



360 Pacific Highway, Crows Nest

Transport Assessment

Prepared for:

Hudson Pacific Property

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1 Introduction

1.1 Background

Hudson Pacific Property engaged JMT Consulting to carry out a traffic and transport assessment of the Planning Proposal for the site at 360 Pacific Highway, Crows Nest (the site). The site is located within the area covered by the St Leonards and Crows Nest 2036 Plan (2036 Plan), prepared by the Department of Planning, Industry and Environment, which sets out site-specific built form controls.

The redevelopment of the site will facilitate a mix of commercial and residential floor space in close proximity to existing and future public transport, particularly the future Crows Nest metro station.

1.2 Site location

The site is located at 360 Pacific Highway, Crows Nest, and comprises one land parcel of 1,409m² with a primary frontage to Pacific Highway, and a secondary frontage to Nicholson Place, both 42 metres in length. The site currently contains a three-storey building, principally used for retail/commercial and office purposes. Six heritage-listed terrace buildings adjoin the site to the north, with similar terraces also located along the street block. To the south-west of Nicholson Place are existing residential dwellings including a three-storey residential apartment complex. The site location is presented in Figure 1 below



Figure 1 Site location

1.3 Description of the planning proposal

The Planning Proposal seeks to amend the North Sydney Local Environmental Plan 2013 (NSLEP 2013) to:

- Increase the maximum height control from 10m to 18 storeys, as per the 2036 Plan
- Establish a maximum FSR of 5.5:1, as per the 2036 Plan
- Establish a minimum non-residential FSR of 2:1, as per the 2036 Plan

1.4 Report purpose

This report has been prepared to summarise the traffic and transport implications of the proposal. Specifically the assessment considers the following items:

- Existing transport conditions, including:
 - Surrounding road network
 - Vehicle site access
 - Car parking
 - Loading and servicing arrangements
 - Public transport provision
- Proposed site access arrangements
- Proposed vehicle loading and servicing arrangements
- Proposed parking rates to be adopted as part of a future development application for the site, including indicative parking numbers based on the indicative architecture concept
- Additional traffic movements resulting from the Planning Proposal and impacts to the adjacent road network
- Public transport, walking and cycling measures

2 Existing Transport Conditions

2.1 Travel behaviours

Travel behaviours for residents and employees within the area surrounding the site¹ been analysed using 2016 Journey to Work Census data. The data demonstrates a high proportion of people travelling to and from Crows Nest use public transport, accounting for close to half of all trips in the case of residents travelling to work. This reflects the strong availability and accessibility of public transport in this area, which will only improve following the completion of the Sydney Metro network. A high proportion of residents walk to work, which reflects the likelihood that future residents of the site will choose to work in the nearby St Leonards or North Sydney CBD. Only 12% of residents noted that they travelled to work using their own vehicle, demonstrating that the site has a very low car reliance making it suitable for future residential development.

Table 1 Existing travel patterns

Mode of travel	Proportion of trips	
	<i>Residents travelling to work from Crows Nest</i>	<i>Employees travelling into Crows Nest for work</i>
Car driver	28%	50%
Car passenger	1%	4%
Bus	21%	10%
Train	28%	25%
Walk	15%	7%
Bicycle	5%	0.5%
Other	2%	3.5%%
Total	100%	100%

¹ SA1, code 12104141401 & Destination Zone 114 143 316

2.2 Road network

To manage the extensive network of roads for which councils are responsible under the Roads Act 1993, Transport for NSW (TfNSW) in partnership with local government established an administrative framework of *State*, *Regional*, and *Local Road* categories. State Roads are managed and financed by TfNSW 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. Key State and Regional roads which provide access to the site are illustrated in Figure 2.

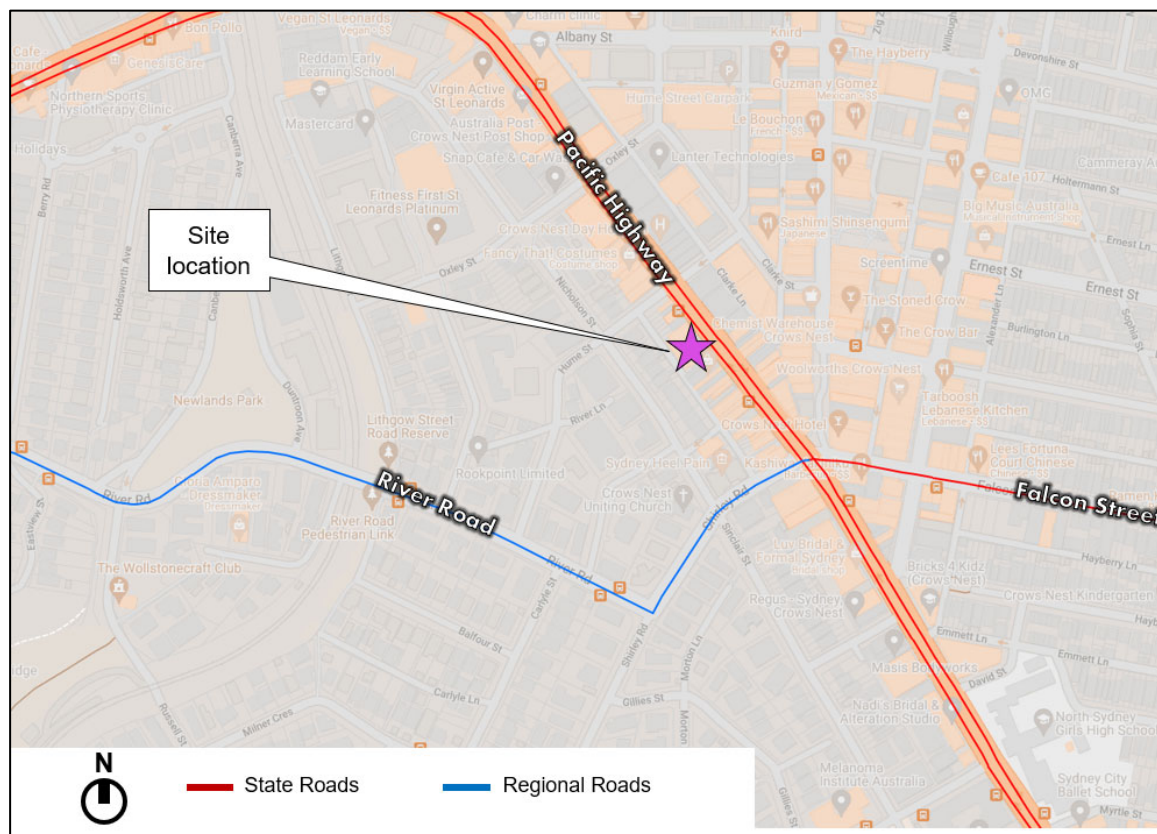


Figure 2 Road network serving the site

2.3 Existing vehicle site access

Vehicular access into the site is currently provided through a driveway located at the rear on Nicholson Place as shown in Figure 3. Vehicle servicing and waste collection also takes place via Nicholson Place, with no vehicle access available via the Pacific Highway.



Figure 3 Existing vehicle site access

Image source: Google Street View

2.4 Public transport

2.4.1 Public transport overview

The site has excellent access to public transport and is located approximately 10 minute walk from St Leonards Station and high frequency bus stops located on Pacific Highway which are illustrated in Figure 4. It is also adjacent to high frequency bus stops on the Pacific Highway and within 100m of the future Crows Nest Metro Station.



Figure 4 Existing public transport environment

2.4.2 Rail services

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.

2.4.3 Bus network

The existing bus routes serving the site are shown in Figure 5. Bus M20 provides access to the city via the Pacific Highway, while the other buses serve various suburbs regionally.

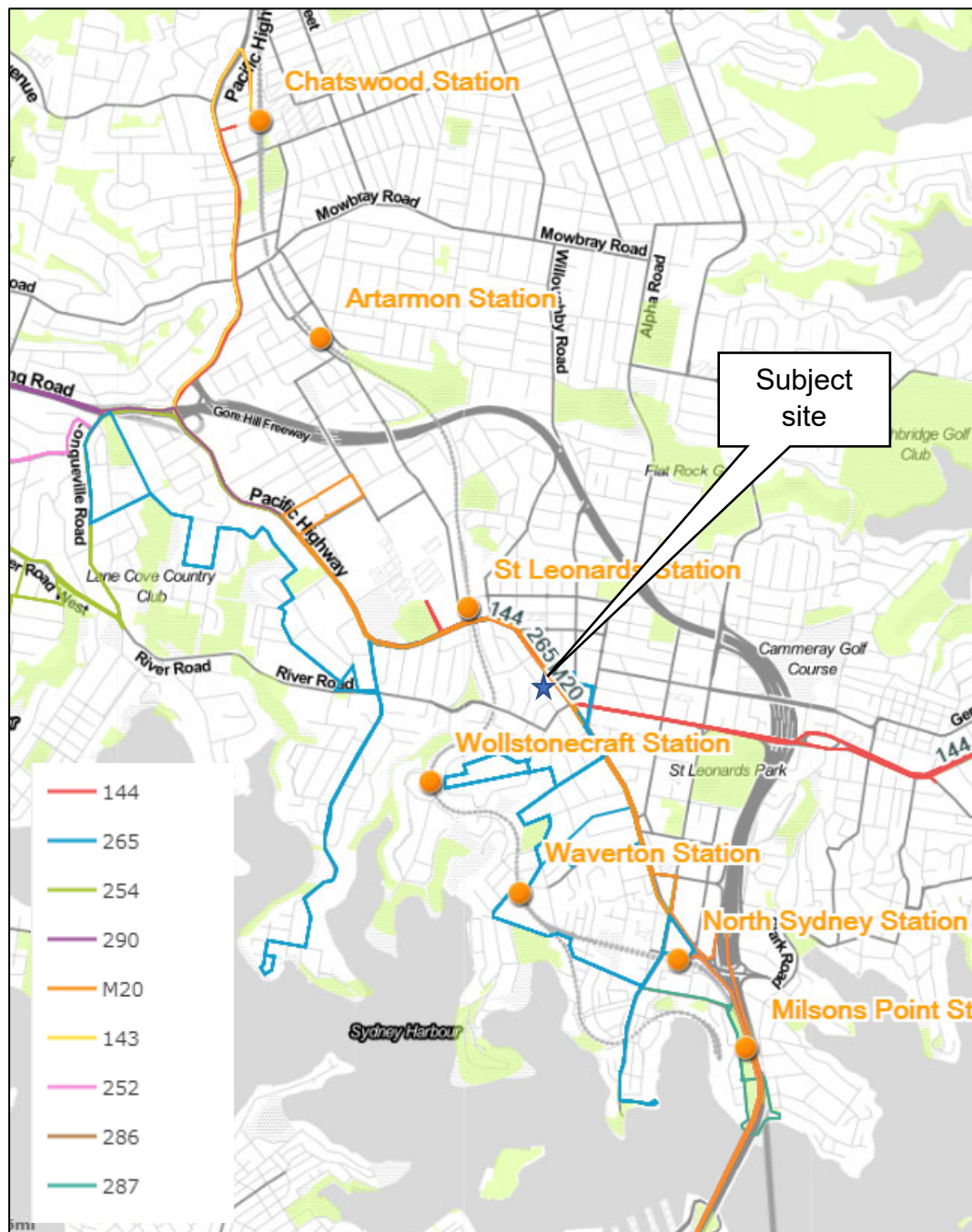


Figure 5 Bus routes serving the site

The extensive network of bus routes servicing the site are summarised in Table 2. 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 2 Existing bus routes servicing the site

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.

2.5 Public transport catchment

An indicator of the level of public transport accessibility a site contains is the number of locations accessible within a 30 minute public transport catchment. A key objective of the Greater Sydney Commission's Greater Sydney Region Plan is to deliver a 30-minute city where jobs, services and quality public transport spaces are in easy reach of residences.

As illustrated in Figure 6 a number of key employment centres across Sydney can be reached within 30 minutes public transport travel time of the site, including Chatswood, Macquarie Park, Sydney CBD and the North Sydney CBD. The highly accessible nature of the site reduces the need for residents to own cars and rely on public transport as a means of accessing their place of work.

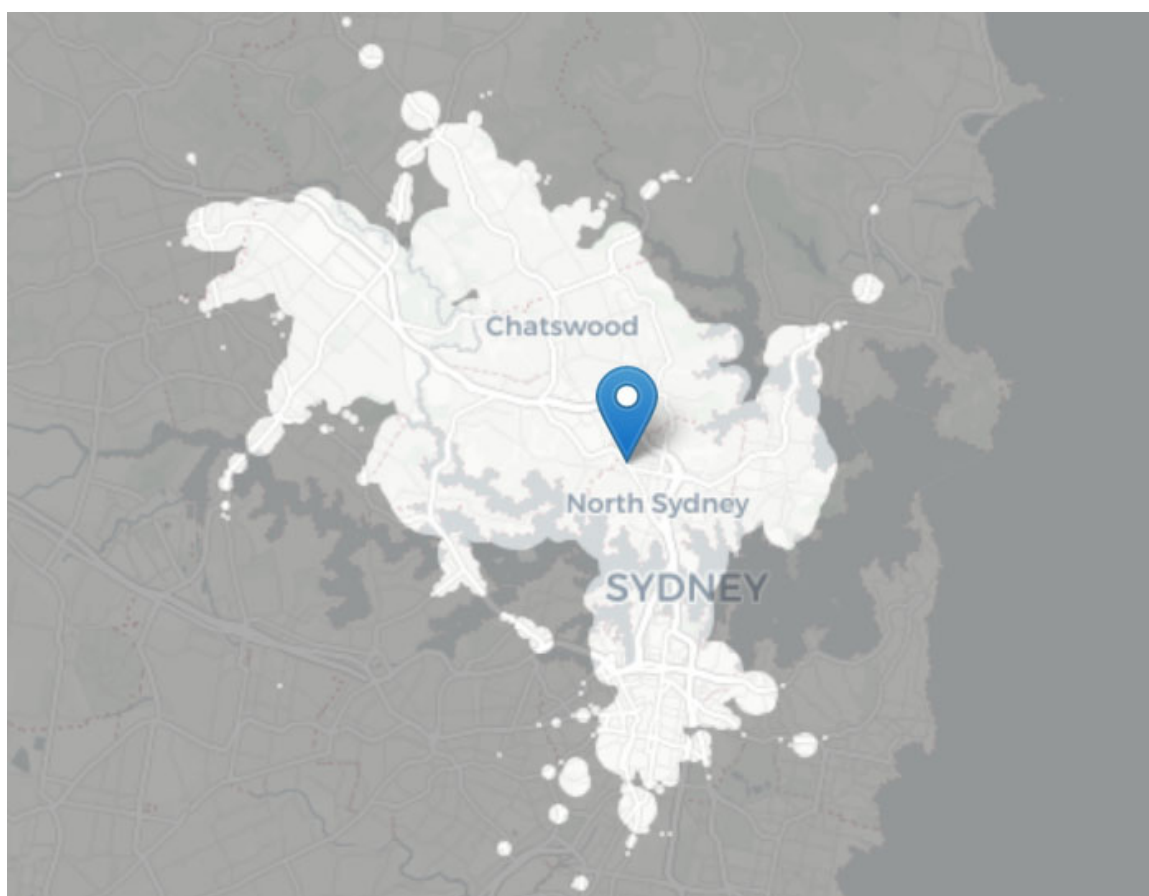


Figure 6 30 minute public transport catchment

Source: <https://www.mapnificent.net/sydney>

2.6 Pedestrian and cycling facilities

The site is well served by a good network of local footpaths. Paved footpaths and kerb ramps are provided on both sides of the Pacific Highway and Nicholson Street. All roads on the walking route from the future development site to St Leonards transport interchange and Crows Nest metro station possess paved footpaths and kerb ramps on both sides of the road. Formal pedestrian crossings of the Pacific Highway are available at the Hume Street signalised 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 in the vicinity of the site 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.

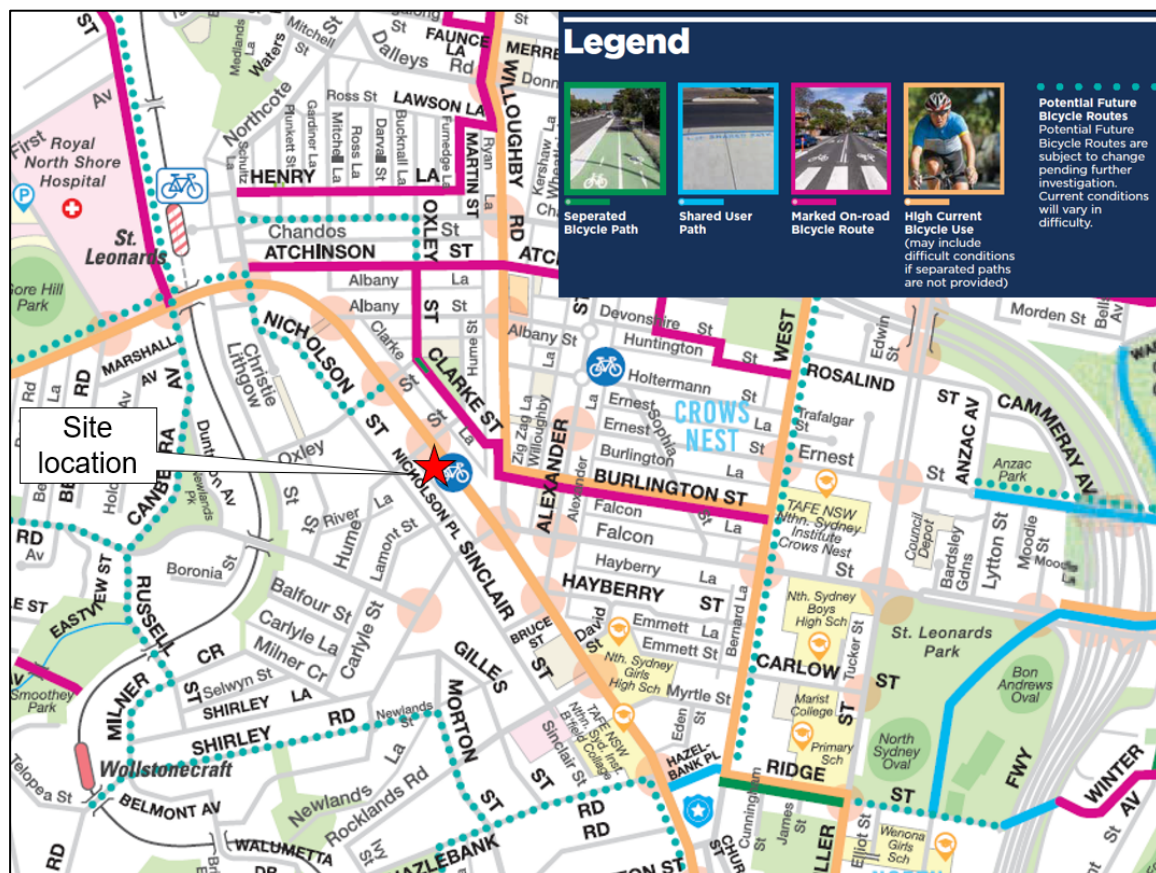


Figure 7 Existing cycling network

3 Transport Impact Assessment

3.1 Proposed vehicle site access and servicing

Given the Pacific Highway is a State classified road carrying significant levels of traffic, all vehicle access into the future development would take place via Nicholson Place. The proposed vehicle access strategy is presented in Figure 8 and includes the following:

- Driveway at the south-western end of the site to support private vehicle access into the site
- Driveway at the south-eastern end of the site which will accommodate service vehicles. This will include provision for up to 8.8m long Medium Rigid Vehicles (MRVs) for the purposes of waste collection and general site deliveries.

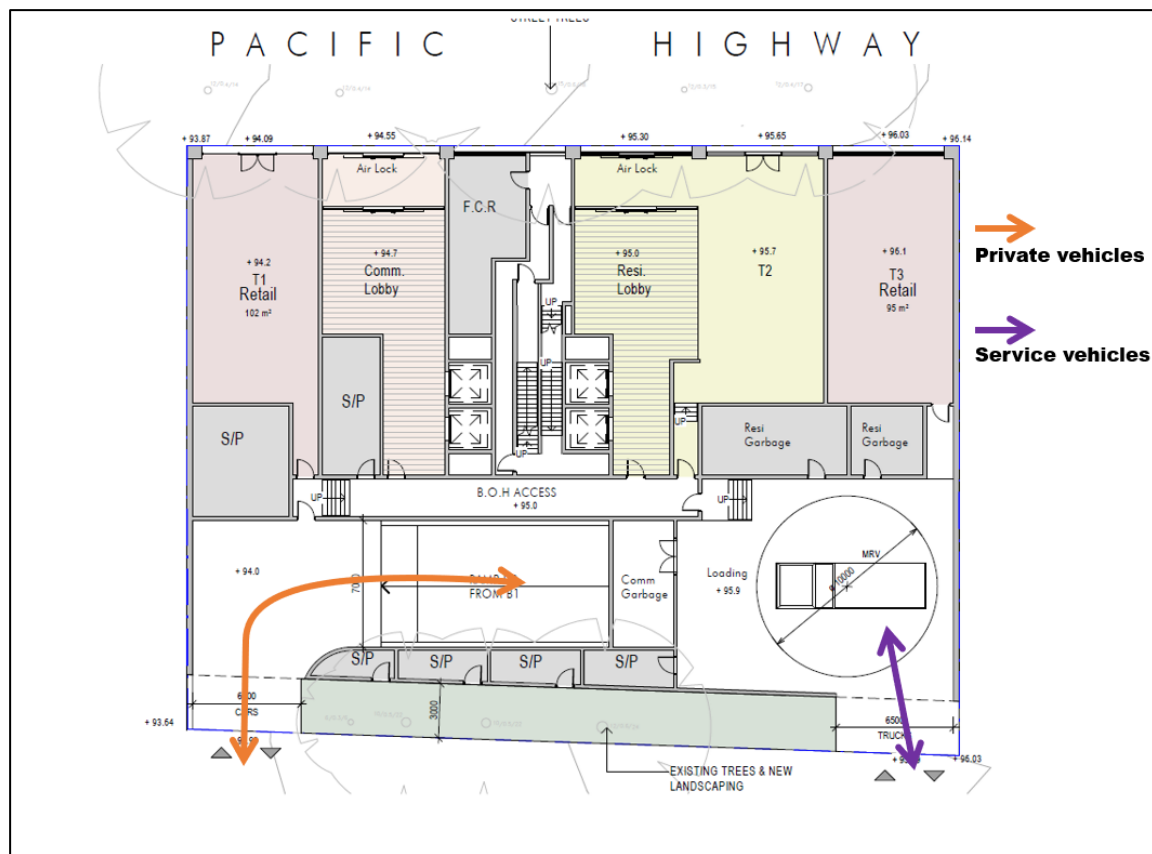


Figure 8 Proposed vehicle site access

Clause 10.4 of the North Sydney DCP notes that “*Developments containing more than 60 dwellings must provide at least 1 service delivery space, capable of accommodating at least:*

- 1 Heavy Rigid Vehicle (HRV), or
- 2 Medium Rigid Vehicle (MRV)”

Given the proposal contains less than 60 dwellings the provision of a single MRV parking space is considered suitable to meet the servicing needs of the site. The detailed design of this on-site loading area will be progressed as part of a future development application for the site.

3.2 Car park design

As part of the reference scheme developed for the Planning Proposal a basement car park has been designed to facilitate the future development. The car park and associated elements such as car parking space dimensions, circulation aisles and ramp would be designed in accordance with the relevant Australian Standard for car parking facilities, namely AS2890.1: 2004 and AS2890.6:2009.

The final design of the car park will be carried out at the Development Application stage of the project. The layout of a typical basement within the site, based on the reference scheme prepared for the Planning Proposal, is shown in Figure 9.

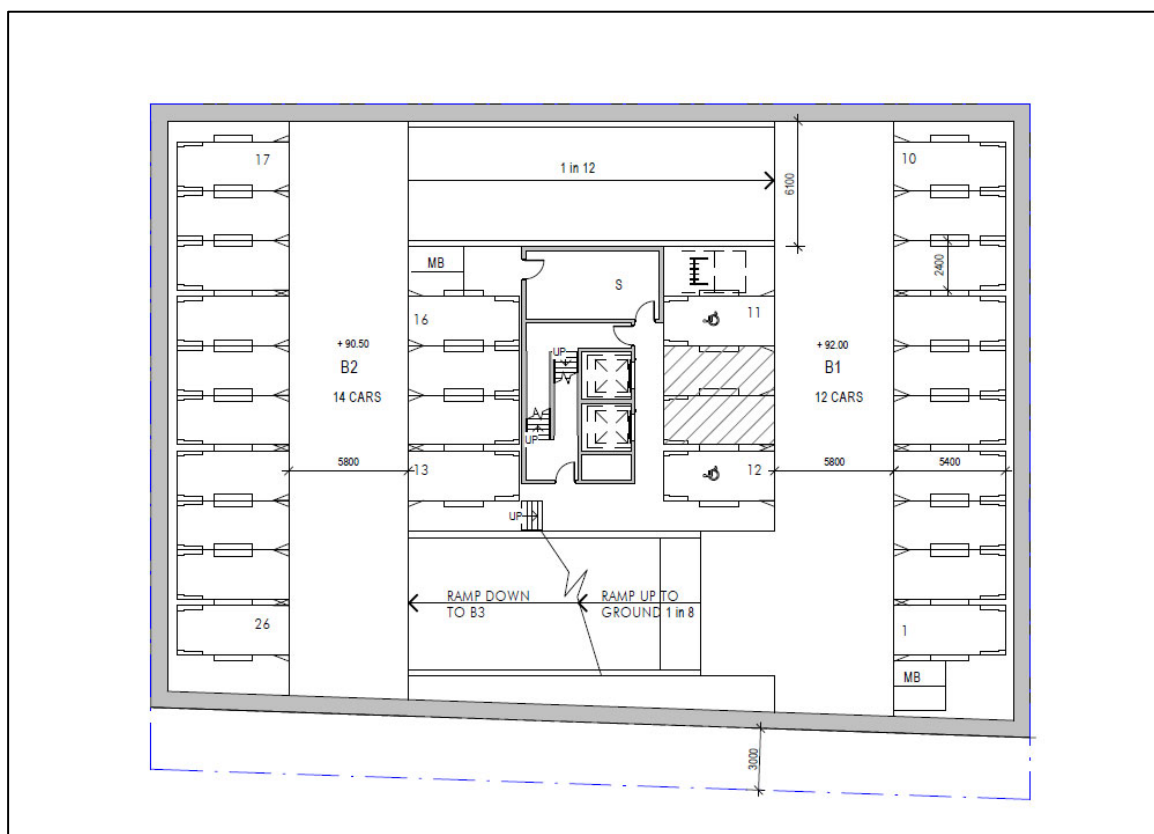


Figure 9 Typical basement layout

3.3 Car parking provision

The car parking rates to be adopted for the site will be generally consistent with those noted in Section 10 of the North Sydney Council Development Control Plan (DCP). The DCP provides a guide to the maximum number of on-site car parking spaces that can be provided for new developments based on their location and level of transport accessibility.

80 or more parking spaces may potentially be provided depending on the final residential dwelling mix to be adopted and the nature of the non-residential uses provided on the site. The final car parking requirements for the site will be confirmed at the Development Application (DA) stage of the project.

3.4 Bicycle parking

The North Sydney Council DCP outlines minimum bicycle parking requirements for new developments. Table 3 below summarises the potential bicycle parking provision based on the reference design prepared for the Planning Proposal. This will be confirmed at the DA stage of the development.

Table 3 Potential bicycle parking requirements

Land Use	No. of units / GFA	User type	Potential bicycle parking requirement	
			Rate	Number
Residential	42 units	Residents	1 / unit	42
		Visitors	1 / 10 units	4
Commercial	2192m ²	Staff	1 / 150m ²	15
		Visitors	1 / 400m ²	6
Retail	620m ²	Staff	1 per 250 m ²	2
		Visitors	2 plus 1 per 100m ² over 100m ²	8
Total				77

For residents and staff bicycle parking will be located in a secure location only accessible via key or swipe card. This will either be in individual storage units (Class 1 facility) or a large secure bicycle parking room within the site boundary (Class 2 facility). For retail and residential visitors class 3 bike parking (i.e. bike rails) will be provided in a publicly accessible location with good passive surveillance.

3.5 Traffic generation

Transport for NSW (formerly Roads and Maritime) published a Technical Direction that described vehicular trip rates for commercial and residential developments. These surveys highlighted those residential developments in the St Leonards area demonstrated one of the lower traffic generation during the morning and evening peak hours. In this regard, the associated traffic generation rates adopted for the assessment are as follows:

- AM Peak hour: 0.14 trips per unit
- PM Peak hour: 0.07 trips per unit

Comparable developments have been considered in order to understand the likely traffic generation resulting from the commercial component of the site. Four sites were selected given their similar proximity to nearby public transport as well as similar car parking rates, which were sites located in North Sydney, Chatswood, Macquarie Park and Parramatta.

Given the constrained on-site parking environment, traffic generation rates per parking space have been used to estimate the likely peak hour vehicle trips generated by the site. The average peak hour trip rates per parking space for the surveyed locations were estimated to be 0.40 and 0.25 trips per parking space during the AM and PM network peak hour respectively. The surveyed data for these sites is highlighted in Table 4 below.

Table 4 Peak hour vehicle trip generation per parking space of similar office sites

Surveyed location	North Sydney	Chatswood	Macquarie Park	Parramatta	Average
AM peak hour trips	51	47	119	185	100
PM peak hour trips	44	36	72	75	57
Parking spaces	136	150	269	402	239
AM peak hour trip rate	0.38	0.31	0.44	0.46	0.40
PM peak hour trip rate	0.32	0.24	0.27	0.19	0.25

Source: Roads and Maritime, Technical Direction 2013/14

The proposed retail component of the development is expected to serve the largely local walk-up catchment and passing trade to/from the metro station, especially during the peak hours. Given the context of the site as well as the limited parking space proposed, it is assumed that the generation of the retail component will be low, and the rates adopted are similar to office uses.

The forecast traffic generation arising from the proposal is summarised in Table 5 below.

Table 5 Forecast traffic generation

Scenario	No. of units / GFA	Use	Car parking spaces*	Peak hour traffic generation rate		Forecast Traffic Generation	
				AM Peak Hour	PM Peak Hour	AM peak hour	PM peak hour
Future site	42 units	Residential	35	0.14 / unit	0.07 / unit	+6	+3
	2812m ²	Commercial	38	0.40 / parking space	0.25 / parking space	+15	+10
	620m ²	Retail	12	0.25 / parking space	0.80 / parking space	+3	+10
Net traffic generation						+24	+23

* Based on indicative development mix and uses prepared for the Planning Proposal. Final car parking provision to be confirmed at the Development Application phase of the project.

3.6 Road network impacts

As evident in Table 5 the development is forecast to generate an additional 24 vehicle trips in the AM peak hour and 23 vehicle trips in the PM peak hour.

A detailed traffic assessment was undertaken in support of the Crows Nest Over Station Development (OSD) at the adjacent Pacific Highway / Hume Street signalised intersection. The assessment concluded that this signalised intersection operates at a very good Level of Service 'A' during both the morning and evening peak hour periods. This intersection performance is summarised in Table 6 below.

Table 6 Existing intersection performance – Pacific Highway / Hume Street intersection

Peak Hour	Vehicle Flow Through Intersection	Average Vehicle Delay	Level Of Service
AM Peak Hour	3,244	13 seconds	A
PM Peak Hour	3,298	12 seconds	A

Given the spare capacity that exists at this intersection the additional vehicle trips generated by the proposal would not significantly impact it's operation.

Of further relevance is that the Planning Proposal is generally consistent with the controls and densities identified in the St Leonards and Crows Nest 2036 Plan. To support the 2036 Plan a detailed future year traffic modelling assessment was carried out by Cardno on behalf of DPIE to assess the traffic implications of the envisaged uplift in the precinct through to 2036.

The St Leonards and Crows Nest Station Precinct Traffic and Transport Study – Future Year Modelling Report 2020 did not identify any future upgrades at the Pacific Highway / Hume Street intersection to support the development of the broader St Leonards and Crows Nest precinct. In this context no additional traffic works would be required to accommodate the Planning Proposal.

3.7 Public transport

As previously noted in Section 2.4 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 introduction of the Sydney Metro (City and Southwest) service 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, currently under construction, will significantly add to the already well provisioned public transport amenities in the area.

From Crows Nest Station (within 100m 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 10.

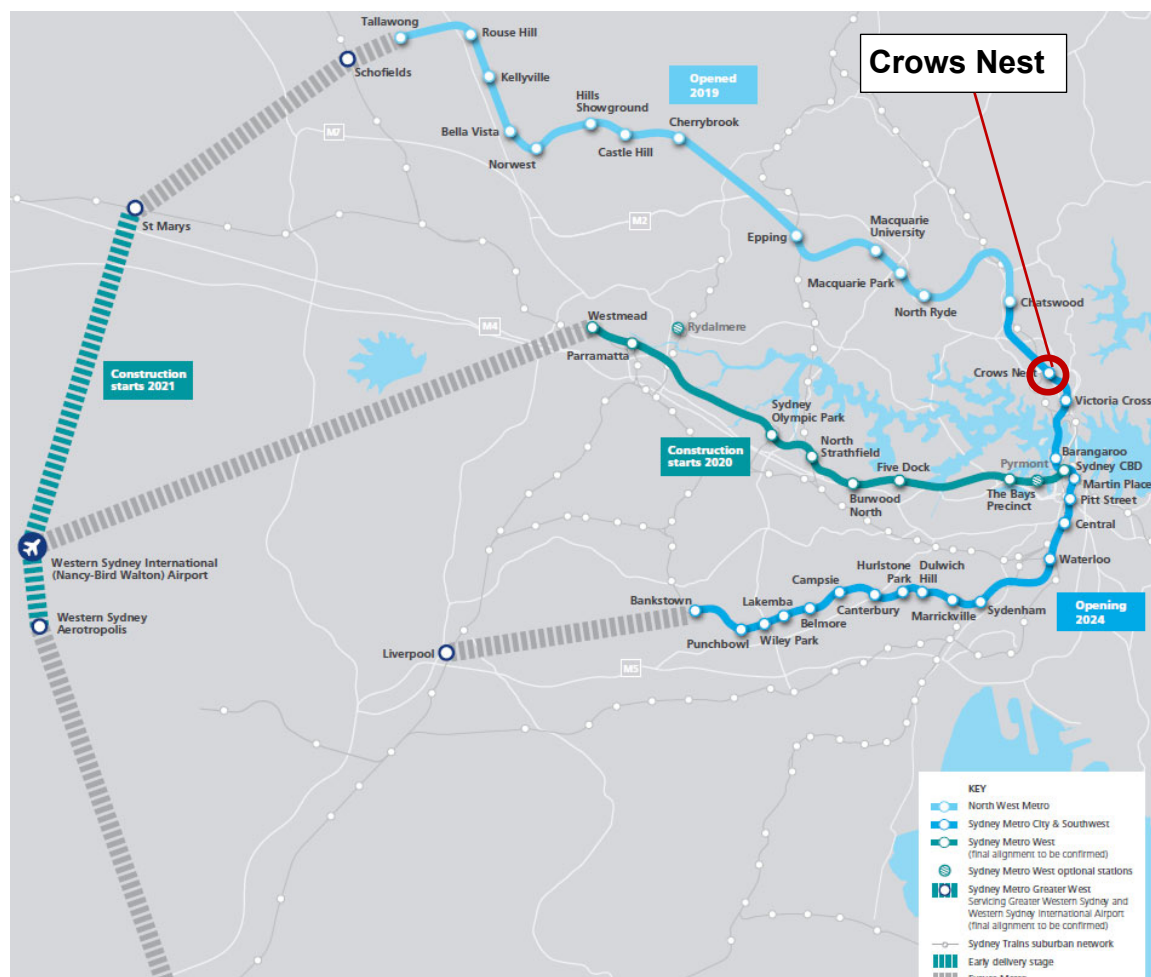


Figure 10 Sydney Metro network

Source: Transport for NSW

3.8 Green travel plan

3.8.1 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.

3.8.2 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.

3.8.3 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 7 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
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

Action	Responsibility
<i>Walking</i>	
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	
<i>Public Transport</i>	
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
<i>Carshare / Carpooling</i>	
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
<i>General actions</i>	
Promotion including: <ul style="list-style-type: none"> • 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

3.8.4 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.

4 Summary

This transport assessment report has been undertaken by JMT Consulting to support a Planning Proposal for the site at 360 Pacific Highway, Crows Nest. The proposal seeks to amend the North Sydney Local Environmental Plan 2013 to increase maximum height and density controls on the site, consistent with that noted in the St Leonards and Crows Nest 2036 Plan. The redevelopment of the site will facilitate a mix of commercial and residential floor space in close proximity to existing and future public transport, particularly the future Crows Nest metro station.

Key findings of the transport assessment are as follows:

- The site has excellent access to public transport and is located within 100m of the future Crows Nest Metro Station.
- The site is located within 30 minutes public transport travel time of key employment centres including Chatswood, Macquarie Park, Sydney CBD and the North Sydney CBD.
- Vehicle access to the site would be provided at the rear via driveways from Nicholson Place, with no vehicle access to be provided from the Pacific Highway.
- Car parking and bicycle parking on the site will be delivered in accordance with the parking rates outlined in the North Sydney DCP, with the final number of spaces to be determined at the Development Application stage of the project.
- Based on the reference scheme prepared for the proposal, the site is forecast to generate an additional 24 vehicle trips in the AM peak hour and 23 vehicle trips in the PM peak hour. This level of traffic generation would not significantly impact the operation of the adjacent road network.
- The future Crows Nest metro station, currently under construction, will significantly add to the already well provisioned public transport amenities in the area.
- Travel demand management measures have also been suggested to improve the mode share of public transport and active transport. These items should be considered further at subsequent stages of the project.

In the above context, the traffic and transport impacts arising from the proposal are considered acceptable.