46 Nicholson Street

Transport Assessment

Prepared for:

Jemalong Property Group

26 June 2020

JMT Consulting

Document History

Document Title	Revision	Date issued	Author
Transport Assessment – 46 Nicholson Street	Draft	09.06.20	JM
Transport Assessment – 46 Nicholson Street	Final	26.06.20	JM

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1 Introduction

1.1 Background

Jemalong Property Group engaged JMT Consulting to carry out a traffic and transport assessment of the Planning Proposal for the site at 46 Nicholson Street, St Leonards (the site). The site is proposed to consist of an A-Grade commercial office building with ancillary retail uses.

1.2 Scope of works

This transport assessment considers the following:

- An overview of the existing transport and planning context
- Trip generation of the site
- Traffic impacts of the development
- Public transport accessibility
- Car parking arrangements
- Pedestrian and bicycle access
- Green travel initiatives

1.3 Site description

The site is in the heart of the St Leonards CBD within the Lane Cove Council Local Government Area (LGA), bounded by Christie Street and Nicholson Street as shown in Figure 1 below. The site is currently zoned as B3 Commercial Core.

The site is in close walking distance to nearby public transport as well as local services such as the St Leonards retail centre and Royal North Shore Hospital.

Figure 1 Site location

2 Existing Conditions

2.1 Existing travel patterns

Journey to work data from the 2016 census for people working in the St Leonards CBD in Figure 2. The data indicates that over 50% of the people working in the area use public transport, with only approximately 39% of people driving to work. This reflects the strong public transport accessibility of the area.

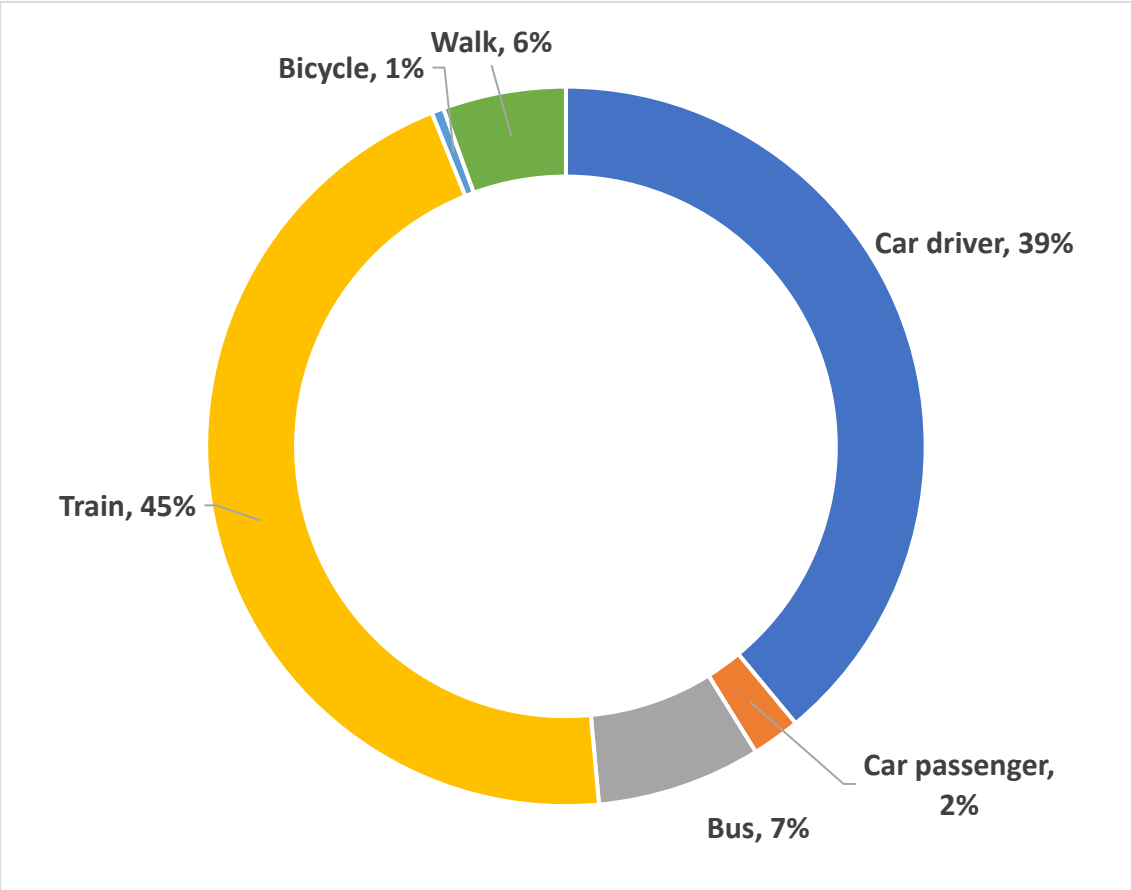

Figure 2 Existing travel patterns

2.2 Public transport

2.2.1 Public transport overview

The site has excellent access to public transport and is located within 5 minutes walking distance from St Leonards Station and high frequency bus stops located on Pacific Highway which are illustrated in Figure 3. It is also within 200m of high frequency bus stops on the Pacific Highway and 250m walking distance of the future Crows Nest Metro Station.

Figure 3 Public transport environment

2.2.2 Bus

The existing bus routes serving the site are shown in Figure 4. Bus M20 provides access to the city via the Pacific Highway, while the other buses serve various suburbs regionally.

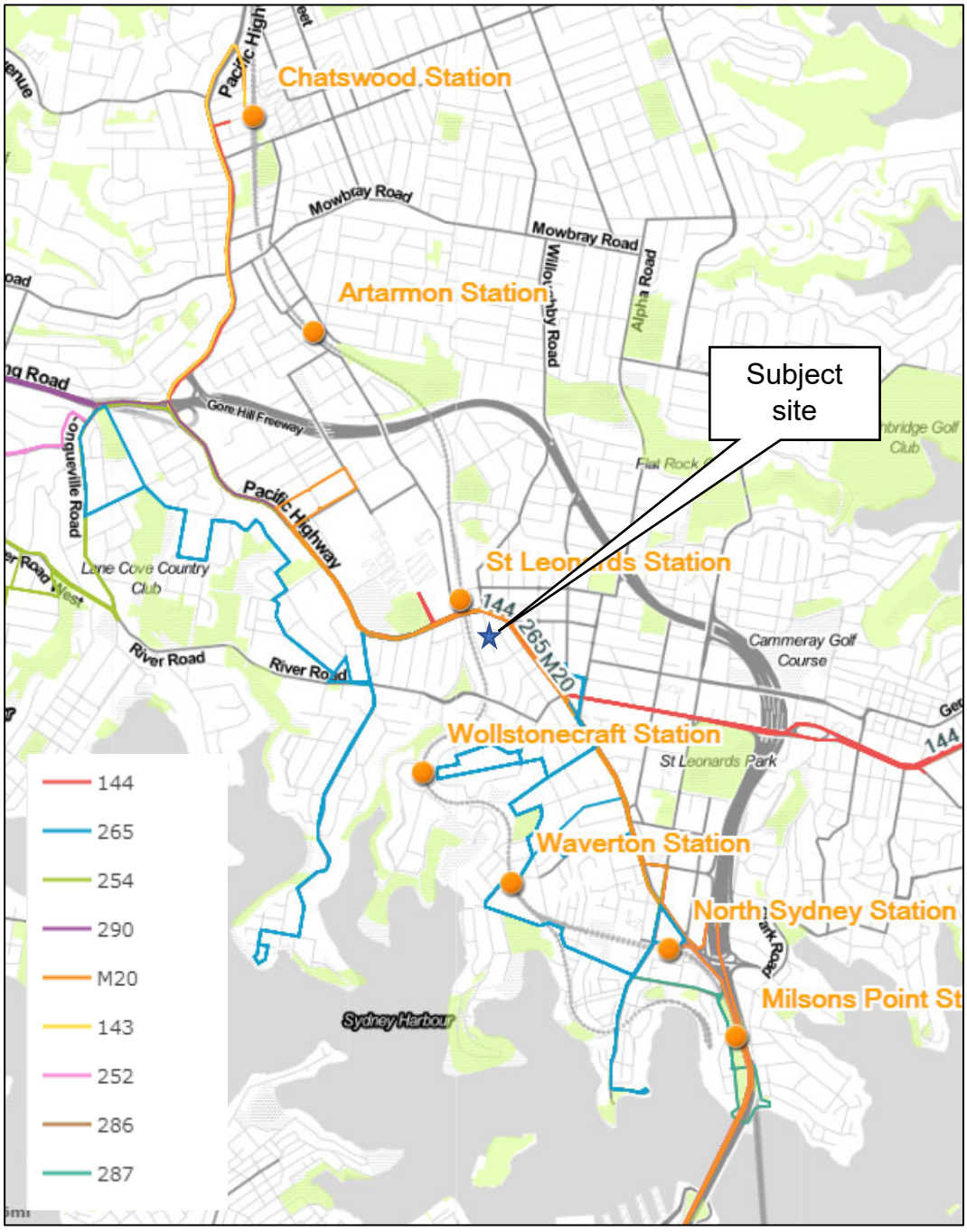

Figure 4 Bus routes serving the site

The extensive network of bus routes servicing the site are summarised in Table 1. Buses connect the local area to the Sydney CBD, Chatswood CBD, Crows Nest, Epping, Lane Cove and surrounding suburbs. Bus services are frequent throughout the day, with express services operating during the peak periods.

Table 1 Bus routes

Bus Route	Service description
Route 143, Manly and Macquarie University	Services every 30 minutes throughout the day in each direction.
Route 144, Chatswood and manly via Royal North Shore Hospital	Services every 30 minutes throughout the day in each direction.
Route 200, Chatswood to Bondi Junction	Services every 15 minutes throughout the day in each direction.
Route 252, Lane Cove West and City via Pacific Highway	Services every 30 minutes throughout the day in each direction.
Route 254, Riverview and City via Pacific Highway	Services every 30 minutes throughout the day in each direction.
Route 265, McMahons Point and Lane Cove via Greenwich Wharf	Services every 30 minutes throughout the day in each direction.
Route 286, Denistone East and City via Pacific Highway	Services every 30 minutes during the peak periods between Monday to Friday.
Route 287, Ryde and Milsons Point via Pacific Highway and North Sydney	Services every 30 minutes during the peak periods between Monday and Friday in each direction.
Route 290, Epping and City via Macquarie Centre and Pacific Highway	Services every 15 minutes during the peak periods between Monday and Friday in each direction. Services every hour at all other times.
Route 291, Epping to McMahons Point	Services every 30 minutes during the peak periods between Monday to Friday.
Route 622, Dural to Milsons Point via Cherrybrook	Services every 30 minutes during the peak periods between Monday to Friday.
Route 653, West Pennant Hills to Milsons Point	Services every 30 minutes during the peak periods between Monday to Friday.
Route 602X, Rouse Hill to North Sydney	Services every 15 minutes during the peak periods between Monday to Friday.
Route 612X, Kellyville to Milsons Point	Services every 5 minutes during the peak periods between Monday to Friday.
M20, Botany and Gore Hill	Services every 10 minutes during the peak periods in each direction. Services every 15 minutes at all other times.
N90, Hornsby to City Town Hall via Chatswood	Services every 60 minutes throughout the day in each direction.
N91, Bondi Junction to Macquarie Park via City Town Hall	Services every 60 minutes throughout the day in each direction.

2.2.3 Rail

St Leonards Station services the T1 North Shore and Northern lines, and the Central Coast and Newcastle lines. The station is well connected to other major stations such as Central Station and Chatswood Station and Epping Station. The station is well served by trains with services every 3 minutes during the peak periods in both directions of travel.

2.3 Road network and site access

2.3.1 Vehicle site access

Access to the existing site is provided from a driveway on Christie Street. Christie Street terminates at a pedestrianised link through to Oxley Street.

2.3.2 Surrounding road network

The main roads surrounding the site are Christie Street to the west; Nicholson Street to the east and immediate north; and Pacific Highway to the north; and Oxley Street to the south as shown in Figure 5.

The southern section of Christie Street in the vicinity of the site is a cul-de-sac with pedestrian only access to Oxley Street. Christie Street intersects Pacific Highway to the north and predominately operates as a non-divided two-lane, two-way local street with parking lanes on each side. Christie Street is a collector road north of Pacific Highway, but acts as a local access to the south with limited one-way access southbound from the intersection.

There are 50km/h speed restrictions on all sections of Christie Street. Nicholson Street operates as a non-divided two-lane, two-way local street with parking permitted on each side of the road. Nicholson Street runs parallel to Pacific Highway and is located towards the eastern boundary of the site.

Nicholson Street is a local road with 50km/h speed restrictions Oxley Street is a non-divided two-lane, two-way collector road with parking permitted on each side (outside of peak periods). Oxley Street crosses the Pacific Highway and continues north through Albany Street and Chandos Street. It provides a link between local roads and the Pacific Highway. The road is subject to 50km/h speed limit.

The Pacific Highway is a divided six-lane, two-way arterial road with restricted parking opportunities available on each side of the road outside of the peak periods. The Pacific Highway within the vicinity of the site connects the North Sydney CBD to the Northern Suburbs and various motorways including the M1 Sydney to Newcastle Freeway, M2 Lane Cove Tunnel/Gore Hill Freeway and M1 Warringah Freeway/Bradfield Highway. It is a major bus corridor servicing a large number of bus routes connecting the Sydney CBD to the Northern suburbs. There are 60km/h speed restrictions in the section of Pacific Highway relevant to the study area.

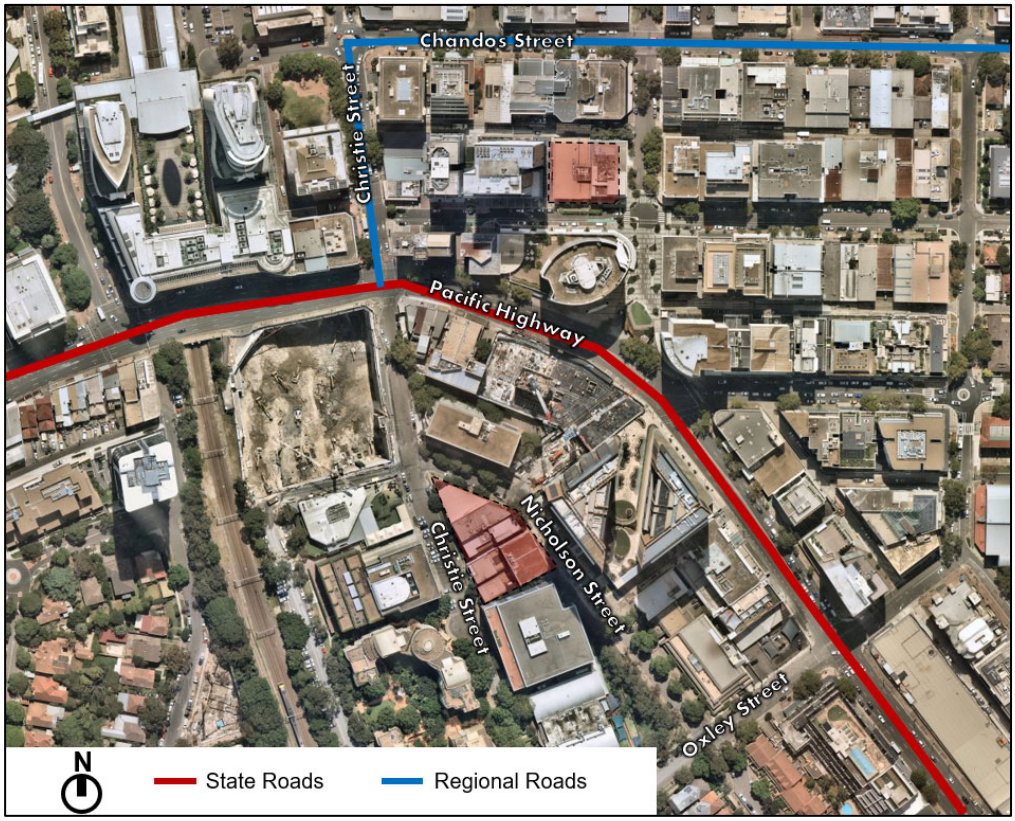

Figure 5 Existing road classification

2.3.3 Road network hierarchy

To manage the extensive network of roads for which council is responsible under the *Roads Act 1993*, RMS in partnership with local government established an administrative framework of *State, Regional,* and *Local Road* categories. State Roads are managed and financed by Transport for NSW and Regional and Local Roads are managed and financed by councils.

Regional Roads perform an intermediate function between the main arterial network of State Roads and council controlled Local Roads. Due to their network significance TfNSW provides financial assistance to councils for the management of their Regional Roads.

Vehicle entry to the site fronts Christie Street (south of the Pacific Highway) and Nicholson Street, which are both local roads.

2.4 Traffic volumes

Traffic counts for the intersections in the vicinity of the site were sourced from the traffic report supporting the adjacent 88 Christie Street Planning Proposal. These volumes for both the AM and PM peak hours are illustrated in the figures on the following page.

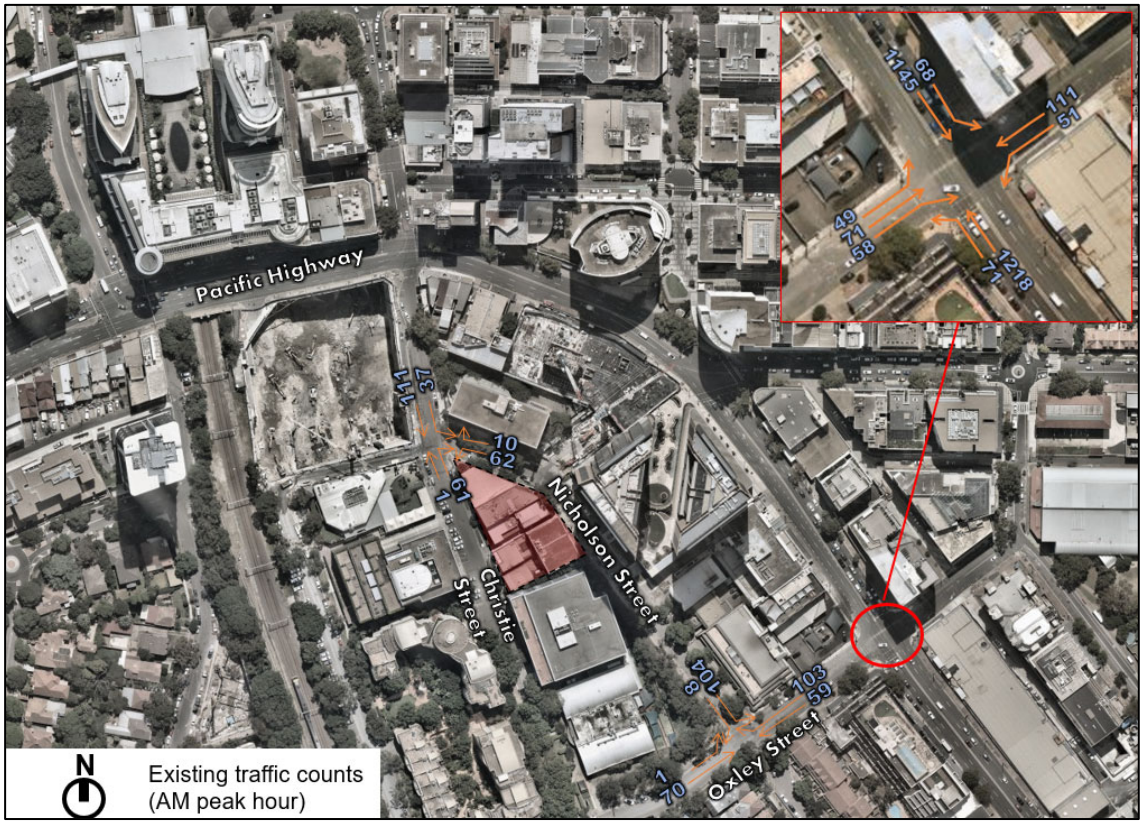

Figure 6 Existing traffic counts – AM peak hour

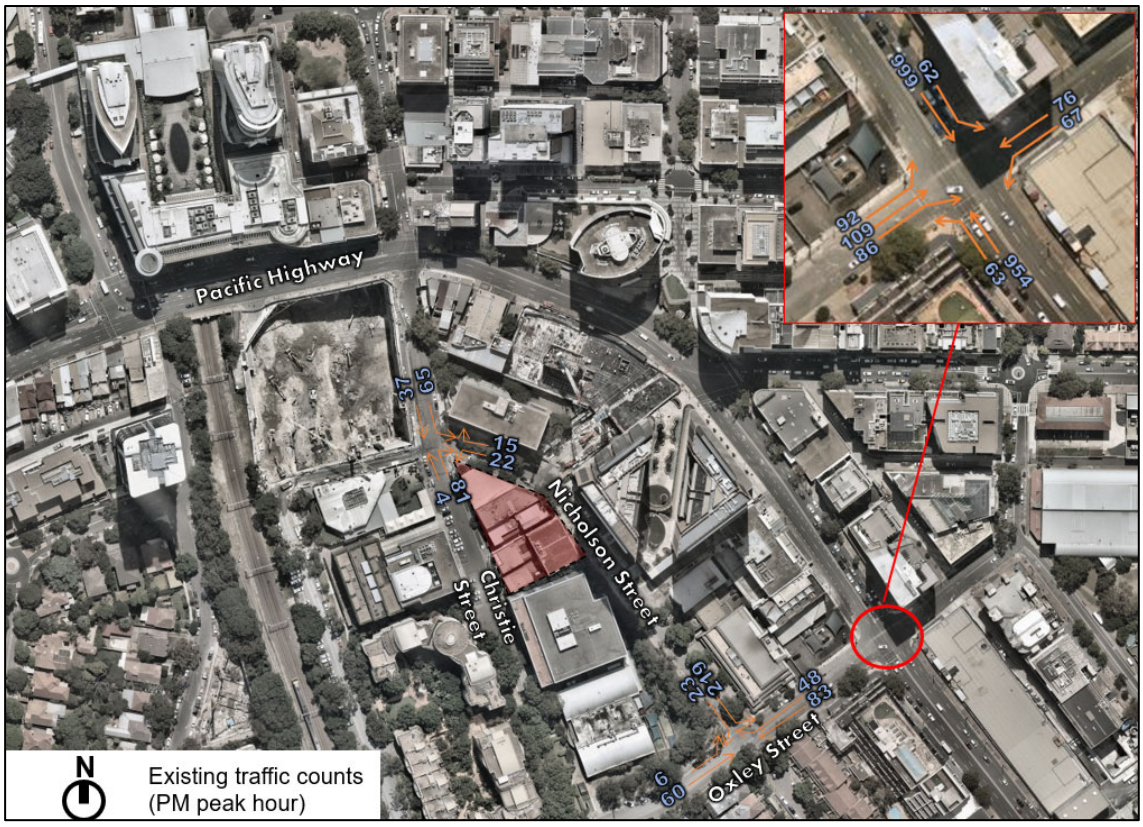

Figure 7 Existing traffic counts – PM peak hour

2.5 Pedestrian and cycling facilities

The site is located within the commercial core of St Leonards and is well served by a good network of local footpaths. Paved footpaths and kerb ramps are provided on both sides of Christie Street and Nicholson Street. All roads on the walking route from the proposed development site to St Leonards transport interchange possess paved footpaths and kerb ramps on both sides of the road. Sections of Pacific Highway and Herbert Street are covered to protect pedestrians during rainy weather. There are signalised pedestrian crossings across Pacific Highway at the Christie Street / Pacific Highway intersection as well as the Herbert Street / Pacific Highway intersection.

The site is well connected to a number of cycling routes which consist of both off-road cycling paths as well as on-road marked paths. Nicholson Street forms part of the local cycling network within the North Sydney / Crows Nest area, providing connectivity between St Leonards and North Sydney CBDs via Morton Street. The local cycling routes also connect to the Warringah Freeway cycleway which provides connections to Lane Cove, North Ryde and Chatswood.

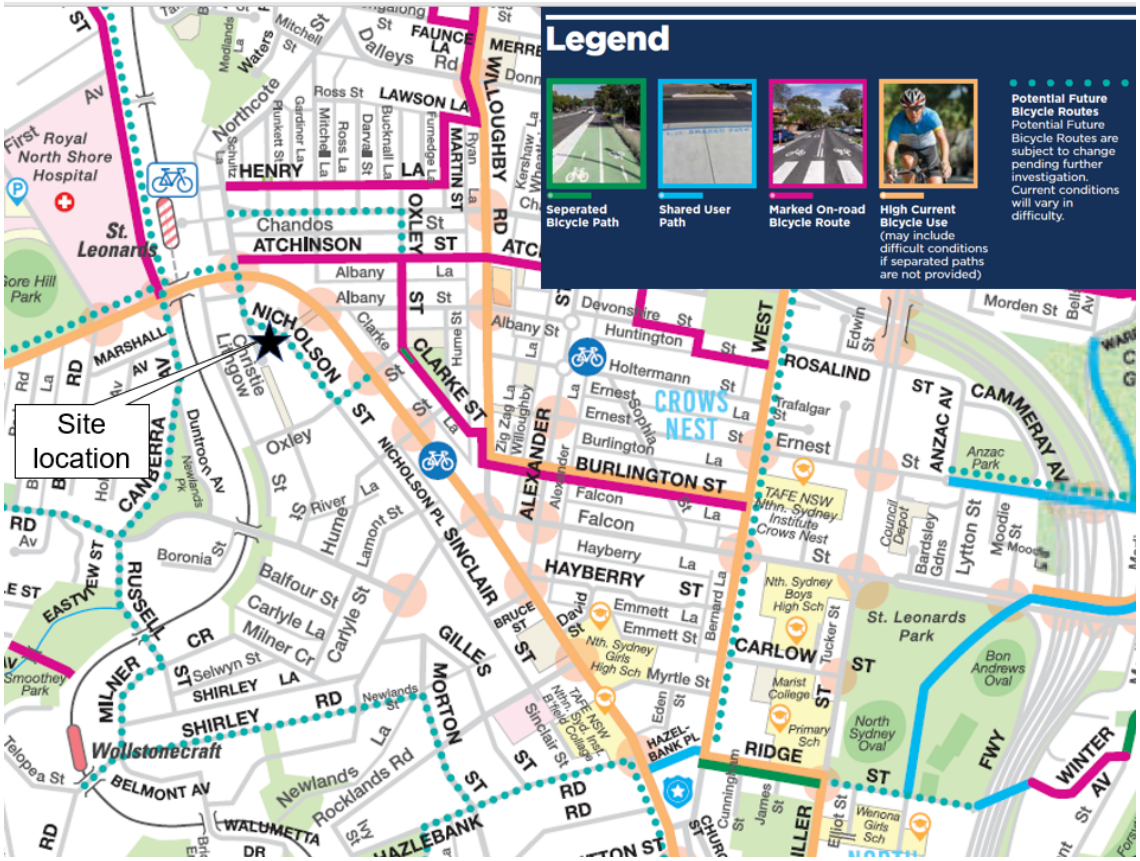

Figure 8 Existing cycling network

3 Planning Proposal

The Planning Proposal seeks to provide an A-Grade commercial office building on the site with retail uses, comprising of approximately 37,800m^2 Gross Floor Area (GFA). A detailed breakdown of the proposal is provided below, which will be confirmed during the submission of a Development Application for the site:

- Commercial office: 36,684m^2 GFA
- Retail: 1,168m^2 GFA

At ground level a through site link is proposed which connects Nicholson Street with Christie Street (see Figure 9). The site would contain three basement levels comprising of a loading dock and 122 car parking spaces.

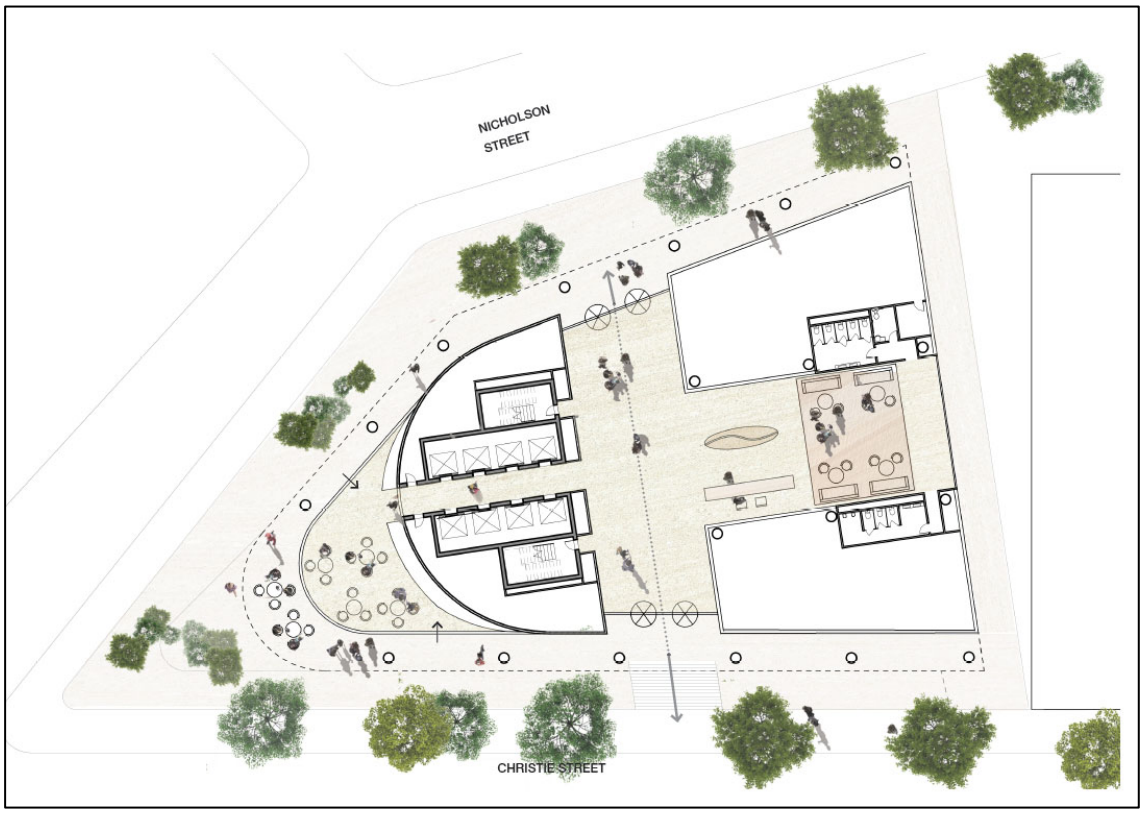

Figure 9 Proposed ground floor plan

4 Transport Assessment

4.1 Vehicle access

Vehicle access into the site would be via the southern end of Christie Street as shown in Figure 10 below. This access would service the both basement car park and loading dock, with all vehicles turning left from Christie Street to enter the site. The vehicle access location has been selected at this location to be away from the main areas of pedestrian activity, which are anticipated to be along Nicholson Street.

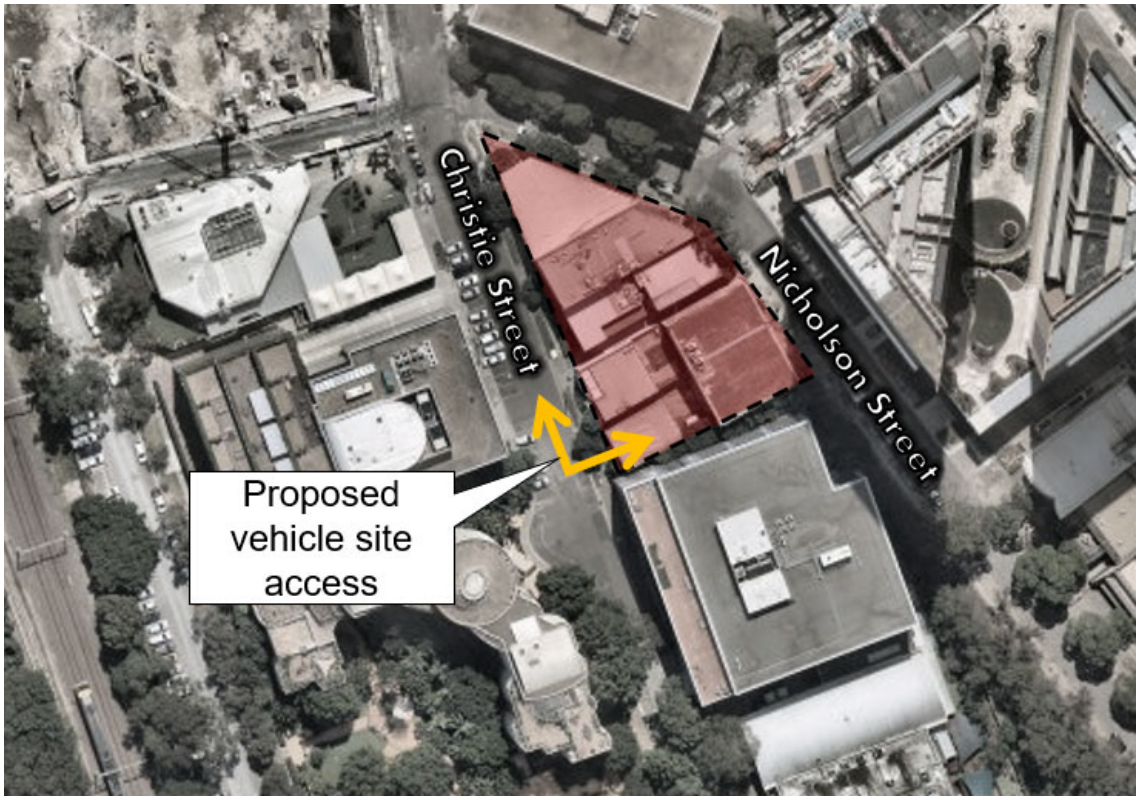

Figure 10 Proposed vehicle site access

The initial car park design considers a standard anti-clockwise circulation loop as shown in Figure 11. Three basement levels are proposed which comprise of 122 car parking spaces. The loading dock will be located on level B1 which is to be designed in accordance with relevant Australian Standards. Further details around the basement car park and loading dock design will be detailed during the preparation of the Development Application for the site.

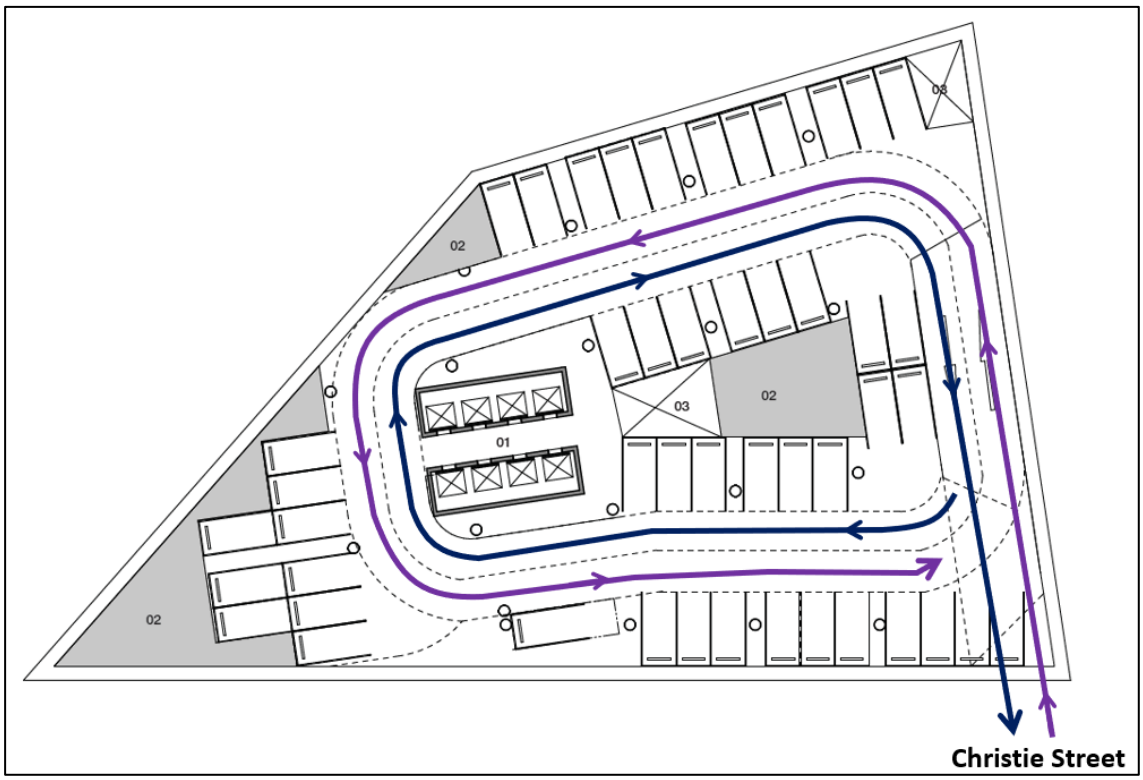

Figure 11 Car park circulation

4.2 Pedestrian accessibility

The proposed development will include improved pedestrian permeability within the area through the provision of a through site link connecting Christie Street with Nicholson Street. As previously noted the vehicle access location has been located at the southern end of Christie Street so as to be away from the main areas of pedestrian activity, which are anticipated to be along Nicholson Street.

4.3 Forecast mode share

A target mode split for the proposal has been set and is presented in Figure 12. Similar to existing travel patterns, more than half of employment trips in the precinct will travel by public transport. With the advent of the future Sydney Metro station at Crows Nest (less than 5 minute walk from the site) as well as the reduced on-site parking provision the proportion of staff using public transport to access the site is expected to increase to approximately 70%.

Based on the level of on-site car parking provided for staff, limited on-street parking opportunities and the relatively high cost of parking in St Leonards, the car mode share is expected to be approximately 15% for future staff of the building.

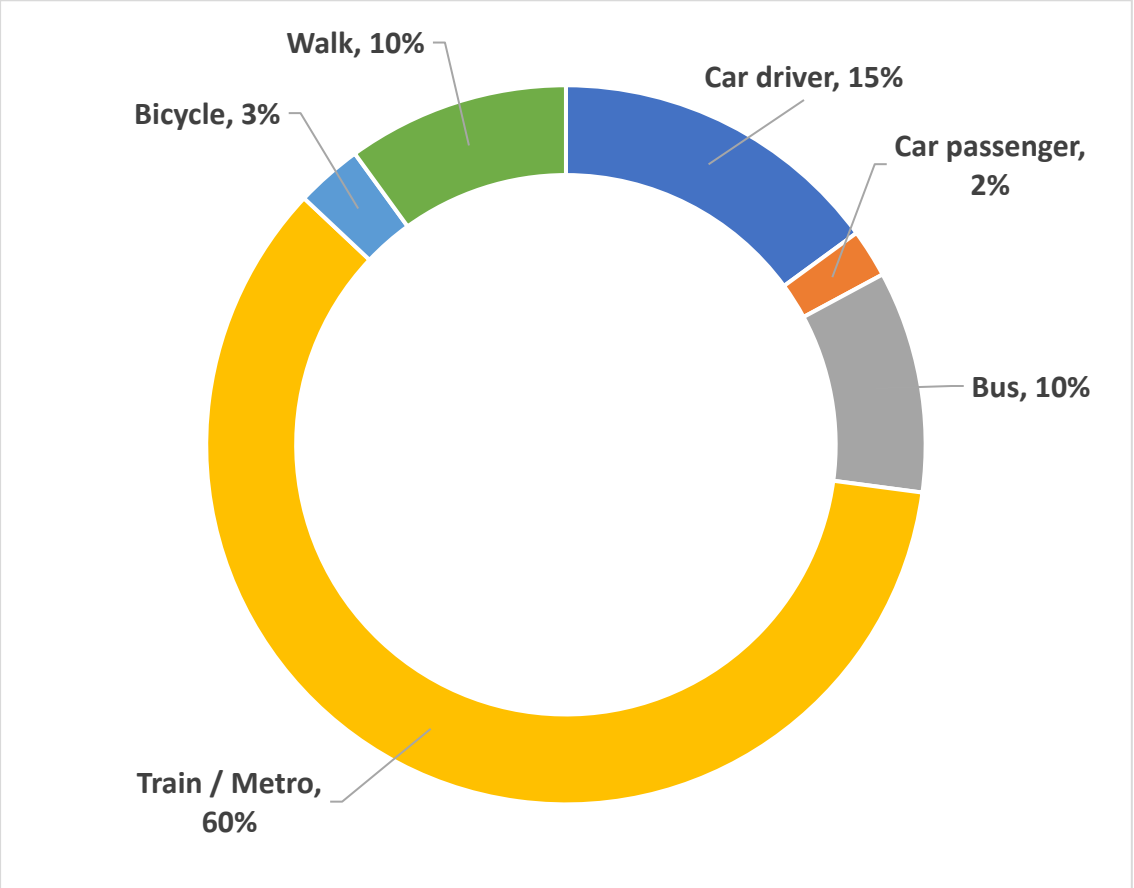

Figure 12 Forecast future mode share

4.4 Travel demand

Table 2 summarises the forecast number of trips (all modes) made to the future building over the following time periods:

- AM peak period (6.30am – 9.30am)
- AM peak hour (8am – 9am)
- Daily[1]

The development is anticipated to generate approximately 1,650 trips over a three hour morning peak period, with approximately 50% taking place during the morning peak hour (8am-9am). As shown in Table 2, the majority of employee trips generated by the proposal will be accommodated using sustainable modes.

Table 2 Total trips generated by proposal

Transport mode	Mode split	Future trip generation		
		AM peak period (6.30am – 9.30am)	AM peak hour (8am – 9am)	Daily
Car driver	15%	248	124	825
Car passenger	2%	36	18	119
Bus	10%	165	83	550
Train / Metro	60%	990	495	3,302
Bicycle	3%	50	25	165
Walk	10%	165	83	550
Total	100%	1,654	827	5,512

[1] The estimated future daily trips is based on surveys undertaken by Transport for NSW which indicates that trips generated during the AM peak hour account for approximately 15% of the daily number of person trips.

4.5 Public transport

As previously noted the site is highly accessible by existing public transport services, with St Leonards Station and numerous bus stops located within a short walk of the site.

The advent of Sydney Metro (City and Southwest) will provide additional connectivity to and from the site. Crows Nest Station will be delivered as part of this project and will be located between Pacific Highway, Clarke Lane and Oxley Street, south of Hume Street. This future metro station will significantly add to the already well provisioned public transport amenities in the area.

From Crows Nest Station (approximately 250m from the site), Central Station may be reached in approximately 11 minutes and Martin Place Station in 7 minutes. The Sydney Metro route and station locations are shown in Figure 13.

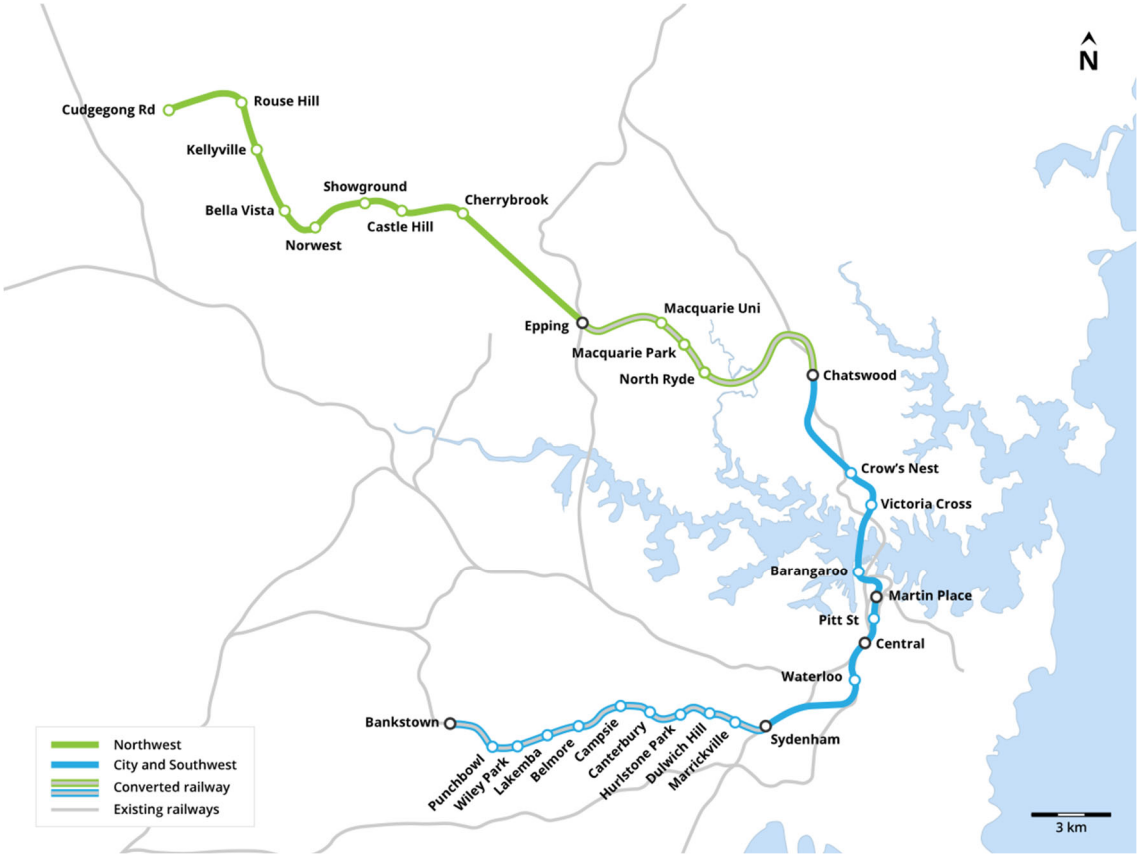

Figure 13 Sydney Metro route and station locations

4.6 Car parking

4.6.1 On-Street parking

As the site is located within the commercial core of St Leonards there are only metered restricted parking opportunities available on surrounding streets. Christie Street, Nicholson Street and Oxley Street are all metered with a 2 hour restriction between 8am and 6pm, Monday to Saturday. The section of Pacific Highway within the vicinity of the site operates as a T3 transit lane during 3pm to 7pm Monday to Friday and has a 1 hour parking restriction at other times. Therefore due to the lack of unrestricted parking opportunities on surrounding streets, employees will be unable to park on surrounding streets.

4.6.2 Off-Street parking

The required parking provisions are outlined in the existing Lane Cove DCP Part R: Traffic, Transport and parking –Table 2 – Car parking rates near St Leonards Railway Station. These parking rates have also been compared to those in place for the St Leonards commercial core for sites within the North Sydney LGA, as summarised in Table 3. As the retail component of the development will serve an ancillary function to workers of the proposed site and therefore it is assumed that it will not generate any additional parking demand.

Table 3 Proposed parking provision

Use	Proposed GFA	Lane Cove Council DCP		North Sydney Council DCP		Proposal	
		Parking rate*	No. of spaces	Parking rate*	No. of spaces	Parking rate	No. of spaces
Commercial	36,684	1 space per 100m^2 GFA	367	1 space per 400m^2 GFA	92	1 space per 300m^2 GFA	122

** For sites located within the St Leonards Commercial Core*

The proposal seeks to provide 122 parking spaces over three basement levels. Although this level of parking provision is lower than what would be required when adopting the parking rates outlined in the Lane Cove Council DCP, this is considered appropriate for the site. Section 2.2 of the DCP notes that lower parking rates will be considered if two or more of the following circumstances apply:

There are realistic transport alternatives to the private car in the locality

for the following reasons:

- The development is located within the commercial core of St Leonards, within five minute walk of St Leonards Station and the future Crows Nest metro station as well as multiple high frequency bus stops. In this context

the development will not generate the full parking demand outlined in the DCP.

- The Lane Cove DCP parking rates were developed in July 2016 prior to the announcement of a new Sydney Metro station at Crows Nest. Therefore the public transport accessibility serving the St Leonards commercial core has significantly improved since the development of the DCP parking rates.
- The proposed 122 parking spaces sits within the range of 92 and 367 as specified within the Lane Cove and North Sydney DCPs for sites located within the St Leonards commercial core.
- Due to the lack of unrestricted parking opportunities on surrounding streets, employees will be unable to park on surrounding streets.
- A lower car parking provision will reduce traffic movements and contribute to an improved and less congested road network in the vicinity of the site.
- The policy of managing parking provision on the site aligns with the actions stated within Lane Cove Council's draft Local Strategic Planning Statement (LSPS) in relation to managing traffic movements and encouraging utilisation of public transport infrastructure for future developments within St Leonards.
- Public transport services within St Leonards have capacity to accommodate additional trips to and from the site, with Transport for NSW currently constructing a new metro station at Crows Nest which will significantly enhance public transport capacity in the precinct.
- A green travel plan has been prepared for the site which aims to reduce private vehicle dependence and promote sustainable modes of transport.

4.7 Bicycle parking

The Lane Cove DCP stipulates bicycle parking requirements for both commercial and retail uses. As summarised in Table 4 below, approximately 200 spaces would be required when adopting the DCP rates. The location and design of the these bicycle parking spaces will be detailed during the preparation of the Development Application for the site.

Table 4 Bicycle parking requirements

Use	User Type	Parking rate	Proposed GFA (m^2)	Parking requirement
Commercial	Employees	1 space per 300m^2	36,684	123
	Visitors	1 rack + 1 rack per 800m^2		46
Retail	Employees	1 space per 50m^2	1,149	23
	Visitors	2 racks + 1 rack per 200m^2		6
Total				***198***

4.8 Green travel plan

4.8.1 Background

A Green Travel Plan (GTP) is a package of measures put in place by the development occupants to try and encourage more sustainable travel. It is a means for a development to demonstrate a commitment and take a pro-active step towards improving the environmental sustainability of its activities.

More generally, the principles of a GTP are applied to all people travelling to and from a site. Government authorities are placing increasing emphasis on the need to reduce the number and lengths of motorised journeys and in doing so encourage greater use of alternative means of travel with less negative environmental impacts than the car.

4.8.2 Objectives

The main objectives of the GTP are to reduce the need to travel and promotion of sustainable means of transport. The more specific objectives include:

- High mode share for public transport, cycling and walking to work journeys;
- Ensuring adequate facilities are provided at the site to enable the tenants and visitors of the development to commute by sustainable transport modes;
- Reduce the number of car journeys associated with business travel;
- Facilitate the sustainable and safe travel of occupants; and
- Raise awareness of sustainable transport amongst tenants of the development.

4.8.3 Potential measures

A suite of potential measures is described below to be implemented as part of the GTP, which can be developed further as the development progresses.

Table 5 List of potential GTP measures

Action	Responsibility
Cycling	
Provide sufficient cycle parking to meet needs, which is easily accessible and secure	Developer
Provide adequate cycle parking facilities for visitors	Developer
Ensure cycle parking is clearly visible or provide signage to direct people to cycle bays	Building manager
Produce a map showing cycle routes and bike stands in the area	Building manager

Action	Responsibility
Supply a communal toolkit for staff consisting of puncture repair equipment, a bike pump, a spare lock and lights.	Building manager
Promote the participation in annual events such as 'Ride to Work Day'	Tenants
Walking	
Identify tenants living near work that may be interested in walking to work	Building manager
Identify through the travel survey what incentives might need to be put in place for non-walkers to consider a mode shift	
Public Transport	
Develop a map showing public transport routes in the area	Building manager
Put up a noticeboard with leaflets and maps showing the main public transport routes to and from the site	Building manager
Carshare / Carpooling	
Establish a car pooling program to help people find someone to share in their daily commute.	Building manager and tenants
Develop a map showing car-share spots in the area to encourage staff and visitors to use a shared car (e.g. GoGet) if they are required to drive	Building manager and tenants
General actions	
Promotion including: • Allow staff the flexibility to commute outside peak periods to reduce overall congestion and travel time. • Identify a tenant/champion to complete travel coordinator duties • Provide a welcome pack upon initial occupation of each tenant which includes details around sustainable travel options	Tenants

4.8.4 Monitoring and review

In order for the GTP to be effective, it must be reviewed on a regular basis. It is important to ensure that the GTP is meeting its objectives and having the intended impact on car use and transport choices. The GTP should be reviewed on a yearly basis by undertaking travel surveys. It is recommended that the mode shares are first reviewed at least 18 months after occupation, to allow activity levels to settle at the site.

5 Road Network Impacts

5.1 Traffic generation

As previously noted in Table 2, it is expected the development may generate up to 124 vehicle trips during the AM and PM peak hours. These trips will be directed to the site itself as well as dispersed across a number of neighbouring public car parking lots in the St Leonards area. As a conservative assumption however, it has been assumed that all 124 trips will be directed towards the site at 46 Nicholson Street. In reality vehicles will disperse across a number of access routes which reduces the impacts on the road network from that assessed.

It is assumed that the retail component of the development will not be a key generator of both vehicle and pedestrian trips, but will likely serve as an ancillary function for workers of the building.

5.2 Traffic distribution

Traffic surveys were previously conducted[2] in the area surrounding the site to observe the movement of vehicles entering and adjacent developments on Nicholson Street. The survey results reveal that during the AM peak that 75% of vehicles accessing sites on Nicholson Street turn in from Oxley Street with only 25% turning in from Christie Street. During the PM peak, 100% of vehicles accessing the site turn in from Oxley Street. Furthermore, the survey reveals that 95% and 100% of outbound trips are made towards the Oxley Street / Pacific Highway intersection in the AM and PM peaks respectively.

Given that the vast majority of inbound and outbound trips pass through the Oxley Street / Pacific Highway intersection, the trip distribution has been proportionally based on the existing turning movements at the intersection. Traffic data reveals that during the evening peak, all movements through the western leg of Oxley Street are split such that 30% turn left, 40% travel through and 30% turn right. Using this data the following origin / destination assumptions have been made:

- 30% of trips have an origin / destination of northwest of St Leonards via the Pacific Highway
- 40% of trips have an origin / destination of northeast of St Leonards via Oxley Street
- 30% of trips have an origin / destination of southeast of St Leonards via the Pacific Highway

[2] Traffic survey results outlined in Traffic, Parking and Accessibility Report (Brown, 2014) which accompanied a planning proposal for Leighton and Charter Hall's development sites

It is assumed that 80% of employment trips generated are incoming trips in the AM peak, with 80% of trips in the PM peak being outgoing trips. This distribution aligns with guidance contained in the *RMS Guide to Traffic Generating Developments* document.

The traffic generated from the development has been distributed using the distribution listed above and is illustrated in Figure 14 below.

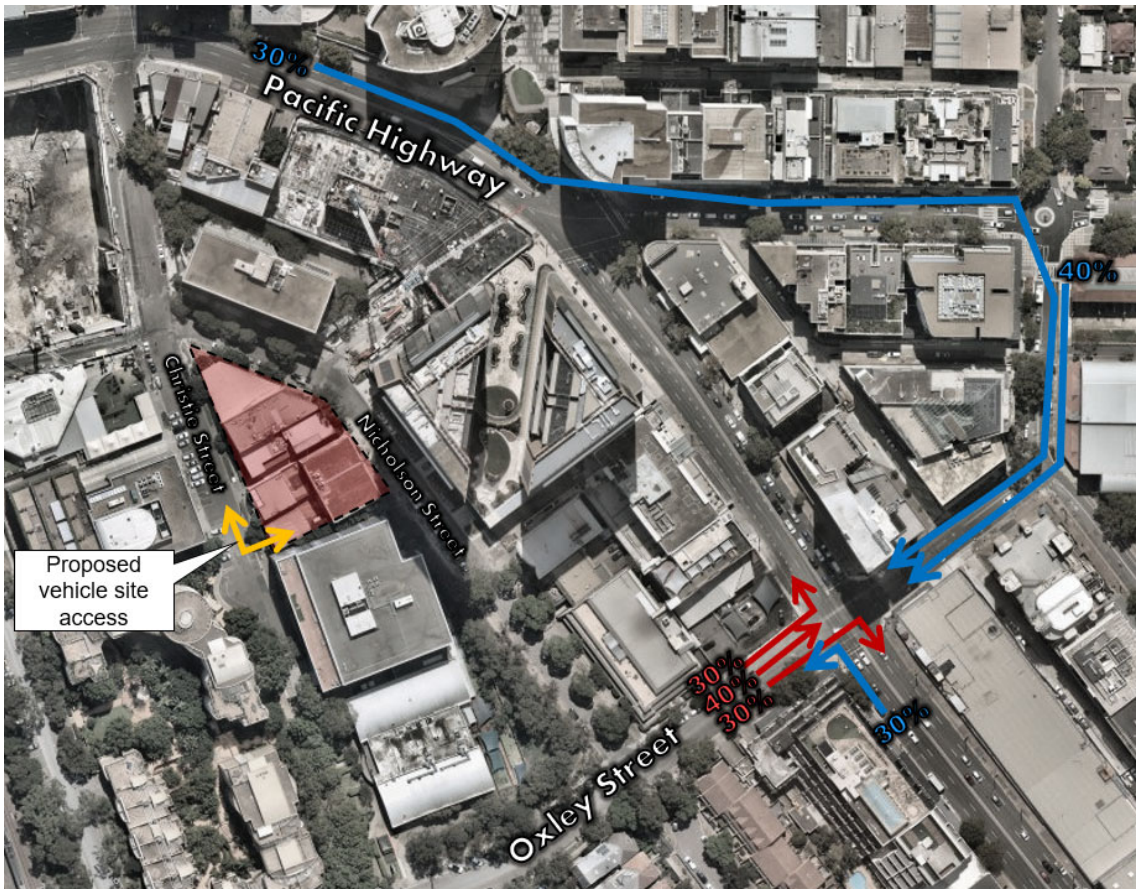

Figure 14 Forecast traffic distribution

5.3 Additional traffic movements

Based on the traffic generation and distribution assumptions previously noted in the previous sections, the additional traffic movements generated by the proposal during the AM and PM peak hours is illustrated in Figure 15 and Figure 16 respectively on the following page.

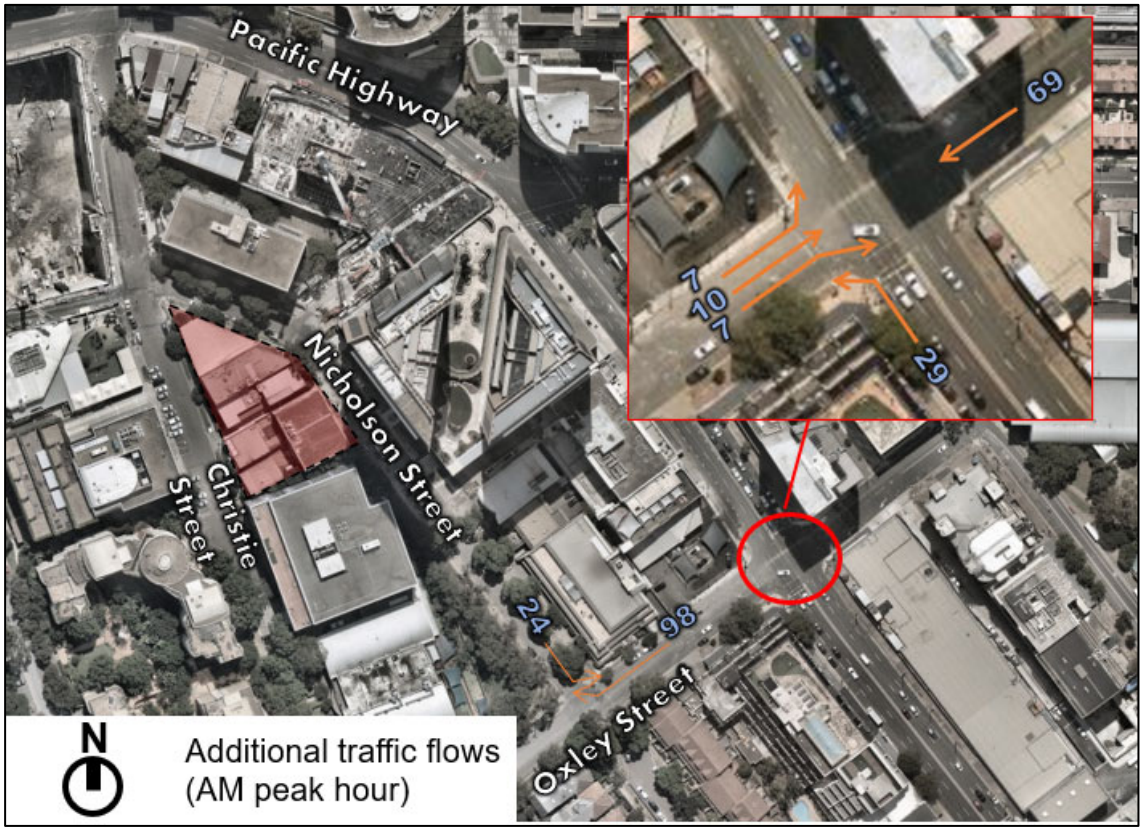

Figure 15 Additional traffic movements – AM peak hour

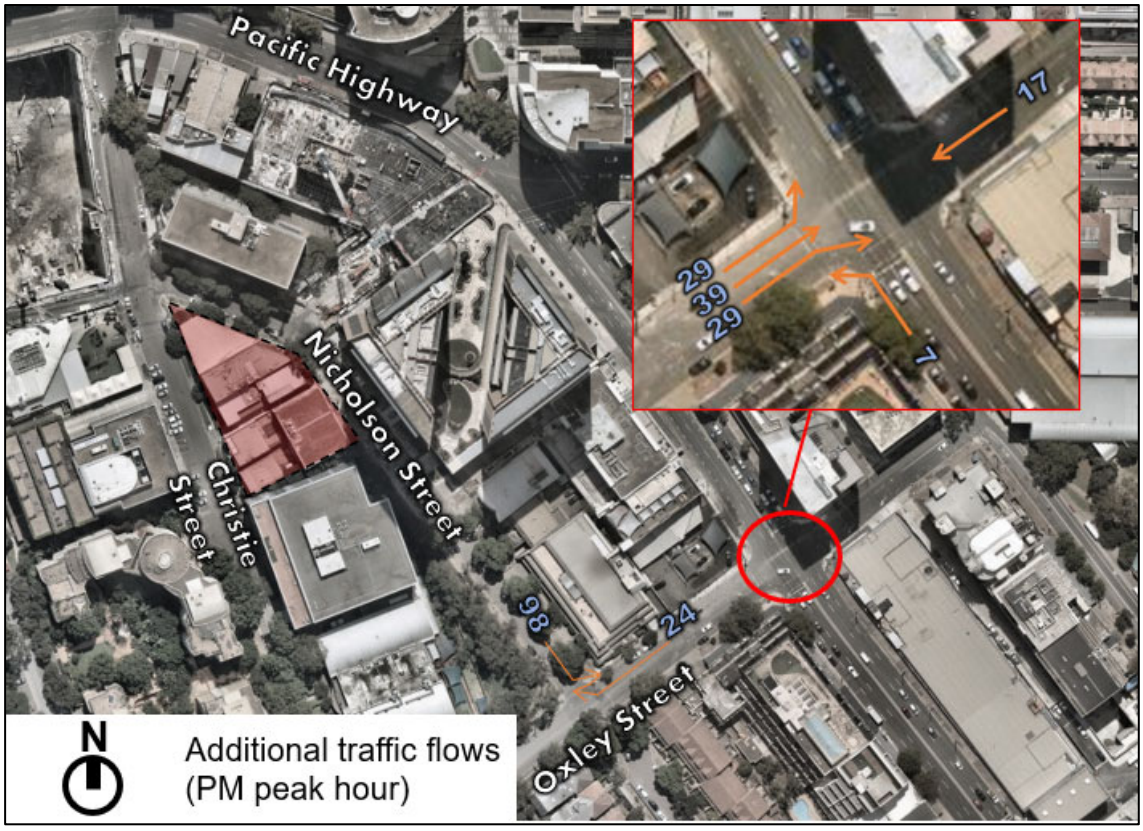

Figure 16 Additional traffic movements – PM peak hour

5.4 Cumulative traffic movements

There are a number of developments within Lane Cove Council's portion of St Leonards that have either recently received planning approval or are currently under construction. Lane Cove Council previously engaged TEF Consulting to undertake a traffic study which considered the cumulative traffic impacts of these developments. The findings of this study have been used in this assessment to determine the future operation of the road network in the vicinity of the site at 46 Nicholson Street.

5.5 Traffic modelling

5.5.1 Overview

Traffic modelling has been undertaken using the TfNSW approved SIDRA modelling software package to consider the impacts of the development of the site at the following intersections:

- Pacific Highway / Oxley Street (traffic signals)
- Nicholson Street / Oxley Street (priority control intersection)

The modelling parameters used to analyse the performance of the intersections are as follows:

Level of Service (LoS) - a measure that uses the average delay experienced by vehicles to categorically assign each approach and movement with a qualitative ordinal grade (A through F, with A being the best and F being the worst). RMS Traffic Modelling Guidelines indicate the average delay relating to each grade, this is outlined in Table 6.

Table 6 Level of service grades / description

Level of service grade	Average delay (seconds)	Description
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity. At signals, incidents will cause excessive delays. Roundabouts require other control mode
F	Greater than 71	Unsatisfactory with excessive queuing

Degree of Saturation (DoS) - Another common measure of intersection performance is the degree of saturation, which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DOS of 1.0 indicates that an intersection is operating at capacity.

The intersection performance is assessed in this report in terms of the following three factors for each intersection.

- Degree of Saturation
- Average Delay (Seconds per vehicle)
- Level of Service

5.5.2 Scenarios considered

The traffic modelling has considered the following two scenarios:

(i) 'Future Base' - Road network operation following the development of planned developments, as assessed in the TEF Consulting report and updated for the 88 Christie Street development proposal.

(ii) 'Future Base + Proposal' – As per scenario (i) above with the additional traffic volumes from the 46 Nicholson Street proposal included.

5.5.3 Traffic modelling results

The results of the traffic modelling are summarised in Table 7 below. Full analysis is provided as Appendix A of this document.

Table 7 Traffic modelling results

Peak Hour	Intersection	Existing traffic flows			Existing traffic plus future development		
		AVD (sec)	DOS	LOS	AVD (sec)	DOS	LOS
AM peak hour	Nicholson Street / Oxley Street	6	0.21	A	6	0.23	A
	Pacific Highway / Oxley Street	18	0.31	B	19	0.31	B
PM peak hour	Nicholson Street / Oxley Street	6	0.27	A	7	0.32	A
	Pacific Highway / Oxley Street	15	0.25	B	20	0.25	B

AVD – Average vehicle delay DOS – Degree of Saturation LOS – Level of Service

The traffic modelling demonstrates that the increased traffic flows associated with the development of the site will not result in adverse impacts on the surrounding road network. All intersections retain an acceptable level of service during both the AM and PM peak hours, with no additional measures required to accommodate future traffic demands.

6 Summary

JMT Consulting has prepared this traffic and transport study on behalf of Jemalong Property Group to inform the preparation of a Planning Proposal for the site at 46 Nicholson Street, St Leonards. The study considers the implications of the proposal with respect to future traffic movements, access arrangements, parking provision and pedestrian circulation. Key findings of the study are as follows:

- The site has excellent access to public transport, which will be further enhanced through the provision of the future Crows Nest metro station which is within a 5 minute walk of the site.
- Vehicle access into the site would be via the southern end of Christie Street which is away from the main areas of pedestrian activity along Nicholson Street.
- Three basement levels are proposed which comprise of 122 car parking spaces. Although this level of parking provision is lower than what would be required when adopting the parking rates outlined in the Lane Cove Council DCP, this is considered appropriate given the site is highly accessible by public transport and a lower car parking provision will reduce traffic movements and contribute to an improved and less congested road network in the vicinity of the site.
- As the site is located within the commercial core of St Leonards parking in this area is restricted which will prohibit workers from parking on surrounding streets.
- Traffic modelling demonstrates that the increased traffic flows associated with the development of the site will not result in adverse impacts on the surrounding road network, taking into consideration cumulative traffic movements of a number of adjacent developments within St Leonards.
- Travel demand management measures have been suggested to improve the mode share of public transport and active transport.

Based on the above key findings, it is considered that the impact of the future site development on the transport network will be acceptable.

Appendix A: Traffic Modelling Outputs

MOVEMENT SUMMARY

Site: 101 [AM Future Base (Site Folder: Oxley-Pac Hwy)]

Pacific Hwy / Oxley St
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Pacific Highway (SE)														
21	L2	177	2.0	186	2.0	0.283	20.5	LOS B	16.6	119.9	0.55	0.58	0.55	45.9
22	T1	1334	5.0	1404	5.0	0.283	15.0	LOS B	16.8	122.3	0.55	0.51	0.55	47.9
Approach		1511	4.6	1591	4.6	0.283	15.6	LOS B	16.8	122.3	0.55	0.52	0.55	47.7
NorthEast: Oxley Street (NE)														
24	L2	54	2.0	57	2.0	0.092	36.7	LOS C	2.4	17.3	0.72	0.72	0.72	36.8
25	T1	47	2.0	49	2.0	0.076	30.9	LOS C	2.1	14.9	0.71	0.55	0.71	39.9
Approach		101	2.0	106	2.0	0.092	34.0	LOS C	2.4	17.3	0.71	0.64	0.71	38.2
NorthWest: Pacific Highway (NW)														
27	L2	117	2.0	123	2.0	0.309	20.8	LOS B	18.5	134.5	0.56	0.55	0.56	46.2
28	T1	1537	5.0	1618	5.0	* 0.309	15.2	LOS B	18.6	136.1	0.56	0.51	0.56	47.8
Approach		1654	4.8	1741	4.8	0.309	15.6	LOS B	18.6	136.1	0.56	0.51	0.56	47.7
SouthWest: Oxley Street (SW)														
30	L2	180	2.0	189	2.0	* 0.306	39.4	LOS C	8.8	62.6	0.78	0.78	0.78	35.8
31	T1	90	2.0	95	2.0	0.145	31.7	LOS C	4.1	29.3	0.73	0.59	0.73	39.5
32	R2	107	2.0	113	2.0	0.265	40.8	LOS C	5.3	37.8	0.78	0.76	0.78	35.5
Approach		377	2.0	397	2.0	0.306	38.0	LOS C	8.8	62.6	0.77	0.73	0.77	36.5
All Vehicles		3643	4.4	3835	4.4	0.309	18.4	LOS B	18.6	136.1	0.58	0.54	0.58	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Pacific Highway (SE)												
P5	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.4	223.8	0.97
NorthEast: Oxley Street (NE)												
P6	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.8	215.2	0.96
SouthWest: Oxley Street (SW)												
P8	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	227.3	218.5	0.96
All Pedestrians		150	158	59.3	LOS E	0.2	0.2	0.96	0.96	227.9	219.2	0.96

MOVEMENT SUMMARY

Site: 101 [AM Future Base + Dev (Site Folder: Oxley-Pac Hwy)]

Pacific Hwy / Oxley St
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Pacific Highway (SE)														
21	L2	206	2.0	217	2.0	0.292	21.1	LOS B	17.2	124.6	0.56	0.60	0.56	45.4
22	T1	1334	5.0	1404	5.0	0.292	15.6	LOS B	17.5	127.5	0.56	0.52	0.56	47.5
Approach		1540	4.6	1621	4.6	0.292	16.3	LOS B	17.5	127.5	0.56	0.53	0.56	47.2
NorthEast: Oxley Street (NE)														
24	L2	54	2.0	57	2.0	0.090	35.9	LOS C	2.4	17.0	0.71	0.72	0.71	37.1
25	T1	106	2.0	112	2.0	0.167	31.3	LOS C	4.8	34.5	0.73	0.59	0.73	39.7
Approach		160	2.0	168	2.0	0.167	32.9	LOS C	4.8	34.5	0.72	0.63	0.72	38.8
NorthWest: Pacific Highway (NW)														
27	L2	117	2.0	123	2.0	0.313	21.4	LOS B	18.9	137.0	0.57	0.56	0.57	45.9
28	T1	1537	5.0	1618	5.0	* 0.313	15.8	LOS B	19.0	138.6	0.57	0.52	0.57	47.5
Approach		1654	4.8	1741	4.8	0.313	16.2	LOS B	19.0	138.6	0.57	0.52	0.57	47.4
SouthWest: Oxley Street (SW)														
30	L2	187	2.0	197	2.0	* 0.311	38.8	LOS C	9.1	64.6	0.78	0.78	0.78	36.0
31	T1	100	2.0	105	2.0	0.158	31.2	LOS C	4.6	32.4	0.73	0.59	0.73	39.8
32	R2	114	2.0	120	2.0	0.307	42.9	LOS D	5.9	41.7	0.81	0.77	0.81	34.8
Approach		401	2.0	422	2.0	0.311	38.1	LOS C	9.1	64.6	0.77	0.73	0.77	36.5
All Vehicles		3755	4.3	3953	4.3	0.313	19.3	LOS B	19.0	138.6	0.60	0.55	0.60	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Pacific Highway (SE)												
P5	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.4	223.8	0.97
NorthEast: Oxley Street (NE)												
P6	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.8	215.2	0.96
SouthWest: Oxley Street (SW)												
P8	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	227.3	218.5	0.96
All Pedestrians		150	158	59.3	LOS E	0.2	0.2	0.96	0.96	227.9	219.2	0.96

MOVEMENT SUMMARY

Site: 101 [PM Future Base + Dev (Site Folder: Oxley-Pac Hwy)]

Pacific Hwy / Oxley St
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Pacific Highway (SE)														
21	L2	176	2.0	185	2.0	0.241	23.7	LOS B	15.7	113.5	0.59	0.61	0.59	44.0
22	T1	1156	5.0	1217	5.0	*0.241	18.1	LOS B	15.9	116.1	0.59	0.53	0.59	46.0
Approach		1332	4.6	1402	4.6	0.241	18.8	LOS B	15.9	116.1	0.59	0.54	0.59	45.7
NorthEast: Oxley Street (NE)														
24	L2	63	2.0	66	2.0	0.092	31.9	LOS C	2.6	18.5	0.66	0.72	0.66	38.7
25	T1	126	2.0	133	2.0	0.176	27.3	LOS B	5.4	38.5	0.69	0.56	0.69	41.5
Approach		189	2.0	199	2.0	0.176	28.8	LOS C	5.4	38.5	0.68	0.62	0.68	40.5
NorthWest: Pacific Highway (NW)														
27	L2	164	2.0	173	2.0	0.221	23.5	LOS B	14.2	102.7	0.58	0.60	0.58	44.1
28	T1	1056	5.0	1112	5.0	0.221	17.9	LOS B	14.4	105.0	0.58	0.53	0.58	46.1
Approach		1220	4.6	1284	4.6	0.221	18.6	LOS B	14.4	105.0	0.58	0.54	0.58	45.8
SouthWest: Oxley Street (SW)														
30	L2	52	2.0	55	2.0	0.076	31.7	LOS C	2.1	15.2	0.66	0.71	0.66	38.7
31	T1	53	2.0	56	2.0	0.074	26.0	LOS B	2.2	15.4	0.66	0.51	0.66	42.1
32	R2	97	2.0	102	2.0	*0.239	37.6	LOS C	4.6	32.6	0.75	0.75	0.75	36.6
Approach		202	2.0	213	2.0	0.239	33.0	LOS C	4.6	32.6	0.70	0.68	0.70	38.5
All Vehicles		2943	4.3	3098	4.3	0.241	20.4	LOS B	15.9	116.1	0.60	0.55	0.60	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Pacific Highway (SE)												
P5	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.4	223.8	0.97
NorthEast: Oxley Street (NE)												
P6	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.8	215.2	0.96
SouthWest: Oxley Street (SW)												
P8	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	227.3	218.5	0.96
All Pedestrians		150	158	59.3	LOS E	0.2	0.2	0.96	0.96	227.9	219.2	0.96

MOVEMENT SUMMARY

Site: 101 [PM Future Base (Site Folder: Oxley-Pac Hwy)]

Pacific Hwy / Oxley St
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Pacific Highway (SE)														
21	L2	169	2.0	178	2.0	0.201	16.9	LOS B	12.4	89.3	0.47	0.53	0.47	48.0
22	T1	1156	5.0	1217	5.0	*0.201	11.4	LOS A	12.5	91.2	0.47	0.44	0.47	50.3
Approach		1325	4.6	1395	4.6	0.201	12.1	LOS A	12.5	91.2	0.47	0.45	0.47	49.9
NorthEast: Oxley Street (NE)														
24	L2	63	2.0	66	2.0	0.124	41.5	LOS C	3.1	21.8	0.77	0.73	0.77	35.1
25	T1	109	2.0	115	2.0	*0.204	36.9	LOS C	5.4	38.7	0.79	0.64	0.79	37.5
Approach		172	2.0	181	2.0	0.204	38.6	LOS C	5.4	38.7	0.78	0.67	0.78	36.6
NorthWest: Pacific Highway (NW)														
27	L2	164	2.0	173	2.0	0.185	16.8	LOS B	11.2	81.2	0.46	0.53	0.46	48.0
28	T1	1056	5.0	1112	5.0	0.185	11.2	LOS A	11.4	83.1	0.46	0.43	0.46	50.3
Approach		1220	4.6	1284	4.6	0.185	12.0	LOS A	11.4	83.1	0.46	0.44	0.46	50.0
SouthWest: Oxley Street (SW)														
30	L2	23	2.0	24	2.0	0.045	40.5	LOS C	1.1	7.7	0.75	0.70	0.75	35.4
31	T1	4	2.0	4	2.0	0.007	34.2	LOS C	0.2	1.3	0.73	0.48	0.73	38.5
32	R2	68	2.0	72	2.0	0.224	47.4	LOS D	3.6	25.9	0.83	0.76	0.83	33.3
Approach		95	2.0	100	2.0	0.224	45.1	LOS D	3.6	25.9	0.81	0.73	0.81	34.0
All Vehicles		2812	4.4	2960	4.4	0.224	14.8	LOS B	12.5	91.2	0.50	0.47	0.50	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Pacific Highway (SE)												
P5	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.4	223.8	0.97
NorthEast: Oxley Street (NE)												
P6	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.8	215.2	0.96
SouthWest: Oxley Street (SW)												
P8	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	227.3	218.5	0.96
All Pedestrians		150	158	59.3	LOS E	0.2	0.2	0.96	0.96	227.9	219.2	0.96

MOVEMENT SUMMARY

Site: 101 [AM Future Base (Site Folder: Oxley-Nicholson)]

Oxley Street / Nicholson Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Oxley Street (NE)														
25	T1	73	0.0	77	0.0	0.093	4.7	LOS A	0.5	3.4	0.35	0.44	0.35	53.3
26	R2	43	0.0	45	0.0	0.093	9.5	LOS A	0.5	3.4	0.35	0.44	0.35	53.1
Approach		116	0.0	122	0.0	0.093	6.5	LOS A	0.5	3.4	0.35	0.44	0.35	53.2
NorthWest: Nicholson Street (NW)														
27	L2	320	0.0	337	0.0	0.214	5.7	LOS A	1.0	7.1	0.14	0.54	0.14	53.2
29	R2	8	0.0	8	0.0	0.009	6.3	LOS A	0.0	0.2	0.25	0.55	0.25	52.8
Approach		328	0.0	345	0.0	0.214	5.7	LOS A	1.0	7.1	0.14	0.54	0.14	53.2
SouthWest: Oxley Street (SW)														
30	L2	1	0.0	1	0.0	0.024	5.6	LOS A	0.0	0.0	0.00	0.51	0.00	54.3
31	T1	89	0.0	94	0.0	0.024	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
Approach		90	0.0	95	0.0	0.024	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
All Vehicles		534	0.0	562	0.0	0.214	5.7	NA	1.0	7.1	0.16	0.51	0.16	53.4

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

MOVEMENT SUMMARY

Site: 101 [AM Future Base + Dev (Site Folder: Oxley-Nicholson)]

Oxley Street / Nicholson Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Oxley Street (NE)														
25	T1	73	0.0	77	0.0	0.217	4.7	LOS A	1.0	7.1	0.40	0.54	0.40	52.9
26	R2	141	0.0	148	0.0	0.217	8.2	LOS A	1.0	7.1	0.40	0.54	0.40	52.7
Approach		214	0.0	225	0.0	0.217	7.0	LOS A	1.0	7.1	0.40	0.54	0.40	52.8
NorthWest: Nicholson Street (NW)														
27	L2	344	0.0	362	0.0	0.230	5.7	LOS A	1.1	7.8	0.14	0.54	0.14	53.2
29	R2	8	0.0	8	0.0	0.009	6.3	LOS A	0.0	0.2	0.25	0.55	0.25	52.8
Approach		352	0.0	371	0.0	0.230	5.7	LOS A	1.1	7.8	0.15	0.54	0.15	53.2
SouthWest: Oxley Street (SW)														
30	L2	1	0.0	1	0.0	0.024	5.8	LOS A	0.0	0.0	0.00	0.51	0.00	54.3
31	T1	89	0.0	94	0.0	0.024	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
Approach		90	0.0	95	0.0	0.024	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
All Vehicles		656	0.0	691	0.0	0.230	6.0	NA	1.1	7.8	0.21	0.54	0.21	53.3

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

MOVEMENT SUMMARY

Site: 101 [PM Future Base (Site Folder: Oxley-Nicholson)]

Oxley Street / Nicholson Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Oxley Street (NE)														
25	T1	98	0.0	103	0.0	0.266	4.7	LOS A	1.3	9.1	0.31	0.51	0.31	53.3
26	R2	192	0.0	202	0.0	0.266	7.1	LOS A	1.3	9.1	0.31	0.51	0.31	53.0
Approach		290	0.0	305	0.0	0.266	6.3	LOS A	1.3	9.1	0.31	0.51	0.31	53.1
NorthWest: Nicholson Street (NW)														
27	L2	30	0.0	32	0.0	0.020	5.7	LOS A	0.1	0.6	0.13	0.54	0.13	53.2
29	R2	23	0.0	24	0.0	0.027	6.6	LOS A	0.1	0.6	0.30	0.58	0.30	52.7
Approach		53	0.0	56	0.0	0.027	6.1	LOS A	0.1	0.6	0.21	0.56	0.21	53.0
SouthWest: Oxley Street (SW)														
30	L2	6	0.0	6	0.0	0.032	5.9	LOS A	0.0	0.0	0.00	0.51	0.00	54.2
31	T1	113	0.0	119	0.0	0.032	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
Approach		119	0.0	125	0.0	0.032	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.7
All Vehicles		462	0.0	486	0.0	0.266	5.9	NA	1.3	9.1	0.22	0.52	0.22	53.5

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

MOVEMENT SUMMARY

Site: 101 [PM Future Base + Dev (Site Folder: Oxley-Nicholson)]

Oxley Street / Nicholson Street
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Oxley Street (NE)														
25	T1	98	0.0	103	0.0	0.320	4.7	LOS A	1.6	11.2	0.42	0.55	0.42	52.9
26	R2	216	0.0	227	0.0	0.320	8.2	LOS A	1.6	11.2	0.42	0.55	0.42	52.6
Approach		314	0.0	331	0.0	0.320	7.1	LOS A	1.6	11.2	0.42	0.55	0.42	52.7
NorthWest: Nicholson Street (NW)														
27	L2	30	0.0	32	0.0	0.020	5.7	LOS A	0.1	0.6	0.13	0.54	0.13	53.2
29	R2	121	0.0	127	0.0	0.142	6.8	LOS A	0.5	3.5	0.33	0.62	0.33	52.6
Approach		151	0.0	159	0.0	0.142	6.5	LOS A	0.5	3.5	0.29	0.60	0.29	52.7
SouthWest: Oxley Street (SW)														
30	L2	6	0.0	6	0.0	0.032	5.9	LOS A	0.0	0.0	0.00	0.51	0.00	54.2
31	T1	113	0.0	119	0.0	0.032	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.8
Approach		119	0.0	125	0.0	0.032	4.7	LOS A	0.0	0.0	0.00	0.51	0.00	54.7
All Vehicles		584	0.0	615	0.0	0.320	6.5	NA	1.6	11.2	0.30	0.56	0.30	53.1

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