

Traffic and Transport Assessment

Detailed State Significant Development Application
Site C, Crows Nest over station development

Table of Contents

Glossary	5
Executive Summary.....	8
1 Introduction	10
1.1 Purpose of the report.....	10
1.2 Overview of Sydney Metro in its context	10
1.3 Background and Concept Approval	11
1.4 Site description.....	12
1.5 Overview of the proposed development.....	13
1.6 Assessment requirements	14
1.7 This report	15
2 Regulatory context.....	16
2.1 North Sydney Council Plans	16
2.2 State Environmental Planning Policy (Infrastructure) 2007	16
2.3 Greater Sydney Region Plan	17
2.4 North District Plan.....	17
2.5 Future Transport Strategy 2056.....	17
2.6 Sydney Metro Planning Study- Crows Nest and North Sydney	18
2.7 Transport Strategy – North Sydney Council.....	18
2.8 Relevant Policies and guidelines	18
3 Existing Transport Conditions	20
3.1 Land Use.....	20
3.2 Travel Pattern and Trip Generation	20
3.2.1. Travel Pattern and Mode Choice.....	20
3.2.2. Trip Generation.....	22
3.3 Accessibility.....	24
3.3.1 Rail Access.....	24
3.3.2 Road Access	24
3.3.3 Service Vehicle Access	26
3.3.4 Bus Access.....	27
3.3.5 Pedestrian Access.....	29
3.3.6 Taxi Service and Facilities	31
3.3.7 Bicycle Access	31
4 Approved over station development.....	32
4.1 Land-Use.....	32
4.2 Parking Provision.....	32
4.3 Trip Generation	32
4.3.1. Vehicular Trips.....	32
4.3.2. Pedestrian Trips.....	33
4.4 Service Vehicle Access and Loading Dock Provision	33
4.5 Ride share	34
4.6 Other Impacts.....	34
4.6.1. Public Transport.....	34
4.6.2. Emergency Vehicle Access.....	34
5 Proposed development	35
5.1 Description	35
6 Proposed land use and impact assessment.....	36
6.1 Land-use	36
6.2 Proposed Parking Provision	36

6.3	Bicycle Parking.....	36
6.4	Trip Generation	37
6.4.1.	Vehicular Trips.....	37
6.4.2.	Pedestrian Trips.....	38
6.5	Assessment of Impacts of the Site C OSD.....	39
6.5.1.	Impacts on Trip Generation.....	39
6.5.2.	Impact on Parking	41
6.5.3.	Impacts on Service Vehicle Traffic and Loading Dock.....	42
6.5.4.	Impacts on Coach and Taxi	43
6.5.5.	Impacts on Pedestrian, Bike and Traffic Circulation	44
6.5.6.	Impacts on Intersections design and Level of Service	44
6.5.7.	Other Impacts	47
7	Recommendations and Conclusion.....	48
7.1	Recommendations.....	48
7.1.1.	Car share scheme.....	Error! Bookmark not defined.
7.1.2.	Construction traffic management	48
7.1.3.	Travel plans	49
7.1.4.	Loading management	50
7.2	Conclusions.....	50
	Appendix A: Green Travel Plan.....	52
	Appendix B: Draft Construction Traffic and Pedestrian Management Plan.....	53

Author:	CNDC
Date:	April 2021
Version:	3
Reference:	SMCSWSCN-SMC-SCN-EM-REP-000023
Division:	Division
Review date:	April 2021

Glossary

Term	Definition
Concept SSD Application	<p>A concept development application as defined in section 4.22 of the EP&A Act. It is a development application that sets out the concept for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications.</p> <p>The concept for the Crows Nest Station precinct (SSD 9579) was approved by the Minister on 23 December 2020.</p>
Council	North Sydney Council, unless otherwise indicated
CSSI	Critical State Significant Infrastructure
CSSI Approval	<p>The approval under the EP&A Act for the construction of the Sydney Metro City & Southwest Chatswood to Sydenham project, as amended by subsequent modification applications. The CSSI project (application number SSI 15_7400) was approved by the (then) Minister for Planning on 9 January 2017 and has been amended on 6 previous occasions.</p> <p>Any reference to the CSSI Approval is a reference to the most current version of that approval as amended by any subsequent modification application</p>
Crows Nest Station precinct	<p>The Crows Nest Station precinct comprises the land between the Pacific Highway and Clarke Street (eastern side of the Pacific Highway) and Oxley Street and south of Hume Street, Crows Nest. The precinct is divided into three (3) sites:</p> <ul style="list-style-type: none"> • Site A: The block bound by the Pacific Highway, Hume Street, Oxley Street, and Clarke Lane (497-521 Pacific Highway, Crows Nest) • Site B: The block on the southern corner of Hume Street and the Pacific Highway (477-495 Pacific Highway, Crows Nest) • Site C: One lot on the north-western corner of Hume Street and Clarke Street (14 Clarke Street, Crows Nest)
Detailed SSD Application	The SSD Application(s) made after the concept SSD Application that seek consent for the use, design and to physically construct stages of the development.
DPIE	Department of Planning, Industry and Environment
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000 (NSW)</i>
EIS	Environmental Impact Statement

Term	Definition
Heritage item	An item of environmental heritage that is listed in Schedule 5 of <i>North Sydney Local Environmental Plan 2013</i> or on the State Heritage Register under the <i>Heritage Act 1977</i>
ISD	Integrated station development – combined station, OSD and public domain works
IAP	Interchange Access Plan required under Condition E92 of the CSSI Approval. The IAP complements the SDPP and informs the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and the integration of public domain and transport initiatives around and at each station.
LOS	Level of Service is a mechanism used to determine how well a transportation facility is operating from a traveller's perspective. Typically, six levels of service are defined for vehicle traffic and for pedestrian movement and each is assigned a letter designation from A to F, with LOS A representing the best operating conditions with free flow, and LOS F the worst with high congestion.
Minister	The Minister for Planning and Public Spaces
NSDCP 2013	<i>North Sydney Development Control Plan 2013</i>
NSLEP 2013	<i>North Sydney Local Environmental Plan 2013</i>
OSD	Over station development as defined in the CSSI Approval – includes non-rail related development that may occupy land or airspace above, within or in the immediate vicinity of the Sydney Metro CSSI but excluding spaces and interface works such as structural elements that may be constructed as part of the CSSI Approval to make provision for future developments
PIR	The Submissions and Preferred Infrastructure Report submitted as part of Sydney Metro City & Southwest Chatswood to Sydenham project, application no. SSI 15_7400
Secretary	Secretary of the NSW Department of Planning, Industry and Environment, or their delegate
SEARs	The Secretary's environmental assessment requirements, which informs the content of an EIS
SSD	State significant development as defined by Section 4.36 of the EP&A Act
Station box	The volumetric area of the Crows Nest Station development approved under the CSSI Approval – includes below and above ground elements up to the 'transfer slab' level, within and above which would sit each OSD

Term	Definition
SDPP	<p>Station Design and Precinct Plan required under Condition E101 of the CSSI Approval. The SDPP resolves the public domain areas for the Crows Nest Station precinct as part of the CSSI Approval and addresses (among other things):</p> <ul style="list-style-type: none"> • Opportunities for public art • Landscaping and building design opportunities to mitigate the visual impacts of rail infrastructure and operational fixed facilities • Any salvaged historic and artistic elements • Location of existing vegetation and proposed landscaping • Location and design of operational lighting and measures to minimise lighting impacts • Timing for the implementation of access, landscaping and public realm initiatives
Sydney Metro City & Southwest – Chatswood to Sydenham project	<p>The Chatswood to Sydenham component of Sydney Metro City & Southwest involves the construction and operation of a 16.5 kilometre metro line from Chatswood, under Sydney Harbour and through Sydney's CBD out to Sydenham</p> <p>This section of the Sydney Metro City & Southwest will deliver new metro stations at:</p> <ul style="list-style-type: none"> • Crows Nest • Victoria Cross • Barangaroo • Martin Place • Pitt Street • Central (new underground platforms) • Waterloo • Sydenham <p>This part of the project will operate between Chatswood and Sydenham Stations</p>
Sydney Metro City & Southwest – Sydenham to Bankstown Upgrade	<p>Upgrading of the T3 Bankstown Line to Sydney Metro standards between Sydenham and Bankstown, including the upgrade of all 10 stations.</p> <p>These works are the subject of a separate Critical State Significant Infrastructure project (reference SSI 17_8256), which was granted consent in December 2018.</p>
Sydney Metro	The applicant for this detailed SSD Application
Sydney Metro CSSI	Sydney Metro City & Southwest – Chatswood to Sydenham project

Executive Summary

This report documents the traffic and transport assessment for the proposed Stage 2 Detailed Design for Site C over station development (OSD) at Crows Nest Station. It discusses the proposed detailed design for Site C and identifies the potential impacts on the surrounding road and pedestrian networks and highlights the change of impacts.

The subject OSD Site C proposal is for a 9-storey commercial office building, accommodating a maximum OSD floor space of 3,100m².

The identified transport impacts of the detailed design of Site C as presented in this report are:

Impacts on trip generation including vehicular and pedestrian trips

It is identified that the Stage 2 Detailed Design for OSD Site C would not increase the total number of vehicular trips and pedestrian trips in comparison to the approved OSD scheme. Vehicular trip generation for the OSD on Site C will be less than that generated by the previous tyre retail outlet on Site C before demolition.

Impacts on parking

There would be no car parking spaces proposed for OSD Site C, owing to the constraints of the site. This is considered appropriate given the highly accessible location of the site, directly above Crows Nest Station, it is anticipated that most AM and PM peak hours trips would not be undertaken by car.

Workers travelling to the OSD who are unable to use active or public transport will be able to use nearby, all day parking garages that are established in St Leonards and Crows Nest.

Impacts on service vehicle traffic and loading dock

The operation of the Site C OSD would not result in any unacceptable queues or delays to service vehicle traffic or other road users. The Site C OSD waste operations are provided via an adjacent parking bay/lay-by as an area at the side of Clarke Lane where waste vehicles can pull off the road and stop. The parking bay/lay-by is 11m long will accommodate one MRV garbage truck or van or small rigid service vehicle in Clarke Lane. The parking bay/lay-by on Clarke Lane will also be utilised for loading and deliveries into the Site C OSD. Following completion of the Site A OSD, provision will be made within the management of the Site A Loading Dock for deliveries to Site C and also to provide 1 access to the Site A car park for Site C Service Vehicles.

Operational waste services and pickup and delivery needs (about 10 deliveries over a 24-hour period) to not exceed one service vehicle at a time. Preferred deliveries would be during off-peak hours to minimise any interference with pedestrian and vehicle flows.

Impacts on pedestrian, bike, and traffic circulation

Stage 2 Detailed Design for Site C would increase the total number of pedestrian trips compared to the former use of the site. The proposed Site OSD C would be consistent with the Approved Concept assumptions and that there is no increase from what was previously modelled. The pedestrian network assessment indicated that the pedestrian footpaths surrounding the OSD Site C would perform with acceptable Levels of Service (LOS).

As with pedestrian trips there would be an increase in bike use demand compared to the former use of the site. Bicycles would be accommodated by the proposed bike

paths and the OSD bike parking in Site C and is consistent with the Concept Development Assessment approvals.

Impacts on intersection performance

The following key intersections adjacent to the Crows Nest OSD Site C development have been assessed to understand the impacts of the expected traffic and pedestrian volumes on the performance of intersections:

- intersection of Pacific Highway/Oxley Street
- intersection of Pacific Highway/Hume Street
- intersection of Oxley Street/Clarke Street
- intersection of Hume Street/Clarke Street

The analysis shows that both signalised intersections adjacent to the site currently operate to a Level of Service (LoS) A during the AM and PM peak. The intersection of Hume Street, Oxley Street and Pacific Highway currently operates to a LoS D.

It is expected that vehicle trip generation to and from OSD Site C would be negligible as no car parking is provided on-site. It is likely most on-site employees would utilise the Metro Station and existing parking stations within the vicinity of the site.

Compared to the growth of background traffic, Site C would have minimal impacts on the performance of the surrounding intersections.

Mitigation

The following mitigation measures are proposed:

- Preparation of detailed construction traffic management plans prior to the commencement of construction
- A separate travel plan for the future employees for the OSD Site C should be prepared to reduce demand for car parking and encourage healthy active transport.
- A loading and waste management plan should be prepared to efficiently manage the loading activities via the parking bay/lay-by in Clarke Lane.

Introduction

1.1 Purpose of the report

This Traffic and Transport Assessment report supports a State Significant Development (SSD) Application for the detailed design, construction and use of over station development (OSD) on Site C of the Crows Nest Station precinct. It is submitted to the Department of Planning, Industry and Environment (DPIE) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The detailed SSD Application for Site C OSD is classified as SSD pursuant to Clause 12 of State Environmental Planning Policy (State and Regional Developments) 2011 (SRD SEPP). Under Clause 12 of the SRD SEPP, any development application that is pursuant to a concept SSD Application is also classified as SSD whether or not that part of the development exceeds the minimum capital investment value specified in the relevant schedule of the SRD SEPP. In this regard, the proposed development on Site C is pursuant to the approved concept SSD Application and has not been delegated to Council under Section 4.37 of the EP&A Act. The proposed development is therefore, classified as SSD and is submitted to DPIE for assessment and determination.

1.2 Overview of Sydney Metro in its context

Sydney Metro is Australia's biggest public transport project (Figure 1). There are four core components:

- **Metro North West Line (formerly the 36-kilometre North West Rail Link)** - Services started in May 2019 in the city's North West between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and \$1 billion under budget.
- **Sydney Metro City & Southwest** - The Sydney Metro City & Southwest project includes a new 30km metro line extending metro rail from the end of the Metro North West Line at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the ultimate capacity to run a metro train every two minutes each way through the centre of Sydney. Sydney Metro City & Southwest will deliver new metro stations at Barangaroo, Crows Nest, Victoria Cross, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.
- **Sydney Metro West** - Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs. Sydney Metro West stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and the Sydney CBD. Further planning is underway to determine the locations of the Pyrmont and Sydney CBD stations.
- **Sydney Metro - Western Sydney Airport** - Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's

public transport system with a fast, safe and easy metro service. Six new stations will be delivered at St Marys, Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and Western Sydney Aerotropolis. The Australian and NSW governments are partners in the delivery of this new railway.

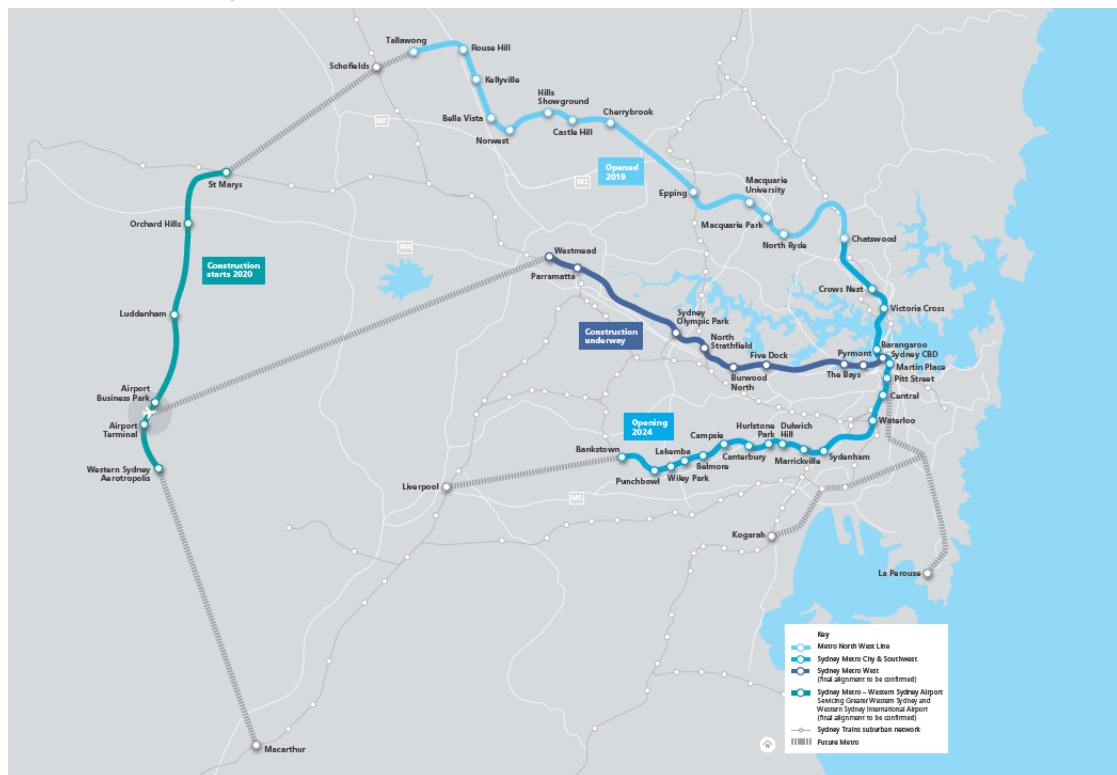


Figure 1: Sydney Metro network

1.3 Background and Concept Approval

Sydney Metro is seeking to deliver OSD above the approved Crows Nest Station. On 23 December 2020, the Minister for Planning and Public Spaces granted consent to the concept proposal for OSD at the Crows Nest Station including building envelopes, development parameters and strategies for a future development above the approved Crows Nest Station, and the use of the OSD spaces approved within the station under the CSSI Approval.

While the Crows Nest Station and OSD will form a single integrated station development (ISD), the planning pathways defined under the EP&A Act requires separate assessment for each component of the development. In this regard, the approved station works (CSSI Approval) are subject to the provisions of Part 5.1 of the EP&A Act (now referred to as Division 5.2) and the OSD component is subject to the provisions of Part 4 of the EP&A Act.

The concept proposal for Crows Nest OSD complements the St Leonards commercial core and seeks to minimise overshadowing and amenity impacts and integrate with the broader Crows Nest village including Willoughby Road. It provides an opportunity for a mixed-use development that capitalises on its immediate access to Australia's biggest public transport project that delivers significant improvements to the amenity of the local area. This aligns with the vision for the area, as outlined in key strategic planning documents, including the Greater Sydney Commission's (GSC) *North District Plan* and the St Leonards and Crows Nest 2036 Plan prepared by DPIE.

In October 2018, DPIE released a draft Rezoning Proposal for the Crows Nest metro site. The Rezoning Proposal sought to increase the relevant planning controls

applying to the site to be commensurate with the built form proposed in the concept SSD Application.

The release of the Rezoning Proposal was simultaneous to the release of the (then) draft strategic planning documents including the St Leonards and Crows Nest 2036 Draft Plan (2036 Draft Plan). *The 2036 Draft Plan* recommended significant changes to the planning controls for the immediate area surrounding the Crows Nest OSD site subject to consideration of community feedback to its exhibition.

The 2036 Plan and the associated Special Infrastructure Contribution (SIC) scheme were finalised by DPIE on 29 August 2020. The Rezoning Proposal was also finalised, and new planning controls gazetted, on 31 August 2020 applying new planning controls to the Crows Nest metro site.

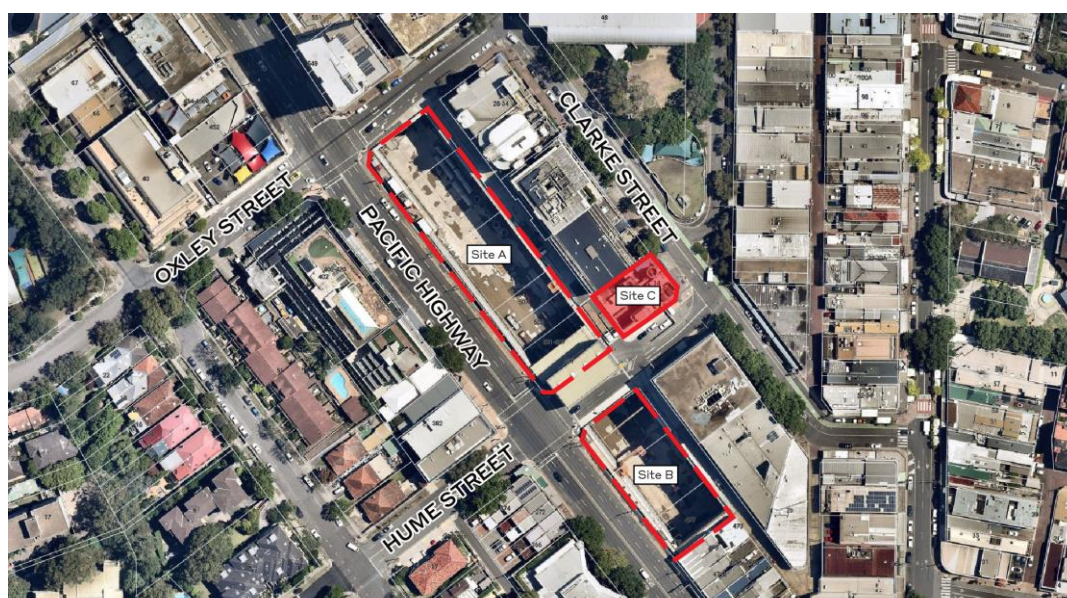
1.4 Site description

The Crows Nest Station precinct is located between the Pacific Highway and Clarke Street (eastern side of the Pacific Highway) and Oxley Street and south of Hume Street, Crows Nest. It is wholly located within the North Sydney local government area (LGA). It is also near the boundary of both the Willoughby and Lane Cove LGAs.

The Crows Nest Station OSD site comprises three sites (**Figure 2**). The following building envelopes and land uses were approved for each of the sites in the concept SSD Application:

- **Site A (497-521 Pacific Highway, Crows Nest):** 21 storey (RL 180m including a 4.4m rooftop building services zone) commercial office building with a maximum floor space of 40,300m²
- **Site B (477-495 Pacific Highway, Crows Nest):** 17 storey (RL 155m) residential accommodation building with a maximum floor space of 13,000m²
- **Site C (14 Clarke Street, Crows Nest):** 9 storey (maximum RL 132m including a 5m rooftop building services zone) commercial office building with a maximum floor space of 3,100m².

This SSD Application relates only to the detailed design and delivery of Site C, with applications for Sites A and B to be undertaken separately in the future.



Crows Nest Station precinct



Site C OSD (subject of this application)



NOT TO SCALE

Figure 2: Aerial photograph of Site C within the greater Crows Nest Station precinct

Site C is located at the north-western corner of Hume Street and Clarke Street, and comprises one allotment with the address of 14 Clarke Street, Crows Nest. It is legally described as Lot 1 in DP1123850.

The site is roughly rectangular in shape and is located within the Crows Nest village centre. Adjoining Site C is a seven-storey residential building (known as 'Wyndel Apartments') at 22-26 Clarke Street and a five-storey commercial building at 20 Clarke Street.

The existing buildings on the site have been demolished to facilitate the construction of Crows Nest Station under the CSSI Approval. The demolition works are now complete, and the site is vacant and surrounded by construction hoarding. Once the station is completed as per the CSSI Approval, the entry within Site C will provide connection to the east towards Willoughby Road.

1.5 Overview of the proposed development

This detailed SSD Application will seek consent for the construction of a commercial office building on the site. It will be highly integrated with the approved Crows Nest Station under construction below.

Specifically, consent is sought for the following works:

- Construction of a new commercial building with the following parameters:
 - A total gross floor area (GFA) of 3,100m²
 - A maximum building height of RL 127m, with an additional 5m 'building services zone' to accommodate rooftop plant and equipment, lift overruns and services (RL 132m total)
 - Nine storeys, comprising:
 - Building entrance lobby on the ground level as part of the CSSI Approval Crows Nest Station
 - Bicycle parking and end of trip facilities on level 1 as part of the CSSI Approval Crows Nest Station
 - Commercial offices on levels 2 – 8
 - An accessible garden on part of level 9 for use by tenants
 - An additional two levels of plant and services (levels 9 – 10)
- Associated building servicing and building landscaping elements.
- Signage zones for building / business identification.
- No vehicle parking will be provided on site.

The CSSI Approval for the metro station includes space provisioning on the ground level and level 1 for the Site C OSD. The use and fit-out of these OSD spaces requires approval under Part 4 while the actual station structure itself is approved as part of the Sydney Metro City & Southwest project.

1.6 Assessment requirements

DPIE has issued the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

SEAR	Where addressed
<i>Prepare a traffic impact assessment, which provides:</i>	
<i>a) accurate details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements in the vicinity of the site.</i>	Section 3.2
<i>b) the predicted transport mode share split for the proposed development.</i>	Section 4
<i>c) an analysis of the existing traffic network, including the road hierarchy, current daily and peak hour vehicle movements and existing performance levels of nearby intersections.</i>	Section 3.2.2
<i>d) a forecast of additional daily and peak hour vehicle movements as a result of the proposal (using SIDRA modelling or as agreed by TfNSW) and identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cycle conflict).</i>	Section 6.5.6
<i>e) proposals to mitigate any traffic impacts, including intersection upgrades to achieve acceptable performance</i>	Section 7
<i>f) a vehicular servicing and management plan providing details of proposed vehicular access and service arrangements for off-street loading, deliveries and servicing of the development and any proposed infrastructure improvements or measures to reduce potential conflicts with pedestrians and cyclists.</i>	Section 7.1.4
<i>g) proposals to improve walking and cycling, such as connections into existing walking and cycling networks, high quality end-of-trip facilities and adequate bicycle parking for visitors, employees and residents (provided in accordance with the relevant rates, specifications and standards).</i>	Section 7
<i>h) measures to promote sustainable travel choices for employees, residents or visitors, such as minimising car parking provision, encouraging car share and public transport, cycling and walking, implementing a green travel plan and providing end of trip facilities</i>	Section 7
<i>i) a draft Construction Traffic Management Plan providing details of predicted construction traffic movements, routes</i>	Appendix B

SEAR	Where addressed
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and access arrangements, and outline how construction traffic impacts on existing traffic, public transport, pedestrian and cycle networks would be appropriately managed and mitigated and how cumulative construction traffic impacts with the Sydney Metro project and other surrounding development would be managed and mitigated.

1.7 This report

Sydney Metro is seeking to secure approval for the next stage of development for the proposed commercial development at OSD Site C of the Crows Nest Station Precinct.

A 'Transport, Traffic and Parking Assessment Report' (November 2018 Appendix AA of the Environmental Impact Statement) to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued on 26 September 2018.

Following Exhibition of the Environmental Impact Statement, the design of the OSD was amended to respond to issues raised in the submissions. The key reference for this report is: NWRLSRT-MET-SCN-TI-REP-000008 (Transport, traffic and parking assessment report).

The purpose of this report is to assess the impacts of the proposed OSD Site C development with regards to traffic, transport and parking facilities, with consideration of the impacts assessed and approved as part of the Concept SSD Application.

Regulatory context

2.1 North Sydney Council Plans

The *North Sydney Local Environment Plan 2013* (NSLEP 2013) is the principal legal document for controlling development and guiding planning decisions within the North Sydney Council area. The *North Sydney Development Control Plan 2013* (NSDCP 2013) provides guidance which supports the implementation of the NSLEP 2013. Although the NSDCP 2013 is not applicable to the SSD, it provides a guide to the maximum number of on-site car parking spaces that can be provided for new developments based on their location and level of transport accessibility. It also recommends the minimum number of bicycle parking spaces to be provided by new developments.

2.2 State Environmental Planning Policy (Infrastructure) 2007

The aim of the *State Environment Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) is to facilitate the provision of infrastructure across NSW. Clauses relevant to the development include:

Clause 88B: Development near proposed metro stations

(2) A consent authority must not grant consent to development on land to which this clause applies unless it has taken into consideration:

- Whether the proposed development will adversely affect the development and operation of a proposed metro station, including by impeding access to, or egress from, the proposed metro station
- Whether the proposed development will encourage the increased use of public transport. The proposed development is above the entrance to the Victoria Cross Station and will not adversely affect access/ egress to the proposed Sydney Metro Station. Furthermore, the station is likely to encourage and facilitate the use of public transport to and from the development, which has the potential to increase the public transport mode share on existing conditions for the area.

Clause 104: Traffic-generating development

(1) This clause sets out thresholds for scale of new or extended development, above which the consenting authority must:

(a) Give written notice of the application to Roads and Maritime Services (Roads and Maritime) within seven days after the application is made, and

(b) Take into consideration:

(i) Any submission that Roads and Maritime provides in response to that notice within 21 days after the notice was given (unless, before the 21 days have passed, Roads and Maritime advises that it will not be making a submission), and

(ii) The accessibility of the site concerned, including:

A. The efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips, and

B. The potential to minimise the need for travel by car and to maximise movement of freight in containers or bulk freight by rail, and

(iii) Any potential traffic safety, road congestion or parking implications of the development.

The consent authority must follow these steps when assessing the development application submitted for this development.

This traffic impact assessment has been prepared to assess how the proposed OSD impacts these criteria, and where necessary describe possible mitigation measures to ensure the efficiency of movement, reduce the need for private car travel and address any traffic safety, congestion and parking impacts.

2.3 Greater Sydney Region Plan

In March 2018, *A Metropolis of Three Cities – the Greater Sydney Region Plan* was released. The plan, along with *Transport for NSW's Future Transport 2056* and Infrastructure NSW's *State Infrastructure Strategy 2018-36* will bring to life the vision of Greater Sydney as a vibrant and sustainable metropolis of the Eastern Harbour City, Central River City and Western Parkland City. It provides strategic direction for Sydney's productivity, environmental management, and liveability, and for the location of housing, employment, infrastructure and open space. The plan's vision is to maintain Sydney's position as a strong global city and a great place to live. The proposed development is part of the Crows Nest Metro Station that will contribute to the implementation of a world class transport system that is connected, accessible and can accommodate the future demands of a growing population. The Site C OSD will contribute to continued growth and opportunities in support of the plan's vision.

2.4 North District Plan

The Greater Sydney Regional Plan nominates six districts of Sydney, the district plans have been released by the Greater Sydney Commission (GSC). The North District Plan (GSC, 2018) sets out priorities and actions for the North District, where the proposal is located. The vision includes strengthening the transport connections from the North Sydney CBD and North Shore to the Eastern Economic Corridor and the Harbour CBD.

2.5 Future Transport Strategy 2056

The *Future Transport Strategy 2056* is NSW Government's framework for planning and improving NSW transport system and was developed as part of the five-year update to the 2012 Long Term Transport Master Plan for NSW. The plan enables Sydney to prepare for a period of population growth with a vision for setting a pathway up to 2056. This vision is based on Greater Sydney being a metropolis of three cities (Eastern Harbour City, Central River City and Western Parkland City).

The strategy to accommodate population growth seeks to take advantage of technological enabled mobility that offers opportunities to maximise travel by car free alternatives within Sydney. This includes the transformation of the mass transit network to align with a 30-minute trip to services and employment. It also recognises the role of automation and how it can help to improve safety, travel choices and mode concepts, service frequency, reliability and travel times for customers when travelling within and around Sydney's transport network.

Sydney Metro City and Southwest and the proposed Crows Nest Metro Station form a key part of this future vision. It offers a modern technologically advanced public transport system solution, which, through the provision of a strategic public transport hub, supports both placemaking and efficient connections to and from Crows Nest. Future activity generated by the proposed Site C OSD will directly benefit from Sydney Metro, which will help to appropriately manage its impacts through its proximity within the North Sydney CBD and its alignment with the objectives of this strategy.

2.6 Sydney Metro Planning Study- Crows Nest and North Sydney

In response to the introduction of the Sydney Metro, Council has prepared a planning study, which aims to inform and guide the future planning and development of the Sydney Metro, including OSDs on Sydney Metro station sites and their immediate surroundings.

The study concludes that OSD on Sydney Metro station sites will contribute to the overall amenity of the North Sydney Centre and Crows Nest, particularly with regard to provision of new commercial floor space and the creation of new public spaces facilitating a sense of place and identity. The proposed OSD allows the incorporation of design excellence to create an exceptional built form and improve the performance and capacity of the public domain in the vicinity of the site.

2.7 Transport Strategy – North Sydney Council

The *North Sydney Transport Strategy* (NSTS) is Council's guiding document for the delivery of its transport planning and management responsibilities. This includes strategic transport planning, transport advocacy and the delivery of local transport projects. The NSTS builds on the directions, outcomes and strategies detailed in North Sydney's Community Strategic Plan 2013-23 and Ecologically Sustainable Development Best Practice Project 2014 to create an over-arching transport planning and management framework for the whole of Council.

The NSTS is based on community engagement undertaken in 2016, which was used to identify the North Sydney community's transport priorities and aspirations for the future of North Sydney's transport networks that informed the development of the NSTS. The vision for transport developed from the community priorities is: In 2030, transport will play a positive role in supporting a happy, healthy and prosperous North Sydney community. Council's NSTS generally aims to deliver inclusive streetscape design and slow speed (40km/h) traffic environments in commercial, mixed use, neighbourhood centres and residential zones, which will encourage the sharing of local streets by all travel modes. On classified state and regional roads outside of local centres, Council aims to advocate for the delivery of high quality, separated walking, cycling and public transport facilities to improve walking, cycling and public transport safety and amenity on these strategic traffic routes, even where this comes at the expense of general traffic capacity and travel times.

Sydney Metro City and Southwest and the proposed Crows Nest Metro Station will contribute to the vision of the NSTS by providing a strategic public transport hub, combined with increased land use density around the new public transport hub and appropriate pedestrian and cyclist infrastructure to support active transport mode share.

2.8 Relevant Policies and guidelines

The following documents have also been considered in the development of this report:

- Guide to Traffic Generating Developments (Roads and Maritime Services [Roads and Maritime], 2002) and Technical Direction 2013/04a: Guide to Traffic Generating Developments – Updated traffic surveys (Roads and Maritime, 2013) which were used to inform the traffic assessment undertaken for this project
- Guide to Traffic Management – Part 12: Traffic impacts of developments (Austroads, 2019), which was used to develop the methodology for assessing the traffic impact of the development

- Australian Standards AS2890 Parking Facilities Parts 1 to 6
- NSW Planning Guidelines for Walking and Cycling
- Construction Traffic Management Framework – City and Southwest Metro Chatswood to Sydenham
- Interchange Access Plan V3-11– Crows Nest, Sydney Metro.
- St Leonards and Crows Nest 2036, Draft Plan, NSW Department of Planning and Environment October 2018
- Strategic Transport Study St Leonards and Crows Nest Station Precinct for Department of Planning and Environment by Cardno October 2018
- Practitioner's Guide to Movement and Place, DPIE NSW, Issue no. 01 – March 2000.

Existing Transport Conditions

3.1 Land Use

The previous use of Site C was a Beaurepaires-branded retailer and fitter of motor vehicle tyres, which generated significant car and truck traffic for deliveries, customers, tyre fitting and waste removal, via the site drive-through from a Hume Street driveway to a Clarke Street driveway and from kerbside parallel parking.

Table 0-1 Previous land uses at location of Site C Crows Nest OSD.

Property Address	Approx. GFA (sqm)	Existing Use
14-20A Clarke St, Crows Nest (Lot 1 only)	922.50	Car tyre retail outlet

3.2 Travel Pattern and Trip Generation

3.2.1. Travel Pattern and Mode Choice

Census 2016 Journey to Work data collected by the Australian Bureau of Statistics (ABS) has been used to assess the current commuter travel behaviour in the proposed development area and characterise the public transport conditions near the site.

The following ABS Level 1 Statistical Areas were considered for this analysis:

- 1141407
- 1141435
- 1141444
- 1140110
- 1140117
- 1140119
- 1140120
- 1140123.

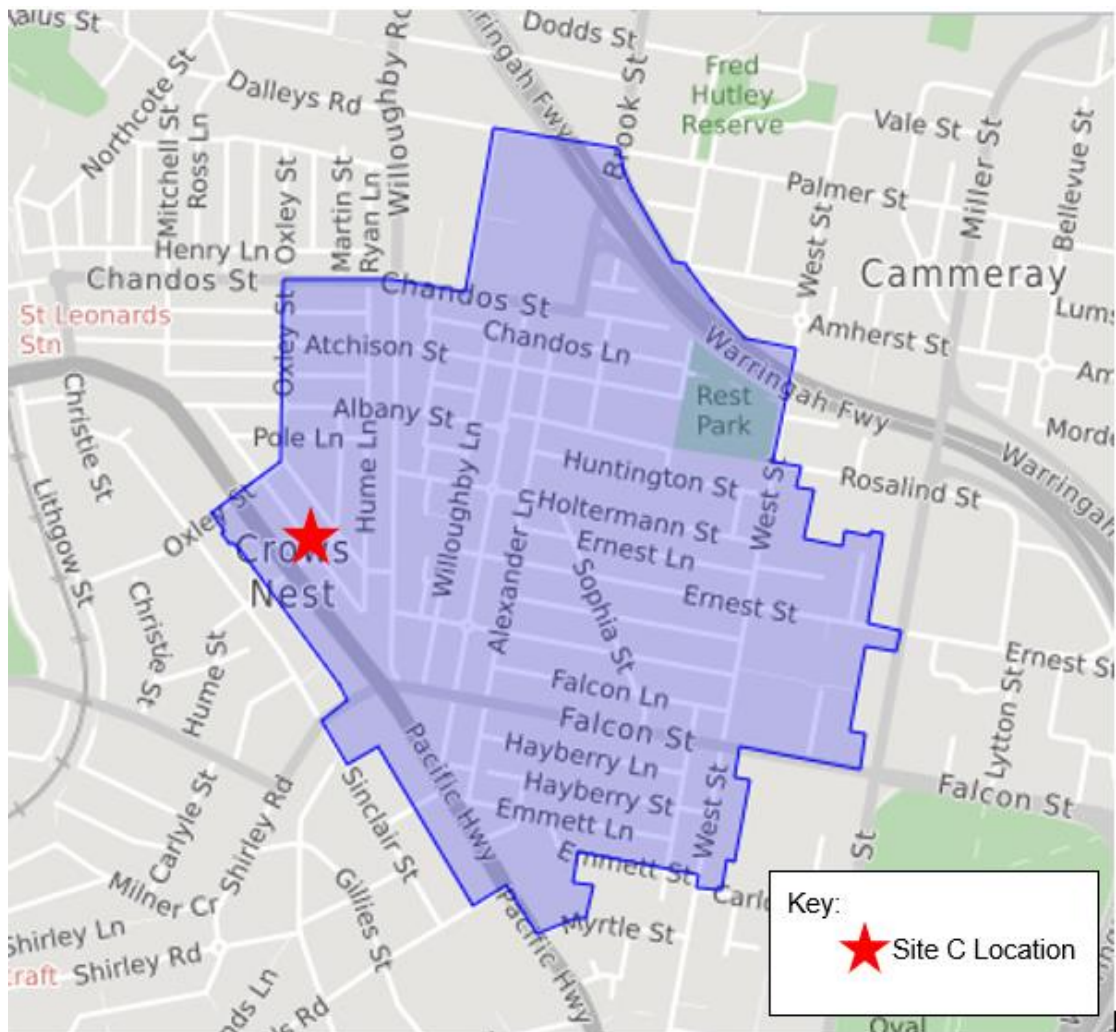


Figure 3: Census 2016, Journey to Work relevant Level 1 Statistical Areas

The main mode of travel for employees who work in the following ABS Destination Zones were also considered for this study:

- 114013269
- 114143316.

The mode split for commute to work for residents living and the mode split for commute to work for employees working in the vicinity of the proposed Crows Nest Site C OSD is shown in **Figure 4**. respectively.

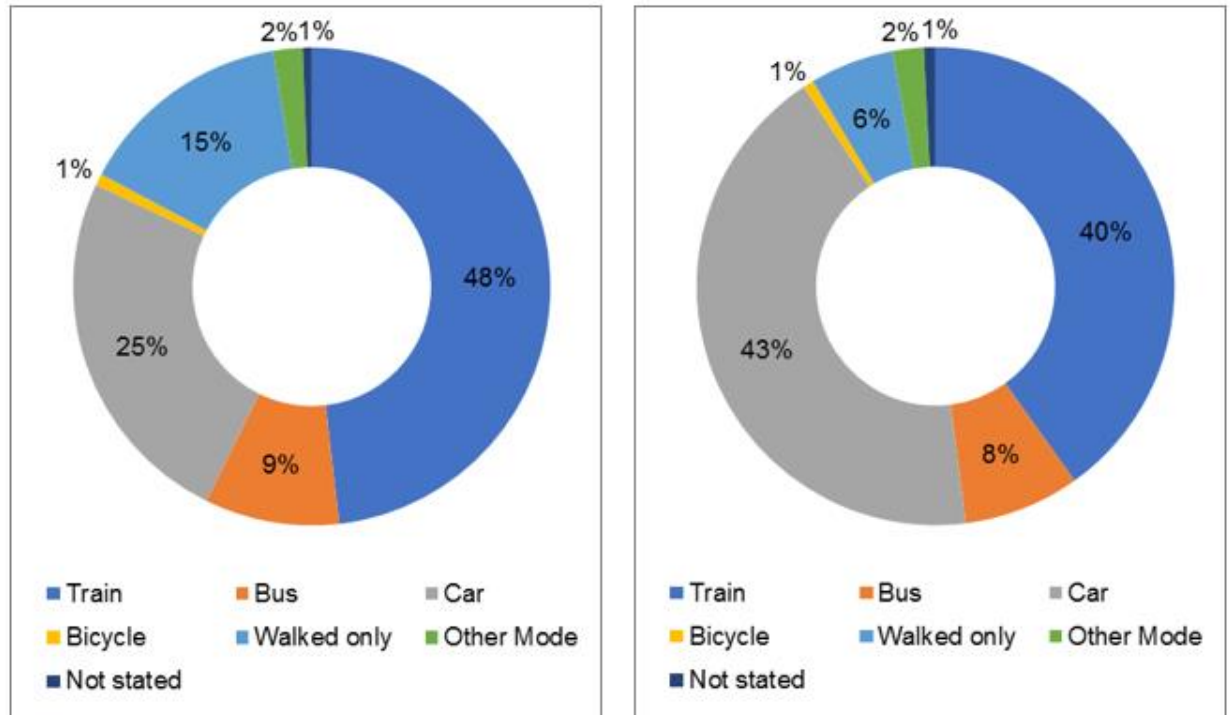


Figure 4: The mode split for commute to work for residents (left) living near the proposed Site C OSD and the mode split for commute to work for employees working (right) in near the proposed Crows Nest Site C OSD

As can be seen from **Figure 4**, commute to work residents living near the Site C OSD travel by train accounts for 48% of total travel, 15% of travel by pedestrians and 25% by car. Employees working near the proposed Crows Nest Station reported a much higher usage of cars, 43%, while only 6% reported walking as their main mode of transport and 40% by train.

It was concluded based on NSW Household Travel Survey for the North Sydney area that residents around the Site C OSD site are less likely to require a car compared to areas that are less dense and have lower availability of public transport. It was also stated that public transportation growth was outpacing that of private transport, with the private vehicle transport growth rate being significantly lower than the population growth rate.

3.2.2. Trip Generation

Trip generation - Person

The number of persons trips generated by the previously existing land-uses were estimated based on the rates provided in the RMS *Guide to Traffic Generating Development* provided in **Table 0-2**. Estimated person trips from the previously existing land-uses are provided in

Table 0-3 below.

Table 0-2 Existing person trip generation rates, per sqm of GFA, used to estimate number of trips for Site C OSD

Existing Land Use	Land-use Intensity	Unit	Trip Rate			Person Trips		
			AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily
Car tyre retail outlet	922.50	Per sqm	0.010	0.01	0.1	9	9	92

The estimated number of person trips generated to the Site C OSD site have been split across all modes, based on the mode share for the site presented in **Section 1**.

The resulting estimate of number of people previously travelling to the site, by mode, is presented in

Table 0-3.

Table 0-3: Existing volumes of workers travelling to the site (based on ABS Method of Travel to Work statistics for Crows Nest-St Leonards).

Mode	AM Peak	PM Peak	Daily
Train	109	76	972
Bus	21	15	191
Car	116	81	1035
Bicycle	2	1	17
Walked only	16	11	138
Other Mode	6	4	51
Not stated	2	1	19
Total	273	189	2,424

Trip Generation - Vehicle

Existing private vehicle trip generation rates for the site were not recorded prior to demolition occurring for construction of the Crows Nest Station. An estimate of trips generated has been produced based on the floor space of each of the buildings on the OSD sites and the associated use, as well as estimated trip generation rates based on the RMS *Guide to Traffic Generating Development, 2013*.

The trip rate used for Site C are presented in

Table 0-4 and the resulting trips are summarised in **Table 0-5**. Given the commercial nature of the previous uses, the peak hour distribution for this site was assumed to be:

- AM: 90% In / 10% Out
- PM: 10% In / 90% Out.

Table 0-4 Trip rates used to estimate existing trip generation

Use	Trip Rate (AM) per sqm	Trip Rate (PM) per sqm
Car tyre retail outlet	0.01	0.01

Table 0-5: Existing estimated vehicle trip generation to the site

Property Address	Approx. GFA (sqm)	Previous Use	Estimated AM In	Estimated AM Out	Estimated PM In	Estimated PM Out
14-20A Clarke St, Crows Nest (Lot 1 only)	922.50	Car tyre retail outlet	8	1	1	8

3.3 Accessibility

3.4 Rail Access

While the Crows Nest Metro Station to be provided on the site, and integrated with the Site C OSD, is still under construction, St Leonards station is located an 800m walk from the Site C OSD. A summary of service frequencies for the station are listed in **Table 0-6** below.

Table 0-6 Service destinations and frequencies for services departing St Leonards train station

Destination	Service Frequency (trains per hour)				
	AM Peak	PM Peak	Interpeak	Evening	Weekend
Sydney CBD	19	19	8	8	8
North Sydney CBD	19	19	8	8	8
Chatswood	20	16	8	8	8
Macquarie Park & Epping	8	4	4	4	4
Parramatta	12	15	4	5	6

As shown in **Table 0-6**, the station provides a high level of service to major employment centres in the AM and PM peaks, and provides a good service to major centres in the off-peak periods.

3.5 Road Access

A summary of roads around Site C and their classifications are listed in

Table 0-7. These roads and their respective hierarchy classifications are presented in **Figure 0-5**.

Table 0-7 Road hierarchy around Crows Nest Station

Street	Hierarchy	Description
Pacific Highway	Primary Arterial	Two-way road with three lanes of traffic in each direction. Parking is generally permitted in the kerbside lane outside of peak hours.
Oxley Street	Local Road	Two-way road with one lane of traffic in each direction. Parking is generally permitted in kerbside areas.
Hume Street	Local Road	Two-way road with one lane of traffic in each direction. Parking is generally permitted in kerbside areas.
Hume Lane	Local Road	One-way laneway, with traffic permitted northbound north of Clarke Street and southbound south of Clarke Street.
Clarke Street	Local Road	Two-way road with one lane of traffic in each direction. Parking is generally permitted in kerbside areas. Classified as an on-road cycle route, with some on-road and some segregated cycle lanes installed.
Clarke Lane	Local Road	One-way laneway, with traffic permitted northbound only.
Willoughby Road	Distributor Road	Two-way road with one lane of traffic in each direction and kerbside parking. Frequent traffic calming measures have been installed. Partly classified as an on-road cycle route, with on-road pavement markers installed



Figure 0-5 Road hierarchy around Crows Nest Station (OSD Site C shown hatched)

3.6 Service Vehicle Access

Pre-demolition service vehicle access routes and loading areas around Site C are shown in **Figure 0-6** below.

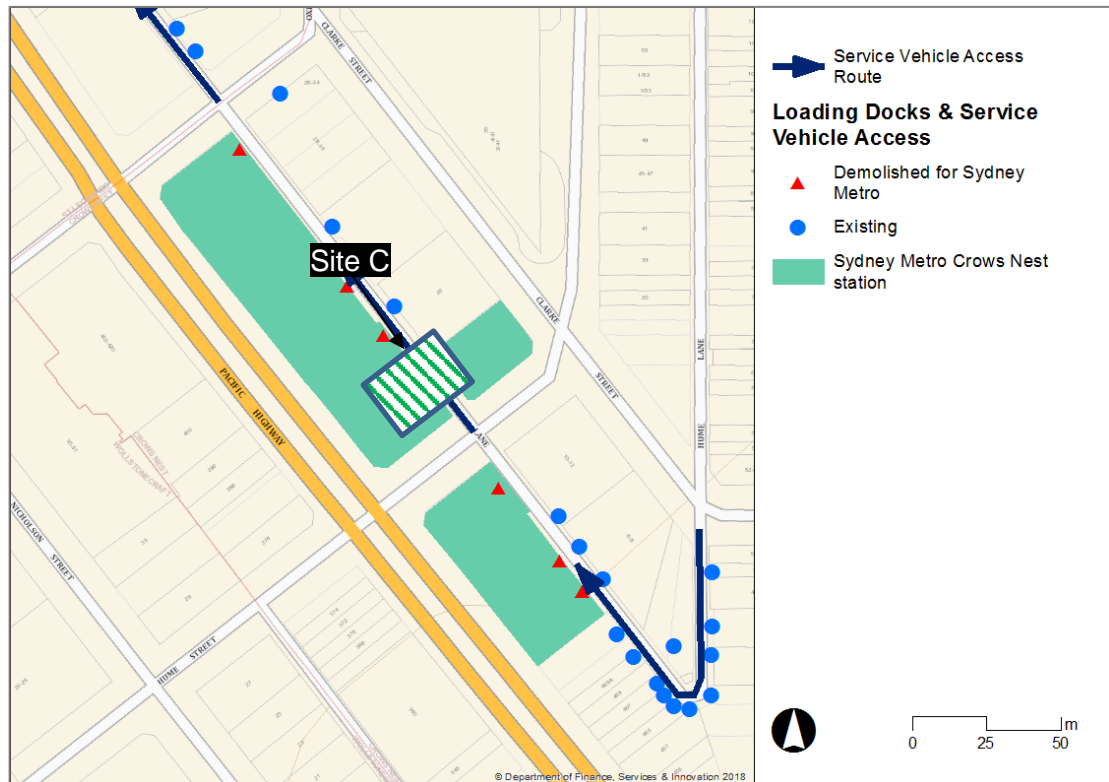


Figure 0-6 Service vehicle routes and docks in the vicinity of Crows Nest OSD (OSD Site C shown hatched)

Prior to construction commencing on the Crows Nest Station site, there were approximately 32 service vehicle loading areas to properties off Clarke Lane. This comprised a variety of different loading areas including driveways with off-street spaces, dedicated loading docks and on-street spaces adjacent to rear property access points. Once the station has been built and is operational, 22 of these service vehicle access points will remain in operation, not including those proposed for the Crows Nest Station and Site C OSD.

Pre-demolition, Site C was a Beaurepaires-branded retailer and fitter of motor vehicle tyres, which generated significant car and truck traffic for deliveries, customers, tyre fitting and waste removal, via the site drive-through from a Hume Street driveway to a Clarke Street driveway and from kerbside parallel parking.

Clarke Lane traffic is one-way from Clarke Street, running first southbound, then makes an acute angle turn, to head approximately northbound to Oxley Street. Clarke Lane is then two-way between Oxley St and Pole Lane, then one-way northbound again from Pole Lane to Albany Street.

The access routes for service vehicles to loading areas on Clarke Lane are generally divided into the following blocks:

- North of Oxley Street: Vehicles access these properties by turning into Clarke Lane (northbound) from Oxley Street, or by turning left (southbound) into Clarke Lane from Pole Lane. Vehicles can then exit via Oxley Street for properties south of Pole Lane, or via Albany Street, for properties north of Pole Lane.
- Between Oxley Street and Hume Street: Vehicles access these properties by turning into Clarke Lane from Hume Street. Vehicles can exit via Oxley Street.

- Between Hume Street and Clarke Street: vehicles access these properties by turning into Hume Lane from Clarke Street and following the laneway around to Clarke Lane.

3.7 Bus Access

Numerous bus stops are located close to the Crows Nest Site C OSD, with buses serving a variety of destinations across the North Shore, Northern Beaches, Northern Suburbs and Inner City. A summary of where bus routes operate and locations of bus stops in the vicinity of the site are shown in **Figure 0-7**.

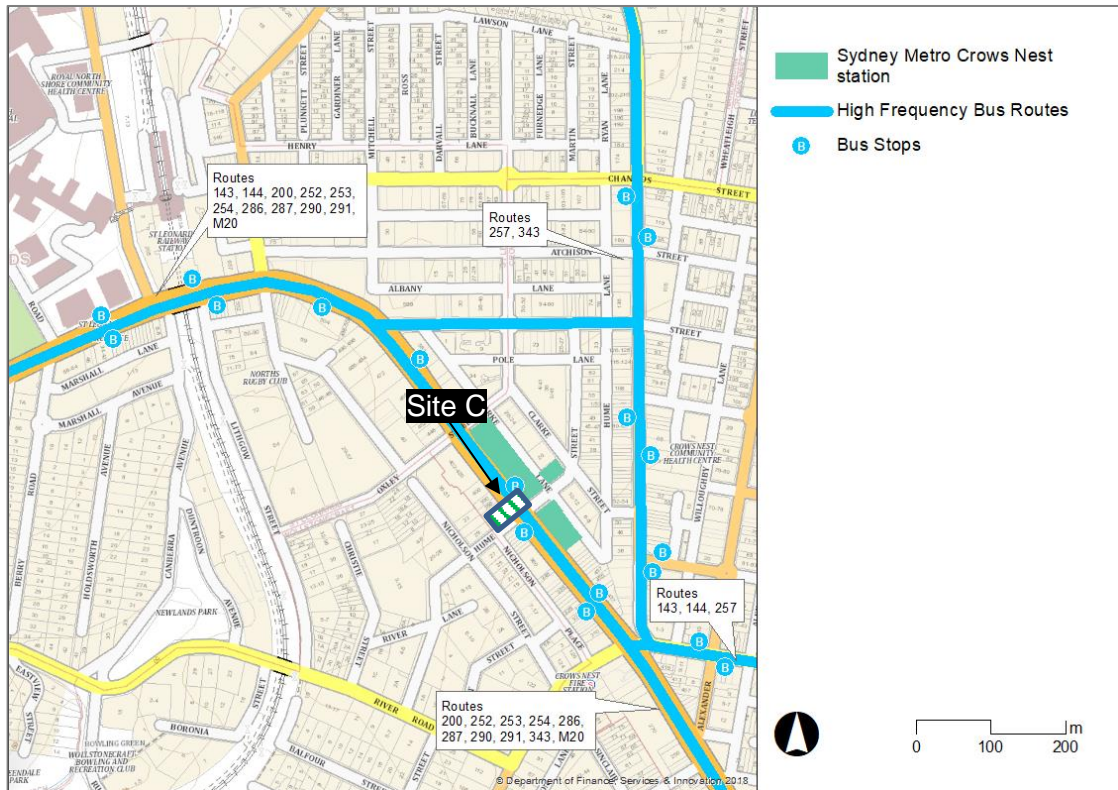


Figure 0-7: Existing bus conditions in the vicinity of Crows Nest Station. (OSD Site C shown hatched)

A summary of the destinations serviced by bus routes which operate in the vicinity of the site is included in **Table 0-8**.

Table 0-8: Bus routes through Crows Nest

Destination	Serviced By	AM Peak Frequency (mins, average)	PM Peak Frequency (mins, average)	Weekend Frequency (mins, average)	Time to destination (mins, approximate)
Sydney CBD	252, 343, M20	2	4	6	20-30
North Sydney CBD	252, 254, 291, M20, 343	<1	3	6	5-10
Chatswood	143, 144, 200, 257, 343	3	4	6	20-30
Manly	143, 144	15	6	15	45
Green Square	343, M20	4	5	8	50-60
Castle Hill	612X	-	6	-	60
Bella Vista, Rouse Hill	602X	-	10	-	45-60
Balmoral	257	30	15	30	25
Neutral Bay	143, 144, 257, 263	10	5	10	10-15
Willoughby Shops	257, 267, 343	7	6	10	15-20
Lane Cove	252, 253, 254, 286, 287, 290, 291	10	5	12	15
Ryde	286, 287	-	12	-	40-45
Macquarie Park	291	30	30	60	30-35

Table 0-9 shows that bus services to most destinations are focused heavily on providing weekday peak direction services, with some bus services to destinations not provided in the non-peak direction on weekdays (for example outbound in AM peak) or at weekends. Service frequencies at weekends are also generally lower than during weekdays, however, trunk routes to major destinations such as the Sydney CBD, North Sydney, Chatswood, Lane Cove, Neutral Bay and Green Square maintain a reasonably high frequency through the weekend, across various services.

A summary of the bus stops near the proposed Crows Nest Site C OSD are listed in **Table 0-9**.

Table 0-9: Bus stops and amenities in Crows Nest.

Bus Stop Location	Bus Stop Number	Routes	Stop Amenity
Pacific Highway at Hume Street	206515	143, 144, 252, 254, 257, 265, 286, 287, 290, 291, M20	Covered, partially covered seating provided, timetable provided.
Pacific Highway at Hume Street	206512	143, 144, 252, 254, 286, 287, 290, 291, M20	Covered, covered seating provided, timetable provided (pre-Metro construction)
Pacific Hwy after Shirley Rd	206524	143, 144, 200, 252, 254, 286, 287, 290, 291, 602X, 612X, 622, 653, M20	Covered, partially covered seating provided, timetable provided.
Pacific Hwy after Albany St	206514	143, 144, 252, 254, 257, 265, 286, 287, 290, 291, M20	Covered seating, timetable provided
Crows Nest, Burlington St, Stand 1	206546	257, 343	Covered seating, timetable provided
Crows Nest, Burlington St, Stand 3	206544	265	Weather protection available, uncovered seating, timetable provided
Crows Nest, Burlington St, Stand 4	206540	263, 267	Covered seating, timetable provided
Crows Nest, Burlington St, Stand 5	206541	343	Covered seating, timetable provided
Willoughby Rd opposite Holtermann St	206547	257, 343	Weather protection available, uncovered seating, timetable provided
Willoughby Rd after Holtermann St	206538	263, 267, 343	Weather protection available, uncovered seating, timetable provided

Existing bus stops throughout Crows Nest are generally of good quality and provide a combination of shelter, covered seating and service information at all stops, with most containing all four.

3.8 Pedestrian Access

The pedestrian network around Site C is shown in **Figure 0-8**, below.

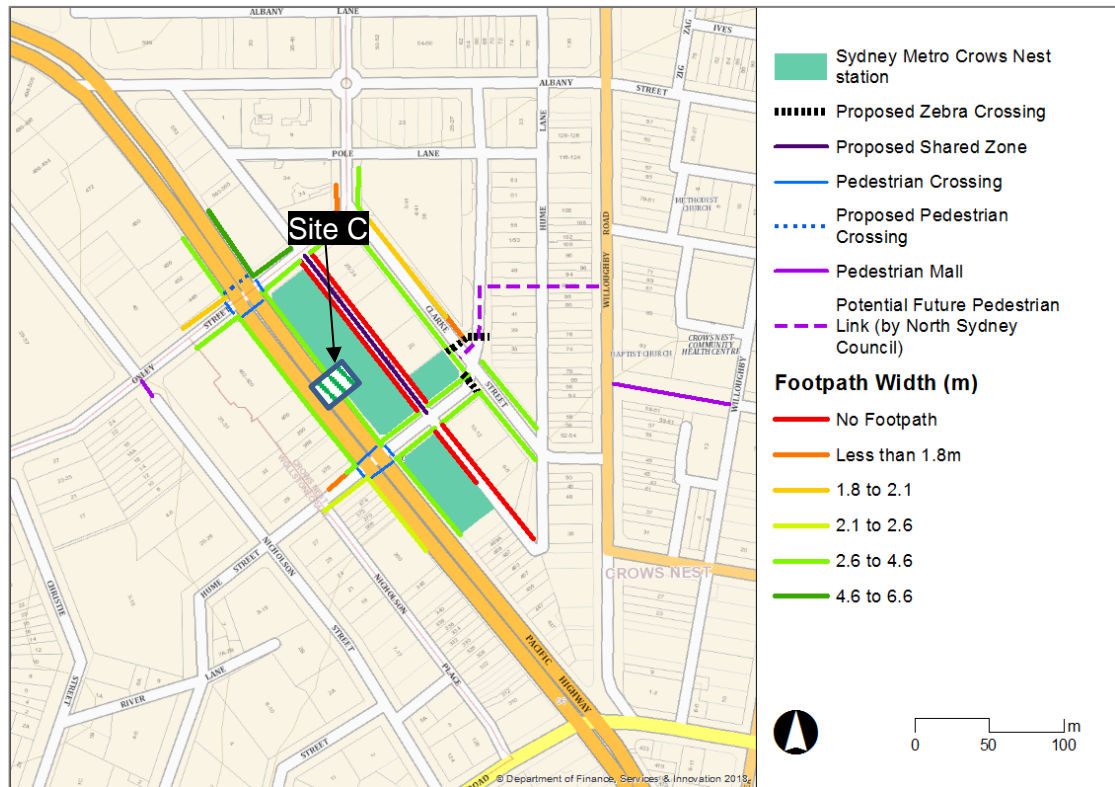


Figure 0-8 Proposed Pedestrian network around Crows Nest (OSD Site C shown hatched)

Pedestrian volumes around Site C are shown in **Figure 0-9**.

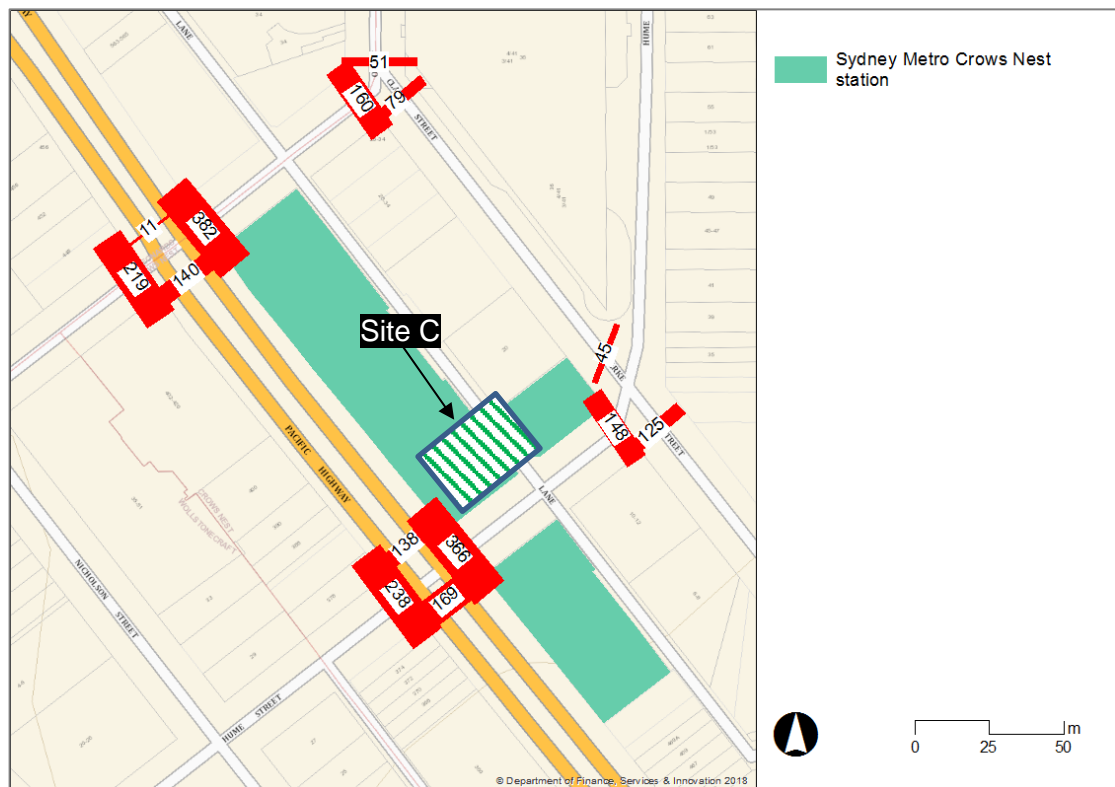


Figure 0-9: Existing pedestrian volumes at crossings between 7am and 10am (Site C shown hatched)

As shown in **Figure 0-9** above, the pedestrian volumes around the proposed Crows Nest Site C OSD are generally low in the existing environment. It is expected that there will be a change to existing pedestrian trip patterns to the OSD and metro, once construction of both is complete. Additionally, there are proposed upgrades to Hume Street Park as well as upgrades to footpaths and crossings around the OSD site, resulting in further changes to existing trip patterns.

However, the detailed design of the Site C OSD does not increase the capacity of the site beyond what was considered in the now approved Concept SSD Application.

3.9 Taxi Service and Facilities

No secure taxi ranks are currently located in the immediate vicinity of the proposed site.

3.10 Bicycle Access

Figure 0-10 below shows the existing bicycle network, infrastructure, associated cycle route hierarchy, and level of difficulty.

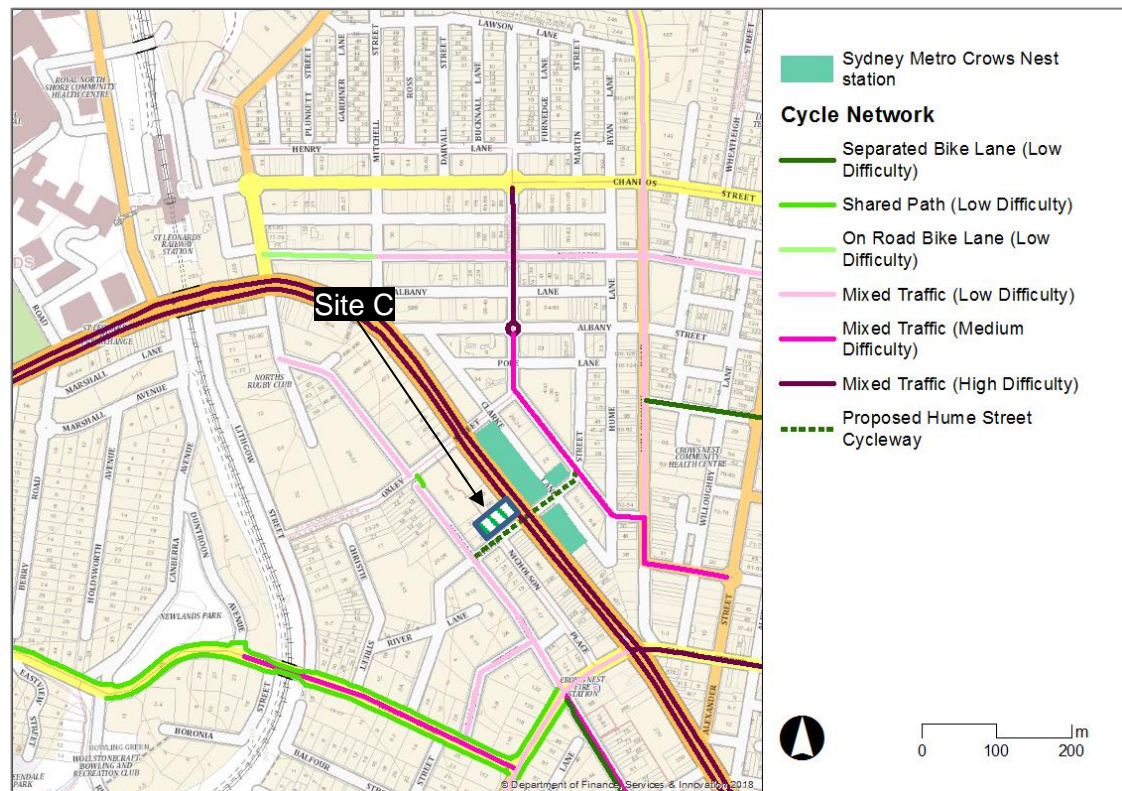


Figure 0-10 Crows Nest cycling network and infrastructure (OSD Site C shown hatched)

Approved over station development

This section summarises the findings of the assessment of the approved Concept SSD Application which provided for three OSD above the Crows Nest Metro Station.

4.1 Land-Use

Table 0-1 summarises the approved land-use for the approved Concept OSD development in relation to Site C.

Table 0-1 Proposed internal land use and quantities (in the concept proposal) for OSD Site C

Building	Land Use	GFA
C	Commercial	3,100m ²

4.2 Parking Provision

Crows Nest OSD Site C would be well serviced by the metro network via Crows Nest Metro Station. As a result of the metro and no parking spaces provided at the site, it is expected that workers travelling to the proposed Site C OSD would predominately use public transport, with likely minimal number of trips being taken by car.

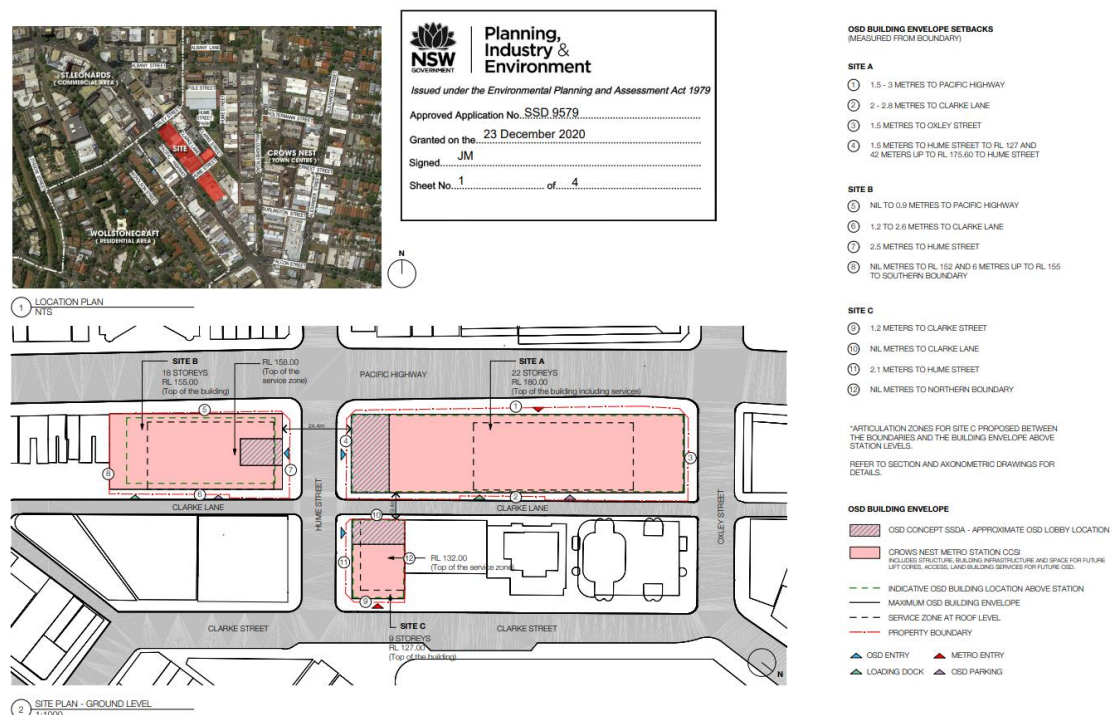


Figure 0-1 Overview of access arrangements for the OSD at Crows Nest

4.3 Trip Generation

4.3.1. Vehicular Trips

Table 0-2 shows vehicle trips generated from for the existing site.

Table 0-2 Existing traffic generated from the site in the AM and PM peak hours based on land-use intensity

Land Use	Scale (unit, sqm GFA)	AM				PM				Daily			
		Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Com.	3,100	0.0017	5	4	0	0.0014	4	0	3	0.0123	33	17	17

Given the highly accessible location of the site, directly above Crows Nest Station, it is anticipated that most of AM and PM peak hours trips would not be undertaken by car.

4.3.2. Pedestrian Trips

Table 0-3 shows the estimated number of pedestrians to be generated by the Site C.

Table 0-3 Estimated number of trips generated by pedestrians in 1 hour peak

Land Use	Scale (unit, sqm GFA)	Estimated Population	Population Generation Rate	Pop. Moving in 3.5hr Peak	3.5hr Conversion Rate	1 Hr Peak	
						AM	PM
Comm.	3,100	135	0.05	135	1	76	69

Pedestrian trips are based on the worst-case scenario where all potential trips by residents and workers were taken using pedestrian access to the building and with no access to the building via private vehicle and the proposed parking garages.

4.4 Service Vehicle Access and Loading Dock Provision

Table 0-4 shows the proposed service vehicle provisions to access the Site C building. Waste Collection will always be via Clarke Lane and deliveries/servicing will be from Clarke Lane until Site A is completed

Table 0-4 Proposed Service vehicle provisions for Site C

Stage	Location	Loading dock access & management
Site C completed	Lay-by in Clarke Lane for waste collection and deliveries	Deliveries and loading and private refuse collection from Clarke Lane
Site A completed	Site A Loading Dock and Level 1 of Site A for service vehicle parking	Deliveries and loading via Site A loading area. Refuse collection from Clarke Lane

Under the approval it is expected that the peak number of vehicles using the docks for Site C would be four vehicles per hour.

4.5 Ride share

As a result of the constrained environment surrounding the site (e.g. existing road network) and the anticipated limited demand for a dedicated rideshare parking on site, rideshare vehicles would use the existing bus zone on Clarke Street, north of Hume Street, adjacent to Hume Street Park, based on the following assumptions:

- Ride share parking is not expected to be needed very often due to the commercial use of Site C
- Kerb side rideshare vehicle parking would not to be used in peak hours (that is, not during weekdays 6-10am and 4-7pm).

A Taxi zone accommodating three spaces is proposed as part of the Metro Integrated Access Plan on Hume Street between Clarke Street and Clarke Lane. This will be located adjunct to the Site C OSD and delivered as part of the station CSSI Approvals.

While workers of Site C would generate taxi trips from the OSD site, it is expected that these trips would be irregular and low in numbers.

4.6 Other Impacts

4.6.1. Public Transport

The bus network through Crows Nest provides good access to locations throughout the Lower North Shore and further afield, particularly during peak periods.

The bus stops situated on Pacific Highway outside the metro station site were proposed to be retained once metro operations commence, with the northbound bus stop currently located south of Hume Street proposed to be relocated to the south of Oxley Street to improve access and interchange for Crows Nest Station. It was assumed that the current high frequency of bus services through Crows Nest would continue in future and the number of bus trips generated by the OSD would have minimal demand impact on the bus network during the morning peak hour.

It was assumed that most train journeys taken from and to the OSD would be via Sydney Metro and that there would be ample capacity for the foreseeable future on this service through Crows Nest once operations commence.

4.6.2. Emergency Vehicle Access

Emergency vehicle access would continue to be accessible via Pacific Highway, Clarke Lane, Hume Street and Clarke Street. It was not anticipated that there would be any impacts to emergency vehicle access as a result of the Site C OSD.

Vehicles queuing in Clarke Lane would need to circulate on the wider road network if emergency vehicles need to access or pass by on Clarke Lane.

Proposed development

5.1 Description

The proposed OSD Site C development is a new nine-storey commercial building with a total OSD gross floor area (GFA) of 3,100m² including a building entrance lobby on the ground level, near the street level pedestrian portal of Clarke Street to the Metro station.

No vehicle parking will be provided on OSD Site C due to the constraints of the site and the majority of the ground floor being occupied by the Metro Station entry. Bicycle parking and end of trip facilities will be provided on Level 1 of the building consisting of We have 21 occupant, 7 visitor parking, 30 lockers and 6 showers.

An overview of the proposed development is provided in Section 2.5 above.

Proposed land use and impact assessment

6.1 Land-use

Following Table 0-1 shows the proposed land-use of Site C, which is entirely consistent with the approved Concept SSD Application.

Table 0-1 Proposed Land-uses for Site C

Site	Land-Use	Unit	Intensity
Site C	Commercial	GFA	3,100

6.2 Proposed Parking Provision

Table 0-2 summarises the number of car parking spaces to be provided in the Site C OSD compared to requirements under the NSDCP 2013 car parking rates.

Table 0-2 Proposed Parking Provisions for Site C

Site	Land-Use	Proposed Parking Spaces	Maximum Number of Parking Spaces per NSDCP
C	Commercial	0	7

Site C would be accessible via active and public transport links. Workers travelling to the OSD who are unable to use active or public transport will be able to use nearby, all day public parking garages that are established in St Leonards and Crows Nest.

Given the location of the commercial building above the metro station and nearby to other high-quality public transport services, as well as availability of off-street parking options nearby, the provision of no parking spaces for workers within Building C is considered acceptable.

6.3 Bicycle Parking

Bicycle and end of trip facilities would be provided at Site C OSD. Under the NSDCP and Green Start 25 bicycle spaces are required for Site C consisting of a mix of occupants and visitors. The site will have 21 occupant, 7 visitor parking.

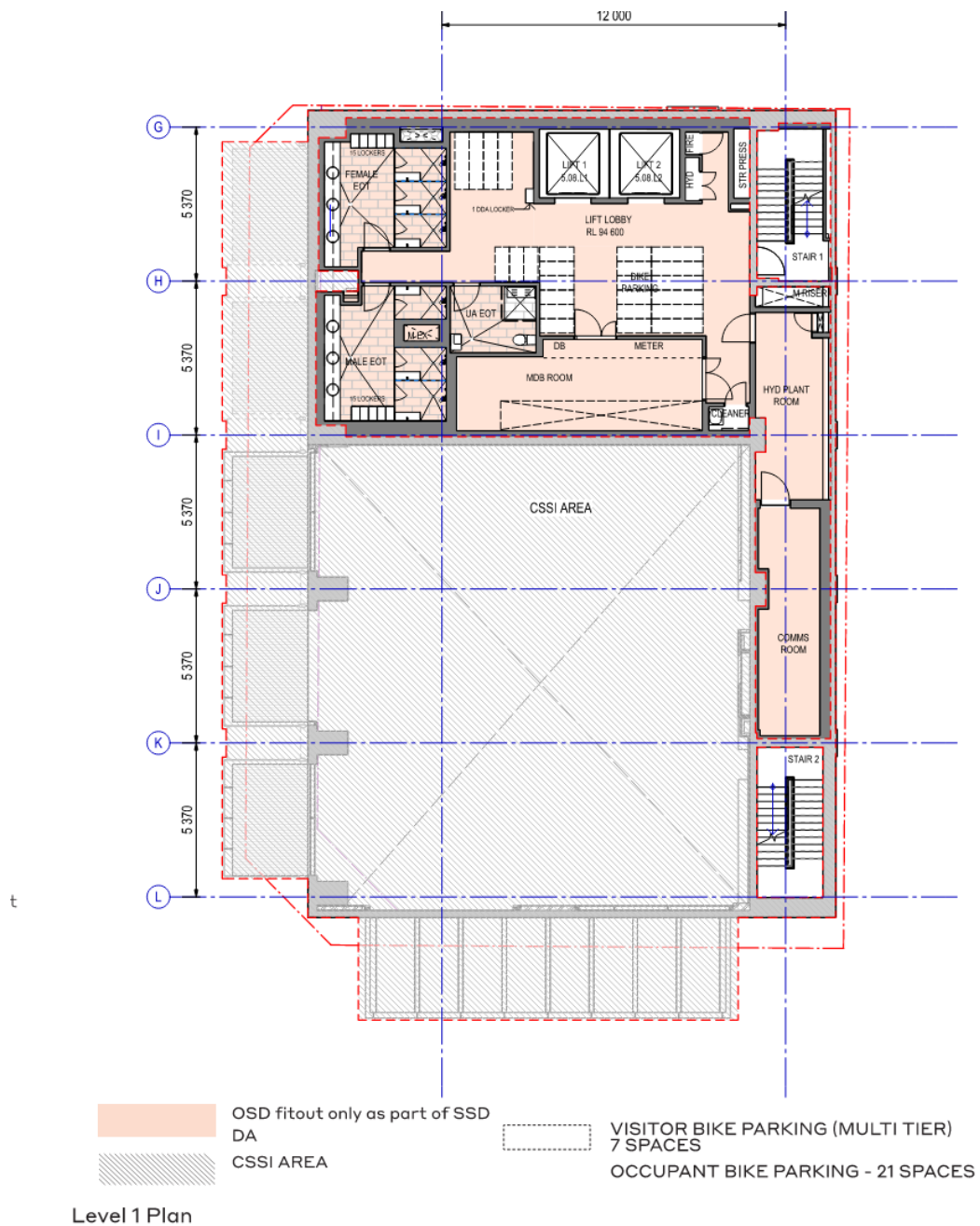


Figure 0-1 Overview of bicycle park arrangements for the Site C OSD

6.4 Trip Generation

6.4.1. Vehicular Trips

Vehicular trip generation is measured in terms of generation based on land use floor space allocation and then generation based on the car parking spaces proposed in the detailed design of the Site C OSD.

Table 0-3 shows the estimated traffic generated as per the *Transport, traffic and parking assessment report* (July 2020).

Table 0-3 Estimated traffic generated in the AM and PM peak hours for Site C (commercial)

Scale (unit, sqm GFA)	AM				PM				Daily			
	Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
3,100	0.0017	5	4	0	0.0014	4	0	3	0.0123	33	17	17

The directional distribution of traffic (i.e. IN/OUT) are also calculated based on the information information provided in

Table 0-3 and presented in Table 0-4 below.

Table 0-4 Directional distribution of traffic derived from Table 4-3

Scale (unit,sqm GFA)	AM			PM			Daily		
	Rate	In	Out	Rate	In	Out	Rate	In	Out
3,100	0.0017	80%	20%	0.0014	25%	75%	0.0123	50%	50%

Assumptions made regarding trip rate and directional distribution as provided in

Table 0-3 and Table 0-4 above are presented in Table 0-5. Table 0-5 shows a comparative analysis of traffic generation estimated for the approved concept design.

Table 0-5 Estimated vehicle trip generation from the Site C (commercial)

Scale (unit, sqm GFA)	AM				PM				Daily			
	Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
3,100	0.0017	5	4	1	0.0014	4	1	3	0.0123	34	17	17

Given the highly accessible location of Site C OSD directly above Crows Nest Metro Station, it is anticipated there would be limited AM and PM peak hour trips undertaken by private vehicles.

6.4.2. Pedestrian Trips

The estimated number of 1-hour peak trips generated by the proposed Site C OSD are provided in Table 0-6.

Table 0-6 Estimated number of pedestrian trips in 1-hour peak

Scale (unit,sqm GFA)	Population Generation Rate	Estimated Population	3.5hr Conversion Rate	Pop. Moving in 3.5hr Peak	1 Hr Peak	
					AM	PM
3,100	0.05	135	1	135	76	69

It is evident from Table 0-6 that there will be an increase of pedestrian trips generated from the site due to the change in land use allocation from what previously existed on the site providing an increase in commercial floorspace. The assessment is consistent with the approved Concept SSD Application and therefore this DA does not represent an increase from what was previously assessed?

Further, it is anticipated that most of these pedestrian trips will be between the OSD and the metro station also on this site because they will be commuting by metro train and are already included in the forecast metro station patronage. Most OSD-generated pedestrian trips will not need to cross the surrounding road network.

6.5 Assessment of Impacts of the Site C OSD

6.5.1. Impacts on Trip Generation

Vehicular Trips

It should be noted that the estimated trips generation from Site C would be lower than the trip generation from the pre-existing land-use at the site. If consideration is given to the location of Site C above a metro station, which is likely to encourage more workers to utilise public transport for their commute, as well as the restriction on the provision of parking spaces for workers of the OSD Site C building, then the number of trips generated per parking space is recommended to be adopted for the assessment.

This means that the OSD Site C, with no car parking spaces proposed on-site, is calculated to generate no vehicle trips in the AM peak and the PM peak. Even allowing for some low level of car parking by OSD site C workers in other car parks in Crows Nest, the overall traffic generation of OSD Site C will be negligible and certainly much less than the former use of the Site C as a retail tyre business.

Pedestrian trips were based on the worst-case scenario where all potential trips by residents and workers were taken using pedestrian access to the building and with no access to the building via private vehicle and the proposed parking garages. It is anticipated that most of these pedestrian trips will be between the Site C OSD and the metro station. As such it is likely that generated pedestrian trips will not need to cross the surrounding road network.

- Estimated population – 135
- Population on generation rate – 0.05
- Population moving in 3.5 hour peak – 135
- 3.5 hour conversion rate – 1
- 1 hour AM peak AM – 75
- 1 hour PM peak - 69

Crows Nest station would generate approximately 82.9% of pedestrian trips, while background pedestrian movements would account for approximately 7.4%.



The corresponding Fruin LoS “C” is considered acceptable for the purposes of this assessment. Footpath widths have been taken as current widths, and pedestrian

crossings have conservatively been assumed at 3.6m wide (minimum width for pedestrian crossings).

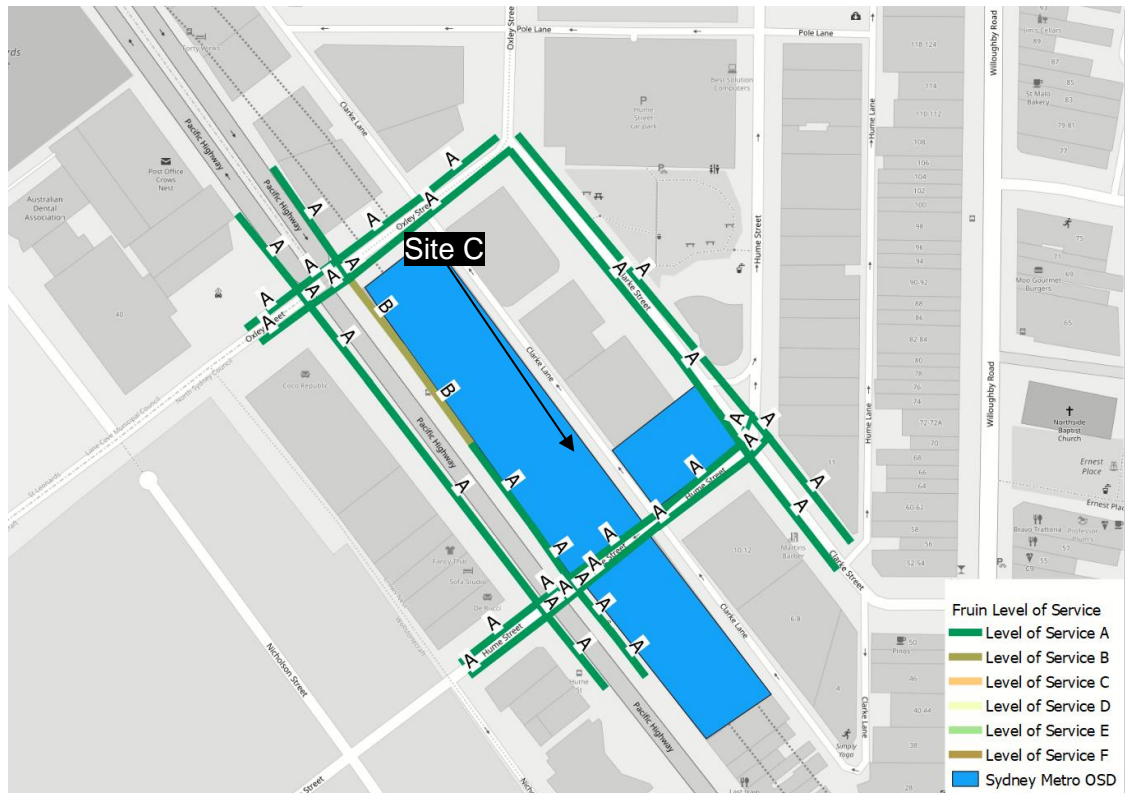


Figure 0-3 2036 Fruin Level of Service for footpaths around Amended OSD scheme during AM peak hour

The cumulative impact of pedestrian volumes from background volumes, Crows Nest Station and the OSD Site C achieve a LoS A along all nearby segments of the pedestrian network around the proposed OSD Site C. Given the very low contributions to passenger flows from the OSD Site C, particularly compared to passenger flows from Crows Nest Station, the impact of the OSD on the pedestrian network is negligible.

Upgrades to the public domain surrounding the OSD Site C as part of the approved Crows Nest Station State Significant Infrastructure proposal will also benefit pedestrians accessing the OSD Site C, through the installation of additional pedestrian crossings on the Pacific Highway, Hume Street and Clarke Street. This would potentially improve safety outcomes for pedestrians and help encourage walking as the main form of transport for local trips.

Part of these public domain changes include changes to Clarke Lane between Hume Street and Oxley Street to change it to a Shared Zone for pedestrians and vehicles, with one-way northbound traffic maintained. This will enable pedestrians to safely access OSD Site C access points off Clarke Lane by reducing vehicle speeds and increasing driver awareness of pedestrian activity in Clarke Lane, particularly for drivers accessing the car garages and loading docks off Clarke Lane.

It is not proposed to have any everyday pedestrian access points for the OSD Site C along Clarke Lane.

6.5.2. Impact on Parking

As discussed, bike parking and end of trip facilities will be provided on Level 1 of OSD Site C. These will be accessed by cyclists on foot via the building front doors off Hume Street, the ground floor lobby, and Site C building lifts.

As discussed above, planned car park demand is considered to be low for Site C and able to be accommodated within existing surrounding car parking stations surrounding the site.

6.5.3. Impacts on Service Vehicle Traffic and Loading Dock

Site C OSD is too small in area to accommodate an effective loading dock, and its limited frontages are already allocated to the station. Accordingly, the Site C OSD will accommodate deliveries, loading, and refuse collection from a lay-by in Clarke Lane as shown in **Figure 0-4**. This loading arrangement from the lay-by in Clarke Lane will be permanent. However, it is proposed that when the Site A OSD becomes operational a facility for deliveries and loading will be allocated for Site C. In addition, following completion of Site A OSD, Site C will be provided with access (via a booking arrangement) to the car park on Level 1 of Site A for long stay service and maintenance vehicles.

Bins and deliveries would, be loaded and unloaded from vans and trucks within Clarke Lane and wheeled on trolleys through the lobby fronting Hume Street and distributed via the building lifts.

Swept paths for vehicles are consistent with the assessment carried out as part of the Concept Design.

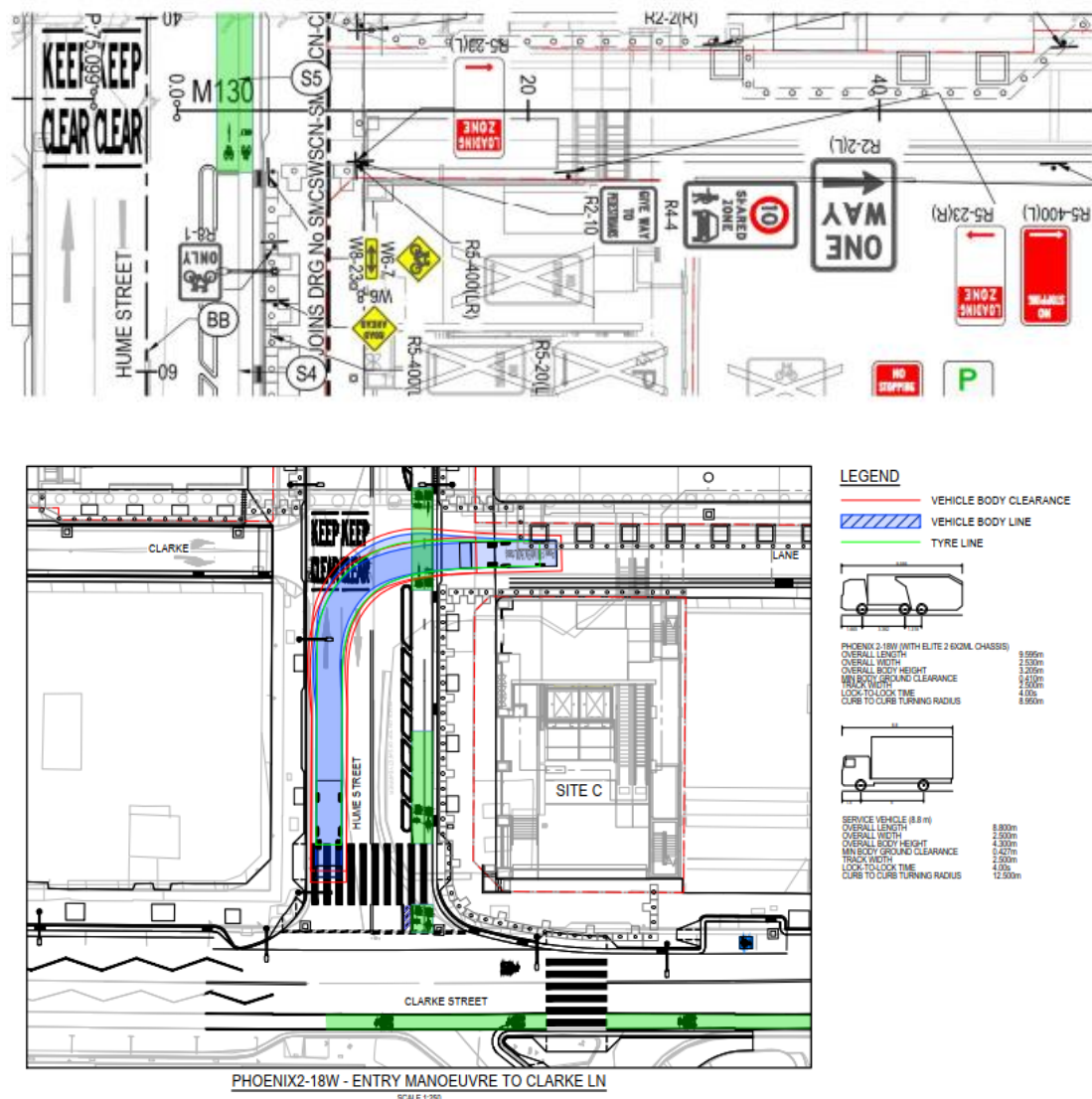


Figure 0-4 Lay-by Loading Zone in Clarke Lane for Site C waste collection, deliveries and loading

A Delivery Management Plan would be developed to manage operational waste services and pickup and delivery needs. Preferred deliveries would be during off-peak hours to minimise any interference with pedestrian and vehicle flows. This would likely avoid the need for delivery vehicles crossing of the footpath near a busy Metro rail station and is considered appropriate for the Site C OSD, which is a small commercial building.

6.5.4. Impacts on Coach and Taxi

The OSD Site C development will have no impacts on coach and taxi operations. Demand for taxi and rideshare services would be accommodated as part of the public domain spaces around the site being delivered under the CSSI Approval. A Taxi zone accommodating three spaces is proposed as part of the Metro Integrated Access Plan on Hume Street between Clarke Street and Clarke Lane. This will be located adjunct to the Site C OSD. No bus/coach parking is required for Site C.

6.5.5. Impacts on Pedestrian, Bike and Traffic Circulation

It is anticipated that the road network surrounding the proposed Site C OSD would remain as stated in the transport, traffic and parking assessment report prepared for the approved Concept SSD Application for the OSD.

The number of bike trips to the Site C OSD are likely to increase, and driven by increased commercial floorspace, but can be accommodated by the proposed bike paths such as the cycleway proposed along Hume Street (under the CSSI) and the additional OSD bike parking proposed.

6.5.6. Impacts on Intersections design and Level of Service

There would likely be some localised increases of vehicular and pedestrian traffic due to the proposed OSD. Following key intersections adjacent to the Crows Nest Site C OSD development have been assessed to understand the impacts of the increased traffic and pedestrian volume on the performance of the intersections:

- Pacific Highway/Oxley Street Intersection
- Pacific Highway/Hume Street Intersection
- Oxley Street/Clarke Street Intersection
- Hume Street/Clarke Street Intersection.

A cycleway is proposed along Hume Street (as part of the CSSI approval) and considered in assessing the performance of Pacific Highway/Hume Street intersection as shown in Figure 0-6 Intersection layout of Pacific Highway/ Hume Street intersection. It should be noted that the left/right turn movements for the cyclists to access the Pacific Highway (southbound) from Hume Street are considered in the signal phasing to avoid any conflict with the vehicular movements and enhance safety. It is anticipated that the cyclists would cross the Pacific Highway and then utilise the pedestrian facilities to cross Hume Street to access the Pacific Highway (southbound).

The performance of these intersections is assessed for the opening year 2025 scenarios and for both AM and PM peak hours. A one percent annual traffic growth rate has been assumed and applied to the recent traffic counts data to estimate the future year 2025 intersection turning flows. The annual growth traffic growth rate has been calculated based on the traffic volume data derived from the nearby RMS permanent traffic count viewer (Station ID: 33098) between the year 2016 and 2018. The traffic data indicates a total traffic volume 34,002 vehicles (both directions) in the year 2016, whereas 34,348 vehicles (both directions) in the year 2018 which implies an annual traffic growth of 0.51 percent between the year 2016 and 2018. Therefore, assumption of one percent annual traffic growth rate for the purpose of traffic assessment is considered conservative and represents a worst-case scenario.

SIDRA version 8.0.1.7778 has been used to assess the performance of these intersections. Figure 0-5 to Figure 0-8 show the proposed intersection layouts of the assessed intersections.

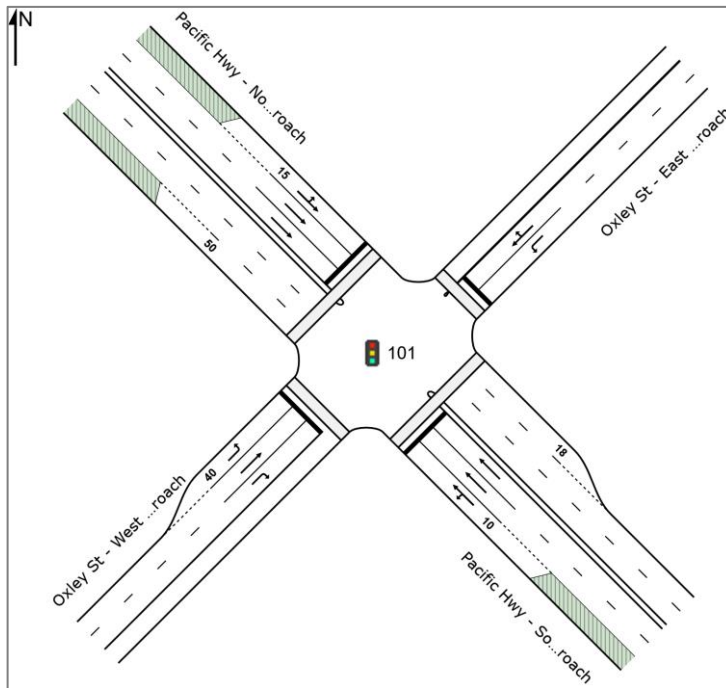


Figure 0-5 Intersection layout of Pacific Highway/Oxley Street intersection

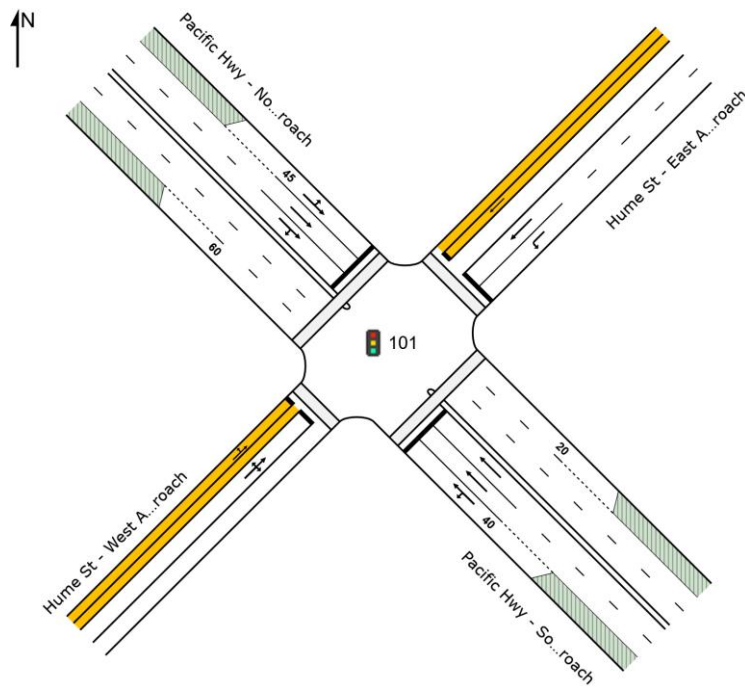


Figure 0-6 Intersection layout of Pacific Highway/ Hume Street intersection

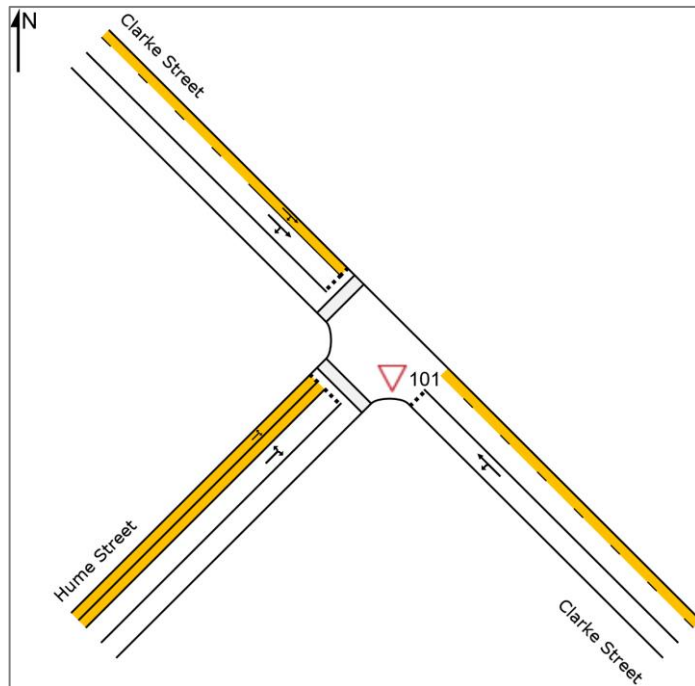


Figure 0-7 Intersection layout of Oxley Street/Clarke Street intersection

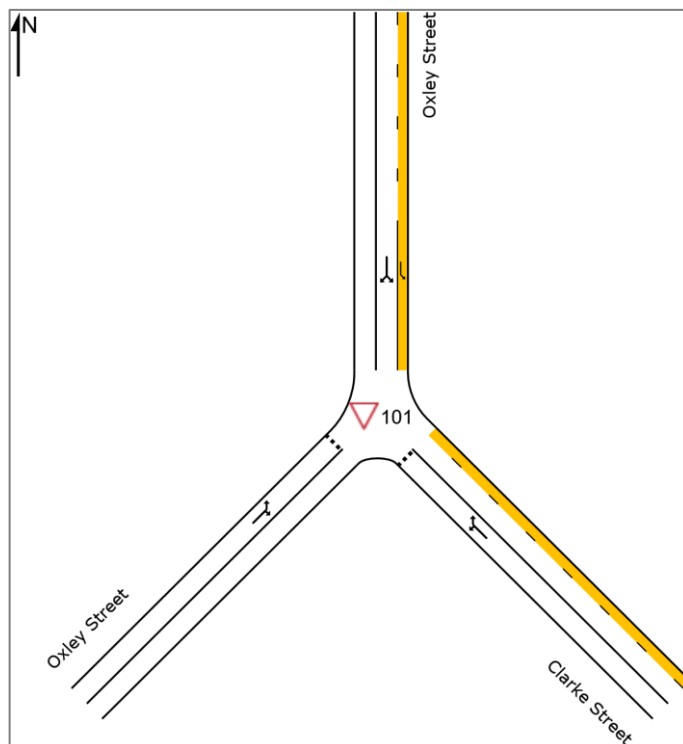


Figure 0-8 Intersection layout of Hume Street/Clarke Street intersection

The following key changes to existing intersection layouts are being delivered under the CSSI Approval for the station. These intersections have been considered for the purposes of this assessment:

- Right turn restriction on east approach of Pacific Highway/Hume Street intersection as per IAP
- Provision of east approach right turn on Pacific Highway/Oxley Street intersection as per the IAP

- Pedestrian crossing on north approach of Pacific Highway/Oxley Street intersection
- Pedestrian crossings on north and west approaches of Hume Street/Clarke Street intersection

Table 0-7 summarises the intersection performance results of the assessed intersections for opening year 2025 for both AM and PM peak hours.

Table 0-7 Intersection performance results for 2025 AM and PM peak hours

Intersection	AM				PM			
	LOS	Delay (Sec)	DoS	95 th Percentile Queue Length	LOS	Delay (Sec)	DoS	95 th Percentile Queue Length
Pacific Highway/Oxley Street	D	41.1	0.93	387m South Approach 237m North Approach	D	40.2	0.88	278m South Approach 276m North Approach
Pacific Highway/Hume Street	D	42.1	0.91	309m South Approach 271m North Approach	D	47.2	0.97	386m North Approach 202m South Approach
Oxley Street/Clarke Street	A	7.2	0.17	-	A	6.9	0.2	-
Hume Street/Clarke Street	A	9.2	0.2	-	A	11.6	0.22	-

The analysis shows that both signalised intersections adjacent to the site currently operate to a Level of Service (LoS) A during the AM and PM peak. The intersection of Hume Street, Oxley Street and Pacific Highway currently operates to a LoS D.

It should be noted that the trip generation from the OSD Site C scheme is considered to be negligible during peak hours compared to the growth of background traffic and would have minimal impacts on the performance of the surrounding intersections.

6.5.7. Other Impacts

The proposed OSD Site C would not have any impacts on the rideshare and bus services and emergency vehicle service.

The proposed OSD Site C development would allow easy approach and departure via the frontage footpaths and does not cause any conflicts with vehicle movements or the kerbside activities, such as queueing for taxis, CSSI kiss-and-ride parking, accessible parking, or cycling and bike parking.

Recommendations and Conclusion

7.1 Recommendations

7.1.1. Car share scheme

Given the physical constraints of the Site C OSD, it is not possible to provide parking spaces on this site for the workers and visitors.

Car share schemes have been shown to directly alter car ownership rates, with one car share vehicle found to remove 9 to 13 vehicles from roads and support 22 to 23 car share scheme members¹. Additionally, car share schemes are considered to be beneficial in reducing the amount of kerbside space dedicated to parking², freeing up more space for bike lanes, clearways, bus lanes or wider pedestrian paths. Concern about increased demand for on-street parking due to the OSD has been identified in early community consultation and in this sense inclusion of a car share scheme in the broader Crows Nest Station precinct was identified in the approved Concept SSD Application to be explored at later stages as the detailed design of OSD was undertaken.

While there is no potential to provide car-share spaces on Site C, Sydney Metro is continuing to explore the opportunity to accommodate care share parking in Site A which will be subject of a separate and future DA. Tenants of the proposed Site C OSD development would be encouraged to enter into an arrangement with the future operator of Site A OSD to use these car share facilities. It will be a requirement within the Sale Documentation for Site A OSD to positively engage with the operator of Site C OSD in relation to loading and shared use of car spaces.

7.1.2. Construction traffic management

A framework CTPMP has been prepared for the Site C OSD and is included in Appendix B. The framework is derived from the approved CTMP and CEMP prepared by AW Edwards in accordance with the CSSI Approval, and includes the following:

- Loading and unloading, including the locations of all proposed work zones
- Haulage routes (refer to **Figure 0-1**)
- Construction vehicle access arrangements
- Construction hours
- Estimated number and type of construction vehicle movements, including morning and afternoon peak and off-peak movements, distinguishing concrete pours from other construction activity, and noting that construction vehicles would be restricted from using work zones surrounding the site during certain times of the day
- Construction program, highlighting details of peak construction activities and proposed construction staging
- Details of specific measures to ensure the arrival of construction vehicles to the site does not cause additional queuing on surrounding road network during peak periods
- Details of any construction vehicle marshalling areas

¹ Benefit-Cost Analysis of Car Share within the City of Sydney, SGS Economics & Planning, 2012, pg. 25.

² The Impact of Car Share Services in Australia, Phillip Boyle & Associates, 2016, pg. 10

- The staging of works and simultaneous construction with other projects in the area, including 1 Denison Street, the Sydney Metro and other developments nearby, and identify mitigation measures to ensure the proposal can be constructed while the impacts to rail users (and their connections) are appropriately managed
- Any potential impacts to general traffic, cyclists, pedestrians and bus services near the site from construction vehicles during the construction of the proposed works
- Measures proposed to mitigate any associated impacts of traffic, public transport, pedestrians and cyclists should be clearly identified and included in the draft CPTMP.

The Sydney Coordination Office (SCO) and DPIE have already been consulted with during the development of the plan.



Figure 0-1 Indicative construction haulage routes, Crows Nest Site C OSD

7.1.3. Travel plans

The limited private car parking proposed for all of the Crows Nest OSD scheme land uses seeks to demonstrate that exceptional public transport and active transport accessibility can effectively and successfully support the travel needs of a broad range of urban land uses and activities. This is particularly relevant to OSD Site C which has zero on-site car parking.

To support the success of the sites, it is recommended that Travel Plans (TP) be prepared for each site, held by Council, and provided to owners/ tenants. The following site-specific and customer-specific Travel Plan should be prepared and incorporated into the operational plans of the sites.

- OSD Site C (Commercial) - Employees TP

7.1.4. Loading management

The proposed lay-by provision in Clarke Lane will be adequate for the OSD Site C. However, the following mitigation measures are proposed to manage the loading facilities in a more efficient way:

- All non-essential servicing activity, including facilities maintenance and cleaning, vending machines replenishment should be conducted out of normal business hours as these services likely require dwell times in excess of an hour. All services to the commercial OSD Site C building should be encouraged to occur outside of peak hours.
- Encourage making deliveries to OSD Site C by courier bicycles or motorbikes, using the bicycle and motorbike parking provided under the station CSSI Approval adjacent to the site.
- A delivery and waste service plan specific to OSD Site C should be developed and adopted to optimise waste collection from the adjacent lay-by in Clarke Lane and deliveries into the future Site A loading dock. This would include a booking and management system to spread activities across off-peak times to minimise any conflict with pedestrians, cyclists, and vehicles.

7.2 Conclusions

This report presents the results of a transport, traffic and parking assessment of the Site C OSD above Crows Nest Station.

This report has been prepared to outline the transport, traffic and parking impacts of the OSD and to specifically respond to the SEARs issued for the concept SSD Application.

The key findings of the assessment of the proposed OSD for Crows Nest Station are that:

- The number of parking spaces provided at site C is zero. While this is not in line with that of North Sydney DCP, planned car park demand for Site C is considered to be low and able to be accommodated within existing surrounding car parking stations surrounding the site
- The number of bicycle storage within Site C are as per the North Sydney DCP
- Site C will be able to utilise a mixture of on-street space in Clarke Lane for deliveries and waste removal without impacting traffic flow on Clarke Lane
- The proposed Site C OSD above Crows Nest station will produce less peak hour trips than the pre-existing uses across the Crows Nest station site
- Pedestrian flows from the OSD will not be detrimental to pedestrian flows on footpaths around Crows Nest station.

To address some of these findings, the following mitigation measures have been suggested:

- Construction Traffic is managed to minimise impacts on nearby residents and businesses during the course of Site C OSD construction
- A loading dock management plan is to be implemented in conjunction with the future operator of Site A OSD, to minimise any queuing issues that may arise during periods of high demand for the delivery and waste removal services for Site C OSD

- Travel Plans should be developed for Site C OSD to ensure that employees are aware of their travel options to and from the site, and how this may help them to make more sustainable travel mode decisions.

Appendix A: Green Travel Plan



Green Travel Plan

Detailed State Significant Development Application
Site C, Crows Nest over station development

Contents

1	Introduction	4
1.1	Project Overview	4
1.2	Site location and description	4
1.3	Overview of the proposed development.....	5
1.4	Purpose of this report	5
1.5	Report structure.....	6
2	Existing Conditions	7
2.1	Existing mode split and future target.....	7
2.2	Existing transport provision.....	9
2.3	Bus Services	9
2.4	Train Services	11
2.5	Pedestrian and cycling infrastructure	11
2.6	Car share	14
2.7	North Sydney Council policy	15
3	Bicycle Parking Facility Provision	16
4	Green Travel Plan Measures	17
4.1	General	17
4.2	Walking	18
4.3	Cycling	18
4.4	Public transport	19
4.5	Carpooling and car share	20
4.6	Car parking.....	20
4.7	Reducing network travel demand	20
5	Monitoring and Review.....	21
5.1	Responsibility	21
5.2	Travel surveys	21
6	Conclusion	22

Author:	CNDC
Date:	28 April 2021
Version:	A
Reference:	SMCSWSCN-SMC-SCN-EM-REP-000023
Review date:	April 2021

Acronyms

Potential measures	Timeframe
ABS	Australian Bureau of Statistics
BTS	Bureau of Transport Statistics
CBD	Central Business District
Council	North Sydney Council
CSSI	Critical State Significant Infrastructure
CPTMP	Construction Pedestrian and Traffic Management Plan
CTMP	Construction Traffic Management Plan
DA	Development Application
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EoT	End of Trip cycling facilities
GFA	Gross floor area
GSC	Greater Sydney Commission
GTP	Green Travel Plan
LEP	Local Environment Plan
LGA	Local Government Authority/Area
LoS	Level of Service
OD	Origin-destination
OSD	Over station development
Roads and Maritime	NSW Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environment Planning Policy
SSD	State Significant Development
SWTC	Scope of Works and Technical Criteria
TfNSW	Transport for NSW
TZ	Travel Zone

1 Introduction

This Green Travel Plan (GTP) has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 24 February 2021. Specifically, this report has been prepared to respond to the SEARs requirements summarised as follows:

'measures to promote sustainable travel choices for employees, residents or visitors, such as minimising car parking provision, encouraging car share and public transport, cycling and walking, implementing a green travel plan and providing end of trip facilities'

1.1 Project Overview

The detailed State Significant development application (SSDA) seeks approval for the detailed design, construction and use of a new nine-storey commercial office building on Site C above the Sydney Metro Crows Nest station entrance. The proposed development also includes the fitout of the ground floor lobby and Level 1 end-of-trip/bicycle storage facilities, which will be constructed under the CSSI Approval for the metro station.

The proposed commercial building will provide additional premium office floor space to the precinct, complementing the St Leonards commercial core and integrating with the broader Crows Nest village.

The detailed design of the Site C over station development (OSD) has been subject to rigorous design development, testing and review from various government and independent parties such as the Design Review Panel (DRP) to ensure that it achieves the highest standard in architectural design.

1.2 Site location and description

The Crows Nest Station precinct is located between the Pacific Highway and Clarke Street (eastern side of the Pacific Highway) and Oxley Street and south of Hume Street, Crows Nest. It is wholly located within the North Sydney local government area (LGA), and also near the boundaries of both the Willoughby and Lane Cove LGAs.

The Crows Nest Station OSD site comprises three sites (Figure 1-1). This plan is for Site C located at 14 Clarke Street, Crows Nest. Site C is located at the north-western corner of Hume Street and Clarke Street, and comprises one allotment with the address of 14 Clarke Street, Crows Nest. It is legally described as Lot 1 in DP1123850.

The site is roughly rectangular in shape and being located within the Crows Nest village centre. Adjoining Site C is a seven-storey residential building (known as 'Wyndel Apartments') at 22-26 Clarke Street and a five-storey commercial building at 20 Clarke Street.

The existing buildings on the site have been demolished to facilitate the construction of Crows Nest Station under the CSSI Approval. The demolition works are now complete, and the site is vacant and surrounded by construction hoarding. Once the station is completed as per the CSSI Approval, the entry within Site C will provide connection to the east towards Willoughby Road.



Figure 1-1: Aerial photograph of Site C within the greater Crows Nest Station precinct

1.3 Overview of the proposed development

This detailed SSD Application will seek consent for the construction of a commercial office building on the site. It will be highly integrated with the approved Crows Nest Station under construction below.

Specifically, consent is sought for the following works:

- Construction, use and fitout of a new commercial building with the following parameters:
 - A total gross floor area (GFA) of 3,100m²
 - A maximum building height of RL 127m, with an additional 5m 'building services zone' to accommodate rooftop plant and equipment, lift overruns and services (RL 132m total)
 - Nine storeys, comprising:
 - Building entrance lobby on the ground level
 - Bicycle parking and end of trip facilities on level 1
 - Commercial offices on levels 2 – 8
 - An accessible garden on part of level 9 for use by tenants
 - Rooftop plant and service areas
- Associated building servicing and building landscaping elements.
- Signage zones for building / business identification.
- No vehicle parking will be provided on site.

The CSSI Approval for the metro station includes space provisioning on the ground level (building entrances) and level 1 (bicycle parking and EoT) for the Site C OSD. The use and fit-out of these OSD spaces require approval under Part 4 while the actual station structure itself is approved as part of the Sydney Metro City & Southwest project.

1.4 Purpose of this report

The use of private vehicles is a major contributor towards both greenhouse gas emissions and traffic congestion on Sydney's roads, with significant environmental

and social costs. As well as delivering better environmental outcomes such as reduced air and noise pollution, the promotion of sustainable travel options will provide both health and social benefits to the community and reduce traffic congestion.

1.5 Report structure

This report outlines current travel conditions and potential green travel options for commuting to the Site C OSD above the new Sydney Metro Crows Nest Station.

This GTP has been prepared as a package intended to inform and encourage the use of sustainable transport options for travel to and from the development site, taking into consideration location and accessibility to alternative transport modes.

It promotes the use of active transport modes such as walking and cycling, and public transport options that service the area. This GTP provides recommendations on sustainable transport initiatives that be undertaken by the OSD, as well as initiatives for the commercial end user to increase sustainable travel options, with the objective of reducing private vehicle use and increasing the use of active or public transport. This report is structured as follows:

- Section 1: Introduction and overview
- Section 2: Existing conditions discusses existing and future transport conditions
- Section 3: Green Travel Plan measures provides an overview of the changes to the existing transport use due to the proposed development and summarises actions to encourage sustainable transport opportunities
- Section 4: Monitoring and review provides an overview of ongoing monitoring actions to obtain maximum benefit from the GTP.

2 Existing Conditions

2.1 Existing mode split and future target

Census 2016 Journey to Work data collected by the Australian Bureau of Statistics (ABS) has been used to assess the current commuter travel behaviour in the proposed development area and characterise the public transport conditions near the site.

The Bureau of Transport Statistics (BTS) uses ABS data to determine the mode used to travel to work by 'travel zones' (TZs). The TZs that apply to this proposed development site are illustrated in Figure 2-1.

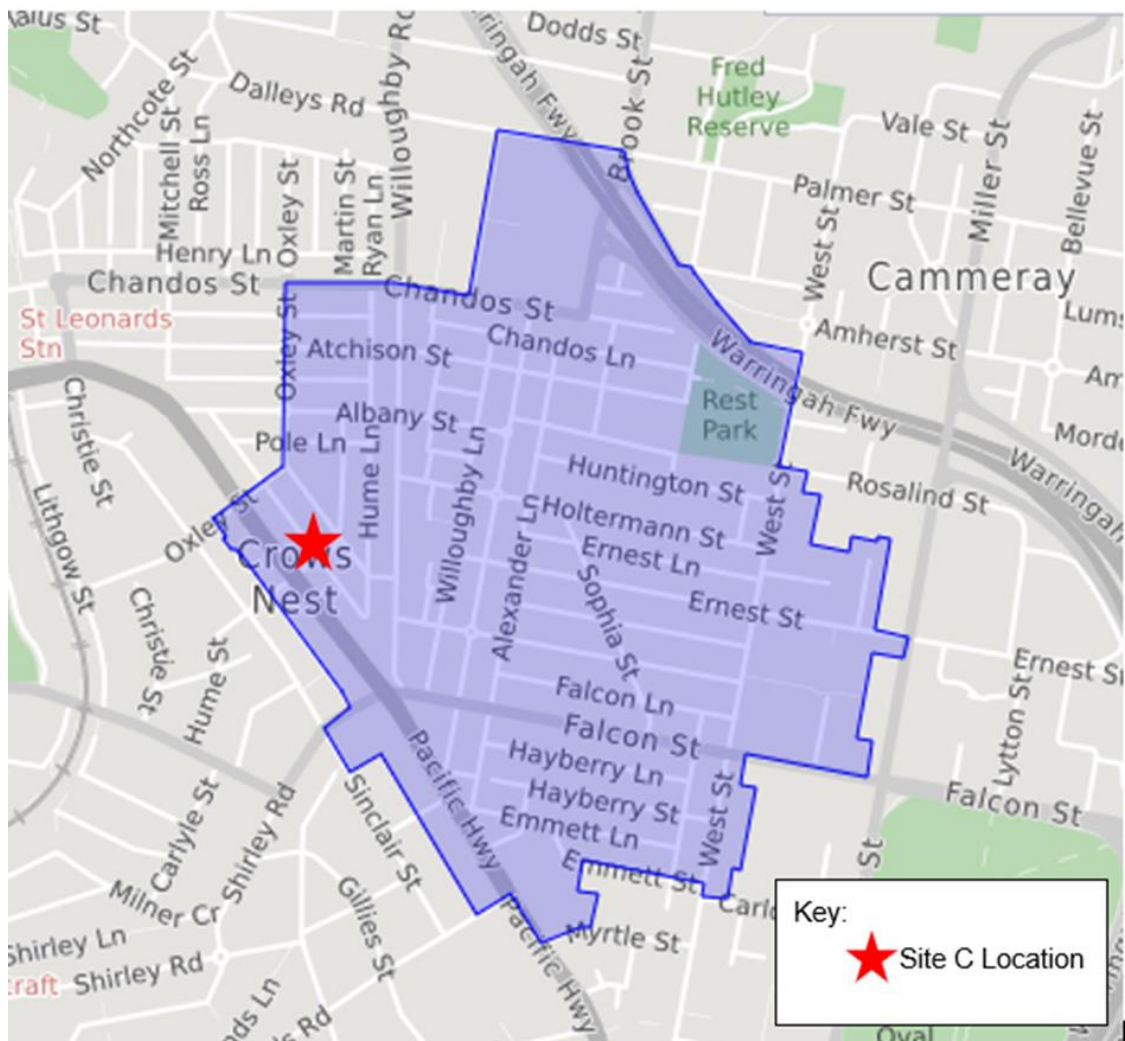


Figure 2-1: Census 2016, Journey to Work relevant Level 1 Statistical Areas¹

The main mode of travel is summarised in Figure 2-2 and includes the following mode share:

- 48 per cent travelled by train

¹ The following ABS Level 1 Statistical Areas were considered for this analysis:
1141407;1141435;1141444;1140110;1140117;1140119;1140120;1140123

- 9 per cent travelled by bus
- 25 per cent travelled by car
- 1 per cent travelled by bicycle
- 15 per cent walked only
- 2 per cent used another mode of travel
- 1 per cent did not state their mode of travel.

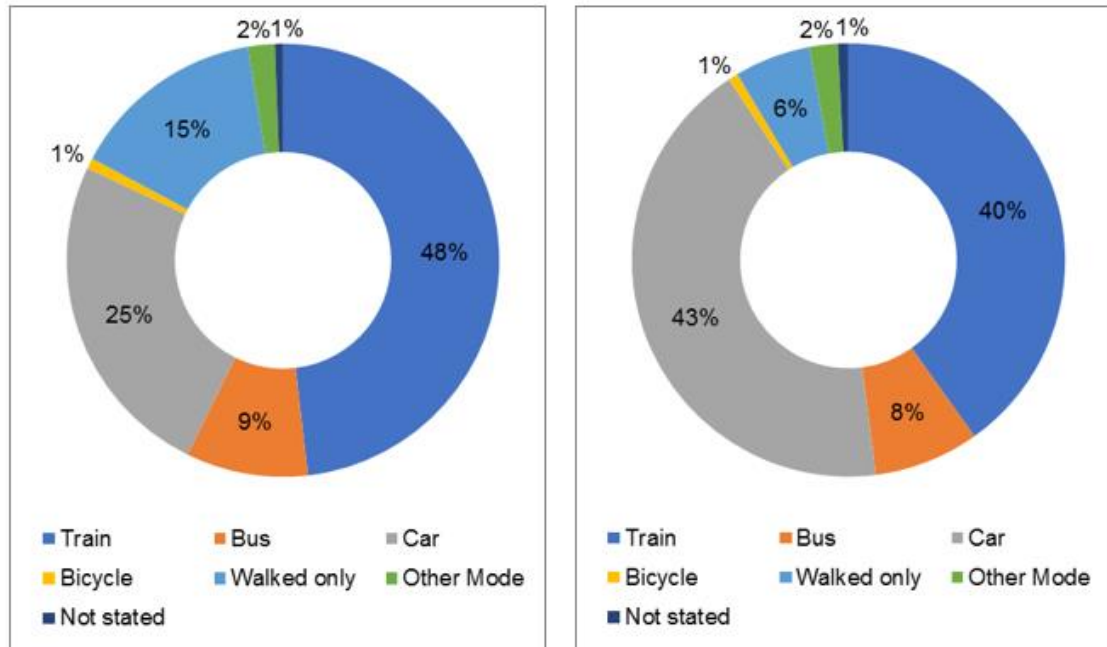


Figure 2-2: The mode split for commute to work for residents (left) living near the proposed Site C OSD and the mode split for commute to work for employees working (right) in near the proposed Crows Nest Site C OSD

The future mode share for the site has been estimated based on the Roads and Maritime Services *Guide to Traffic Generating Development* provided in Table 4-1. Estimated person trips from the previously existing land-uses are provided in Table 2-1 and Table 2-2 below.

Given the accessibility of the metro station to the OSD, a slight increase in work trips undertaken through rail transport would be expected, due to the increased coverage and accessibility to the site by public transport.

Table 2-1 Existing person trip generation rates, per sqm of GFA, used to estimate number of trips for Site C OSD

Previous Land Use	Land-use Intensity	Unit	Trip Rate			Person Trips		
			AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily
Car tyre retail outlet	922.50	Per sqm	0.010	0.01	0.1	9	9	92

Table 2-2: Existing volumes of workers travelling to the Crows Nest OSD site (based on ABS Method of Travel to Work statistics for Crows Nest-St Leonards).

Mode	AM Peak	PM Peak	Daily
Train	109	76	972

Bus	21	15	191
Car	116	81	1035
Bicycle	2	1	17
Walked only	16	11	138
Other Mode	6	4	51
Not stated	2	1	19
Total	273	189	2,424

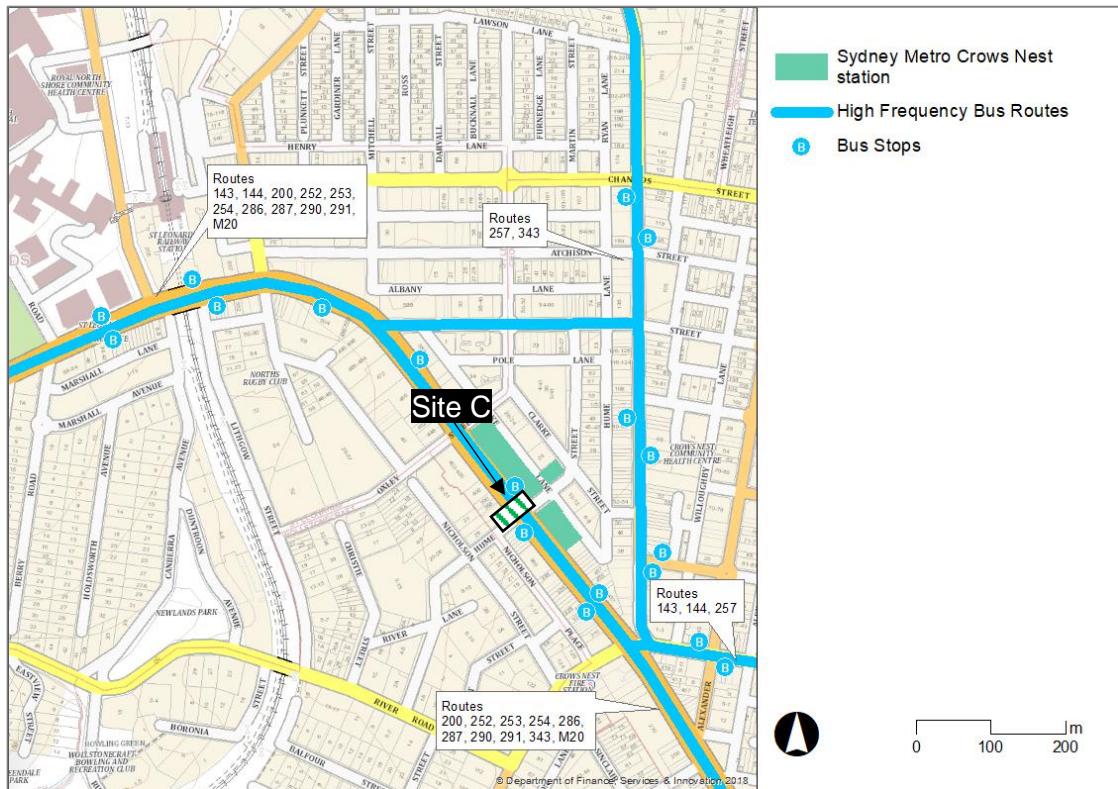
2.2 Existing transport provision

There is a wide range of sustainable transport options including both active and public transport available to travellers to the Crows Nest Site C OSD, including:

- Bus services
- Train services
- Walking and cycling
- Car share.

2.3 Bus Services

Numerous bus stops are located close to the Crows Nest Site C OSD, with buses serving a variety of destinations across the North Shore, Northern Beaches, Northern Suburbs, and Inner City. A summary of where bus routes operate and locations of bus stops in the vicinity of the site are shown in **Figure 2-3**.



Source: Transport, Traffic and Parking Assessment Report, EIS 2018

Figure 2-3: Existing bus conditions in the vicinity of Crows Nest Station. (OSD Site C shown hatched)

A summary of the destinations serviced by bus routes which operate in the vicinity of the site is included in Table 2-3.

Table 2-3: Bus routes through Crows Nest

Destination	Served By	AM Peak Frequency (mins, average)	PM Peak Frequency (mins, average)	Weekend Frequency (mins, average)	Time to destination (mins, approximate)
Sydney CBD	252, 343, M20	2	4	6	20-30
North Sydney CBD	252, 254, 291, M20, 343	<1	3	6	5-10
Chatswood	143, 144, 200, 257, 343	3	4	6	20-30
Manly	143, 144	15	6	15	45
Green Square	343, M20	4	5	8	50-60
Castle Hill	612X	-	6	-	60
Bella Vista, Rouse Hill	602X	-	10	-	45-60
Balmoral	257	30	15	30	25
Neutral Bay	143, 144, 257, 263	10	5	10	10-15
Willoughby Shops	257, 267, 343	7	6	10	15-20

Destination	Serviced By	AM Peak Frequency (mins, average)	PM Peak Frequency (mins, average)	Weekend Frequency (mins, average)	Time to destination (mins, approximate)
Lane Cove	252, 253, 254, 286, 287, 290, 291	10	5	12	15
Ryde	286, 287	-	12	-	40-45
Macquarie Park	291	30	30	60	30-35

2.4 Train Services

The site and its surrounding area are reasonably accessible via rail, being within reasonable walking distance to St Leonards railway station (within a 700-metre walk). St Leonards railway station is within the top twenty busiest stations in Sydney, providing services for morning commuters who work and live in St Leonards and Crows Nest and the surrounding area. The primary pedestrian access route between the OSD Site C and St Leonards station are along the Pacific Highway, supplemented by local roads that provide a more pleasant pedestrian experience than the highway.

St Leonards railway station serves the following train lines:

- T1 Western Line – Emu Plains or Richmond to City
- T1 North Shore Line – Berowra to Parramatta
- T9 Northern Line – Hornsby to North Shore, via City
- CCN Central Coast and Newcastle Line – Newcastle Interchange to Central, via Strathfield or Gordon.

2.5 Pedestrian and cycling infrastructure

The pedestrian network around Site C is shown in **Figure 2-4**, below.

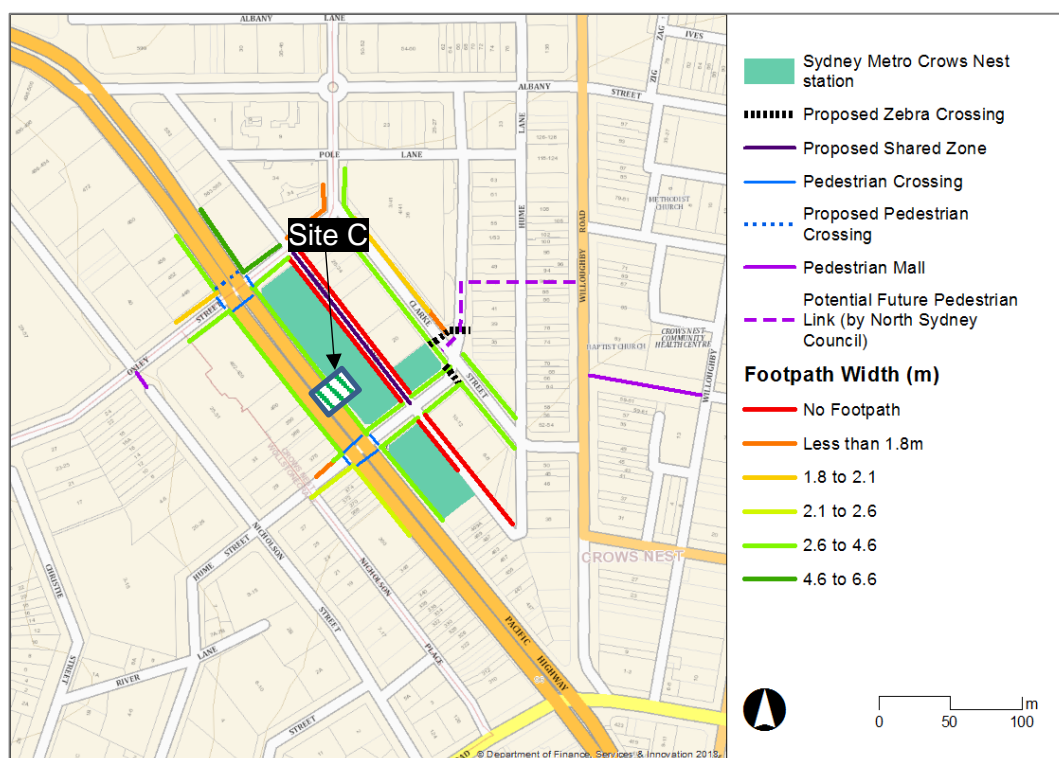


Figure 2-4 Proposed Pedestrian network around Crows Nest (OSD Site C shown hatched)

Pedestrian volumes around Site C are shown in **Figure 2-5**.

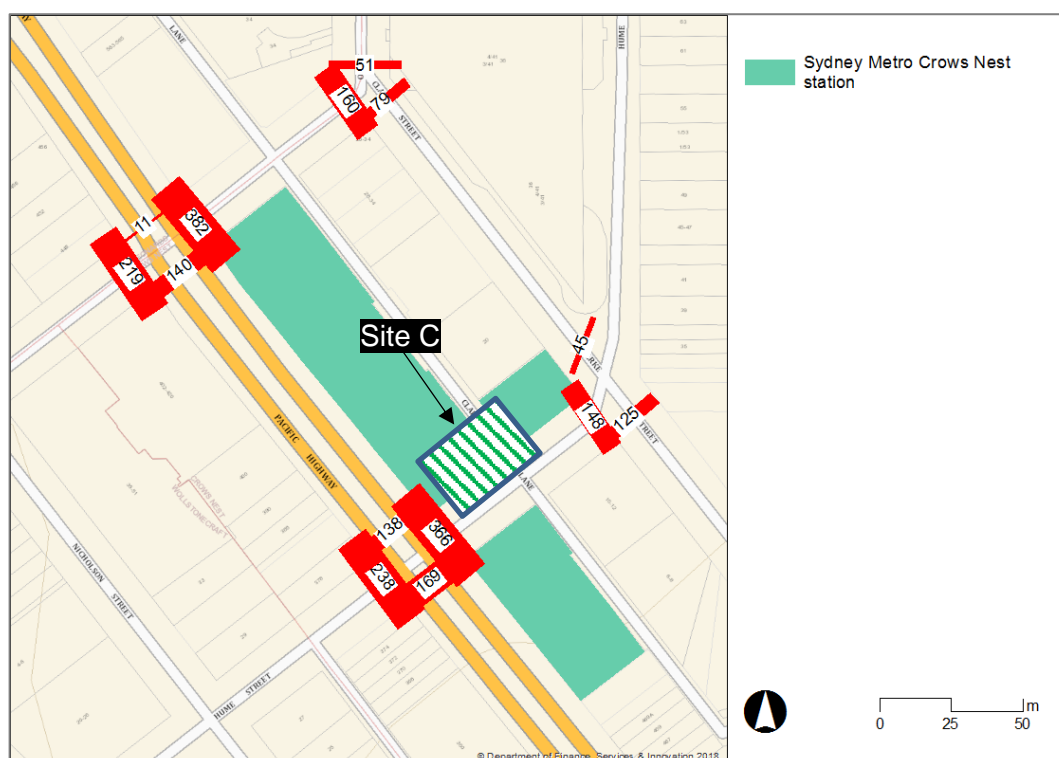


Figure 2-5: Existing pedestrian volumes at crossings between 7am and 10am (Site C shown hatched)

Near the site, the key pedestrian desire lines are to the Crows Nest retail centre, bus stops along the Pacific Highway and Willoughby Road and the St Leonards centre, connecting to the predominantly residential areas west of the Pacific Highway.

A walk score is a measure of pedestrian accessibility of a development to retail and entertainment centres, schools, restaurants, and public transport. A high walk score value corresponds to a high level of accessibility by non-car options.

Crows Nest is ranked by Walk Score² as the 18th most walkable neighbourhood in Sydney, with a walk score of 92 placing it in a band between 90 and 100 as “Walkers Paradise” where daily errands do not require a car.

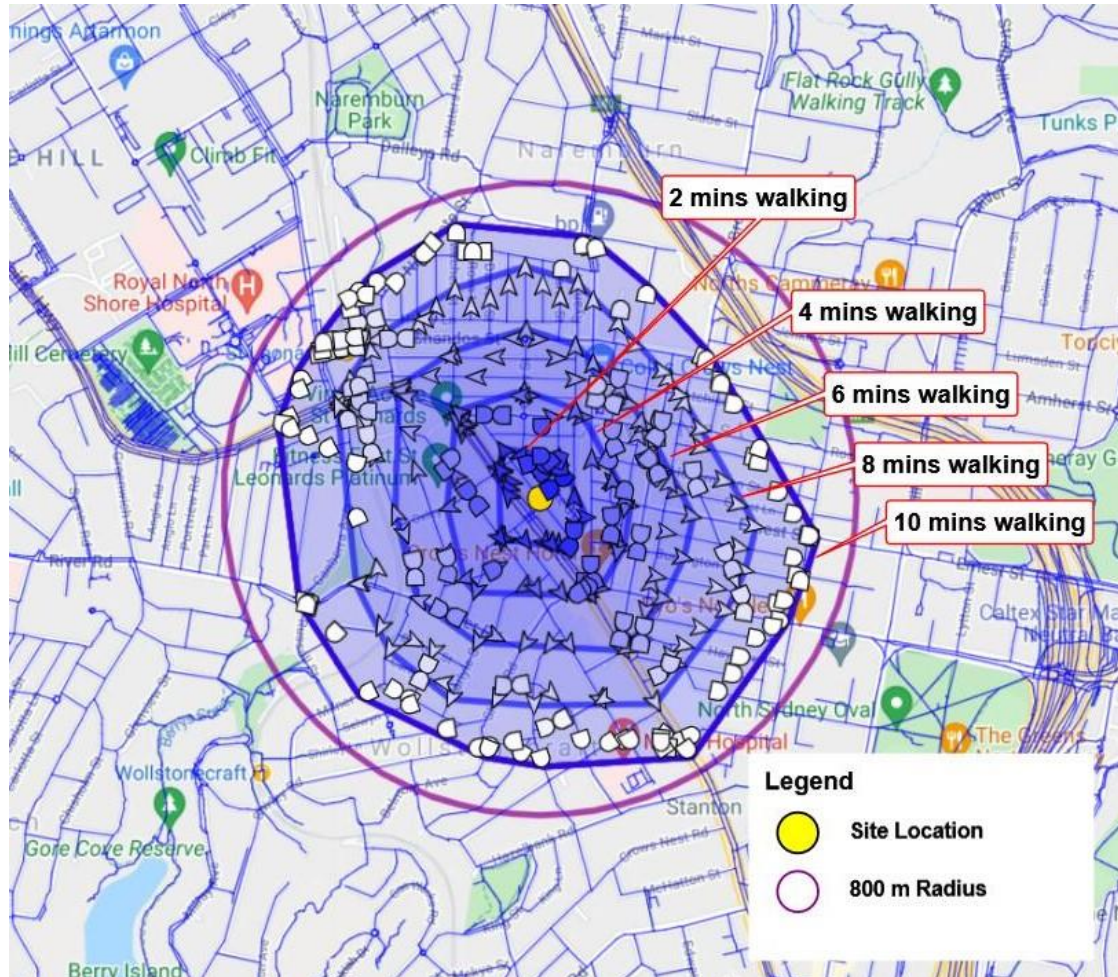


Figure 2-6: Walkable catchment from OSD Site C.

² www.walkscore.com

Figure 2-7 below shows the existing bicycle network, infrastructure, associated cycle route hierarchy, and level of difficulty.

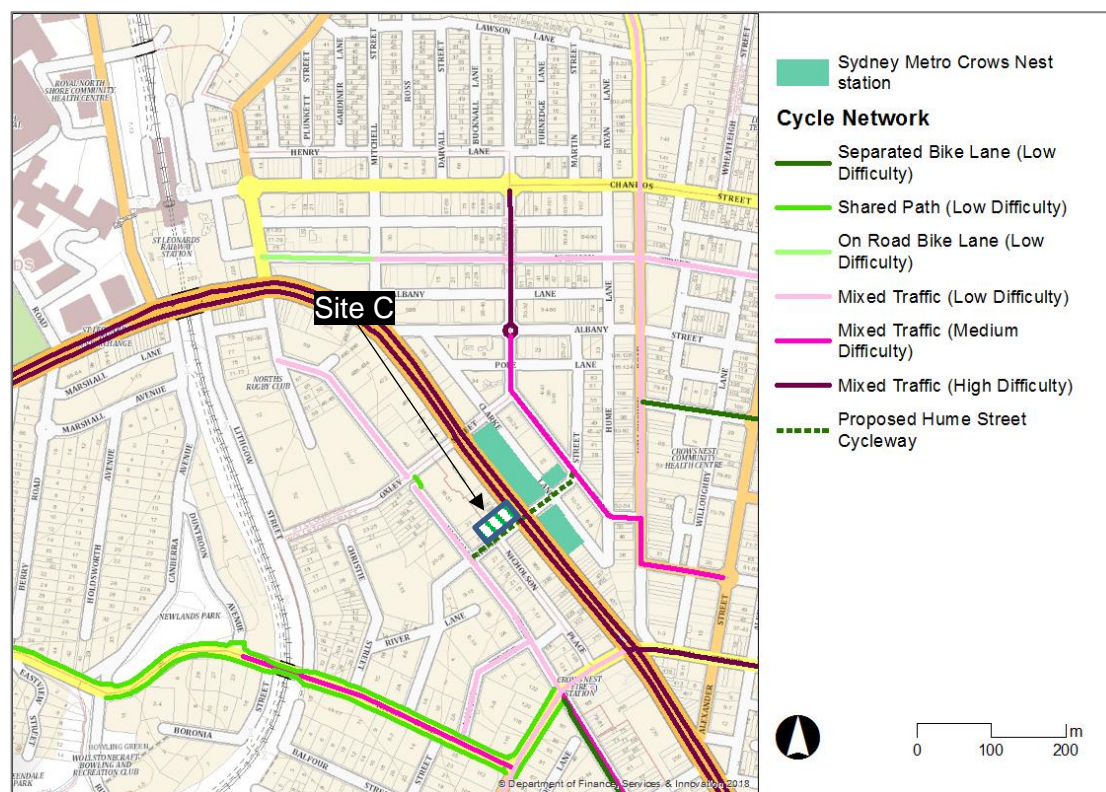


Figure 2-7 Crows Nest cycling network and infrastructure (OSD Site C shown hatched)

The site is situated within a central location in Crows Nest and is served by the North Sydney bicycle network. The OSD Site C is ideally located to take advantage of the existing and planned cycleway facilities in Crows Nest and North Sydney. The development would be located adjacent to designated on-road cycle routes along Clarke Street and planned changes to the road and cycle networks.

Bicycle parking facilities such as O-rings, rails and enclosed lockers are available near the site for cyclists.

2.6 Car share

Car share provides a convenient car rental option, particularly suitable to short periods, with vehicles available from on-street 'pods' or from within car parks for use by residents and local businesses. The North Sydney Council endorses car sharing services as a way to reduce vehicle ownership, which consequently reduces the demand for on-street parking spaces. Within the North Sydney Council area there are car share vehicles available on-street and in car parks, with around 3,500 resident members and 1,500 business members currently in the North Sydney local government area³

GoGet, the longest established operator in Sydney offers a variety of membership options with hourly charges between \$6 and \$10. Figure 11 shows the indicative car share vehicle pod locations in the area.

³ (https://www.northsydney.nsw.gov.au/Transport_Parking/Walking_Transport/Car_Pool_Car_Share).

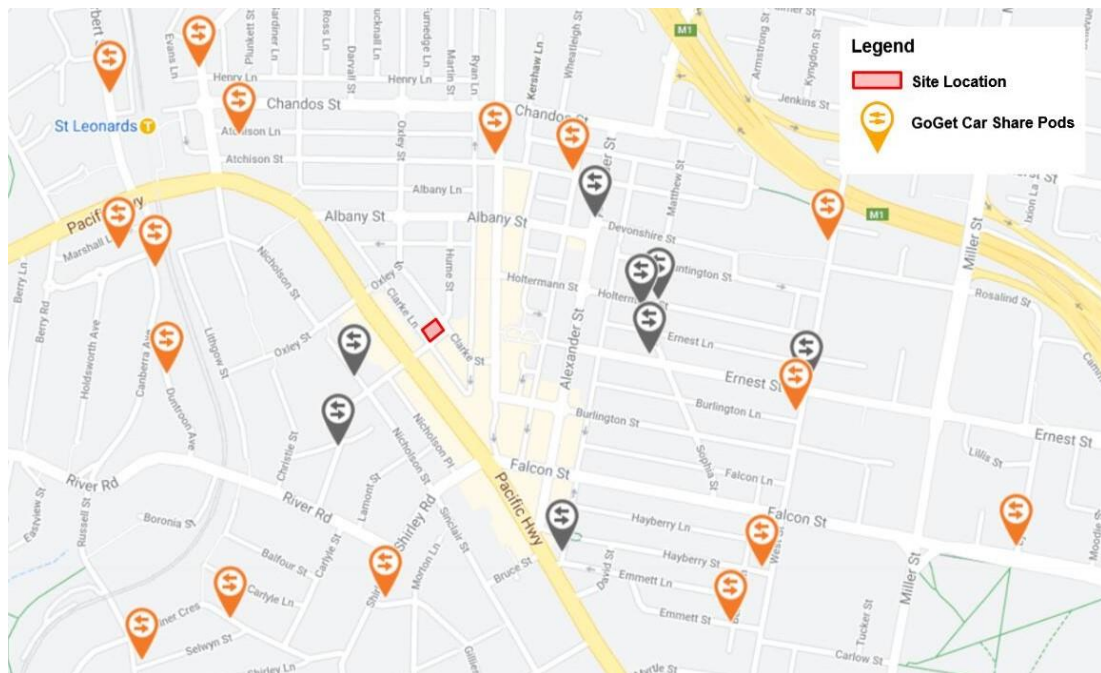


Figure 2-8: Car Share Pods in Crows Nest near the OSD Site C.

It can be seen from the map that there is convenient access to car share services within walking distance of the site.

2.7 North Sydney Council policy

The North Sydney Council promotes the use of sustainable transport modes through its policies, strategies, and initiatives. These include, but are not limited to:

- Encouraging walking for transport in North Sydney including Crows Nest by upgrading streetscapes and pedestrian amenities to improve walkability. North Sydney Council encourages the use of apps such as the Sydway Walker app, and has produced various recreational walking maps to engage the community
- Resident parking permits are issued by Council, with permit fees varying based on the environmental impact of the private vehicle being owned. This promotes sustainable private vehicle ownership, as lower fees are issued for smaller, low-fuel consumption vehicles
- Bicycle lockers and parking racks are provided at various key nodal points, to provide destination parking for bikes and to encourage the community to use bike travel for shorter trips of 5 kilometres or under
- The use of motorcycles has been promoted as a favourable alternative to single occupancy motor vehicles by Council (with preference to public and active transport modes). Council has actively increased motorbike parking spaces in the LGA by over 100 per cent since 2005, and is continuing to look for opportunities to expand the motorbike parking network
- Encouraging the use of car share programs as a sustainable, affordable, and convenient transport option, and installing new car share spaces
- Replacing Council's fleet of trucks with hybrid models, each saving over 30 per cent in total fuel consumption
- The Make Your Move program, an initiative to encourage active travel as part of school children's daily commute to encourage an active lifestyle, better environmental outcomes, and a reduction in school peak hour congestion.

3 Bicycle Parking Facility Provision

End of trip facilities and bicycle parking will be provided for employees and visitors of the new OSD Site C development in accordance with Sydney Metro requirements. Under the North Sydney Development Control Plan (NSDCP) and Green Star, 25 bicycle spaces are required for Site C consisting of a mix of occupants and visitors. The site will have 21 occupant bike parking spaces and 7 visitor bike parking spaces.

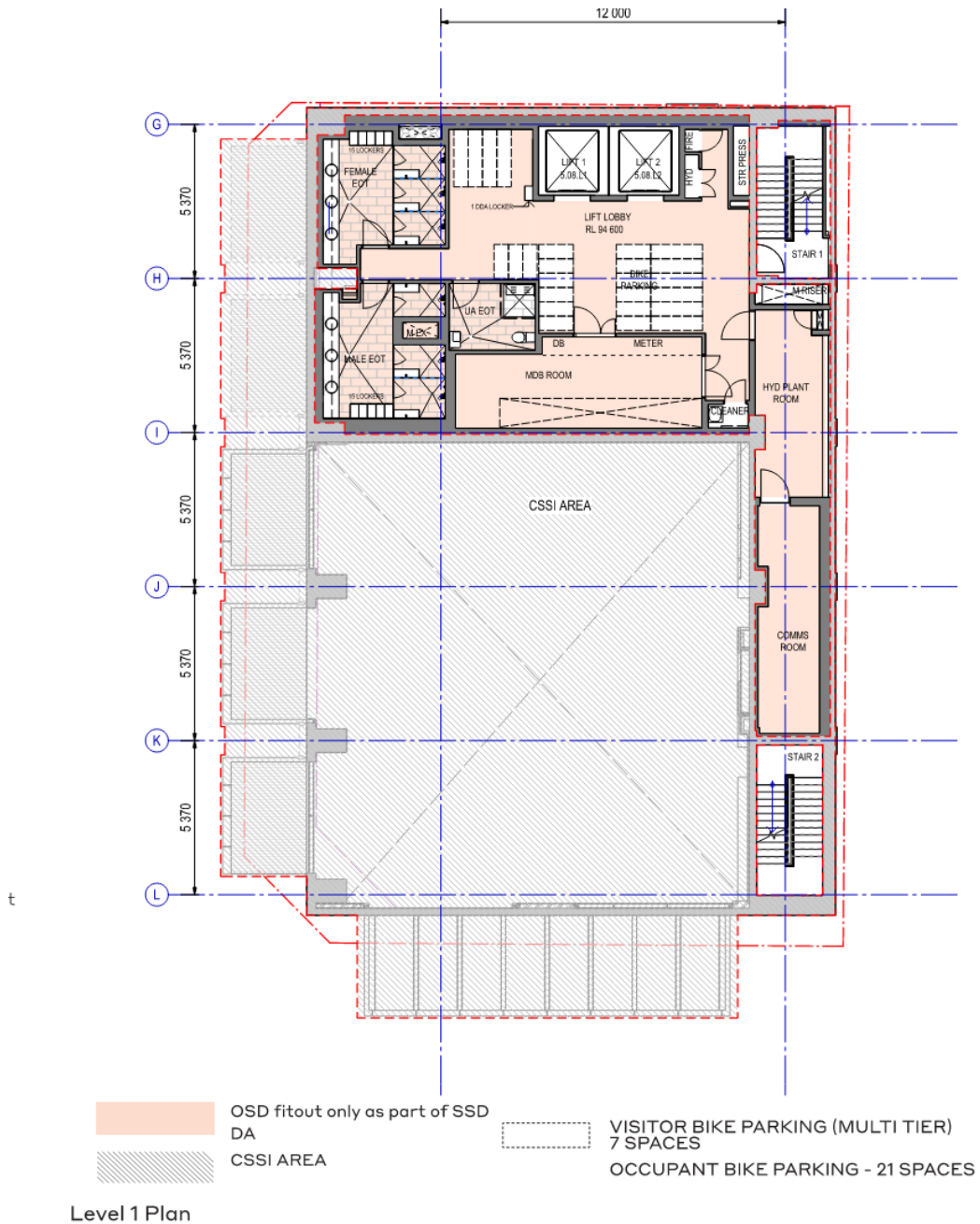


Figure 3-1 Overview of bicycle park arrangements for the Site C OSD

4 Green Travel Plan Measures

This section outlines potential opportunities and measures that can be taken to meet the objectives and targets of the GTP. The GTP will support the proposed estimated mode share detailed in the Traffic and Transport Impact Assessment. The proposed mode share for the site is based on the BTS Travel Zones above, and proposed adjustments are summarised as follows.

Table 4-1 Proposed future mode share for the OSD Site C

Mode	Current TZ	Adjustment proposed	Proposed mode share for OSD Site C
Train and Metro	48%	Adopt 55% to reflect introduction of 12% by Metro	60%
Bus	9%	Maintain good bus service, but some transfer to Metro	9%
Ferry/Tram	0%	Maintain	0%
Car Driver	25%	Zero car parking on OSD Site C, and minimal in surrounds. Forecast 6 cars per hour	4%
Car Passenger	Included with car driver	Maintain	Included with car driver
Walk only	15%	Maintain as stretch target	15%
Mode not stated	1%	Maintain	1%
Other modes (including cycling)	2%	28 bike spaces by 75 % in peak hour of say 200 staff	11%
Total	100%		100%

4.1 General

General marketing and promotion of the availability and benefits of adopting sustainable travel options is highly important in meeting the objectives of this GTP.

Potential measures	Timeframe
Introduce a travel coordinator role as part of the building's management activities to execute the recommendations of this plan during the operation of the OSD	During operation
The provision of easily accessible travel information about available sustainable transport options and facilities, as well as useful mobile applications and travel information websites. This could potentially be incorporated into the building's management activities. A dedicated website could also be	During occupation

Potential measures	Timeframe
considered to provide a portal for travel information specific for the site	
As part of building management activities, recommendations can be made to tenants of the OSD that staff inductions provide information about sustainable travel options, and potentially a tour of the available bicycle parking and end-of-trip facilities	During Operation
Monitor the mode share, use and demand of facilities to inform future updates of the GTP	During operation

4.2 Walking

Crows Nest is considered a highly walkable neighbourhood due to the accessibility of public transport and locations required for daily errands. To ensure that tenants can benefit from the walkability of the area, the following measures should be implemented.

Potential measures	Timeframe
Inform potential tenants through marketing and leasing activities of the high walkability of the site to public transport hubs and entertainment centres	Prior to and during occupation
As part of building management activities, promote participation in events such as “National Walk to Work Day”	During occupation
As part of building management activities, promote walking for short trips in lieu of using a private vehicle	During Operation

4.3 Cycling

The proposed OSD Site C above Crows Nest Station is well situated to capitalise on the connections provided by the local Crows Nest and broader North Sydney bicycle networks. In order to support the promotion of cycling as a mode of access to the development, the following measures should be implemented.

Potential measures	Timeframe
As part of building management activities, inform tenants of safe and accessible cycling routes as well as end-of-trip facilities provided by the building	Prior to and during occupation
As part of building management activities, ensure tenants are informed about the about bicycle parking access location.	Prior to and during occupation
Provide effective internal wayfinding signage to direct tenants and visitors to bike lifts, bicycle parking and end-of-trip facilities	Prior to occupation
As part of building management activities, inform tenants of the presence of cycling clubs and bicycle user groups (BUGs) that may be lobbying for the improvement of cycle facilities in the surrounding area	Prior to and during occupation

Potential measures	Timeframe
Set up a 'Bike Buddies' scheme for less confident staff interested in cycling to work	During operation
Ensure the provided bicycle parking and end-of-trip facilities within the building are secure and maintained	During operation
Ongoing maintenance of end-of-trip facilities and security monitoring Systems	During operation
Supply a communal bicycle repair toolkit for tenants	During operation
Promote bicycle share scheme and bicycle pooling schemes for Tenants	During operation
Promote participation in events such as "Ride to Work Day" and "National Bike Week"	During operation
Partner with a local bicycle store to provide bicycle maintenance classes and discounted process	During operation
Encourage electric bike charging stations near some of the bike parking	Prior to occupation

4.4 Public transport

The Sydney Metro and the North Shore railway at Crows Nest and St Leonards stations, respectively, will provide a very high level of accessibility to the area by rail, and the bus stops on the Pacific Highway and Willoughby Road near the OSD will provide good opportunities for other modes of access. The station and supporting intermodal facilities will create a highly accessible public transport precinct.

Combined with the existing public transport network surrounding the site, it is expected that the mode share to public transport for the site will increase on existing splits. The proposed OSD is considered to offer high levels of public transport connectivity, especially due to its proximity to the Crows Nest Metro Station, which would increase coverage and accessibility to the site by public transport due to new Sydney Metro links (Northwest and City and South West lines). Due to the introduction of new tenants, there exists an opportunity to achieve a greater public transport mode share for work trips through early marketing activities.

Potential measures	Timeframe
Inform tenants of the public transport stops in the surrounding area, as well as the expected walk times needed to access the locations. This could be potentially achieved through the provision of a map, and useful applications and travel information websites	Prior to and during operation
Investigate the possibility of providing shared office Opal Cards for use during business journeys instead of private vehicle travel	During occupation

4.5 Carpooling and car share

Carpooling or car share is considered to be a sustainable alternative to the single rider private vehicle. The following measures can be taken to promote the use of car share services to tenants of the building and reduce car ownership.

Potential measures	Timeframe
Promote the cost savings of car share over commuting via private vehicle to residents of the precinct through the tenant website.	During operation
Investigate partnership with GoGet or another provider to offer tenants and workers discounted membership options	During operation
Explore the possibility of allocating unleased car spaces within the wider ODS Site A and OSD Site B off-street parking areas for car-sharing.	During operation

4.6 Car parking

No on-site parking spaces have been proposed by the Sydney Metro Crows Nest Station OSD Site C concept design, therefore traffic generation will be mainly related to servicing and delivery trips. It is estimated that very few staff will commute by car, resulting in a reduced number of car trips during peak times compared to the existing (pre-demolition) situation.

Potential measures	Timeframe
Encourage electric car charging stations around the site	Prior to occupation
Provide clear signage and wayfinding to electric car charging stations	Prior to occupation

4.7 Reducing network travel demand

High travel demand during the morning and afternoon work commuter peak hours produces significant congestion on road and rail and bus networks. The following measures would help alleviate the network travel demand across a longer time period and in turn alleviate congestion on the network.

Potential measures	Timeframe
As part of building management activities, encouraging the use of office teleconferencing facilities as an alternative to face-to-face meetings to tenants of the building	During operation
Encouraging flexible working hours to tenants of the building, to arrive and leave work outside of peak hours or to work from home where feasible	During operation

5 Monitoring and Review

For this GTP to be effective, it should be reviewed on a regular basis to ensure that the objectives are being met. Travel surveys should be conducted, and the GTP should be updated annually to more effectively achieve its goals.

5.1 Responsibility

To ensure the long-term success of implementing the recommendations outlined within this GTP, it is necessary to nominate a group to engage in continual monitoring and review of the various aspects of the plan. This can be achieved through the building management team, who could monitor travel patterns through ongoing travel surveys to assess the effectiveness of the GTP and carry out the initiatives outlined in this plan.

Senior management support from commercial tenants would be highly beneficial in achieving the objectives of this GTP, through providing support to changes and developments to policy documentation, allowing budget allocations for the implementation of measures and leading by example.

5.2 Travel surveys

The purpose of a travel survey is to understand the reasons for which commuters to and from the site select their preferred travel modes. In turn, this allows for more effective incentives and initiatives to be developed in increasing the mode share of sustainable travel options.

An example of a travel survey has been provided below.

Q1. What is your postcode? _____

Q2. How did you travel here today?

- ☐ Walk only
- ☐ Bicycle
- ☐ Bus
- ☐ Train
- ☐ Ferry
- ☐ Combination of public transport
- ☐ Car driver
- ☐ Car passenger
- ☐ Other (please explain) _____

Q3. If you did not arrive via public transport, why not?

6 Conclusion

The Sydney Metro Crows Nest Site C Over Station Development is centrally located in a commercial area within the Crows Nest area, with high quality end of trip facilities and convenient access to a wide range of public transport modes.

To ensure that the new commuter trips generated by the OSD contribute towards reaching the green travel targets outlined in this Green Travel Plan (GTP), it is necessary to undertake green travel initiatives such as providing information and promoting the benefits of sustainable travel options to new tenants. This GTP will contribute towards improved social and personal health of the commuters to the development site, as well as improved environmental outcomes.

Appendix B: Draft Construction Traffic and Pedestrian Management Plan

30012631

30 April 2021

Sydney Metro
Level 43, 680 George Street,
Sydney NSW 2000
Att: Mr Dayle Bennett

Dear Sir,

RE: Crows Nest Metro Station SEARs Construction Traffic Management Plan (CMTP) – OSD Site C

The Department of Planning, Industry and Environment Secretary's Environmental Assessment Requirements (SEARs) for this project (application Number SSD-13852803 dated 24/2/21) has "Key issues to be addressed" including the following relevant to construction:

#4 Integration with Sydney Metro Station Infrastructure

- *Show how the SSD will integrate with the CSSI infrastructure such as structural design, detailed architectural approach, access, wayfinding, public domain works and construction management.*

11. Transport, traffic, parking, and access (operation and construction)

- *A draft Construction Traffic Management Plan providing details of predicted construction traffic movements, routes and access arrangements, and outline how construction traffic impacts on existing traffic, public transport, pedestrian and cycle networks would be appropriately managed and mitigated and how cumulative construction traffic impacts with the Sydney Metro project and other surrounding development would be managed and mitigated.*

It is intended that the construction of the Crows Nest over station development (OSD) for Site C will be integrated with the station infrastructure construction management, which is founded on the basic requirements to construct the station box and station and surrounding infrastructure at the same time in this location. AW Edwards has been awarded the construction contract for the Crows Nest integrated station development (ISD), which includes the OSD Site C.

To comply with the CSSI-7400 Conditions of Approval, AW Edwards have prepared a Construction Environment Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) for Crows Nest Station to satisfy the CSSI Conditions of Approval. These construction management documents have been prepared in consultation with Department of Planning Industry and Environment and Transport for NSW, and have been approved.

The Site C OSD works are inclusive of the Site C OSD, as this is part of the station contract. This cover letter provides extracts from the construction documentation that address the SEARs requirement and are relevant to the Site C OSD.

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Yours sincerely,



Colin Henson

Principal Transport Planner,

SMEC

Appendix A – CTMP for Site C OSD

The following information has been provided to address the SEARs requirement No. 11. It is noted that the final CTMP for Site C OSD has already been prepared and approved in accordance with the CSSI-7400 Conditions of Approval. Any amendments will need to be approved as part of the approved Traffic Management Plan (TMP) for the Crows Nest Station site. This CTMP framework extracts the relevant information relating to the Site C OSD from the CEMP and CTMP prepared by AW Edwards, and detail the specific road safety and traffic management measures that will be applied whilst undertaking construction works for Site C OSD.

The key legislation and regulations of relevance are described below:

- *Roads Act 1993* – Section 138 of the *Roads Act 1993* requires that a person obtain the consent of the appropriate roads authority for the erection of a structure, or the carrying out of a work in, on or over a public road, or the digging up or disturbance of the surface of a public road. If the applicant is a public authority, the roads authority must consult with the applicant before deciding whether or not to grant consent or concurrence.

1.1 Program and construction hours of operation

As discussed, the Site C OSD establishment works will be constructed concurrently with the Integrated station development.

Most construction works would be undertaken between the following standard construction hours:

- 7.00 am to 6.00 pm Monday to Friday
- 8.00 am to 1.00 pm Saturday
- No works on a Sunday or public holiday.

Outside of standard construction hours deliveries associated with works will comply with the approved Construction Traffic Management Plan, the Logistics Lane Traffic Management Plan and the Concrete Delivery Operations Traffic Management Plan.

1.2 Managing existing public transport

Potential impacts to bus routes and bus stops during construction will be managed in accordance with the approved TMP.

Pedestrian access for bus stops, including any existing disabled facilities, will be maintained during any temporary works noting that there are no bus stops directly adjacent to the Site C OSD. School bus services (dedicated to servicing schools, not services that school children happen to use) will operate as normal.

1.3 Managing pedestrians and bicycles

While the Site C OSD does not pertain to any public domain or on-ground works, footpaths surrounding the site (e.g. Pacific Hwy between Oxley St and Hume St) will be closed as part of the Site C OSD site works. Periodic closures if required will be detailed in ROL applications. In the rare case a temporary footpath is required they will be considered under the approved TMP. There are currently no planned activities associated with the Works that specifically and adversely impact cyclists.

1.4 Managing construction traffic

As per the approved TMP, all vehicle movements shall be planned to minimise the impact on the road network, they will:

- Develop a route that maximises the use of the arterial roads, and only utilises permitted roads in accordance with any relevant guidelines and specifications
- Select a route that has minimal impact, and/or, where potential impacts can be effectively managed
- As required, consult with local councils, road authorities, Traffic and Transport Liaison Group (TTLG) and relevant stakeholders
- Select delivery vehicles that can safely negotiate the route
- Where possible, avoid movements during peak periods
- Develop a detailed access plans and toolbox all drivers on said plans
- Ensure the deliver fleet are regularly maintained by the relevant sub-contractor (detailed in Section 4.1 and 4.2)
- Disciplinary action taken on non-compliant workers.

The types of vehicles used will include: 4WD utilities; single unit trucks; semi-trailers; cranes of varying size; and over dimension floats. Estimated average daily truck movements (in and out) will be developed in consultation with the construction contractor prior to the commencement of works for Site C OSD.

Parking may be temporally lost during the works as per the below figure.

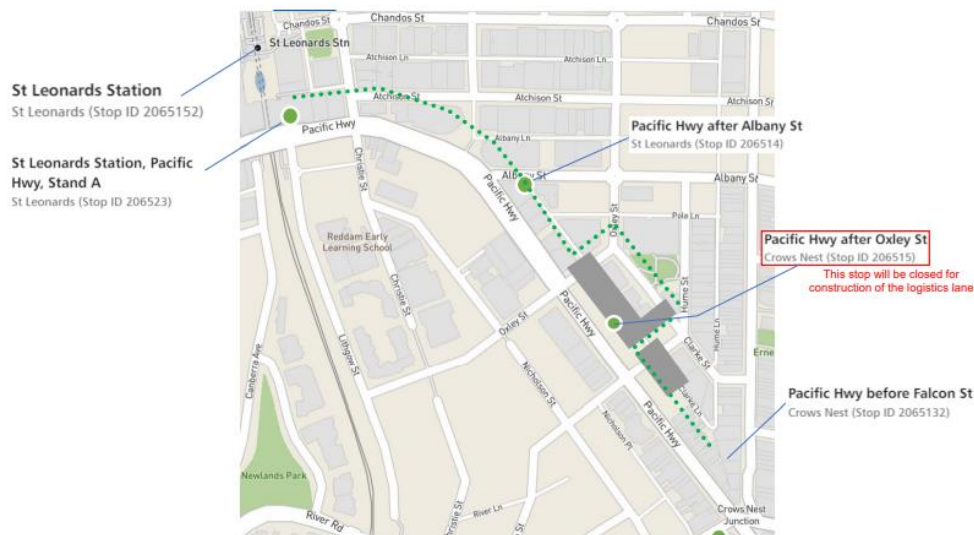


Figure 1 Temporary bus stops and route implemented as part of the station and Site C OSD works

Delivery truck routes, to and from the construction site, were developed in line with the approved TMP and the Metro Project EIS with the view to minimising impacts to local streets while maximising use of state and regional roads. All deliveries will be pre-booked and managed through a web and app-based software tool that allows truck drivers to book a timeslot for loading/ delivery areas and receive real-time notifications. The software also allows the contractor to track actual vehicle arrival and departure times. Other software add-ons that may also be utilised include Driver Induction, Chain of Responsibility, Driver ETA Tracking, Exclusion Zones and Work Permits Scheduling and Plant Inspection Checklist.



Figure 2 Construction haulage routes proposed for the Site C OSD construction works

3 Obtain Road Occupancy Licences (ROLs)

An ROL is a licence granted to occupy a portion of the road network, e.g. one lane of two for a set time over a set number of days. An ROL shall be obtained by the contractor from TMC prior to conducting any short term works on roads

The three specific areas of approval will include:

- Development works within the road reserve and/or any changes to existing infrastructure (occurring as part of the CSSI Approval)
- Temporary or permanent installation and/or change of any regulatory traffic control device on a road
- Road closures, occupation of the road network to conduct works, and the associated installation of temporary traffic control devices.

The road authorities responsible for roads affected by the Project include local councils, Sydney Coordination Office and Transport for NSW. The contractor shall liaise with these authorities and stakeholders (if required) during construction.

4 Consultation with the community and stakeholders

The Project will engage and inform community and stakeholders in a constructive and transparent process. Details of this commitment to community consultation are described in the *Community Communications Strategy and Business Management Plan* (SMCSWSCN-AWE-SCN-AN-PLN-0000010).

5 Conclusion

This letter has been prepared to confirm the construction traffic, pedestrian and cyclist management measures being facilitated in the construction of the new Crows Nest Site C OSD, which will occur concurrently with the station.