



Five Ways Triangle Site – Crows Nest

Transport Impact Assessment

Prepared for:

Deicorp Projects (Crows Nest) Pty Ltd

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1 Introduction

1.1 Overview

JMT Consulting was engaged by Deicorp Projects (Crows Nest) Pty Ltd to prepare a transport impact assessment to support a State Significant Development Application (SSDA 66826207) for the site known as the 'Five Ways Triangle Site' located at 391-423 Pacific Highway, 3-15 Falcon Street and 8 Alexander Street, Crows Nest. The development sought under the SSDA is proposed to be consistent with the approved Planning Proposal for the site which allows for an increase to the permissible height and Floor Space Ratio (FSR) on the site - consistent with the controls outlined in the St Leonards and Crows Nest 2036 Plan.

1.2 Site location

The subject site is bound by Falcon Street to the north, Alexander Street to the east, and the Pacific Highway to the south-west. The site is 3,200.9sqm in area. It is triangular in shape with a frontage of approximately 70m to Falcon Street, 85m to Alexander Street and 110m to the Pacific Highway. The site contains a number of buildings ranging in height in a variety of building styles and sizes. St Leonards Railway Station is located approx. 800m walk to the north-west, which provides regular services to the south to Sydney City CBD, and to the north to Chatswood, Macquarie Park and Hornsby. The future Crows Nest Metro Station is located approx. 240m to the north-west of the site.



Figure 1 Site location

1.3 Previous transport studies

A detailed Traffic and Parking Impact Assessment Report was prepared in support of the Planning Proposal for the site by Barker Ryan Stewart consultants and finalised in December 2020. Due to the timing of the assessment, traffic counts on the surrounding road network were undertaken in April 2020 during the first COVID lockdown period. These traffic counts were then compared to traffic data from February 2020 (i.e. pre COVID) and scaled up accordingly, which then formed the basis of the traffic analysis later undertaken for the study.

A revised Traffic and Parking Impact Assessment Report was issued in December 2021 to support an updated Planning Proposal for the site – however the traffic analysis underpinning this study utilised the previous 2020 traffic data along with out of date assumptions regarding potential development yield. This detailed Traffic and Parking Impact Assessment Report is provided as Appendix B to this document.

JMT Consulting prepared a supplementary transport assessment in November 2022 to confirm the accuracy and suitability of the traffic data utilised in the detailed Traffic and Parking Impact Assessment Report supporting the Planning Proposal – responding to advice provided by the Sydney North Planning Panel. The supplementary assessment considered contemporary traffic conditions around the site based on traffic data collected in October 2022. The study found that traffic movements at key intersections surrounding the site had reduced in October 2022 compared to those assumed in the detailed traffic modelling supporting the Planning Proposal – with reductions in traffic of between 5% and 17% at the Pacific Highway / Falcon Street / Shirley Road and Pacific Highway / Alexander Street intersections respectively.

The supplementary assessment informed further discussions with Transport for NSW (TfNSW) in July 2023 following the exhibition of the Planning Proposal. Following the provision of additional information TfNSW was satisfied with the traffic impacts of the proposal, noting that it “*is satisfied in light of minimal traffic generation*” matters relating to road network impacts are closed out for the purposes of the Planning Proposal. TfNSW requested that further information be provided at the time of the detailed DA in relation to the suitability of the proposed vehicle access arrangements via Alexander Street, specifically whether a ‘left in – left out’ arrangement would need to be implemented.

1.4 Report purpose

This report has been prepared in response to the Secretary's Environmental Assessment Requirements (SEARs) for SSD-66826207 relevant to traffic and transport as summarised in Table 1 below.

Table 1 SEARs requirements

Item	Description of Requirement	Relevant Section of Report
10. Traffic, Transport and Accessibility	<i>Provide a transport and accessibility impact assessment that includes the following:</i>	This report
	<i>an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.</i>	Section 2
	<i>details of the proposed development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.</i>	Section 3
	<i>analysis of the impacts of the proposed development during construction and operation (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict) and any cumulative impact from surrounding approved developments</i>	Section 3.8 & 3.9
	<i>measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms of delivery (including proposed arrangements with local councils or government agencies) of any infrastructure improvements in accordance with relevant standards.</i>	Section 3.9

Item	Description of Requirement	Relevant Section of Report
10. Traffic, Transport and Accessibility	<i>proposals to promote sustainable travel choices for employees, residents, guests and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high quality end-of-trip facilities, and implementing a Green Travel Plan.</i>	Section 3.10, 3.11, 3.12 & Section 4
	<i>Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.</i>	Section 5

1.5 Transport for NSW consultation

Consultation was undertaken in early 2024 to discuss the proposal. TfNSW initially recommended in their correspondence of 19 March 2024 the following items be included in the transport assessment supporting the proposal:

- An assessment of the suitability of the vehicular access arrangement from Alexander Street and its associated impacts on the Falcon St / Alexander St signalised intersection.
- Traffic modelling of surrounding intersections including:
 - Pacific Hwy/Shirley Rd/Falcon St
 - Pacific Hwy/Alexander St
 - Falcon St/ Alexander St

In response to advice provided by JMT Consulting regarding the expected traffic generation, further correspondence was received from TfNSW on 28 March 2024 advising that the requirement for network traffic modelling could be waived given the forecast traffic movements arising from the proposal. The full TfNSW correspondence is provided as Appendix C of this document.

The TfNSW advice relating to the assessment of the Alexander Street driveway has been incorporated into this document and is included in Section 3.9.1.

2 Existing Site Conditions

2.1 Travel behaviours

Travel behaviours for residents and employees within the area surrounding the site¹ been analysed using 2016² 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 2 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 Given 2021 Census was completed during COVID lockdown period data this is not considered provide an accurate reflection of contemporary travel behaviours

2.2 Road network

The road network surrounding the site is illustrated in Figure 2 below and includes the following key roads:

- **Pacific Highway** – A State Highway and arterial route linking between Sydney and Hornsby
- **Falcon Street** – A State Road and sub-arterial route being part of an east-west link between Manly, Mosman and Neutral Bay and the Pacific Highway at Crows Nest
- **Alexander Street and Willoughby Road** – local roads that act as north-south collector roads connecting to Falcon Street



Figure 2 Surrounding road network

2.3 Public transport services

2.3.1 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 adjacent to high frequency bus stops on the Pacific Highway and approximately 240m away from the future Crows Nest Metro Station.

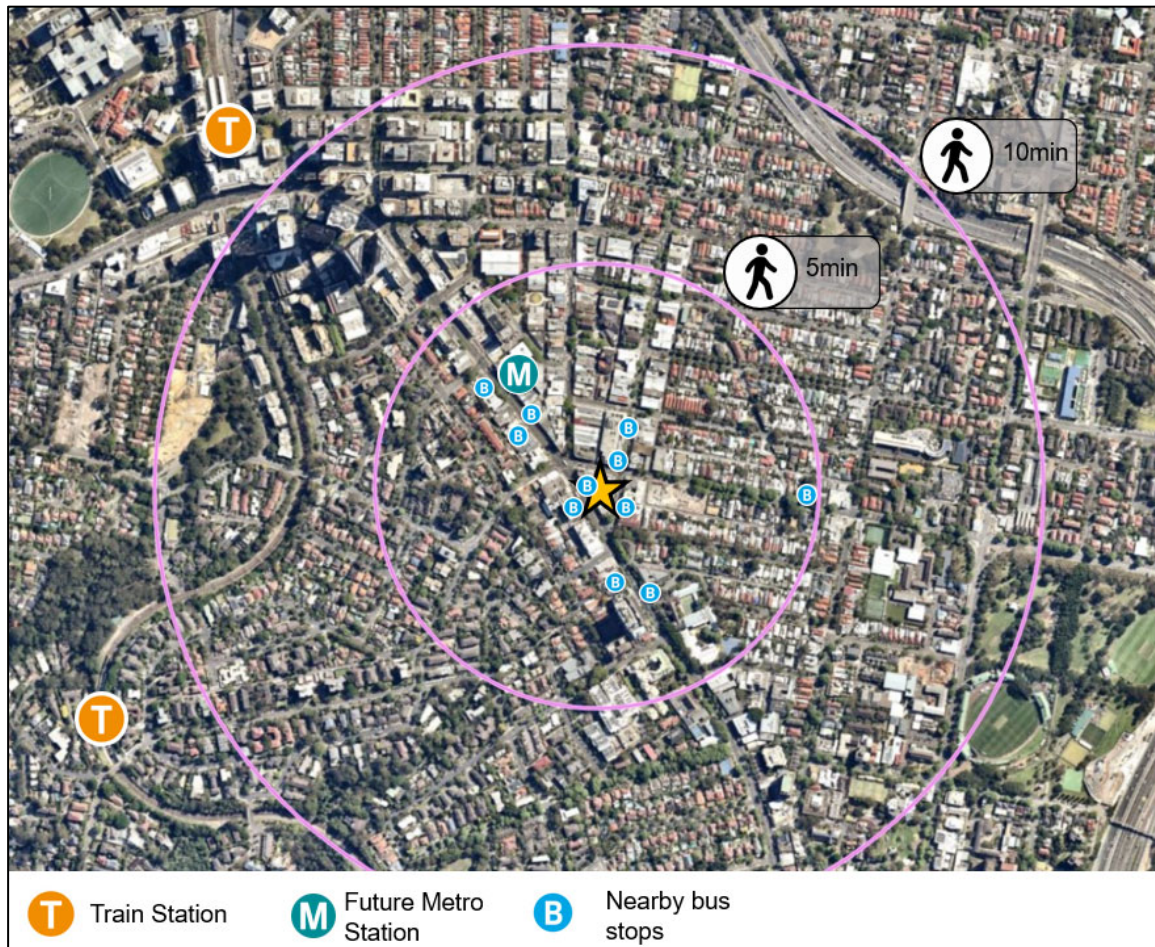


Figure 3 Public transport environment

2.3.2 Bus services

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.

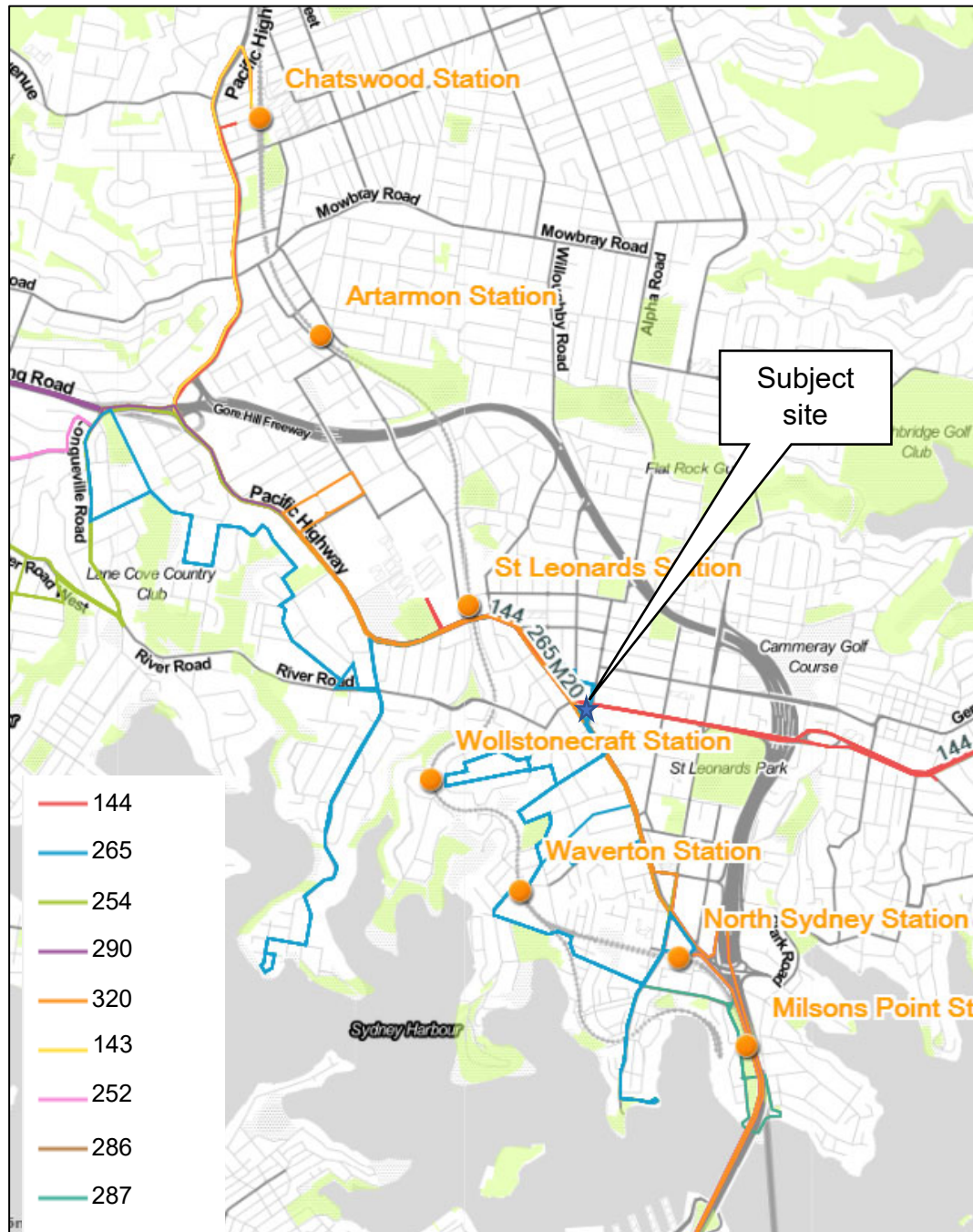


Figure 4 Bus routes serving the site

The extensive network of bus routes servicing the surrounding area are summarised in Table 3. Buses connect the local area to the Sydney CBD, Chatswood CBD, Crows Nest, Epping, North Sydney and surrounding suburbs. Bus services are frequent throughout the day, with express services operating during the peak periods.

Table 3 Existing bus routes servicing the site

Bus Route	Service description
Route 143, Manly and Macquarie University	Services every 20 minutes during peak periods and 30 minutes throughout the day.
Route 144, Chatswood and Manly via Royal North Shore Hospital	Services every 10 minutes during peak periods and 20-30 minutes throughout the day.
Route 200, Chatswood to Bondi Junction	Services every 10 minutes during peak periods and 15 minutes throughout the day.
Route 252, North Sydney West and City via Pacific Highway	Services every 10 minutes during peak periods and 20-30 minutes throughout the day.
Route 254, Riverview and City via Pacific Highway	Services every 10 minutes during peak periods and 20-30 minutes throughout the day.
Route 265, McMahon's Point and North Sydney via Greenwich Wharf	Services every 20 minutes during peak periods and 30 minutes throughout the day.
Route 286, Denistone East and City via 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 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 McMahon's 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.

2.3.3 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. Crows Nest Metro Station (further discussed in subsequent sections of this report) will be a five minute walk away from the site and operational in 2024.

2.3.4 Metro

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 (approximately 240m walk of 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 5.

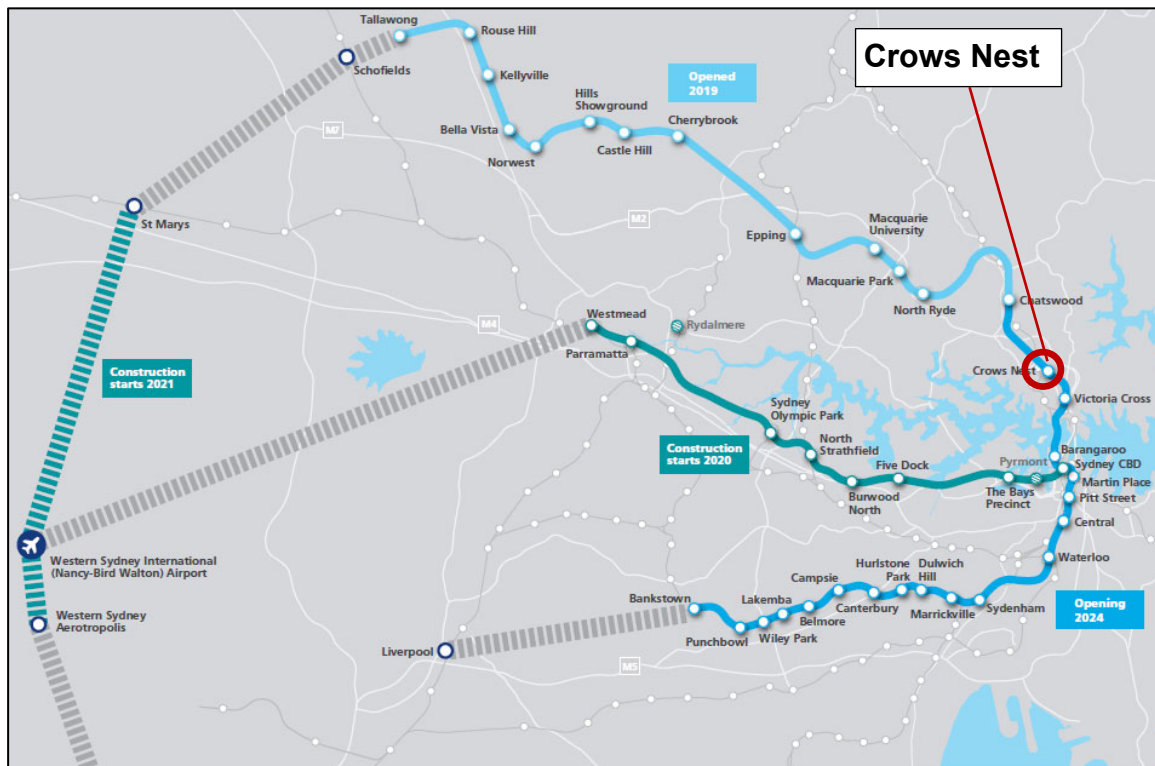


Figure 5 Sydney Metro network

Source: Transport for NSW

2.4 Public transport travel time catchment

A key 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, St Leonards, Sydney CBD and the North Sydney CBD. The highly accessible nature of the site will allow residents to easily access their place of work. Travel by private vehicle will primarily be used for more discretionary trips undertaken outside of the busy road network periods for purposes such as shopping, recreational travel etc.

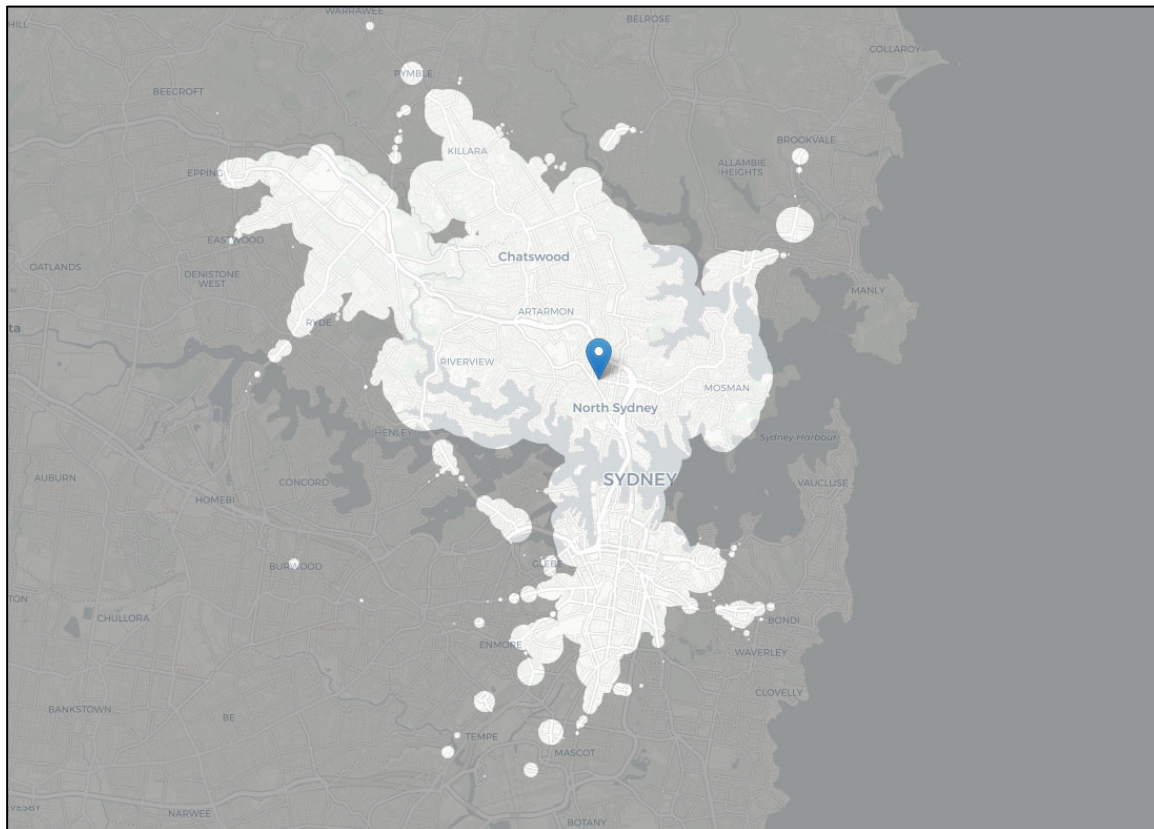


Figure 6 30 minute public transport catchment

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

2.5 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 Falcon Street and the Pacific Highway. All roads on the walking route from the site to the future Crows Nest metro station possess paved footpaths and kerb ramps on both sides of the road. Formal pedestrian crossings of Falcon Street are provided at the nearby Alexander Street and Willoughby Road signalised intersections.

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. Burlington 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 West Street. The local cycling routes also connect to the Warringah Freeway cycleway which provides connections to North Sydney, North Ryde and Chatswood.

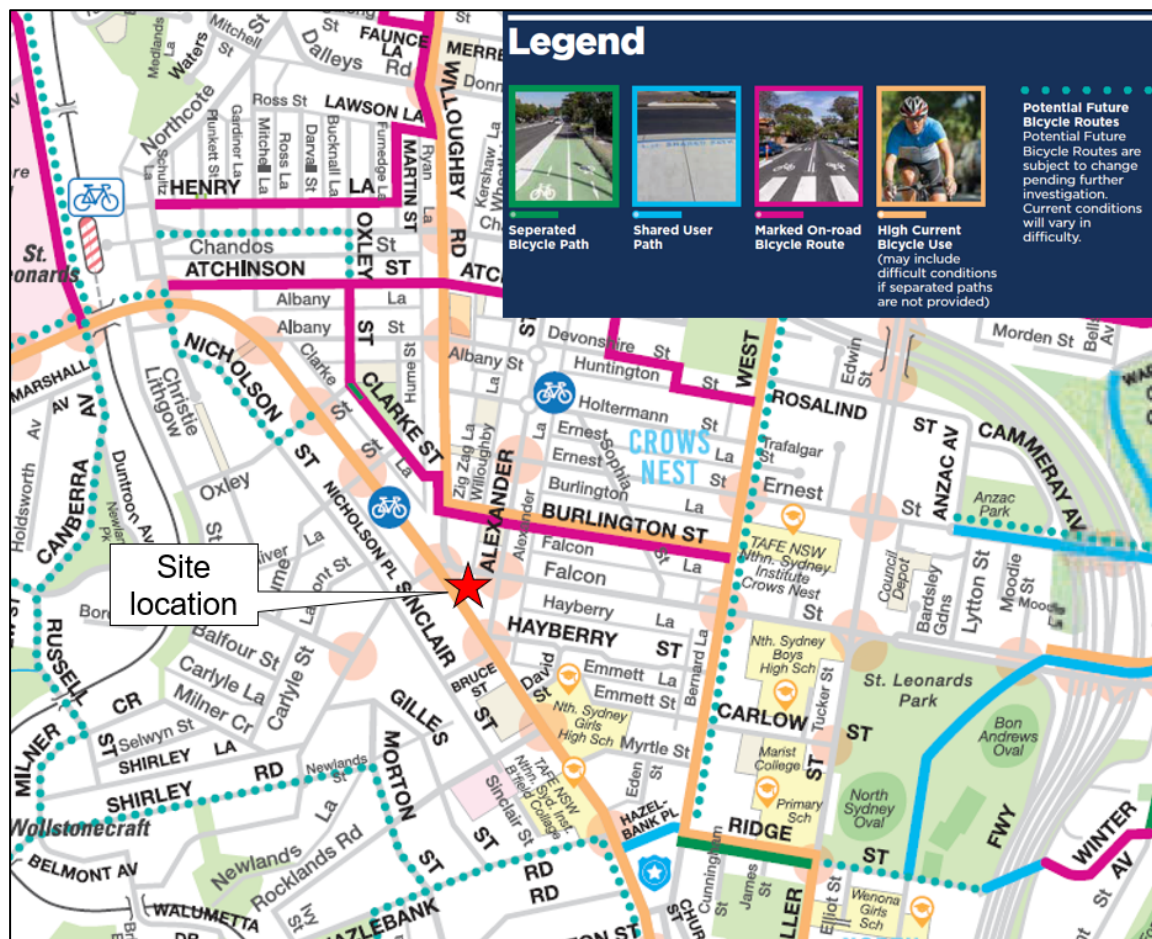


Figure 7 Existing cycling network

3 Transport Impact Assessment

3.1 Site access strategy

The proposed site access strategy is illustrated in Figure 8 and includes a single 9 metre wide driveway off Alexander Street that will be utilised by residents, visitors and service vehicles. Access of Alexander Street is appropriate given both Falcon Street and the Pacific Highway are State Classified roads. Clause 2.118 of SEPP (Transport and Infrastructure) 2021 notes that *“the consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that where practicable and safe, vehicular access to the land is provided by a road other than the classified road”*.

Given Alexander Street is a local road and can provide suitable vehicular access to the site the driveway location as proposed is considered acceptable. All traffic movements into and out of the site from Alexander Street would be provided, with the appropriateness of this arrangement described in subsequent sections of this report.

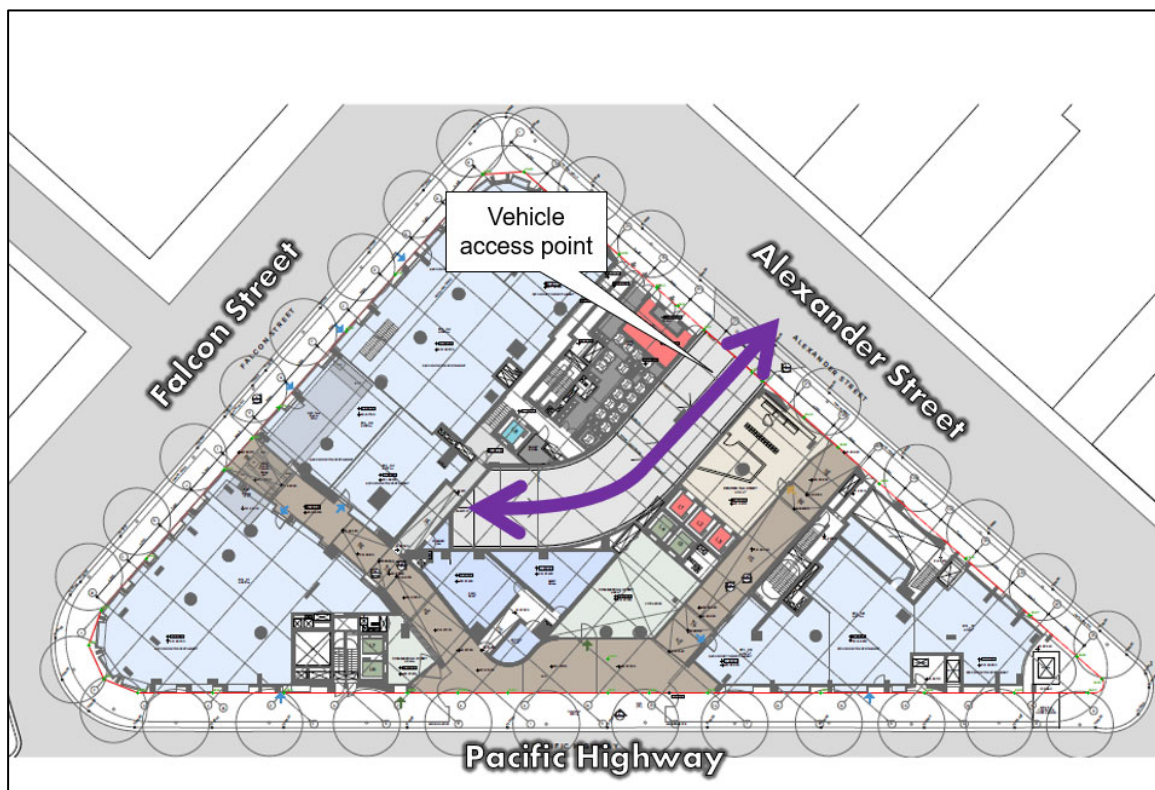


Figure 8 Proposed site access arrangements

3.2 Driveway design

The proposed driveway design and location complies with the relevant requirements of AS/NZS 2890.1, specifically:

- Table 3.2 – Access driveway widths. The driveway is approximately 7m wide which is sufficient to accommodate two Medium Rigid Vehicles (MRVs) passing in opposite directions.
- Figure 3.3 – Minimum sight distance for pedestrian safety.
- Clause 3.3. driveway gradients including a minimum 5% gradient for the first 6m from the property boundary.

3.3 Car parking layout

As part of the reference scheme developed for the SSDA 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 and AS2890.6. Swept path analysis for the basement levels is provided in Figure 9 and Figure 10.

Car parking spaces have been designed to comply with a Class 1A car park facility for residents as specified in the Australian Standard (generally low turnover long term parking) with 2.4m wide spaces and aisle widths of 5.8m. For the commercial and retail parking spaces these have been designed in accordance with a Class 3 facility, particularly 2.7m wide spaces.

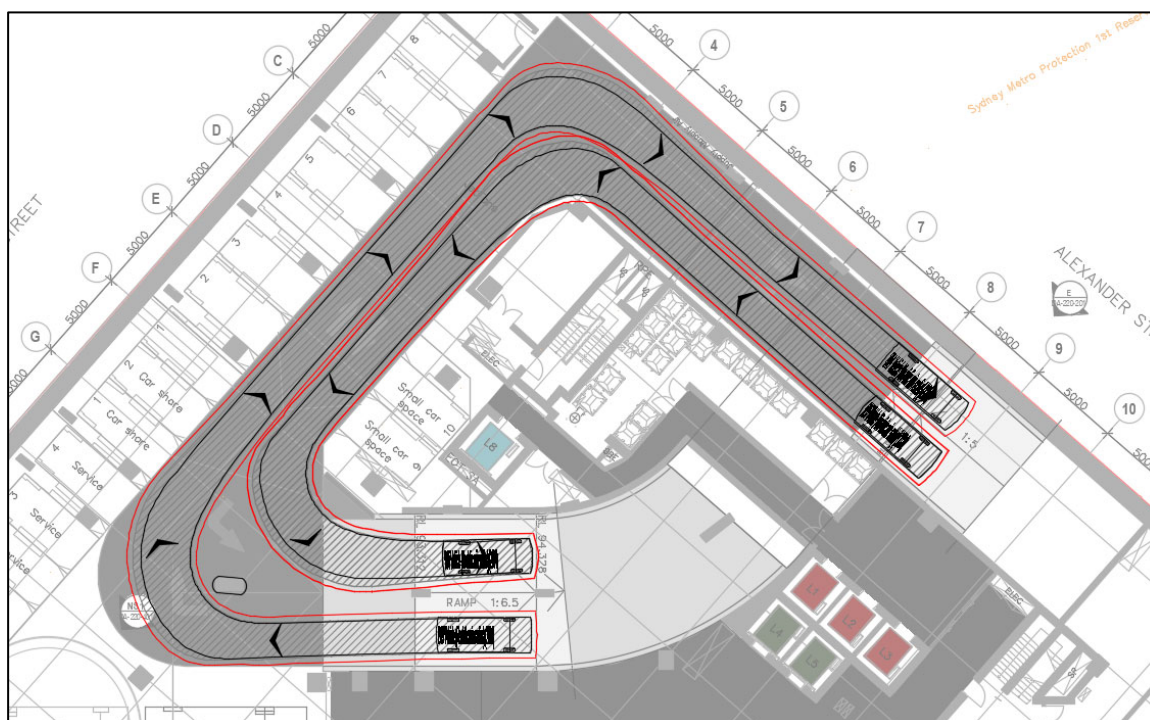


Figure 9 Vehicle swept path analysis – basement 01

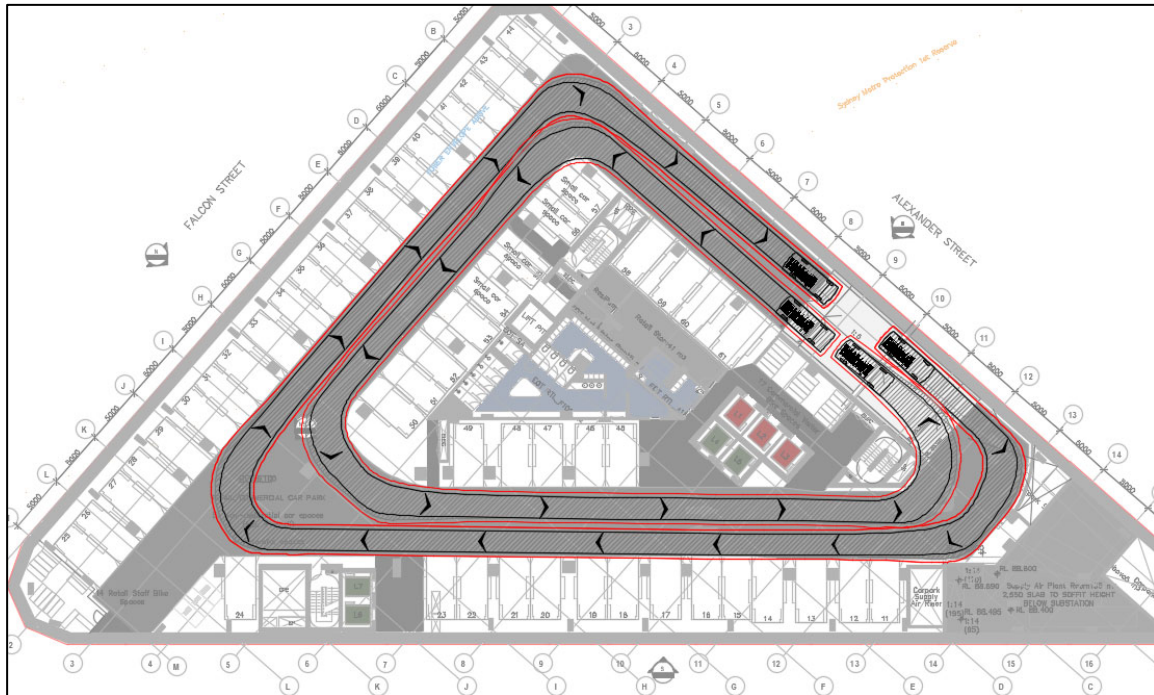


Figure 10 Vehicle swept path analysis – basement 02

3.4 Loading and servicing

The service vehicle access point is combined with the general vehicle access on Alexander Street. A loading dock at basement level is provided containing two truck parking spaces comprising of the following vehicle types:

- 1 * 8.8m long space for a Medium Rigid Vehicle (MRV)
- 1 * 6.4m long space for a Small Rigid Vehicle (SRV)

The design makes provision to allow the all vehicles to enter and exit the site in a forwards direction, which is a core requirement for North Sydney Council. The loading dock has minimum head height clearance of 4.5m which is suitable to accommodate the largest vehicle expected to enter the loading dock being the delivery trucks. Swept paths for trucks manoeuvring within the loading dock are provided in Figure 11 which indicates trucks can enter and exit the loading dock in a forwards direction.

The loading dock design is also consistent with the requirements of AS2890.2 in that it separates truck manoeuvring from the main passenger vehicle access aisle.

In addition to the two truck spaces in the loading dock four service vehicle parking spaces will be provided in the basement of the building. These spaces can be used by vans/utes for the purposes of building servicing, resident deliveries or deliveries to the retail tenants of the building.

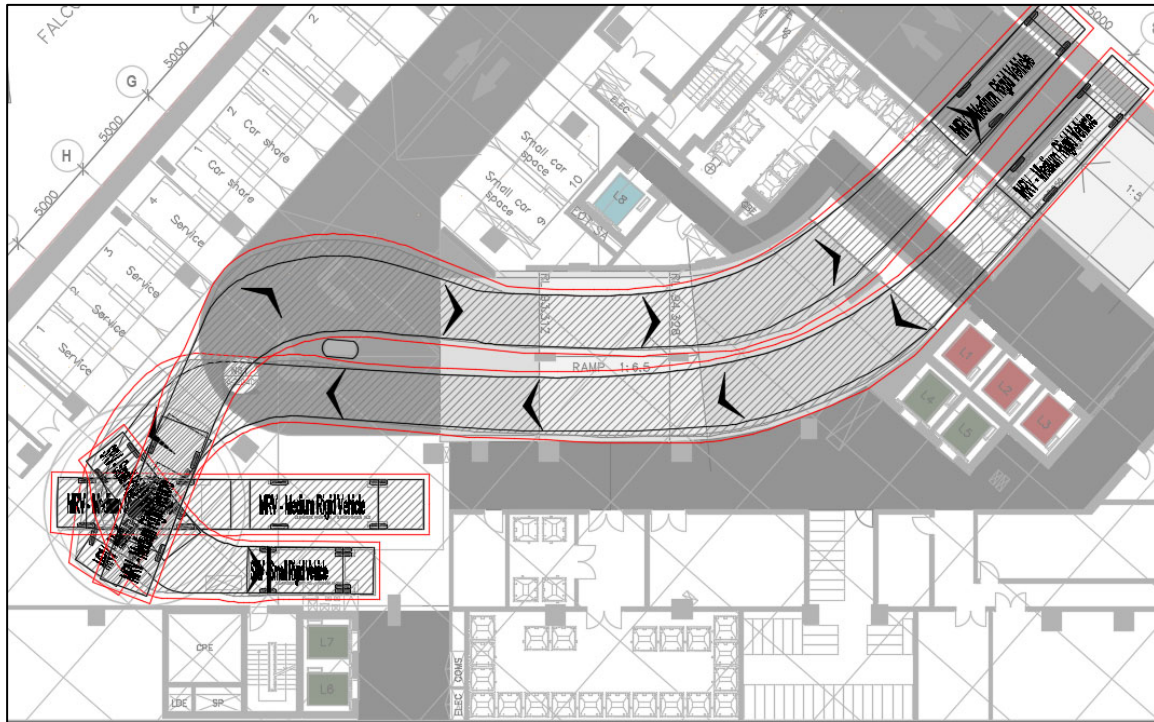


Figure 11 Vehicle swept paths – loading dock

As per current North Sydney Council waste collection policy, all residential waste will be collected via Alexander Street. Commercial and retail waste will be undertaken via a private contractor service within the basement of the building.

The North Sydney DCP provides guidance in relation to service vehicle parking in new developments. The DCP rates are however based on standalone uses rather than a mix of uses within a single development like our site. Given the proposal provides for a range of uses there is the opportunity for the sharing of service vehicle spaces. The *Transport for NSW Urban Freight Forecasting Model* can be used as a reference to understand the potential servicing requirements in this instance.

The model, based on the proposed number of service vehicle parking spaces, forecasts an average efficacy of approximately **98.93%**. This exceeds the minimum efficacy level of 80% (subject to management measures) demonstrating a suitable level of on-site vehicle servicing provision.

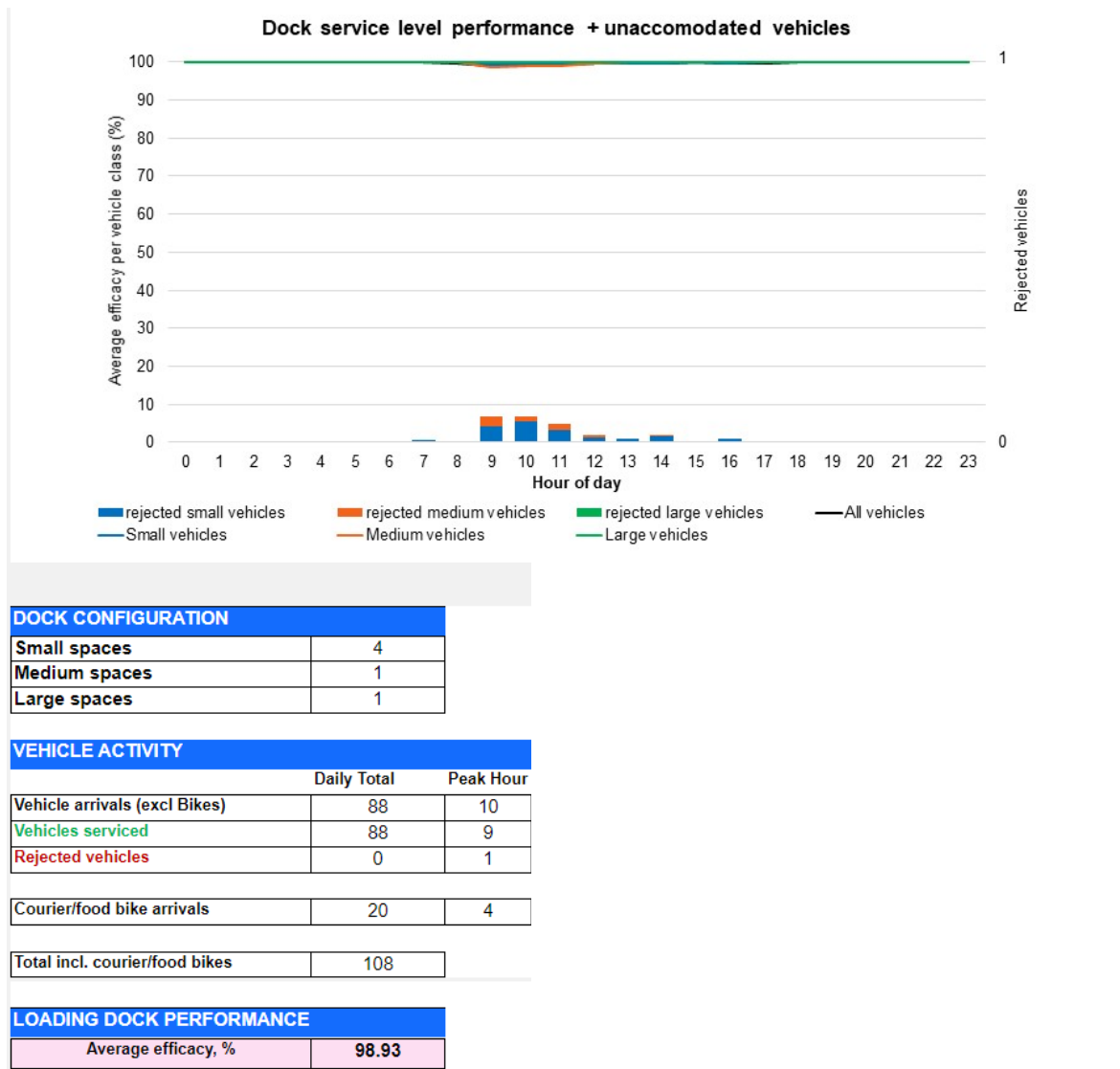


Figure 12 Outputs from TfNSW urban freight forecasting model

3.5 Loading dock management

The building management team will be required to engage and maintain a Loading Dock Manager to organise and supervise delivery and removal activities. The Loading Dock Manager will need to be present on the site during all normal servicing hours and contactable by mobile phone at other times to oversee the operation of the loading dock areas.

All deliveries and waste collection will be conducted by a booking system for building occupants, which will be coordinated by the Loading Dock Manager. It is expected that the designated loading bays will be locally managed to achieve an average of 15-20 minutes per delivery.

Each commercial/retail tenant would be allocated one of the delivery windows for their deliveries to occur. Residents would need to book-in times with building management if they require the loading dock for activities (such as moving/receiving furniture). A delivery schedule will be organised by management to stagger and control arrival of deliveries.

A preliminary loading dock management plan has been developed for the site and is included as Appendix B of this document.

3.6 Car parking provision

3.6.1 Residential parking

The adopted parking rates for the residential component of the development are consistent with those noted in the Housing SEPP (2021) which are as follows:

- 1 bed: 0.5 spaces / dwelling
- 2 bed: 1.0 spaces / dwelling
- 3 bed: 1.5 spaces / dwelling

The above parking rates are consistent with the minimum parking rates recommended in the Housing SEPP (2021) for in-fill affordable housing projects. Given the project includes a significant portion of affordable housing units it is considered appropriate to adopt a consistent parking rate for residential uses across the entire site.

Application of these parking rates identified in the Housing SEPP to the proposed development yield and unit mix results in a requirement for 190 parking spaces. The proposal includes 190 spaces for residents which is consistent with the requirements of the Housing SEPP.

The 190 parking spaces for residents equates to an average of one vehicle per dwelling. This level of parking provision is slightly below the current average car ownership rate for residents of Crows Nest of approximately 1.10 vehicles per dwelling (refer Figure 13). This reflects the location of the site adjacent to nearby public transport including the future Crows Nest metro station.

Rates of car ownership for residents of Crows Nest have been steadily increasing over the past 15 years, rising between 2001 and 2016. At the same time however private vehicle use for journey to work trips has decreased – as shown in Figure 13. This indicates that car ownership does not necessarily lead to car usage in the busy commuter peak periods for areas well served by public transport such as North Sydney, particularly given that the subject site is located close to the future Crows Nest metro station. It can therefore be applied that the majority of cars within the development will only generate trips occasionally and be generally on a discretionary basis - mostly outside of commuter peak periods.

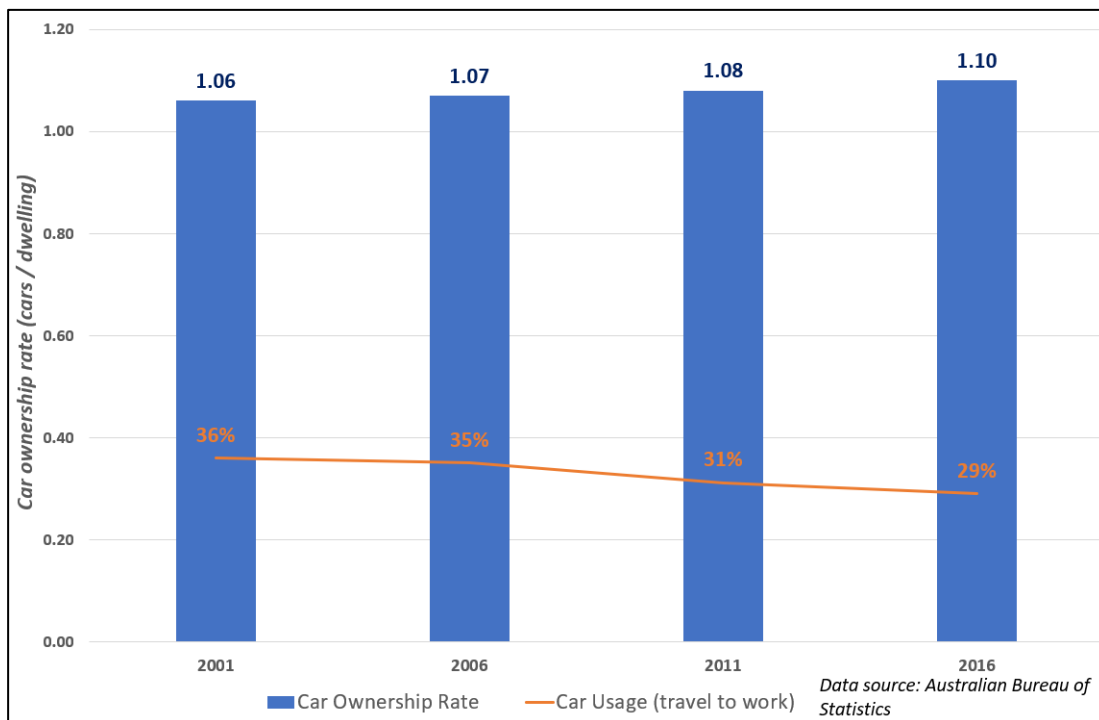


Figure 13 Car ownership vs car usage – Crows Nest

A further benefit of providing residential parking rates as proposed is that it will reduce the instances of residents using nearby on-street parking resulting in flow on impacts to local streets. The parking provision proposed is considered sufficient to fully meet the future demands of residents of the site.

3.6.2 Non-residential parking

Consistent with the parking rate noted in the former North Sydney DCP a rate of 1 space per 60m² GFA has been adopted for the commercial and retail uses. Based on the proposed development this results in a total of 134 parking spaces, comprised of 56 commercial spaces and 78 retail spaces.

The use of the 1/60m² parking rate is considered appropriate given this is consistent with the rate adopted as part of the Planning Proposal for the site. The traffic analysis undertaken in support of the Planning Proposal was predicated on the use of the parking rate in the former North Sydney DCP which, for consistency, has been adopted as part of this application. Traffic analysis undertaken for this project (refer to Section 3.8 and 3.9) confirms the continued application of this car parking rate would not adversely affect the operation of the surrounding transport network.

3.7 Forecast travel demand

Surveys undertaken by the TfNSW of high density residential developments indicates a person trip generation rate of approximately 0.60 trips / dwelling. The equivalent trip generation rate for commercial/retail uses was found to be 2.26 trips per 100m² GFA in the AM peak hour and 1.73 trips per 100m² GFA in the PM peak hour. Applying these rates to the yields proposed under the SSDA results in the following total development trips:

Table 4 Development trip generation

Use	Yield	Quantum	Trip rate (per unit / 100m ²)		Number of trips	
			AM peak hour	PM peak hour	AM peak hour	PM peak hour
Residential	191	units	0.60	0.60	115	115
Retail/Commercial	8,002	m ² GFA	2.26	1.73	181	138
Total trips					296	253

Based on the existing travel behaviours of residents and employees, future public transport services (particularly Sydney Metro), as well as the constrained parking rates for the various site uses, forecast mode shares have been developed. These mode shares, along with the forecast trip generation noted in Table 4, have been used to estimate the number of trips by mode to and from the site. This is summarised in Table 5 and demonstrates the additional travel demand by mode of transport is relatively low. The frequency of public transport services, including the future metro station at Crows Nest, will comfortably be able to accommodate this level of travel demand.

Table 5 Trip generation by mode

Travel mode	Residential trips to/from the site			Retail/Commercial trips to/from the site			Total trips to/from the site	
	Mode share	AM peak hour	PM peak hour	Mode share	AM peak hour	PM peak hour	AM peak hour	PM peak hour
Car driver	20%	23	23	25%	45	35	68	58
Car passenger	3%	3	3	2%	4	3	7	6
Bus	2%	2	2	10%	18	14	20	16
Train / Metro	54%	62	62	42%	76	58	138	120
Walk	20%	23	23	20%	36	28	59	51
Other	1%	1	1	1%	2	1	3	3
Total	100%	115	115	100%	181	138	296	253

3.8 Forecast traffic generation

3.8.1 Residential traffic generation

Given the proximity of the site to public transport services the forecast traffic generation for the residential uses has been determined based on the surveyed rate of high density residential uses for St Leonards as published by TfNSW which are as follows:

- AM peak hour: 0.14 vehicle trips per unit
- PM peak hour: 0.07 vehicle trips per unit

3.8.2 Commercial traffic generation

Transport for NSW published a Technical Direction that described vehicular trip rates for commercial developments. Comparable commercial developments have been considered in order to understand the likely traffic generation resulting from the site. Three 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, and Parramatta.

The average peak hour trip rates per parking space for the surveyed locations were estimated to be 0.61 and 0.53 trips per 100m² GFA during the AM and PM network peak hour respectively. The surveyed data for these sites is highlighted in Table 6 below.

Table 6 Peak hour vehicle trip generation per parking space

Surveyed location	North Sydney	Chatswood	Parramatta	Average
AM peak hour trips	51	47	185	94
PM peak hour trips	44	36	75	52
GFA	31400	10214	27000	22871
AM peak hour trip rate (Vehicles / 100m ² GFA)	0.17	1.03	0.69	0.63
PM peak hour trip rate (Vehicles / 100m ² GFA)	0.14	0.84	0.61	0.53

3.8.3 Retail traffic generation

The proposed retail component of the development is expected to serve the local walk-up catchment and passing trade to/from the Crows Nest centre, especially during the weekday commuter 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 adopted traffic generation rates for the retail uses align closely with those surveyed by JMT Consulting at the Coles Dank Street retail development in Waterloo. This mixed use development with constrained on-site parking and close to public transport closely reflects the subject site, with the retail centre at Dank Street in Waterloo providing approximately 3,850m² of gross leasable area (GLA) including a full line supermarket supported by 95 parking spaces. Vehicle access to the car park is shared between residents and retail/commercial visitors, again consistent with the subject site. Surveys of the Waterloo site were

undertaken over two separate weekdays and Saturdays, with findings across both survey periods very consistent. The surveys found that the retail uses generated traffic at the following rates:

- 0.96 vehicles / 100m² GLA in the AM peak hour; and
- 2.55 vehicles / 100m² GLA in the PM peak hour; and

3.8.4 Traffic generation associated with existing site uses

When considering the net impacts of the development proposal it is important to consider the traffic movements associated with the existing site uses. The current site comprises of approximately 30 retail and commercial tenancies with a total floor area of approximately 4,475m². Based on advice from Deicorp this floor space can be categorised as approximately 3,130m² of retail and 1,345m² of commercial. The traffic movements associated with these existing tenancies has been deducted from the net traffic generation associated with the development proposal.

3.8.5 Net traffic generation

Considering the various uses envisaged within the proposal, along with the traffic movements generated by the existing site uses, the overall increase in traffic generation is summarised in Table 7 below. This indicates the site may generate an additional 54 vehicle movements in the AM peak hour and 63 vehicle movements in the PM peak hour – equivalent to just one additional vehicle per minute compared to current conditions.

Table 7 Forecast additional traffic generation resulting from proposal

Scenario	Use	Quantum	Unit	Forecast Traffic Generation		Forecast Traffic Generation	
				AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Proposal	Residential	191	Apartments	0.14 / unit	0.07 / unit	27	13
	Commercial	3335	m ² GFA	0.61 / 100m ²	0.53 / 100m ²	20	18
	Retail	4667	m ² GFA	0.96 / 100m ²	2.55 / 100m ²	45	119
Existing Conditions	Commercial	1,345	m ² GFA	0.61 / 100m ²	0.53 / 100m ²	8	7
	Retail	3,130	m ² GFA	0.96 / 100m ²	2.55 / 100m ²	30	80
Net Additional Traffic						54	63

3.9 Road network impacts

3.9.1 Alexander Street driveway

At the request of TfNSW a bespoke investigation has been undertaken to understand the potential queueing impacts arising from the future driveway access point on Alexander Street – including the likelihood of queueing back to the Alexander Street / Falcon Street traffic lights. The proposed driveway is approximately 30m away from the signalised intersection as indicated in Figure 14 below.



Figure 14 Alexander Street driveway location

Traffic counts at the Alexander Street / Falcon Street intersection were undertaken in August 2023 to understand the volume of traffic movements in the area, and particularly volumes on Alexander Street in the vicinity of the proposed driveway. Current traffic flows on Alexander Street (south of Falcon Street) are summarised in Table 8.

Table 8 Existing traffic flows on Alexander Street

Scenario	Hourly Traffic Flows – Alexander Street (south of Falcon Street)		
	Northbound	Southbound	Total
AM Peak Hour	313	368	681
PM Peak Hour	268	362	630
Sat Peak Hour	262	312	574

A SIDRA traffic model was developed to understand the extent of queues that may form on Alexander Street in the vicinity of the proposed driveway – in particular for vehicles turning right from Alexander Street into the driveway.

The outcomes of the modelling are summarised in Table 9 and indicate the following:

- The driveway access point on Alexander Street is forecast to operate at a strong 'Level of Service A' with significant spare capacity.
- The maximum vehicle queue on Alexander Street (back towards Falcon Street) is expected to be 4.2m – well below the 30m queueing distance available to the Falcon Street traffic lights.

Detailed traffic modelling outputs are provided as Appendix A of this document.

Table 9 Traffic modelling outcomes – Alexander Street driveway

Scenario	Performance of Alexander Street Driveway		
	Level of Service	Degree of Saturation	95% queue (Alexander Street)
AM Peak Hour	A	0.23	2.4m
PM Peak Hour	A	0.24	3.1m
Sat Peak Hour	A	0.23	4.2m

In the above context the driveway access point is considered suitable and no turning movement restrictions are necessary in order to maintain suitable road network operations.

3.9.2 Broader road network impacts

The traffic modelling undertaken in support of the Planning Proposal was based on the traffic generation arising from the reference scheme from December 2020 which contained significantly greater FSR in comparison to the current proposal.

As indicated in Figure 15 the expected traffic generation arising from the current proposal is considerably less than that assumed at the time of the original Planning Proposal submission - in the order of 70% fewer trips in the AM peak hour and 60% fewer trips in the PM peak hour. This confirms that the Development Application will result in improved road network performance and reduced delays on the surrounding road network compared to that previously assessed as part of the Planning Proposal for the site.

The previous analysis (adopting significantly higher traffic movement numbers) concluded that the additional traffic arising from the development of the site would have only minor impacts at key intersections surrounding the site. With fewer traffic movements the current proposal's impact on the surrounding road network would be reduced in comparison.

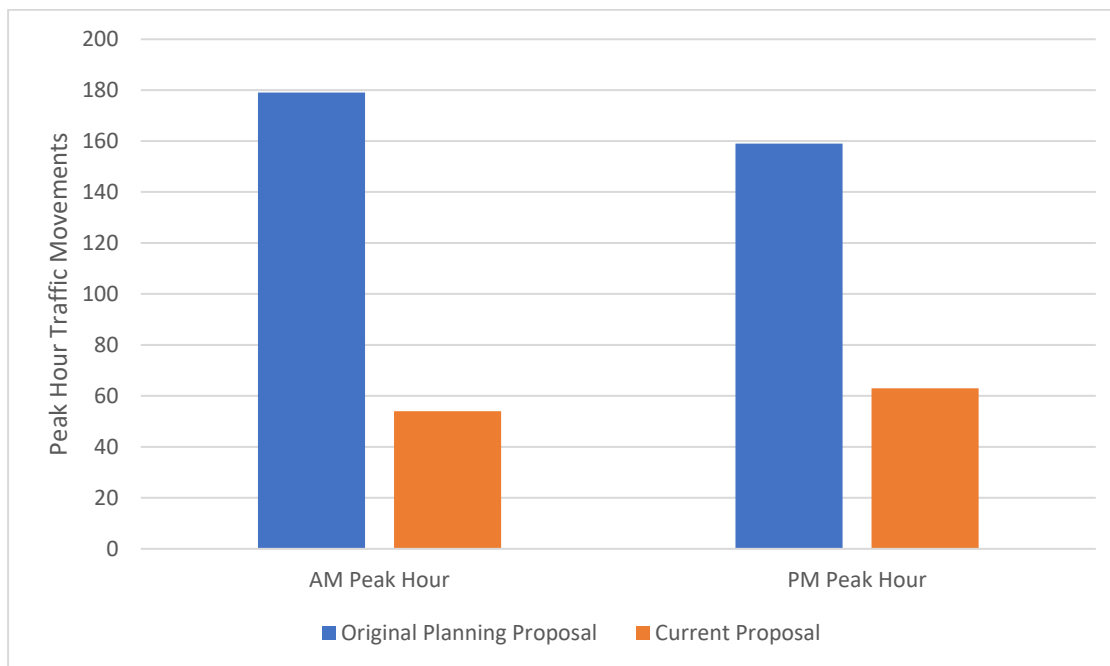


Figure 15 Traffic generation comparison

It is important to note that the forecast traffic generated by the site represents only approximately 2% of existing total traffic movements through the intersections on the Pacific Highway and Falcon Street. As previously demonstrated in the approved Planning Proposal for the site the relative impact of these movements is low and has already been considered as part of broader planning for the St Leonards / Crows Nest precinct.

3.10 Pedestrian accessibility

The proposed development will include improved pedestrian permeability within the area through the provision of pedestrian links connecting Alexander Street and the Pacific Highway.



Figure 16 Pedestrian links

3.11 Public transport accessibility

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 Metro 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 Metro Station (within a five minute walk), 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 5.

3.12 Bicycle parking

The North Sydney DCP stipulates bicycle parking requirements for residential, commercial and retail uses. As summarised in Table 10 below, approximately 300 spaces are required when adopting the DCP rates with the proposal making provision in line with Council's requirements.

Table 10 Bicycle parking requirements

Land Use	No. of units / GFA	User type	Bicycle parking requirement	
			Rate	Number
Residential	191 units	Residents	1 / unit	191
		Visitors	1 / 10 units	19
Commercial	3335m ²	Staff	1 / 150m ²	22
		Visitors	1 / 400m ²	8
Retail	4667m ²	Staff	1 per 250 m ²	19
		Visitors	2 plus 1 per 100m ² over 100m ²	46
Total				305

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.

4 Preliminary Green Travel Plan

4.1 GTP purpose

This report includes a preliminary Green Travel Plan (GTP) identifying some key items that could be included in a more detailed plan to be completed prior to the initial opening of the development. A more detailed GTP will be prepared prior to occupancy which reflects the needs of the users of the building and outlines contemporary transport conditions. The requirement for the preparation of a detailed GTP prior to occupation is commonplace in major developments such as the subject site and can be reinforced through an appropriately worded condition of consent.

4.2 GTP overview

A Green Travel Plan 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.

4.3 GTP objectives

A GTP is a package of measures aimed at promoting and encouraging sustainable travel and reducing reliance on the private car. The GTP for the site will assist in reducing car reliance by promoting alternative, sustainable modes of travel. The GTP aims to encourage and support the broader use of sustainable travel options by the community in carrying out their daily activities.

Sustainable travel options include active transport (including travel by foot, bicycle and other non-motorised vehicles) and public transport. The GTP focuses on minimising the impact of events on the local and wider transport network and encourages those accessing the site to do so by sustainable modes of transport, thereby reducing car dependency for residents, staff and visitors of the site.

The key objectives of the GTP are to:

- Achieve a high modal share for public transport, cycling and walking journeys for residents, staff and visitors of the site;
- Reduce private vehicle dependency as a means of access to the site;
- Ensure adequate facilities are provided at the site to enable users to travel by sustainable transport modes; and

- Raise awareness of, and actively encourage the use of, sustainable transport amongst users.

4.4 Mode share targets

The aim of the GTP is to encourage a modal shift away from private vehicles by implementing measures that influence the travel patterns of residents living at the site. The implementation of the GTP would be regularly monitored to ensure that the GTP is having the desired effect. The success of the GTP is measured by setting modal share targets and identifying the measures and actions that have the greatest impact.

The mode share targets have been set based on the site's location near the North Sydney CBD and Crows Nest metro station – therefore having strong access to public transport, employment and general services. Bicycle parking will be provided for building staff, with complementary end of trip facilities, and therefore this mode of transport is expected to increase compared to current conditions. All residents will also be provided with secure bicycle parking facilities. The overall mode share targets for the site are summarised in Table 11 below.

Table 11 Mode share targets

Mode of travel	Existing Mode Share		Target Mode Share	
	<i>Residents</i>	<i>Employees</i>	<i>Residents</i>	<i>Employees</i>
Car driver	28%	50%	14%	25%
Car passenger	1%	4%	1%	5%
Bus / Light Rail	21%	10%	21%	10%
Train / Metro	28%	25%	40%	46%
Walk / Bicycle	15%	7%	20%	10%
Other	5%	0.5%	2%	0.5%
Did not go / Work from Home	2%	3.5%	2%	3.5%
Total	100%	100%	100.00%	100.00%

4.5 Design initiatives

A number of initiatives have been incorporated within the design of the building to promote travel by sustainable modes and reduce car dependency – in line with the objectives of the GTP. These design measures include:

- Provision of publicly accessible car share spaces within the basement of the building.
- Bicycle parking for residents, staff and visitors in line with the minimum requirements outlined in the North Sydney DCP.
- End of trip facilities (showers, lockers, change areas) for staff of the building.
- Pedestrian through site links to open up the ground plane and support improved permeability and accessibility within the site.
- Motorcycle parking within the basement of the car park to support travel via this mode of transport.
- Strong access to nearby public transport including bus stops on the Pacific Highway and the future Crows Nest metro station.

4.6 Potential strategies

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 12 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
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	Building manager
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

Action	Responsibility
Carshare / Carpooling	
Establish a car pooling program to help people find someone to share in their daily commute. Engagement with car share operators (e.g. Go Get) will take place closer to the initial occupancy of the development to confirm there is market demand for these spaces.	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

The information provided within the GTP will be provided to residents staff and visitors in the form of a package of easy to understand travel information known as a Transport Access Guide (TAG).

TAGs provide customised travel information for people travelling to and from a particular site using sustainable forms of transport – walking, cycling and public transport. It provides a simple quick visual look at a location making it easy to see the relationship of site to train stations, light rail stations, bus stops and walking and cycling routes. Such TAGs encourage the use of non-vehicle mode transport and can reduce associated greenhouse gas emissions and traffic congestion while improving health through active transport choices.

They can take many forms from a map printed on the back of business cards or brochures. Best practice suggests that the information should be as concise, simple and site centred as possible and where possible provided on a single side/sheet. If instructions are too complex, people are likely to ignore them.

4.7 Management and monitoring

There is no standard methodology for the implementation and management of a GTP. However, the GTP will be monitored to ensure that it is achieving the desired benefits. The mode share targets set out in this document are used in this regard to ensure there is an overall goal in the management of the GTP.

The Plan is a 'living' document, so measures excluded at this time could be reconsidered or reintroduced at any time in the future. It is recognised that travel needs, and patterns will change, and new measures will become available. The Plan will be periodically reviewed to ensure that the objectives are being met.

An implementation plan has been developed that includes all of the proposed actions within the GTP and how these will be monitored and evaluated for five years post occupancy.

The body corporate will appoint a Travel Plan Coordinator (with support from the body corporate committee) will be responsible for the implementation and management of the plan, including:

- Communicating the travel plan to stakeholders;
- Promote awareness of the plan and associated initiatives;
- Providing travel information for residents, staff and visitors;
- Developing and disseminating appropriate travel plan marketing information, and to ensure that all relevant and up to date material is provided;
- To liaise with other venues and Government agencies to develop a collaborative approach to Travel Plan initiatives;
- To evaluate the benefit of the proposed measures to identify any changes required to the Travel Plan; and
- Overseeing the implementation and effectiveness of the Plan

The monitoring of the GTP would require travel surveys to be undertaken with a focus to establish travel patterns including mode share of trips to and from the site. It is anticipated that the first set of surveys would be undertaken within six months of first occupation to obtain the baseline mode shares for the site.

Sample travel surveys for staff and residents of the building have been developed and are provided in Appendix B and C respectively.

Utilisation of bicycle parking and end of trip facilities will also provide a measure for monitoring the effectiveness of the plan – and enhance these facilities should monitoring determine that demand is exceeding supply. Additionally staff and visitor feedback on the bicycle parking and end of trip facilities should be gathered on an ongoing basis (e.g. through staff meetings) to understand any concern with the provision of bicycle facilities, with enhancements made based on the outcomes of this feedback and subsequent investigations.

4.8 Communications strategy

In order to secure a successful Travel Plan, the Travel Plan Coordinator will continue to engage with key transport agencies and stakeholders such as Transport for NSW and North Sydney Council. It will also be necessary to provide feedback to residents, staff and visitors to ensure that they can see the benefits of sustainable transport. Indeed, there are several keys to the development and implementation of a successful GTP. These include:

- **Communications** – Good communications are an essential part of the GTP. It will be necessary to explain the reason for adopting the plan to promote the benefits of sustainable transport options.
- **Commitment** – GTPs involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than car use. To achieve co-operation, it is essential to promote positively the wider objectives and benefits of the plan. This commitment includes the provision of the necessary resources to implement the plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes upon occupation.
- **Building Consensus** – It will be necessary to obtain broad support for the introduction of the plan from the residents, staff and visitors.

Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the project as a whole will be important. A continuous review will take place to identify remedial actions should the modal share targets not be achieved.

5 Preliminary Pedestrian Construction Traffic Management Plan

5.1 Overview

For the purposes of the proposal a preliminary Construction Pedestrian Traffic Management Plan (CTPMP) has been prepared. This preliminary CPTMP outlines the key principles for how construction may be carried out on the site, subject to further planning to be undertaken during subsequent stages of the project. As the project is in very early concept phase details around construction timeframes, methodology and processes are not yet clear.

Prior to the commencement of construction for the subject site a detailed CPTMP will be prepared. The purpose of the CTPMP is to assess the proposed access and operation of construction traffic associated with the proposed development with respect to safety and capacity. The Contractor will be responsible for preparing the CTPMP, ensuring the following are addressed:

- Proposed construction vehicle routes;
- Indicative construction programme;
- Expected construction vehicle types and volumes;
- Car parking arrangements and site access during construction;
- Safety measures to minimise impacts to pedestrians and cyclists. T

The Contractor will also be responsible for monitoring and coordinating all vehicles entering and exiting the site.

5.2 Work hours

Consistent with standard North Sydney Council guidelines working hours for the project would likely be as follows:

- Monday to Friday 7.00am to 6.00pm
- Saturday 7:00am to 5:00pm
- Sunday/ public holiday No work

The appointed contractor will be responsible for instructing and controlling all subcontractors regarding the hours of work. Any work outside the approved construction hours would be subject to specific prior approval.

5.3 Vehicle types

To facilitate the works on site it is expected that a range of vehicles will be utilised, including:

- 12.5m Heavy Rigid Vehicles (HRVs)
- 8.8m Medium Rigid Vehicles (MRVs)
- 6.4m Small Rigid Vehicles (SRVs).

On a daily basis it is also expected that smaller utes and vans will access the site. Special permits and approval from Council will be required to bring in larger and oversize vehicles during the works if required. These will be managed on a case by case basis in close consultation with North Sydney Council.

5.4 Construction traffic volumes

Based on movements generated of similar projects construction traffic generation of approximately 50 vehicles per day is anticipated at the peak of the works, with 40 of these vehicles to be heavy vehicles and 10 light vehicles. It is anticipated that a peak of 10 two-way truck movements may occur during a one hour period. This volume of construction traffic movements will be confirmed closer to the time of construction following the appointment of a contractor and outlined in the detailed CPTMP.

As previously detailed in Section 3.9 of this document, the surrounding road network has the ability to accommodate this volume of traffic subject to appropriate management.

Trips generated by construction staff will typically be outside of the main road network peaks. The impact of construction traffic volumes on the external network is therefore expected to be low. The good availability of public transport in the area, particularly St Leonards transport interchange and the future Crows Nest metro station, will encourage workers to minimise private vehicle use which will further reduce the impacts on the local road network.

5.5 Construction vehicle routes

The proposed construction vehicle access routes have been selected to align with key arterial roads such as the Pacific Highway, Warringah Freeway, Falcon Street and Epping Road. All vehicles will turn into and out of Alexander Street, with no vehicle set down permitted on either Falcon Street or the Pacific Highway to manage impacts on the classified road network. The construction vehicle routes will be developed as the project progresses further, however for the purposes of this preliminary assessment the anticipated routes are illustrated in Figure 17 below.

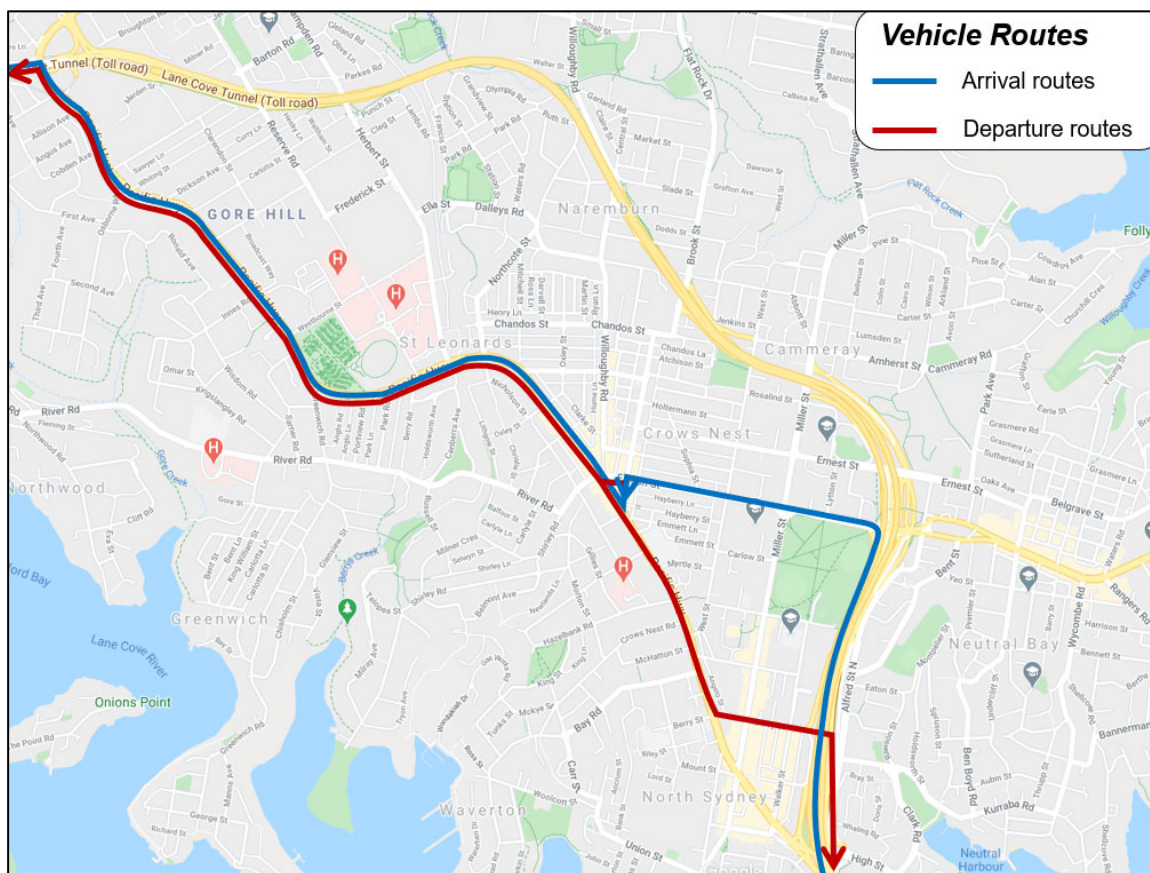


Figure 17 Construction vehicle routes

5.6 Pedestrian management

Temporary fencing and hoardings will be installed along frontage of the works site to maintain pedestrian movements and ensure the safety of pedestrians walking adjacent to the construction site. Footpaths will remain open at all times to pedestrians and therefore minimal impacts are anticipated.

Traffic controllers will be positioned at vehicle site access points to manage interactions between vehicles and pedestrians on the adjoining footpaths. Traffic control plans detailing further measures to manage pedestrian safety will be

provided as part of the detailed CPTMP to be prepared prior to the commencement of construction on the site.

5.7 Mitigation measures

Mitigation measures would be adopted during construction to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and may include the following:

- Trucks to minimise the use local streets for access to the construction site;
- Trucks to enter and exit the site in a forward direction;
- Pedestrians near the ingress/egress points will not be held unnecessarily.
- At construction vehicle access/egress points, priority is to be given to trucks accessing the site over trucks egressing the site so as to have no impact to traffic flow on surrounding roads (unless exceptional circumstances do not permit)
- Trucks to not circulate on the road network to wait to enter the site (unless exceptional circumstances do not permit)
- Restrict construction vehicle activity to designated routes which do not utilise any local roads;
- Truck drivers will be advised of the designated truck routes to/ from the site;
- Construction access from the external road network to mainly occur at signalised intersection;
- Pedestrian movements adjacent the construction site will be managed and controlled by site personnel where required;
- Pedestrian warning signs and construction safety signs/devices to be utilised in the vicinity of the site and to be provided in accordance with WorkCover requirements;
- Construction activity to be carried out in accordance with approved hours of work;
- Truck loads would be covered during transportation off-site;
- Activities related to the construction works would not impede traffic flow along adjacent roads;
- Construction vehicles not to queue on adjacent streets
- During site induction, workers will be informed of the existing bus, train and light rail network servicing the site; and
- Development and enforcement of driver charter.

These mitigation measures will be further developed as the project progresses and outlined in detail in the CPTMP to be prepared prior to the commencement of construction.

6 Summary

JMT Consulting has prepared this traffic and transport study on behalf of Deicorp Projects (Crows Nest) Pty Ltd to inform the preparation of a State Significant Development Application for the site known as the 'Five Ways Triangle Site' located at 391-423 Pacific Highway, 3-15 Falcon Street and 8 Alexander Street, Crows Nest. 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 Alexander Street which is away from the State classified roads of Falcon Street and the Pacific Highway.
- An on-site loading dock is provided to accommodate loading and servicing for the building, complying with relevant TfNSW requirements.
- The on-site car park and loading areas have been designed in accordance with the relevant Australian Standards AS2890.1 and AS2890.2.
- Detailed traffic analysis of the proposed driveway on Alexander Street demonstrates that no turning movement restrictions into or out of the driveway are necessary in order to maintain suitable road network operations.
- The proposal is forecast to generate a relatively minor amount of additional traffic movements, equivalent to approximately one additional extra vehicle per minute during the busiest times of the day. This level of additional traffic is considered minimal and would not materially impact the operation of the surrounding road network.
- The traffic modelling completed in support of the approved Planning Proposal for the site considered significantly greater levels of traffic movements in comparison to the scheme subject to the detailed SSDA. This previous modelling demonstrated that the increased traffic flows associated with the development of the site will not result in adverse impacts on the surrounding road network.
- 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 SSDA on the transport network will be acceptable.

Appendix A: Traffic Modelling Outputs

MOVEMENT SUMMARY

 **Site: 101 [AM Peak Hour (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh]	[Dist] m				km/h
South: Alexander Street (S)															
1	L2	All MCs	28	7.4	28	7.4	0.188	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	329	2.2	329	2.2	0.188	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.5
Approach			358	2.6	358	2.6	0.188	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
North: Alexander Street (N)															
8	T1	All MCs	387	1.4	387	1.4	0.232	0.0	LOS A	0.3	2.4	0.10	0.11	0.10	59.2
9	R2	All MCs	28	7.4	28	7.4	0.232	11.4	LOS A	0.3	2.4	0.10	0.11	0.10	56.1
Approach			416	1.8	416	1.8	0.232	0.8	NA	0.3	2.4	0.10	0.11	0.10	59.0
West: Site Driveway															
10	L2	All MCs	27	3.8	27	3.8	0.087	9.7	LOS A	0.3	2.1	0.52	0.93	0.52	49.2
12	R2	All MCs	27	3.8	27	3.8	0.087	13.5	LOS A	0.3	2.1	0.52	0.93	0.52	49.0
Approach			55	3.8	55	3.8	0.087	11.6	LOS A	0.3	2.1	0.52	0.93	0.52	49.1
All Vehicles			828	2.3	828	2.3	0.232	1.4	NA	0.3	2.4	0.08	0.14	0.08	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\JMT Consulting\Projects\2274 - Five Ways Triangle\Internal\SSDA\Five Ways SIDRA.sip9

MOVEMENT SUMMARY

 **Site: 101 [PM Peak Hour (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh]	[Dist] m				km/h
South: Alexander Street (S)															
1	L2	All MCs	39	5.4	39	5.4	0.172	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	56.6
2	T1	All MCs	282	5.6	282	5.6	0.172	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach			321	5.6	321	5.6	0.172	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.9
North: Alexander Street (N)															
8	T1	All MCs	381	3.3	381	3.3	0.241	0.0	LOS A	0.4	3.1	0.12	0.14	0.12	59.0
9	R2	All MCs	39	5.4	39	5.4	0.241	10.4	LOS A	0.4	3.1	0.12	0.14	0.12	56.0
Approach			420	3.5	420	3.5	0.241	1.0	NA	0.4	3.1	0.12	0.14	0.12	58.7
West: Site Driveway															
10	L2	All MCs	27	3.8	27	3.8	0.084	9.5	LOS A	0.3	2.1	0.50	0.91	0.50	49.4
12	R2	All MCs	27	3.8	27	3.8	0.084	13.1	LOS A	0.3	2.1	0.50	0.91	0.50	49.2
Approach			55	3.8	55	3.8	0.084	11.3	LOS A	0.3	2.1	0.50	0.91	0.50	49.3
All Vehicles			796	4.4	796	4.4	0.241	1.6	NA	0.4	3.1	0.10	0.16	0.10	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\JMT Consulting\Projects\2274 - Five Ways Triangle\Internal\SSDA\Five Ways SIDRA.sip9

MOVEMENT SUMMARY

 **Site: 101 [Saturday Peak Hour (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh. veh	[Dist] m				
South: Alexander Street (S)															
1	L2	All MCs	55	3.8	55	3.8	0.174	5.6	LOS A	0.0	0.0	0.00	0.10	0.00	56.4
2	T1	All MCs	276	2.7	276	2.7	0.174	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.0
Approach			331	2.9	331	2.9	0.174	1.0	NA	0.0	0.0	0.00	0.10	0.00	58.6
North: Alexander Street (N)															
8	T1	All MCs	335	1.9	335	1.9	0.231	0.0	LOS A	0.6	4.2	0.18	0.20	0.18	58.5
9	R2	All MCs	55	3.8	55	3.8	0.231	10.2	LOS A	0.6	4.2	0.18	0.20	0.18	55.6
Approach			389	2.2	389	2.2	0.231	1.4	NA	0.6	4.2	0.18	0.20	0.18	58.1
West: Site Driveway															
10	L2	All MCs	38	2.8	38	2.8	0.110	9.4	LOS A	0.4	2.7	0.49	0.92	0.49	49.6
12	R2	All MCs	38	2.8	38	2.8	0.110	12.6	LOS A	0.4	2.7	0.49	0.92	0.49	49.4
Approach			76	2.8	76	2.8	0.110	11.0	LOS A	0.4	2.7	0.49	0.92	0.49	49.5
All Vehicles			796	2.5	796	2.5	0.231	2.2	NA	0.6	4.2	0.13	0.22	0.13	57.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\JMT Consulting\Projects\2274 - Five Ways Triangle\Internal\SSDA\Five Ways SIDRA.sip9

Appendix B: Preliminary Loading Dock Management Plan



Five Ways Triangle Site – Crows Nest Preliminary Loading Dock Management Plan

Prepared for:

Deicorp Projects (Crows Nest) Pty Ltd

8 March 2024



PROJECT INFORMATION

Project Name:	Five Ways Triangle Site – Crows Nest
Client:	Deicorp Projects (Crows Nest) Pty Ltd
Project Number:	2274
Prepared By:	JMT Consulting

DOCUMENT HISTORY

Document Title	Revision	Date issued	Author
Five Ways Triangle Site – Loading Dock Management Plan	Draft 1	27.10.23	JM
Five Ways Triangle Site – Loading Dock Management Plan	Issue	08.03.24	JM

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1 Introduction

1.1 Background

JMT Consulting has prepared this loading dock management plan on behalf of Deicorp Projects (Crows Nest) Pty Ltd to support a State Significant Development Application (SSDA 66826207) for the site known as the 'Five Ways Triangle Site' located at 391-423 Pacific Highway, 3-15 Falcon Street and 8 Alexander Street, Crows Nest. The SSDA seeks to provide for a residential tower building with complementary retail and commercial uses.

1.2 Site location

The subject site is bound by Falcon Street to the north, Alexander Street to the east, and the Pacific Highway to the south-west. The site is 3,200.6sqm in area. It is triangular in shape with a frontage of approximately 70m to Falcon Street, 85m to Alexander Street and 110m to the Pacific Highway. The site contains a number of buildings ranging from 1-4 storeys in height in a variety of building styles and sizes. St Leonards Railway Station is located approx. 800m walk to the north-west, which provides regular services to the south to Sydney City CBD, and to the north to Chatswood, Macquarie Park and Hornsby. The future Crows Nest Metro Station is located approx. 250m to the north-west of the site.



Figure 1 Site location

1.3 Report purpose

This preliminary loading dock management plan report has been prepared to summarise the proposed loading dock design and principles around dock management – confirming the suitability of the proposed layout and ability to accommodate likely traffic movements to the on-site service areas.

1.4 Relevant standards and guidelines

The following Australian Standards documents have been considered as part of the design process for the proposal:

- AS2890.1:2004 for car parking areas.
- AS2890.2:2018 for commercial vehicle loading areas.

In addition the relevant Transport for NSW document considered includes the 'Last Mile Freight Toolkit: A guide to planning the urban freight task'

2 Loading Dock Access and Design

2.1 Vehicle site access arrangements

Access for all service vehicles will be shared with general passenger vehicles through a driveway on Alexander Street - consistent with that envisaged as part of the Planning Proposal for the site. Access of Alexander Street is appropriate given both Falcon Street and the Pacific Highway are State Classified roads.

A 5% gradient for the first 6m of the driveway is provided in accordance with the requirements of AS2890.1:2004 and AS2890.2:2018 so that vehicles have suitable lines of sight to oncoming pedestrians on Alexander Street.

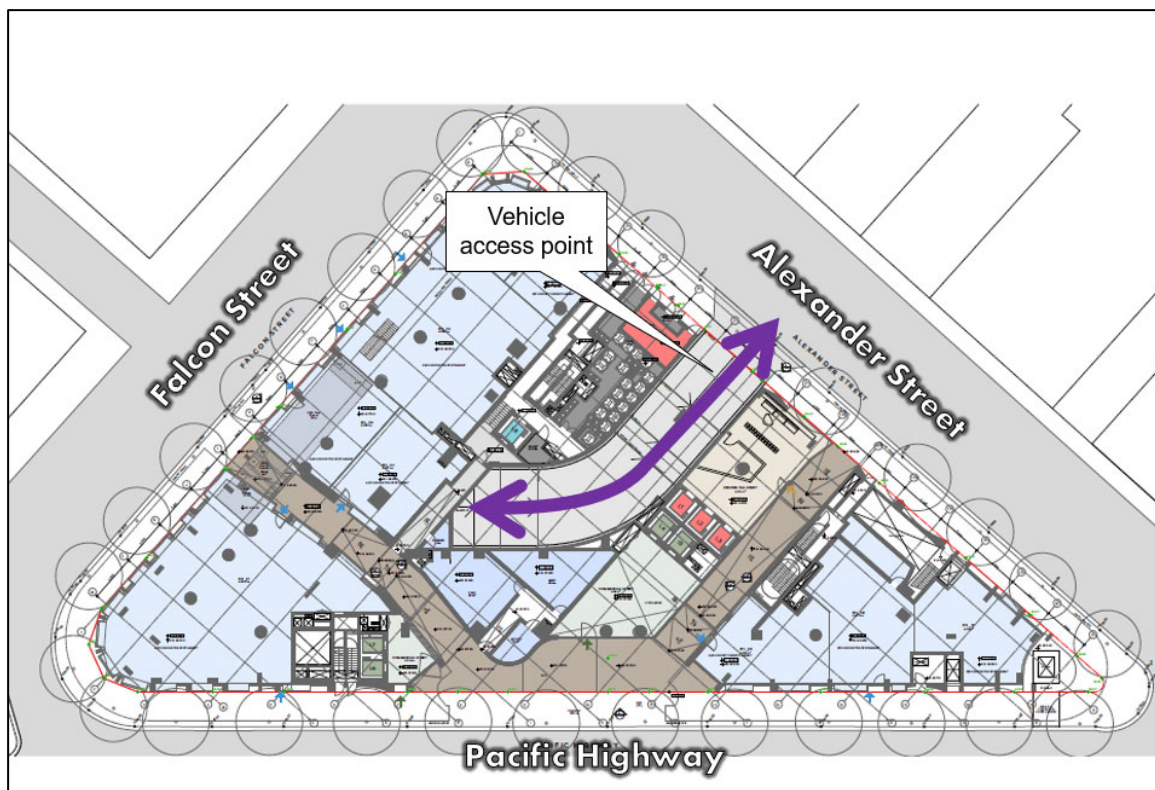


Figure 2 Proposed vehicle site access

2.2 Vehicle clearance heights

The following vehicle clearance heights will be provided in the basement to accommodate the safe movement of vehicles:

- 4.5m clearance height along the main entry ramp through to the loading dock on basement level 1 to accommodate large delivery vehicles used for residential move ins / outs.
- 2.2m clearance height within the remainder of the basement, as per the requirements of AS2890.1. This will be sufficient for use by vans and utes, equivalent to the 'B99 vehicle' as defined in AS2890.1. These vans and utes will access the site to undertake general maintenance and/or undertake smaller deliveries to the various site users.

2.3 Loading provision

A loading dock at basement level is provided containing two truck parking spaces comprising of the following vehicle types:

- 1 * 8.8m long space for a Medium Rigid Vehicle (MRV)
- 1 * 6.4m long space for a Small Rigid Vehicle (SRV)

In addition to the two truck spaces in the loading dock four service vehicle parking spaces will be provided in the basement of the building. These spaces can be used by vans/utes for the purposes of building servicing, resident deliveries or deliveries to the retail tenants of the building.

As per current North Sydney Council waste collection policy, all residential waste will be collected via Alexander Street. Commercial and retail waste will be undertaken via a private contractor service within the basement of the building.

The North Sydney DCP provides guidance in relation to service vehicle parking in new developments. The DCP rates are however based on standalone uses rather than a mix of uses within a single development like our site. Given the proposal provides for a range of uses there is the opportunity for the sharing of service vehicle spaces. The *Transport for NSW Urban Freight Forecasting Model* can be used as a reference to understand the potential servicing requirements in this instance.

The model, based on the proposed number of service vehicle parking spaces, forecasts an average efficacy of approximately **98.93%**. This exceeds the minimum efficacy level of 80% (subject to management measures) demonstrating a suitable level of on-site vehicle servicing provision.

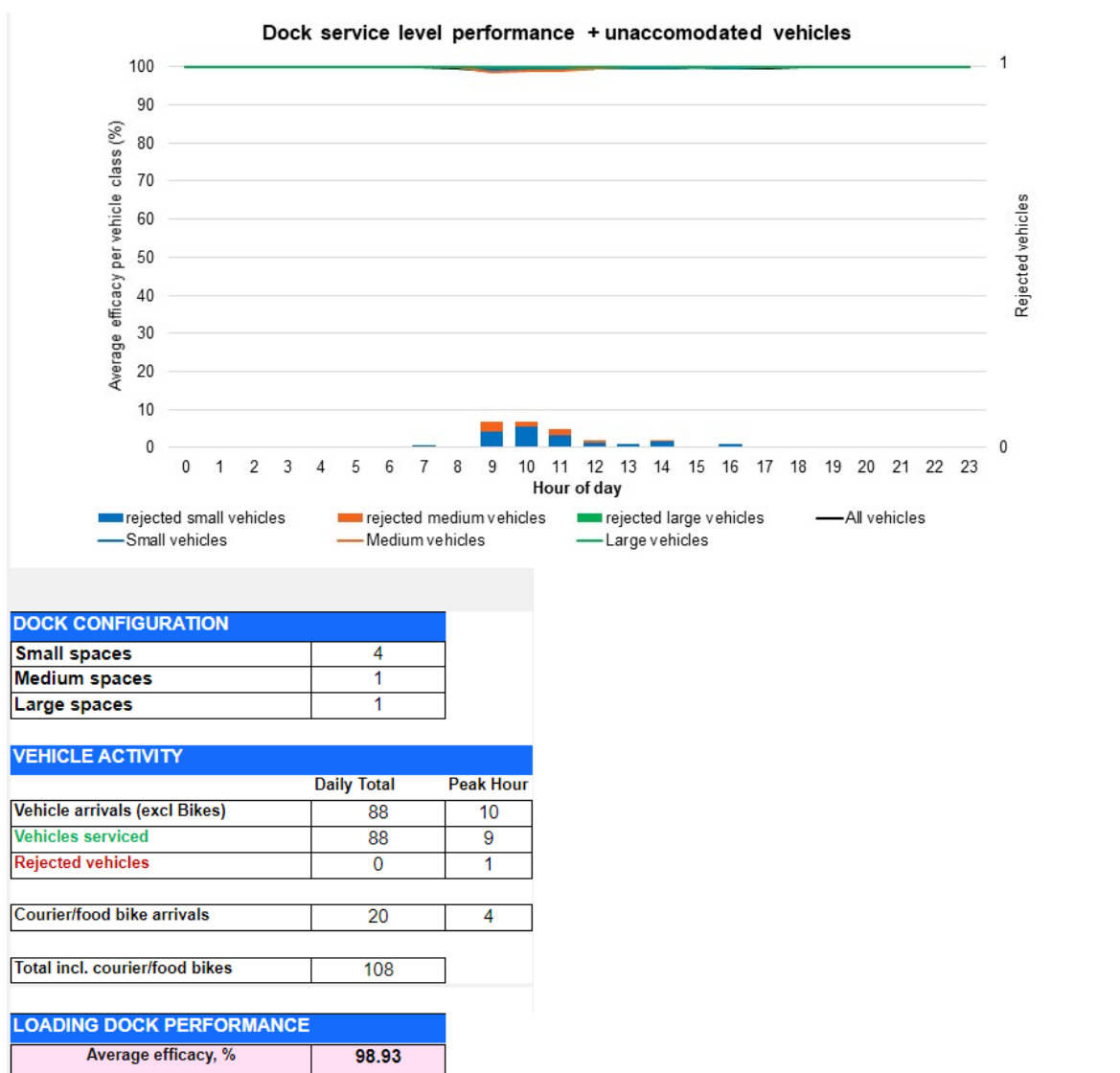


Figure 3 Outputs from TfNSW urban freight forecasting model

2.4 Internal vehicle circulation

The proposed internal vehicle circulation arrangements are indicated in Figure 4 below and include:

- All vehicles to enter and exit the site in a forwards direction from Alexander Street
- Large trucks to access a turntable located on the ground floor and position themselves in the south-west corner of the building from where loading/unloading will occur. An 11m diameter turntable is provided to facilitate the movement of trucks in a forwards direction.

The loading dock design is also consistent with the requirements of AS2890.2 in that it separates truck manoeuvring from the main passenger vehicle access aisle.

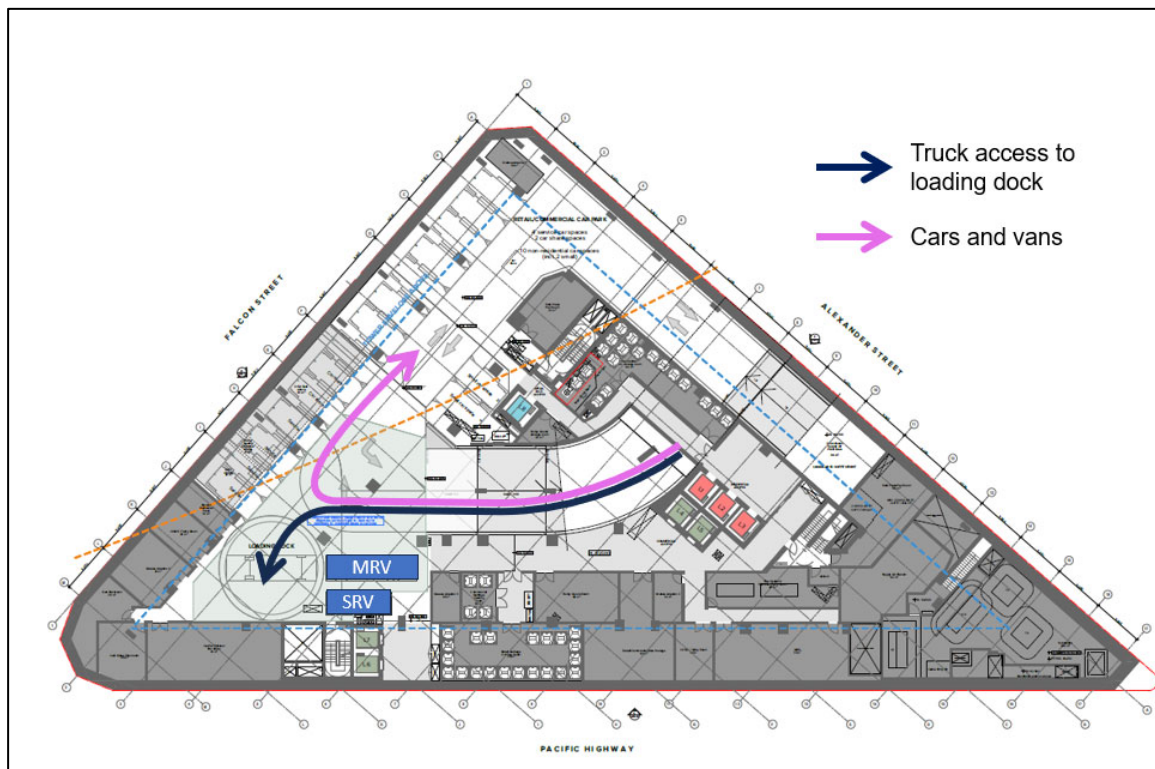


Figure 4 Internal vehicle movements

As shown in the swept paths in Figure 5 the design makes provision for two Medium Rigid Vehicles to pass one another as they enter and exit the site. Suitable manoeuvring area is provided within the loading dock to allow the trucks to enter and exit the designated parking spaces.

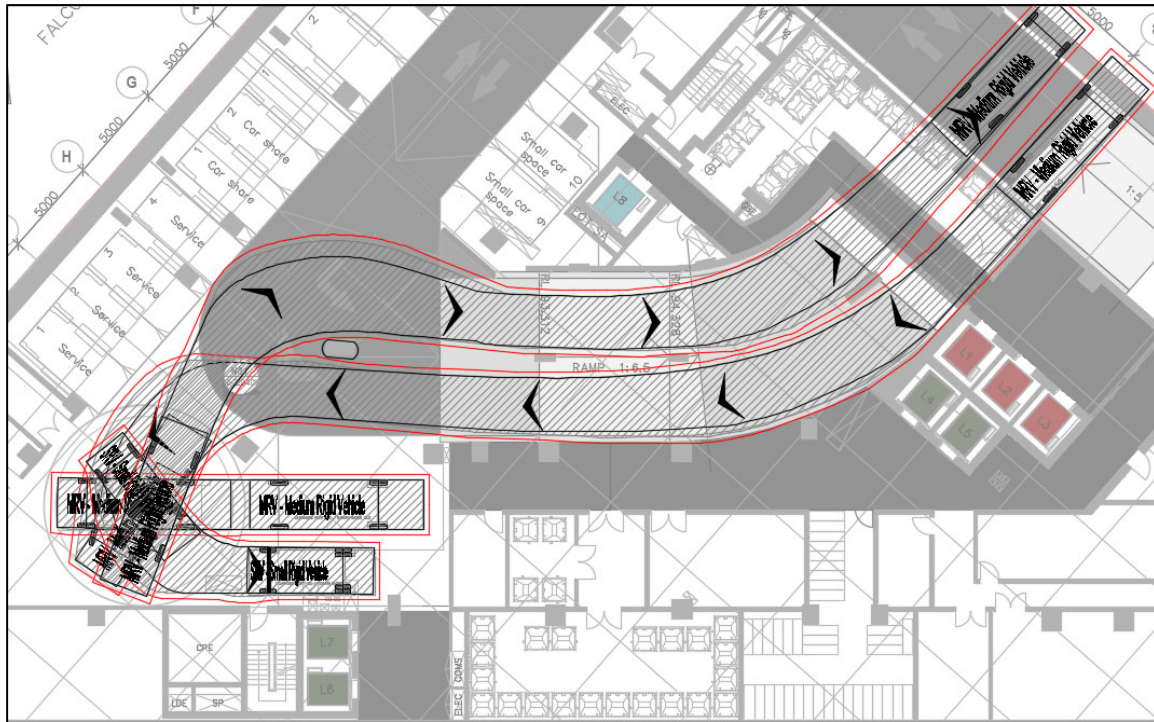


Figure 5 Vehicle swept paths – loading dock

2.5 Service corridor

A wide service corridor will be available for goods to be trolleyed between the trucks parked in the loading dock to the adjacent goods lift as indicated in Figure 6.

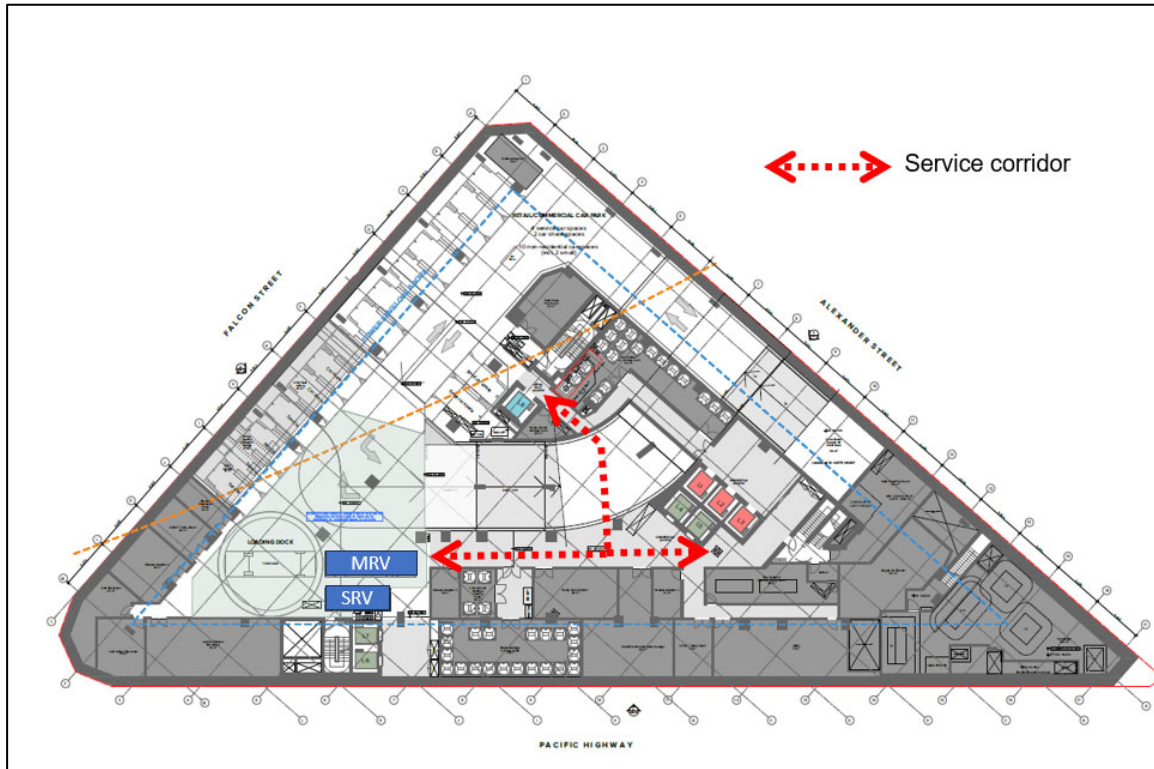


Figure 6 Service corridor from loading bay to goods lift

3 Loading Dock Operations

3.1 Delivery types

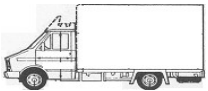
The loading dock is estimated to be receive the following services via those bays, but not limited to:

- Grocery deliveries (regularly);
- Goods deliveries for retail (weekly);
- Furniture delivery (prior to opening and approximately once per week after opening);
- Waste and recycling collection (two times per week for residential uses, three times per week for retail/commercial uses);
- Cleaning and maintenance service (regularly);
- Building maintenance service (occasionally); and

3.2 Vehicle types

An overview of vehicle types expected to service the building is shown in Table 1. The largest vehicle expected to service the building is an 8.8m long Medium Rigid Vehicle (MRV). Typical dwell (turnaround) times for these vehicle types within the loading dock are also indicated in this table.

Table 1 Vehicle types and typical dwell times

Vehicle Type	Vehicle	Characteristics	Turnaround Time (minutes)
Bicycle		Bicycle couriers	5-10
Motorcycle		Motorcycle couriers.	5-10
Service vehicle typically a Van or Car (B99 vehicle)		Typically, 5.2m length, load capacity does not exceed SRV.	10-15
Small Rigid Vehicle (SRV)		Typically, 6.4m length, 2.33m width, 4-tonne load capacity, single rear axle and either single or dual tyres.	10 – 15
Medium Rigid Vehicle (MRV)		Typically, 8.8m length, 2.5m width, 8-tonne load capacity, single rear axle and dual tyres.	15-30

3.3 Hours of operation

It is expected that the loading dock will be available for up to 12 hours per day, seven days per week. Subject to prior discussions and approval from the building manager, the loading dock may also be available for exceptional out-of-hours deliveries.

3.4 Operations management

When in operation the loading dock will have a building manager on-site to coordinate the safe movement of goods, vehicles and personnel within the loading dock area. The building manager will ensure the loading dock (including designated safe walking routes) are kept clear of goods at all times and ensure delivery vehicles strictly adhere to their allotted booking slot. Any vehicles overstaying their booking will be moved on to ensure later bookings are not affected.

Additional signage such as “No Pedestrian Access” will be placed in a visible location at the entrance of the loading dock, along with ground marking stating “No Pedestrian Entry, Loading Dock”, ensuring that pedestrians do not enter the area.

The loading dock rules will be sign posted at the entrance of the loading dock to clearly explain the requirements within this zone.

An informal speed limit of 10km/hr will be put in place on the ramp prior to the loading dock, to clearly notify drivers of the speed within the area.

As the driveway entrance is shared by both light vehicles and trucks, drivers will be made aware to enter and leave the loading dock with caution to ensure the safety of other users. Additional warning signage should be installed near the proposed loading dock to warn motorists of reversing trucks to minimise any perceived safety issues in the vicinity of the loading dock.

3.5 Booking system and driver communications

A loading dock booking system will be employed to control access to dock and spread the demand profile over the day. Deliveries will be required to be pre-booked to an allocated time slot of 30 minutes maximum dwell time.

Drivers will be required to phone the building manager in advance of their arrival to the site so that the building manager will be present to operate the turntable as soon as the truck arrives.

Trucks intending to use the docks will not be permitted to come to site without making a booking beforehand. The major benefit of the implementation of such a system is the ability to moderate demand throughout the day. The allocation of deliveries to timeslots (with strict length of stay limits) reduces the risk the loading dock reaching capacity and manages traffic flow into the site during

peaks. The booking system also largely mitigates the risk of vehicle queues forming to enter the site and improving the flow of traffic on adjacent streets.

If a supplier arrives without a valid booking or outside of their booked time, the building manager may decline their entry to the dock and request that they book an alternate time.

3.6 Forecast loading dock activity

Typically 20% of units within residential apartment buildings turn over every year. Based on 191 residential apartments and this typical turnover rate of 20% it could be expected that between 1 and 2 move ins/outs each week will take place. The building manager will ensure all move ins/outs are scheduled in advance so that space within the loading dock can be allocated appropriately. During the initial move in phase for each building new, special arrangements will be made at basement level through allocation of space and scheduling of bookings.

There will be a range of service vehicles visiting the site for durations of up to 2 hours to provide maintenance and repair services to residential properties. These vehicles will typically be vans and utes which can use the dedicated service vehicle spaces in the basement car park.

Given the land uses and densities proposed within the development, deliveries to the site are manageable given the proposed loading layout – including the four van/ute spaces in the basement of the building. A typical daily delivery profile would include:

- 4-5 deliveries by MRV or SRV trucks.
- 1 garbage / 1 recycle pick-up.
- 15 deliveries by vans / cars.
- 3-4 service vehicles parked for 2-3 hours.

A delivery schedule will be organised by management to stagger and control arrival of deliveries.

For the purpose of this plan, based on experience from similar developments and the expected demand as detailed above, a potential weekly profile for the use of the MRV loading bay on ground level has been developed and is presented in Table 2 on the following page.

Table 2 Potential daily use of medium rigid vehicle parking bay

From	To	Potential Use of Medium Rigid Vehicle Bay						
		MON	TUES	WED	THUR	FRI	SAT	SUN
6:00	6:30		Garbage / Recycling – Commercial & Retail		Garbage / Recycling – Commercial & Retail		Garbage / Recycling – Commercial & Retail	
6:30	7:00	Delivery				Delivery		
7:00	7:30	Delivery						
7:30	8:00			Delivery				
8:00	8:30				Delivery		Delivery	Delivery
8:30	9:00	Delivery						
9:00	9:30		Delivery			Delivery	Apartment move in / out	Apartment move in / out
9:30	10:00	Delivery		Delivery	Delivery			
10:00	10:30				Delivery			
10:30	11:00	Delivery	Delivery	Delivery		Delivery		
11:00	11:30		Delivery		Delivery			
11:30	12:00			Delivery				
12:00	12:30	Delivery						
12:30	13:00		Delivery		Delivery	Delivery		
13:00	13:30			Delivery			Delivery	
13:30	14:00					Delivery		Delivery
14:00	14:30	Delivery			Delivery			
14:30	15:00						Delivery	
15:00	15:30			Delivery		Delivery		
15:30	16:00							
16:00	16:30		2 hour furniture delivery		2 hour furniture delivery			
16:30	17:00							
17:00	17:30							
17:30	18:00							

3.7 Workplace health and safety

Safety requirements for the loading docks include the following:

- In the event of an incident occurring in the loading dock, the Building Manager is to be notified immediately
- In the event of an emergency, the Building Manager will work with the tenant to ensure that an adequate response occurs
- All persons must wear high-visibility vests/clothing and enclosed footwear (no thongs, sandals or open-toed shoes)
- No person is to work while under the influence of drugs or alcohol
- No unauthorised riding of bicycles or skateboards on the loading dock
- If gas bottles are unloaded, they are to be labelled with a company name and stored correctly
- All drivers must drive at a speed no greater than 10km per hour.

3.8 Turntable redundancy

In the event that the turntable malfunctions there are the following typical safeguards that would be built in:

- Main and “battery backup” power supply
- Principal and “backup rotation motors
- Dual system for manual usage when there is a failure - the affected drive can be disengaged allowing the turntable to continue operation without loss of productivity.

Deicorp commit to implementing these safeguards as part of the development to ensure that vehicles can always enter and exit the site in a forwards direction.

3.9 Information to residents and building tenants

An information pack will be provided to all new residents and building tenants containing this Loading Dock Management Plan and other specific information. The Loading Dock Management Plan will be distributed to all tenants of the building annually and with any change of tenancy (both retail and commercial).

3.10 Management and monitoring

A maintenance check of the traffic management system on-site is to be scheduled yearly and will include a review of:

- the on-site turntable
- signage for placement and wear
- wear and visibility of ground line marking.

In the event that the system is not working, the building management is to be informed and emergency traffic management measures are to take place.

The contact details of building management is to be sign posted at all entrances and within the loading dock.

4 Summary

This loading dock management plan report has been prepared by JMT Consulting on behalf of Deicorp Projects (Crows Nest) Pty Ltd to support a State Significant Development Application (SSDA 66826207) for the site known as the 'Five Ways Triangle Site' located at 391-423 Pacific Highway, 3-15 Falcon Street and 8 Alexander Street, Crows Nest.

The report summarises the proposed loading dock design and principles around dock management – confirming the suitability of the proposed layout and ability to accommodate likely traffic movements to the on-site service areas.

The loading dock management plan has demonstrated that the loading dock has been designed in order to accommodate expected service vehicle movements to the site without relying on any on-street loading areas. The dock will be managed (employing a pre-booking system) to provide efficient operations and minimise the impacts on the surrounding transport network.

Appendix C: TfNSW Correspondence

Josh Milston

From: Shengxi Lin <Shengxi.Lin@transport.nsw.gov.au>
Sent: Thursday, 28 March 2024 11:47 AM
To: Josh Milston
Subject: RE: Five Ways, Crows Nest (SSD-66826207) - TfNSW Consultation

Hi Josh,

TfNSW has reviewed the submitted information and advises that if the additional vehicle trips generated by the proposal is about 60 vtpm in the peak hours, the requirement for network modelling, in this instance, could be waived.

Should you have any further enquiries, please refer to development.sydney@transport.nsw.gov.au.

Note: It is emphasised that the comments provided above are informal and of a pre-lodgement nature. They are not to be interpreted as binding upon TfNSW and may change following formal assessment of a submitted development application from the appropriate consent authority.

Regards,

Shengxi Lin

Development Assessment Officer
Planning and Programs
Greater Sydney
Transport for NSW

 E shengxi.lin@transport.nsw.gov.au

transport.nsw.gov.au



**Transport
for NSW**

OFFICIAL

From: Josh Milston <josh.milston@jmtconsulting.com.au>
Sent: Wednesday, March 20, 2024 7:45 AM
To: Shengxi Lin <Shengxi.Lin@transport.nsw.gov.au>
Subject: RE: Five Ways, Crows Nest (SSD-66826207) - TfNSW Consultation

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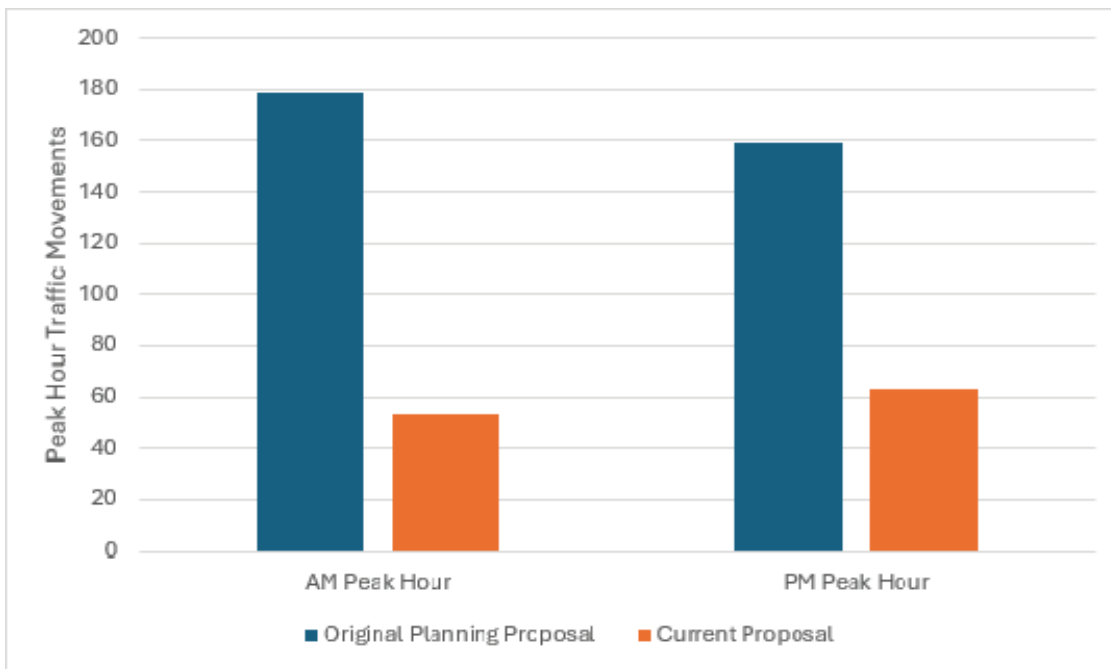
Hi Shengxi

Thanks very much for providing this feedback, it is much appreciated. In response to your comments:

- As per your advice, the TIA will include a detailed assessment of the vehicle access arrangements from Alexander Street which will include traffic modelling. This traffic modelling will consider the potential queueing into the driveway and any associated impacts to the Alexander Street / Falcon Street signalised intersection

- Based on the latest development scheme the proposal is forecast to generate only 60 additional vehicles in the commuter peak hours, equivalent to just one vehicle every minute. Once this traffic is distributed over multiple arrival/departure routes the impacts will be further diluted. As indicated below the expected traffic generation arising from the current proposal is considerably less than that assumed at the time of the original Planning Proposal submission - in the order of 70% fewer trips in the AM peak hour and 60% fewer trips in the PM peak hour. In this context we do not believe there will be any need or benefit in undertaking traffic modelling of nearby signalised intersections. It would not register any difference in any traditional traffic modelling program in a 'with development' and 'without development' traffic scenarios, nor would it trigger any changes to these intersections. Lastly development of this nature has already been contemplated as part of planning for the broader St Leonards / Crows Nest precinct.
- I also note TfNSW's previous advice on the Planning Proposal, which considered higher volumes of traffic, specifically noted that the project had "*minimal traffic generation*"

In this context we respectfully request the requirement for network modelling to be reconsidered, noting that the TIA will undertake detailed modelling of the Alexander Street driveway as per the TfNSW advice. We would be more than happy to meet with you and your team to discuss this further if required.



Thanks in advance and look forward to hearing from you.

Josh Milston

Director | Transport Planner

0415 563 177

josh.milston@jmtconsulting.com.au

www.jmtconsulting.com.au



OFFICIAL

From: Shengxi Lin <Shengxi.Lin@transport.nsw.gov.au>

Sent: Tuesday, March 19, 2024 5:43 PM

To: Josh Milston <josh.milston@jmtconsulting.com.au>

Subject: RE: Five Ways, Crows Nest (SSD-66826207) - TfNSW Consultation

Hi Josh,

Thanks for your email seeking Transport for NSW (TfNSW) pre-lodgement advice in relation to the proposed development (SSD-66826207) at Five Ways, Crows Nest.

TfNSW has reviewed the submitted information and offers the following advice, in addition to the scope identified in the SEARs dated 23 January 2024 for 'Traffic, Transport and Accessibility':

- The Traffic Impact Assessment should include an assessment of the suitability of the vehicular access arrangement from Alexander Street and its associated impacts on the Falcon St / Alexander St signalised intersection. The TIA must demonstrate that there will be no queuing back onto the intersection if right turn movements into the site are permitted from Alexander Street. Otherwise, it is suggested that Left In/Left Out access arrangement should be considered to maintain network efficiency and road safety.
- The following intersections surrounding the development site should be modelled as a network model. The cycle times adopted for these intersections should be derived from site investigations/SCATS data (SCATS.Traffic.Signal.Data@transport.nsw.gov.au).
 - Pacific Hwy/Shirley Rd/Falcon St
 - Pacific Hwy/Alexander St
 - Falcon St/ Alexander St

TfNSW will provide further comments during the EIS exhibition stage when the Traffic Impact Assessment is available for review.

It is recommended that the developer to consult with Council (if this hasn't occurred already) in relation to any specific local road assessment requirements they would like to be included in the TIA scope for this development.

Note: It is emphasised that the comments provided above are informal and of a pre-lodgement nature. They are not to be interpreted as binding upon TfNSW and may change following formal assessment of a submitted development application from the appropriate consent authority.

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