	45	**1□□**
0800 - 0815	32	40	41	6	8	58	**1□□**
0815 - 0830	17	36	32	4	10	19	**11□**
0830 - 0845	26	57	40	7	4	37	**171**
0845 - 0900	21	83	53	3	18	39	**217**
P□r E□d	**2□7**	**□□1**	**□□□**	**□0**	**□7**	**□□0**	**1□19**

L□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	48	64	53	8	7	113	**29□**
0615 - 0715	70	85	67	8	6	161	**□97**
0630 - 0730	82	105	88	7	8	187	**□77**
0645 - 0745	101	139	106	11	10	208	**□7□**
0700 - 0800	113	155	122	11	10	213	**□2□**
0715 - 0815	118	159	135	15	16	209	**□□2**
0730 - 0830	114	166	134	17	23	177	**□□1**
0745 - 0845	108	178	145	20	25	158	□□□
0□00 - 0900	94	215	165	20	39	151	□□□
PEA□ □R	**9□**	**21□**	**1□□**	**20**	**□9**	**1□1**	□□□

□□□□□□	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	0	2	1	1	0	0	□
0615 - 0715	0	2	1	1	0	1	□
0630 - 0730	0	4	1	1	0	1	**7**
0645 - 0745	0	5	3	0	0	1	**9**
0700 - 0800	0	4	2	0	0	1	**7**
0715 - 0815	1	4	2	0	0	1	□
0730 - 0830	1	2	2	0	0	1	□
0745 - 0845	1	2	0	0	0	1	□
0□00 - 0900	2	1	1	0	1	2	**7**
PEA□ □R	**2**	**1**	**1**	**0**	**1**	**2**	**7**

C□□ □□□d	NORT□		EAST		SO□T□		
	Oatley Pde		*Frederick St*		*Oatley Pde*		
P□□□P□r	T	L	R	L	R	T	TOT
0600 - 0700	48	66	54	9	7	113	**297**
0615 - 0715	70	87	68	9	6	162	**□02**
0630 - 0730	82	109	89	8	8	188	□□□
0645 - 0745	101	144	109	11	10	209	□□□
0700 - 0800	113	159	124	11	10	214	**□□1**
0715 - 0815	119	163	137	15	16	210	**□□0**
0730 - 0830	115	168	136	17	23	178	**□□7**
0745 - 0845	109	180	145	20	25	159	□□□
0□00 - 0900	96	216	166	20	40	153	**□91**
PEA□ □R	**9□**	**21□**	**1□□**	**20**	**□0**	**1□□**	**□91**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

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Mobile.0418239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS

T□□ □P□r	WEST River Rd	SO□T□ Mulga Rd	EAST River Rd	TOT
0600 - 0615	0	4	3	**7**
0615 - 0630	1	6	4	**11**
0630 - 0645	2	6	5	**1□**
0645 - 0700	0	23	7	**□0**
0700 - 0715	1	13	8	**22**
0715 - 0730	1	17	15	**□□**
0730 - 0745	1	36	30	**□7**
0745 - 0800	0	43	25	**□□**
0800 - 0815	0	20	12	**□2**
0815 - 0830	0	10	9	**19**
0830 - 0845	2	9	6	**17**
0845 - 0900	0	8	3	**11**
P□r E□d	**□**	**19□**	**127**	**□□0**

PEDS

P□□□P□r	WEST River Rd	SO□T□ Mulga Rd	EAST River Rd	TOT
0600 - 0700	3	39	19	**□1**
0615 - 0715	4	48	24	**7□**
0630 - 0730	4	59	35	**9□**
0645 - 0745	3	89	60	**1□2**
0700 - 0800	3	109	78	**190**
0715 - 0815	2	116	82	**200**
0730 - 0830	1	109	76	**1□□**
0745 - 0845	2	82	52	**1□□**
0□00 - 0900	2	47	30	**79**
PEA□ □R	**2**	**□7**	**□0**	**79**

L□□□□

T□□ □P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0615	9	0	0	11	5	2	**27**
0615 - 0630	8	2	3	11	4	8	**□□**
0630 - 0645	19	1	0	23	9	9	**□1**
0645 - 0700	20	3	6	31	31	11	**102**
0700 - 0715	16	7	4	34	17	14	**92**
0715 - 0730	22	6	7	36	22	16	**109**
0730 - 0745	26	10	15	31	18	19	**119**
0745 - 0800	34	14	14	43	29	19	**1□□**
0800 - 0815	29	8	4	39	32	19	**1□1**
0815 - 0830	30	6	1	35	20	6	**9□**
0830 - 0845	44	3	4	54	26	14	**1□□**
0845 - 0900	39	0	2	48	44	25	**1□□**
P□r E□d	**29□**	**□0**	**□0**	**□9□**	**2□7**	**1□2**	**12□1**

□ □□□□□

T□□ □P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0615	0	0	0	0	0	0	**0**
0615 - 0630	0	0	0	0	0	0	**0**
0630 - 0645	0	0	0	0	0	0	**0**
0645 - 0700	0	0	0	0	0	0	**0**
0700 - 0715	0	0	0	0	0	0	**0**
0715 - 0730	0	0	0	1	0	0	**1**
0730 - 0745	0	0	0	0	0	0	**0**
0745 - 0800	0	0	0	0	0	0	**0**
0800 - 0815	0	0	0	0	0	0	**0**
0815 - 0830	1	1	0	1	1	0	**□**
0830 - 0845	0	0	0	1	1	0	**2**
0845 - 0900	0	0	0	0	0	0	**0**
P□r E□d	**1**	**1**	**0**	**□**	**2**	**0**	**7**

C□□ □□□d

T□□ □P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0615	9	0	0	11	5	2	**27**
0615 - 0630	8	2	3	11	4	8	**□□**
0630 - 0645	19	1	0	23	9	9	**□1**
0645 - 0700	20	3	6	31	31	11	**102**
0700 - 0715	16	7	4	34	17	14	**92**
0715 - 0730	22	6	7	37	22	16	**110**
0730 - 0745	26	10	15	31	18	19	**119**
0745 - 0800	34	14	14	43	29	19	**1□□**
0800 - 0815	29	8	4	39	32	19	**1□1**
0815 - 0830	31	7	1	36	21	6	**102**
0830 - 0845	44	3	4	55	27	14	**1□7**
0845 - 0900	39	0	2	48	44	25	**1□□**
P□r E□d	**297**	**□1**	**□0**	**□99**	**2□9**	**1□2**	**12□□**

L□□□□

P□□□P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0700	56	6	9	76	49	30	**22□**
0615 - 0715	63	13	13	99	61	42	**291**
0630 - 0730	77	17	17	124	79	50	**□□□**
0645 - 0745	84	26	32	132	88	60	**□22**
0700 - 0800	98	37	40	144	86	68	**□7□**
0715 - 0815	111	38	40	149	101	73	**□12**
0730 - 0830	119	38	34	148	99	63	**□01**
0745 - 0845	137	31	23	171	107	58	**□27**
0□00 - 0900	142	17	11	176	122	64	**□□2**
PEA□ □R	**1□2**	**17**	**11**	**17□**	**122**	**□□**	**□□2**

□ □□□□□

P□□□P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0700	0	0	0	0	0	0	**0**
0615 - 0715	0	0	0	0	0	0	**0**
0630 - 0730	0	0	0	1	0	0	**1**
0645 - 0745	0	0	0	1	0	0	**1**
0700 - 0800	0	0	0	1	0	0	**1**
0715 - 0815	0	0	0	1	0	0	**1**
0730 - 0830	1	1	0	1	1	0	**□**
0745 - 0845	1	1	0	2	2	0	**□**
0□00 - 0900	1	1	0	2	2	0	**□**
PEA□ □R	**1**	**1**	**0**	**2**	**2**	**0**	**□**

C□□ □□□d

P□□□P□r	WEST River Rd T	WEST River Rd R	SO□T□ Mulga Rd L	SO□T□ Mulga Rd R	EAST River Rd L	EAST River Rd T	TOT
0600 - 0700	56	6	9	76	49	30	**22□**
0615 - 0715	63	13	13	99	61	42	**291**
0630 - 0730	77	17	17	125	79	50	**□□□**
0645 - 0745	84	26	32	133	88	60	**□2□**
0700 - 0800	98	37	40	145	86	68	**□7□**
0715 - 0815	111	38	40	150	101	73	**□1□**
0730 - 0830	120	39	34	149	100	63	**□0□**
0745 - 0845	138	32	23	173	109	58	**□□□**
0□00 - 0900	143	18	11	178	124	64	**□□□**
PEA□ □R	**1□□**	**1□**	**11**	**17□**	**12□**	**□□**	**□□□**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

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Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS	WEST	SO□T□	EAST	
T□□ □P□r	*River Rd*	*Mulga Rd*	*River Rd*	TOT
1600 - 1615	0	10	10	**20**
1615 - 1630	0	12	13	**2□**
1630 - 1645	0	14	16	**□0**
1645 - 1700	0	11	4	**1□**
1700 - 1715	0	15	8	**2□**
1715 - 1730	1	9	5	**1□**
1730 - 1745	0	26	17	**□□**
1745 - 1800	1	13	11	**2□**
1800 - 1815	0	12	6	**1□**
1815 - 1830	0	6	4	**10**
1830 - 1845	2	21	13	**□□**
1845 - 1900	1	13	9	**2□**
P□r E□d	**□**	**1□2**	**11□**	**2□□**

PEDS	WEST	SO□T□	EAST	
P□□□P□r	*River Rd*	*Mulga Rd*	*River Rd*	TOT
1600 - 1700	0	47	43	**90**
1615 - 1715	0	52	41	**9□**
1630 - 1730	1	49	33	**□□**
1645 - 1745	1	61	34	**9□**
1700 - 1800	2	63	41	**10□**
171□ - 1□1□	2	60	39	**101**
1730 - 1830	1	57	38	**9□**
1745 - 1845	3	52	34	**□9**
1800 - 1900	3	52	32	**□7**
PEA□ □R	**2**	**□0**	**□9**	**101**

L□□□□□

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
T□□ □P□r	T	R	L	R	L	T	TOT
1600 - 1615	31	2	1	45	57	36	**172**
1615 - 1630	24	5	3	33	43	30	**1□□**
1630 - 1645	36	4	2	35	51	32	**1□0**
1645 - 1700	27	2	2	40	57	50	**17□**
1700 - 1715	15	1	1	38	51	39	**1□□**
1715 - 1730	18	5	4	47	51	27	**1□2**
1730 - 1745	33	5	6	51	68	28	**191**
1745 - 1800	30	7	2	35	76	21	**171**
1800 - 1815	21	9	6	41	64	30	**171**
1815 - 1830	27	3	1	28	51	24	**1□□**
1830 - 1845	29	7	3	40	44	19	**1□2**
1845 - 1900	22	4	5	53	47	30	**1□1**
P□r E□d	**□1□**	**□□**	**□□**	**□□□**	**□□0**	**□□□**	**191□**

□□□□□□□

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
T□□ □P□r	T	R	L	R	L	T	TOT
1600 - 1615	0	0	0	0	1	0	**1**
1615 - 1630	0	0	0	1	0	0	**1**
1630 - 1645	0	0	0	0	0	0	**0**
1645 - 1700	0	0	0	0	2	0	**2**
1700 - 1715	0	0	0	0	0	0	**0**
1715 - 1730	0	0	0	0	0	0	**0**
1730 - 1745	0	0	0	1	0	0	**1**
1745 - 1800	0	0	0	0	1	0	**1**
1800 - 1815	0	0	0	0	0	0	**0**
1815 - 1830	0	0	0	0	0	0	**0**
1830 - 1845	0	0	0	0	0	0	**0**
1845 - 1900	0	0	0	0	0	0	**0**
P□r E□d	**0**	**0**	**0**	**2**	**□**	**0**	**□**

C□□ □□□□d

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
T□□ □P□r	T	R	L	R	L	T	TOT
1600 - 1615	31	2	1	45	58	36	**17□**
1615 - 1630	24	5	3	34	43	30	**1□9**
1630 - 1645	36	4	2	35	51	32	**1□0**
1645 - 1700	27	2	2	40	59	50	**1□0**
1700 - 1715	15	1	1	38	51	39	**1□□**
1715 - 1730	18	5	4	47	51	27	**1□2**
1730 - 1745	33	5	6	52	68	28	**192**
1745 - 1800	30	7	2	35	77	21	**172**
1800 - 1815	21	9	6	41	64	30	**171**
1815 - 1830	27	3	1	28	51	24	**1□□**
1830 - 1845	29	7	3	40	44	19	**1□2**
1845 - 1900	22	4	5	53	47	30	**1□1**
P□r E□d	**□1□**	**□□**	**□□**	**□□□**	**□□□**	**□□□**	**1921**

L□□□□□

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
P□□□P□r	T	R	L	R	L	T	TOT
1600 - 1700	118	13	8	153	208	148	**□□□**
1615 - 1715	102	12	8	146	202	151	**□21**
1630 - 1730	96	12	9	160	210	148	**□□□**
1645 - 1745	93	13	13	176	227	144	**□□□**
1700 - 1800	96	18	13	171	246	115	**□□9**
171□ - 1□1□	102	26	18	174	259	106	**□□□**
1730 - 1830	111	24	15	155	259	103	**□□7**
1745 - 1845	107	26	12	144	235	94	**□1□**
1800 - 1900	99	23	15	162	206	103	**□0□**
PEA□ □R	**102**	**2□**	**1□**	**17□**	**2□9**	**10□**	**□□□**

□□□□□□□

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
P□□□P□r	T	R	L	R	L	T	TOT
1600 - 1700	0	0	0	1	3	0	**□**
1615 - 1715	0	0	0	1	2	0	**□**
1630 - 1730	0	0	0	0	2	0	**2**
1645 - 1745	0	0	0	1	2	0	**□**
1700 - 1800	0	0	0	1	1	0	**2**
171□ - 1□1□	0	0	0	1	1	0	**2**
1730 - 1830	0	0	0	1	1	0	**2**
1745 - 1845	0	0	0	0	1	0	**1**
1800 - 1900	0	0	0	0	0	0	**0**
PEA□ □R	**0**	**0**	**0**	**1**	**1**	**0**	**2**

C□□ □□□□d

	WEST		SO□T□		EAST		
	River Rd		*Mulga Rd*		*River Rd*		
P□□□P□r	T	R	L	R	L	T	TOT
1600 - 1700	118	13	8	154	211	148	**□□2**
1615 - 1715	102	12	8	147	204	151	**□2□**
1630 - 1730	96	12	9	160	212	148	**□□7**
1645 - 1745	93	13	13	177	229	144	**□□9**
1700 - 1800	96	18	13	172	247	115	**□□1**
171□ - 1□1□	102	26	18	175	260	106	**□□7**
1730 - 1830	111	24	15	156	260	103	**□□9**
1745 - 1845	107	26	12	144	236	94	**□19**
1800 - 1900	99	23	15	162	206	103	**□0□**
PEA□ □R	**102**	**2□**	**1□**	**17□**	**2□0**	**10□**	**□□7**

R□O□A□R□ DATA

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Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS

T□□ □P□r	WEST Hurstville Rd	SO□T□ Oatley Pde	EAST Hurstville Rd	TOT
0600 - 0615	0	0	0	**0**
0615 - 0630	0	0	1	**1**
0630 - 0645	0	0	2	**2**
0645 - 0700	1	0	0	**1**
0700 - 0715	0	0	3	□
0715 - 0730	1	0	1	**2**
0730 - 0745	0	0	2	**2**
0745 - 0800	0	0	1	**1**
0800 - 0815	0	0	3	□
0815 - 0830	1	0	2	□
0830 - 0845	0	0	2	**2**
0845 - 0900	0	0	1	**1**
P□r E□d	□	**0**	**1□**	**21**

PEDS

P□□□P□r	WEST Hurstville Rd	SO□T□ Oatley Pde	EAST Hurstville Rd	TOT
0600 - 0700	1	0	3	□
0615 - 0715	1	0	6	**7**
0630 - 0730	2	0	6	□
0645 - 0745	2	0	6	□
0700 - 0800	1	0	7	□
0715 - 0815	1	0	7	□
0730 - 0830	1	0	8	**9**
0745 - 0845	1	0	8	**9**
0□00 - 0900	1	0	8	**9**
PEA□ □R	**1**	**0**	□	**9**

L□□□□□

T□□ □P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0615	18	12	17	28	9	26	**110**
0615 - 0630	44	10	19	33	9	42	**1□7**
0630 - 0645	79	12	26	45	15	39	**21□**
0645 - 0700	66	27	30	41	22	77	**2□□**
0700 - 0715	75	23	37	70	26	70	**□01**
0715 - 0730	81	17	34	65	14	67	**27□**
0730 - 0745	88	32	32	64	28	75	**□19**
0745 - 0800	91	32	31	54	31	82	**□21**
0800 - 0815	90	28	36	68	30	69	**□21**
0815 - 0830	93	27	30	52	25	105	**□□2**
0830 - 0845	130	23	26	63	32	115	**□□9**
0845 - 0900	91	55	24	80	31	85	□□□
P□r E□d	**9□□**	**29□**	**□□2**	□□□	**272**	**□□2**	**□□7□**

□ □□□□□□

P□□□P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0700	1	0	0	0	0	0	**1**
0615 - 0715	0	0	0	0	0	0	**0**
0630 - 0730	0	0	0	0	0	0	**0**
0645 - 0745	1	0	1	0	2	3	**7**
0700 - 0800	2	0	0	1	0	2	□
0715 - 0815	1	0	0	0	2	2	□
0730 - 0830	0	0	1	0	0	0	**1**
0745 - 0845	0	1	0	1	0	0	**2**
0800 - 0815	1	1	0	0	0	0	**2**
0815 - 0830	0	0	0	1	0	2	□
0830 - 0845	0	0	0	0	1	1	**2**
0845 - 0900	0	0	1	0	0	0	**1**
P□r E□d	□	**2**	□	□	□	**10**	**29**

C□□ □□□d

T□□ □P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0615	19	12	17	28	9	26	**111**
0615 - 0630	44	10	19	33	9	42	**1□7**
0630 - 0645	79	12	26	45	15	39	**21□**
0645 - 0700	67	27	31	41	24	80	**270**
0700 - 0715	77	23	37	71	26	72	**□0□**
0715 - 0730	82	17	34	65	16	69	**2□□**
0730 - 0745	88	32	33	64	28	75	**□20**
0745 - 0800	91	33	31	55	31	82	**□2□**
0800 - 0815	91	29	36	68	30	69	**□2□**
0815 - 0830	93	27	30	53	25	107	□□□
0830 - 0845	130	23	26	63	33	116	**□91**
0845 - 0900	91	55	25	80	31	85	**□□7**
P□r E□d	**9□2**	**□00**	□□□	□□□	**277**	**□□2**	**□□02**

L□□□□□

P□□□P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0700	207	61	92	147	55	184	**7□□**
0615 - 0715	264	72	112	189	72	228	**9□7**
0630 - 0730	301	79	127	221	77	253	**10□□**
0645 - 0745	310	99	133	240	90	289	**11□1**
0700 - 0800	335	104	134	253	99	294	**1219**
0715 - 0815	350	109	133	251	103	293	**12□9**
0730 - 0830	362	119	129	238	114	331	**129□**
0745 - 0845	404	110	123	237	118	371	**1□□□**
0□00 - 0900	404	133	116	263	118	374	**1□0□**
PEA□ □R	**□0□**	**1□□**	**11□**	**2□□**	**11□**	**□7□**	**1□0□**

□ □□□□□□

P□□□P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0700	2	0	1	0	2	3	□
0615 - 0715	3	0	1	1	2	5	**12**
0630 - 0730	4	0	1	1	4	7	**17**
0645 - 0745	4	0	2	1	4	7	**1□**
0700 - 0800	3	1	1	2	2	4	**1□**
0715 - 0815	2	2	1	1	2	2	**10**
0730 - 0830	1	2	1	2	0	2	□
0745 - 0845	1	2	0	2	1	3	**9**
0□00 - 0900	1	1	1	1	1	3	□
PEA□ □R	**1**	**1**	**1**	**1**	**1**	□	□

C□□ □□□d

P□□□P□r	WEST Hurstville Rd T	WEST Hurstville Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde R	EAST Hurstville Rd L	EAST Hurstville Rd T	TOT
0600 - 0700	209	61	93	147	57	187	**7□□**
0615 - 0715	267	72	113	190	74	233	**9□9**
0630 - 0730	305	79	128	222	81	260	**107□**
0645 - 0745	314	99	135	241	94	296	**1179**
0700 - 0800	338	105	135	255	101	298	**12□2**
0715 - 0815	352	111	134	252	105	295	**12□9**
0730 - 0830	363	121	130	240	114	333	**1□01**
0745 - 0845	405	112	123	239	119	374	**1□72**
0□00 - 0900	405	134	117	264	119	377	**1□1□**
PEA□ □R	**□0□**	**1□□**	**117**	**2□□**	**119**	**□77**	**1□1□**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS

T□□ □P□r	WEST *Hurstville Rd*	SO□T□ *Oatley Pde*	EAST *Hurstville Rd*	TOT
1600 - 1615	0	0	0	**0**
1615 - 1630	0	0	0	**0**
1630 - 1645	0	0	0	**0**
1645 - 1700	0	0	0	**0**
1700 - 1715	0	0	1	**1**
1715 - 1730	0	0	1	**1**
1730 - 1745	0	0	1	**1**
1745 - 1800	0	0	0	**0**
1800 - 1815	0	0	0	**0**
1815 - 1830	0	0	1	**1**
1830 - 1845	0	0	0	**0**
1845 - 1900	0	0	1	**1**
P□r E□d	**0**	**0**	□	□

PEDS

P□□□P□r	WEST *Hurstville Rd*	SO□T□ *Oatley Pde*	EAST *Hurstville Rd*	TOT
1600 - 1700	0	0	0	**0**
1615 - 1715	0	0	1	**1**
1□□0 - 17□0	0	0	2	**2**
1645 - 1745	0	0	3	□
1700 - 1800	0	0	3	□
1715 - 1815	0	0	2	**2**
1730 - 1830	0	0	2	**2**
1745 - 1845	0	0	1	**1**
1800 - 1900	0	0	2	**2**
PEA□ □R	**0**	**0**	**2**	**2**

L□□□□

T□□ □P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1615	95	54	39	40	40	119	□□7
1615 - 1630	91	41	34	48	71	108	□9□
1630 - 1645	88	56	35	40	66	104	□□9
1645 - 1700	86	52	42	38	64	130	□12
1700 - 1715	95	58	25	43	61	116	□9□
1715 - 1730	88	44	35	56	65	118	□0□
1730 - 1745	83	46	31	40	71	94	□□□
1745 - 1800	95	68	27	47	77	97	□11
1800 - 1815	77	46	34	54	69	100	□□0
1815 - 1830	72	33	31	33	67	67	□0□
1830 - 1845	75	40	32	49	45	70	□11
1845 - 1900	77	47	25	43	54	65	□11
P□r E□d	**1022**	□□□	**□90**	**□□1**	**7□0**	**11□□**	□□□□

□ □□□□□□

T□□ □P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1615	0	0	0	0	0	0	**0**
1615 - 1630	0	0	1	0	0	0	**1**
1630 - 1645	0	0	0	0	0	0	**0**
1645 - 1700	0	0	0	0	0	0	**0**
1700 - 1715	0	0	0	0	0	1	**1**
1715 - 1730	0	0	0	0	0	0	**0**
1730 - 1745	0	0	0	0	0	0	**0**
1745 - 1800	0	0	0	0	0	0	**0**
1800 - 1815	0	0	0	0	0	0	**0**
1815 - 1830	0	0	0	0	0	0	**0**
1830 - 1845	0	0	0	0	0	0	**0**
1845 - 1900	0	0	0	0	0	0	**0**
P□r E□d	**0**	**0**	**1**	**0**	**0**	**1**	**2**

C□□ □□□d

T□□ □P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1615	95	54	39	40	40	119	□□7
1615 - 1630	91	41	35	48	71	108	□9□
1630 - 1645	88	56	35	40	66	104	□□9
1645 - 1700	86	52	42	38	64	130	□12
1700 - 1715	95	58	25	43	61	117	□99
1715 - 1730	88	44	35	56	65	118	□0□
1730 - 1745	83	46	31	40	71	94	□□□
1745 - 1800	95	68	27	47	77	97	□11
1800 - 1815	77	46	34	54	69	100	□□0
1815 - 1830	72	33	31	33	67	67	□0□
1830 - 1845	75	40	32	49	45	70	□11
1845 - 1900	77	47	25	43	54	65	□11
P□r E□d	**1022**	□□□	**□91**	**□□1**	**7□0**	**11□9**	□□□□

L□□□□

P□□□P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1700	360	203	150	166	241	461	1□□1
1615 - 1715	360	207	136	169	262	458	1□92
1□□0 - 17□0	357	210	137	177	256	468	1□0□
1645 - 1745	352	200	133	177	261	458	1□□1
1700 - 1800	361	216	118	186	274	425	1□□0
1715 - 1815	343	204	127	197	282	409	1□□2
1730 - 1830	327	193	123	174	284	358	1□□9
1745 - 1845	319	187	124	183	258	334	1□0□
1800 - 1900	301	166	122	179	235	302	1□0□
PEA□ □R	**□□7**	**210**	**1□7**	**177**	**2□□**	□□□	**1□0□**

□ □□□□□□

P□□□P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1700	0	0	1	0	0	0	**1**
1615 - 1715	0	0	1	0	0	1	**2**
1□□0 - 17□0	0	0	0	0	0	1	**1**
1645 - 1745	0	0	0	0	0	1	**1**
1700 - 1800	0	0	0	0	0	1	**1**
1715 - 1815	0	0	0	0	0	0	**0**
1730 - 1830	0	0	0	0	0	0	**0**
1745 - 1845	0	0	0	0	0	0	**0**
1800 - 1900	0	0	0	0	0	0	**0**
PEA□ □R	**0**	**0**	**0**	**0**	**0**	**1**	**1**

C□□ □□□d

P□□□P□r	WEST *Hurstville Rd* T	WEST *Hurstville Rd* R	SO□T□ *Oatley Pde* L	SO□T□ *Oatley Pde* R	EAST *Hurstville Rd* L	EAST *Hurstville Rd* T	TOT
1600 - 1700	360	203	151	166	241	461	1□□2
1615 - 1715	360	207	137	169	262	459	1□9□
1□□0 - 17□0	357	210	137	177	256	469	1□0□
1645 - 1745	352	200	133	177	261	459	1□□2
1700 - 1800	361	216	118	186	274	426	1□□1
1715 - 1815	343	204	127	197	282	409	1□□2
1730 - 1830	327	193	123	174	284	358	1□□9
1745 - 1845	319	187	124	183	258	334	1□0□
1800 - 1900	301	166	122	179	235	302	1□0□
PEA□ □R	**□□7**	**210**	**1□7**	**177**	**2□□**	**□□9**	**1□0□**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client : G.H.D

Job No/Name : 4881 OATLEY Traffic & Parking

Day/Date : Wednesday / 13th November 2013

PEDS	NORT□	WEST	SO□T□	
T□□ □P□r	*Oatley Pde*	*River Rd*	*Oatley Pde*	TOT
0600 - 0615	1	2	0	□
0615 - 0630	3	5	0	□
0630 - 0645	9	4	0	**1□**
0645 - 0700	4	5	0	**9**
0700 - 0715	12	7	0	**19**
0715 - 0730	8	12	0	**20**
0730 - 0745	16	15	0	**□1**
0745 - 0800	24	21	1	□□
0800 - 0815	17	17	2	□□
0815 - 0830	53	40	0	**9□**
0830 - 0845	73	62	0	**1□□**
0845 - 0900	14	17	1	**□2**
P□r E□d	**2□□**	**207**	□	□□□

PEDS	NORT□	WEST	SO□T□	
P□□□ P□r	*Oatley Pde*	*River Rd*	*Oatley Pde*	TOT
0600 - 0700	17	16	0	□□
0615 - 0715	28	21	0	**□9**
0630 - 0730	33	28	0	**□1**
0645 - 0745	40	39	0	**79**
0700 - 0800	60	55	1	**11□**
0715 - 0815	65	65	3	**1□□**
0730 - 0830	110	93	3	**20□**
0745 - 0845	167	140	3	**□10**
0□00 - 0900	157	136	3	**29□**
PEA□ □R	**1□7**	**1□□**	□	**29□**

L□□□□	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
T□□ □P□r	T	R	L	R	L	T	TOT
0600 - 0615	18	3	20	5	6	25	**77**
0615 - 0630	13	6	16	3	7	36	**□1**
0630 - 0645	19	8	25	12	7	46	**117**
0645 - 0700	40	19	26	15	13	45	**1□□**
0700 - 0715	29	20	46	17	22	61	**19□**
0715 - 0730	21	10	30	22	22	59	**1□□**
0730 - 0745	45	14	36	22	25	57	**199**
0745 - 0800	35	20	39	25	20	39	**17□**
0800 - 0815	44	24	48	30	34	59	**2□9**
0815 - 0830	31	12	43	18	8	38	**1□0**
0830 - 0845	38	13	43	43	25	52	**21□**
0845 - 0900	57	24	43	46	31	60	**2□1**
P□r E□d	**□90**	**17□**	**□1□**	**2□□**	**220**	**□77**	**20□□**

□□□□□□	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
T□□ □P□r	T	R	L	R	L	T	TOT
0600 - 0615	0	0	0	0	0	0	**0**
0615 - 0630	0	0	0	0	0	0	**0**
0630 - 0645	0	0	0	0	0	0	**0**
0645 - 0700	2	0	0	0	0	1	□
0700 - 0715	0	0	0	0	0	1	**1**
0715 - 0730	2	0	0	1	0	0	□
0730 - 0745	0	0	0	0	0	1	**1**
0745 - 0800	1	0	0	0	0	1	**2**
0800 - 0815	1	0	0	0	1	0	**2**
0815 - 0830	0	0	1	0	0	0	**1**
0830 - 0845	1	1	0	0	0	0	**2**
0845 - 0900	0	0	0	1	0	1	**2**
P□r E□d	**7**	**1**	**1**	**2**	**1**	□	**17**

C□□ □□□d	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
T□□ □P□r	T	R	L	R	L	T	TOT
0600 - 0615	18	3	20	5	6	25	**77**
0615 - 0630	13	6	16	3	7	36	**□1**
0630 - 0645	19	8	25	12	7	46	**117**
0645 - 0700	42	19	26	15	13	46	**1□1**
0700 - 0715	29	20	46	17	22	62	**19□**
0715 - 0730	23	10	30	23	22	59	**1□7**
0730 - 0745	45	14	36	22	25	58	**200**
0745 - 0800	36	20	39	25	20	40	**1□0**
0800 - 0815	45	24	48	30	35	59	**2□1**
0815 - 0830	31	12	44	18	8	38	**1□1**
0830 - 0845	39	14	43	43	25	52	**21□**
0845 - 0900	57	24	43	47	31	61	**2□□**
P□r E□d	**□97**	**17□**	**□1□**	**2□0**	**221**	**□□2**	**20□0**

L□□□□	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
P□□□ P□r	T	R	L	R	L	T	TOT
0600 - 0700	90	36	87	35	33	152	□□□
0615 - 0715	101	53	113	47	49	188	□□**1**
0630 - 0730	109	57	127	66	64	211	□□□
0645 - 0745	135	63	138	76	82	222	**71□**
0700 - 0800	130	64	151	86	89	216	**7□□**
0715 - 0815	145	68	153	99	101	214	**7□0**
0730 - 0830	155	70	166	95	87	193	**7□□**
0745 - 0845	148	69	173	116	87	188	**7□1**
0□00 - 0900	170	73	177	137	98	209	□□□
PEA□ □R	**170**	**7□**	**177**	**1□7**	**9□**	**209**	□□□

□□□□□□	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
P□□□ P□r	T	R	L	R	L	T	TOT
0600 - 0700	2	0	0	0	0	1	□
0615 - 0715	2	0	0	0	0	2	□
0630 - 0730	4	0	0	1	0	2	**7**
0645 - 0745	4	0	0	1	0	3	□
0700 - 0800	3	0	0	1	0	3	**7**
0715 - 0815	4	0	0	1	1	2	□
0730 - 0830	2	0	1	0	1	2	□
0745 - 0845	3	1	1	0	1	1	**7**
0□00 - 0900	2	1	1	1	1	1	**7**
PEA□ □R	**2**	**1**	**1**	**1**	**1**	**1**	**7**

C□□ □□□d	NORT□		WEST		SO□T□		
	Oatley Pde		*River Rd*		*Oatley Pde*		
P□□□ P□r	T	R	L	R	L	T	TOT
0600 - 0700	92	36	87	35	33	153	□□□
0615 - 0715	103	53	113	47	49	190	□□□
0630 - 0730	113	57	127	67	64	213	□□**1**
0645 - 0745	139	63	138	77	82	225	**72□**
0700 - 0800	133	64	151	87	89	219	**7□□**
0715 - 0815	149	68	153	100	102	216	**7□□**
0730 - 0830	157	70	167	95	88	195	**772**
0745 - 0845	151	70	174	116	88	189	**7□□**
0□00 - 0900	172	74	178	138	99	210	**□71**
PEA□ □R	**172**	**7□**	**17□**	**1□□**	**99**	**210**	**□71**

R□O□A□R□ DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS

T□□ □P□r	NORT□ Oatley Pde	WEST River Rd	SO□T□ Oatley Pde	TOT
1600 - 1615	18	20	0	□□
1615 - 1630	10	4	2	1□
1630 - 1645	8	4	3	1□
1645 - 1700	4	3	1	□
1700 - 1715	10	4	2	1□
1715 - 1730	22	25	0	□7
1730 - 1745	15	10	2	27
1745 - 1800	10	11	2	2□
1800 - 1815	11	8	1	20
1815 - 1830	18	18	1	□7
1830 - 1845	13	11	3	27
1845 - 1900	9	10	0	19
P□r E□d	1□□	12□	17	29□

PEDS

P□□□P□r	NORT□ Oatley Pde	WEST River Rd	SO□T□ Oatley Pde	TOT
1600 - 1700	40	31	6	77
1615 - 1715	32	15	8	□□
1630 - 1730	44	36	6	□□
1645 - 1745	51	42	5	9□
1700 - 1□00	57	50	6	11□
1715 - 1815	58	54	5	117
1730 - 1830	54	47	6	107
1745 - 1845	52	48	7	107
1800 - 1900	51	47	5	10□
PEA□ □R	□7	□0	□	11□

L□□□□

T□□ □P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1615	62	35	31	40	45	48	2□1
1615 - 1630	66	45	38	27	39	43	2□□
1630 - 1645	73	52	28	36	36	47	272
1645 - 1700	67	45	24	35	46	55	272
1700 - 1715	73	46	33	27	60	42	2□1
1715 - 1730	69	41	41	23	31	52	2□7
1730 - 1745	67	48	35	37	34	44	2□□
1745 - 1800	87	54	33	26	40	40	2□0
1800 - 1815	55	56	33	24	40	54	2□2
1815 - 1830	49	45	27	27	25	41	21□
1830 - 1845	41	40	37	33	30	45	22□
1845 - 1900	66	39	44	25	30	32	2□□
P□r E□d	77□	□□□	□0□	□□0	□□□	□□□	□0□□

□□□□□□

T□□ □P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1615	0	0	0	0	1	0	1
1615 - 1630	0	0	0	0	0	1	1
1630 - 1645	0	0	0	1	0	0	1
1645 - 1700	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	1	0	1
1715 - 1730	0	0	0	0	0	0	0
1730 - 1745	0	0	0	1	0	0	1
1745 - 1800	0	0	0	0	1	0	1
1800 - 1815	0	0	0	0	0	0	0
1815 - 1830	0	0	0	0	0	0	0
1830 - 1845	0	0	0	0	0	0	0
1845 - 1900	0	0	0	0	0	0	0
P□r E□d	0	0	0	2	□	1	□

C□□ □□□d

T□□ □P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1615	62	35	31	40	46	48	2□2
1615 - 1630	66	45	38	27	39	44	2□9
1630 - 1645	73	52	28	37	36	47	27□
1645 - 1700	67	45	24	35	46	55	272
1700 - 1715	73	46	33	27	61	42	2□2
1715 - 1730	69	41	41	23	31	52	2□7
1730 - 1745	67	48	35	38	34	44	2□□
1745 - 1800	87	54	33	26	41	40	2□1
1800 - 1815	55	56	33	24	40	54	2□2
1815 - 1830	49	45	27	27	25	41	21□
1830 - 1845	41	40	37	33	30	45	22□
1845 - 1900	66	39	44	25	30	32	2□□
P□r E□d	77□	□□□	□0□	□□2	□9	□□□	□090

L□□□□

P□□□P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1700	268	177	121	138	166	193	10□□
1615 - 1715	279	188	123	125	181	187	10□□
1630 - 1730	282	184	126	121	173	196	10□2
1645 - 1745	276	180	133	122	171	193	107□
1700 - 1□00	296	189	142	113	165	178	10□□
1715 - 1815	278	199	142	110	145	190	10□□
1730 - 1830	258	203	128	114	139	179	1021
1745 - 1845	232	195	130	110	135	180	9□2
1800 - 1900	211	180	141	109	125	172	9□□
PEA□ □R	29□	1□9	1□2	11□	1□□	17□	10□□

□□□□□□

P□□□P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1700	0	0	0	1	1	1	□
1615 - 1715	0	0	0	1	1	1	□
1630 - 1730	0	0	0	1	1	0	2
1645 - 1745	0	0	0	1	1	0	2
1700 - 1□00	0	0	0	1	2	0	□
1715 - 1815	0	0	0	1	1	0	2
1730 - 1830	0	0	0	1	1	0	2
1745 - 1845	0	0	0	0	1	0	1
1800 - 1900	0	0	0	0	0	0	0
PEA□ □R	0	0	0	1	2	0	□

C□□ □□□d

P□□□P□r	NORT□ Oatley Pde T	NORT□ Oatley Pde R	WEST River Rd L	WEST River Rd R	SO□T□ Oatley Pde L	SO□T□ Oatley Pde T	TOT
1600 - 1700	268	177	121	139	167	194	10□□
1615 - 1715	279	188	123	126	182	188	10□□
1630 - 1730	282	184	126	122	174	196	10□□
1645 - 1745	276	180	133	123	172	193	1077
1700 - 1□00	296	189	142	114	167	178	10□□
1715 - 1815	278	199	142	111	146	190	10□□
1730 - 1830	258	203	128	115	140	179	102□
1745 - 1845	232	195	130	110	136	180	9□□
1800 - 1900	211	180	141	109	125	172	9□□
PEA□ □R	29□	1□9	1□2	11□	1□7	17□	10□□

Appendix B – SIDRA Outputs

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- AM Existing Condition

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	161	1.3	0.117	1.3	LOS A	0.7	5.2	0.43	0.18	51.2
3	R2	42	2.5	0.117	9.7	LOS A	0.7	5.2	0.43	0.18	51.2
Approach		203	1.6	0.117	3.0	NA	0.7	5.2	0.43	0.18	51.2
East: Frederick Street											
4	L2	21	0.0	0.214	10.0	LOS B	0.8	5.5	0.37	0.75	46.7
6	R2	175	0.6	0.214	10.3	LOS B	0.8	5.5	0.37	0.75	46.7
Approach		196	0.5	0.214	10.2	LOS B	0.8	5.5	0.37	0.75	46.7
North: Oatley Parade (North)											
7	L2	227	0.5	0.175	8.2	LOS A	0.0	0.0	0.00	0.52	51.8
8	T1	101	2.1	0.175	0.0	LOS A	0.0	0.0	0.00	0.52	51.8
Approach		328	1.0	0.175	5.7	NA	0.0	0.0	0.00	0.52	51.8
All Vehicles		727	1.0	0.214	6.2	NA	0.8	5.5	0.22	0.49	50.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- AM Existing Condition

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	161	1.3	0.117	1.3	LOS A	0.7	5.2	0.43	0.18	51.2
3	R2	42	2.5	0.117	9.7	LOS A	0.7	5.2	0.43	0.18	51.2
Approach		203	1.6	0.117	3.0	NA	0.7	5.2	0.43	0.18	51.2
East: Frederick Street											
4	L2	21	0.0	0.214	10.0	LOS B	0.8	5.5	0.37	0.75	46.7
6	R2	175	0.6	0.214	10.3	LOS B	0.8	5.5	0.37	0.75	46.7
Approach		196	0.5	0.214	10.2	LOS B	0.8	5.5	0.37	0.75	46.7
North: Oatley Parade (North)											
7	L2	227	0.5	0.175	8.2	LOS A	0.0	0.0	0.00	0.52	51.8
8	T1	101	2.1	0.175	0.0	LOS A	0.0	0.0	0.00	0.52	51.8
Approach		328	1.0	0.175	5.7	NA	0.0	0.0	0.00	0.52	51.8
All Vehicles		727	1.0	0.214	6.2	NA	0.8	5.5	0.22	0.49	50.2

Level of Service (LOS) Method: Delay (HCM 2000).
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.

Processed: Thursday, 5 December 2013 2:59:31 PM
SIDRA INTERSECTION 6.0.15.4263
Project: G:\21\22971\Technical\Traffic\SIDRA\Oatley Parade - Frederick Street.sip6
8000065, GHD SERVICES PTY LTD, NETWORK / Enterprise
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www.sidrasolutions.com
SIDRA INTERSECTION 6

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- AM Design Scenario

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	176	1.2	0.125	1.3	LOS A	0.8	5.6	0.44	0.17	51.2
3	R2	43	2.4	0.125	9.7	LOS A	0.8	5.6	0.44	0.17	51.2
Approach		219	1.4	0.125	3.0	NA	0.8	5.6	0.44	0.17	51.2
East: Frederick Street											
4	L2	21	0.0	0.217	10.1	LOS B	0.8	5.6	0.38	0.75	46.6
6	R2	175	0.6	0.217	10.4	LOS B	0.8	5.6	0.38	0.75	46.6
Approach		196	0.5	0.217	10.3	LOS B	0.8	5.6	0.38	0.75	46.6
North: Oatley Parade (North)											
7	L2	227	0.5	0.175	8.2	LOS A	0.0	0.0	0.00	0.52	51.8
8	T1	101	2.1	0.175	0.0	LOS A	0.0	0.0	0.00	0.52	51.8
Approach		328	1.0	0.175	5.7	NA	0.0	0.0	0.00	0.52	51.8
All Vehicles		743	1.0	0.217	6.1	NA	0.8	5.6	0.23	0.48	50.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- PM Design Scenario

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	161	0.0	0.091	1.8	LOS A	0.7	4.6	0.50	0.05	51.1
3	R2	9	0.0	0.091	10.3	LOS B	0.7	4.6	0.50	0.05	51.1
Approach		171	0.0	0.091	2.3	NA	0.7	4.6	0.50	0.05	51.1
East: Frederick Street											
4	L2	27	0.0	0.255	10.6	LOS B	0.9	6.6	0.46	0.79	46.2
6	R2	187	1.1	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
Approach		215	1.0	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
North: Oatley Parade (North)											
7	L2	241	0.4	0.235	8.2	LOS A	0.0	0.0	0.00	0.43	53.5
8	T1	205	0.0	0.235	0.0	LOS A	0.0	0.0	0.00	0.43	53.5
Approach		446	0.2	0.235	4.4	NA	0.0	0.0	0.00	0.43	53.5
All Vehicles		832	0.4	0.255	5.6	NA	0.9	6.6	0.22	0.45	50.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- PM Peak

New Site
Giveway / Yield (Two-Way)

Movements - Oatley Parade - Frederick Street

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	161	0.0	0.091	1.8	LOS A	0.7	4.6	0.50	0.05	51.1
3	R2	9	0.0	0.091	10.3	LOS B	0.7	4.6	0.50	0.05	51.1
Approach		171	0.0	0.091	2.3	NA	0.7	4.6	0.50	0.05	51.1
East: Frederick Street											
4	L2	27	0.0	0.255	10.6	LOS B	0.9	6.6	0.46	0.79	46.2
6	R2	187	1.1	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
Approach		215	1.0	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
North: Oatley Parade (North)											
7	L2	241	0.4	0.235	8.2	LOS A	0.0	0.0	0.00	0.43	53.5
8	T1	205	0.0	0.235	0.0	LOS A	0.0	0.0	0.00	0.43	53.5
Approach		446	0.2	0.235	4.4	NA	0.0	0.0	0.00	0.43	53.5
All Vehicles		832	0.4	0.255	5.6	NA	0.9	6.6	0.22	0.45	50.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Frederick Street -- PM Peak

New Site
Giveway / Yield (Two-Way)

Movements - Oatley Parade - Frederick Street

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
2	T1	161	0.0	0.091	1.8	LOS A	0.7	4.6	0.50	0.05	51.1
3	R2	9	0.0	0.091	10.3	LOS B	0.7	4.6	0.50	0.05	51.1
Approach		171	0.0	0.091	2.3	NA	0.7	4.6	0.50	0.05	51.1
East: Frederick Street											
4	L2	27	0.0	0.255	10.6	LOS B	0.9	6.6	0.46	0.79	46.2
6	R2	187	1.1	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
Approach		215	1.0	0.255	10.8	LOS B	0.9	6.6	0.46	0.79	46.2
North: Oatley Parade (North)											
7	L2	241	0.4	0.235	8.2	LOS A	0.0	0.0	0.00	0.43	53.5
8	T1	205	0.0	0.235	0.0	LOS A	0.0	0.0	0.00	0.43	53.5
Approach		446	0.2	0.235	4.4	NA	0.0	0.0	0.00	0.43	53.5
All Vehicles		832	0.4	0.255	5.6	NA	0.9	6.6	0.22	0.45	50.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- AM Existing Road

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	123	0.9	0.474	12.0	LOS B	3.4	23.9	0.72	1.67	43.8
3	R2	278	0.4	0.474	14.1	LOS B	3.4	23.9	0.72	1.67	43.8
Approach		401	0.5	0.474	13.5	LOS B	3.4	23.9	0.72	0.83	43.8
East: Hurstville Road (East)											
4	L2	125	0.8	0.454	9.7	LOS A	3.7	25.8	0.49	1.25	47.3
5	T1	397	0.8	0.454	8.4	LOS A	3.7	25.8	0.49	1.25	47.3
Approach		522	0.8	0.454	8.7	LOS A	3.7	25.8	0.49	0.62	47.3
West: Hurstville Road (West)											
11	T1	426	0.2	0.587	10.3	LOS B	5.3	37.2	0.73	1.53	45.7
12	R2	141	0.7	0.587	13.6	LOS B	5.3	37.2	0.73	1.53	45.7
Approach		567	0.4	0.587	11.1	LOS B	5.3	37.2	0.73	0.77	45.7
All Vehicles		1491	0.6	0.587	10.9	LOS B	5.3	37.2	0.64	0.73	45.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- AM Future Case

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	123	0.9	0.476	12.1	LOS B	3.4	24.2	0.72	1.67	43.8
3	R2	278	0.4	0.476	14.1	LOS B	3.4	24.2	0.72	1.67	43.8
Approach		401	0.5	0.476	13.5	LOS B	3.4	24.2	0.72	0.83	43.8
East: Hurstville Road (East)											
4	L2	157	20.8	0.494	9.8	LOS A	4.2	30.7	0.52	1.23	47.1
5	T1	397	0.8	0.494	8.6	LOS A	4.2	30.7	0.52	1.23	47.1
Approach		554	6.5	0.494	8.9	LOS A	4.2	30.7	0.52	0.62	47.1
West: Hurstville Road (West)											
11	T1	426	0.2	0.587	10.3	LOS B	5.3	37.3	0.73	1.53	45.7
12	R2	141	0.7	0.587	13.6	LOS B	5.3	37.3	0.73	1.53	45.7
Approach		567	0.4	0.587	11.1	LOS B	5.3	37.3	0.73	0.77	45.7
All Vehicles		1522	2.6	0.587	10.9	LOS B	5.3	37.3	0.65	0.73	45.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- AM Design

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	126	0.8	0.486	12.2	LOS B	3.6	25.1	0.72	1.68	43.7
3	R2	284	0.4	0.486	14.2	LOS B	3.6	25.1	0.72	1.68	43.7
Approach		411	0.5	0.486	13.6	LOS B	3.6	25.1	0.72	0.84	43.7
East: Hurstville Road (East)											
4	L2	125	0.8	0.454	9.7	LOS A	3.7	25.9	0.49	1.25	47.3
5	T1	397	0.8	0.454	8.4	LOS A	3.7	25.9	0.49	1.25	47.3
Approach		522	0.8	0.454	8.7	LOS A	3.7	25.9	0.49	0.62	47.3
West: Hurstville Road (West)											
11	T1	426	0.2	0.592	10.5	LOS B	5.4	38.1	0.74	1.55	45.6
12	R2	141	0.7	0.592	13.7	LOS B	5.4	38.1	0.74	1.55	45.6
Approach		567	0.4	0.592	11.3	LOS B	5.4	38.1	0.74	0.78	45.6
All Vehicles		1500	0.6	0.592	11.0	LOS B	5.4	38.1	0.65	0.74	45.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- PM Existing Conditions

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	124	0.0	0.410	12.0	LOS B	2.8	19.9	0.74	1.68	44.0
3	R2	196	0.0	0.410	14.1	LOS B	2.8	19.9	0.74	1.68	44.0
Approach		320	0.0	0.410	13.3	LOS B	2.8	19.9	0.74	0.84	44.0
East: Hurstville Road (East)											
4	L2	288	0.0	0.697	11.9	LOS B	8.1	56.6	0.78	1.50	45.7
5	T1	448	0.2	0.697	10.7	LOS B	8.1	56.6	0.78	1.50	45.7
Approach		737	0.1	0.697	11.2	LOS B	8.1	56.6	0.78	0.75	45.7
West: Hurstville Road (West)											
11	T1	380	0.0	0.562	9.1	LOS A	5.0	34.8	0.63	1.39	46.1
12	R2	227	0.0	0.562	12.4	LOS B	5.0	34.8	0.63	1.39	46.1
Approach		607	0.0	0.562	10.3	LOS B	5.0	34.8	0.63	0.69	46.1
All Vehicles		1664	0.1	0.697	11.3	LOS B	8.1	56.6	0.72	0.75	45.5

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- PM (Current)

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	124	0.0	0.479	13.0	LOS B	3.6	27.3	0.78	1.75	43.1
3	R2	227	13.9	0.479	15.0	LOS B	3.6	27.3	0.78	1.75	43.1
Approach		352	9.0	0.479	14.3	LOS B	3.6	27.3	0.78	0.87	43.1
East: Hurstville Road (East)											
4	L2	288	0.0	0.701	12.0	LOS B	8.3	58.0	0.79	1.50	45.7
5	T1	448	0.2	0.701	10.8	LOS B	8.3	58.0	0.79	1.50	45.7
Approach		737	0.1	0.701	11.2	LOS B	8.3	58.0	0.79	0.75	45.7
West: Hurstville Road (West)											
11	T1	380	0.0	0.599	9.8	LOS A	5.5	38.7	0.72	1.48	45.6
12	R2	227	0.0	0.599	13.1	LOS B	5.5	38.7	0.72	1.48	45.6
Approach		607	0.0	0.599	11.0	LOS B	5.5	38.7	0.72	0.74	45.6
All Vehicles		1696	1.9	0.701	11.8	LOS B	8.3	58.0	0.76	0.77	45.1

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - Hurstville Road -- PM (Design)

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade											
1	L2	124	0.0	0.410	12.0	LOS B	2.8	19.9	0.74	1.68	44.0
3	R2	196	0.0	0.410	14.1	LOS B	2.8	19.9	0.74	1.68	44.0
Approach		320	0.0	0.410	13.3	LOS B	2.8	19.9	0.74	0.84	44.0
East: Hurstville Road (East)											
4	L2	294	0.0	0.706	12.2	LOS B	8.4	58.8	0.79	1.52	45.6
5	T1	448	0.2	0.706	11.0	LOS B	8.4	58.8	0.79	1.52	45.6
Approach		742	0.1	0.706	11.4	LOS B	8.4	58.8	0.79	0.76	45.6
West: Hurstville Road (West)											
11	T1	380	0.0	0.566	9.1	LOS A	5.0	35.2	0.64	1.39	46.0
12	R2	232	0.0	0.566	12.4	LOS B	5.0	35.2	0.64	1.39	46.0
Approach		612	0.0	0.566	10.3	LOS B	5.0	35.2	0.64	0.69	46.0
All Vehicles		1674	0.1	0.706	11.4	LOS B	8.4	58.8	0.73	0.75	45.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Oatley Parade - River Road -- AM Existing Conditions

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	104	1.0	0.170	8.2	LOS A	0.0	0.0	0.00	0.29	55.9
2	T1	221	0.5	0.170	0.0	LOS A	0.0	0.0	0.00	0.29	55.9
Approach		325	0.6	0.170	2.6	NA	0.0	0.0	0.00	0.29	55.9
North: Oatley Parade (North)											
8	T1	181	1.2	0.154	1.3	LOS A	0.9	6.7	0.44	0.26	50.5
9	R2	78	1.4	0.154	9.8	LOS A	0.9	6.7	0.44	0.26	50.5
Approach		259	1.2	0.154	3.8	NA	0.9	6.7	0.44	0.26	50.5
West: River Road											
10	L2	187	0.6	0.327	10.1	LOS B	1.5	10.4	0.41	0.74	46.7
12	R2	145	0.7	0.327	10.4	LOS B	1.5	10.4	0.41	0.74	46.7
Approach		333	0.6	0.327	10.3	LOS B	1.5	10.4	0.41	0.74	46.7
All Vehicles		917	0.8	0.327	5.7	NA	1.5	10.4	0.27	0.44	50.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Oatley Parade - River Road -- AM Future Conditions

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	104	1.0	0.170	8.2	LOS A	0.0	0.0	0.00	0.29	55.9
2	T1	221	0.5	0.170	0.0	LOS A	0.0	0.0	0.00	0.29	55.9
Approach		325	0.6	0.170	2.6	NA	0.0	0.0	0.00	0.29	55.9
North: Oatley Parade (North)											
8	T1	202	11.5	0.186	1.5	LOS A	1.2	9.1	0.47	0.25	50.2
9	R2	88	13.1	0.186	10.0	LOS A	1.2	9.1	0.47	0.25	50.2
Approach		291	12.0	0.186	4.1	NA	1.2	9.1	0.47	0.25	50.2
West: River Road											
10	L2	187	0.6	0.337	10.4	LOS B	1.6	11.1	0.41	0.75	46.5
12	R2	145	0.7	0.337	10.7	LOS B	1.6	11.1	0.41	0.75	46.5
Approach		333	0.6	0.337	10.5	LOS B	1.6	11.1	0.41	0.75	46.5
All Vehicles		948	4.1	0.337	5.8	NA	1.6	11.1	0.29	0.44	50.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - River Road -- AM Design Period

New Site
Giveway / Yield (Two-Way)

Movements: Oatley Parade - River Road

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	109	1.0	0.178	8.2	LOS A	0.0	0.0	0.00	0.29	55.9
2	T1	231	0.5	0.178	0.0	LOS A	0.0	0.0	0.00	0.29	55.9
Approach		340	0.6	0.178	2.7	NA	0.0	0.0	0.00	0.29	55.9
North: Oatley Parade (North)											
8	T1	181	1.2	0.155	1.4	LOS A	1.0	6.8	0.45	0.26	50.4
9	R2	78	1.4	0.155	9.8	LOS A	1.0	6.8	0.45	0.26	50.4
Approach		259	1.2	0.155	3.9	NA	1.0	6.8	0.45	0.26	50.4
West: River Road											
10	L2	187	0.6	0.331	10.2	LOS B	1.5	10.6	0.42	0.75	46.6
12	R2	145	0.7	0.331	10.5	LOS B	1.5	10.6	0.42	0.75	46.6
Approach		333	0.6	0.331	10.4	LOS B	1.5	10.6	0.42	0.75	46.6
All Vehicles		932	0.8	0.331	5.8	NA	1.5	10.6	0.28	0.44	50.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - River Road -- PM Design Period

New Site
Giveway / Yield (Two-Way)

Movements: Oatley Parade - River Road

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	176	1.2	0.192	8.2	LOS A	0.0	0.0	0.00	0.40	54.1
2	T1	187	0.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.40	54.1
Approach		363	0.6	0.192	4.0	NA	0.0	0.0	0.00	0.40	54.1
North: Oatley Parade (North)											
8	T1	312	0.0	0.320	1.8	LOS A	2.2	15.5	0.54	0.33	49.1
9	R2	199	0.0	0.320	10.3	LOS B	2.2	15.5	0.54	0.33	49.1
Approach		511	0.0	0.320	5.1	NA	2.2	15.5	0.54	0.33	49.1
West: River Road											
10	L2	149	0.0	0.321	11.3	LOS B	1.4	9.9	0.39	0.74	45.6
12	R2	120	0.9	0.321	11.5	LOS B	1.4	9.9	0.39	0.74	45.6
Approach		269	0.4	0.321	11.4	LOS B	1.4	9.9	0.39	0.74	45.6
All Vehicles		1143	0.3	0.321	6.2	NA	2.2	15.5	0.33	0.45	49.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - River Road -- PM Design Scenario

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	176	1.2	0.209	8.2	LOS A	0.0	0.0	0.00	0.38	54.1
2	T1	208	10.1	0.209	0.0	LOS A	0.0	0.0	0.00	0.38	54.1
Approach		384	6.0	0.209	3.8	NA	0.0	0.0	0.00	0.38	54.1
North: Oatley Parade (North)											
8	T1	312	0.0	0.325	2.1	LOS A	2.3	16.4	0.56	0.34	48.8
9	R2	199	0.0	0.325	10.5	LOS B	2.3	16.4	0.56	0.34	48.8
Approach		511	0.0	0.325	5.4	NA	2.3	16.4	0.56	0.34	48.8
West: River Road											
10	L2	171	12.3	0.357	11.7	LOS B	1.7	12.8	0.43	0.75	45.2
12	R2	120	0.9	0.357	12.0	LOS B	1.7	12.8	0.43	0.75	45.2
Approach		291	7.6	0.357	11.8	LOS B	1.7	12.8	0.43	0.75	45.2
All Vehicles		1185	3.8	0.357	6.4	NA	2.3	16.4	0.35	0.45	49.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Oatley Parade - River Road -- PM Design Scenario

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oatley Parade (South)											
1	L2	176	1.2	0.192	8.2	LOS A	0.0	0.0	0.00	0.40	54.1
2	T1	187	0.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.40	54.1
Approach		363	0.6	0.192	4.0	NA	0.0	0.0	0.00	0.40	54.1
North: Oatley Parade (North)											
8	T1	321	0.0	0.325	1.8	LOS A	2.3	15.9	0.54	0.33	49.1
9	R2	199	0.0	0.325	10.3	LOS B	2.3	15.9	0.54	0.33	49.1
Approach		520	0.0	0.325	5.1	NA	2.3	15.9	0.54	0.33	49.1
West: River Road											
10	L2	149	0.0	0.333	11.5	LOS B	1.5	10.6	0.39	0.75	45.4
12	R2	125	0.8	0.333	11.7	LOS B	1.5	10.6	0.39	0.75	45.4
Approach		275	0.4	0.333	11.6	LOS B	1.5	10.6	0.39	0.75	45.4
All Vehicles		1158	0.3	0.333	6.3	NA	2.3	15.9	0.34	0.45	49.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: River Road - Mulga Road -- AM Existing

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	12	0.0	0.199	9.5	LOS A	0.7	5.1	0.33	0.71	47.2
3	R2	187	1.1	0.199	9.7	LOS A	0.7	5.1	0.33	0.71	47.2
Approach		199	1.1	0.199	9.7	LOS A	0.7	5.1	0.33	0.71	47.2
East: River Road (East)											
4	L2	131	1.6	0.106	8.2	LOS A	0.0	0.0	0.00	0.50	52.3
5	T1	67	0.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.50	52.3
Approach		198	1.1	0.106	5.4	NA	0.0	0.0	0.00	0.50	52.3
West: River Road (West)											
11	T1	151	0.7	0.091	0.7	LOS A	0.5	3.9	0.32	0.10	53.3
12	R2	19	5.6	0.091	9.2	LOS A	0.5	3.9	0.32	0.10	53.3
Approach		169	1.2	0.091	1.6	NA	0.5	3.9	0.32	0.10	53.3
All Vehicles		566	1.1	0.199	5.8	NA	0.7	5.1	0.21	0.46	50.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: River Road - Mulga Road -- AM Option

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	12	0.0	0.201	9.5	LOS A	0.7	5.2	0.33	0.72	47.2
3	R2	187	1.1	0.201	9.8	LOS A	0.7	5.2	0.33	0.72	47.2
Approach		199	1.1	0.201	9.8	LOS A	0.7	5.2	0.33	0.72	47.2
East: River Road (East)											
4	L2	141	9.0	0.115	8.2	LOS A	0.0	0.0	0.00	0.49	52.3
5	T1	67	0.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.49	52.3
Approach		208	6.1	0.115	5.5	NA	0.0	0.0	0.00	0.49	52.3
West: River Road (West)											
11	T1	151	0.7	0.092	0.8	LOS A	0.6	3.9	0.34	0.10	53.1
12	R2	19	5.6	0.092	9.2	LOS A	0.6	3.9	0.34	0.10	53.1
Approach		169	1.2	0.092	1.7	NA	0.6	3.9	0.34	0.10	53.1
All Vehicles		577	2.9	0.201	5.9	NA	0.7	5.2	0.21	0.45	50.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: River Road - Mulga Road -- AM Design Scenario

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	12	0.0	0.200	9.5	LOS A	0.7	5.2	0.33	0.71	47.2
3	R2	187	1.1	0.200	9.8	LOS A	0.7	5.2	0.33	0.71	47.2
Approach		199	1.1	0.200	9.7	LOS A	0.7	5.2	0.33	0.71	47.2
East: River Road (East)											
4	L2	134	1.6	0.108	8.2	LOS A	0.0	0.0	0.00	0.50	52.3
5	T1	69	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.50	52.3
Approach		203	1.0	0.108	5.4	NA	0.0	0.0	0.00	0.50	52.3
West: River Road (West)											
11	T1	151	0.7	0.091	0.7	LOS A	0.5	3.9	0.33	0.10	53.2
12	R2	19	5.6	0.091	9.2	LOS A	0.5	3.9	0.33	0.10	53.2
Approach		169	1.2	0.091	1.7	NA	0.5	3.9	0.33	0.10	53.2
All Vehicles		572	1.1	0.200	5.8	NA	0.7	5.2	0.21	0.46	50.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: River Road - Mulga Road -- PM Existing Condition

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	14	0.0	0.207	9.8	LOS A	0.8	5.3	0.38	0.74	46.9
3	R2	181	0.6	0.207	10.1	LOS B	0.8	5.3	0.38	0.74	46.9
Approach		195	0.5	0.207	10.1	LOS B	0.8	5.3	0.38	0.74	46.9
East: River Road (East)											
4	L2	260	0.4	0.202	8.2	LOS A	0.0	0.0	0.00	0.52	52.0
5	T1	121	0.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.52	52.0
Approach		381	0.3	0.202	5.6	NA	0.0	0.0	0.00	0.52	52.0
West: River Road (West)											
11	T1	101	0.0	0.067	1.4	LOS A	0.4	3.0	0.45	0.14	51.3
12	R2	19	0.0	0.067	9.9	LOS A	0.4	3.0	0.45	0.14	51.3
Approach		120	0.0	0.067	2.7	NA	0.4	3.0	0.45	0.14	51.3
All Vehicles		696	0.3	0.207	6.4	NA	0.8	5.3	0.18	0.51	50.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: River Road - Mulga Road -- PM Peak Current

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	14	0.0	0.227	10.0	LOS A	0.8	6.1	0.39	0.73	46.8
3	R2	192	6.0	0.227	10.2	LOS B	0.8	6.1	0.39	0.73	46.8
Approach		205	5.6	0.227	10.2	LOS B	0.8	6.1	0.39	0.73	46.8
East: River Road (East)											
4	L2	260	0.4	0.202	8.2	LOS A	0.0	0.0	0.00	0.52	52.0
5	T1	121	0.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.52	52.0
Approach		381	0.3	0.202	5.6	NA	0.0	0.0	0.00	0.52	52.0
West: River Road (West)											
11	T1	101	0.0	0.067	1.4	LOS A	0.4	3.0	0.45	0.14	51.3
12	R2	19	0.0	0.067	9.9	LOS A	0.4	3.0	0.45	0.14	51.3
Approach		120	0.0	0.067	2.7	NA	0.4	3.0	0.45	0.14	51.3
All Vehicles		706	1.8	0.227	6.5	NA	0.8	6.1	0.19	0.52	50.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: River Road - Mulga Road -- PM Peak Design

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mulga Road											
1	L2	14	0.0	0.211	9.8	LOS A	0.8	5.4	0.38	0.74	46.9
3	R2	184	0.6	0.211	10.1	LOS B	0.8	5.4	0.38	0.74	46.9
Approach		198	0.5	0.211	10.1	LOS B	0.8	5.4	0.38	0.74	46.9
East: River Road (East)											
4	L2	260	0.4	0.202	8.2	LOS A	0.0	0.0	0.00	0.52	52.0
5	T1	121	0.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.52	52.0
Approach		381	0.3	0.202	5.6	NA	0.0	0.0	0.00	0.52	52.0
West: River Road (West)											
11	T1	103	0.0	0.069	1.4	LOS A	0.4	3.0	0.45	0.14	51.3
12	R2	19	0.0	0.069	9.9	LOS A	0.4	3.0	0.45	0.14	51.3
Approach		122	0.0	0.069	2.7	NA	0.4	3.0	0.45	0.14	51.3
All Vehicles		701	0.3	0.211	6.4	NA	0.8	5.4	0.19	0.51	50.3

Level of Service (LOS) Method: Delay (HCM 2000).
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.

Appendix C – Car Park Survey Data

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : GHD
Job No/Name : 4881 OATLEY Parking Surv
Day/Date : Wednesday 13th November

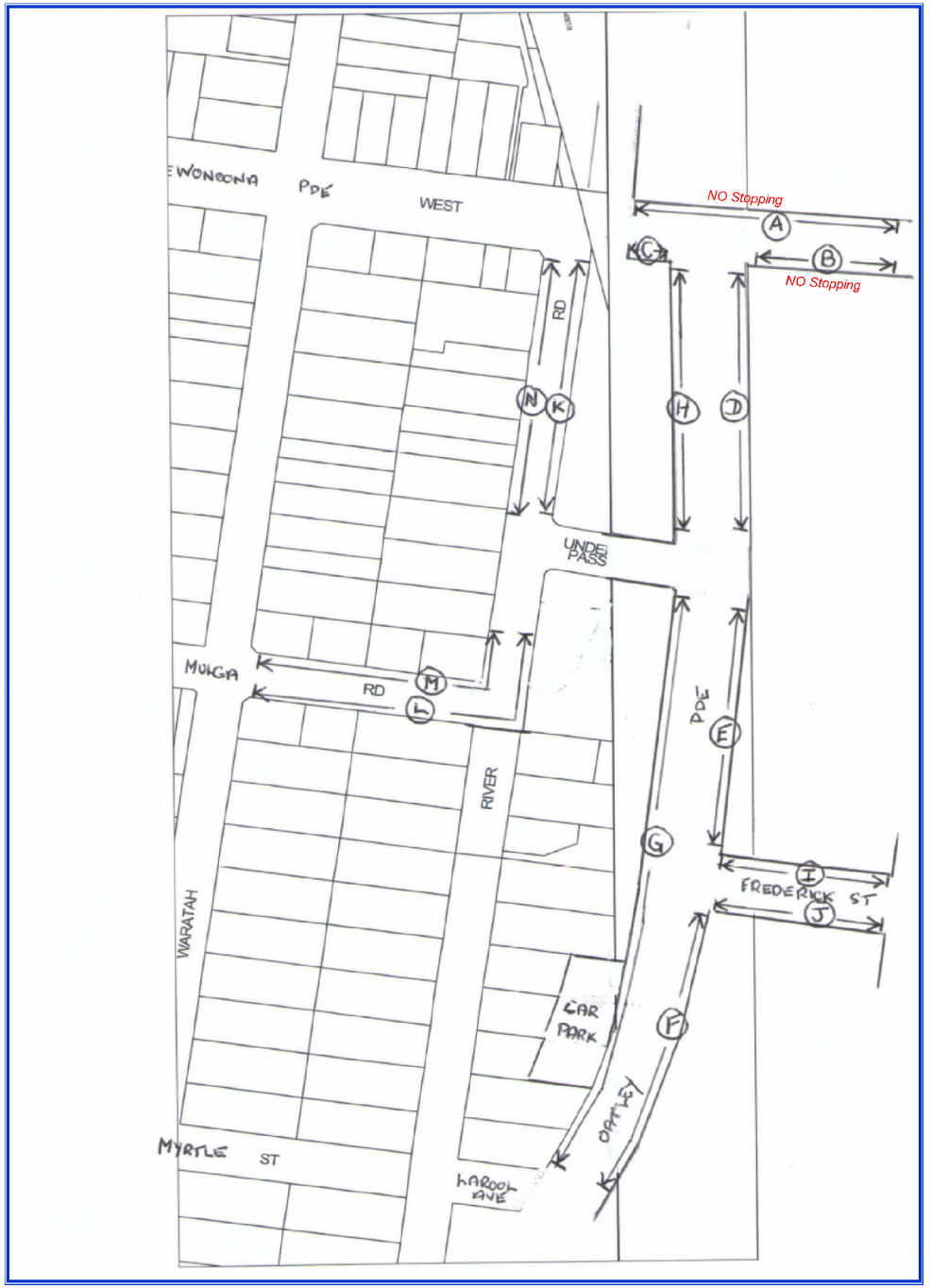
TIMES

Zone	Location	Cap	0600	0700	0800	0900
A	Hurstville Rd Nth / Side	NS	0	0	0	0
B	Hurstville Rd Sth / Side	NS	0	0	0	0
C	Hurstville Rd Sth / Side	3	0	0	0	0
D	Oatley Pde Es / Side	10	7	8	9	9
E	Oatley Pde Es / Side	7	0	2	5	5
F	Oatley Pde Es / Side	16	1	4	13	15
G	Oatley Pde Ws / Side	22	1	3	13	13
H	Oatley Pde Ws / Side	8	7	4	8	7
I	Frederick St Nth / Side	6	0	3	1	2
J	Frederick St Nth / Side	6	1	3	1	0
K	River Rd Es / Side	25	4	13	23	24
L	Mulga Rd Sth / Side	7	1	6	7	7
M	Mulga Rd Nth / Side	10	1	10	10	10
N	River Rd Ws / Side	20	4	9	19	19
	Station Car Park	16	1	7	16	16
	Total Vehicles	**156**	**28**	**72**	**125**	**127**
	Number of Spaces		128	84	31	29
	% Capacity Used		**18%**	**46%**	**80%**	**81%**

Zone	Location	Cap	1600	1700	1800	1900
A	Hurstville Rd Nth / Side	NS	0	0	0	0
B	Hurstville Rd Sth / Side	NS	0	0	0	0
C	Hurstville Rd Sth / Side	3	0	0	0	0
D	Oatley Pde Es / Side	10	10	10	7	8
E	Oatley Pde Es / Side	7	6	6	2	3
F	Oatley Pde Es / Side	16	15	12	9	3
G	Oatley Pde Ws / Side	22	13	12	8	9
H	Oatley Pde Ws / Side	8	7	6	6	7
I	Frederick St Nth / Side	6	4	5	4	2
J	Frederick St Nth / Side	6	5	5	3	3
K	River Rd Es / Side	25	22	20	12	8
L	Mulga Rd Sth / Side	7	6	5	4	0
M	Mulga Rd Nth / Side	10	10	6	4	3
N	River Rd Ws / Side	20	18	18	9	4
	Station Car Park	16	16	11	5	1
	Total Vehicles	**156**	**132**	**116**	**73**	**51**
	Number of Spaces		24	40	83	105
	% Capacity Used		**85%**	**74%**	**47%**	**33%**

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : GHD
Job No/Name : 4881 OATLEY Parking Surveys
Day/Date : Wednesday 13th November 2013



Appendix D – Pedestrian Survey Data

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

PEDS	WEST Underpass		SOUTH Stairs to Station		EAST Underpass		
Time Per	T	R	L	R	L	T	TOT
1600 - 1605	1	1	0	1	10	1	14
1605 - 1610	4	1	1	0	7	0	13
1610 - 1615	1	0	1	7	1	2	12
1615 - 1620	1	0	35	40	3	3	82
1620 - 1625	1	0	1	1	7	4	14
1625 - 1630	1	0	7	9	1	2	20
1630 - 1635	1	3	1	4	5	5	19
1635 - 1640	1	0	0	2	1	1	5
1640 - 1645	2	0	33	40	2	1	78
1645 - 1650	1	1	0	0	9	1	12
1650 - 1655	0	1	0	0	4	1	6
1655 - 1700	2	0	10	21	1	0	34
1700 - 1705	5	1	3	5	2	7	23
1705 - 1710	2	2	0	1	6	6	17
1710 - 1715	0	2	24	44	2	3	75
1715 - 1720	0	0	2	0	5	1	8
1720 - 1725	1	1	14	17	4	2	39
1725 - 1730	0	0	3	5	1	2	11
1730 - 1735	2	1	31	25	3	2	64
1735 - 1740	0	0	12	18	4	0	34
1740 - 1745	3	1	12	5	6	4	31
1745 - 1750	1	0	0	0	0	2	3
1750 - 1755	0	0	15	28	2	0	45
1755 - 1800	0	0	30	23	0	2	55
1800 - 1805	1	0	0	2	0	1	4
1805 - 1810	6	1	1	1	6	2	17
1810 - 1815	2	0	30	29	0	0	61
1815 - 1820	0	1	9	18	0	0	28
1820 - 1825	2	1	5	7	4	3	22
1825 - 1830	0	1	2	4	1	2	10
1830 - 1835	0	2	3	4	1	2	12
1835 - 1840	5	2	38	43	0	2	90
1840 - 1845	1	1	10	1	2	4	19
1845 - 1850	0	1	0	0	0	2	3
1850 - 1855	0	0	14	22	2	2	40
1855 - 1900	0	0	11	10	0	2	23
Period End	47	25	358	437	102	74	1043

PEDS	WEST Underpass		SOUTH Stairs to Station		EAST Underpass		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	16	7	89	125	51	21	309
1605 - 1705	20	7	92	129	43	27	318
1610 - 1710	18	8	91	130	42	33	322
1615 - 1715	17	10	114	167	43	34	385
1620 - 1720	16	10	81	127	45	32	311
1625 - 1725	16	11	94	143	42	30	336
1630 - 1730	15	11	90	139	42	30	327
1635 - 1735	16	9	120	160	40	27	372
1640 - 1740	15	9	132	176	43	26	401
1645 - 1745	16	10	111	141	47	29	354
1650 - 1750	16	9	111	141	38	30	345
1655 - 1755	16	8	126	169	36	29	384
1700 - 1800	14	8	146	171	35	31	405
1705 - 1805	10	7	143	168	33	25	386
1710 - 1810	14	6	144	168	33	21	386
1715 - 1815	16	4	150	153	31	18	372
1720 - 1820	16	5	157	171	26	17	392
1725 - 1825	17	5	148	161	26	18	375
1730 - 1830	17	6	147	160	26	18	374
1735 - 1835	15	7	119	139	24	18	322
1740 - 1840	20	9	145	164	20	20	378
1745 - 1845	18	9	143	160	16	20	366
1750 - 1850	17	10	143	160	16	20	366
1755 - 1855	17	10	142	154	16	22	361
1800 - 1900	17	10	123	141	16	22	329

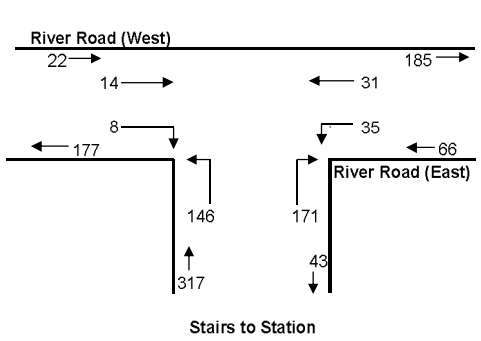
PEAK HR	14	8	146	171	35	31	405

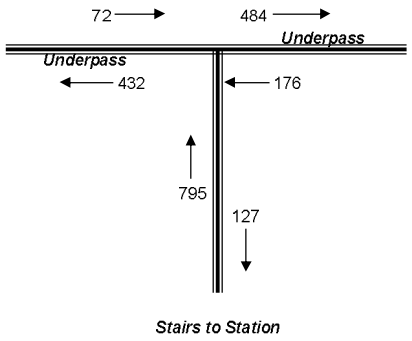
Start: 4pm
10

End: 7pm
1

PM PEAK HOUR
1700 - 1800

TOTAL VOLUMES FOR COUNT PERIODS





R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : G.H.D
Job No/Name : 4881 OATLEY Traffic & Parking
Day/Date : Wednesday / 13th November 2013

Time Per	Accum
1600 - 1605	20
1605 - 1610	27
1610 - 1615	20
1615 - 1620	-52
1620 - 1625	-47
1625 - 1630	-62
1630 - 1635	-59
1635 - 1640	-60
1640 - 1645	-131
1645 - 1650	-121
1650 - 1655	-116
1655 - 1700	-146
1700 - 1705	-151
1705 - 1710	-144
1710 - 1715	-208
1715 - 1720	-205
1720 - 1725	-231
1725 - 1730	-238
1730 - 1735	-290
1735 - 1740	-316
1740 - 1745	-326
1745 - 1750	-326
1750 - 1755	-367
1755 - 1800	-420
1800 - 1805	-422
1805 - 1810	-417
1810 - 1815	-476
1815 - 1820	-502
1820 - 1825	-509
1825 - 1830	-513
1830 - 1835	-517
1835 - 1840	-596
1840 - 1845	-604
1845 - 1850	-603
1850 - 1855	-637
1855 - 1900	-658

Appendix E – Crash Data

Detailed Crash Report

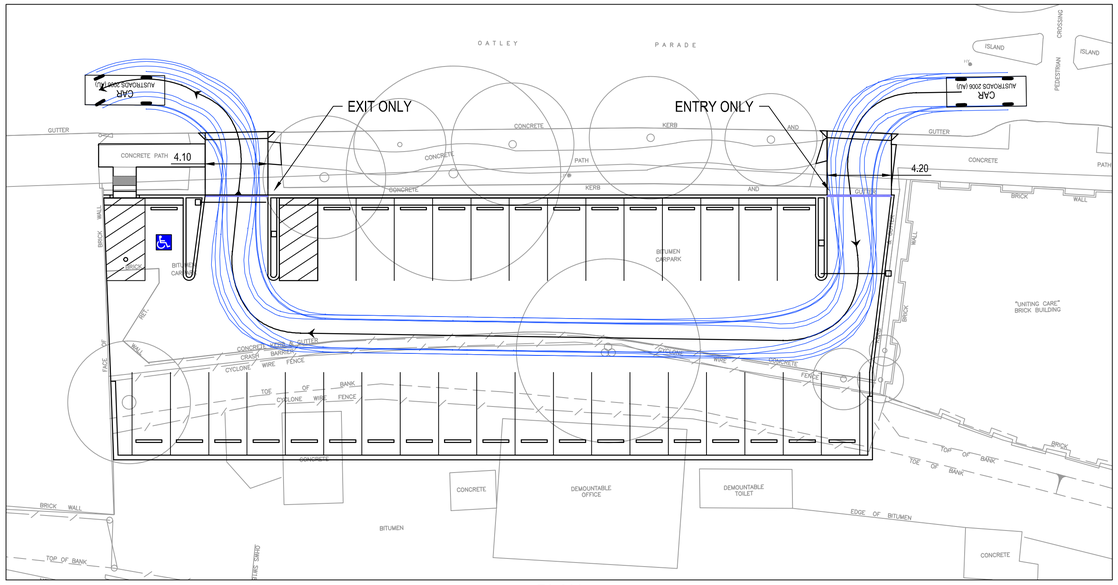
NOTES: Crashes within 100m of Oatley Railway Station entrance (subway) from 01 Jan 2008 to 31 Dec 2012.

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
																				S F
Sydney Region																				
Hurstville City LGA																				
Oatley																				
Mulga Rd																				
782540	17/10/2011	Mon	07:30	20 m	S RIVER RD	2WY	CRV	Fine	Dry	50	3	BUS	M40	N in MULGA RD	30	Proceeding in lane	N	0	0	S
E46084518						RUM:	87	Off lft/lft bnd=>obj				CAR	F41	N in MULGA RD	0	Parked loading				
												4WD	F47	N in MULGA RD	0	Parked				
Mulgoa Rd																				
769915	30/07/2011	Sat	21:05	10 m	S RIVER RD	TJN	CRV	Fine	Dry	50	1	CAR	M18	N in MULGOA RD	70	Proceeding in lane	N	0	0	S
E45138833						RUM:	87	Off lft/lft bnd=>obj				Signpost								
River Rd																				
782372	10/01/2012	Tue	14:55	25 m	E MULGA RD	2WY	STR	Fine	Dry	50	2	CAR	M U	E in RIVER RD	20	Proceeding in lane	N	0	0	F
E46793164						RUM:	73	Off rd rght => obj				TRK	M51	W in RIVER RD	Unk	Proceeding in lane				
												Fence								
Kogarah LGA																				
Oatley																				
Oatley Pde																				
748723	11/04/2011	Mon	06:30	50 m	N FREDERICK ST	2WY	STR	Fine	Dry	50	3	CAR	M64	S in OATLEY PDE	5	Proceeding in lane	I	0	2	
E44323566						RUM:	0	Ped nearside				PED	F64	OATLEY PDE		Walk across carriageway				
												PED	M67	OATLEY PDE		Walk across carriageway				
789155	27/02/2012	Mon	14:00	63 m	N FREDERICK ST	2WY	STR	Fine	Dry	50	2	WAG	F53	S in OATLEY PDE	5	Proceeding in lane	I	0	1	
E49699781						RUM:	2	Ped far side				PED	F45	E in OATLEY PDE		Walk across carriageway				
633703	10/08/2008	Sun	13:10		at RIVER RD	TJN	STR	Fine	Dry	50	2	CAR	M40	S in OATLEY PDE	20	Turning right	N	0	0	
E35024007						RUM:	21	Right through				WAG	M31	N in OATLEY PDE	40	Proceeding in lane				
657819	10/12/2008	Wed	17:45		at RIVER RD	TJN	STR	Fine	Dry	60	2	4WD	F54	E in RIVER RD	10	Turning right	I	0	2	
E69259101						RUM:	13	Right near				M/C	M19	N in OATLEY PDE	50	Proceeding in lane				
780175	08/11/2011	Tue	17:20	55 m	S RIVER RD	2WY	STR	Raining	Wet	50	2	CAR	M35	S in OATLEY PDE	20	Proceeding in lane	I	0	1	
E46582668						RUM:	2	Ped far side				PED	F24	E in OATLEY PDE		Walk across carriageway				

Report Totals: Total Crashes: 8 Fatal Crashes: 0 Injury Crashes: 4 Killed: 0 Injured: 6

Crashid dataset Crashes within 100m of Oatley Railway Station entrance (subway) from 01 Jan 2008 to 31 Dec 2012.

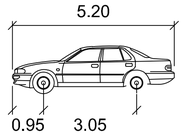
Appendix F – AutoTurn Swept Path Assessments



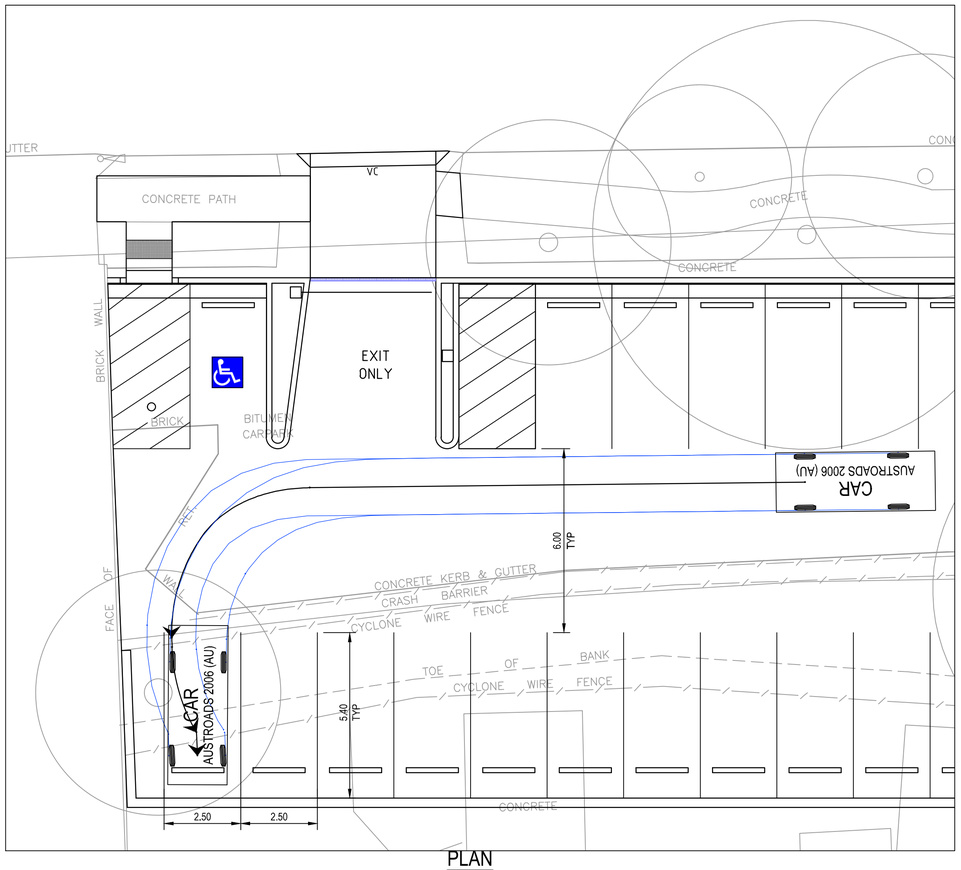
PLAN

SCALE 1:200

DESIGN VEHICLE

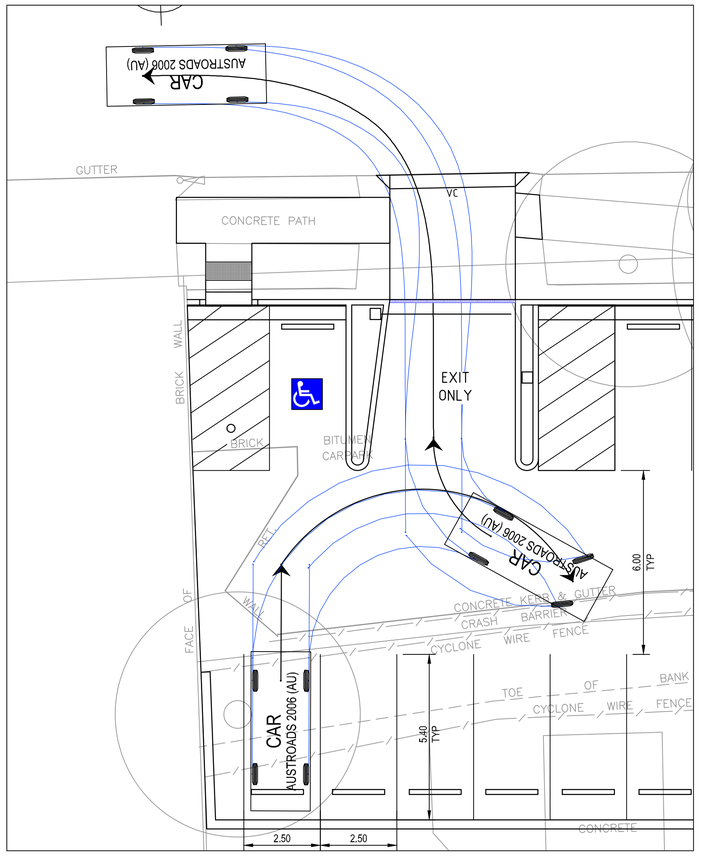


B99 CAR	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.5



PLAN

SCALE 1:100



PLAN

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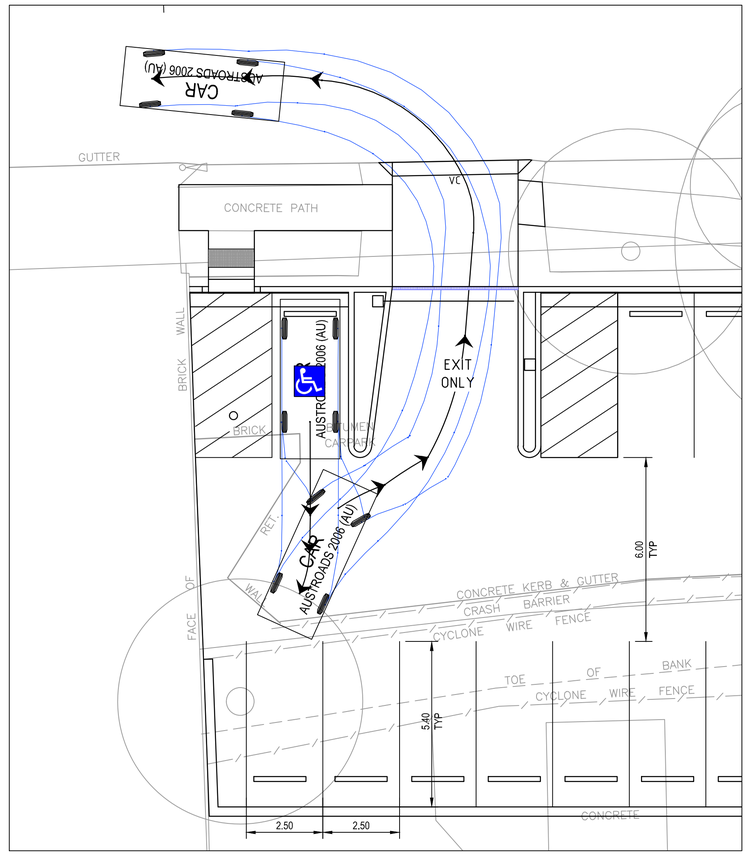

PLAN

SCALE 1:100

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
B	REVISED VEHICLE TURNING PATH	AE	FQ		14.02.14
A	VEHICLE TURNING PATH	AE	FQ		01.11.13

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 1 2 3 4 5m

SCALE 1:100 AT ORIGINAL SIZE

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DO NOT SCALE

Drawn	A. ENKESHAFI	Designer	F. QUIGLEY
Drafting Check		Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

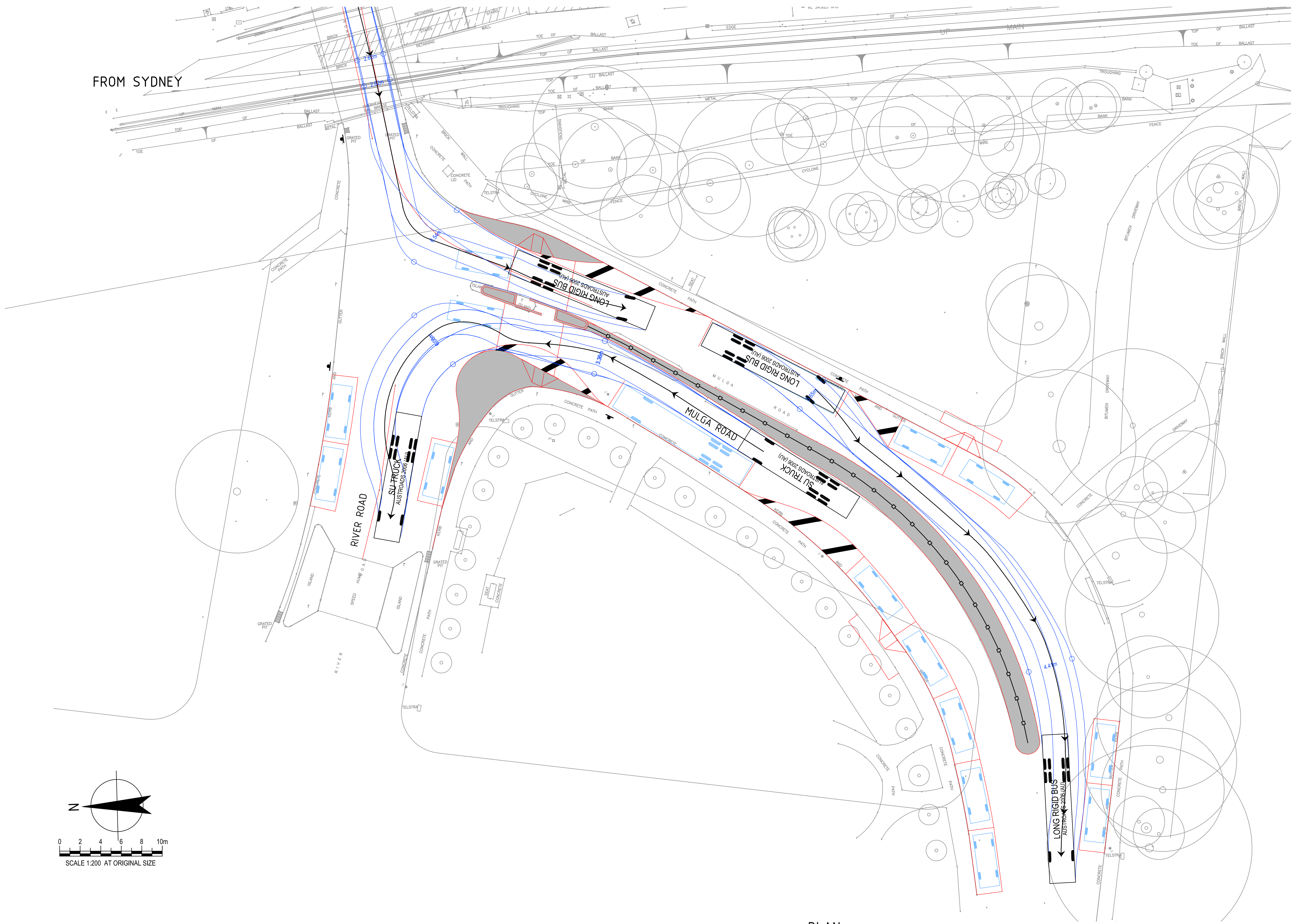
Client **TfNSW**
Project **OATLEY STATION**
Title **COMMUTER CAR PARK VEHICLE TURNING PATH**

Original Size **A1** Drawing No: **21-22971-FIG001** Rev: **B**

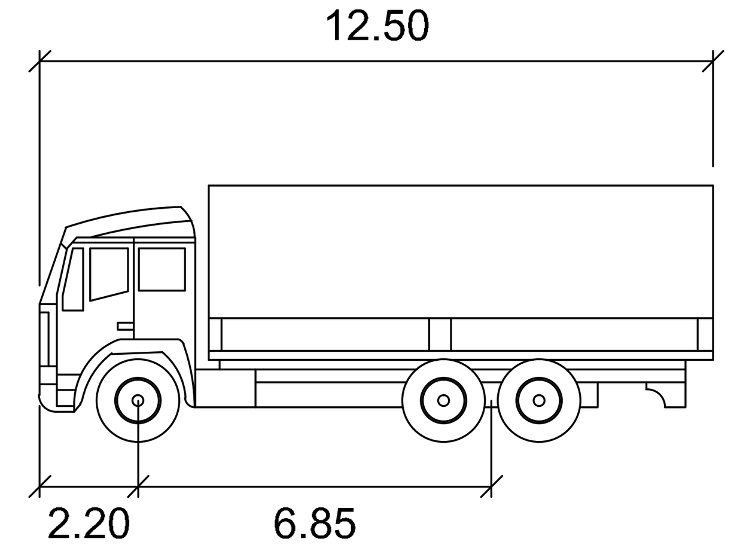
Plot Date: 14 February 2014 - 4:03 PM Plotted by: Amir Enkeshafi Cad File No: \\ghdnet\ghd\AU\Sydney\Projects\21\22971\CADD\Drawings\Figures\21-22971-FIG001.dwg

PLAN

SCALE 1:200

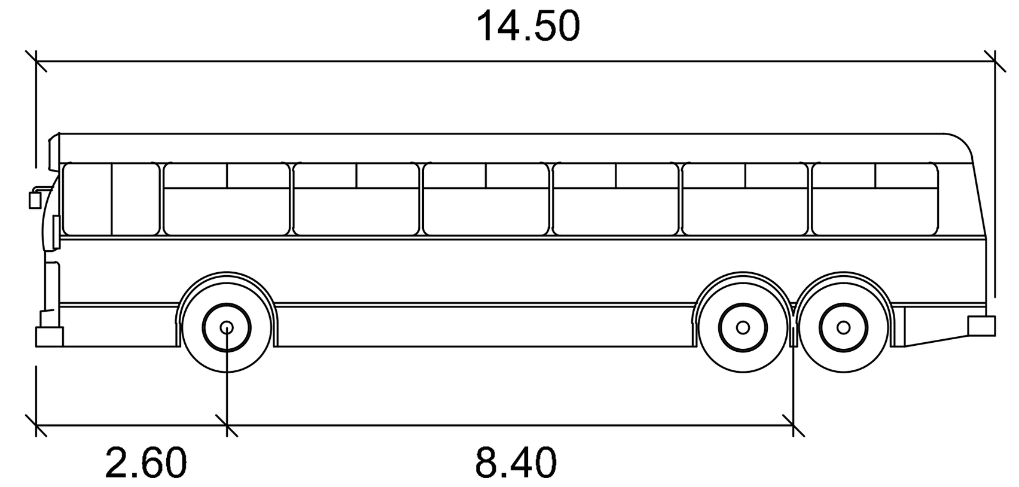


PLAN
SCALE 1:200



SU TRUCK

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



LONG RIGID BUS meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 46.3

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G:\21\22971\WP\2014-03-13 Final Concept Design All Reports\TAP-1822-TR-1001_2 Traffic, Transport and Access Impact Assessment\TAP-1822-TR-1001_2.docx

TAP-1822-TR-1001

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	O Peel	I Smith		Eric Bugeja		19/12/2013
1	O Peel	I Smith		Eric Bugeja		25/02/2014
2	O Peel	I Smith		Eric Bugeja		03/04/2014

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