Frasers Property Australia and Dexus Funds Management Limited

Western Gateway Sub-Precinct Proposal: Block B
14-30 Lee St, Haymarket NSW 2000

Planning Statement - Transport, Traffic, Pedestrian and Parking Report

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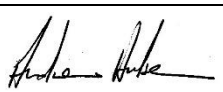
		Signature			
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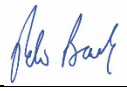
		Signature			
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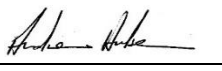
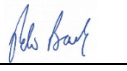
		Signature			
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Appendix A

Basement Distribution Centre Planning and Operations

1 Introduction

Dexus CPA Pty Ltd (Dexus) and Frasers Property Australia (Frasers Property) (the Consortium) is seeking to build *"a vibrant new business district and revitalise the face of Sydney's busiest transport interchange" (Project Vision)* at 14-30 Lee Street, Haymarket, otherwise known as the Site or Block B within the Western Gateway Sub-Precinct, as illustrated in Figure 1.

Figure 1: Western Gateway landholdings

Figure 2: Western Gateway landholdings

The Western Gateway sub-precinct is made up of three landholdings as illustrated in Figure 2:

- Block A – land predominately occupied by the YHA Hostel;
- Block B – the Henry Deane Place site and subject of this report;
- Block C – land on which the Adina Hotel and Henry Deane Plaza are located.

To facilitate this vision, the existing planning controls are required to be amended. This report supports a submission to the Secretary of the Department of Planning, Industry and Environment (DPIE) which seeks to amend the height and density controls within the Sydney Local Environmental Plan 2012 (Sydney LEP 2012) as they apply to the Western Gateway Sub-Precinct.

The request to amend the planning controls follows the Minister for Planning and Public Spaces recent declaration the Central Station Precinct has been identified as a State Significant Precinct (SSP). The Western Gateway Sub-Precinct, located within the Central Station Precinct SSP, is earmarked as a Sub-Precinct within the proposed SSP boundary for early consideration for rezoning. Transport for New South Wales (TfNSW) is developing a vision for the growth and development of this precinct and is preparing a Strategic Framework to guide future detailed planning in this area. The Strategic Framework will be placed on exhibition for public comment concurrently with the proposed rezoning of the Western Gateway Sub-Precinct.

Transport for New South Wales (TfNSW) is developing a vision for the growth and development of this precinct and is preparing a Strategic Framework to guide future detailed planning of the Central Precinct. The Strategic Framework will be placed on exhibition for public comment concurrently with the rezoning of the Western Gateway.

This report should be read in conjunction with the Planning Statement prepared by MG Planning, and the other appended technical reports.

1.1 Project Objectives

The proposed rezoning forms part of a broader planning process being pursued by the Consortium to realise a shared vision and set of objectives for the Western Gateway and the Central Precinct more broadly. The overall Project objectives for Block B is to:

- High tech jobs – Deliver creative workspace that builds the Sydney Innovation and Technology Precinct and underpins Sydney's enduring global competitiveness.
- Transport connectivity – Redefine the experience of over 20 million pedestrians who walk through Henry Deane Plaza every year with world class public realm and connectivity.
- A revitalised precinct – Transform Central into an exciting place with lively retail and dining options, supporting Sydney's day and night time economy.
- Infrastructure for the future – Enable wider renewal of Central by delivering underground smart building services, waste and utility infrastructure necessary for an integrated and sustainable precinct.

Figure 3: Block B within the Western Gateway sub-precinct

1.2 The Project

The Consortium intends to develop up to 155,000sqm of commercial and retail GFA within a podium, two towers, lower and upper ground plane over a three-level basement. The Project comprises:

- Two commercial towers comprising 46,000sqm and 42,000sqm located above the podium with floorplates of approx. 1,850sqm and 2,000sqm GFA;
- 61,500 sqm of commercial office space located within the podium which provide flexibility and campus style / large floorplates approx. 6,200sqm GFA,
- A retail offering of approx. 5,500sqm accessible from lower and upper ground levels, including food and beverage catering to station, visitors and Western Gateway commercial occupants providing an activated frontage and interface to Henry Deane Plaza. This includes an activated Lee Street frontage and lobby located at upper ground level, providing access to the commercial office podium levels and towers above.
- Three levels of basement car parking to accommodate:
    - 48 service vehicles and loading dock parking and distribution area within an Integrated Distribution Facility (IDF)
    - Service vehicle, loading dock and distribution area for all stakeholders within the Western Gateway;
    - Provision for emergency, maintenance and service vehicle parking and distribution area for future Central Over Station Development (OSD within the IDF);
    - 121 parking spaces for Block B occupants;
    - Provision for Block A and C vehicle access via the Block B;
    - Bicycle parking and end of trip facilities for staff;
    - Bicycle parking spaces for customers/visitors;
- Podium and tower rooftops designed for passive activation and gatherings for occupants of the Project to utilise and appreciate the views of the city and harbour;
- Redeveloped public space and stairs from Block B to future Central Precinct Over Station Development (OSD) providing an east-west pedestrian connection to and from the Western Gateway Sub-Precinct;
- Integration with a redeveloped Henry Deane Plaza to accommodate the increased pedestrian movement from existing and future pedestrian connections to various modes of transport;

To prepare Block B for future development, an increase in building height and floor space controls is sought. These proposed amendments to the Sydney LEP 2012 align with State, regional and local strategic planning objectives and initiatives.

This report should be read in conjunction with the Planning Statement prepared by MG Planning, and the other appended technical reports.

1.3 Purpose of report

This report has been produced to support the Planning Statement for the Site. It assesses the transport aspects of the development and how these integrate with the wider Central Station Precinct and surrounding development. This report has been prepared specifically for the Site and the benefits for the wider Central Station Precinct that are offered in this development.

This report includes:

- A review of regional and local policy;
- Assessment of the existing transport conditions;
- An outline design for the proposed distribution centre;
- Description of the Site and the current developments;
- Description of the proposed Basement Distribution Centre including transport provision for all modes;
- Transport assessment including trip generation to ascertain the impact of the proposal on the surrounding transport network; and
- Travel demand measures and considerations.

2 Policy and guidelines

The following is a brief description of the strategic and local transport planning policy, provisions and guidelines which are relevant to the transport and traffic considerations for the Planning Statement.

2.1 Regional Policy

2.1.1 Future Transport 2056 (2018)

The NSW Government's Future Transport 2056 is a plan to transform and modernise Sydney's transport network so that it can grow with the city's population and meet the needs of customers in the future. Future Transport 2056 is an update of NSW's Long-Term Transport Master Plan and is a suite of strategies and plans for transport developed in concert with the Greater Sydney Commission's Sydney Regional Plan, Infrastructure NSW's State Infrastructure Strategy, and the Department of Planning Industry Environment's regional plans, to provide an integrated vision for NSW.

2.1.2 A Metropolis of Three Cities – The Greater Sydney Region Plan

To meet the needs of Sydney's growing and changing population the Greater Sydney Commission have produced a vision relating to land use and transport to boost Greater Sydney's liveability, productivity and sustainability. The document proposes the development of three 30-minute cities:

- Western parkland City
- Central River City
- Eastern Harbour City

The Central Station Precinct is located at the heart of the Eastern Harbour City and will provide a key transport connection to the Central River City via the rail connection between Central Station and Parramatta. This makes it a key precinct regionally to support the development of all three major centres.

2.1.3 Eastern City District Plan (2018)

The Greater Sydney Commission released the Greater Sydney Region Plan which included a sub plan for the Eastern City District outlining planning priorities and actions for improving the quality of life within the district. It is a 20-year plan to manage growth in the context of economic, social and environmental matters and informs Local Environmental Plans in the region.

The Site lies within the Harbour CBD where the plan targets significant growth in jobs by 2036. To facilitate this, uplift in commercial development will be required such as that outlined in the Planning Statement.

One of the Plan's priorities is to deliver integrated land use and transport planning to create walkable and 30-minute cities. The proximity of the Site to Central Station which is currently being redeveloped presents a prime opportunity to fulfil this commitment.

2.1.4 Sydney's Bus Future (2013)

Sydney's Bus Future produced by Transport for NSW provides the framework for improving and delivering more frequent and reliable bus services throughout Sydney. The core aim of the strategy is to provide an integrated bus network with seamless connections to other transport services.

The strategy also aims to tailor bus services to customer needs. In this vein, bus services will be focused into three key types, with associated priority and infrastructure investment:

- Rapid routes, which will use priority infrastructure, connect regionally throughout the city and have stops every 800m-1km;
- Suburban routes, which will have stops every 400m and have mix of frequent 'turn up and go' and timetabled services; and
- Local routes, which will complete the network using local streets.

Employees on the Site will take advantage of these improved connections.

2.1.5 Sydney's Walking Future (2013)

Sydney's Walking Future produced by Transport for NSW sets out a strategy to encourage people in Sydney to walk more through actions that make it a more convenient, better connected and safer mode of transport.

Key points to emerge from the strategy that are relevant to the project include:

- NSW Government commitment to invest in new walking links that connect people to public transport;
- Prioritisation of investment in walking infrastructure to be prioritised within 2km of centres and public transport interchanges; and
- Commitment to invest in walking facilities as part of the Transport Access Program, including improved circulation spaces around station precincts and safer walking links.

The project has the potential to significantly enhance walkability in the local area.

2.1.6 Sydney's Cycling Future (2103)

Sydney's Cycling Future produced by Transport for NSW provides a framework for the way cycling is planned and prioritised in Sydney. It aims to grow the number of people cycling by investing in safe, connected networks, making better use of existing infrastructure and fostering the formation of partnerships to

develop cycling infrastructure. Key points to emerge from the strategy that are relevant to the project include:

- A safe and connected bicycle network which benefits the wider transport network by improving access to towns and centres, reducing congestion and increasing capacity on the public transport system;
- The promotion of safe segregation of cyclists from motor vehicles and pedestrians where possible;
- Investment in bicycle infrastructure should be prioritised within 5km of public transport interchanges to provide improved connections; and
- Promoting 'bike-and-ride' at major public transport interchanges including secure parking facilities integrated with public transport access.

The City of Sydney is moving towards a well-connected cycle network to improve accessibility for workers and visitors to the CBD. The development will encourage people to cycle by providing high quality end of trip facilities for employees and visitors.

2.1.7 Sydney's Light Rail Future (2013)

Sydney's Cycling Future produced by Transport for NSW provides a framework for the way light rail is planned and prioritised in Sydney. The plan identifies four stages for the future of light rail, including the provision of the CBD and South East Light Rail.

This line will be an attractive option to employees and visitors of the development, with Central Station being the nearest stop.

2.2 Local policy

2.2.1 City of Sydney's Sustainable Sydney 2030

The vision for the City of Sydney is to be a green, global and connected city, leading the world in all three of these fields. To achieve these goals, the city is required to encourage active modes of transport and improve its public transport system.

This document is currently being reviewed with the aim to produce a strategy that extends to 2050.

2.2.2 Central Sydney Planning Strategy 2016-2036 (Draft)

The strategy is a 20-year growth strategy which revises previous planning controls and aligns with the aim of Sustainable Sydney 2030 for a green, global, connected city. The vision of the draft Plan includes enhancing the role of global Sydney, leveraging investment in transport infrastructure and enriching unique places and connections. It recognises that the City of Sydney has a key role to play in the economic, cultural and social identity of the wider city. The strategy:

- Ensures a resilient and diverse economy;
- Promotes efficient and effective transportation;
- Supports great streets;
- Delivers a city for people; and
- Ensures strong community and service infrastructure accompanies growth.

The project can contribute to a number of these objectives.

2.2.3 City of Sydney Local Environmental Plan (2012)

The City of Sydney Local Environmental Plan (LEP) applies to a large proportion of the City's local area and is made up of a written instrument and maps. The plan has a number of aims including:

- Providing for development that permits employment to increase;
- Enabling a range of services and infrastructure that meets the needs of residents, workers and visitors; and
- Ensuring that the pattern of land use and density in the City of Sydney reflects the existing and future capacity of the transport network and facilitates walking, cycling and the use of public transport.

With regards to transport provision it identifies the parking provision that can be provided for new developments based on their location and level of transport accessibility. The objective of the car parking rates is generally to minimise the amount of vehicular traffic generated by the project.

Clause 7.6 of the LEP states the maximum number of car parking spaces for office and business premises which would apply to any future development application. These parking provision rates have been adopted for the purposes of this transport and traffic report. A formula is used to derive the maximum parking standards for the commercial and retail uses where the floor space ratio is greater than 3.5:1.

$$M = \frac{G \times A}{50 \times T}$$

M is the maximum number of parking

G is the gross floor area of all office and retail premises

A is the site area

T is the total gross floor area of all buildings on the site

Application of this formula to ascertain the maximum parking requirement for the development is presented in Section 4.4.

2.2.4 City of Sydney Development Control Plan (2012)

The Development Control Plan (DCP) supplements the LEP and provides more detail on provision to assist development. The DCP contains controls for transport

provision including managing travel demand, minimum rates for bicycle parking and servicing vehicle parking which will drive aspects of the project.

This document outlines minimum standards for bicycle parking for commercial and retail land uses. These are outlined in Table 1.

Table 1: DCP cycle parking standards

Land Use	Employees	Visitors
Commercial	1 per 150sqm GFA	1 per 400sqm GFA
Retail (Shopping centre)	1 per 200sqm GFA	1 per 300sqm sales GFA

It is expected that Class 2 bike facilities are provided for employees on the uppermost level of the basement in the vicinity of entry points. For visitors Class 3 bike rails at accessible on-grade locations should be provided. Supporting end of trip facilities will be required for employees including lockers, showers and change cubicles. The standards for these are:

- 1 locker for each cycle parking space;
- 2 showers and change cubicles for every 20 cycle parking spaces.

These should be located in proximity of the cycle parking spaces with simple access routes between the two facilities.

The DCP also presents the standards for servicing vehicle provision, these are summarised for commercial and retail uses in Table 2.

Table 2: DCP servicing vehicle parking requirements

Land use	Standard		
Commercial	Up to 50,000 sqm	Between 50,000sqm and 100,000sqm	Above 100,000sqm
	1 space per 3,300sqm GFA	1 space per 6,600sqm GFA	1 space per 13,200sqm GF
Retail	Up to 2,000sqm	Above 2,000sqm	
	1 space per 350sqm GFA	1 space per 800sqm GFA	

Further detail and assessment against the relevant controls are provided in Chapter 4.

2.2.5 Cycling Strategy and Action Plan 2018-2030 (Draft)

The strategy commits to making cycling safer and easier, so is it is an attractive and feasible option for more people. It addresses the Sustainable Sydney 2030 target of 10% bicycle mode share within the City. The strategy outlines four key priorities to increasing cycling in the City of Sydney:

- Connecting the network - Building a connected bike network that is suitable for all ages and abilities improving safety for all users. The permeability of the network should ensure all residents are within 250m of a designated route;

- Supporting people to ride - Address the current barriers to cycling in the City and develop mechanisms to overcome these issues;
- Supporting business - Engage employers to encourage staff to cycle to work due the to the associated health and productivity benefits. This includes providing suitable end of trip facilities in all new developments; and
- Leading by example - Share expertise with other stakeholders and the wider city to influence sustainable travel patterns beyond the extents of the City of Sydney.

2.3 Guidelines

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

- Sydney Streets Design Code and Sydney Streets Technical Specification used to inform any modifications to the street network.
- Roads and Maritime Services (RMS) Guide to Traffic Generating Developments used to inform the traffic assessment undertaken for the project.
- EIS Guidelines – Road and Related Facilities used to inform the preparation of the transport strategy, in particular the assessment of transport impacts.
- NSW Planning Guidelines for Walking and Cycling and NSW Bicycle Guidelines. These documents have been used to inform the development of the walking and cycling measures proposed in this strategy.
- Guide to Traffic Management – Part 12: Traffic Impacts of Developments (AUSTROADS). This guide has been referenced for the appropriate methodology to be used for traffic impact assessment of the development.

3 Existing Transport Conditions

3.1 Site Location

The Consortium's Proposal relates to land located at 14-30 Lee Street, Haymarket as illustrated below. Identified as Block B within the proposed Western Gateway Sub-Precinct, the site is legally described as Lots 12, 14 and 15 in DP 1062447. Legal descriptions of each parcel within Block B are detailed below.

Table 3: Lot details

Title Details	Legal Description
Lot 12 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651830 expiring on 30 June 2099 is Dexus CP Pty Ltd A.C.N. 160 685 156.
Lot 14 in DP 1062247	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651832 expiring on 30 November 2100 is Henry Deane Building Nominees Pty Ltd A.C.N. 081 941 951
Lot 15 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651833 expiring on 31 March 2101 is Gateway Building Nominees Pty Ltd A.C.N. 081 951 822.

Henry Deane Plaza (located on the lower level to the Site) is centrally located within the Western Gateway Sub-Precinct and primarily funnels pedestrians between Devonshire Street tunnel, accessed from the Site's eastern boundary, and Lee Street tunnel, Railway Square, and tertiary institutions to the west.

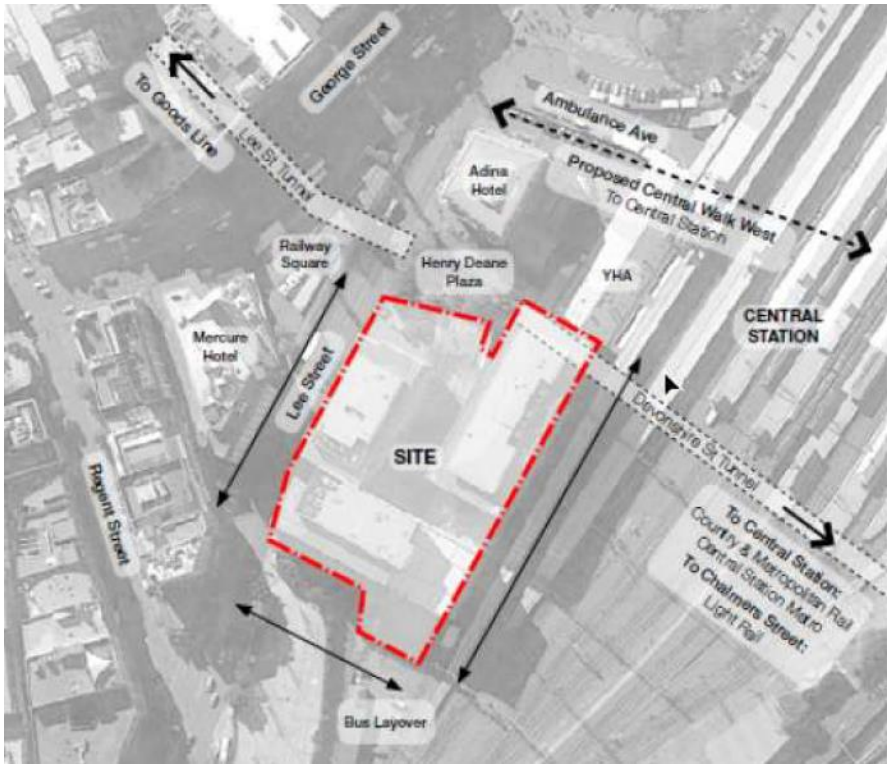

Figure 4: Block B site boundary Source: Woods Bagot & SOM architects

Located adjacent to Central Station, the Site comprises land fronting Lee Street, Haymarket and is bounded by Henry Deane Plaza to the north, the railway corridor to the east, the Sydney Buses layover to the south and Lee Street and Railway Square to the west. Together these constitute an area of approximately 10,000 square metres as illustrated in Figure 5.

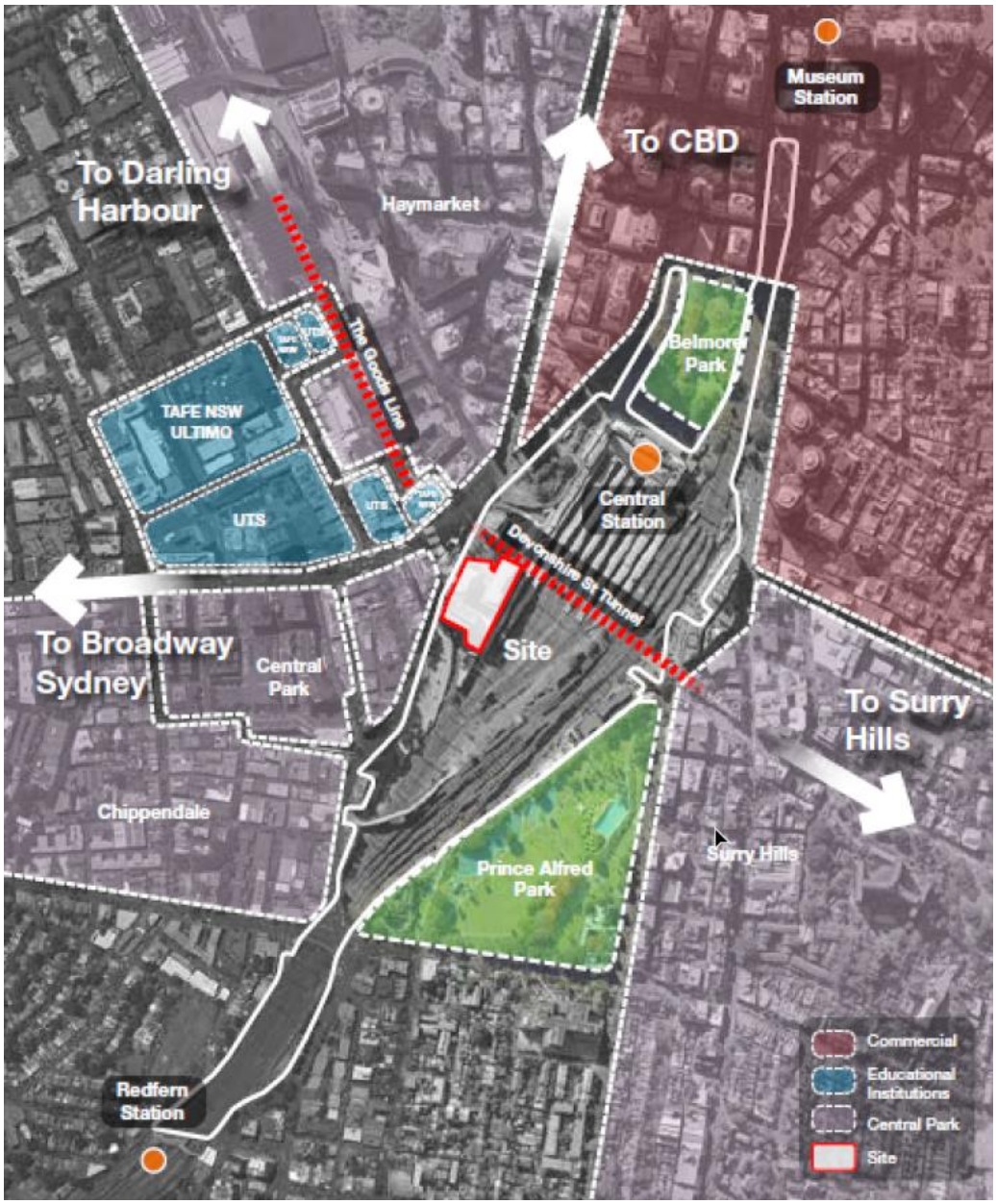

Figure 5: Site location

The State heritage listed Adina Apartments Hotel in Block C and Sydney Railway Square Youth Hostel (YHA) in Block A are located north of Henry Deane Plaza. The Site is currently dominated by more contemporary office buildings of approximately 20 years age which are occupied by State and Commonwealth agencies including Transport for NSW, Department of Immigration and Border Protection, Department of Foreign Affairs and Trade and Corrective Services NSW. A range of food and beverage outlets and service retail tenancies are located across both the lower and upper levels fronting Henry Deane Plaza.

3.2 Vehicular Access and Parking

The western side of Block B is bordered by Lee Street which runs North-South and is five lanes wide (three northbound, two southbound). Lee Street connects to the wider road network to the north forming a signalised intersection with George Street, Pitt Street and Quay Street. The section of Lee Street bordering the Site also contains a signalised pedestrian crossing which connects to Railway Square. Further south Lee Street forms a signalised intersection with Regent Street.

The surrounding streets have little on-street parking, with No Stopping zones along the frontage of the Site.

The only existing vehicular access is located on the south west corner of Block B. It is a private access which serves the buildings within Block B. A right turn bay is provided on Lee Street for northbound traffic accessing the development. This is a two-way access which provides access to drop off plus the following parking and servicing facilities:

- SRA House - four loading bays and 90 car parking spaces across the basement levels; and
- Henry Deane Building and Gateway House - four loading bays at ground level, 51 car parking spaces and 2 loading bays at basement Level 1, 28 car parking spaces at Level 2.

3.3 Existing Traffic Generation

A survey was conducted on a Wednesday in July 2019 during the AM peak from 08:00 to 09:00 at the vehicle access point to ascertain the traffic generated by the existing development. The traffic generation, is linked to car parking which will remain similar (see Section 6.1). The results of the survey are outlined in Table 4.

Table 4: Existing traffic survey data by direction

Type of movement	**In**		**Out**	
	Left	**Right**	**Left**	**Right**
Car	4	13	0	0
Loading	2	2	1	4
UGL	1	1	0	1
Drop off	0	6	4	2
Total	**7**	**22**	**5**	**7**

Observations made throughout the survey confirmed 12 bicycles also entered the development throughout the peak hour. The right turn bay for northbound traffic accessing the development provided adequate capacity to accommodate the turning vehicles.

The survey also assessed the movements relating to the bus layover facility south of the development indicating 56 movements in and 51 movements out in the AM peak hour.

3.4 Existing Mode Share

Census Journey to Work data (2016) has been used to analyse the existing commuter travel behaviour in the area and characterise the public transport conditions in the vicinity of the precinct.

The Site lies within DZN 113371142 the data for this destination zone indicates the following the Journey to Work mode split as outlined in Table 5 and Figure 6.

Table 5: DZN 113371142 mode share

Mode	%
Train	62
Bus	9
Ferry	0
Tram (Light Rail)	0
Taxi	0
Car, as driver	11
Car, as passenger	1
Motorbike	0
Bicycle	1
Walk	4
Other	12

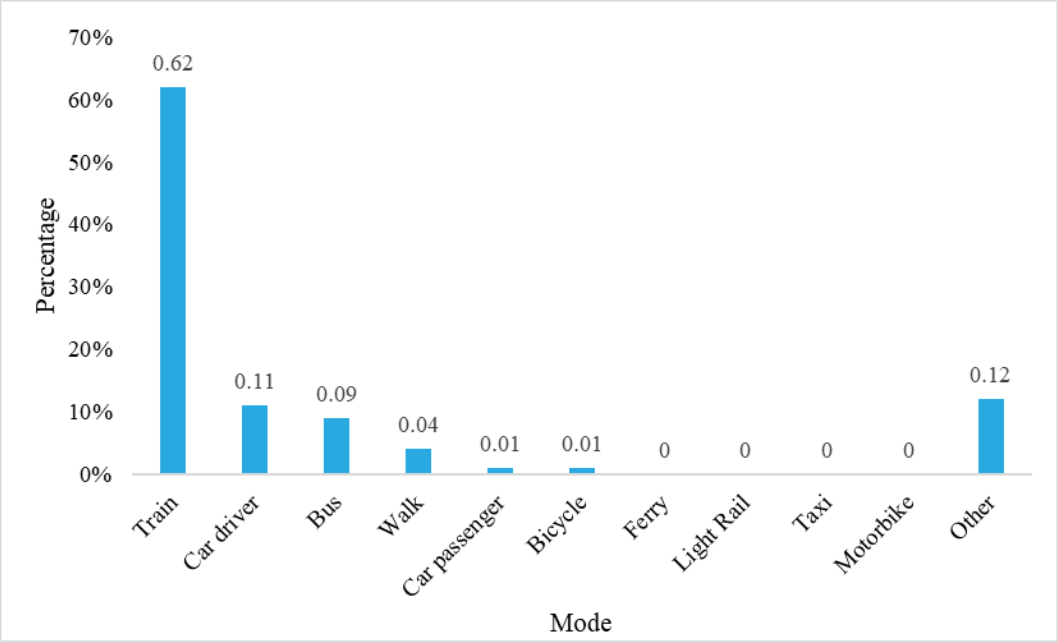

Figure 6: DZN 113371142 mode share

Data for the surrounding area has also been analysed. The area considered is outlined on Figure 7. This area consists of a number of travels zones that aim to represent the travel patterns of the wider Central Station Precinct.

Figure 7: SA1 areas surrounding the Central Station Precinct

The Journey to Work mode share for the wider precinct is outlined in Table 6 and Figure 8.

Table 6: Central Station Precinct mode share

Mode	Employee	Resident
Train	53	28
Bus	15	15
Ferry	0	0
Tram (Light Rail)	1	1
Taxi	0	1
Car, as driver	16	11
Car, as passenger	2	2
Motorbike	1	1
Bicycle	2	2
Walked	9	39
Other	0	1

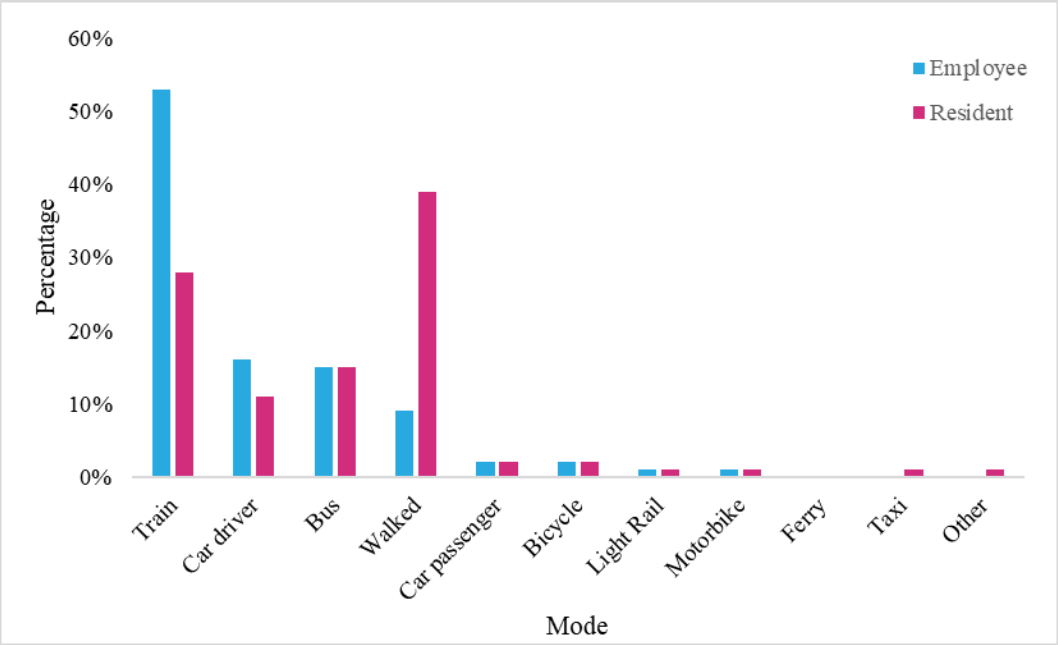

Figure 8: Central Station Precinct mode share

3.5 Existing Public Transport Access

The area is highly accessible by public transport due to its proximity to Central Station which provides access to Sydney, Regional and Interstate trains, Light Rail and a variety of bus services. This is reflected in the Journey to Work data for the precinct which indicates a transport mode share of over 60%. A summary of these public transport options is summarised in Figure 9.

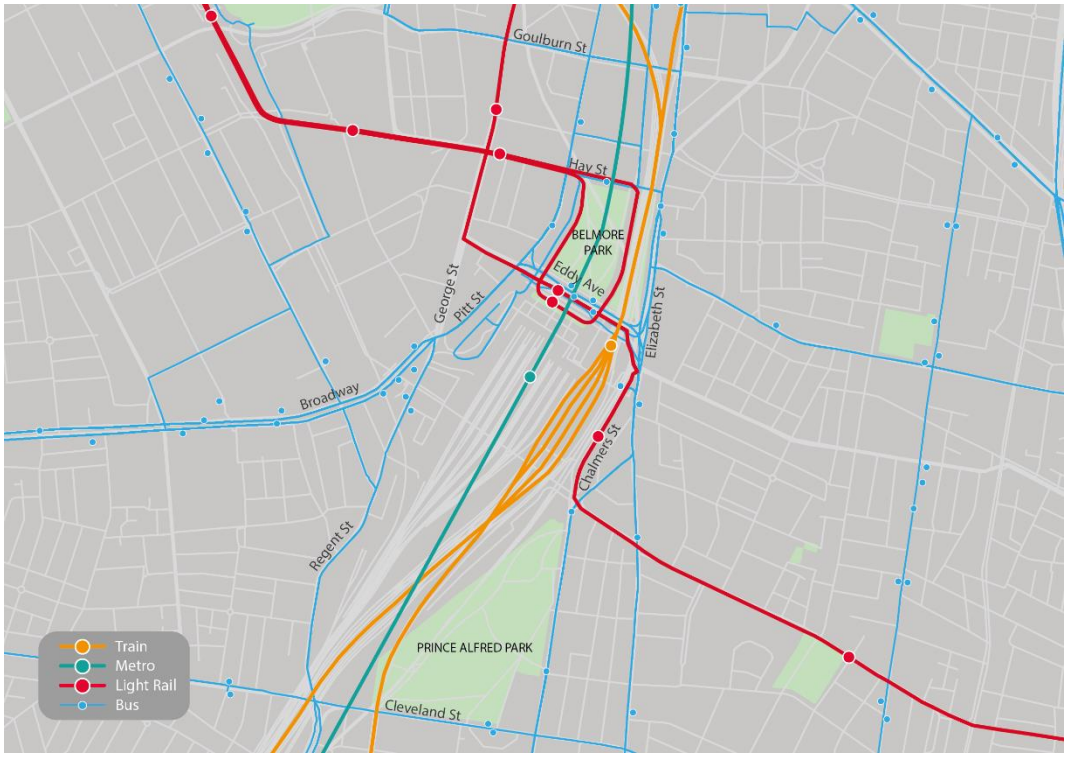

Figure 9: Main public transport nodes surrounding the precinct

3.5.1 Trains

The western entrance to Central Station is located directly north of the Site and the station has a number of other pedestrian accesses in proximity. Train services operating at this station include:

- Sydney Trains T1- this connects the City to Emu plains, Richmond and Berowra;
- Sydney Trains T2 – this connects the City to Parramatta and Leppington;
- Sydney Trains T3 – this connects the City to Liverpool and Lidcombe;
- Sydney Trains T4 – this runs from Bondi junction to Waterfall and Cronulla;
- Sydney Trains T7 – this connects the City to Sydney Olympic parka and Blacktown;
- Sydney Trains T8 – this connects the City to Macarthur via the Airport;
- Sydney Trains T9 – this runs from Gordon to Hornsby vis the City;
- Blue Mountains Line;
- Central Coast & Newcastle line;
- South Coast line – providing connections to Port Kembla and Kiama; and
- Southern highlands Line – providing connection to Campbelltown and Goulburn.

It should be noted that plans for Sydney Metro City & Southwest will stop at Central and connect to the already open Sydney Metro North West at Chatswood. This will provide a high frequency service in both the north and south directions providing improved public transport capacity at the station and connections to a wider catchment. Sydney Metro City & Southwest is expected to open in 2024.

3.5.2 Buses

Central Station is supported by extensive bus networks, which cover most of the area within approximately 10km from the station, as well as some longer distance services from the Northern Beaches, Upper North Shore and the Northwest. This network comprises primarily direct services which serve particular suburbs at their outer extent and then converge on corridors as they approach the station. The combined service frequencies on a number of these corridors, such as Oxford Street, Broadway and Victoria Road are in the range of 50 to 120 buses per hour.

Sydney Buses

There are a number of bus stops in the surrounding area including Broadway and Eddy Avenue. Services originate from

- Inner West including Ashfield, Burwood, Lilyfield, Abbottsford and Chiswick via Broadway and George Street;
- North West via Victoria Road corridor including areas such as Ryde and Eastwood; and

- South West (Tempe, Kingsgrove, Canterbury, Dulwich Hill).

When leaving the City most services use Broadway. Services from the Eastern Suburbs generally run along Elizabeth Street, east of Central.

Private Bus Operators

In addition to the above Sydney Buses services, a number of private operators offer services to the City. These include services from:

- Sydney's North West (Hillsbus) which generally use the M2 Motorway alignment and Gore Hill Freeway, connecting at Wynyard and then Town Hall and Railway Square; and
- Sydney's Upper North Shore (Forest Coach Lines and Shorelink) connecting Belrose, North Turramurra, East Wahroonga and Terry Hills stopping at Wynyard and Town Hall.

Convenient bus stops are in the Central area. There are also a number of coaches and regional services that depart from Railway Square and Eddy Avenue.

3.5.3 Light Rail

Central Station also provides access to the Light Rail line which runs from Central to Dulwich Hill. During peak times, the frequency of light rail services is every 8 minutes. The light rail stop is located on the northern side of the station at the Grand Concourse above Eddy Avenue.

The construction of the CBD and South East Light Rail is due to open in 2020 which will provide further Light Rail connections to the CBD, Randwick and Kingsford. The stop for this line will be located on the eastern side of the station on Chalmers Street.

3.6 Pedestrian Access

Pedestrians primarily access the Site from the northwest (Railway Square) and northeast (Devonshire Tunnel). Buses at Railway Square deliver passengers to the Site via the mid-block crosswalk across Lee Street and also through the Lee Street tunnel and Henry Deane Plaza. Pedestrians from Suburban rail platforms tend to access the north edge of the Site via the Devonshire Street tunnel. Pedestrians from Intercity platforms access the site from both the Devonshire Street tunnel and also via Lee Street. The existing and potential future pedestrian routes are presented on Figure 10.

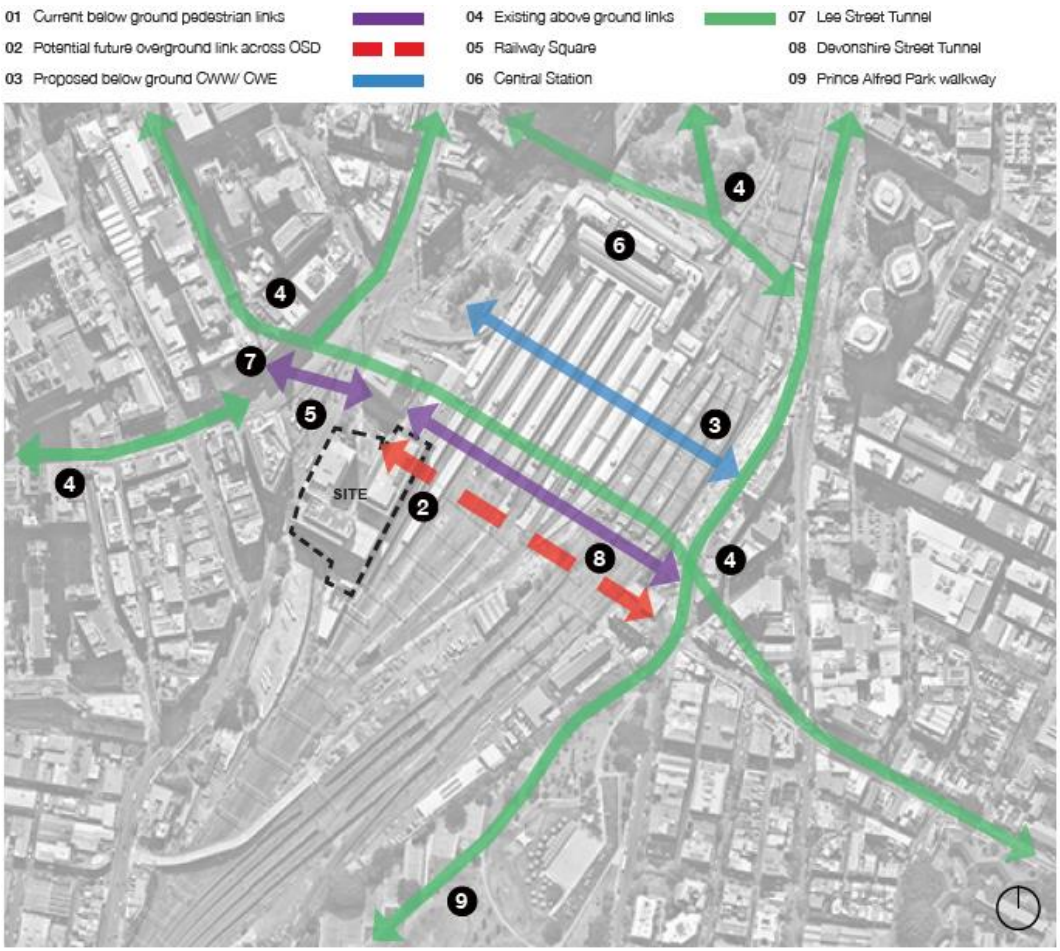

Figure 10: Existing pedestrian access

As part of the redevelopment of Central Station, Central Walk West may be constructed creating a new east-west link through the Station. This new link would impact the routeing of pedestrians through the urban realm surrounding the Proposed Development. It should be noted that this proposed link and the estimated future growth would alter the routeing and increase pedestrian volumes in the precinct which may impact the suitability of the existing urban realm surrounding the Proposed Development.

3.7 Cycling Network

The City of Sydney Cycling Strategy and Action Plan indicates existing cycling routes in the area and plans for future routes, these are presented on Figure 11.

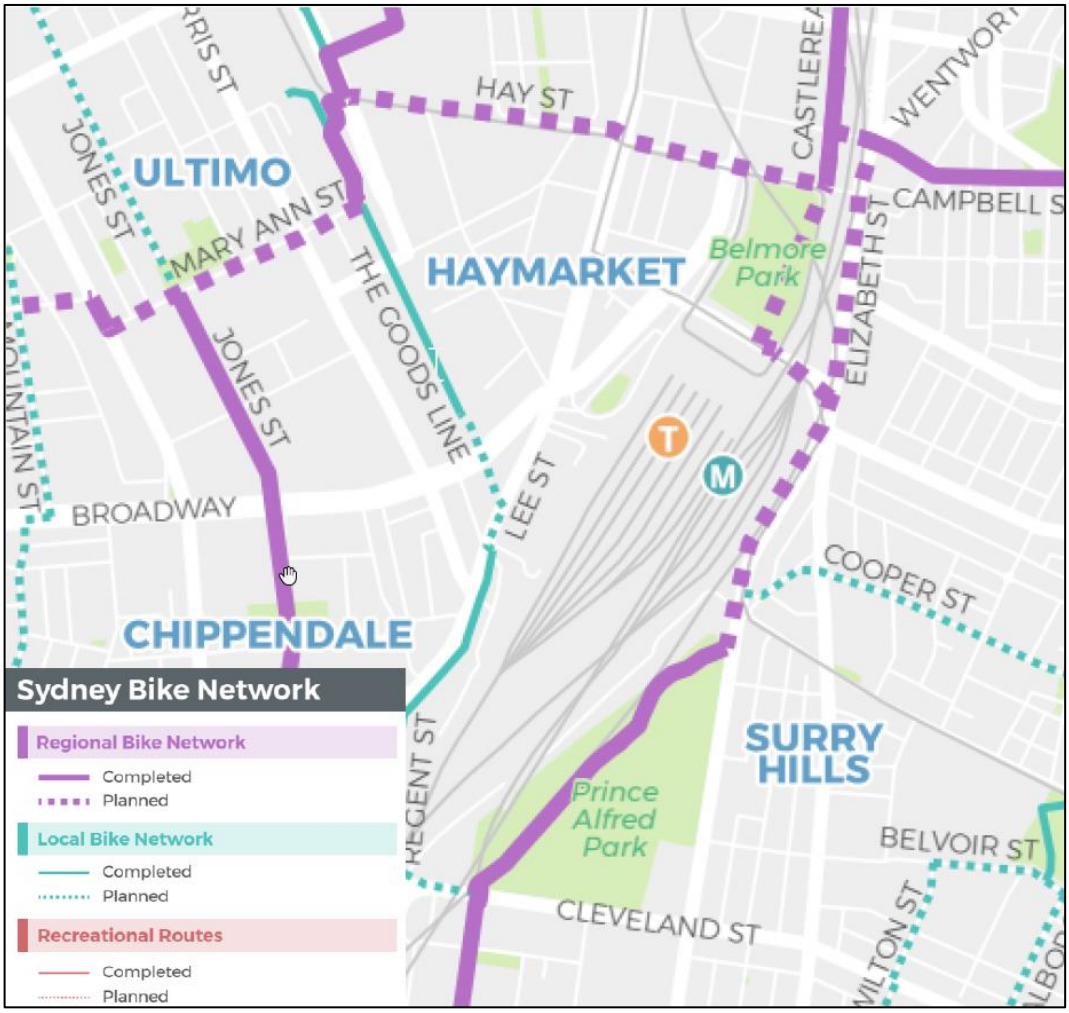

Figure 11: Local cycling routes

This indicates there is an existing bike route within the carriageway on Lee Street and the Goods Line with aspirations for it to be extended to pass the frontage of the Site. This route provides wider connection to regional bike routes on Jones Street and Cleveland Street.

The traffic survey undertaken on Wednesday 10th July 2019 noted that 12 bicycles entered the Site via the private vehicle access in the AM peak hour.

4 Development Proposal

4.1 Description

Areas previously shown throughout the OSD Precinct have been used in assessments of impact on the Site, but some future stages of the development have been excluded such as Phase 2 of the OSD. The indicative scheme for Block B will accommodate two commercial towers in the indicative scheme over a common podium and basement levels within the Site. The two proposed commercial towers are illustrated in Figure 12. The blue line on the figure indicates the Block B boundary.

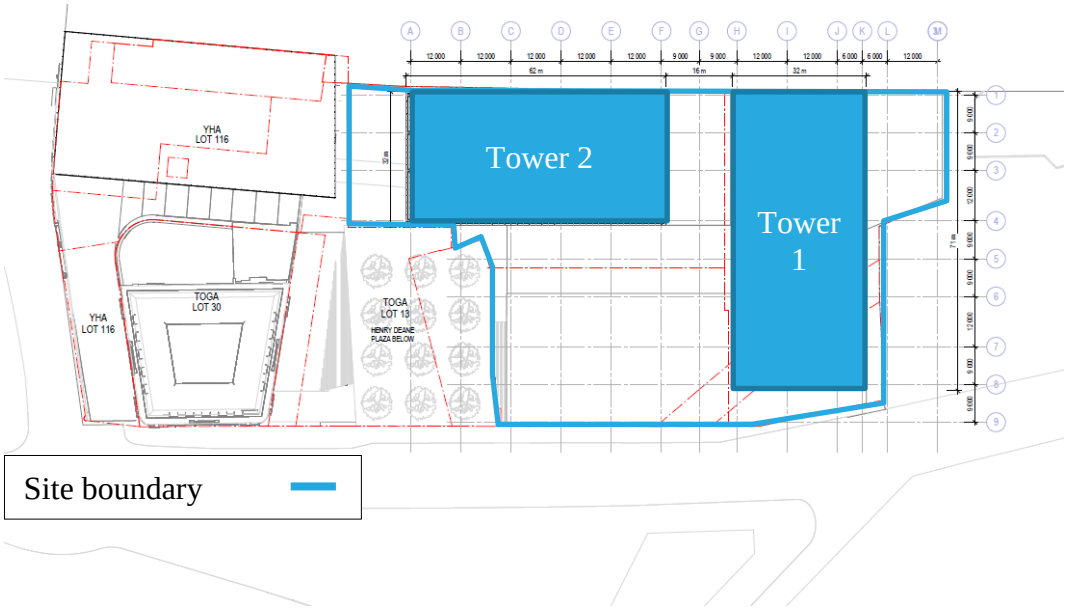

Figure 12: Site development

The Western Gateway Sub Precinct rezoning seeks to amend the Sydney LEP through enabling greater building height and floor space. The proposed amendments will establish a new maximum allowable Floor Space Ratio (FSR) and maximum building height for the Site.

The total expected gross floor areas (GFA) of the total Central Station Precinct is summarised in Table 7. The Site will accommodate the Site elements below, which includes 5,500 sqm gross floor area (GFA) of retail and 149,500 sqm GFA of commercial office.

Table 7: Site areas

Site	**Area Use (sqm)**				
	Total area	**Retail**	**Restaurant /Cafe**	**Office**	**Hotel**
Block A YHA Site	**68,452**	-	2,738	58,184	
Block B Podium	**67,000**	1,500	4,000	61,500	
Block B Tower 1	**46,000**	-	-	46,000	

Site	Area Use (sqm)				
	Total area	Retail	Restaurant /Cafe	Office	Hotel
Block B Tower 2	**42,000**	-	-	42,000	
Block C Adina (existing)	**7,700**	231	539	-	6,930
OSD Phase 1A/B	**90,000**	2,700	6,300	81,000	
OSD Phase 1C	**110,000**	3,300	7,700	99,000	
Central Station Retail	**10,000**	5,000	5,000	-	
TOTAL	**441,152**	**12,731**	**26,277**	**387,684**	**6,930**

4.2 Mode Share

A target mode split for the overall Central Station Precinct has been envisaged by TfNSW and is presented in Figure 13. Similar to existing travel patterns, more than half of employment trips in the Precinct will travel by Train/Metro (62%), with travel by bus (17%) having the second highest mode share. Walking and cycling are both anticipated to have a mode share of 5%. The target mode split reflects high accessibility to public transport of the Site.

Although no additional car parking will be provided in the Precinct, a small number of employees are expected to continue to drive, parking in neighbouring parking lots, rented spaces or at peripheral park and ride locations. Therefore, the mode shares for the Western Gateway Sub-Precinct have been adjusted based on this expected demand.

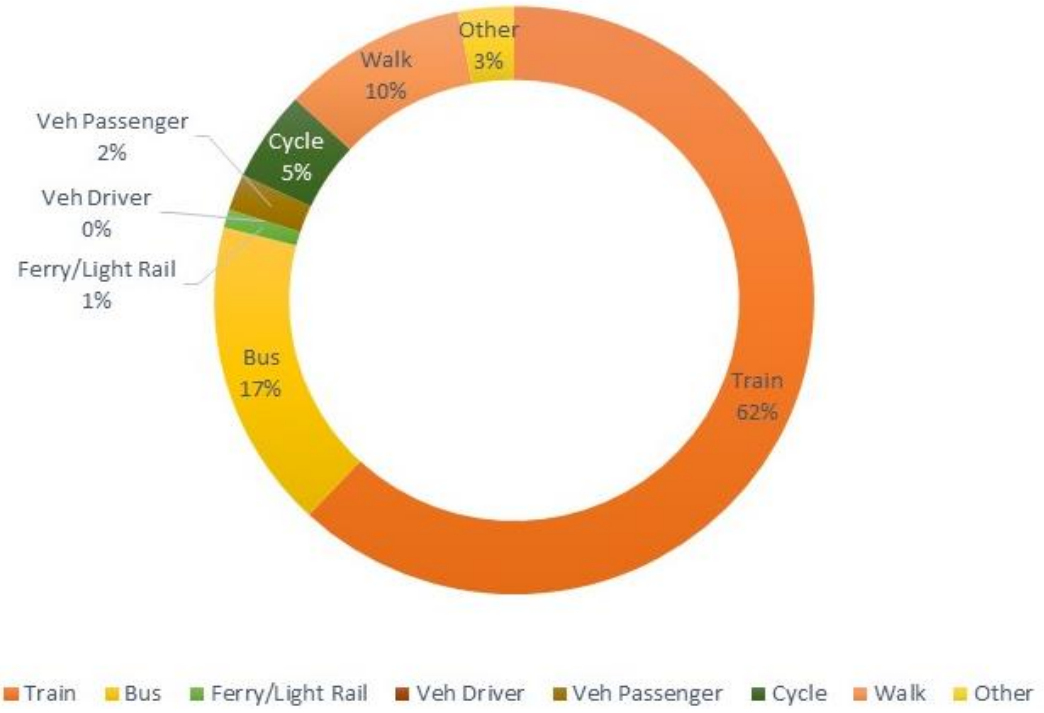

Figure 13: OSD Target Mode Split

The following assumptions have been used for the Site staff arrival trips based on a typical day:

- Overall staff occupancy rate of 1 person per 10 sqm gross floor space resulting in 15,000 staff.
- 85% office occupancy at any one time on a typical weekday.
- Arrival trips would take place over a three-hour morning peak period,
- Approximately 50% of staff arrive during the morning peak hour (8am-9am).

Using the target mode shares shown in Table 8, the additional employee trips generated by the Site are anticipated to be accommodated using sustainable modes. It is expected that there will be a shift towards bus and walking modes with the bulk arriving on train.

Table 8: Site Generated trips

Mode	Existing Mode Share	Existing Trips (4,420 staff)	Future Mode Share	Future Trips (15,000 staff)	Increase	Peak Hour Change
Train/Metro	62%	2741	62%	9300	6559	2788
Bus	9%	398	17%*	2550	2152	915
Ferry/Light Rail	0%	0	1%	150	150	64
Veh Driver	11%	486	0%	0	-486	-207
Veh Passenger	1%	44	1%	300	256	109
Cycle	1%	44	5%	750	706	300
Walk	4%	177	10%	1500	1323	562
Other	12%	530	7%	450	-80	-34
Total	**100%**	**4421**	**100%**	**15000**	**10579**	**4496**

*A proportion of the bus mode share is expected to shift to Light Rail once the CBD and South East Light Rail opens

4.3 Development Areas to be Serviced

The total expected gross floor areas (GFA) of the Central Station Precinct including the first phase of the OSD is summarised in Table 7. These uses have been used as the basis for delivery generation by site as well as loading bay requirement calculations. Assumptions have been made where information is currently unavailable, these are listed below Table 6.

For the purposes of vehicle generation calculations, a distinction is made between retail and food and beverage areas. Restaurant/café areas are defined to be outlets serving food and beverages (e.g. restaurants, cafes and fast food outlets) while retail is defined as non-food and beverage retail (e.g. clothing, sports, book shops).

Table 9: Development areas to be serviced

Site	Area Use (m^2)				
	Retail	**Food / Bev**	**Office**	**Hotel**	**Total Area**
The Site	1,500	3,500	150,000	-	**155,000**
Block A	-	2,738	58,184	7,530*	**68,452**
Block C	231	539	-	6,930*	**7,700**
OSD Package JKL	5,000	5,000	-	10,000	**20,000**
OSD Package Q	5,000	5,000	170,000	-	**180,000**
TOTAL	**11,731**	**16,777**	**378,184**	**24,460**	**431,152**

* These areas are assumed based on subtracting retail and restraint/café areas from the total area provided

The distribution area and loading bays within Block B will also service Blocks A and C and the OSD.

4.4 Car & Motorcycle Parking

The parking standards in the City of Sydney LEP dictate that given the site area, the development can contain a maximum of 193 parking spaces associated with the commercial office use.

Current site planning notes that the quantum of parking within the Site will be reduced from the existing 169 spaces to accommodate the Basement Distribution Centre. No additional car parking or motorcycle parking is proposed as part of the project.

While no changes are proposed to the parking arrangements at adjacent sites, the following assumptions have been made:

- No additional car parking will be provided to the OSD.
- Block A will have 36 car parking spaces accessed via Block B based on the latest plans received.
- Block C will retain their existing parking but it will be accessed via the Block B site entrance.
- All access for the Western Gateway Sub-Precinct will occur via Block B.

As such, it is assumed that there is no overall net change to the parking provision being provided for the Site's driveway.

4.5 Cycling

The proposal will provide bicycle parking for commercial employees, in line with City of Sydney/Green Star requirements. Current planning has indicated that bicycle parking and end of trip facilities will be located within the basement level. There is an opportunity for these facilities to connect with the Devonshire Street Tunnel and plaza area. The exact allocation and location of bicycle parking across the Site will be addressed as part of the future DA's.

End of trip facilities will be provided for staff, and bicycle parking will be provided for both employees and visitors of the new development in accordance with the City of Sydney DCP 2012 and Green Star requirements.

The DCP requires:

- For employees:
  - 1 bicycle space per 150 sqm GFA for commercial
  - 1 bicycle space per 250 sqm GFA for retail employees
- For customers and visitors:
  - 1 bicycle space per 400 sqm GFA for commercial
  - 1 bicycle space per 100 sqm GFA for retail visitors

Bicycle parking is required to be Class 2 secure bicycle spaces for the employees of the building and Class 3 bicycle racks for visitor spaces (which are easily accessible and clearly signposted).

There is also a requirement for 2 showers and change cubicles per 20 bicycle parking spaces, including 1 personal locker for each employee bicycle parking space.

Using the current yield, the required end of trip facilities is expected to include the following approximate provisions:

- Approx. 1,000 staff bike parking spaces;
- Approx. 400 customer/visitor bicycle parking spaces
- 50 showers and change cubicles;
- Lift access from Henry Deane Plaza to the Site's facilities; and
- Stair with a wheeling ramp connecting on the northern side located adjacent to the Devonshire Street Tunnel.

There is an opportunity within the Site to provide a public cycle parking facility to service the overall Central Station Precinct. There is a good synergy between the customer/visitor requirements for the development and the provision of a public bicycle facility. The parking provision can be determined in subsequent development applications.

4.6 Pedestrian enhancements

As described in previous sections, there are several changes planned for the precinct. The most significant of these being the opening of the Sydney Metro Station beneath Central Station along with Central Walk West; the primary portal between the station and the public realm. The opening of Central Walk West will create a seismic shift in the way pedestrians travel into, out of, and through Henry Deane Plaza. It is expected that in the future, most Suburban, Intercity and Metro trips between Central Station and areas west of Central Station will use Central Walk West for access rather than the Devonshire Tunnel.

As part of planning for the precinct, the Consortium team analysed TfNSW data regarding future growth in employment and residential around Central Station, including public transit and non-public transit trips. This analysis showed that in 2056 job growth in the precinct is skewed towards the area of UTS and TAFE NSW with approximately 20% of trips expected to pass through the Broadway/Harris Street intersection. Thus, the pedestrian links between Central Walk West and the Broadway/Harris intersection, through the Site and through Henry Deane Plaza are of critical importance in terms of enabling the public realm.

As noted previously, the Consortium do not control or have rights to the main pedestrian access points to the Site, including Henry Deane Plaza, Central Walk West, Ambulance Ave, Lee Street, the Lee Street Tunnel and the Devonshire Tunnel. However, the Consortium, in cooperation with TfNSW, have undertaken a series of studies and analyses looking at future pedestrian movements to understand how future growth and the opening of Central Walk West could impact the precinct and how the pedestrian realm, site access and links should be contemplated. The studies revealed an opportunity for the Site to create a distributed and diffused network of pedestrian paths so that movements in the Western Gateway and in a revised Henry Deane Plaza can facilitate distribution of crowds throughout the precinct.

The expectation is that Henry Deane Plaza will be redeveloped and a new at-grade “Link” will be created between the Adina and the YHA to enhance pedestrian routes. These moves align with TfNSW’s objectives for an improved public realm that facilitates access to Transport assets at Central Station, the Western Gateway and the area surrounding UTS and TAFE.

Further details on the enhancements and how these affect the various pedestrian routes to and from the Site can be found in Section 6.4.

5 Basement Distribution Centre

The intended over-station development (OSD) deck is intended to be largely pedestrianised. Vehicle access will be needed for emergency and maintenance vehicles, but these are infrequent. By contrast, deliveries to commercial buildings will be a frequent occurrence, and if allowed full access to the deck, would compromise the pedestrian environment. In addition, all loading docks would have to be at deck street level, taking up valuable ground-floor space, street frontage and therefore reducing amenity.

For this reason, the provision of a central distribution centre (Figure 14) in the basement under Block B is proposed. All goods for the Blocks A, B, C and the OSD can be delivered to a managed loading dock and distribution centre (DC) underneath Block B. Once delivered, the goods will be consolidated and then redistributed to neighbouring developments and the developments over rail.

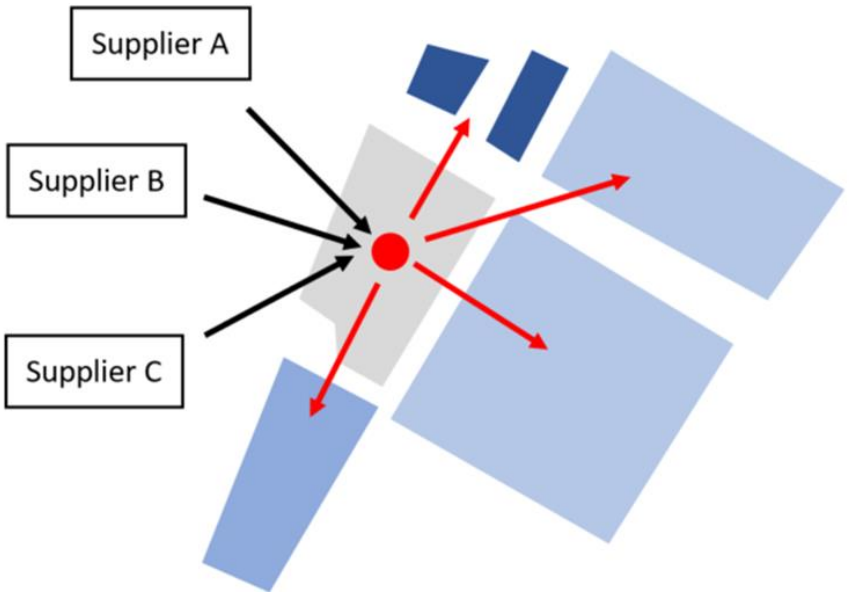

Figure 14: Centralised Distribution Centre

5.1 Benefits of a Centralised Distribution Centre

A goods DC in the basement under the Western Gateway Sub-Precinct is a key enabler for future OSD. All vehicular deliveries will be directed to a single managed loading dock and DC, allowing security screening and consolidation of goods movement to all adjacent precinct development using small electric vehicles or direct access to lifts.

Centralisation of vehicle deliveries will allow pedestrianisation of the over-rail deck and minimisation of on-deck loading docks, increasing street level amenity and valuable ground-floor space. Through these benefits, a centralised DC will create cost efficiencies and other advantages including:

- Enhanced control – to avoid random, unplanned deliveries.

- Internal Consolidation - reduce the number of vehicles entering the OSD by ensuring vehicle carrying capacity is as fully utilised as possible.
- Better management – deliveries can be managed and temporarily stored to minimise traffic generation.
- Cost efficiency – a centralised dock will reduce fixed and operating costs across the precinct, aiding development feasibility.
- Access simplification – truck deliveries are limited to one access point.
- Security – a centralised dock will allow security screening before goods are distributed to development over or beside the rail corridor.
- Pedestrianisation – delivery trucks can be kept off the OSD allowing an improved pedestrian environment.

5.2 On-site Consolidation

The goal of consolidation is to reduce the number of vehicles entering a target area by ensuring vehicle carrying capacity is as fully utilised as possible. On-site consolidation considers consolidating all deliveries into managed single carriers wherever possible across the various site users. This minimises the number of vehicles entering a site by carrying more goods on less vehicles.

Consolidation can achieve a significant reduction in vehicle movements to a specified destination with an associated reduction in emissions, congestion, noise pollution traffic movements in absolute terms, peak traffic levels, queuing and loading bay area requirement.

Consolidation is a growing delivery solution worldwide and emerging to Sydney. TfNSW is exploring options for the inner city. Supply chain consolidation may also be employed within the precinct to reach this aim.

Procurement-led consolidation is the sharing of transport resources through collaboration between businesses. It can lead to a reduction in vehicle trips as well as financial and environmental savings. Regardless of the number of orders placed from tenants on the site, they are given a time period, so the supplier only makes the delivery on a given day or date. Individual orders are ‘bunched’ so they arrive together on a single vehicle. This reduces the overall number of trips needed and associated emissions. It results in less delivery costs for the operator and where the minimum order value is increased, leads to less order processing costs for the customer. This approach is ideally suited to daily fresh, frozen or chilled consumables for office, retail and food and beverage tenants.

5.3 Distribution Centre Planning and Operations

To ensure the DC can operate efficiently, it is imperative to understand the development being serviced in detail. We anticipate the “mix” and layout plans will change over time, and some adjustment will be necessary, impacting the number and size of loading docks, manual handling charging areas, storage type and size, garbage zones, circulation zones, staff facilities, etc. Further detail on the DC Operations and Planning is provided in Appendix A.

5.4 Vehicular Site Access and Loading Dock

Vehicular access will be contained within Block B to the south of the site. It is proposed that the Central OSD will be accessed by vehicles through this common driveway, which will also accommodate access for Blocks A and C and another split ramp directly to the future OSD development.

The loading dock access point for Block B will be shared with the car parking and is presented in Figure 15 (accessed from Lee Street). It should be noted this is an indicative location and further detail regarding proposals for Block B will be submitted in future development applications.

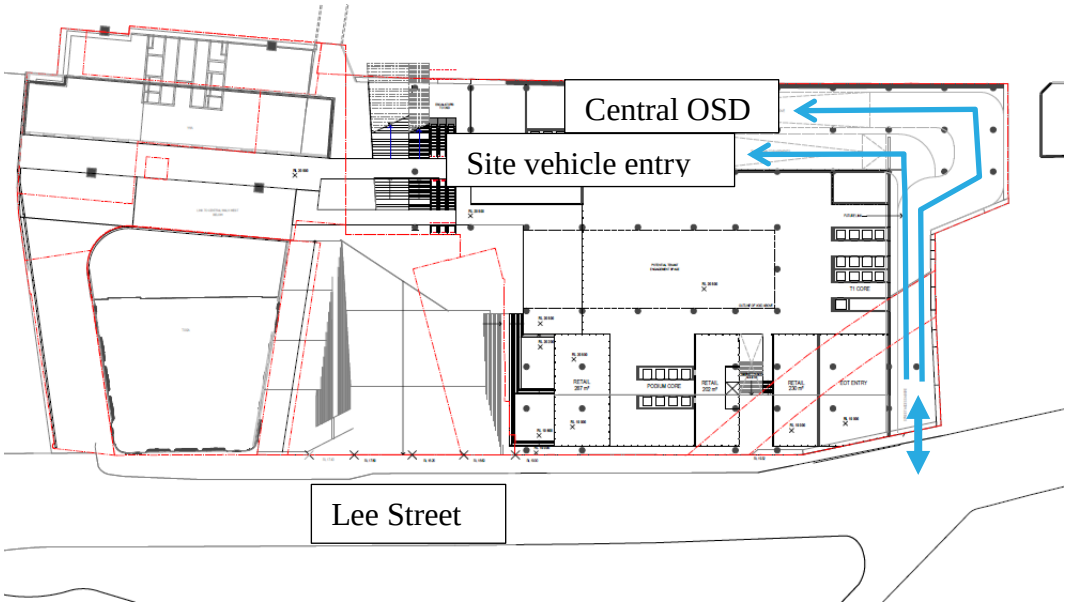

Figure 15: Indicative access to new and existing service yards and onsite parking

5.5 Loading Dock Requirement

The proposed developments over and beside the rail corridor can be enabled through the provision of a large basement DC centre to service the precinct; utility and service connections; and access ramps for goods, maintenance, construction and emergency vehicles. The loading bay requirement within the DC has being calculated using the area uses shown in Table 7.

In the absence of detailed information regarding the time taken to access the facility and satisfy the screening requirements, the dwell time for each vehicle has been assumed to be equal for both unmanaged and managed dock solutions. the dwell time has been considered at 30-minute intervals. The dwell time is defined as the time a vehicle arrives at the boom gate to enter the facility and the moment the vehicle exits the facility.

5.5.1 The Site Only

The sites considered in this combination are made up of the uses within the Site.

Table 10: Area use assumptions

Site	Area Use (m²)				
	Retail	Food / Bev	Office	Hotel	Total Area
The Site	1,500	3,500	150,000	-	**155,000**

From the GFA and proposed land uses, the loading bay requirements have been estimated. The estimations made in Table 11 have assumed an unmanaged 24/7 operation, where the loading bay requirement is covering the estimated peak hour period within the loading dock. The table displays the daily deliveries generated as well as the quantity and type of loading bays required if the loading dock is servicing just the Site.

Table 11: Unmanaged daily vehicle arrivals & loading bay requirement

Vehicle Size	Daily Arrivals	Loading Bay Requirement
MRV	65	4
SRV/Vans	255	14
Light vehicles (long-dwell)	36	2
Light vehicles (courier)	90	4
TOTAL	**445**	**24**

*The DC has no capacity to accommodate HRVs and have thus been excluded from the calculations

These figures assume that the access to the loading dock will be unrestricted and the volume of vehicles entering the driveway are similar to that of a typical mixed-use commercial development.

Assuming a managed loading dock, operating 16-hours per day, with a 30-minute booking system, the estimated daily vehicle arrivals and loading bay requirement is displayed in Table 12.

Table 12: Daily vehicle arrivals & loading bay requirement adopting a managed operation

Vehicle Size	Daily Arrivals	Loading Bay Requirement
MRV	65	2
SRV/Vans	255	8
Light vehicles (long-dwell)	36	2
Light vehicles (courier)	90	3
TOTAL	**445**	**16**

*The DC has no capacity to accommodate HRVs and have thus been excluded from the calculations

5.5.2 All Sites (ultimate development)

The sites considered in this stage are made up of the uses shown in Table 13.

Table 13: Area use assumptions

Site	Area Use (m^2)				
	Retail	**Food / Bev**	**Office**	**Hotel**	**Total Area**
Block B	1,500	3,500	150,000	-	**155,000**
Block A	-	2,738	58,184	7,530*	**68,452**
Block C	231	539	-	6,930*	**7,700**
OSD Package JKL	5,000	5,000	-	10,000	**20,000**
OSD Package Q	5,000	5,000	170,000	-	**180,000**
TOTAL	**11,731**	**16,777**	**378,184**	**24,460**	**431,152**

From the GFA and proposed land uses, the loading bay requirements have been estimated. The estimations made in Table 14 have assumed an unmanaged 24/7 operation, where the loading bay requirement is covering the estimated peak hour period within the loading dock. The table displays the daily deliveries generated as well as the quantity and type of loading bays required if the loading dock is servicing the entire Precinct.

Table 14: Unmanaged daily vehicle arrivals & loading bay requirement

Vehicle Size	Daily Arrivals	Loading Bay Requirement
HRV*	0	0
MRV	261	16
SRV/Vans	796	48
Light vehicles (long-dwell)	118	8
Light vehicles (courier)	227	10
TOTAL	**1,402**	**82**

*The DC has no capacity to accommodate HRVs and have thus been excluded from the calculations

It is recommended that a managed operation be implemented. A managed loading dock can greatly improve the efficiency of the DC, levelling the peak periods expected throughout the day. This will mitigate the potential for queues, on-street parking and unsafe conditions within the loading dock during these peak periods. The risks of an unmanaged system also include the exceptional situations where vehicles dwell on the site for longer periods than displayed in Table 16, causing queues and longer waiting times.

A 16-hour operating window will provide the loading dock with a secure premise that operates efficiently and effectively. Vendors will be required to pre-book their delivery using a booking system, bookings will allow for a 30-minute window for all vehicle types. From the daily trips rates, the minimum loading bay requirement for a managed loading dock is presented in Table 15.

Table 15: Daily vehicle arrivals & loading bay requirement adopting a managed operation

Vehicle Size	Daily Arrivals	Loading Bay Requirement
HRV*	0	0
MRV	261	9
SRV/Vans	796	25
Light vehicles (long-dwell)	118	4
Light vehicles (courier)	227	8
TOTAL	**1,402**	**46**

*The DC has no capacity to accommodate HRVs and have thus been excluded from the calculations

Current site planning has allowed up to 48 bays consisting of:

- 12 MRVs
- 22 SRVs
- 14 light vehicles

The indicative layout is presented in Figure 16.

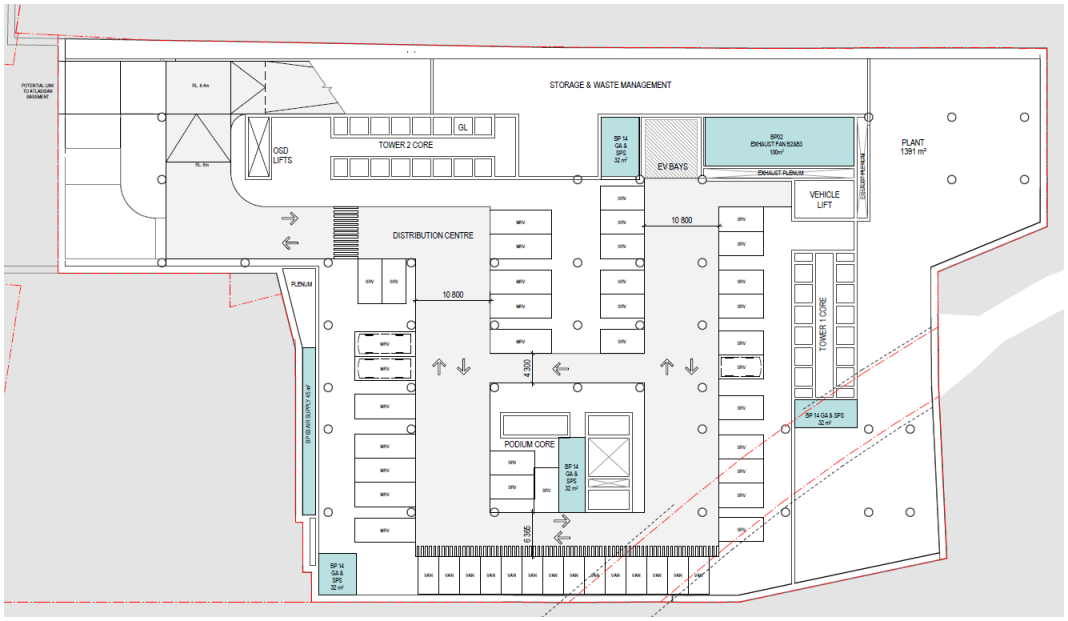

Figure 16: Indicative layout for DC

6 Transport Assessment

6.1 Traffic Generation

To assess the traffic generation impact of the development, the existing traffic generation for Block B was assumed to stay the same given that parking provision is relatively the same across the Western Gateway Sub-Precinct. It is important to note that the level of traffic generation is linked to the amount of car parking being provided within the development.

This was applied in conjunction with the expected increased loading demand across Block B assuming two scenarios:

- Block B indicative scheme was built in isolation
- the ultimate Precinct development

By applying the operating model that assumes a 16-hour operating window and 30-minute managed loading dock service rate based on vehicle bookings (for all vehicle types), the following trip generation of the loading dock was estimated in Table 16.

Table 16: Service rates and traffic generation of a managed loading dock

Vehicle type	**Peak deliveries per hour**	
	Site only	**Ultimate**
MRV	4	17
SRV/Vans	16	50
Light vehicles (long-dwell)	3	8
Light vehicles (courier)	6	15
Total	**29**	**90**

*The DC has no capacity to accommodate HRVs and have thus been excluded from the calculations

Based on the anticipated profile of activity for loading, the AM peak hour will be the busiest peak hour to assess. However, to be conservative, both peak hours were assessed with the same peak flows. A 50/50 in/out split was assumed for the peak hours, in line with standard practice for loading activity.

While there is slightly more traffic generated from the Distribution Centre, this is negligible in the context of the background volumes.

6.2 Road Network Impacts

6.2.1 Intersection operations

Intersection modelling was undertaken on key intersections within the study area to provide an understanding of the existing and future performance of the nearby road network.

SIDRA network, an industry standard static modelling software package, was utilised to assess the identified intersections. The intersection performance is assessed in terms of the following metrics:

- Level of service;
- Degree of saturation; and
- Average delay.

In urban areas, the traffic capacity of the major road network is generally a function of the performance of traffic intersections. This performance is quantified in terms of the Level of Service (LOS), which is an index of the operational performance of traffic at an intersection and is based on the average delay per vehicle. LOS ranges from A = very good to F = highly congested travel conditions, as shown in Table 17.

Table 17: Roads and Maritime Services NSW Level of service definitions (RMS NSW Guide to Traffic Generating Developments 2002).

Description	Level of Service	Average Delay per Vehicle (s)
Very Good	A	< 14.5
Good	B	14.5 ≤ 28.5
Satisfactory	C	28.5 ≤ 42.5
Near Capacity	D	42.5 ≤ 56.5
At Capacity	E	56.5 ≤ 70.5
Over Capacity	F	≥ 70.5

Generally, it is desirable to aim at achieving a LOS C or greater at all major road intersections. However, in practice, it is reasonable for some intersections to operate at LOS D at peak times.

Another common measure of intersection performance is the degree of saturation (DOS), which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DOS of 1.0 indicates that an intersection is operating at capacity. The desirable maximum DOS are as follows for the respective intersection types:

- Signalised intersection – 0.9
- Roundabout – 0.85
- Priority intersection – 0.8

Using the 2018 SCATS data presented in the Central Station Precinct Renewal Project – Vehicular Access and Road Network Performance report, an existing SIDRA model was produced for the Lee Street / Regent Street intersection for the AM and PM peak hours, the network layout is presented in Figure 17.

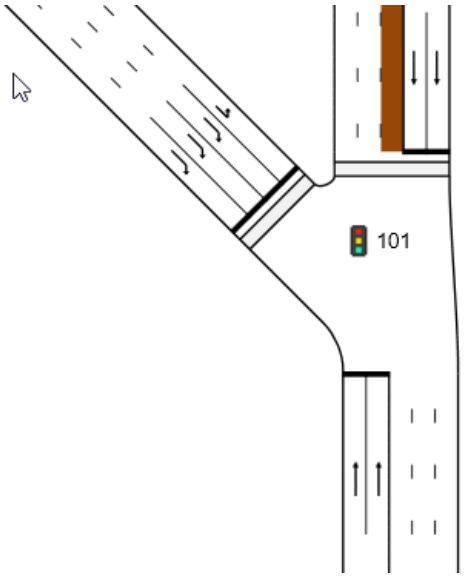

Figure 17: Lee Street/ Regent Street SIDRA model Network Layout

The SIDRA modelling exercise produced the following results as outlined in Table 18.

Table 18: Lee Street / Regent Street SIDRA modelling results

Scenario	Level of Service	Degree of Saturation	95th percentile queue (m)
AM	B	0.71	87
PM	B	0.83	98

The modelling results indicate that the intersection is operating at an acceptable Level of Service (B). The length of the 95th percentile queue on Regent Street West suggests that queuing will fill a large proportion of the link length which may impact the signalised intersection of Regent Street / Harris Street / George Street / Broadway.

6.2.2 Development assessment

The intersection modelling results for the Lee Street / Regent Street intersection with development are shown in Table 19. This conservatively models all loading activity and generating traffic on top of the existing traffic even though parking is being reduced. It also considers that cycle times will remain consistent into the future, even through there is high variability and likely changes to be made in the future.

Table 19: SIDRA Modelling Results – 2029 with development

Scenario	Peak	LoS	DoS	95th Percentile queue length (m)
Existing	AM Peak	B	0.71	87
	PM Peak	B	0.83	97
Existing + Site	AM Peak	B	0.71	87
	PM Peak	B	0.84	110
Existing + Ultimate	AM Peak	B	0.76	93
	PM Peak	B	0.86	110

The results indicate that the project will have minimal impacts on the surrounding local road network. There is no change to the level of service with minor increase of queuing and degree of saturation.

Given the results at Lee Street / Regent Street, it was deemed unnecessary to model additional intersections such as Pitt Street / George Street. There is expected to be minimal change in the context of the surrounding traffic volumes, noting the already minor impact to Lee Street / Regent Street intersection. In the context of 4,000-5,000 vehicles using the Pitt Street / George Street intersection the development flows account for less than 1% of the total intersection flows which is negligible.

6.2.3 Site access driveway

The existing site access driveway on Lee Street permits all vehicle movements. Right turn entry to the site is facilitated by a short right turn bay at the head of the right turn bus bay into the bus layover facility as shown in Figure 18. This driveway will continue to service the proposed site uses.

The additional demand placed on this access driveway if used for the ultimate precinct development would be the subject of further access considerations. A number of options are available including:

- Limit movements to left turn in / left turn out.
- Adjust the right turn facility to be shared by buses and private access.
- Provision of a new access point associated with redevelopment of the bus layover site with a connection to the Regent Street traffic signals.

Figure 18: Site access driveway

6.3 Public Transport

Central Station will provide a very high level of accessibility by train. Bus stops and taxi ranks in Lee Street and Broadway will provide good opportunities for other modes of access. The location also takes advantage of being 350m from Eddy Avenue for LRT access. The station and supporting intermodal facilities will create a highly accessible public transport precinct.

As outlined in Section 0, the OSD will generate approximately 4,105 additional Train/Metro trips, 1,276 additional bus trips and 85 additional Light Rail trips during the morning peak hour.

The proposed Sydney Metro, along with signalling and infrastructure upgrades across the existing Sydney rail network is anticipated to increase the capacity of train services entering the CBD – from about 120/hr today to 200 services beyond 2024. Considering the significant increase in capacity, the impact of the development on Train/Metro capacity is considered acceptable.

Similarly, the existing extensive bus network and the proposals set out in Sydney's Bus Future to increase services and journey times across the network, the impact on bus capacities is considered to be acceptable.

6.4 Walking

There are several changes to the pedestrian network around Block B which are fundamental assumptions to this assessment:

- The Sydney Metro Central Station is open;
- The Central Walk connection is open between Ambulance Avenue and Chalmers Street;
- Ambulance Avenue is a pedestrian only connection between Lee Street and Central Walk West;
- There is an at-grade pedestrian-only connection (the "Link") between Central Walk West and Devonshire Tunnel between Blocks A and B;
- Henry Deane Plaza forming part of the Block C site is redeveloped to provide seamless connections between the Link and Block B and between Lee Street and Block B. (It should be noted that the redevelopment of Henry Deane Plaza is not included in this Planning Statement.)

It is expected that Central Walk West will largely replace the Devonshire Tunnel as the main access point for rail-based pedestrian trips. When Central Walk West opens, Sydney Metro customers and intercity and suburban Sydney Train customers will have convenient access to the Site and to the precinct pedestrian and street networks through the Link and Ambulance Avenue. The expected future pedestrian network is illustrated in Figure 19 and key movements are illustrated in Figure 20.

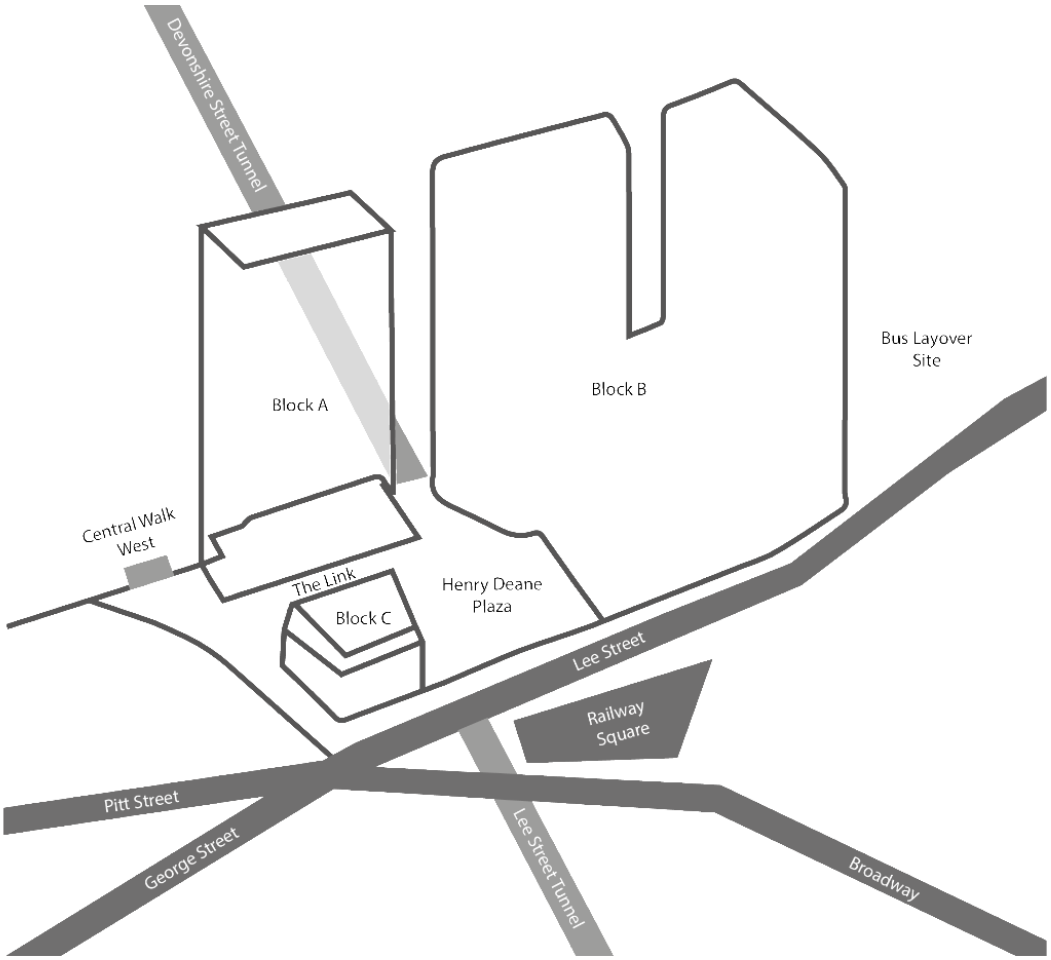

Figure 19: Western Gateway Site and Pedestrian Links

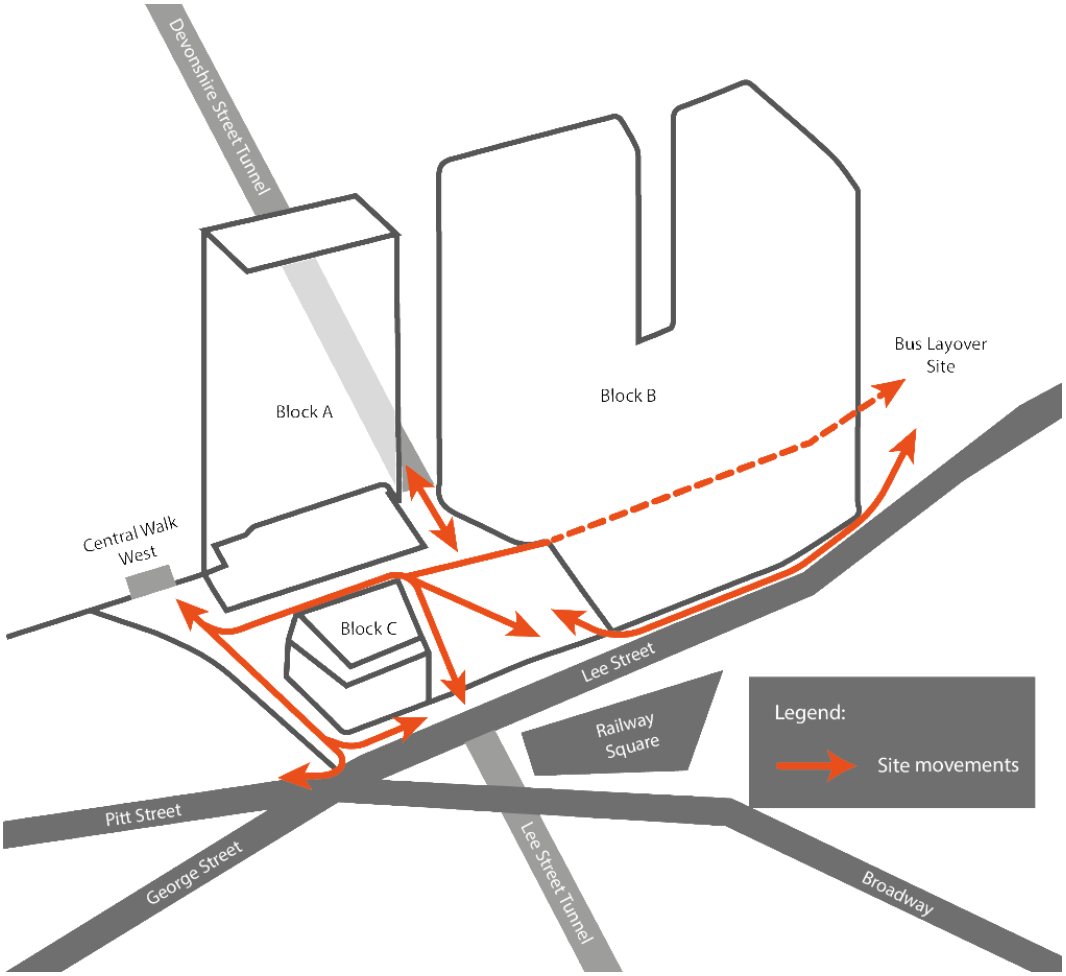

Figure 20: Future Movements through and around the Site

Sydney Train users can continue to use the existing Devonshire Street Tunnel, through Henry Deane Plaza and Lee Street Tunnel to connect to the precinct west of George Street. Pedestrians using bus and Chalmers Street light rail services from the east can continue to use the Devonshire Street Tunnel, through to Henry Deane Plaza. A future development at the bus layover site south of Block B is anticipated. Access to the bus layover site is expected to be provided through Block B but pedestrians can also access via Henry Deane Plaza and Lee Street.

Henry Deane Plaza will continue to be a major connection for existing and future users to Block B but also for people moving throughout the Central Station Precinct. The redeveloped Henry Deane Plaza forming part of Block C will also provide a western access to an elevated east-west connection over Central Station as part of the Central Station over-station development (OSD). The OSD connection will link customers from Block B, Sydney Metro customers and pedestrians from the precinct to the west, to the OSD via Henry Deane Plaza.

Access to Block B through Henry Deane Plaza is illustrated in Figure 21.

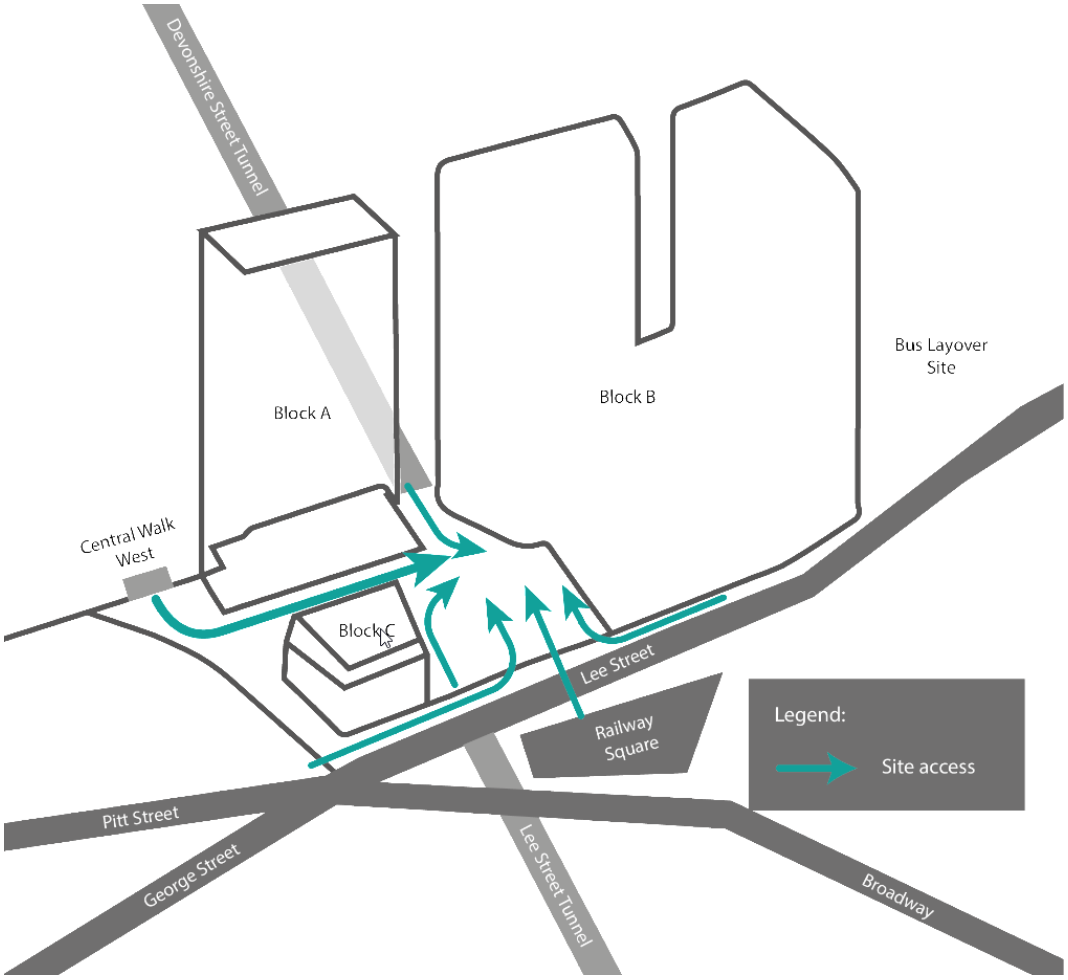

Figure 21: Future Access Movements to the Site

Although the form and layout of the pedestrian network to the north of Block B is expected to change significantly, the pattern of access as it relates specifically to Block B is largely unchanged in that pedestrians will continue to access from the north. The Link will provide primary access between the Site and Central Walk West for Sydney Metro and suburban and intercity Sydney Trains customers. The Devonshire Street Tunnel will continue to act as a connecting path to the Site for Sydney Train customers, bus and Chalmers Street light rail users from the east. Access from Railway Square and Lee Street will remain on the existing footpath, and through the revitalized Henry Deane Plaza. The Lee Street Tunnel will continue to connect the Site to the precinct west of George Street.

6.5 Cycling

The Site is well located to take advantage of the City's existing and planned network of high-quality cycleway facilities. The proposed bi-directional cycleway on Pitt Street will form the main north-south spine through the CBD for cyclists into the area.

6.6 Interchange Integration

The project does not change the surface level requirements for interchange functions, but it does offer some opportunity for improvement including:

- Shared on-Site bicycle parking facilities to relieve the on-street pedestrian space.
- A reduction of vehicle crossovers on Lee Street

The proposed development will be accessed almost entirely by public transport and active transport modes with very limited car parking proposed and hence the interchange functions will be integrated well with the development.

7 Travel Plan

The developers are acutely aware of the importance of facilitating and encouraging travel to and from the workplace by alternative modes to private car. With around 15,000 employees expected to be working across Block B, there will be a need to implement a Travel Plan which will encourage employees to travel by sustainable modes.

The travel plan will promote commuting and business trips by walking, cycling and public transport and outline incentives which promote the use of these modes. The lack of parking provided as part of the development will, in itself, discourage employees from travelling by private car.

8 Conclusions

This report examines the transport, traffic, pedestrian and parking implications of the proposed redevelopment of Block B which seeks to amend the Sydney LEP through enabling greater building height (South Site only) and floor space (North and South Sites).

The precinct is very accessible by non-car modes as evidenced by the existing Journey to Work travel patterns. The mode split target set for the precinct increases the proportion travelling by non-car modes further.

It is anticipated that the proposal will have a negligible traffic impact on the road network, with no new additional car parking spaces proposed to be provided as part of the Planning Statement (with surplus car parking spaces removed). As previously noted, the parking provision is linked to the traffic generation with minimal additional trips envisaged as a result of the Basement Distribution Centre. This will create minimal additional traffic flows in the context of the surrounding traffic volumes.

The Site will encourage loading consolidation and provide a centralised facility to service the surrounding area to limit vehicle interaction across the precinct.

Similarly, the additional public transport trips are expected to an acceptable impact considering the planned increases in rail and bus capacity and services.

Further detail regarding proposals for the Site will be submitted in future applications.

Appendix A

Basement Distribution Centre Planning and Operations

A1 Management

The loading dock will be managed by a dock master who will coordinate vehicle movements, govern the booking system, ensure safety and direct goods to end users or interim storage.

A dock master's office or booth should be located as such so they can keep the entire dock area in view and control the entrance and exit from the building. The circulation into the dock should pass this control point, and access should be restricted to authorized personnel. Security cameras and CCTV may serve as supportive measures.

A2 Booking System

In order for the loading dock to be adequately controlled, it is proposed that a delivery booking system will be utilised. The major benefit of the implementation of such a system is vehicle demand levelling. The allocation of deliveries to timeslots reduces a 'peak hour' for delivery vehicles occurring at the loading dock, which can lead to congestion, delays and incidents. The booking system also largely mitigates the risk of vehicle queues forming to enter the site, improving the flow of traffic on the street and within the DC.

There are several commercial delivery booking systems available. The functionality of a typical system is outlined below:

- A delivery or service vehicle operator logs a delivery or service requirement with the loading dock through an online/mobile app and selects from a list of available timeslots. The delivery or service vehicle operator is provided with:
  - The loading dock entry address and allocated a loading bay for delivery;
  - A security code to be used at the entrance to the dock for access;
  - Contact information for the dock operator and instructions if a timeslot is unable to be met;
- The vehicle operator is sent a reminder notification or text message to alert them that their timeslot is upcoming; and
- Upon arrival at the dock, the vehicle operator uses the security code provided to gain access to the site, unload goods or provide service, and uses the code to leave the dock area.

A2.1 Examples

There are numerous examples of managed loading docks in the Australian CBDs. Some examples are as follows:

Barangaroo Precinct, Sydney

- Precinct style dock serving entire Barangaroo development.
- Bookings made in advance through Bestrane.
- No entry is allowed to the facility without a booking.
- Vehicles are pre-allocated a space within the loading dock based on the building they are servicing and the size of the vehicle.
- Dock master on site between 6am and 6pm, however 24-hour access to the dock is provided.
- Centralised precinct courier / mail room located within the dock.

200 George Street, Sydney

- Precinct use of loading dock.
- Concierge directs all deliveries through to loading dock.
- Bookings for deliveries made in advance through 'Scatter' system. This is associated with availability of the goods lift rather than the spaces within the dock.
- No booking required for couriers. Most of them are known to the dock master who simply directs them to their space.
- Separate contractor parking on B1 (bookings required).
- Dock master on site between 6.30am and 6.30pm.
- Bookings only from 7pm.

Emporium, Melbourne

- Precinct style dock serving entire Shopping Centre.
- Bookings made in advance through a customised Bestrane Descartes dock appointment scheduling solution.
- Levelling demand and spreading the 100 daily deliveries.
- Onsite dock master between 6:00am and 7:30pm.
- 2 x 25-ton Truck Lifts lowering vehicles to the basement, optimising the potential for retail by reducing the need for long and costly ramps.

A3 Traffic Flow

The best DC and dock operations achieve simple one-way flows. Pedestrian zones and lift waiting areas are to be kept clear of vehicle circulation where possible.

Waste from the served-area of the precinct will compacted and stored on-site and collected outside of dock operating hours by a private contractor.

Electric vehicles (EVs) or automated guided vehicles (AGVs) can be used for the onward movement of goods from the loading dock to end users. EVs and AGVs can also be used to collect localised waste from each facility and consolidate the waste in a centralised precinct Waste Room, minimising refuse vehicle movements within the precinct.

A4 Security

A boom gate will operate at the top of the ramp, controlling access into the DC. This mitigates unauthorised vehicle access the DC. The placement of the boom gate should be far enough into the site so as not to obstruct traffic flow. During operating hours (when dock master is present), access will be granted only to those vehicles that are booked via the loading dock booking system. Signage to this effect will be displayed prominently at the loading dock entrance to deter entry attempts by un-booked vehicles.

A5 Blast Protection

Security against terrorism acts necessitate that loading docks are not constructed over the rail corridor or key rail infrastructure. However, a risk still exists for development over the dock even when not over rail. Based on risk analysis for the building, a blast resistant design would be recommended. Blast resistant design is a risk-based approach. The approach is typically to:

- Reduce the likelihood of a blast threat being delivered to a site (e.g. this can be achieved through access restrictions);
- Reduce the potential size of blast threats (e.g. screening/management)
- Assess consequences of blast; and
- Reduce consequences (e.g. separating critical equipment from the loading dock by at least 15m or hardening the structure).

If deemed necessary, it is recommended that this high-level advice be followed by a more in-depth review conducted by certified Blast Engineers.

A6 Goods Distribution

Goods will be moved from the DC across the precinct using manual handling equipment (e.g. hand trolleys, pallet jacks, etc.) and EVs or AGVs. EVs are small, manned vehicles used for the safe and efficient distribution across the precinct. An example of one type of EV is shown below in Table 20.

Table 20: Typical electric vehicle

	External dimensions	2.50m x 1.00m
	Load surface dimensions	1.22m x 1.00m
	Load capacity	1,000-1,500kg
	Weight	980kg
	Turn radius	2m
	Speed	12km/h

AGVs offer an automated solution for the onward distribution of goods from the loading dock (Table 21). AGVs may be an option dependant on the suitability of access routes provided to buildings within the precinct.

Typical units are battery powered, laser or optically guided with sophisticated collision avoidance systems. They may require painted or magnetic tracks affixed to flooring depending on the navigation system. The main benefit of AGVs in this context is the reduction in operating costs as the movement of goods would not require personnel.

Table 21: Typical automated guided vehicle AGV

	External dimensions	1.73m x 50.5m
	Load surface dimensions	Under lift
	Load capacity	1,000kg
	Weight	140kg
	Turn radius	1m
	Speed	3.4km/h

A7 Vehicle Lift Options

The provision of ramp access often requires significant spatial allocation. Provision of heavy vehicle lifts provide an alternate option for vertical transportation of delivery vehicles. The lifts can accept fully loaded vehicles and are operated in a similar way to standard passenger lifts.

An example of truck lifts in use are those operated by the Emporium Melbourne shopping centre (Figure 22).

Emporium is approximately 40,000m², has 224 tenancies and a central loading dock that services these tenancies as well as neighbouring David Jones and Myer stores. Twin 25 tonne scissor tables transport vehicles 12m from street level to the basement dock. Multiple vehicles may use each lift at one time. The main benefit of this solution was freeing up for other purposes of over 7,000m² versus providing lengthy ramps.

Figure 22: Emporium's twin truck lifts in operation (showing use by multiple vehicles at once)

Lifts could be used from street level down to the distribution centre, and potentially up to the over-rail deck level servicing the OSD. The process operating process could be as follows:

1. A scheduled Vehicle enters the DC at their allotted time via the driveway;
2. Vehicle will be directed to their allocated loading bay;
3. Vehicle will unload goods into an interim storage area;
4. All goods intended to be delivered to the OSD will be consolidated in the DC;
5. Consolidated deliveries for the OSD will be loaded onto an EV, AGV or into a localised van(s) and driven into the Truck Lift;
6. Goods will then arrive at the OSD, where facilities management staff will be ready to distribute the goods to their respective tenants; and
7. The EV, AGV or into a localised van(s) will return to the DC via the Truck Lifts and be ready for their next round of movements.