
Appendix T

Transport and Access Report

Sydney Olympic Over and Adjacent Station Development Transport and Access Report

Appendix T

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Glossary

Term	Definition
ABS	Australian Bureau of Statistics
ASD	Adjacent Station Development
CBD	Central business district
Concept and Stage 1 CSSI Application	Application SSI-10038, including all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West line
Concept SSDA	A concept development application as defined in section 4.22 the EP&A Act, as a development application that sets out concept proposals 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.
Council	City of Parramatta
CSSI	Critical State Significant Infrastructure
CTMF	Construction Traffic Management Framework
DCP	Development Control Plan
DPE	Department of Planning and Environment
EIS	Environmental impact statement
EOTF	End of Trip Facilities
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
GFA	Gross floor area
LGA	Local Government Area
LOS	Level of service
MRV	Medium rigid vehicles
OSD	Over Station Development
PTPM	Public Transport Projects Model
SEARs	Secretary's Environmental Assessment Requirements
SOPA	Sydney Olympic Park Authority
SRV	Small rigid vehicles
SSD	State Significant Development
SSDA	State Significant Development Application
SSI	State Significant Infrastructure
Stage 2 CSSI Application	Application SSI-19238057, including major civil construction works between The Bays and Hunter Street Station
Stage 3 CSSI Application	Application SSI-22765520, including rail infrastructure, stations, precincts and operation of the Sydney Metro West line
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in section 1.1
TfNSW	Transport for New South Wales
The site	The site which is the subject of the Concept SSDA

Executive summary

This Transport and Access Report supports a Concept State Significant Development Application (Concept SSDA) submitted to the Department of Planning and Environment (DPE) pursuant to part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Concept SSDA is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking to secure concept approval for an over station development (OSD) and adjacent station development (ASD) on an area defined as Site 47 within the Central Precinct of Sydney Olympic Park (referred collectively as the 'proposed development'). The proposed development will comprise of one new commercial and retail building (Building 1) above the Sydney Olympic Park metro station and two residential accommodation buildings (Buildings 2 and 3) with retail and commercial space, adjacent to the Sydney Olympic Park metro station.

The Concept SSDA seeks consent for a building envelope and mixed-use purposes, maximum building height, a maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking and the strategies and design parameters for the future detailed design of development.

This Transport and Access Report responds specifically to the Secretary's Environmental Assessment Requirements (SEARs). It provides a summary of the proposed development against applicable transport strategy and policy, highlighting the potential transport related impacts associated with the construction and end state proposed development. This in turn aims to ensure that future staff, residents and visitors have equitable access, and that impacts on the local transport network are understood and not anticipated to be significant.

The results indicate that future traffic conditions satisfy the relevant assessment criteria. Impacts to intersection performance are anticipated to be negligible, indicating that the future local road network will operate within acceptable level of service thresholds. Proposed car parking provisions satisfy Sydney Olympic Park Master Plan standards, with bicycle parking and end of trip facilities exceeding minimum requirements. However, there are some aspects that will require further consideration to fulfil their intended use. One area of particular concern is the loading dock of Building 1, which does not currently meet the proposed development and Sydney Metro use requirements as stipulated by Transport for New South Wales (TfNSW) Freight Toolkit.

Design refinements will therefore be required to accommodate additional service vehicle parking spaces in the loading dock in order to achieve the minimum service level requirement. Alternatively, other solutions should be explored should additional service vehicle parking spaces not be able to be accommodated within Building 1.

1 Introduction

1.1 Sydney Metro West

Sydney Metro West will double rail capacity between Greater Parramatta and the Sydney Central Business District (CBD), transforming Sydney for generations to come. The once in a century infrastructure investment will have a target travel time of about 20 minutes between Parramatta and the Sydney CBD, link new communities to rail services and support employment growth and housing supply.

Stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD).

Sydney Metro West station locations are shown in Figure 1-1.

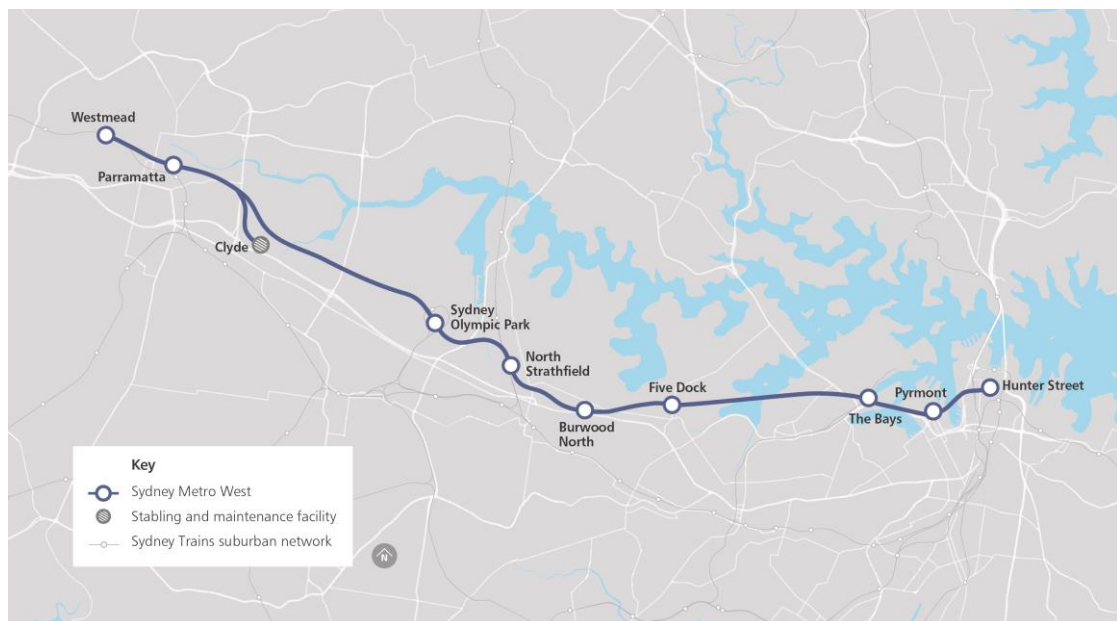


Figure 1-1 Sydney Metro West

1.2 Background and planning context

Sydney Metro is seeking to deliver Sydney Olympic Park metro station under a two part planning approval process. The station fit-out infrastructure is to be delivered under a Critical State Significant Infrastructure (CSSI) application subject to provisions under division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), while the over and adjacent station developments are to be delivered under a State Significant Development (SSD) subject to the provisions of part 4 of the EP&A Act.

1.2.1 Critical State Significant Infrastructure

The State Significant Infrastructure (SSI) planning approval process for the Sydney Metro West metro line, including delivery of station infrastructure, has been broken down into a number of planning application stages, comprising the following:

- Concept and Stage 1 CSSI Approval (SSI-10038) – All major civil construction works between Westmead and The Bays including station excavation, tunnelling and demolition of existing buildings (approved 11 March 2021).

- Stage 2 CSSI Application (SSI-19238057) – All major civil construction works between The Bays and Hunter Street Station (under assessment).
- Stage 3 CSSI Application (SSI-22765520) – Tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and Hunter Street Station, and operation and maintenance of the Sydney Metro West line (under assessment).

1.2.2 State Significant Development Application

The SSD will be undertaken as a staged development with the subject Concept State Significant Development Application (Concept SSDA) being consistent with the meaning under section 4.22 of the EP&A Act and seeking conceptual approval for a building envelope, land uses, maximum building heights, a maximum gross floor area, pedestrian and vehicle access, vertical circulation arrangements and associated car parking. A subsequent Detailed SSD is to be prepared by a future development partner which will seek consent for detailed design and construction of the development.

1.3 Purpose of the report

This Transport and Access Report supports a Concept SSDA submitted to the Department of Planning and Environment (DPE) pursuant to part 4 of the EP&A Act. The Concept SSDA is made under section 4.22 of the EP&A Act.

This report has been prepared to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the Concept SSDA on 18 February 2022 which states that the environmental impact statement (EIS) is to address the following requirements:

SEARs requirement	Where addressed in report
9. Traffic, Transport and Accessibility	
Provide a transport and accessibility impact assessment, which includes:	
<ul style="list-style-type: none"> • an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections. 	Section 4 - Existing conditions
<ul style="list-style-type: none"> • details of the proposed development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading. 	Section 5 - Land use, access and parking arrangements
<ul style="list-style-type: none"> • analysis of the impacts of the proposed development (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict) and any cumulative impact from surrounding approved developments. 	Section 6 - Transport impact assessment

SEARs requirement	Where addressed in report
<ul style="list-style-type: none"> measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms of delivery (including proposed arrangements with local councils or government agencies) of any infrastructure improvements in accordance with relevant standards. 	Section 6 - Transport impact assessment
<ul style="list-style-type: none"> proposals to promote sustainable travel choices for employees, residents, guests and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high-quality end-of-trip facilities, and implementing a Green Travel Plan. 	Section 5 - Land use, access and parking arrangements
<p>Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.</p>	Section 7 - Construction impact assessment

This Transport and Access Report provides an assessment of the potential transport impacts of the proposed development during both construction and operation. It will assess pedestrian and vehicular access, circulation arrangements and associated car parking to determine the impact from increased volumes of pedestrian and vehicle related activity to and from the future development. This is determined by using relevant strategies and design parameters to determine if impacts are negligible, and if not, how they can be mitigated.

2 The site and proposal

2.1 Site location and description

The site is located within Sydney Olympic Park and is situated within the City of Parramatta Local Government Area. The site is in the Central Precinct of Sydney Olympic Park and defined as Site 47 in the Proposed SOP Master Plan (Interim Metro Review). The broader metro site is bound by Herb Elliot Avenue to the north, Olympic Boulevard to the west and Figtree Drive to the south as shown in Figure 2-1.

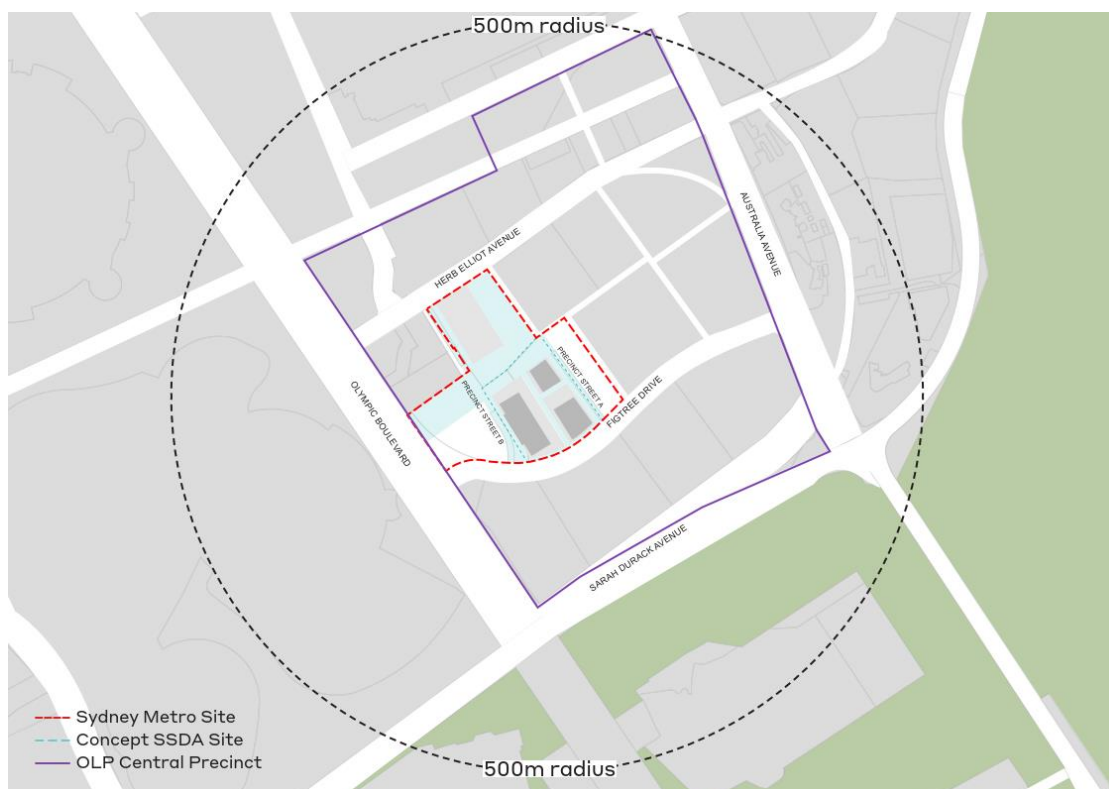


Figure 2-1 Sydney Olympic Park metro station location precinct

As described in Table 2-1, the site comprises part of Lot 59 in DP 786296 and Lot 58 in DP 786296, and comprises approximately 11,407m² of land.

Table 2-1 Site legal description

Street address	Legal description
5 Figtree Drive, Sydney Olympic Park	Lot 58 in DP 786296
7 Figtree Drive, Sydney Olympic Park	Lot 59 in DP 786296

2.2 Overview of this proposal

The Concept SSDA will seek consent for three building envelopes and the delivery of Precinct Street A as detailed in Table 1-2 and Figure 1-3.

Table 2-2 Sydney Olympic Park proposed development overview

Item	Description
Land use	Building 1: Commercial and retail Building 2: Commercial, retail and residential Building 3: Commercial, retail and residential
Building height (RL) / Number of storeys	Building 1: 120.20 / 21 storeys Building 2: 116.90 / 27 storeys Building 3: 171.50 / 45 storeys
Gross floor area (m ²)	Building 1: 28,517 Building 2: 12,089 Building 3: 27,384 TOTAL: 68,000
Car parking spaces	358

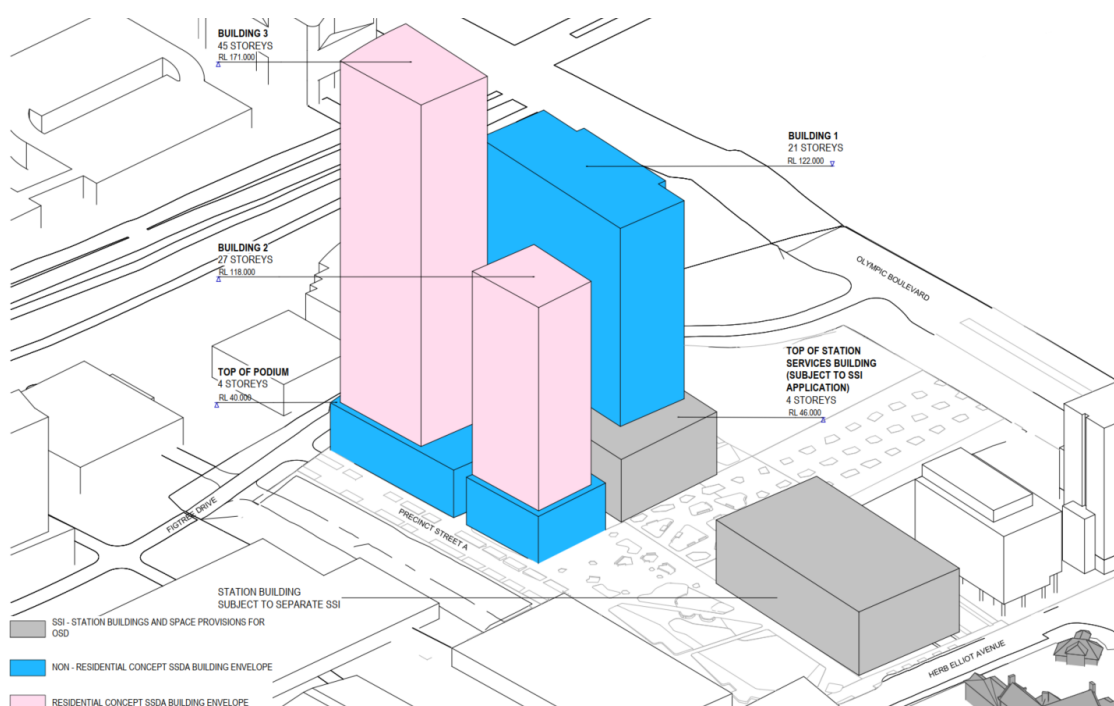


Figure 2-2 Proposed Concept SSDA development and CSSI scope

3 Methodology

3.1 Overview

This technical paper provides an assessment of the potential transport impacts of the Concept SSDA during both end state and construction and addresses the relevant assessment requirements of the SEARs (see section 1.3).

The scope of this technical paper includes the following:

- identification of the existing transport conditions in the study area
- assessment of the potential transport impacts resulting from the Concept SSDA
- assessment of potential transport impacts during construction of the Concept SSDA
- identification of recommendations and potential mitigation measures to avoid, minimise and manage impacts associated with the Concept SSDA.

The following sections detail the methodology and assumptions used for the assessment.

3.2 Existing conditions

This chapter describes the existing conditions at the Concept SSDA site. It includes the existing land use context and parking arrangements as well as the current transport environment, including provision of active transport, public transport (suburban rail, light rail, bus and ferry) and the current performance of the road network. It also looks at the existing travel patterns for residents and workers in the vicinity of the site using Australian Bureau of Statistics census data.

Performance of the existing road network has been assessed through analysis of existing traffic volumes and patterns on the road network surrounding the Concept SSDA in the Technical Paper 1 – Operational Transport of the Sydney Metro West Environmental Impact Statement - Rail infrastructure stations, precincts and operations (Sydney Metro, 2022) were adopted. Those counts were undertaken in March 2021.

To assess Covid-19 impacts, a comparison of data from Transport for NSW (TfNSW) permanent traffic counter sites were undertaken. The monthly average difference in 8-9 AM and 5-6 PM peak hour flows between 2019 (pre Covid-19) and 2021 was calculated and is presented in Table 3-1 and Table 3-2. In the AM peak there was an average reduction of 3% in peak hour flows between 2019 and 2021, whereas in the PM peak there was an average reduction of 2.6% in peak hour flows.

Assessment of existing intersection performance in the vicinity of the Concept SSDA site has been undertaken using SIDRA Intersection 9 software. Base year traffic models were developed to replicate existing traffic conditions for a morning and evening peak hour. No weekend (Saturday) SIDRA analysis has been undertaken as part of the assessment as the weekday traffic represent the worst-case scenario. Traffic modelling using SIDRA has not been undertaken for the construction assessment at this stage, however construction traffic modelling will be undertaken for the detailed SSDA.

Table 3-1 Monthly average difference in 8-9 AM peak hour flows between 2019 and 2021

Month	Hawkesbury Road	Centenary Drive	Western Distributor	Cahill Expressway	Average
March	-10%	-3%	7%	-7%	-3%

Table 3-2 Monthly average difference in 5-6 PM peak hour flows between 2019 and 2021

Month	Hawkesbury Road	Centenary Drive	Western Distributor	Cahill Expressway	Average
March	-0.5%	-2%	-4.4%	-3.5%	-2.6%

To account for Covid-19 impacts and the reduction in traffic levels on the road network due to the pandemic, observed traffic volumes were increased by an amount equivalent to the average monthly reductions identified in Table 3-1 and Table 3-2. The adjusted flows were used for purposes of the existing baseline assessment.

3.3 Review of provision of parking and access

The proposed provision of car, motorcycle and bicycle parking for the Concept SSDA has been detailed and referenced against the requirements of the Sydney Olympic Park (SOP) Master Plan 2030 (Interim Metro Review) and Parramatta Development Control Plan (DCP) 2011 where guidance from the SOP Master Plan 2030 (Interim Metro Review) is absent.

The proposed development is aiming to achieve a Green Star rating from the Green Building Council Australia. The Green Star Buildings Movement and Place Credit assessment tool has been used to calculate the quantities of bicycle parking and end of trip facilities and applied where it is more onerous than the DCP.

Consultation with the TfNSW Freight Division and application of their Last Mile Toolkit forecasting tool has been undertaken to estimate the loading requirements for the Concept SSDA.

This tool is a bespoke application developed to provide guidance on the urban freight demands of developments and calculates the efficacy of proposed docking bays. In the context of urban freight, efficacy is a measurement of the effectiveness of the docking arrangement and its ability to meet demand. The tool is a guide based on recent research into demands generated by buildings in Metropolitan Sydney.

The tool uses land use as an input and aims to achieve a service level performance of approximately 95%.

Access arrangements to the proposed development for pedestrians, cyclists and vehicles is also presented.

3.4 Review of potential transport impacts of the proposal

Integration of the Concept SSDA with the precinct is discussed in this chapter, including consideration of safe and efficient integration of the pedestrian network, cycle network, public transport network and surrounding road network. Impacts on access to adjacent properties to the Concept SSDA have also been assessed.

The future mode share for the trips generated by the Concept SSDA has been estimated based on existing travel patterns in the area and with consideration of the

availability of additional modes (e.g. Metro) and the expectation that private vehicle use will decrease, or at a minimum be constrained by the amount of parking. A comparison of the predicted mode share across similar precincts was also carried out, including Chatswood, North Ryde, Epping, Macquarie Park, and Waterloo Over Station Development.

The additional demand on the pedestrian network has been estimated with consideration of forecast mode share.

The number of vehicle trips in the AM and PM peak have been based on the Roads and Maritime Services (RMS) Guide to Traffic Generating Developments for residential trips by number of units and constrained by the parking provision. For commercial trips, the vehicles trips were estimated in line with benchmarked precincts and other assumptions.

PTPM 2036 future year model runs have been used that are consistent with Technical Paper 1 – Operational Transport of the Sydney Metro West Environmental Impact Statement - Rail infrastructure, stations, precincts and operations (Sydney Metro, 2022) to inform the study and to assess the potential impacts on the road network for a 'with Concept SSDA' scenario. The traffic growth factor derived from PTPM model outputs was used to extrapolate 2021 traffic survey flows (adjusted to account for Covid-19 impacts) to future year 2036 traffic flows. A cumulative (over the next 14 years) growth rate of 1.07 has been applied.

SIDRA Intersection 9 has been used to test how the road network and key intersections surrounding the Concept SSDA may operate in the forecast 2036 year. The future year traffic impact assessment considered two scenarios, including:

- 2036 future year with metro and without the Concept SSDA
- 2036 future year with metro and with the Concept SSDA.

To estimate the traffic flows for the 2036 future year scenario without the Concept SSDA, the estimated traffic generation of the proposal was deducted from the traffic associated with the future scenario with the proposal.

Other known developments or credible proposals which may have a cumulative impact on the transport network in the vicinity of the Concept SSDA are assumed to be factored into the PTPM growth rates.

3.5 Review of potential construction impacts of the proposal

This chapter presents the anticipated construction plan including stages, construction activities, construction sites, and construction vehicles. Haulage routes have been proposed and construction vehicle forecast estimated.

The impacts of the construction on the transport network have been assessed including road network, active transport links and public transport.

Impacts on parking, property access and emergency vehicles have also been assessed.

A Construction Traffic Management Plan (CTMP) will be undertaken as part of the detailed SSDA as that would provide a more detailed and valuable assessment considering the possible changes and unknowns at concept level. Also, a CTMP was prepared as part of the CSSI and that applies to the SSD development as it is anticipated that both would be constructed concurrently.

When assessing the potential construction impacts, the cumulative impacts of the Concept SSD, the CSSI (the Sydney Olympic Park metro station), and developments that are located near the proposal construction sites and would share construction

haulage routes were reviewed. The developments that were assessed for cumulative impacts under this Concept SSDA are:

- Site 2A and 2B, Sydney Olympic Park
- Site 43/44 Sydney Olympic Park – Stage 1 and 2 (6 Australia Avenue and 2 Herb Elliott Avenue).

3.6 Mitigation measures

Recommendations and mitigation measures have been developed to avoid, reduce and manage the potential transport impacts of the Concept SSDA during end state and construction.

3.7 Data sources

The data in Table 3-3 was used to inform this transport assessment.

Table 3-3 Data sources

Data	Source
Current transport trends	Australian Bureau of Statistics 2016 Census
2021 AM and PM traffic and pedestrian flows	Package A – Sydney Olympic Park IC Traffic Flows (March 2021)
Global Traffic Statistics for Precinct (Link Traversal Volumes, SA2 Volumes, VHT, VKT) <ul style="list-style-type: none"> • 2017 AM peak hour • 2036 AM peak hour with Sydney Metro West and proposed SSD 	Public Transport Project Model (PTPM)
Development area schedules	211123_EDS OLP Area Schedule (005)
Development architectural drawings	Sydney Metro West Sydney Olympic Park Concept Definition report (Rev. D) – October 2021
Freight and servicing requirements	Freight and Servicing Summary, 1 February 2022, Transport for NSW Urban Freight

3.8 Assumptions

Assessment of traffic and transport modelling scenarios were based on the following assumptions:

- Intersection layouts were based on aerial photography and site observations. SIDRA modelling has been carried out for signalised intersections and un-signalised intersections where required.
- Phasing and timings for signalised intersections were based on information from Traffic Control Signal plans and Sydney Coordinated Adaptive Traffic System data provided by TfNSW.
- Intersections were assessed as a network of intersections using SIDRA Intersection 9 analysis software.
- Existing base year modelling assumes observed pedestrian crossing volumes, while future year modelling assumes pedestrian volumes calculated by applying a growth factor derived from future land use projections to existing pedestrian volumes. The future year with the Concept SSDA scenario assumes the future

year background pedestrian volumes in addition to the Concept SSDA pedestrians using Sydney Metro West.

- Calibration of existing base year models was completed based on available aerial photography, site observations and Sydney Coordinated Adaptive Traffic System data. Queue length survey data, as well as on-site observations were used to validate the performance of the base models.
- Traffic movements for the 2036 future year with Concept SSDA scenario were informed by outputs from PTPM traffic model runs.
- The PTPM growth rate is assumed to include the traffic generated by the Concept SSDA and was therefore used directly for the 2036 'with Concept SSDA' modelling scenario.
- Other known developments or credible proposals which may have a cumulative impact on the transport network in the vicinity of the Concept SSDA are assumed to be factored into the PTPM growth rates, including Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.
- The traffic generation for the Concept SSDA was calculated in two ways using the RMS Guide to Traffic Generating Development and agreed first principles:
 - based on proposed land uses for residential use, and the amount of parking provided for residents, which may act as a constraint to the traffic generated.
 - based on benchmarked precincts.
- For commercial trips, 80% of car parking spaces are assumed to generate one vehicle trip in the AM and PM peaks.
- Retail staff trips are assumed to occur outside of the peak periods.
- Access/egress splits were assumed to be as follows:
 - In the AM peak: 20% in, 80% out (residential), and 80% in, 20% out (commercial)
 - In the PM peak: 80% in, 20% out (residential), and 20% in, 80% out (commercial).
- Australian Bureau of Statistics (ABS) 2016 Journey to Work data was used to estimate 2036 mode share choice for residential (SA1) and commercial (DZN) trips. As this data did not include Metro or light rail, modifications have been made based by benchmarking against similar projects. The estimated future mode share for both inbound and outbound trips are listed in Table 3-4.

Table 3-4 Future mode share splits

Mode	Inbound %	Outbound %
Train	11%	19%
Metro	30%	46%
Bus	15%	15%
Ferry	0%	0%
Total public transport	56%	80%
Taxi	0%	1%
Car, as driver	36%	8%
Car, as passenger	2%	1%
Bicycle	2%	3%
Walked only	4%	7%
Total	44%	20%

The rationale for adopting the above listed future mode share targets is as follows:

- Train: transfer of demand from Sydney Trains to Sydney Metro West is assumed, given that function of the T7 Olympic Park Line will not improve, while Sydney Metro West will be a more direct connection with transfers to Sydney Trains at multiple points. However, this assumption is not critical to the assessment.
- Bus mode share was increased on the basis that a new bus interchange would be provided in a close proximity to the Concept SSDA site. The proposed bus mode share is considered as the upper extremity of what is possible/conservative to assume for Olympic Park, but this could shift to light rail if construction of the Parramatta Light Rail Stage 2 alignment is confirmed by the NSW Government. Also, bus interchange will serve destinations for future development residents not on the Sydney Metro West alignment.
- Ferry - the Concept SSDA site will not be accessed by ferry, therefore, 0% was allocated to ferry.
- Cycling mode share was adopted as is from Waterloo OSD. It is a reasonable percentage taking into consideration the established and future cycle network within Olympic Park precinct.
- Walking mode share was increased in line with walking share at Epping and Macquarie Park, however, not to the levels observed at Waterloo or Chatswood, as both these centres have a denser urban fabric than that expected at Sydney Olympic Park.
- Car driving mode share for residential use (outbound) was estimated based on vehicle generation divided by total trip generation, reflecting a scenario where parking demand is contained to on-site provision for residential use. It is considered unlikely that residents will use open-air parking within Olympic Park, or otherwise pay for parking in other buildings in the precinct on an ongoing basis.
- Car driving mode for commercial (Inbound) use was assumed to be accommodated by parking throughout Olympic Park. This is considered a potential behaviour for inbound commuters to workplaces in the development, but not for outbound residents. The adopted mode share for this category resembles Chatswood as a benchmarked precinct.

- All remaining outbound trips were allocated to Metro, as it is the fastest way out of the precinct for residents to nationally significant employment centres (Sydney CBD and Parramatta), and to advantageous transfers to other rail lines.
- Inbound Metro is assumed to account for 20% extra rail mode share, plus the 10% switching away from Train, to give a mode share of 30% for inbound Metro, and a total rail mode share of 40%, closely resembling Chatswood.

Building trip generation was calculated using the assumptions listed in Table 3-5.

Table 3-5 Building generation assumptions

Land use	Assumption
Commercial	Employee to Space Ratio of 0.1
	GFA to NLA efficiency 85%
	Attendance 85%
	Arrival in AM 50%
	Final rate: 0.04
Residential	Based on Population to Dwelling Ratios from ABS data (SA2)
	Departures in AM 50%
	Final rate (trips): 1.63 (1 bedroom), 2.26 (2 bedroom), 3.11 (3 bedroom)

- AM to PM conversion factor for pedestrian trip generation is assumed to be 0.94 which is consistent with the pedestrian modelling undertaken for the Sydney Metro West stations.
- The pedestrian distribution is based on the Travel Zone Projections 2019 (TZP19) for 2036, the NSW Government's publicly available land use forecasts. Each travel zone within 800m of the Concept SSDA (approximated by the metro station Entrances) has been assigned to footpaths approaching the proposal, considering crossing opportunities, severance, and amenity. TZP19 is based on best available data available as at late 2019 and does not consider impacts from the Covid-19 pandemic. This distribution is an estimation and is provided as a guide only.
- Outgoing walk trips from the Concept SSDA are proportioned to the jobs (EMP_2036) in each direction, while incoming walk trips are associated with residences (ERP_2036).
- The TfNSW Freight Toolkit was used to determine loading dock provisions. It is assumed that buildings which share a basement also share loading dock spaces and management.

3.9 Assessment criteria

Traffic performance has been assessed at an intersection level using SIDRA Intersection 9 analysis software. In line with TfNSW's guidance (Guide to Traffic Generating Developments, October 2002), vehicle delay was used to categorise performance into level of service (LOS) categories ranging from A (good) to F (unsatisfactory).

Table 3-6 shows the criteria that SIDRA Intersection adopts in assessing the LOS.

Table 3-6 SIDRA Intersection level of service criteria

Level of service	Average delay per vehicle (sec/veh)	Traffic signals, roundabout	Give way and stop signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing

Source: Roads and Traffic Authority (2002) Guide to Traffic Generating Developments

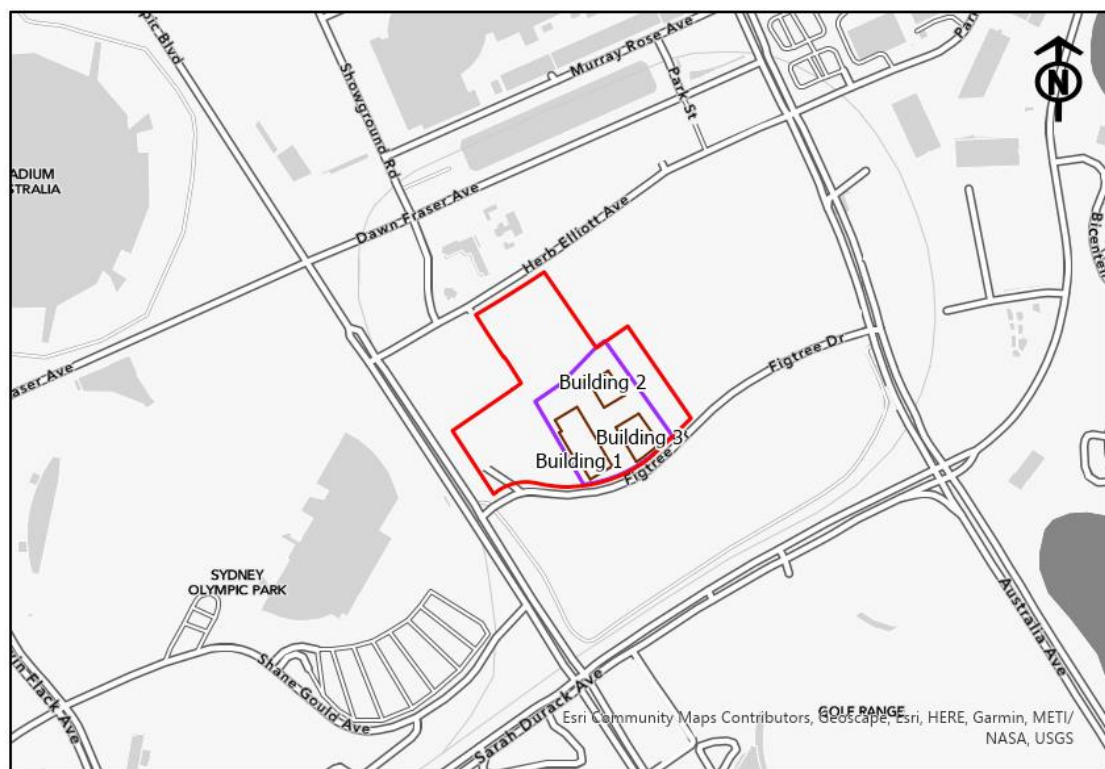
4 Existing conditions

This section describes the existing situation at the site of the Concept SSDA, including the land use context, existing transport network and current usage trends.

4.1 Site location

The Concept SSDA site would be located in the central precinct of Sydney Olympic Park, a suburb within the City of Parramatta LGA that is managed and developed by the Sydney Olympic Park Authority (SOPA). A nationally significant event precinct catering for large sports, music, arts, cultural and civic events, the area is characterised by large venues and iconic stadia set along wide avenues and forecourts.

The precinct in which the Concept SSDA is located, is situated south of the existing Olympic Park Station and is bounded by Herb Elliott Avenue to the north, Olympic Boulevard to the west and Figtree Drive to the south, as shown in Figure 4-1.



Engineering Design Services - Metro West

Sydney Olympic Park - Proposed SSD development location

Legend

- SSD Boundary
- Proposed SSD Development
- Site Boundary

Figure 4-1 Concept SSDA development location

4.2 Land use context

Land uses within the site boundaries and surrounding area are primarily zoned as mixed use, with public recreation and environmental conservation and management lands to the east of the central precinct, as shown in Figure 4-2.

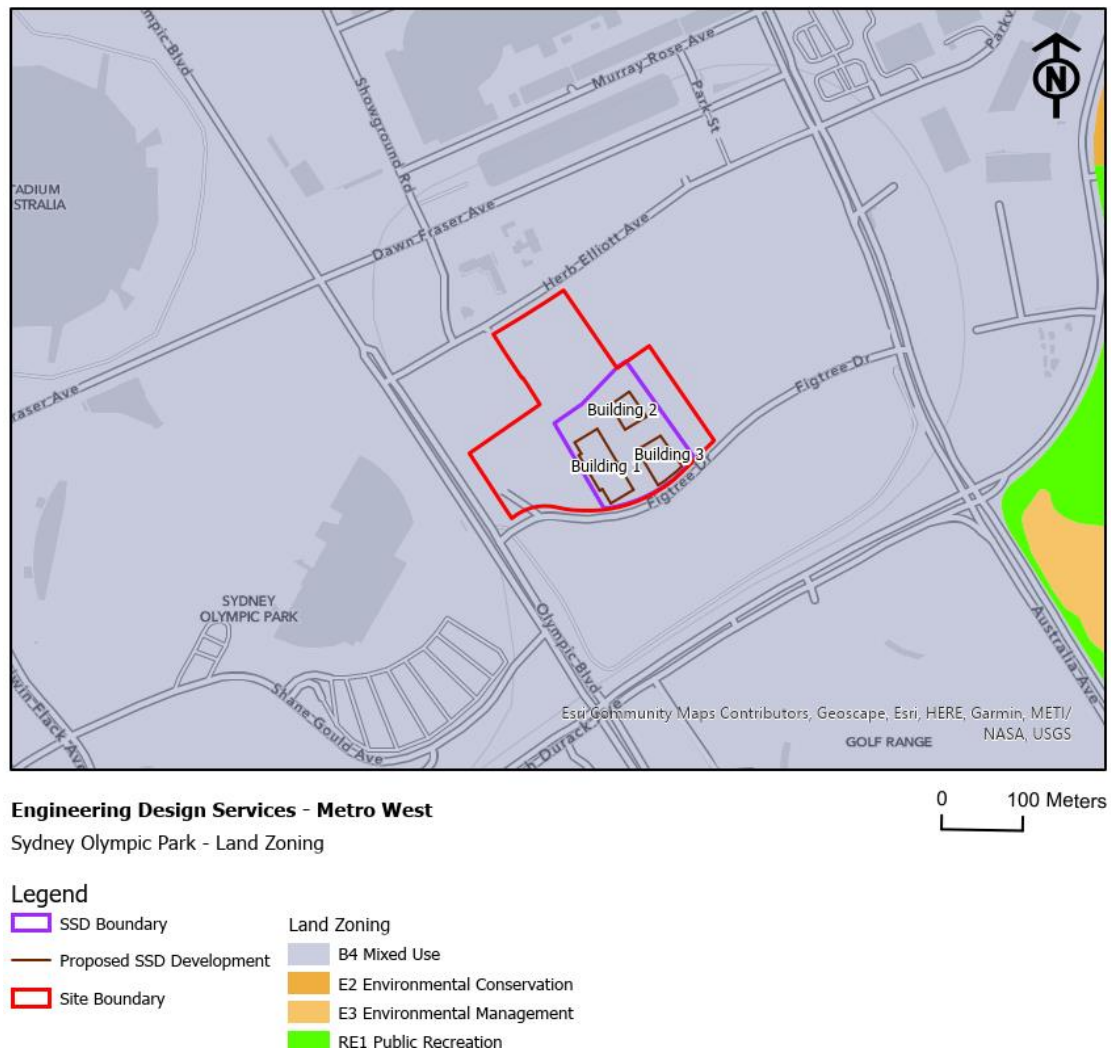


Figure 4-2 Land zoning map

The current land use and characteristics of Sydney Olympic Park and the lands within the vicinity of the Concept SSDA site are as follows:

- Mixed use zoning within the Concept SSDA site, extending further to the north, east, south and west to Stadium Australia and Sydney Olympic Park.
- Public recreation zoning east of the Concept SSDA site, with environmental conservation and management land uses within this zoning parcel.

The existing environment and future development of Sydney Olympic Park is guided by a range of strategic plans:

- Sydney Olympic Park was designated as a separate suburb in 2009 and later identified as a key strategic centre within the Central City District in the 2018 Greater Sydney Regional Plan.
- The future growth of Sydney Olympic Park is guided by The Master Plan 2030 (2018 Review), developed by the SOPA with the vision to reinvigorate the area into a great place to live and work, built sustainably on its Olympic Legacy. This

document is to be superseded by the SOPA Master Plan 2030 (Interim Metro Review) following its planned implementation in June 2022.

- The Sydney Olympic Park metro station is centred on a large open space between Herb Elliot Avenue and Figtree Drive that will serve as a vibrant mixed-use town centre for Sydney Olympic Park.
- The centre has been identified to accommodate a further 10,000 dwellings (23,000 residents) and 34,000 workers by 2030.

4.3 Road network

The Concept SSDA site is bounded by the following roads:

- Figtree Drive to the south
- Olympic Boulevard to the west
- Herb Elliot Avenue to the north.

Figtree Drive is a two-lane, two-way undivided local road with a posted speed limit of 40km/h. It provides a through connection for traffic between Australia Avenue and Olympic Boulevard, though is primarily used to provide access a number of high-density residential dwellings and commercial businesses.

Olympic Boulevard is a four-lane, two-way divided road with a posted speed limit of 40km/h. Olympic Boulevard provides access to the Sydney Olympic Park Aquatic Centre and Stadium Australia is frequently closed during major events. As a major north-south road through the suburb of Sydney Olympic Park, it is highly utilised by several public transport bus services, with frequency and volume of services increasing on event days.

Herb Elliot Avenue is a two-lane, two-way undivided local road with a posted speed limit of 40km/h. It provides access to off-street parking, recreational, commercial and retail land uses.

Table 4-1 Existing peak hour traffic volumes by direction provides AM and PM peak hour link volumes for major roads that form the surrounding road network, based on traffic counts conducted in March 2021. Survey data indicates that the peak hour periods on the road network are between 8:00-9:00AM and 5:00-6:00PM.

Table 4-1 Existing peak hour traffic volumes by direction (2021)

Road	Direction	AM peak volume (vehicles per hour)		PM peak volume (vehicles per hour)	
		Light	Heavy ¹	Light	Heavy ¹
Figtree Drive	Westbound	106	0	100	2
	Eastbound	91	0	95	1
Olympic Boulevard	Northbound	126	13	199	8
	Southbound	136	7	159	6
Australia Avenue	Northbound	678	17	523	22
	Southbound	600	31	861	26
Herb Elliot Avenue	Westbound	175	7	138	3
	Eastbound	135	10	218	5
Sarah Durack Avenue	Westbound	509	25	636	15
	Eastbound	399	17	522	10

Road	Direction	AM peak volume (vehicles per hour)		PM peak volume (vehicles per hour)	
		Light	Heavy ¹	Light	Heavy ¹
Dawn Fraser Avenue	Westbound	84	11	147	9
	Eastbound	127	9	110	9
Park Street	Northbound	18	16	19	3
	Southbound	47	7	58	4

Source: TfNSW Traffic surveys, 2021

¹Buses are included as heavy vehicles in the table

Baseline network performance for the AM and PM peak hours for key intersections in the vicinity of the Concept SSDA are provided in Table 4-2. Note that observed traffic volumes for baseline intersection performance assessment have been adjusted as described in section 2.2 to account for Covid-19 impacts.

Table 4-2 Existing intersection performance (2021)

Intersection	AM peak		PM peak	
	Average delay (sec)	LOS	Average delay (sec)	LOS
Australia Avenue and Sarah Durack Avenue	42	D	61	E
Olympic Boulevard and Sarah Durack Avenue	20	C	21	C
Olympic Boulevard and Figtree Drive ¹	1	A	1	A
Olympic Boulevard and Herb Elliot Avenue ¹	2	A	2	A
Australia Avenue and Herb Elliott Avenue	34	C	30	C
Australia Avenue and Figtree Drive ¹	14	B	12	B

¹LOS of worst movement

Baseline intersection performance indicates that most intersections perform at level of service C or better during the AM and PM peak hours, representing reasonable operations with slightly restricted manoeuvrability and free-flow speeds across the local network. Vehicle volumes in these locations during peak periods generally do not experience notable delays or impact driver ability to make mid-block lane changes on surrounding roads and intersections.

Congestion at the intersection of Australia Avenue/Sarah Durack Avenue during the PM peak may severely impact performance, potentially leading to a breakdown of flow. This is typically as a result of vehicle volumes exceeding the capacity of the intersection to clear traffic.

4.4 Parking arrangements

Free, time-limited on street parking spaces are available along Olympic Boulevard, Murray Rose Avenue, Dawn Fraser Avenue, Figtree Drive, Herb Elliot Avenue, Showground Road, Grand Parade and Parkview Drive. There are also paid on-street parking spaces available along Herb Elliot Avenue, Dawn Fraser Avenue and Showground Road. During major special events, on-street parking may not be available due to road closures in place around the Sydney Olympic Park precinct.

A number of other on-street parking arrangements exist on Herb Elliott Avenue and include parking for motorbikes, accessible parking on the northern shoulder east of Showground Road, a kiss and ride zone near Olympic Boulevard and a taxi zone on the southern shoulder of Herb Elliott Avenue east of Olympic Boulevard. In addition, there is a mail zone on the western side of Showground Road. A loading zone is also located on the southern side of Dawn Fraser Avenue between Showground Road and Park Street.

In addition to on-street parking, off-street parking is provided by the Sydney Olympic Park P8 in the precinct area. A multi-storey facility on Herb Elliot Avenue, the parking facility offers hourly, long-term and event mode parking options for drivers.

Figure 4-3 shows the location of on-street and off-street parking areas within the Concept SSDA precinct.

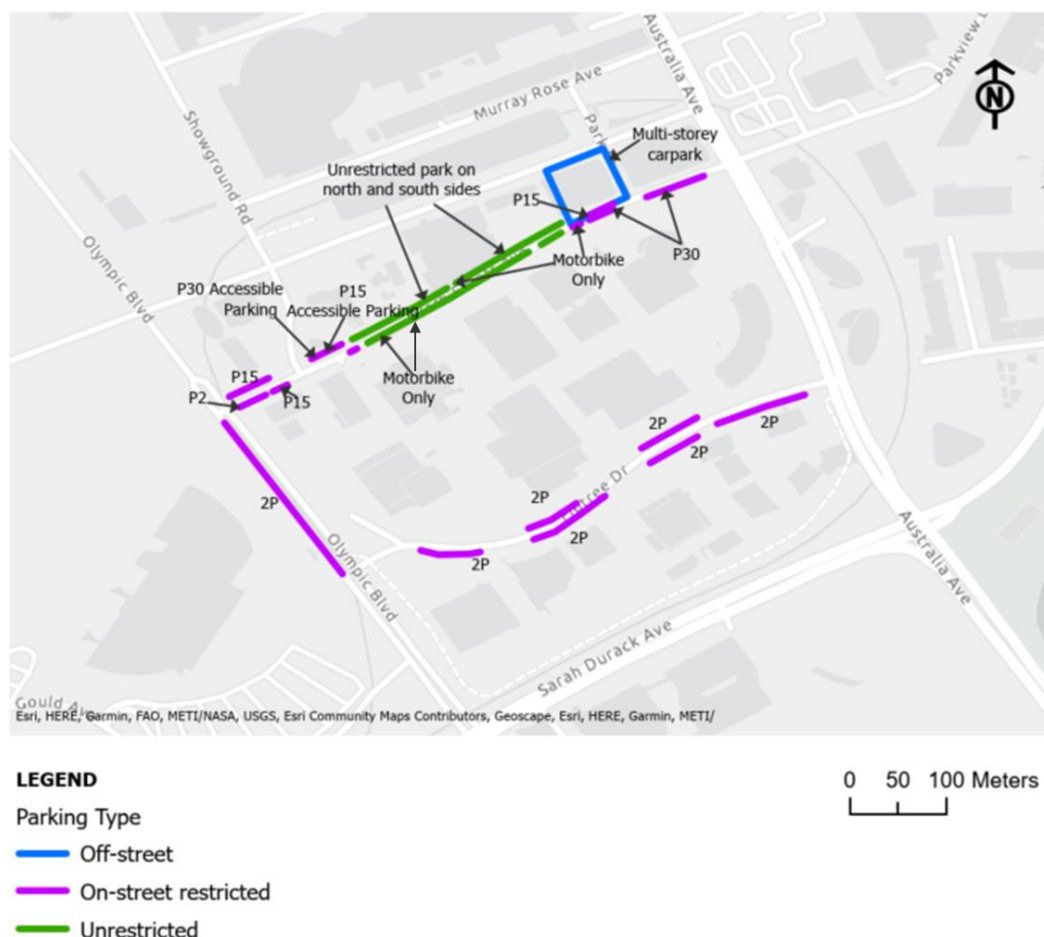


Figure 4-3 Existing parking locations

There are a number of existing off-street parking facilities throughout Sydney Olympic Park, though these are located outside of the Sydney Olympic Park metro station area.

4.5 Public transport services

Figure 4-4 shows the existing transport network surrounding the Concept SSDA site.

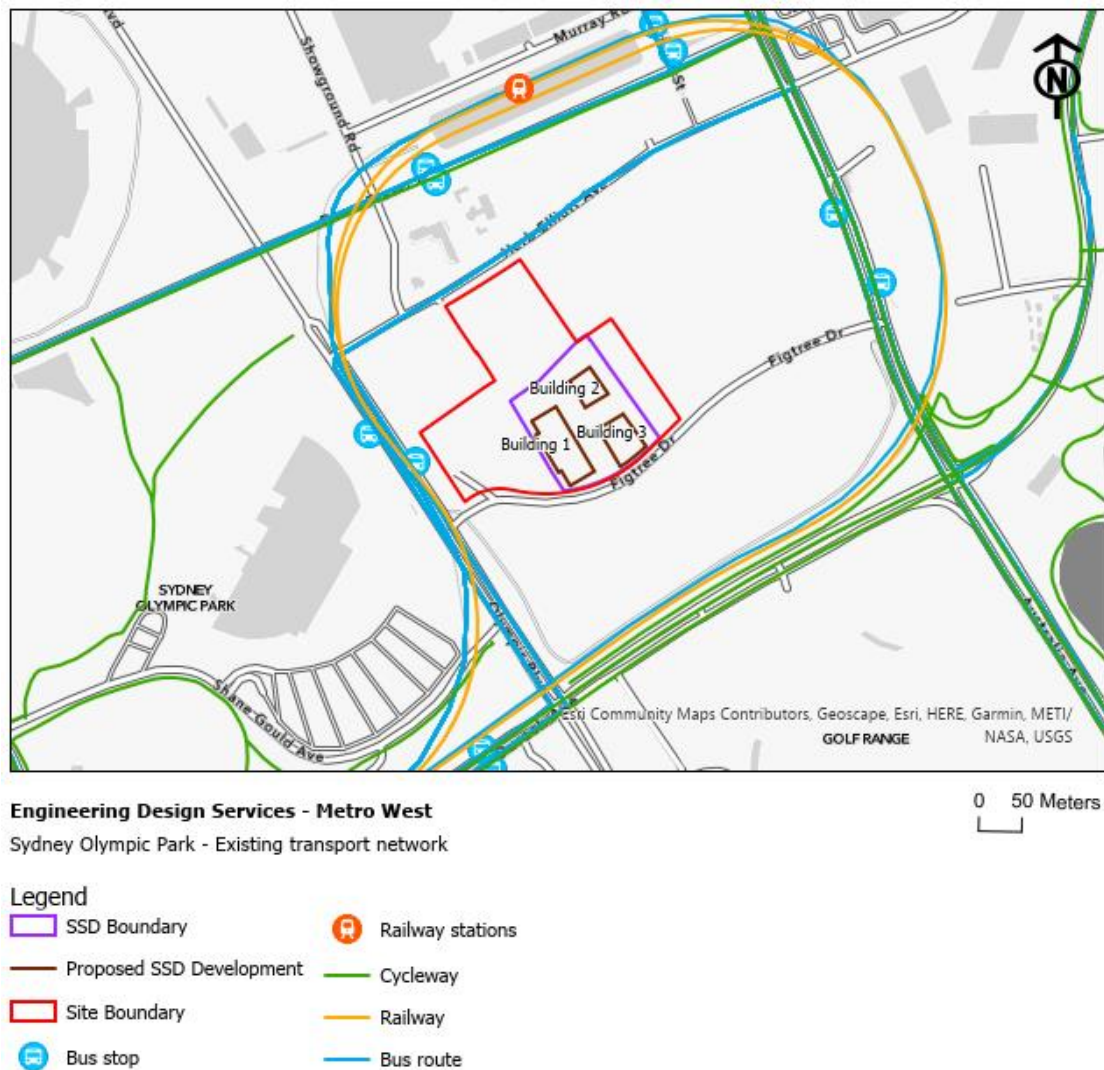


Figure 4-4 Existing transport network

Bus services

Buses provide the greatest public transport network coverage for Sydney Olympic Park. Three bus routes service six bus stops within interchanging distance of the future metro station on Dawn Fraser Avenue, Park Street and Australia Avenue. Bus services operating in Sydney Olympic Park are shown below in Table 4-3.

Table 4-3 Existing bus services (2021)

Route	Description	Frequency (number of services)	
		Weekday AM 7:00 am – 9:00am	Weekday PM 4:00pm – 6:00pm
525	Strathfield to Parramatta via Sydney Olympic Park	5	3
	Parramatta to Strathfield via Sydney Olympic Park	7	8
526	Burwood to Rhodes Shopping Centre	6	7
	Rhodes Shopping Centre to Burwood	7	6
533	Chatswood to Sydney Park via Rhodes and North Ryde	8	10
	Sydney Olympic Park via Rhodes and North Ryde	11	8

Buses in the local area are facilitated by a number of operators, including Sydney Buses, Transit Systems, and a NightRide bus route operated by Hillsbus. These buses provide connections to Parramatta, Burwood, Chatswood, Macquarie Park and Sydney CBD. Demand responsive transit services platform BRIDJ (operated by Transit Systems) connects Sydney Olympic Park to the nearby suburbs of North Strathfield, Concord, Cabarita and Mortlake.

Bus customers are able to transfer to the Sydney Trains network at the existing Olympic Park Station, with bus stops located on Dawn Fraser Avenue providing access to the station at its western end, and bus stops on Park Avenue providing access to the station at its eastern end. Another bus route operated by Transit Systems serves the Lidcombe local area, with the closest bus stops located on Carter Street about 800 metres away from the site access point.

On Demand bus services operated by Transit Systems are directly accessible from the site, connecting Sydney Olympic Park to adjacent suburbs, including Concord, Cabarita, Mortlake, Homebush and North Strathfield.

During major events held at Sydney Olympic Park, nine additional bus services operate. Four services arrive and depart from bus stands at the Aquatic Terminal, located on Olympic Drive between Figtree Drive and Herb Elliott Avenue. The other five bus services arrive and depart from bus stands at the Plaza Terminal, located on Olympic Drive between Barrier Street and Kevin Coombs Avenue.

School buses also service the area, with two school bus routes (760S and 761S) in operation on weekdays.

Rail services

The existing Olympic Park Station is located 200 metres north of the Concept SSDA site as shown in Figure 4-4 and is served by the T7 Olympic Park Line on the Sydney Trains suburban rail network, which operates as a shuttle between Olympic Park and Lidcombe.

During major special events held at the Sydney Olympic Park precinct, direct trains run between Olympic Park and Central. In addition, some westbound services extend past Lidcombe to Blacktown, Leppington and Campbelltown. Details of services are provided in Table 4-4.

Table 4-4 Existing Sydney Trains suburban rail network services and frequency – existing Olympic Park station

Line	Direction	Weekday AM 7:00 am – 9:00am	Weekday PM 4:00pm – 6:00pm
T1	City to Emu Plains or Richmond	Event days only	Event days only
T3	Liverpool or Lidcombe to City via Bankstown	Event days only	Event days only
T7	Lidcombe to Olympic Park	12	12
	Olympic Park to Lidcombe	12	12

4.6 Active transport network

Walking

The pedestrian network in Sydney Olympic Park is well established, with wide footpaths and large, paved pedestrian areas for the movement and storage of large crowds during event mode.

There are no signalised intersections or protected pedestrian crossing facilities in the immediate surrounding area. A single staged crossing through the median on Olympic Boulevard provides refuge for pedestrians between the site area and nearby stadiums.

The surrounding local roads of Herb Elliott Avenue, Showground Road and Figtree Drive carry low vehicle volumes and have 40km/h signposted speed limits. In addition, vehicle movements and speeds are restricted during event modes.

From the wider network, the Concept SSDA can be accessed from signalised pedestrian crossings at the intersections of Sarah Durack Avenue/Olympic Boulevard, Sarah Durack Avenue/Australia Avenue and Australia Avenue/Herb Elliott Avenue. However, distances between crossings are more than 400 metres, increasing the likelihood of pedestrians attempting to cross at unprotected locations.

South of the Concept SSDA, pedestrian activated signals are located on the Homebush Bay Drive ramps at the Homebush Bay Drive/Australia Avenue/Underwood Road roundabout.

Pedestrian counts were collected in 2021 at footpaths and signalised intersections within the vicinity of the Concept SSDA site area and are summarised in Figure 4-5 and Figure 4-6 for the AM and PM peaks.

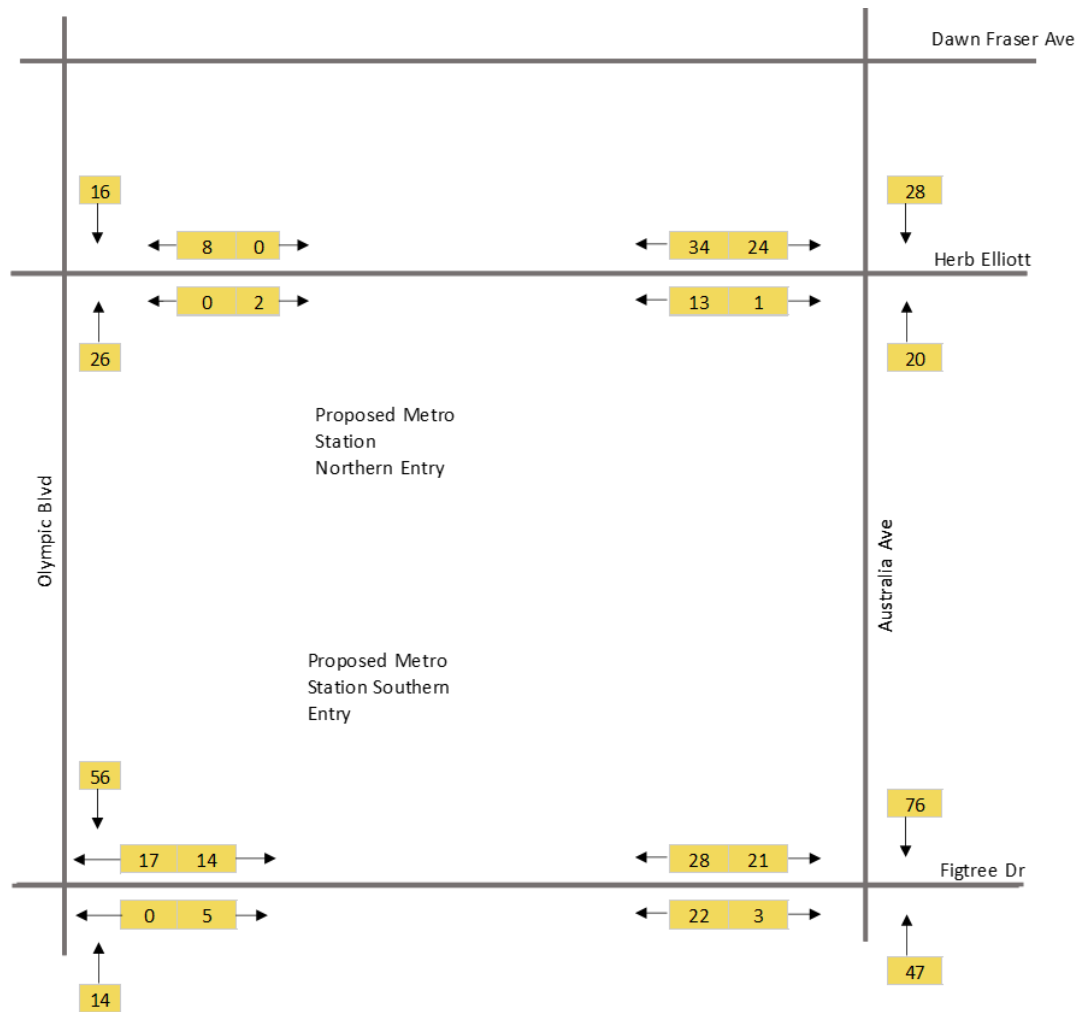


Figure 4-5 Existing AM peak hour pedestrian counts (March 2021)

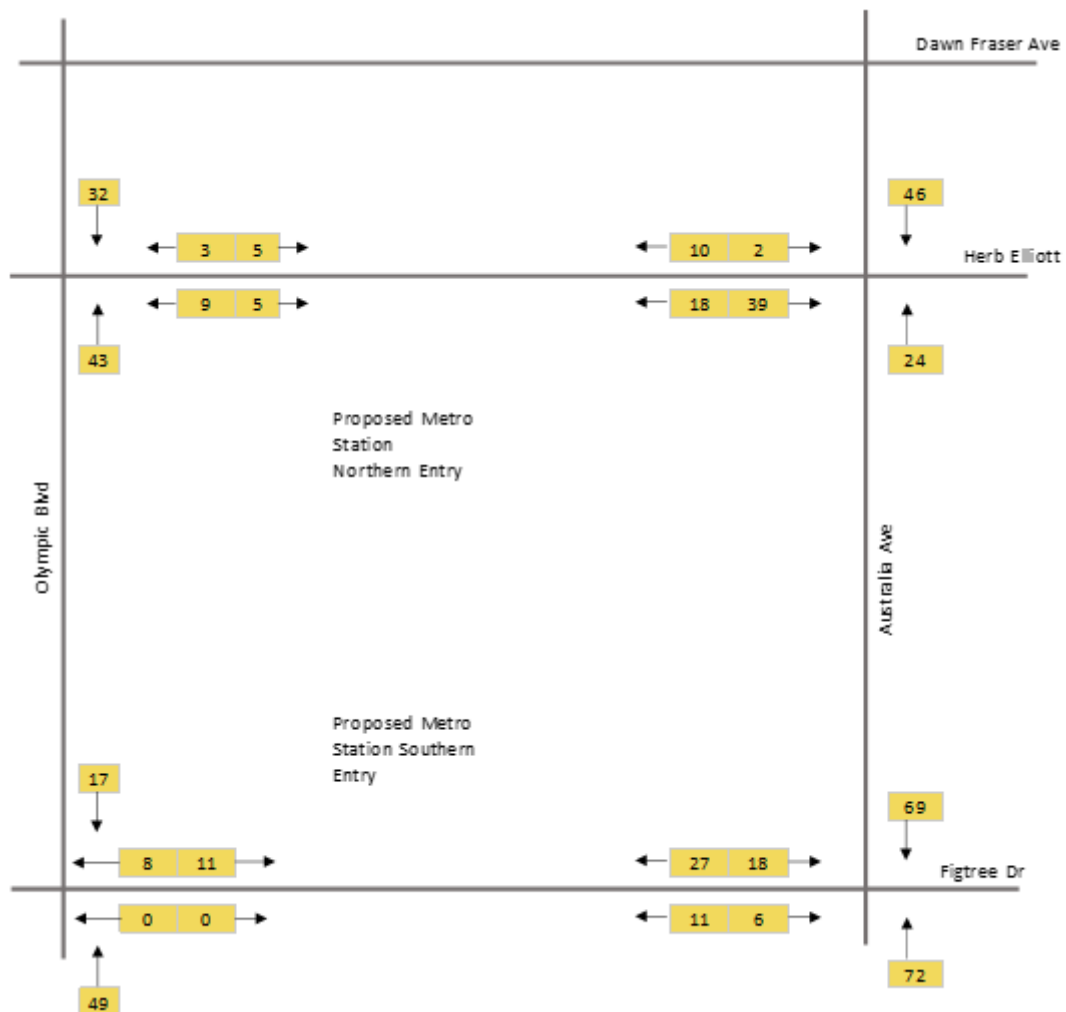


Figure 4-6 Existing PM peak hour pedestrian counts (March 2021)

Major pedestrian desire lines are generally orientated between the existing Olympic Park Station and the various stadiums and arenas located throughout, particularly during special events, such as concerts or sporting events. There is also an east-west pedestrian desire line along Dawn Fraser Avenue where numerous businesses operate along the southern frontage.

Cycling

The cycle network surrounding the Concept SSDA site is shown in Figure 4-4 and is well developed, consisting of on-road and off-road cycle routes. Marked cycle lanes of moderate difficulty are provided in the shoulder of both sides of the following roads:

- Australia Avenue
- Sarah Durack Avenue
- Edwin Flack Avenue
- Dawn Fraser Avenue
- Bennelong Parkway.

On-road cycle routes of low difficulty are located along Shirley Strickland Avenue and Rod Laver Drive. Off-road shared paths also feature from around the Concept SSDA to the wider cycle network, including areas east of Australia Avenue and west of Olympic Boulevard. The non-direct alignment of these routes typically serves

recreational users, though commuters may use connecting on-road cycle lanes that link to the regional cycle network, including the M4 cycleway and the Cooks River cycleway, a 30-kilometre shared path that follows the Cooks River between Ryde and Kyeemagh.

Three cycle circuits exist within the Sydney Olympic Park area, including the Olympic Circuit, River Heritage Circuit and Parklands Circuit. These circuits comprise both on-road and off-road cycle paths already discussed, as well as other cycle paths located north of Bicentennial Park and Dawn Fraser Avenue.

Cycle racks are provided throughout the Sydney Olympic Park area. Within the immediate vicinity of the Concept SSDA, these are located on Herb Elliott Avenue, Olympic Boulevard and Dawn Fraser Avenue.

4.7 Special events

A large number of events varying in size are held each year at Sydney Olympic Park, with the existing Sydney Olympic Park Station being a major transport focus for access to and from events.

Between 2017 and 2018, 34 events were attended by audiences of 20,000 or greater, with 12 events exceeding 50,000. Typical mode share split for regular (10,000-20,000) and major events (>50,000) are detailed in Table 4-5.

Table 4-5 Regular and major event scenario mode splits

Event	Train	Parking (car)	Bus	Taxi/share ride	Walk
Regular	8,000	10,700	500	800	50
Major	50,000	20,000	10,000	3,400	100

Large calendar events held by nearby stadiums are listed in Table 4-6.

Table 4-6 Major special events in Sydney Olympic Park

Indicative month	Event	Location
January	The Sydney International	Sydney Olympic Park Tennis Centre
January	Sydney Festival	Sydney Olympic Park
April	Sydney Royal Easter Show	Sydney Showground
June	Supanova Comic Con and Gaming	Sydney Showground
Year-round	Music concerts	Various stadiums, arenas and centres
Year-round	Football matches (Rugby Union, Rugby League, Australian Football League, Soccer)	ANZ Stadium
Year-round	Other sporting events	Various stadiums, arenas and centres

Impacts on the local transport network from scheduled regular and major events have not been considered as part of this assessment. It is not anticipated that impacts to the transport network will be significant, as events typically occur outside of peak hour periods. Traffic increases associated with scheduled events are typically during ingress and egress periods only. Access may be limited during these periods due to road closures that are applied in either regular or major event scenarios, which are subject to event traffic management plan design and implementation.

4.8 Current transport trends

Journey to Work (2016) census data has been analysed to establish primary modes of travel for inbound and outbound workers for travel zones within 800 metres of the proposed Concept SSDA site. The current mode share is presented in Figure 4-7.

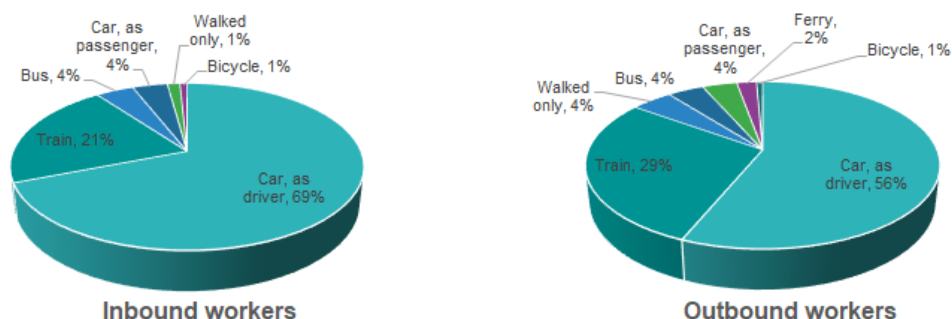


Figure 4-7 Existing mode share

The Journey to Work (2016) census data has also been interrogated to extract the top five origins and destinations for inbound and outbound trips associated with an 800-metre precinct catchment. These are summarised in Table 4-7.

Table 4-7 Top five origins and destinations for inbound and outbound trips

Inbound - workers travelling to Sydney Olympic Park for work	Outbound - residents leaving Sydney Olympic Park for work
7% - Parramatta	26% - Sydney Inner City
7% - Auburn	18% - Auburn
7% - Strathfield, Burwood, Ashfield	6% - Ryde, Hunters Hill
4% - Merrylands, Guildford	6% - Strathfield, Burwood, Ashfield
4% - Baulkham Hills	5% - Parramatta

5 Land use, access and parking arrangements

This section describes the Concept SSDA, including the land uses, access and parking arrangements.

5.1 Land use and quantities

The proposed concept for the Sydney Olympic Park proposed development is summarised in Table 5-1. The proposal seeks approval for three building envelopes and a six level basement under Buildings 2 and 3. Note that this is subject to minor changes as the land use quantities are refined. At this stage of design, the provision is under development and will be confirmed in later versions of this report.

Building 1 is a 21-storey commercial building that is positioned over the future metro station. The building is serviced by a ground level loading dock, with no on-site car parking provided.

Buildings 2 and 3 are 27-storey and 45-storey buildings situated to the east, adjacent to the station. Both buildings are predominantly residential, with commercial uses accommodated for in the podium and retail to the ground floor. A loading dock on the Basement Level 01 of the six-storey basement below Buildings 2 and 3 will service the two buildings, with car parking on levels 02-04 to cater for all three buildings.

Table 5-1 Proposed Sydney Olympic Park Concept SSDA development land use and quantities

Land use		Building and basement		
		Building 1*	Building 2	Building 3
Commercial	sqm GFA	26,690	2,380	3,750
Retail	sqm NLA	1,200	250	310
Residential		-	9,460	23,330
Total building	sqm GFA	27,890	12,090	27,390
Residential	1 bedroom	-	-	76 no.
	2 bedroom	-	66 no.	114 no.
	3 bedroom	-	22 no.	38 no.
	Total units	-	88 no.	228 no.

*630m² of Building 1 is allocated as Station GFA (SSI) and is not applicable for this assessment

5.2 Proposed access and parking

5.2.1 Pedestrian access

Pedestrian access to each of the sites is illustrated in Figure 5-1 and Figure 5-2 Table 5-2 and described below.

- Building 1 is situated above the southern station entrance. The buildings elevated lobby (level 1) is accessible from the station promenade via escalators and lifts close to the station entrance.
- Building 2 can be accessed from the east via Precinct Street A.
- Building 3 can be accessed from Precinct Street A to the east and from the station promenade to the west.

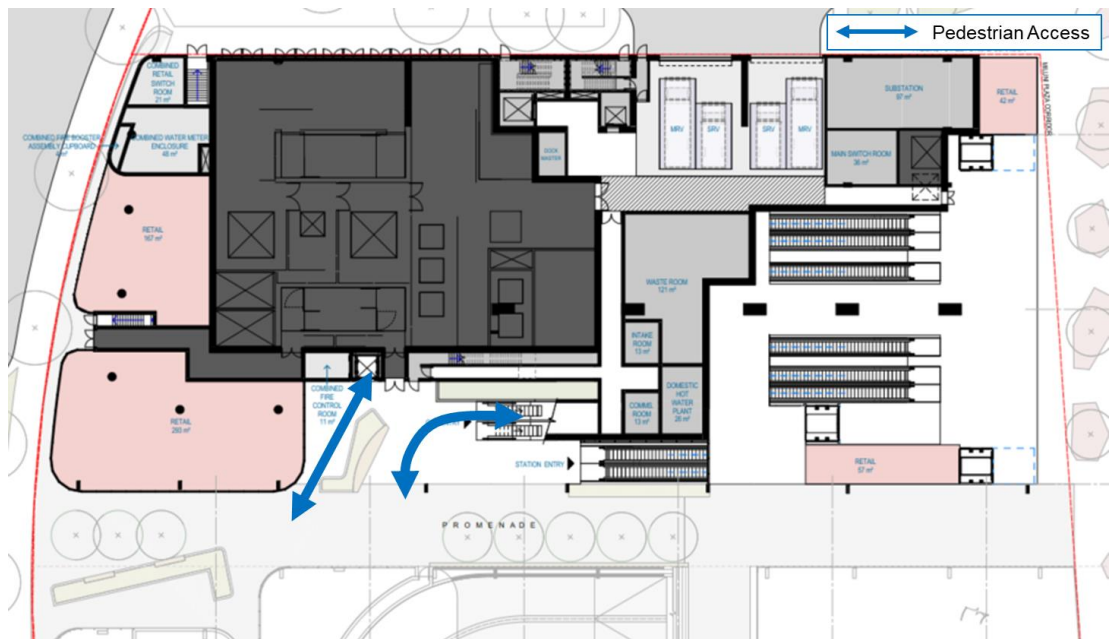


Figure 5-1 Pedestrian access to/from Building 1

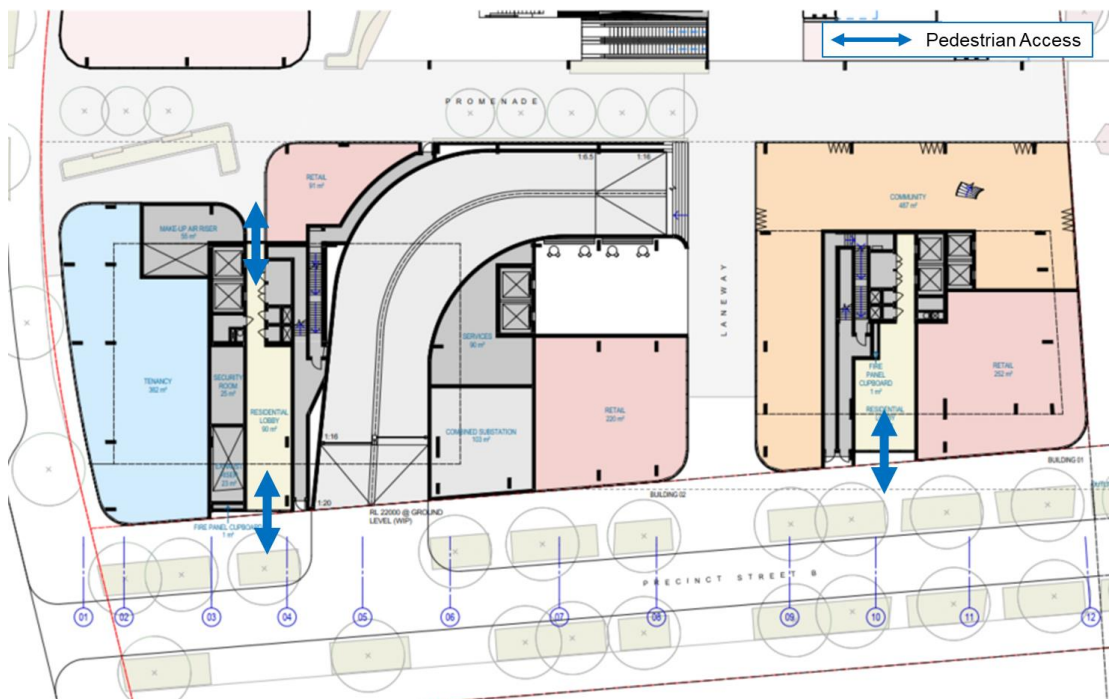


Figure 5-2 Pedestrian access to/from Building 2 and Building 3

5.2.2 Bicycle parking and end of trip facilities

Bicycle parking and end of trip facilities are provided on Level 3 of Building 1 and in Basement Level 1 of Buildings 2 and 3. Designs are for the purposes of assessing the Concept SSDA, with a detailed SSDA to follow.

The commercial end of trip and bicycle parking facilities in Building 1 are accessible via a dedicated lift within the buildings loading dock area that faces onto Precinct Street B. The commercial and retail bicycle parking and end of trip facilities and residential bicycle parking are accessible through a lift in the lobby of Building 3. Access via the vehicle down ramp from Precinct Street A is not recognised as an official entry/exit point for active travel users, but it is acknowledged that this is the most direct route to and from the facilities. Access locations for both buildings are detailed in Figure 5-3.

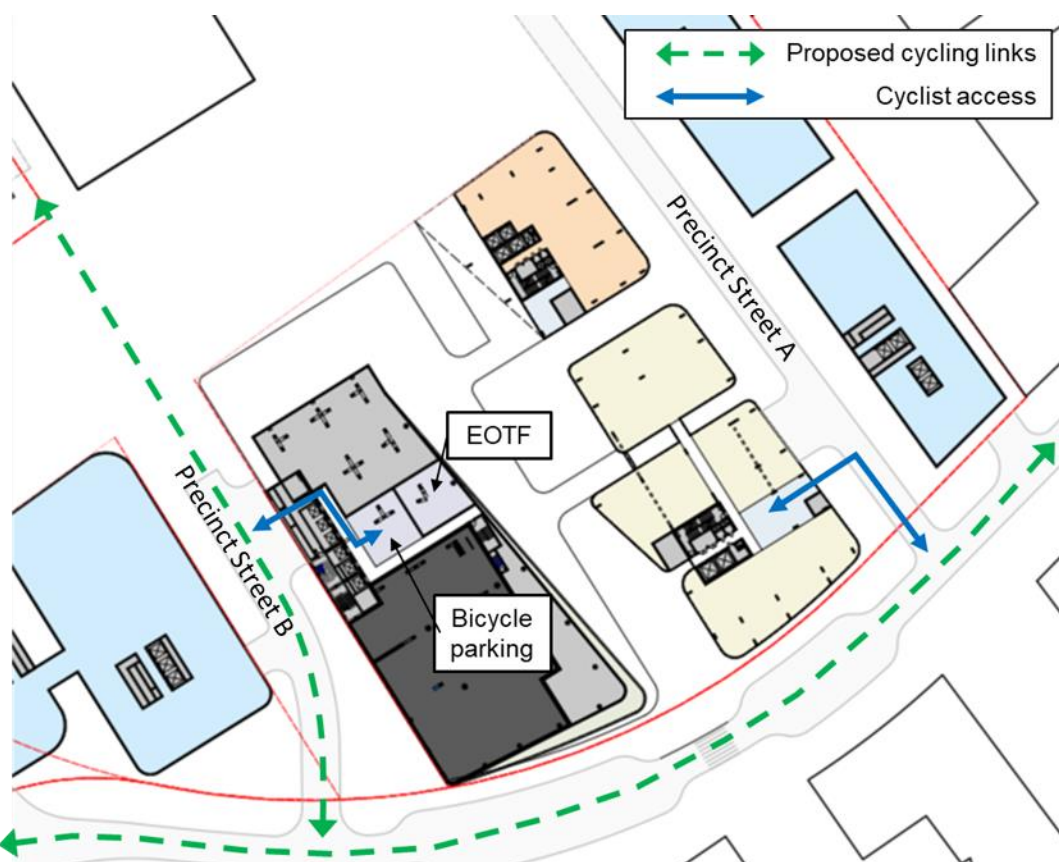


Figure 5-3 Access and egress routes for cyclists

Accessibility to the commercial bicycle parking and end of trip facilities proposed at Building 1 of the Concept SSDA will be improved through several proposed active travel connections. The scope of active travel infrastructure that integrates with the Concept SSDA is unclear and will be investigated further in consultation with Council and other key stakeholders.

This includes new cycle links on Dawn Fraser Avenue, Showground Road, Precinct Street B and Figtree Drive. New links on Dawn Fraser Avenue and Figtree Drive will connect to existing cycling links on Olympic Boulevard. The last and first leg of all future cycling trips will be on the new Precinct Street B, a shared vehicle and pedestrian zone.

Figure 5-4 and Figure 5-5 illustrates the bicycle parking and end of trip facilities on Level 03 of Building 1 and Basement 01 of Buildings 2 and 3.



Buildings 2 and 3 have two 'storage' rooms on Level 1 of the eastern basement sized at 158m² and 346m² that have been allocated for bicycle parking and end of trip facilities. These facilities are to be used by both residents and retail workers of the buildings and are accessible via a lift from the residential lobby in Building 3. It is recommended that proper signage is provided in the basement to advise of which bicycle parking facility is designated for residents or retail employees and that residential bicycle parking be separate from commercial and retail parking.

The SOP Master Plan 2030 (Interim Metro Review) requires the following minimum number of bicycle parking spaces:

- 1 space per 150m² of commercial GFA and 1 visitor space per 750m²
- 1 space per 1 bedroom dwelling
- 1.2 spaces per 2 bedroom dwelling
- 1.5 spaces per 3 bedroom dwelling
- 2 spaces per 4 bedroom dwelling
- 0.25 spaces per residential dwelling.

The SOP Master Plan 2030 (Interim Metro Review) does not specify the number of retail bicycle parking spaces. The Parramatta DCP requires one bicycle space per 200m² of retail floor space.

Bicycle parking is to be in the form of Class 2 compounds (bicycle cages) and adequate showers and lockers are to be provided to service the number of bicycle parking spaces.

The Concept SSDA is aiming to achieve a Green Star rating from the Green Building Council Australia. The Green Star Buildings Movement and Place Credit assessment tool has been used to calculate the quantities of end of trip facilities and is found to be more onerous than the SOP Master Plan 2030 (Interim Metro Review) in most areas. The number of bicycle facilities required for the development are therefore set out in Table 5-2. Note that this is subject to minor changes as the land use quantities are refined. At this stage of design, the provision is under development and will be confirmed in later versions of this report.

Table 5-2 Required bicycle parking and EOTF

Building	Use type	SOP MP 2030 (Interim Metro Review) /Green Star	Required bicycle racks (no.)	Recommended bicycle racks (no.)	Required showers (no.)	Required lockers (no.)
Building 1	Commercial	SOP MP/Green Star	210	209	17	326
	Retail	Green Star	10	9	5	50
Building 2	Commercial	SOP MP/Green Star	20	25	5	30
	Retail	Green Star	5	2	2	11
	Residential	SOP MP	130	122	Exempt	Exempt
Building 3	Commercial	SOP MP/Green Star	30	31	5	47
	Retail	Green Star	10	3	4	13
	Residential	SOP MP	300	292	Exempt	Exempt

5.2.3 Vehicular access

Proposed vehicle access to the basement level parking areas and loading docks is via Precinct Street B (proposed to be delivered as part of the Stage 3 CSSI Application) for Building 1 and Precinct Street A for Buildings Building 2 and 3, as shown in Figure 5-6.

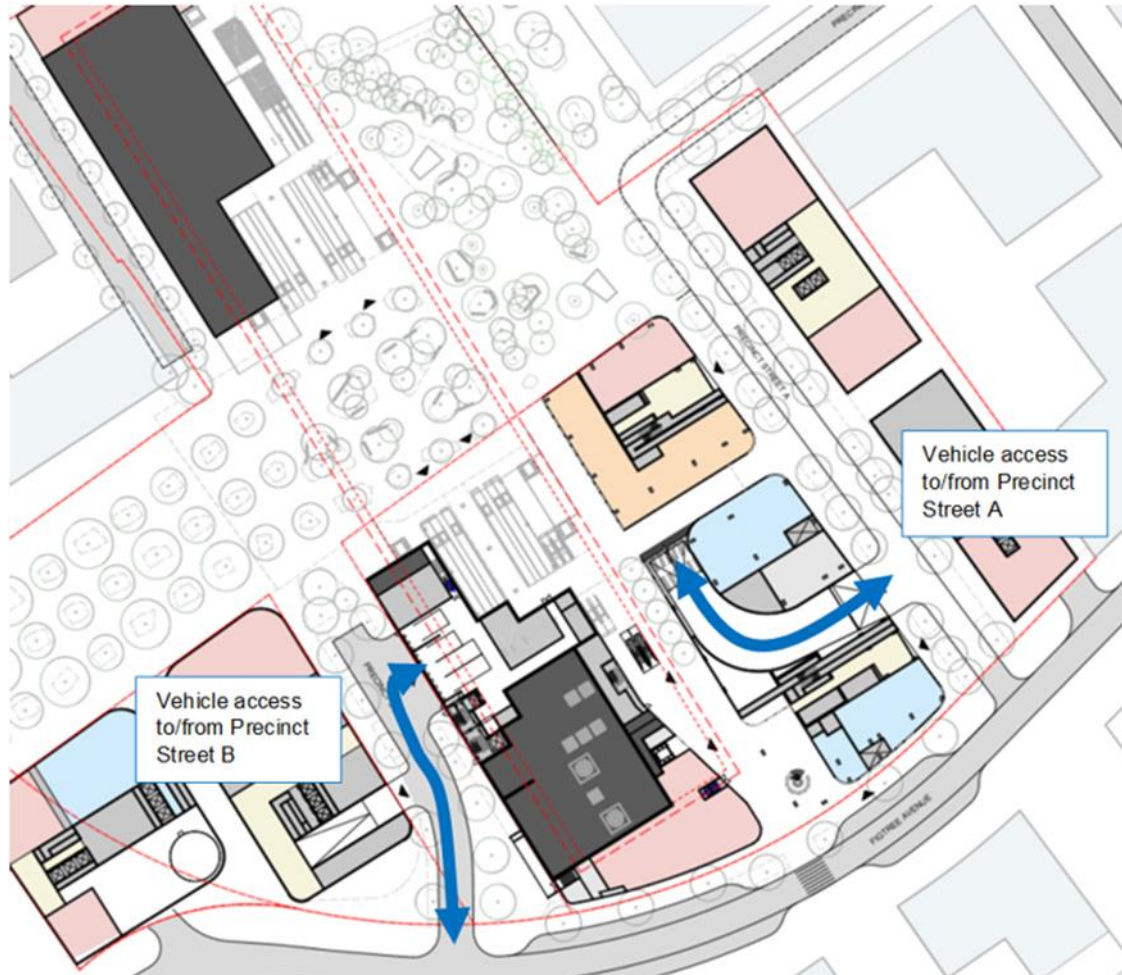


Figure 5-6 Vehicular access to/from the site

Access and egress to/from Building 1 and Precinct Street B is proposed to operate as right-in, left-out. Although the road will be configured as a two-way, two-lane road, Precinct Street B has largely been designed a service route shared zone, with the intention of this road space to be shared by vehicles, cyclists and pedestrians. Placement of the loading dock entry is at the end of the roadway, with additional road space provided at the end of the roadway to enable larger vehicles to complete turns when accessing or egressing from the loading dock.

Access and egress to/from the eastern basement beneath Building 2 and 3 is via a car park ramp from Precinct Street A. Access is expected to operate as left/right-in and left/right-out given that the road will be configured as a two-way, two-lane shared zone road.

5.2.4 Car parking

The proposed development is subject to the parking requirements stipulated in the SOP Master Plan 2030 (Interim Metro Review). This gives maximum rates which are not to be exceeded.

Table 5-4 summarises the LEP maximum parking rates and spaces based on the proposed SSD land use yields for each building. Note that this is subject to minor changes as the land use quantities are refined.

Table 5-3 Maximum car parking spaces per building

Land use	SOP MP 2030 (Interim Metro Review) parking rates (maximum)	Maximum permissible spaces per building		
		Building 1	Building 2	Building 3
Commercial	1 per 110m ² GFA	237	22	34
Retail (Local)	1 per 70m ² GFA	17	4	4
1 bedroom Residential	0.6 per dwelling			46
2 bedroom Residential	0.9 per dwelling		59	103
3 bedroom Residential	1.2 per dwelling		26	46
Residential visitor	0.2 per dwelling		18	46
Total		254	129	278

As Buildings 1, 2 and 3 all share the eastern basement, Table 5-4 sets out the maximum permissible parking spaces, as well as the proposed provision of car parking spaces for the whole basement. It should be noted that all non-residential parking has been designated as commercial for the purposes of this assessment for conservatism in the road network modelling.

Table 5-4 Maximum eastern basement car parking spaces and proposed provision

Land use	SOP MP 2030 (Interim Metro Review) parking rates (maximum)	Maximum permissible	Proposed parking spaces
Commercial	1 per 110m ² GFA	293	141
Retail	1 per 70m ² GFA	25	17
1 bedroom residential	0.6 per dwelling	46	50
2 bedroom residential	0.9 per dwelling	162	100
3 bedroom residential	1.2 per dwelling	72	40
Residential visitor	0.2 per dwelling	63	10
Total		661	358

The proposed provision of parking is within the SOP Master Plan 2030 (Interim Metro Review) maximum rates. Given the proximity of the Concept SSDA site to a range of public transport links, the reduction in the number of spaces compared to the existing site is considered appropriate. By providing a lower number of parking spaces per residential dwelling than the SOP Master Plan 2030 (Interim Metro Review) maximum, residents will be discouraged from owning and using private vehicles, catalysing a shift to sustainable transport modes and reducing impacts on the broader road network.

The SOP Master Plan 2030 (Interim Metro Review) states that accessible car parking should comply with SOPA Access Guidelines 2017 which in turn references AS 1428.1 and AS 2890 and specifies that no less than 2% of parking spaces should be accessible. It should be noted that the number of accessible parking spaces are to be confirmed at a later stage in the design process. Given the potential distance between the basement and the commercial land use at Building 1, consideration for the ease of travel between these two locations for persons who have physical or visually disabilities will need to be given.

5.2.5 Car sharing

Car sharing is encouraged under the SOP Master Plan 2030 (Interim Metro Review), though no minimum requirements are specified. SOPA has stated that it 'will work closely with proponents to identify opportunities to provide car sharing spaces for new developments where possible' (4.14 General Controls and Guidelines). As the Parramatta DCP does not have any further specific guidance on number of car share parking spaces, the City of Sydney 2012 guide and 2014 amendment is used as reference, which gives the following rates in the Sydney CBD:

- 1 car share space per 50 residential car spaces
- 1 car share space per 30 commercial or retail car spaces.

As can be seen in Table 5-5, nine car share spaces would be required from the proposed car parking arrangements.

Table 5-5 Proposed car share space requirements

Car share spaces	Commercial	Residential
Proposed car parking spaces	141	200
Calculated share parking requirements	5	4

Allocation and locations of the car share spaces are to be confirmed for the Concept SSDA development as the design develops.

5.2.6 Motorcycle parking

The SOP Master Plan 2030 (Interim Metro Review) has no guidance on the number of required motorcycle parking spaces. The Parramatta DCP specifies that separate parking for motorcycles should be provided, with a minimum area of one car parking space for every 50 car parking spaces provided.

The allocation and location of the motorcycle parking is to be confirmed for the Concept SSDA development as the design develops.

5.2.7 Loading docks

The primary function of loading dock spaces is to support the service demands of the proposed development, enabling continued commercial operations and refuse collection that is adequate for the intended use of the development.

The number of loading docks calculated as required and provided for each basement for medium rigid vehicles (MRV), small rigid vehicles (SRV) and B99 vehicles are provided in Table 5-6.

Table 5-6 Proposed Sydney Olympic Park OSD and ASD loading dock provision

Loading docks	B99	SRV	MRV	Service level
Calculated requirements				
Building 1 Ground Floor	5	1	1	96%
Buildings 2 and 3 Basement Level 1	2	2	2	96.9%
Total Requirement	7	3	3	
Provision				
Building 1 Ground Floor	0	1	1	51.1%
Buildings 2 and 3 Basement Level 1	2	2	2	96.9%
Total Provision	2	3	3	
Difference	-5	0	0	
Building 1 Ground Floor (Metro) ¹	0	1	1	

¹Metro requires one SRV and one MRV dedicated spaces in Building 1 Ground Floor loading dock. These spaces are not considered in calculated commercial/retail building service level requirements.

The number of loading docks provided across both buildings is subject to confirmation and further detailed design will be undertaken to investigate if further spaces are able to be provided to achieve the minimum calculated service level requirement.

Building 1 accommodates two loading docks on the ground floor of the building that are accessible from Precinct Street B (one SRV and one MRV loading space).

The loading dock area is shared for Building 2 and 3 and is accessible from a loading dock turntable in Basement Level 01 via Precinct Street A (two MRV, two SRV and two B99 loading spaces). A swept path analysis has been undertaken to review the manoeuvrability of the vehicles with dimensions detailed in Table 5-7. The swept path analysis is provided in Appendix A.

Table 5-7 Assumed service vehicle dimensions

Vehicle type	Overall length (m)	Design width (m)	Wheel base (m)	Clear height (m)
B99	5.20	1.94	3.05	2.20
SRV	6.40	2.30	3.80	3.50
MRV	8.80	2.50	5.00	4.50
Council waste	10.8	2.50	variable	4.50

6 Transport impact assessment

This chapter reviews the traffic and transport impacts of the Concept SSDA, including consideration of the road network, public transport, active transport and adjacent properties.

6.1 Predicted future modal split

Table 6-1 presents the future mode share and volume of trips by mode for the Concept SSDA, with the existing mode share presented for comparison. The predicted future mode share is illustrated in Figure 6-1. Explanation of how this was derived is provided in section 1.1.

It is estimated that the proportion of car trips will significantly reduce given the provision of a bus interchange facility and Sydney Metro West metro line. The proportion of public transport trips is expected to significantly increase to become the primary form of travel to and from the Concept SSDA site.

Car movements to and from the Concept SSDA site are not expected to be significant. The number of car parking spaces proposed as part of the Concept SSDA is limited, and this provision is not intended to cover increases in vehicle movements.

Table 6-1 Existing and predicted future mode share

Mode	Existing	Proposed		Existing	Proposed	
	Inbound %	Inbound %	Inbound no.	Outbound %	Outbound %	Outbound no.
Train	21%	11%	114	29%	19%	110
Metro	-	30%	310	-	46%	263
Bus/Light Rail	4% ¹	15%	155	4% ¹	15%	87
Ferry	0%	0%	0	2%	0%	0
Total public transport	25%	56%	579	35%	80%	460
Taxi	0%	0%	0	0%	1%	6
Car, as driver	69%	36%	370	56%	8%	47
Car, as passenger	4%	2%	20	4%	1%	6
Bicycle	1%	2%	23	1%	3%	19
Walked only	1%	4%	41	4%	7%	40
Total	75%	44%	454	65%	20%	118

¹Bus Only

Source: Australian Bureau of Statistics, Journey to Work 2016. Mode share aggregated across DZNs or SA1s within an 800m radius of the site.

The predicted future mode share given in Table 6-1 is illustrated in Figure 6-1.

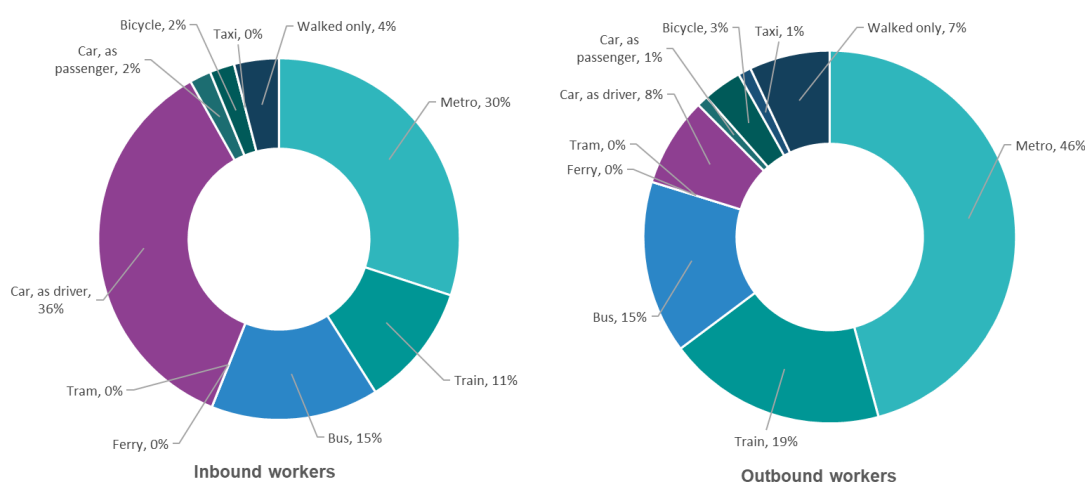


Figure 6-1 Predicted future mode share

6.2 Impacts on road network

6.2.1 Traffic generation

The traffic generated by the Concept SSDA will be constrained by the number of parking spaces provided. There are 358 parking spaces proposed within the eastern basement in the current design.

As retail trips are likely to take place outside of the peak periods, and to be conservative for the purposes of this assessment, the remainder of spaces are assumed to be for commercial use. The resulting provision of parking is given in Table 6-2.

Table 6-2 Proposed parking provision

Development basement	Proposed number of parking spaces		Total parking provision (no. spaces)
	Residential	Commercial	
Eastern	200	158	358

The (former) RMS Guide to Traffic Generating Developments provides vehicle trip generation rates for high density residential dwellings based on the number of units (0.19), bedrooms (0.09) and car spaces (0.15). A comparison of the resulting number of vehicle trips generated for each approach is given in Table 6-3.

As Building 1 is an OSD and has no basement car parking or allocation for parking spaces within the GFA of the building, all car parking for residential, retail and commercial uses are to be located in the eastern basement of Buildings 2 and 3. To be conservative and as the number of trips generated by unit is lower than the parking provision, this has been used for the assessment.

Table 6-3 Residential traffic trips generated in the AM and PM peak hours based on the number of units, bedrooms and parking spaces

Residential provision	Yields	AM peak vehicle trips			PM peak vehicle trips		
		by unit	by bedroom	by spaces	by unit	by bedroom	by spaces
1 bedroom units	76	14	7	0	11	5	0
2 bedroom units	180	34	32	0	27	25	0
3 bedroom units	60	11	16	0	9	13	0
Parking spaces	200	0	0	30	0	0	24
Total		59	55	30	47	43	24

When the former RMS Guide to Traffic Generating Developments was used to calculate the number of commercial vehicle trips, the result was well in excess of the number of parking spaces provided. A first principles approach has therefore been taken based on the number of available spaces and the assumptions discussed in section 3.8.

Commercial, retail and loading dock traffic generation estimates for the proposed development are provided in Table 6-4 for the AM and PM peak period.

Table 6-4 Estimated AM and PM peak hour building vehicle trips

Location	AM peak vehicle trips				PM peak vehicle trips			
	In-bound	Out bound	Loading dock	Total	In-bound	Out bound	Loading dock	Total
Building 1 Ground floor	0	0	12 ¹	12	0	0	0	12
Buildings 2 and 3 Basement	96	47	13	156	42	95	13	150

¹Does not include station service vehicle movements

6.2.2 Intersection modelling

The road network performance has been modelled for the future year 2036. The traffic demand has been based on 2021 counts with an agreed growth factor applied, calculated using outputs extracted from the PTPM model, which includes the Concept SSDA. An additional scenario, with Sydney Olympic Park metro station but without the Concept SSDA was also assessed, by subtracting the traffic generation provided in section 6.2.1. Modelled network performance for 2036 during the AM and PM peak hours for key intersections in the vicinity of the Concept SSDA site are provided in Table 6-5.

Table 6-5 Future intersection modelled performance (2036)

Intersection	AM Peak				PM Peak			
	Without SSD		With SSD		Without SSD		With SSD	
	Ave delay (sec)	LOS	Ave delay (sec)	LOS	Ave delay (sec)	LOS	Ave delay (sec)	LOS
Australia Avenue and Sarah Durack Avenue	46	D	41	D	72	E	72	E
Olympic Boulevard and Sarah Durack Avenue	22	C	23	C	27	C	26	C
Olympic Boulevard and Figtree Drive ^{1,2}	4	A	4	A	4	A	4	A
Olympic Boulevard and Herb Elliot Avenue ¹	2	A	3	A	2	A	3	A
Australia Avenue and Herb Elliott Avenue	48	D	36	D	39	D	39	D
Australia Avenue and Figtree Drive ^{1,2}	13	B	16	B	14	B	26	C

¹Level of service of worst movement

²Buses for future network approval included

The traffic modelling undertaken shows that future intersection performance across the local network is similar with and without the Concept SSDA development. Minor increased congestion occurs at the intersection of Australia Avenue/Figtree Drive during the PM peak, though this is not anticipated to have a detrimental effect on the surrounding road network operation. Slightly decreased intersection performance at this location is being caused by private and service vehicle movements to and from the Concept SSDA between Precinct Street A, Precinct Street B and Figtree Drive.

6.3 Public transport

The Concept SSDA site will be positioned at the heart of a major transport interchange hub within Sydney Olympic Park. The development is located south of the existing Olympic Park Station and north of a proposed bus interchange on Figtree Drive.

The Concept SSDA development is considered to offer very high levels of public transport accessibility and connectivity for future workers and residents.

6.3.1 Rail

The introduction of Sydney Metro will vastly improve mobility by rail within the local area and provide a high level of accessibility by train. The existing Sydney Olympic Park Station is primarily utilised for major events, operating as a shuttle service for day-to-day operations on the T7 Olympic spur line between Olympic Park Station and Lidcombe.

The new Sydney Olympic Park metro station and the existing train station are expected to account for 41% of arrivals and 64% of departures to and from the proposed OSD, largely benefiting from its immediate proximity.

Considering the significant increase in capacity and connectivity with the introduction of metro services, the impact on the rail operations as a result of the Concept SSDA demand is expected to be acceptable.

6.3.2 Bus

The Sydney Olympic Park metro station bus interchange would be located south of the Concept SSDA on Figtree Drive, between Olympic Boulevard and Australia Avenue. The new interchange on Figtree Drive would be supported by existing paired bus stops on Park Street, Dawn Fraser Avenue and Australia Avenue.

Bus trips are expected to account for around 15% of all trips to the Concept SSDA Development which would be around 155 inbound trips and 87 outbound trips in the morning peak. Although the bus timetable for the new bus interchange is yet to be planned, it's expected that with the introduced bus frequencies and the future proposed light rail services at Sydney Olympic Park, there would be no diverse effect of the Concept SSDA bus trips on the bus network.

Access between the Concept SSD and the bus interchange will be improved through a new mid-block pedestrian crossing on Figtree Drive, which would be delivered as part of the Stage 3 CSSI Application.

The potential for improved bus services and route alignment to/from the interchange on Figtree Drive is being investigated in consultation with SOPA and TfNSW as part of the Sydney Metro West station project.

6.4 Active transport

6.4.1 Walking

The existing pedestrian network within the Concept SSDA site is non-existent, with the site currently comprised of several commercial properties. The proposed pedestrian network that will be delivered as part of the Stage 3 CSSI Application will vastly improve pedestrian connectivity across the area, providing through pedestrian links, green space, and a public domain. It is anticipated that 7% of trips to and 4% from the Concept SSDA development will be by walking.

The Concept SSDA site would integrate with the pedestrian network in two distinctly different ways, which relate to its dual design as a vibrant town centre for improved activation and programme and capacity to carry and store high volumes of pedestrian movements during event mode.

The future north-south pedestrian promenade extends between Figtree Drive and Herb Elliott Avenue and through the heart of the development. In its centre, it will connect to a west-east public plaza that will support event crowd movements to Olympic Boulevard. Day-to-day access has been segregated from event access so that event crowds do not impact on local access arrangements.

During precinct events, the metro station would have separate, more direct, event access in and out of the station to the surface within the Forest Plaza. This plaza would extend west from the metro station away from the town centre towards Olympic Boulevard. This is the major approach route for all bump-out crowds during major events. The area has historically had roads closed on event days where pedestrian demand warrants increased safety measures to reduce the likelihood and severity of pedestrian-vehicle conflicts.

Two new shared environment streets are proposed, including Precinct Street A (to be delivered as part of the Concept SSDA) and Precinct Street B (delivered through the Stage 3 CSSI Application). These would be designed to prioritise pedestrian and

cyclist movements, whilst also allowing access for vehicles accessing surrounding developments.

A shared zone would need to comply with the (former) RMS Technical Direction Design and implementation of shared zones including provision for parking (TTD 2016/001 February 2016). A Category 1 shared zone is defined as 'provided on a road related area, has clearly different coloured and textured surface treatments from the surrounding roads, and typically does not have kerbs. Design principles to be considered for a shared zone include:

- All new Category 1 shared zones must be constructed without kerbs.
- All shared zones in NSW must display a speed limit of 10 km/h. No other speed limit is allowed. All shared zones in NSW must be authorised by RMS as they are a speed zone.
- Continuous footpath treatments should be considered as entry/exit treatments to assist traffic calming.
- Regulatory traffic signs as per the requirements of the NSW Road Rules 2008 are required.
- The pavement surface shall be changed to highlight the difference in the street environment from the surrounding road network. It must be clearly distinguishable by colour, texture and/or materials.

Mid-block pedestrian crossing facilities provided as part of the Stage 3 CSSI Application would be situated at either end of the promenade at Herb Elliott Avenue and Figtree Drive. The Herb Elliott Avenue crossing would provide access to Dawn Fraser Avenue via an existing pedestrian link through the Abattoir Heritage Precinct. The crossing of Figtree Drive to the south provides the major link between the two sides of the bus interchange. The type of crossing facilities to be provided would be developed in consultation with key stakeholders including SOPA and TfNSW.

Pedestrian access to the site from the east is restricted by the existing rail track alignment to a single underpass on Australia Avenue. From here, pedestrians either use Herb Elliott Avenue or Figtree Drive to access the Concept SSDA development or stadiums. To improve access, a west-east pedestrian connection would be implemented between the precinct area and beyond the rail tracks to improve accessibility through this area. This connection is not expected to be finalised until after the completion of surrounding development east of the precinct and would be delivered by SOPA and other relevant stakeholders.

The distribution of AM trips to and from the Concept SSDA has been estimated and is provided in Figure 6-2. This figure shows that the majority of movements generated are localised around the new metro station and from the Figtree Drive bus interchange to the south. Pedestrian movements to/from the Sydney Olympic Park metro station account for the majority of trips to the north, with few trips extending past the precinct area.



6.4.2 Cycling

Around 3% of trips to and from the Concept SSDA development are estimated to travel by bicycle. The NSW Principal Bicycle Network shows existing cycling links on Dawn Fraser Avenue, Australia Avenue and Sarah Durack Avenue. Future links are proposed on Australia Avenue, the extents and built form of which are to be confirmed.

Within the site area, the future north-south and east-west public domain (to be provided through the SSI) will provide off-road connectivity from the Concept SSDA to the adjacent road and cycle networks.

Existing infrastructure consists primarily of on-road cycle lanes, at moderate difficulty, with wide off-road shared paths around stadium areas. Roads that surround the proposed station Concept SSDA, including Herb Elliott Avenue, Olympic Boulevard, Showground Road and Figtree Drive have no dedicated cycle infrastructure, but are low speed environments that typically carry low volumes of vehicles. These routes are likely to be used by cyclists comfortable with sharing road space with vehicles.

No additional formalised crossing facilities are proposed, however cyclists travelling north-south through the public domain would be able to use the mid-block pedestrian crossings provided on Herb Elliott Avenue and Figtree Drive.

Existing connectivity in the wider local area is reasonable, with a series of north-south and east-west cycle links providing access to the wider network and the suburbs of Concord and Newington. Access south is limited to two off-road crossings on Birnie Avenue and Hill Road, as the M4 Western Motorway limits accessibility.

6.5 Adjacent property and parking impacts

There are no private property access or parking impacts associated with the Concept SSDA.

7 Construction impact assessment

This chapter reviews the impacts associated with the construction of the Concept SSDA, including providing preliminary details of the construction plan and assessment of the potential impact on the transport network.

7.1 Construction details

7.1.1 Construction staging

Three possible staging scenarios have been identified for delivery of the proposed Concept SSDA as detailed below:

1. Scenario 1 – the station and Concept SSDA developments are constructed concurrently by constructing the transfer slab first and then building in both directions.
2. Scenario 2 – the station is constructed first and ready for operation. Concept SSDA development construction may still be incomplete or soon ready to commence after station construction is completed. This means that some or all Concept SSDA construction is likely to still be underway upon opening of the station.
3. Scenario 3 – the station is constructed first and ready for operation. The Concept SSDA development is built at a later stage, with timing yet to be determined. This creates two distinct construction periods for the station and Concept SSDA development.

Scenario 1 represents Sydney Metro's preferred option as it would provide for completion of the full integrated station development and therefore the optimum public benefit at the site at the earliest date possible. However, given that the delivery of the Concept SSDA development could be influenced by property market forces, Scenarios 2 or 3 could also occur.

The final staging for the delivery of the Concept SSDA development would be resolved as part of the detailed SSD Application(s).

7.1.2 Construction activities

The major worksite construction activities proposed to be carried out across the Concept SSDA site are:

- construction traffic access and egress
- enabling and site establishment
- basement excavation
- temporary shoring and ground anchors
- basement construction
- building structure, facades, and roof
- fit out including building services
- finishing work and testing and commissioning.

7.1.3 Construction vehicles

The proposed construction vehicles type and size for the construction site are listed in Table 7-1. Truck types are based on factors such as site accessibility (including

constraints on the local road network), materials required to be delivered to sites, material removals and construction activities. This table identifies construction vehicle types which may be used.

Table 7-1 Indicative construction vehicles for Concept SSDA development site

Truck type	Capacity	Maximum length
Semi-trailer & low loaders	10-30 tonne	13-19m
Rigid truck or truck and dog	20m ³	19m
Concrete agitator	23-28 tonnes	8.5m
Heavy rigid vehicle	15-26 tonnes	12.5m
Medium rigid vehicle	12 tonnes	12.5m
Light rigid vehicle	5-8 tonnes	8.5m

7.1.4 Plant & equipment

The construction will involve significant plant requirements across a range of general and specialist construction equipment. The demand for specific plant is likely to vary over time depending on the specific stage of construction.

An indicative list of major plant and equipment to be utilised on the Concept SSDA site are:

- tower cranes
- material hoists
- elevated work platforms
- telescopic forklifts
- forklifts
- concrete pumps
- concrete Trucks
- excavators
- road sweepers
- water carts
- semi-trailer and low loaders
- truck and dogs
- Heavy rigid vehicles
- light rigid vehicles
- deliveries vans.

7.1.5 Oversize deliveries

For safety reasons the delivery of oversized plant and materials may be required to take place outside of site working hours. This would require relevant approvals from Local Council, NSW Police or other authorities (including TfNSW) prior to these deliveries occurring.

7.1.6 Proposed haulage routes and parking

The proposed primary haulage routes facilitate left turns only as shown in Figure 7-1. It is proposed that construction vehicles would travel along Australia Avenue before turning left onto Herb Elliot Avenue, and then left onto Olympic Boulevard, before turning left onto Figtree Drive and then left into the site.

Under Scenario 1, construction vehicles leaving the site would exit turning left into Herb Elliot Avenue, and then left onto Olympic Boulevard and Sarah Durack Avenue. Under construction scenarios 2 and 3, the construction vehicles would exit into Figtree Drive instead of Herb Elliot Avenue and will continue west to Olympic Boulevard and Sarah Durack Avenue egress route.



Figure 7-1 Sydney Olympic Park SSD proposed construction haulage routes – Scenario 1

Secondary haul routes may include Edwin Flak Avenue, Old Hill Link and Hill Road in consistency with Environmental Impact Statement 3.

A car parking will be established on-site for construction light vehicles under construction Scenario 1 as shown in Figure 7-1. Up to three light vehicles would be expected at the site during peak hours and up to six vehicles during off peak hours. Construction movements are discussed in the following section. No parking will provide on-site for construction workers under Scenarios 2 or 3. Workers would be expected to use public transport to access the site instead.

Truck movements to site will be coordinated to avoid idling on nearby streets, with all trucks loading or unloading within the Materials Handling zone.

7.1.7 Construction vehicle movement forecast

Indicative estimates of traffic generation associated with the Sydney Olympic Park metro station fit out and the Concept SSDA works are provided below in Table 7-2.

Table 7-2 Indicative construction traffic generation estimates

	Period/vehicle type											
	Peak hour ¹			Non-peak hour ²			Evening ³			Night ⁴		
	Light	HV	Total	Light	HV	Total	Light	HV	Total	Light	HV	Total
Station	6	6	12	12	12	24	4	6	10	2	2	4
Concept SSDA	3	3	6	6	6	12	2	3	5	-	-	-
Total	9	9	18	18	18	36	6	9	15	2	2	4

All figures are hourly; maximum condition

¹ AM peak hour and PM peak hour (7-8am / 5-6pm)

² 9-hour period (8-5pm)

³ 4-hour period (6-10pm)

⁴ 9-hour period (10pm-7am), subject to specific permits

During AM and PM peak hours, it is expected that up to three light vehicles and six heavy vehicles will access the construction site during the construction of the Concept SSDA development. In case construction Scenario 1 is adopted, that number would increase by six light vehicles and six heavy vehicles for construction of the station during peak hours.

The maximum number of construction vehicles (both light and heavy) would be expected during non-peak hours when around six light and six heavy vehicles would be expected an hour. In case construction scenario 1 is adopted, that number would increase by 12 light vehicles and 12 heavy vehicles for construction of the station.

7.2 Construction impact assessment

7.2.1 Site establishment

The site would be enclosed by hoardings along the perimeter of the site including Herb Elliot Avenue, Olympic Boulevard, Figtree Drive and the private car parks adjacent to the site.

Hoardings will be installed as part of works completed under the preceding Sydney Metro West planning applications and would be adjusted by Concept SSDA contractor(s) if required. Hoardings would be designed, installed, and maintained to ensure segregation of pedestrians, workforce, heavy vehicles, and light vehicles.

Figure 7-2 below shows the proposed site establishment for scenario 1 (preferred) including hoardings and the segregation of pedestrians, workforce, heavy vehicles, and light vehicles.

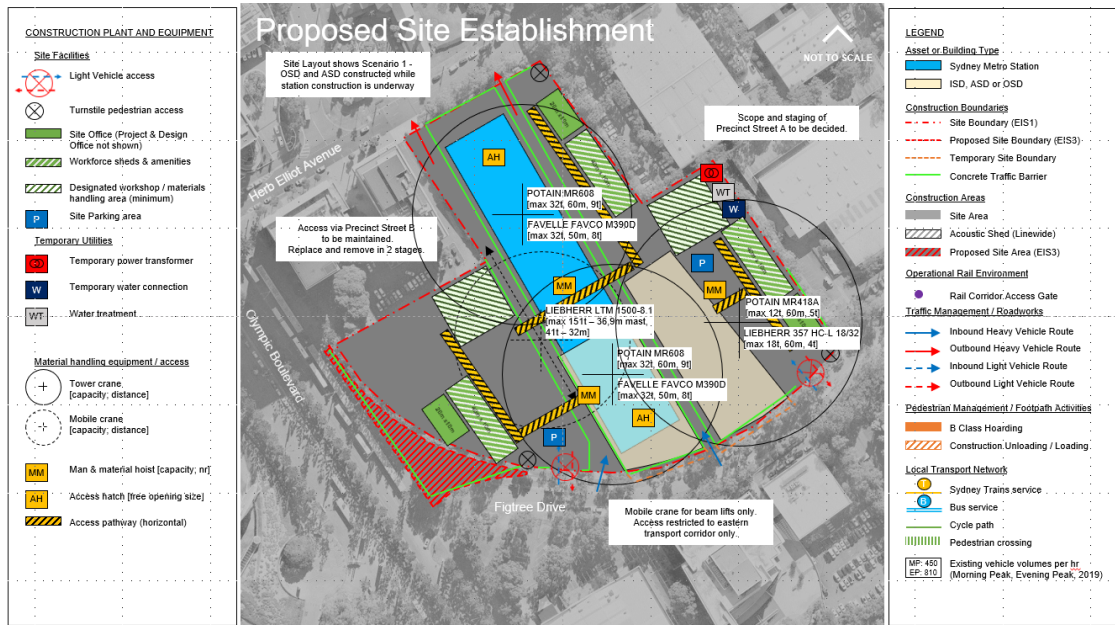


Figure 7-2 Proposed site establishment plan – Scenario 1

Figure 7-3 below shows the proposed site layout for scenarios 2 and 3, if the Concept SSDA construction is not completed prior to the commencement of Sydney Olympic Park metro station operations or construction commences after Sydney Olympic Park metro station is operational.

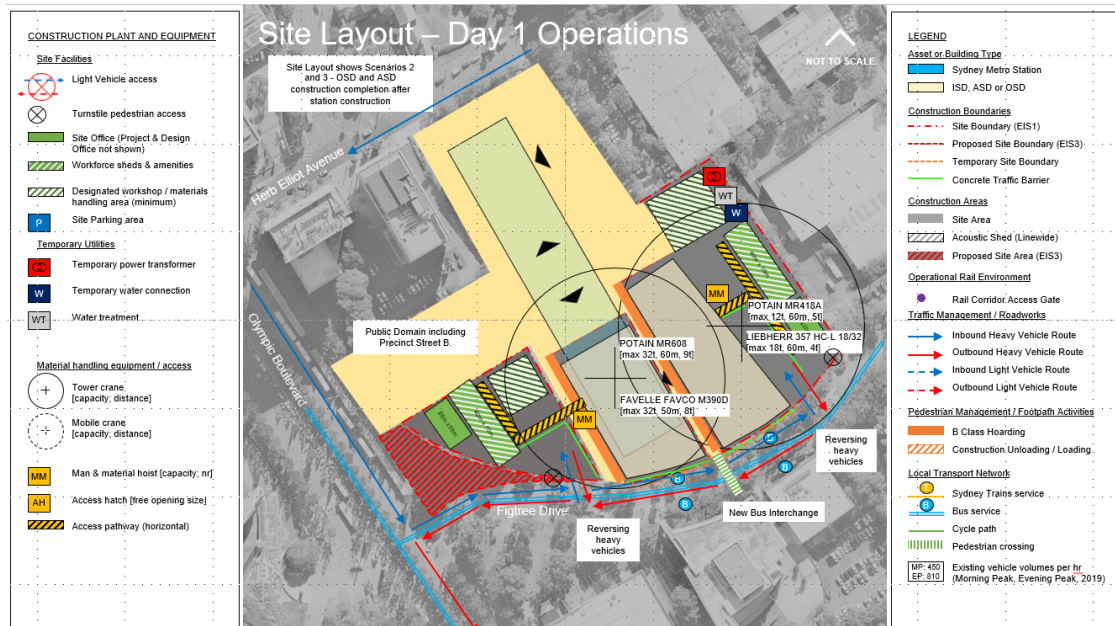


Figure 7-3 Proposed site layout – Day 1 operations (Scenarios 2 and 3)

7.2.2 Impact on road network

Under Scenario 1, when both station and Concept SSDA are constructed at the same time, traffic access arrangements are as shown in Figure 7-2 with access for both light vehicles and heavy vehicles from Figtree Drive. Heavy vehicles would exit the site into Herb Elliot Avenue and light vehicles into Figtree Drive to segregate both vehicle types.

Construction vehicle movement forecasts indicate that a maximum of 9 light vehicles would access the site during the peak hours (3 vehicles associated with the SSD and

6 with the station construction). Also, it is estimated that 9 heavy vehicles would access the construction site during the peak hours (3 vehicles associated with the Concept SSD and 6 with the station construction). This indicates a very minor impact on the adjacent road network with no adverse impacts on the network performance.

Under Scenarios 2 and 3, the station will be already constructed and access to the proposed SSD construction site will be through Figtree Drive as shown in Figure 7-3.

Construction vehicle movement forecasts indicate that a maximum of 3 light vehicles would access the site during the peak hours. Also, it is estimated that 3 heavy vehicles would access the construction site during the peak hours. This indicates a very minor impact on the adjacent road network with no adverse impacts on the network performance during those scenarios.

Additionally, considering the low expected number of construction vehicles associated with the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park, it is not expected that those would have major impacts on the road network and intersections at the vicinity of the site.

Construction traffic modelling would be undertaken at further stages of the SSDA to ensure that changes to traffic arrangements would not result in significant impact on network performance.

It is not anticipated that construction vehicles would be accessing the construction site during major events in the area, and therefore no major impacts on construction are expected as those construction related activities would occur during off peak hours and outside the event duration.

The largest construction vehicles anticipated to travel to the site via the proposed haul routes would be a 19m semi-trailer truck and 19m truck and dog.

A swept path analysis of access and egress movements at the indicative construction site location has been undertaken for the 8.5m medium rigid vehicle and 19m semi-trailer. The swept path analysis indicates that turning movements for these vehicles could be adequately accommodated. Swept path plans have been included in Appendix A of this report.

7.2.3 Impact on public transport

Under Scenario 1, the existing bus stops on each of Dawn Fraser Avenue, Park Street, and Australia Avenue will be operational with no impacts on the services or the bus stops. Impacts to buses would be limited to a potential minor increase in travel time due to the additional construction vehicles on the road network.

For Scenarios 2 and 3, when the station is assumed to be operational, the proposed bus interchange on Figtree Drive is expected to be operational. Heavy vehicles may need to reverse in and out of the construction site under those scenarios and that will be in a controlled manner with appropriate traffic control officers to ensure minor disruptions to bus movements and safe boarding/alighting for bus customers. The proposed mid block crossing on Figtree Drive would not be impacted as a result of construction.

No impacts to the rail network are anticipated during construction of the Concept SSDA.

Additionally, no cumulative impacts on the public transport are anticipated as a result of the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

7.2.4 Impact on active transport

Cycling

During construction of the Sydney Olympic Park metro station and Concept SSDA under Scenario 1, no road closures are expected, and all existing cycling routes would be maintained. Cyclists around the Concept SSDA construction site would still be able to use each of Herb Elliott Avenue, Olympic Boulevard, Showground Road and Figtree Drive. It should be noted however that those roads have no dedicated cycle infrastructure but are low speed environments that typically carry low volumes of vehicles and are likely to be used by cyclists comfortable with sharing road space with vehicles.

Alternative north-south cycling links under Scenario 1 include Australia Avenue. Alternative east-west links include Dawn Fraser and Sarah Durack Avenue.

During the construction of the Concept SSDA under Scenarios 2 and 3 when the station is already constructed, construction work is not expected to disrupt cycling activities on Precinct Street B as the site entry will be to the south of Figtree Drive. Cyclists accessing the station bike parking would still be able to do so using the public domain and Precinct Street B.

Cyclists travelling north-south through the public domain would still be able to use the mid-block pedestrian crossings provided on Herb Elliott Avenue and Figtree Drive.

No cumulative impacts on the cycling infrastructure are anticipated as a result of the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

Walking

The site would be enclosed by hoardings along the perimeter of the site including Herb Elliot Avenue, Olympic Boulevard, Figtree Drive and the private car parks adjacent to the site.

Under Scenario 1, when both Sydney Olympic Park metro station and Concept SSDA are being constructed, proposed access pathways would be provided within the construction site to facilitate pedestrian movements for workers between the site office, workforce sheds and designated workshops as shown in Figure 7-2.

Temporary footpath closures may occur on Figtree Drive under this scenario; however, the design has not progressed sufficiently to show the exact location of those. This work would preferably be done prior to the Sydney Olympic Park metro station operations commencing.

Under Scenarios 2 and 3, it is expected that the station would be operational, and therefore different measures would be required to maintain a safe access for pedestrians accessing and exiting the station while the Concept SSDA is being constructed. The future promenade linking Figtree Drive and Herb Elliott Avenue will be built and access to this link maintained during construction. Similarly, the Public Domain would also be constructed in addition Precinct Street B. B Class hoarding would be provided near Precinct Street B and between the Building 1 and Building 2 and 3 to segregate site activities from pedestrian accessing the station. Also, proposed access pathways would be provided for site workers under those 2 scenarios as shown in Figure 7-3.

Figtree Drive proposed bus interchange would be operational, and the proposed pedestrian crossing to facilitate pedestrian access from and to the bus stops and surrounding development would be maintained during construction under the 2 scenarios. It is however expected that temporary footpath closure would take place on Figtree Drive during the construction of the Concept SSD. The design has not

progressed sufficiently to show the exact location of those closed footpaths. This work would preferably be done prior to station operations commencing.

Additionally, no cumulative impacts on the walking infrastructure are anticipated as a result of the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

Appropriate diversions would be established to safely guide pedestrians around work zones in accordance with Construction Traffic Management Framework (CTMF).

7.2.5 Impact on parking and property access

Other than minor impact with closures of some on-street parking spaces on Herb Elliot Avenue and Figtree Drive, there is no impact on parking during construction under any of the scenarios. The location and number of those spaces would be determined at a later stage.

When the station's kiss and ride and taxi rank facilities are operational, it is not expected that those would be impacted under construction Scenarios 2 and 3.

Similarly, there will be no impact on property access during the construction of the Concept SSDA.

7.2.6 Impact on emergency access and special events

It is not anticipated that there will be any major impacts to emergency services within the area as no road closures are planned as part of any construction stage. Relevant services will be notified of the works as part of the Construction Traffic Management Plan approval process of the final routes.

No major impacts would be expected during major events under any of the construction scenarios as construction vehicles movements would be restricted or limited including the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

During major events, Olympic Boulevard would be closed between Dawn Frazer Avenue and Figtree Drive, and bump-out crowds accessing the metro station would be directed south down Olympic Boulevard to the Forest Plaza. To facilitate pedestrian entry from Olympic Boulevard into Forest Plaza, a small break would be provided in the central median of Olympic Boulevard, directly opposite the Forest Plaza entry. There would be no impact on this arrangement during construction under Scenarios 2 and 3 as the public domain will be open for pedestrians to allow pedestrian movements to and from the station.

Also, the western end on Herb Elliot Avenue may be closed and the CTMF would outline mitigation measures that would be implemented to minimise impacts. These would be detailed in future Construction Traffic Management Plans.

7.2.7 Cumulative impacts

For the purpose of providing a high-level assessment of the potential environmental impacts associated with construction, impacts directly associated with the Concept SSDA development were considered, the subject of this SSDA, in addition to the cumulative impacts associated with the CSSI (Sydney Olympic Park metro station) and the following developments:

- Site 2A and 2B, Sydney Olympic Park
- Site 43/44 Sydney Olympic Park – Stage 1 and 2 (6 Australia Avenue and 2 Herb Elliott Avenue).

It should be noted that the construction program for the above listed developments is not available (using publicly available documents for those projects) including the number of construction vehicles associated with those, and therefore a high level cumulative was undertaken in consistency with what was undertaken for Stage 3 of the EIS of the CSSI under the assumption that those developments would be constructed at the same time with this proposal as a worst-case scenario.

A review of the publicly available construction information indicates that Homebush Bay Drive, Australia Avenue, and Herb Elliott Avenue east of the construction site form part of primary construction vehicle routes for the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park. Australia Avenue also forms part of the primary and secondary construction routes for this proposal.

No information about the estimated number of construction vehicles that are associated with the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park is publicly available, however those are anticipated to be low and would have a minimal impact on the road network and intersections at the vicinity of the Concept SSD.

Construction traffic modelling would be undertaken at the detailed stage of the SSDA to ensure that changes to traffic arrangements would not result in significant impact on network performance.

No cumulative impacts on the public transport are anticipated as a result of the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

Additionally, no cumulative impacts on the walking infrastructure are anticipated as a result of the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

Appropriate diversions would be established to safely guide pedestrians around work zones in accordance with CTMF.

Similarly, no major impacts would be expected during major events under any of the construction scenarios as construction vehicles movements would be restricted or limited including the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

8 Considerations

The following recommendations and future considerations are proposed and would require further development and refinement in the subsequent stages (during preparation of the Detailed SSD):

8.1 Service vehicle and loading dock requirements

It is anticipated that the proposed loading dock provision in Building 1 will not be adequate for the Concept SSD and Sydney Metro use requirements. Options to cater for minimum requirements should be investigated, including the consideration of loading dock management plan.

8.2 Loading dock and active travel use management

Improved safety of active travel users accessing the bicycle parking and end of trip facility lift off the loading dock in Building 1 should be investigated. Loading docks are typically high activity areas (with vehicles that tend to have blind spots and are undertaking numerous movements) and combining this environment with vulnerable road users increases the risk of vehicle-cyclist conflicts.

8.3 Accessible parking locations

Consider spatial allocation and design of accessible parking in the basement of Buildings 2 and 3. Movements for persons with visual or physical disabilities may be elongated or onerous, particularly to commercial land uses in Building 1.

8.4 Down ramp vehicle conflicts

Active travel users who need to access the bicycle parking and EOTF on Level 01 in the basement of Buildings 2 and 3 are more likely to use the vehicle down/up ramp rather than take an elongated route through the building's lobby before taking a lift down one level. Investigation of options to reduce vehicle-cyclist conflicts through mitigative measures or restricting active travel movements is recommended.

8.5 Construction traffic management

A CTMP will be undertaken as part of the detailed SSDA for adoption during the construction phase as that would provide a more detailed and valuable assessment considering the possible changes and unknowns at concept level.

It should also be noted that a draft CTMP was prepared as part of the CSSI and that plan also applies to the SSD development as it is anticipated that both would be constructed concurrently.

8.6 Travel plans

The size of the proposed SSD means it is a requirement under the Parramatta DCP to create a Travel Plan. It is proposed that this is a consent condition prior to the issue of a construction certificate and to be prepared in the future Detailed SSDA. A Travel Plan is a package of measures designed to reduce car trips and encourage the use of sustainable transport. It must include:

- Targets – These are typically aimed at reducing the number of single occupant car trips.

- Travel data – An initial estimate of the number of trips to the site by mode is required. Travel Plans require an annual travel survey to estimate the change in travel behaviour to and from the site and a review of the measures.
- Measures – A list of specific tools or actions to achieve the target.

9 Conclusion

This report presents the results of a transport and accessibility impact assessment for the Concept SSDA at Sydney Olympic Park. It has been prepared to outline the impacts to the transport network and parking for the end state of development and during construction in response to the SEARs requirements.

Key transport impact assessment findings

The key findings of the assessment of the end-state proposed Concept SSDA development are that:

- The proposed provision of car parking is well within the Sydney Olympic Park SOP Master Plan 2030 (Interim Metro Review) maximum rates.
- The quantity of loading dock facilities provided will be further investigated during the Detailed SSDA stage, including options for where else loading dock spaces could be located to ensure provisions are suitable for the estimated dock activity (based on the TfNSW Freight Toolkit).
- It is estimated that the proportion of car trips will significantly reduce compared to the existing mode share around the proposed development, given the addition of the Sydney Metro West metro line, bus interchange facility and improved active transport links (e.g. Forest Plaza, Figtree Drive, Precinct Street A and B). The proportion of public transport trips is expected to significantly increase to become the primary form of travel to and from the proposed development.
- The Concept SSDA is not anticipated to have a detrimental effect on the surrounding road network operation. The road network is expected to continue to operate at acceptable levels of service, with the only notable impact a slight increase in congestion at the intersection of Australia Avenue and Figtree Drive in the PM peak.
- Excellent connectivity and accessibility of public transport is provided at the proposed development with it being at the heart of a major transport interchange. It is located within the same block as the new Sydney Olympic Park metro station and within a short walking distance to the existing Olympic Park station and bus interchange on Figtree Drive.
- Cyclists will benefit from proposed new active travel connections on Figtree Drive, Precinct Street A and Precinct Street B, with bicycle parking and end of trip facilities for commercial and retail workers.
- Pedestrian connectivity within the proposed precinct is prioritised, with the future pedestrian promenade and Forest Plaza running north-south and west-east through the precinct.
- Two new pedestrian crossings on Herb Elliott Avenue and Figtree Drive (to be delivered under the Stage 3 CSSI Application) will improve pedestrian connectivity through the precinct and are aligned north-south with the main pedestrian promenade.
- Access to adjacent properties will be maintained in their existing form. No impact to adjacent properties has been identified.

Key construction impact assessment findings

The key findings of the assessment of the construction of the proposed development are that:

- The maximum number of construction vehicles (both light and heavy) would be expected during non-peak hours when around six light and six heavy vehicles

would be expected an hour. In case construction Scenario 1 is adopted, that number would increase by 12 light vehicles and 12 heavy vehicles for construction of the station. This estimated number of vehicles will have a minor impact on the adjacent road network; however, traffic modelling will be conducted as part of the Detailed SSDA.

- On-site car parking will be provided for construction staff under construction Scenario 1 with an estimation of three light vehicles accessing the site during peak hours and six during non-peak hours for the construction of the SSDA. During Scenarios 2 and 3, no on-site parking will be provided. Workers are expected to use public transport including metro, train, and buses to access the site.
- Public transport services would not be impacted as a result of construction activities under any of the proposed scenarios.
- Cycling links would not be impacted during the construction of the proposed development under any of the scenarios.
- During the construction of the proposed development, temporary footpath closures may occur on Figtree Drive under; however, the design has not progressed sufficiently to show the exact location of those. This work would preferably be done prior to station operations commencing.
- Under Scenarios 2 and 3, B Class hoarding would be provided near Precinct Street B and between Building 1 and Buildings 2 and 3 to segregate site activities from pedestrian accessing the station.
- All loading and unloading of trucks shall occur within the proposed construction sites with no on street construction activities. Traffic modelling will be conducted during Stage 2 to review for any impacts on network performance.
- A number of on-street parking spaces will be temporarily closed on Herb Elliot Avenue and Figtree Drive. The location and number of those spaces would be determined at a later stage.
- No impact on adjacent property access is expected under any of the scenarios.
- No major impacts to emergency services are expected within the area as no road closures are planned as part of any construction stage.
- No major impacts as expected during major events as construction vehicle movements would be limited or restricted, however, the western end on Herb Elliot Avenue may be closed and the CTMF would outline mitigation measures that would be implemented to minimise impacts. These would be detailed in future Construction Traffic Management Plans.
- Truck drivers would be instructed to use the nominated haul routes to/from the site and shall conform to this.
- No major cumulative impacts are anticipated during the construction of Site 2A and 2B, Sydney Olympic Park and Site 43/44 Sydney Olympic Park.

Proposed mitigation measures and recommendations

The following mitigation measures and recommendations are proposed for the Concept SSDA development are as follows:

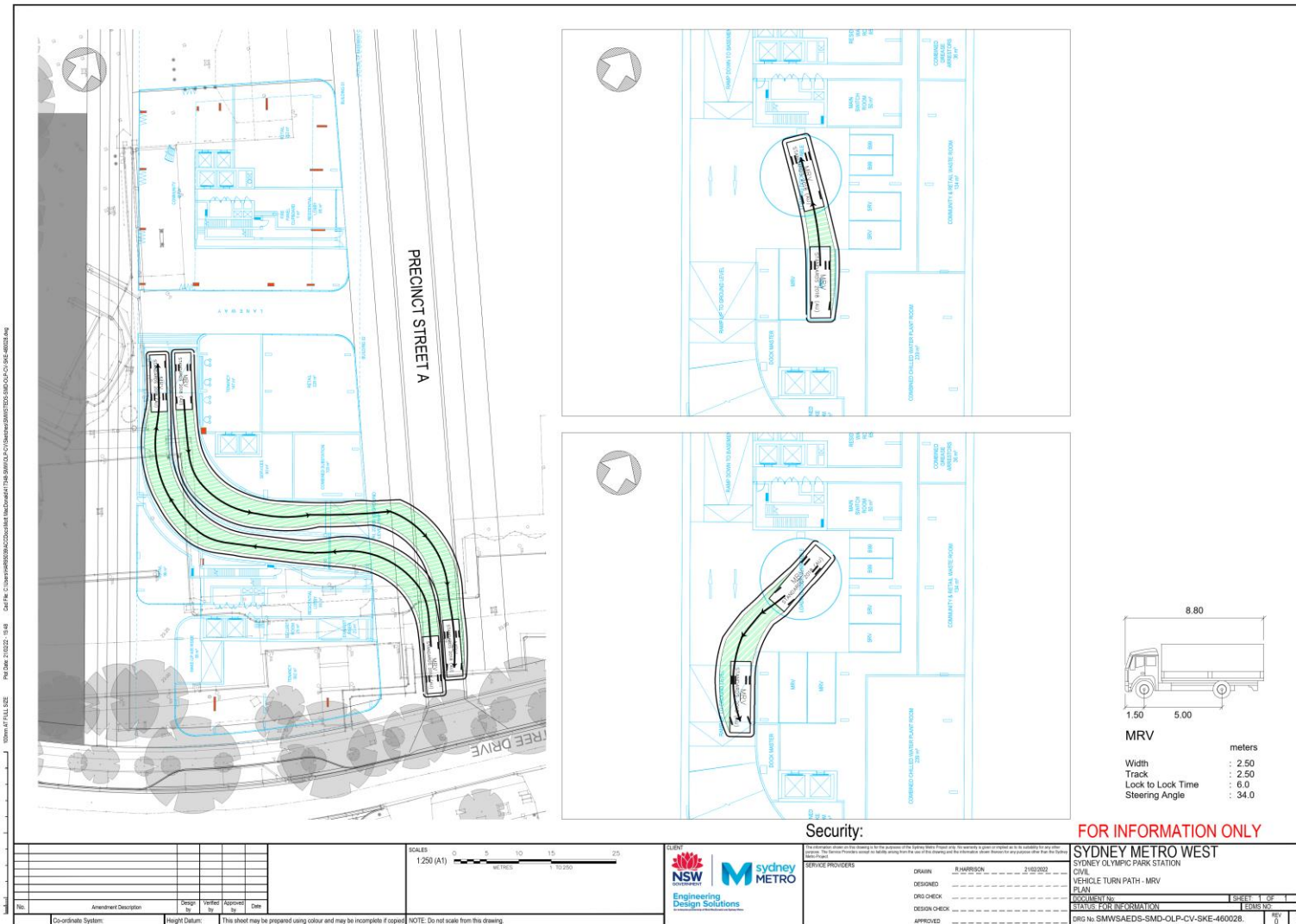
- Active travel user safety should be prioritised on Precinct Street B. it is anticipated that high volumes of cyclists and other vulnerable users will use this link during peak hours to access the end of trip facilities in Building 1. Low speeds and appropriate signage should be provided to reduce the likelihood of conflict with vehicles.

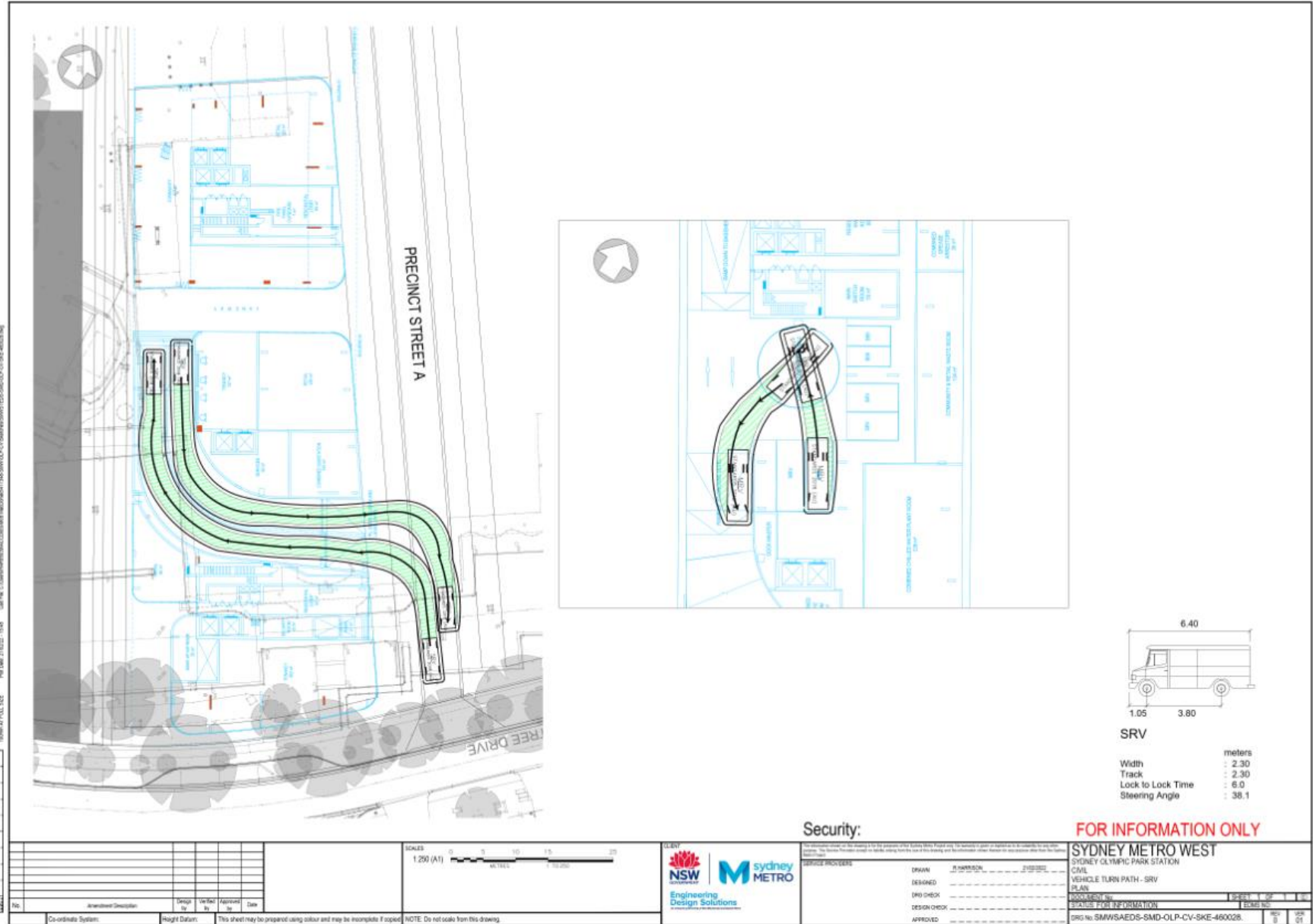
- Provision of car share spaces in basements to reduce the need for individual car ownership and conform to the Parramatta DCP.
- A detailed Construction Traffic Management Plan for adoption during the construction phase should be prepared as part of the future Detailed SSDA.
- A Travel Plan should be created to reduce car trips and encourage the use of sustainable transport as part of the future Detailed SSDA.

10 References

- Australian Standards 2018, AS2890.2 Parking facilities Part 2: Off-street commercial vehicle facilities
- City of Parramatta May 2017, Parramatta Bike Plan
- City of Parramatta Council April 2021, Draft Parramatta Integrated Transport Plan
- City of Sydney 2012/2014, Sydney Development Control Plan 2012 and Attachment B Minor Policy and Housekeeping Amendments 2014
- Roads and Maritime Services 2002/2013, Guide to Traffic Generating Developments Version 2.2 (2002) and Updated Traffic Surveys, amendment TDT 2013/04a (2013)
- Roads and Maritime Services 2016, Technical Direction Design and implementation of shared zones including provision for parking (TTD 2016/001)
- Roads and Maritime Services 2019, Cycleway Finder, available online: http://www.rms.nsw.gov.au/maps/cycleway_finder
- Sydney Olympic Park Authority (SOPA) Master Plan 2030 (Interim Metro Review)
- Transport for NSW 2018, Future Transport Strategy 2056
- Transport for NSW November 2020, Freight and Servicing Last Mile Toolkit, A guide to planning the urban freight task
- Transport for NSW January 2021 Road User Space Allocation Policy CP21000
- Transport for NSW July 2021, Parramatta Light Rail Stage 1 and 2 Factsheet

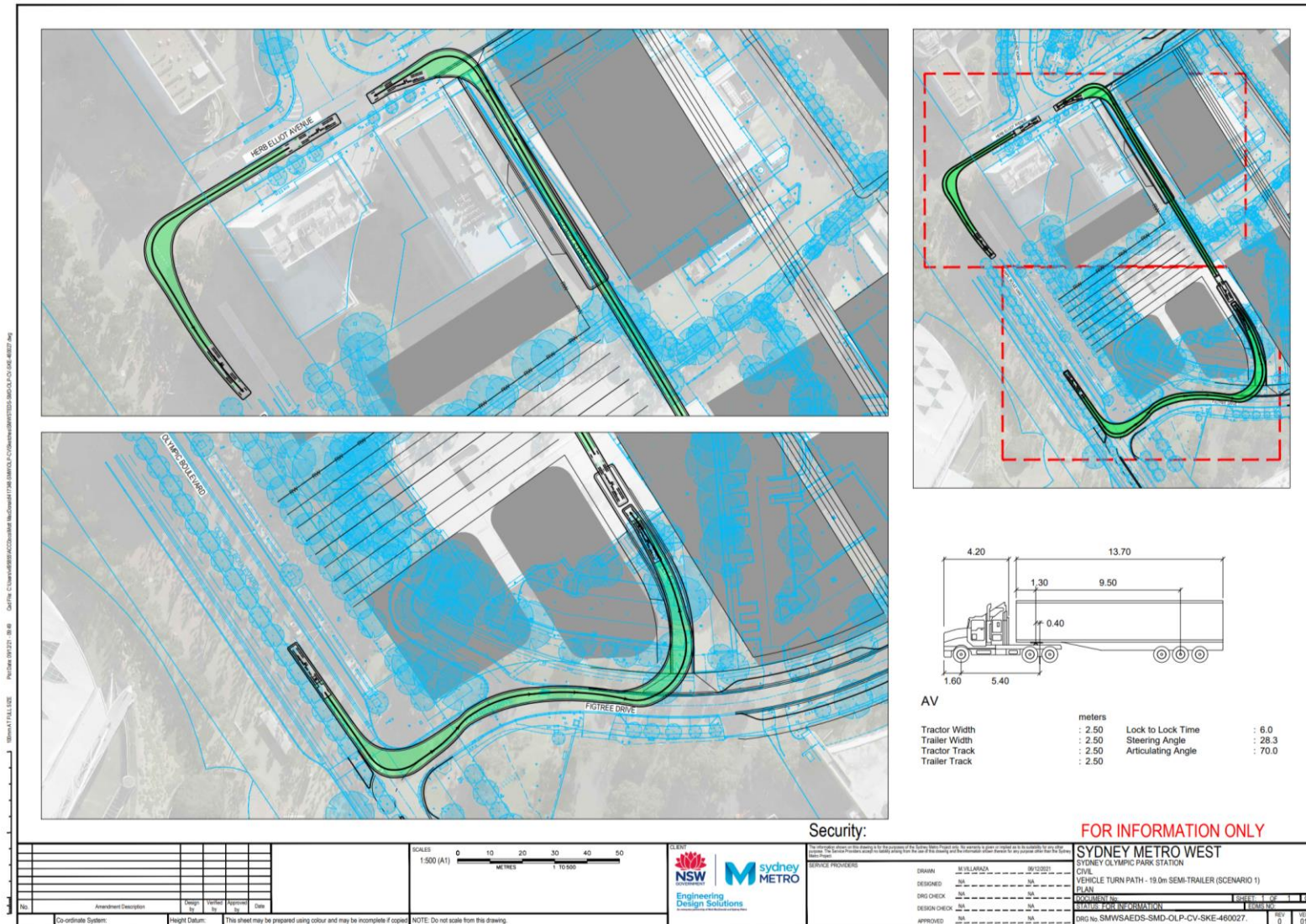
Appendix A Vehicle Swept Path Analysis Buildings 2 and 3



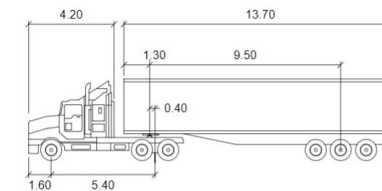
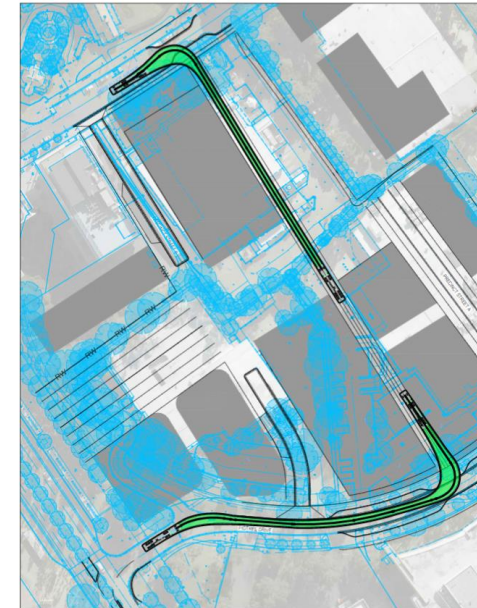
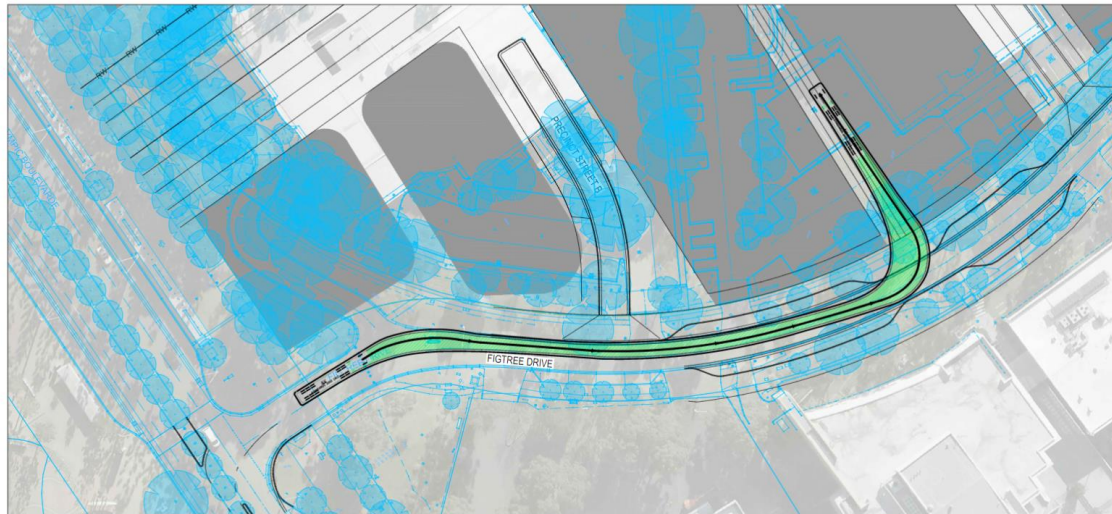
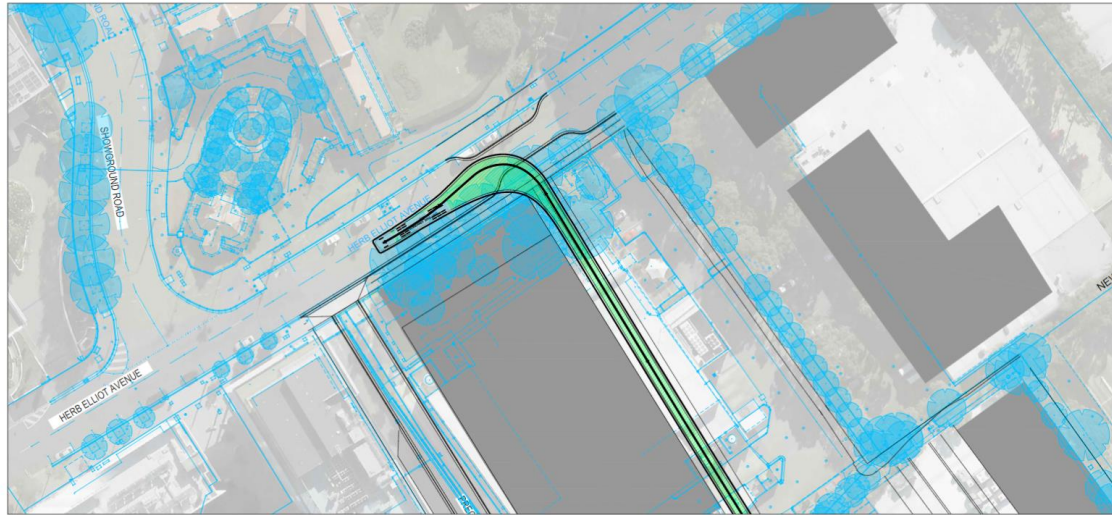


Sydney Olympic Park Over and Adjacent Station Development
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Appendix B Construction Swept Path Analysis



NSW AT FULL SIZE
Plot Date: 08/07/2022 10:55
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Plot Date: 08/07/2022 10:55
C:\Users\p33030000\OneDrive\Documents\Projects\Sydney Metro\CV-SKE-460027.dwg



AV

	metres		
Tractor Width	4.20	Lock to Lock Time	6.0
Trailer Width	13.70	Steering Angle	28.3
Tractor Track	1.60	Articulating Angle	70.0
Trailer Track	5.40		

Security:

FOR INFORMATION ONLY

No.	Amendment Description	Design	Verified	Approved	Date

Coordinate System:	Height Datum:	This sheet may be prepared using colour and may be incomplete if copied

SCALES	0	10	20	30	40	50
1:500 (A1)						

CLIENT	NSW GOVERNMENT	sydney METRO
Engineering Design Solutions		

SERVICE PROVIDERS	DRAWN	DESIGNED	DESIGN CHECK	DESIGN CHECK	APPROVED
	M. VILLARAZA	NA	NA	NA	NA
	20/12/2021	NA	NA	NA	NA
	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA

SYDNEY METRO WEST	SYDNEY OLYMPIC PARK STATION
CIVIL	VEHICLE TURN PATH - 19.0m SEMI-TRAILER (SCENARIO 1)
PLAN	
DOCUMENT No.	20/12/2021
STATUS FOR INFORMATION	EDMS No.
DRG No: SMWSAEDS-SMD-OLP-CV-SKE-460027.	REV 0
	VER 01

