

Attachment B

**Central Square Preliminary Transport
Context Analysis Report (Pentelic Advisory
November 2019)**

A map of the Central Square area in Sydney, Australia. The map shows a grid of streets with various colored overlays: green, yellow, orange, and red. A large black building footprint is visible in the upper right and lower right. The text is overlaid on the map.

CENTRAL SQUARE MASTER PLAN

PRELIMINARY TRANSPORT CONTEXT ANALYSIS

FINAL REPORT

Prepared for City of Sydney

November 2019



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Introduction

1.1 Background

This report describes the strategic transport planning inputs for the City of Sydney's Central Square Master Plan Study. The report has been prepared on behalf of the City of Sydney and accompanies the development of a preferred concept for an expanded 'Central Square' as part of the city's long-term 'three squares' public domain strategy (Figure 1.1).

More recently, development of the new square has been incorporated as an integral element within the NSW Government's urban renewal vision for the 'Central Precinct', a Nominated State Significant Precinct (SSP). This vision, overseen by Transport for NSW (TfNSW), seeks to guide a comprehensive programme of urban renewal for Central Station and its immediate environs. This vision, in turn, forms a critical enabling piece of the government's plan to establish the Sydney Innovation and Technology Precinct, a corridor promoting advanced industrial and knowledge-based enterprises extending from the southern edge of the Sydney CBD south-west to Newtown and Eveleigh.

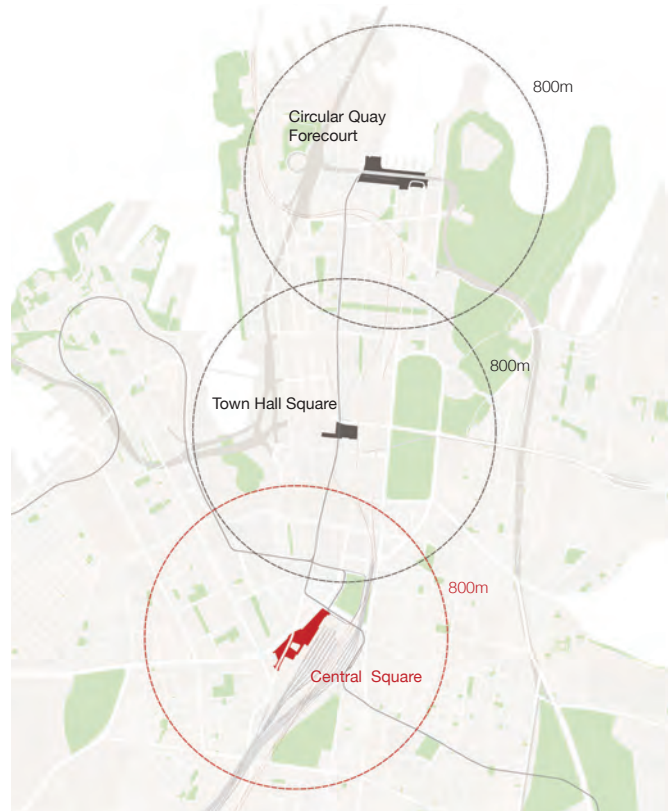


Figure 1.1 'Three squares' concept

1.2 Purpose of the report

This report comprises a preliminary technical paper intended to inform the City of Sydney's preparation of a master plan for the proposed new Central Square. The report aims to:

1. Define and analyse the strategic movement network context(s) for the proposed Central Square.
2. Identify broadly defined implications of the proposed master plan concept for the city's movement network infrastructure.
3. Identify a preliminary set of transport planning initiatives (metropolitan and local 'enablers') that are likely to be required in order to enable the realisation of the City of Sydney's vision.

While the report does not include detailed assessment of the initiatives identified, it does provide high-level guidance intended to assist in prioritising more detailed analysis and planning for the new Central Square. In particular, the findings and recommendations described in this report are intended to inform the development of this process in a way that prioritises the integration of movement networks, urban structure and public realm planning.

Introduction

1.3 Master plan study area

Figure 1.2 shows the master plan study area for the proposed new 'Central Square'. The study area includes land occupied by the Central Station Western Concourse, (existing) Railway Square and Henry Deane Plaza. It also incorporates parts of Lee Street (north of Little Regent Street), George Street, Pitt Street and Quay Street, each of which are identified as suitable for significant modification and/or removal of existing traffic functions.

The master plan study area accommodates a complex, and to some extent conflictive, mix of movement network modes and infrastructures. Important contextual factors in this regard are:

- / Central Station's historical role as the principal hub within Sydney's metropolitan transit network, serving as a major interchange for local, metropolitan and regional transport services.
- / The master plan study area's position as a southern 'gateway' for Central Sydney, facilitating the movement of high volumes of pedestrian and local transit movements between the CBD and Central Station.
- / The study area's role as a major confluence within the city's regional arterial road network, linking suburbs to the east, west and south of the city and accommodating high volumes of regional through-traffic. This latter aspect, in particular, currently constrains the study area's ability to more fully function as a social space and gateway for the city.

Conditions within the study area tend to reflect these roles and limitations. Relevant characteristics include:

- / Significant variations in level throughout the study area, currently addressed through a somewhat ad hoc and historically derived mix of approaches (terraforming, stairs, elevators).
- / A significant number of vehicle access points and on-site vehicle movement arrangements, generally conflicting with the study area's core pedestrian functions.
- / A variety of landscape treatments and public realm elements that have tended to evolve on a piecemeal basis rather than as part of any coherent overall strategy.
- / An evolving land use context characterised by an increasingly complex mix of ownership and/or leasehold arrangements along with the encroachment of commercial, tourist and retail uses. These have tended to accentuate demands for pedestrian, service vehicle and visitor vehicle access while at the same time fragmenting the management of movement space within the study area.

The composite result is a generally fragmented public realm characterised by high pedestrian and road traffic volumes, intense AM and PM peaks, significant conflicts between modes (particularly between pedestrians and vehicles) and compromised operational efficiencies. At the same time, the somewhat ad hoc historical overlaying of infrastructures and land uses provides little if any in-built redundancy or capacity to accommodate emerging movement network demands resulting from either planned investments in new transit infrastructure or the proposed redevelopment of adjoining commercial landholdings. Known projects in this regard include:

- / CBD and South East Light Rail, due to commence operating in December 2019.
- / Sydney Metro Southwest and accompanying Central Walk, due to commence operating in 2024.
- / Sydney Metro West, which may potentially include a station located within the master plan study area from the late 2020s.
- / Separate redevelopment proposals for the Railway Square YHA ('Atlassian site') and 14-24 Lee Street office precinct ('Dexus-Frasers site').
- / Potential over-station development above the existing Devonshire Street Tunnel.

Once operational, these projects will each generate significant new demands for pedestrian and social space within the master plan study area.

1.4 Summary of master plan elements

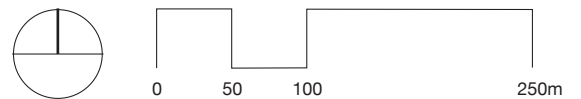
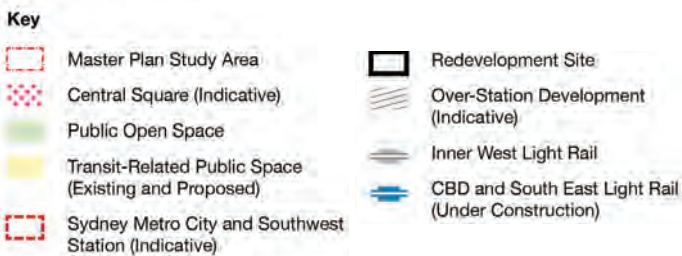
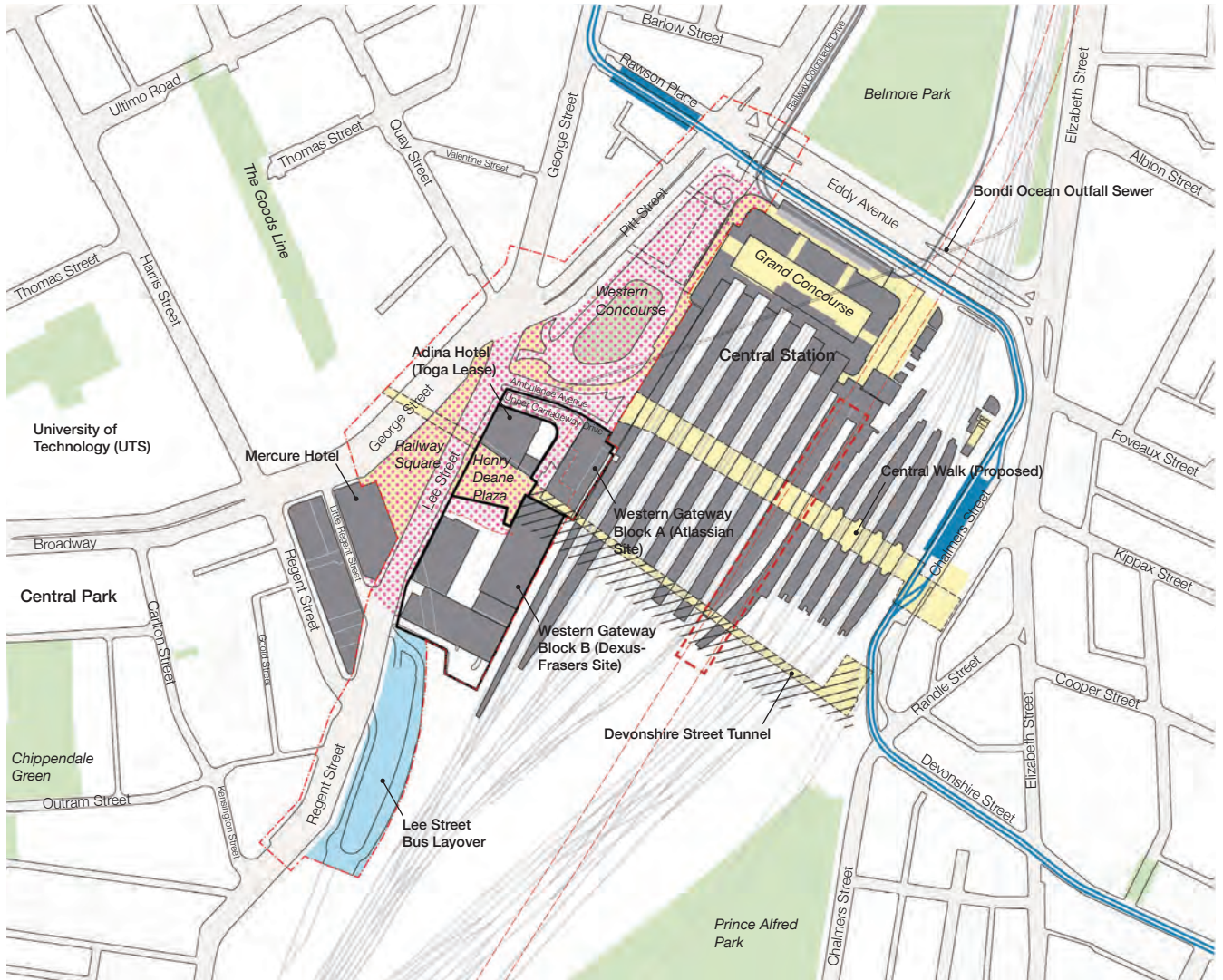
The proposed creation of a new 'Central Square' along the western edge of Central Station is a key mechanism for resolving these conflicts and limitations, as well as unlocking the study area's capacity to better serve Central Station's core role as a public transit hub and interchange. At the same time, this will facilitate the staged redevelopment of adjoining commercial and tourist accommodation sites in a way that better meets the access requirements for these sites.

To this end, key aspects of the proposed master plan include:

1. The integration of the existing Western Concourse, Railway Square and Henry Deane Plaza sites within a single civic space.
2. Integration of existing and planned pedestrian infrastructure, including the existing Devonshire Street Tunnel and planned Central Walk.
3. The accommodation of a potential Sydney Metro West station beneath or adjacent to the proposed new square.
4. Consolidation and rationalisation of access points and internal circulation arrangements for buses and service and visitor vehicles.
5. A series of staged street modifications, including the closure or partial closure of sections of Lee Street, George Street and Quay Street, in order to prioritise pedestrian connectivity between the new square, Central Station and the surrounding city.
6. Conversion of Regent Street (south of Broadway) and Harris Street to two-way vehicular movement.
7. The opening up of potential new pedestrian and cycling infrastructure, including use of the existing The Goods Line.
8. Enhancement and augmentation of existing cycling networks.

Introduction

Figure 1.2 Study area context



1.5 Method and assumptions

Taken together, the findings and recommendations described in this report are intended to provide a high-level though holistic view of the likely transport planning implications of the proposed Central Square in light of Central Station's evolving transport network and urban structure contexts. By necessity, the analysis informing the report entails a number of limitations:

1. The analysis described in the report is preliminary in scope and is not based on the results of any technical modelling. The report is only intended to inform the parameters for more detailed analysis and modelling should this be required.
2. The report identifies a number of indicative movement network improvements and enabling projects considered relevant to achieving the master plan vision. These have been assessed only on a preliminary basis from the point of view of a high-level assessment of the master plan's strategic movement network context. Additional detailed work will be required to more accurately quantify and assess the relevancy and/or implications of these findings.
3. The analysis is limited to the consideration of publicly available information for relevant projects and policies. While efforts have been made to ensure reference to the most up-to-date information sources, it should be borne in mind that the policy context for the project is constantly evolving. Those using this report should seek to ensure they have access to the most recent versions of any policy or project information when interpreting its findings.

Where relevant, the analysis is based on the master plan study drawings prepared on behalf of the City of Sydney by Tonkin Zuaikha Architects and Greer and Spackman Mossop Michaels Landscape Architects (13 September 2019).

1.6 Report structure

The report comprises the following sections:

1	Introduction Describes the report's purpose, approach and study area characteristics.
2	City-Wide Network Context Provides a high-level outline of the existing and emerging movement network and urban structure contexts at the Central Sydney scale.
3	Policy Context Summarises the key implications of relevant public policy documents, including: <ul style="list-style-type: none">/ Draft Central Precinct Strategic Vision (TfNSW, 2019)/ Eastern City District Plan (GSC, 2018)/ Future Transport Strategy 2056 (TfNSW, 2018)/ Sydney City Centre Access Strategy (TfNSW, 2013)/ Draft Central Sydney Planning Strategy 2016-2036
4	Network Opportunities and Constraints Summarises the strategic implications for each network mode, including street traffic, metro and suburban rail, light rail, buses, cycling, pedestrians and internal service vehicle access.
5	Enabling Projects Provides a preliminary assessment of projects likely to be required to enable implementation of the master plan vision.

City-Wide Network Context

This section provides a snapshot of the existing and emerging city-wide network context for the proposed Central Square. More detailed analysis of the various networks and their implications for the project are included in Section 4.

2.1 Existing and emerging network context

Figure 2.1 describes the spatial positioning of the planned ‘three squares’ for Central Sydney within the city’s overall movement network contexts. It is evident from this analysis that each square is subject to unique challenges and opportunities stemming from its local movement network context. The Central Square master plan study area is prominently positioned within the main southern gateway for Central Sydney. This precinct serves as a major transport interchange for the city, accommodating an intense concentration and diversity of transport modes, network scales and movement volumes. Central Station itself serves as the primary multi-modal transport hub for the city’s overall public transport system.

Figure 2.1 Emerging city-wide networks

Metro and suburban rail

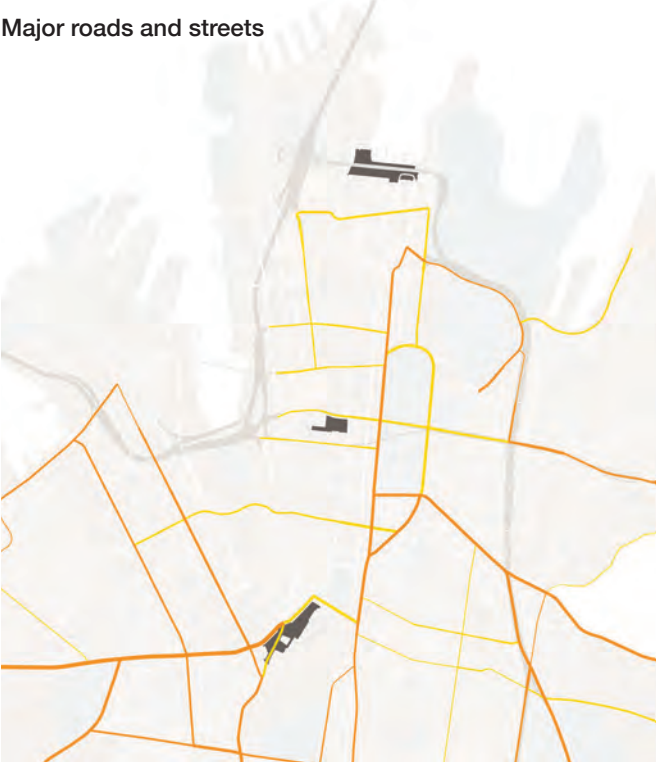


Light rail



City-Wide Network Context

Major roads and streets



George Street pedestrian spine



Bus



Cycling



2.2 Key implications

In addition to its role as a key social space for the city, it is likely that the proposed Central Square will be required to facilitate a complex and intense mix of movement modes, trip purposes and interchange possibilities. Key implications at the city-wide scale include:

1. The planned introduction of new metro rail services (Sydney Metro City and Southwest and Sydney Metro West) and light rail services (CBD and South East Light Rail) will reinforce Central Station's role as a major interchange. This is expected to significantly intensify demand for effective and safe pedestrian movements within the Central Precinct and between the station and city. The successful integration of the new Central Square with key enabling infrastructure (eg, Central Walk) will be crucial to achieving this.
2. Of the three squares, the proposed Central Square is the only one directly constrained by roads accommodating major cross-city traffic movements. Significant intervention within the existing street network, including the closure of Lee Street and partial narrowing of Broadway and Pitt Street to reduce the volume of traffic using these streets. As discussed in Section 4 below, this will require a comprehensive and integrated suite of road and street improvements, including the redirection of traffic flows.
3. The George Street pedestrian spine is a key city-shaping element for Central Sydney, and has the potential to be significantly supported and enhanced by alleviating existing physical barriers between Central Station and its immediate context (eg, reduction in traffic volumes, street narrowing).
4. The Central Precinct currently acts as a significant barrier to cross-city cycle and pedestrian movements. Development of the new square has the potential to complete 'missing links' in these networks.
5. Existing and planned light rail services (IWLR and CSELR) have significant potential to be expanded and augmented into the long term, including a potential western route along Broadway as part of the planned Burwood to Sydney CBD On-Street Rapid Transit Corridor. Central Station, and in particular the proposed Central Square, will continue to serve as a key hub and interchange space within these future networks. Provision should be made for this within the master plan.
6. Bus routes for the city centre have the potential to be significantly rationalised. Operation of the planned CSELR from December 2019 onwards will entail opportunities to rationalise stops and routes within the master plan study area.
7. Coach stabling and parking along George Street and within the Western Concourse will ultimately need to be relocated in order to facilitate the desired prioritisation of pedestrian space and functions.
8. Central Station needs to be considered in a holistic manner, not only as a transport interchange, but as a place through which people move, meet and conduct business. The addition of new social space in the form of the proposed Central Square should seek to accommodate this by providing comfortable and functional social space in addition to fulfilling its vital movement network functions.

Consideration of these city-wide implications will be crucial to Central Square's development as a successful social space and transport interchange consistent with the future needs of Central Station and the wider Central Precinct.

Policy Context

3.1 Draft Central Precinct Strategic Vision (TfNSW, October 2019)

The Draft Central Precinct Strategic Vision was released for public comment in October 2019. The Central Precinct is a Nominated State Significant Precinct (SSP) owned by the NSW Government. It comprises 24 hectares of land composed of Central Station and its adjoining public landholdings (Figure 3.1).

The Draft Strategic Vision describes the NSW Government’s intention to develop a comprehensive urban renewal strategy for the Central Precinct. This project is seen as a key step in the development of the broader Sydney Innovation and Technology Precinct, a broad corridor extending from the southern edge of the Sydney CBD south-west to Newtown and Eveleigh.

The Central Square master plan study area is located on the western edge of the Central Precinct and encompasses the ‘Western Forecourt’, ‘Western Gateway’ and ‘Regent Street Sidings’ sub-precincts. A draft State Environmental Planning Policy (SEPP) has been prepared by TfNSW (October 2019) to facilitate rezoning within the Western Gateway sub-precinct. This is intended to facilitate a significant increase in permissible floorspace within the sub-precinct. The draft SEPP has been placed on public exhibition by the NSW Department of Planning, Industry and Environment (DPIE), along with specific development proposals for Block A (‘Atlassian site’) and Block B (‘Dexus-Frasers site’).

Table 3.1 Western Gateway Sub-Precinct Development Summary

	Block A	Block B
GFA	70,000m ²	155,000m ²
Maximum Building Height	RL 200.2m	RL 205.8m
Proposed Uses	Commercial, retail and hotel	Commercial and retail

Source: Draft SEPP Report- Western Gateway Rezoning Proposal (TfNSW, October 2019: 52)

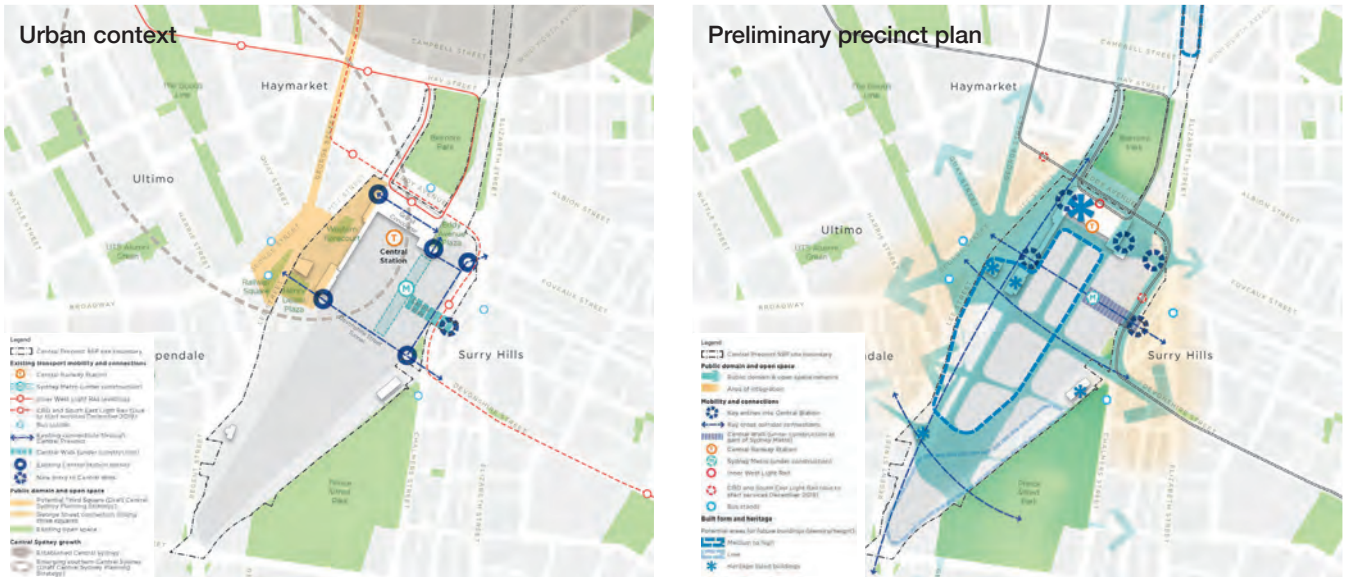
Preliminary Precinct Plan

A Preliminary Precinct Plan forms part of the draft Strategic Vision. The plan identifies a proposed network of east-west and north-south pedestrian connections traversing the precinct, in some cases facilitated by planned over-station development (OSD). This includes provision for the planned Central Walk (East) and Central Walk (West), and a new above-ground east-west connection along the existing Devonshire Street Tunnel alignment. Principles relevant to the master plan study area’s transport context include:

- / Principle 1 - Enable the creation of a new public space for Sydney situated at the heart of southern Central Sydney
- / Principle 2 - Contribute to public domain and open space network through new and enhanced open space linked by green connections
- / Principle 4 - Reinforce Central as the main public transport interchange of Sydney
- / Principle 5 - Reconnect the precinct into its surrounds

Policy Context

Figure 3.1 Draft Central Precinct Strategic Vision (TfNSW, October 2019)



3.2 Eastern City District Plan (Greater Sydney Commission, March 2018)

The Eastern City District Plan (ECDP) describes the NSW Government's long-term urban growth vision for the City of Sydney and surrounding suburbs. Among other things, the plan is intended to guide implementation of the government's aim of a "30-minute city", as articulated by the Greater Sydney Region Plan and Future Transport Strategy 2056 (section 3.2 below). General provisions of the District Plan relevant to the master plan study area's strategic transport context include:

- / An emphasis on the provision of walkable places at a human scale, and the prioritisation of opportunities for people to walk, cycle and use public transport (ECDP: 34).
- / Prioritisation of infrastructure investments focused on access to public transport (ECDP: 61).
- / Enhancement of cycling connectivity within 10 kilometres of the CBD (ECDP: 61).
- / Integration of land use and transport (ECDP: 76).
- / Developing walking, cycling and open space connections to the "Greater Sydney Green Grid" (ECDP: 107-111).
- / Definition of an "Innovation Corridor" within the western edge of the City of Sydney, extending between Walsh Bay/Barangaroo/Pymont/The Bays in the north and The University of Sydney/Australian Technology Park in the south (ECDP: 60, 62-67). Within the Innovation Corridor, emphasis is to be placed on the provision of high levels of amenity and walkability, access to public transport and events spaces.

In addition, the plan references a number of urban renewal projects that are likely to influence the long-term strategic transport context for the City of Sydney (ECDP: 21). These include:

- / Camperdown-Ultimo Health and Education Precinct
- / Sydenham to Bankstown Urban Renewal Corridor
- / Parramatta Road Corridor Urban Transformation Strategy
- / Bayside West

Within this overall framework, the District Plan identifies a number of potential "city serving" and "centre serving" transport corridors that, subject to investigation and study, may be suitable for the provision of new public transport infrastructure. Corridors relevant to the strategic transport context for the Central Square master plan study area include:

- / Provision for an "Investigation Corridor (10-20 years)" for a new rail/mass transit link between the Sydney CBD and Malabar/Little Bay via Central Station and Green Square (ECDP: 10-11).
- / Provision for a "City Serving Transport Corridor" between the Sydney CBD and Mascot via Green Square (ECDP: 10-11).
- / Sydney Metro West (ECDP: 74), which may include a station at Central.
- / Previously committed improvements to Parramatta Road (ECDP: 74).

In general, the District Plan provides no details as to the specific form, timing and nature of these potential transport corridors. A more specific (albeit high-level) list of committed and planned projects is provided by the Future Transport Strategy 2056 (see below).

Policy Context

3.3 Future Transport Strategy 2056 (TfNSW, March 2018)

The Future Transport Strategy 2056 (FTS2056) is the NSW government's principal transport policy. The strategy applies to the whole of NSW and as such should be understood as a generalised policy guide rather than a specific programme of action. General provisions relevant to the planning of future transport networks within the City of Sydney include:

- / The aim of a “30-minute city” for Greater Sydney. This is a somewhat loosely defined ambition, wherein “customers” will be able to travel between their home and one of the metropolitan region’s three “cities” and/or their nearest “centre” within 30 minutes by public or active transport (FTS2056: 34). This broad aim, which is shared by the Greater Sydney Region Plan, provides an overall framing element for the strategy’s provisions.
 - / A continued shift towards ‘customer-focused’ and ‘data-enabled’ transport service provision (“mobility as a service”). This is designed to take advantage of emerging ‘smart’ technologies to broaden the interface between transport networks and transport ‘customers’, and to enable “seamless multimodal journeys” (FTS2056: 16).
 - / An emphasis on the role of transport in bringing about “successful places”. A key mechanism in this regard is the definition of a Movement and Place Framework (MPF) that aims to transcend traditional standards-based approaches to the classification streets and road types by interpreting them as integrated transport and social spaces (FTS2056: 17, 43, 82-85; see below). The implications of the MPF are addressed in Section 4 to this report.
 - / The generalised encouragement of walking, cycling and public transport (FTS2056: 18, 86-87) as movement modes, supported by an aim to ensure a fully accessible transport network that enables barrier-free travel for all (FTS2056: 25).
- Specific provisions relevant to the strategic transport context for the Central Square master plan study area include:
- / The definition of a number of “city-shaping”, “city-serving” and “centre-serving” corridors (FTS2056: 34, 96-107; see project summary below).
 - / Identification of the likely growing role of connected and automated vehicles (CAVs), a trend with the potential to ease road congestion into the long term (FTS2056: 59, 110).
 - / Development of a “Principal Bicycle Network” for Greater Sydney, incorporated within the region’s Green Grid (FTS2056: 115-116). This includes the development or enhancement of strategic cycling connections between the Sydney CBD and the city’s south and south-west.
 - / A generalised emphasis on value-capture as a potential mechanism for cost-recovery for strategic transport infrastructure and as a means of leveraging new investment in urban renewal (FTS2056: 137).

City-shaping and city-serving transport initiatives

The strategy divides city-shaping and city-serving transport infrastructure initiatives into the following categories:

1. Committed/funded (0-10 years) (may be subject to final business case and funding approval)
2. Investigation (0-10 years)
3. Investigation (10-20 years)
4. Visionary (20+ years)

Relevant initiatives are shown in Table 3.2. No specific details on the nature or form of these projects is provided within the strategy itself, and these remain subject to individual planning and investigation processes.

3.4 Sydney City Centre Access Strategy (TfNSW, December 2013)

The Sydney Centre Access Strategy is the state government's blueprint for rationalising public transport services within the Sydney CBD.

The strategy predates a number of significant initiatives, including publication of the Central Sydney Planning Strategy 2016-2036, planning for the Sydney Metro City and Southwest and Sydney Metro West rail projects and detailed design and construction of the CBD and South-East Light Rail line.

Strategies relevant to the Central Square master plan include:

- / The planned rationalisation of bus routes within Central Sydney in response to the Sydney CBD and South-East Light Rail (SCCAS: 7, 38-39).
- / The corresponding definition of a series of 'interchange precincts' (elsewhere referred to as 'bus stop precincts'; SCCAS: 39) intended to facilitate passenger transition between bus, heavy (suburban) rail and light rail networks (SCCAS: 7, 38-39).
- / A very broadly defined 'modal priorities' concept for Central Sydney delimiting proposed 'pedestrian and rail access priority' and 'mixed access priority' zones (SCCAS: 20).
- / Pedestrian improvements to George Street (SCCAS: 40-41).
- / Definition of a potential 'strategic cycleway' between Lee Street/Regent Street and Cleveland Street/Prince Alfred Park (SCCAS: 44-45).

The potential implications of changes to the operation of bus networks in response to the CBD and South East Light Rail are discussed in Section 4 below.

Policy Context

Table 3.2 Future Transport Strategy 2056 city-serving transport initiatives (selected corridors)

Corridor	Status	Timeframe
CBD and South East Light Rail	Under construction	December 2019 (Main Line and Randwick Branch) March 2020 (Kingsford Branch)
Parramatta Road Public Transport Improvements	Committed	0-10 years
Sydney Metro City and Southwest	Under construction	2024
Sydney Metro West	Committed	0-10 years
More Trains, More Services Program	Investigation	0-10 years
Harbour CBD to Green Square Mass Transit Link	Investigation	0-10 years
Light Rail to Bays Precinct	Investigation	0-20 years
Mass Transit/Train Link to South East	Investigation	0-20 years

Source: Future Transport Strategy 2056 (TfNSW 2018: 100-107)

3.5 Draft Central Sydney Planning Strategy 2016-2036 (City of Sydney, July 2016)

The Central Sydney Planning Strategy was released as a draft for public comment in July 2016. The draft strategy explicitly recognises the “step change in transport capacity” for the city centre to be brought about by implementation of the CBD and South East Light Rail and Sydney Metro City and Southwest (DCSPS: 33). In this light, the draft strategy can be read, in part, as an attempt to pre-empt the long term opportunities this additional movement network capacity provides for reconsidering the city centre’s urban structure and functional role.

While the draft strategy is principally oriented towards directing the preparation and implementation of new development and design controls for the central city, it nevertheless defines a number of measures relevant to Central Station’s strategic transport context. These include:

/ The draft strategy articulates the City of Sydney’s long-standing ‘three squares’ policy (DCSPS: 6, 25, 39-40, 116, 232-234). This proposes the creation of major public squares at Circular Quay, Town Hall and Central Station (encompassing the existing Railway Square and Western Concourse). Ultimately, the three squares are to be linked by a pedestrianised George Street. Taken together, the proposed squares and George Street will form a civic and pedestrian spine for Central Sydney directly linking major transport hubs (Circular Quay, Wynyard, Martin Place, Town Hall and Central Station) and more generally providing an organising civic space framework for the city centre that links major public spaces, districts, facilities and transport routes. The proposed squares are to comprise a “square for celebration” at Circular Quay, a “civic square” at Town Hall and a “village square” at Central Station (DCSPS: 39).

- / A proposal to enable the development of growth within designated 'tower clusters', including a precinct loosely defined as comprising air space above and areas adjoining Central Station (DCSPS: 19-20) and another to the north of the station and immediately south of Liverpool Street. Elsewhere, the area between Darling Harbour and Central Station is defined as a "future zone of high density" (DCSPS: 232). The augmentation of existing development densities and land use functions that these clusters implies a potentially significant increase in Central Station's role as a major transport interchange and hub, along with demand for high quality, legible and safe pedestrian environments within the wider station precinct.
- / The draft strategy highlights the potential for over-station development (OSD) above the rail yards at Central Station (DCSPS: 39).
- / An underlying aim to open up new capacity within the city centre for additional economic growth and employment-based floorspace (DCSPS: 41, 123-124). Into the longer term, this implies a southwards shift in the city's centre of economic gravity along with the growth of a "multi-centred" urban structure comprising a number of distinct economic nodes (DCSPS: 41-44, 217-224).
- / A "smart transport strategy" that prioritises pedestrian, cycling and public transport networks (DCSPS: 58), linked to an emphasis on the importance of streets as public spaces (DCSPS: 60).
- / In general, the reduction of vehicle traffic demand and provision of additional pedestrian space within the city's relatively constrained street grid is an implicit objective running throughout the draft strategy (DCSPS: 109-110, 129-130). Key proposals include the pedestrianisation of George Street between Circular Quay and Pitt Street/Lee Street, an improved of connection between the existing Goods Line pedestrian path and Railway Square and the accommodation of a number of new east-west pedestrian connections traversing Central Station (CSPS: 130, 210).
- / A specific strategy to "continue to upgrade all streets in Central Sydney for pedestrian comfort starting at the south end of Central Sydney including Quay Street and a link from the Goods Line to Railway Square" (DCSPS: 233). The link between Darling Harbour and Railway Square along Quay Street and Tumbalong Boulevard is defined as "increased pedestrian priority (DCSPS: 232).
- / A long term light rail strategy that includes the addition of light rail services along Elizabeth Street and Chalmers Street (DCSPS: 126). The strategy also identifies George Street and Broadway as a "future light rail" route (DCSPS: 232).
- / A strategy to significantly rationalise bus routes within the city centre (DCSPS: 127). This strategy describes a significantly stronger rationalisation of routes than that described in the Sydney City Access Strategy (2013). In particular, the strategy implies the relocation of bus services currently using Lee Street.
- / Definition of a number of strategic cycling routes (DCSPS: 131-132). The existing shared path along Regent Street (south of Lee Street) is shown as "identified for removal". Elsewhere, however, this route is defined as "continuation of citywide cycle network" (DCSPS, 210).

Policy Context

3.6 Sustainable Sydney 2030 Community Strategic Plan 2017-2021 (City of Sydney, 2017)

The Community Strategic Plan updates and implements the City of Sydney's Sustainable Sydney 2030 vision. The plan is the council's highest level policy document and summarises the overall strategic objectives and priorities for the City of Sydney. These are organised according to the integrated themes of 'green', 'global' and 'connected' (CSP: 21).

The Community Strategic Plan sets out the following targets for 2030 that are relevant to the strategic transport context for the proposed Central Square:

- / A 70% reduction in greenhouse gas emissions based on 2006 levels by 2030, and the achievement of zero net emissions for the city by 2050.
- / A net increase of 48,000 dwellings in the city compared to the 2006 baseline.
- / A net increase of 97,000 jobs in the city compared to the 2006 baseline.
- / An 80% increase in trips to work using public transport.
- / At least 10% of total trips in the city are to be made by bicycle and 50% by pedestrian movement.

These targets support a number of 'strategic directions' for the City of Sydney. Those directions of most relevance to the strategic transport context for the proposed Central Square are:

- / Strategic Direction 3 – Integrated transport for a connected city
- / Strategic Direction 4 – A city for walking and cycling
- / Strategic Direction 5 - A lively and engaging city centre

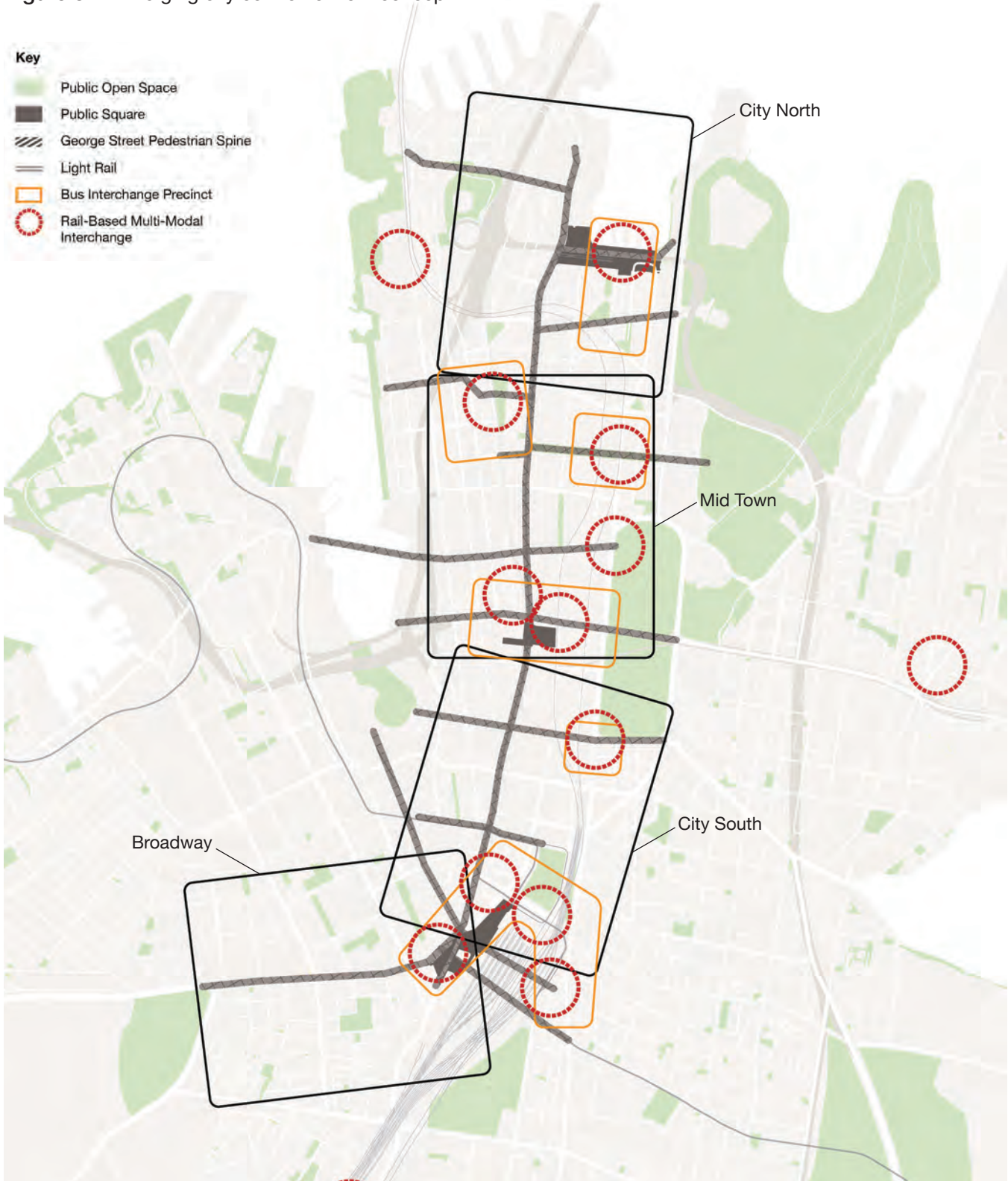
Each of these incorporates a number of 'supporting strategies' that, collectively, aim to drive the continued development of the city in a way that integrates increasing intensities of transit, pedestrian and cycling infrastructure while promoting the further evolution of the city's public realm as a social space. Both aspects are considered essential to maintaining the city's hegemonic role as a 'global' economic agglomeration for the greater metropolitan region, particularly in terms of fostering the social inclusivity and capacity for economic innovation and resilience essential to this process.

3.7 Emerging city centre network concept

Figure 3.2 describes an emerging city centre network concept prepared in response to the various policy and transport network implications described in Sections 2 and 3 to this report. This describes, at a conceptual level, the emerging overall transit and city centre access framework within which the detailed master planning for the proposed Central Square will take place.

The emerging city centre network concept builds upon the Sydney City Centre Access Strategy (2013) and adapts this in line with subsequent infrastructure commitments (ie, metro rail) and emerging priorities for Central Sydney (eg, the 'three squares' strategy and George Street pedestrian spine). While only conceptual in nature, the revised access concept is intended to assist in interpreting the strategic context within which more detailed movement network principles can be defined. These are described in Section 4 below.

Figure 3.2 Emerging city centre network concept



Opportunities and Constraints

4.1 Network planning principles

Figure 4.1 describes a series of network planning principles for the proposed Central Square and its emerging urban context. These are strategic by nature and are intended to define, in broad terms, the parameters within which more detailed opportunities and constraints for an integrated movement network can be developed and evaluated. Key principles include:

1. Establish Central Square as a multifunctional social space and movement network hub connecting Central Station and the Western Gateway to the wider CBD.
2. Rationalise streets and redirect and reduce traffic volumes to open up the potential for a contiguous 'Central Square'.
3. Prioritise pedestrian and cycling space within the surrounding street network and reduce the dominance of vehicle through-traffic.
4. Support the extension and enhancement of the city's key pedestrian corridors, including George Street and Broadway.
5. Support Central Station's core role as a transit interchange and social space by integrating existing and planned pedestrian spaces and corridors, including the future Central Walk.
6. Provide capacity for the future augmentation and extension of metro rail, light rail and rapid transit networks and their integration with the new social space.
7. Support the rationalisation of bus routes and their integration with rail and light rail modes.

Street grid and site access



Light rail



Metro and suburban rail



Figure 4.1 Network planning principles

Opportunities and Constraints



Bus network

8. Facilitate the relocation of coach stabling and stops in order to prioritise space for enhanced pedestrian and cycling links.
9. Support the augmentation and enhancement of the city's cycle network through the completion of 'missing links', including new and/or improved east-west and north-south connections.
10. Rationalise and consolidate vehicle access in order to reduce conflicts, optimise pedestrian safety and convenience and prioritise Central Station's and transit-based functions.



Cycling



Pedestrian
desire lines

4.2 Pedestrian movement

Existing context

Central Station is surrounded by a dense pedestrian network providing the principle means of connecting the station to the surrounding city. The majority of the pedestrian network follows the kerbside footpaths, while a number of dedicated pedestrian passageways, tunnels and subsurface links complete the network. All access points into Central Station are directly connected to the pedestrian network.

The functionality of the pedestrian network is currently constrained by the limited number of north-south and east-west connections within the Central Precinct itself, along with significant levels of conflict between pedestrian and vehicle movements within the western edge of the station. The construction of the new Central Square provides an opportunity to significantly improve Central Station's pedestrian functionality by rationalising vehicle access and integrating future pedestrian desire lines (eg, Central Walk).

Existing demand

Previous pedestrian surveys have highlighted the concentrations of existing pedestrian flows through Central Station. Indicative pedestrian flows based on these surveys are shown in Figures 4.2 and 4.3. Key characteristics of these indicative flows include:

- / Pedestrian flows through the Devonshire Street tunnel are high during the AM peak hour with an estimated total of 7,000 (two-way) pedestrian movements at the eastern end of the tunnel.
- / During the PM peak hour the flows through the Devonshire Street Tunnel are high with an estimated total of 6,600 (two-way) pedestrians walking through the eastern end of the tunnel.

- / At the western end (the Railway Square side) of the Devonshire Street Tunnel, the majority of pedestrians use the westernmost entrances to enter or exit Broadway during the peak hours, suggesting that pedestrians prefer to walk subsurface rather than above ground after exiting the western end of the tunnel.
- / The Pitt Street/Eddy Avenue intersection is heavily utilised by pedestrians with an estimated total of 1,400 and 1,700 pedestrians during the AM and PM peak hours respectively. During both peak hours, the major pedestrian movement is south of the intersection in both directions.

Future demand – Central Walk (East and West)

As part of the Sydney Metro City and South West (SMCSW) a new metro station is currently being constructed under Platforms 13, 14 and 15. A 19m wide concourse (Central Walk East) is also being constructed to connect the new metro station and existing platforms to 16 to 23 with Chalmers Street. Initial two-way estimates for Central Walk East indicate that between 12,000 to 16,000 pedestrians will use this link during each peak hour, including platform-to-platform interchanging. This link is planned to be completed in 2024 to coincide with the opening of the SMCSW). Into the longer term, it is understood that Central Walk will be extended to connect to the proposed new Central Square at Ambulance Avenue.

Pedestrian network opportunities

Key external pedestrian network opportunities for the master plan study area are identified in Table 4.1 and Figure 4.4. These are likely to be required in order to facilitate development of the proposed Central Square.

Opportunities and Constraints

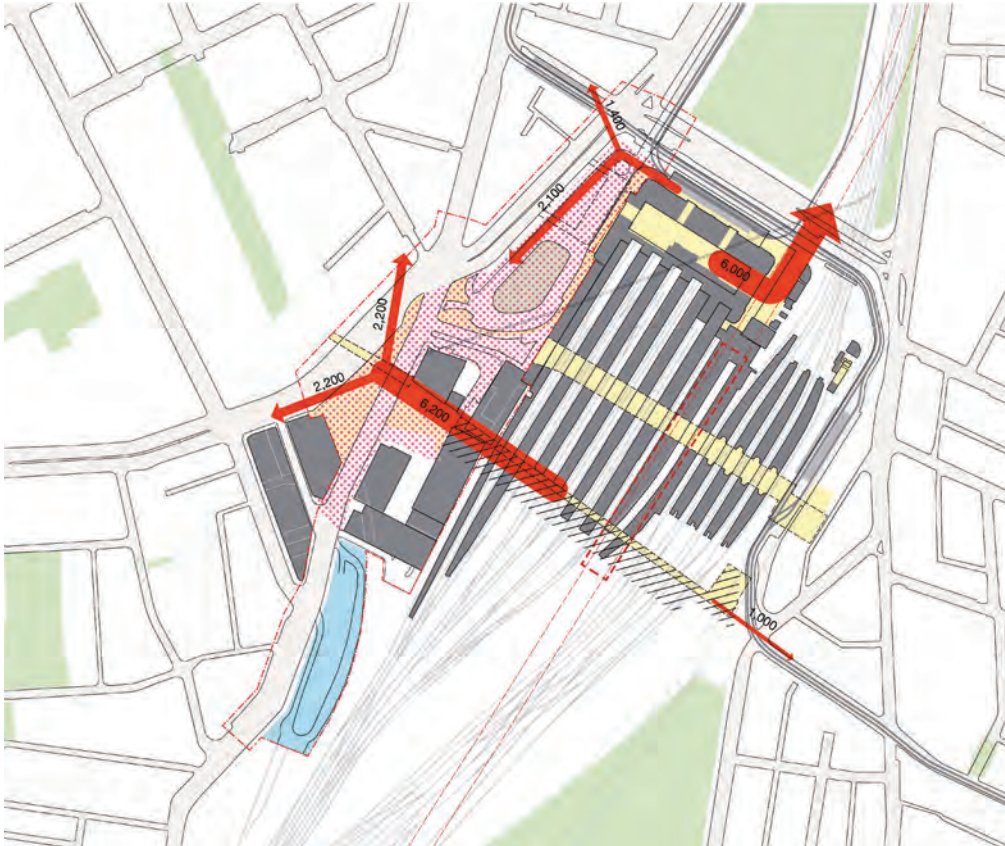


Figure 4.2 Estimated pedestrian movements (outgoing, AM peak 8am-9am)

Note: Data shown for study area only.

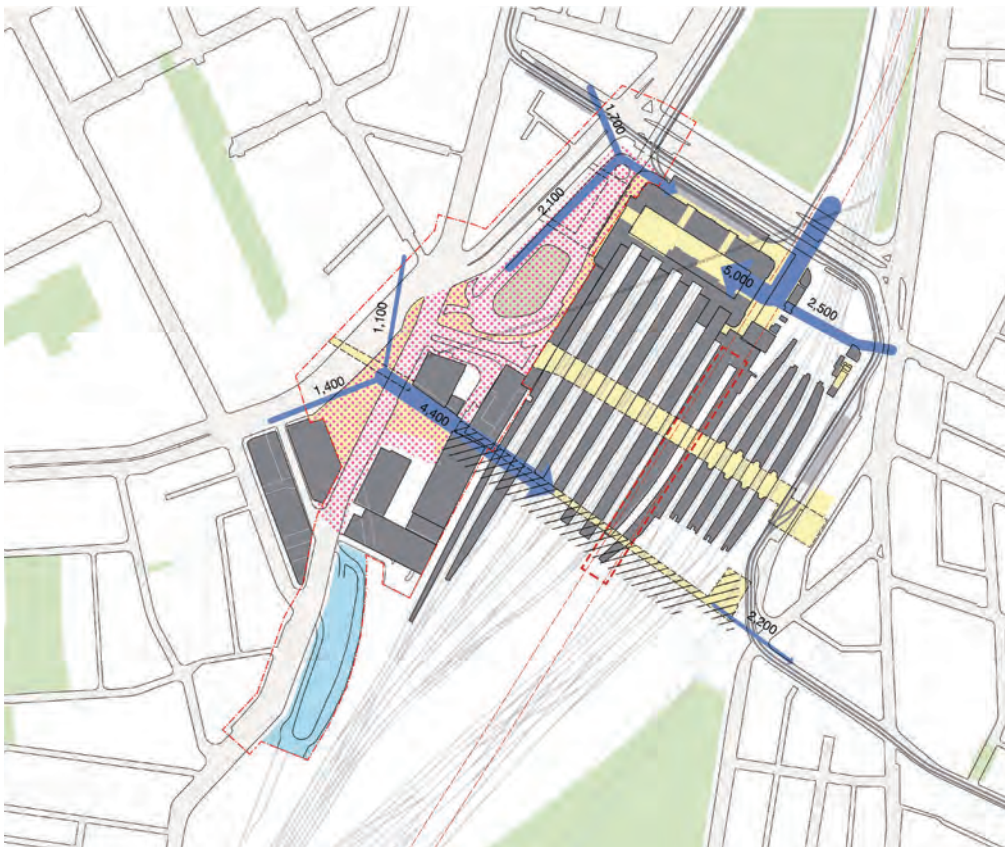


Figure 4.3 Estimated pedestrian movements (incoming, PM peak 5pm-6pm)

Note: Data shown for study area only.

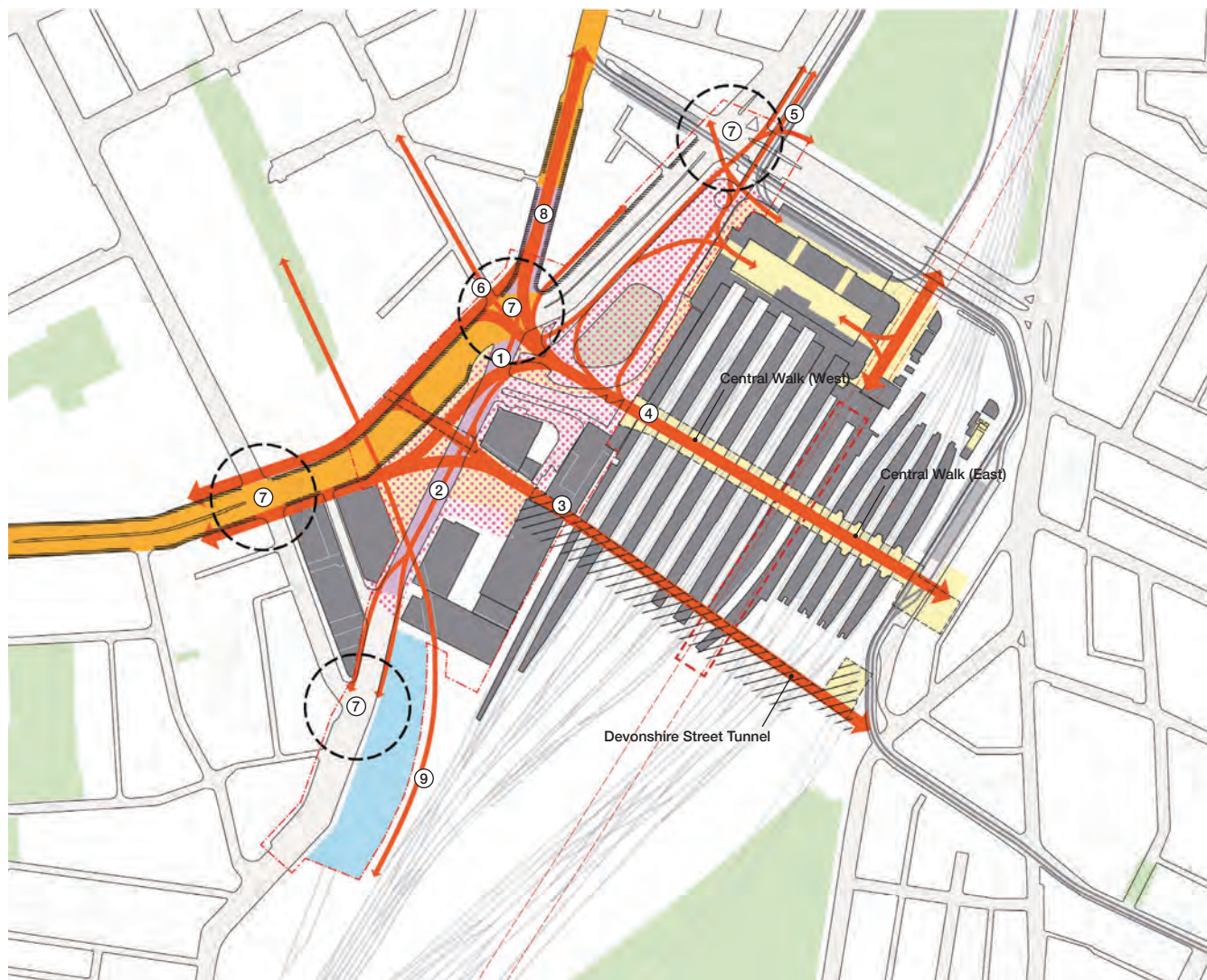
- Key**
- Master Plan Study Area
 - Central Square (Indicative)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Sydney Metro City and Southwest Station (Indicative)
 - Over-Station Development (Indicative)
 - Light Rail Route and Stop
 - Lee Street Bus Layover

Table 4.1 Pedestrian movement opportunities

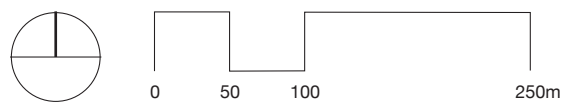
Opportunity	Timeframe	Implications
1. Partial closure of Lee Street (closed between George Street and Ambulance Avenue)	Medium Term	<ul style="list-style-type: none"> / Retains partial access to Lee Street, Ambulance Avenue and Upper Carriageway Drive for service and visitor vehicles / Requires active management of pedestrian and vehicle movements (eg, Ambulance Avenue shared zone)
2. Full closure of Lee Street	Long term	<ul style="list-style-type: none"> / Requires rerouting of Lee Street buses (stops K and N) (see Section 4.5) / Requires opening Harris Street and Regent Street to two-way traffic movement (see Section 4.2) / Requires service and visitor vehicle access (both station and private development-related) to be consolidated at Block B access (ie, construction of Western Gateway 'super dock')
3. Integration with over-station development (Henry Deane Plaza)	Long term	<ul style="list-style-type: none"> / Potential scope for new/additional east-west cross-station links (pedestrian and/or cycling)
4. Integration of Central Walk (West)	Long term	<ul style="list-style-type: none"> / Requires removal of vehicles from (Lower) Ambulance Avenue
5. Removal of vehicle traffic from Railway Colonnade Drive		<ul style="list-style-type: none"> / Requires relocation of taxi and kiss-and-ride facilities (potentially to Pitt Street)
6. Closure of Quay Street-George Street intersection		<ul style="list-style-type: none"> / Requires opening Harris Street to two-way traffic movement (see Section 4.2) / Requires right-turn traffic movement from Harris Street to Ultimo Road (see Section 4.2)
7. Footpath and crossing widenings		<ul style="list-style-type: none"> / Requires relocation of inter-city coach parking/station in Pitt Street (to new location outside of Central Precinct) / Requires opening Harris Street and Regent Street to two-way traffic movement in order to enable reduction in local traffic volumes (see Section 4.2) / Needs to accommodate potential light rail/rapid transit along Broadway-George Street
8. Closure of George Street (between Rawson Place and Pitt Street)		<ul style="list-style-type: none"> / Requires relocation of bus routes and stops planned as part of the Rawson Place light rail interchange / Requires opening Harris Street to two-way traffic movement (see Section 4.2) / Requires right-turn traffic movement from Harris Street to Ultimo Road (see Section 4.2)
9. Extend and integrate Goods Line pedestrian link		<ul style="list-style-type: none"> / Adaptive re-use of existing Goods Line corridor east of George Street for combined pedestrian and cycle use. Requires connections to existing George Street pedestrian subway and new Central Square.

Opportunities and Constraints

Figure 4.4 Pedestrian movement opportunities



- Key**
- Master Plan Study Area
 - Central Square (Indicative)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Sydney Metro City and Southwest Station (Indicative)
 - Over-Station Development (Indicative)
 - Light Rail Route and Stop
 - Lee Street Bus Layover
 - Strategic Pedestrian Link
 - Signalled Crossing
 - Street Closure (Long Term)
 - Pedestrian Amenity Improvement
 - Footpath Widening (Indicative)



4.3 Street network

Existing conditions

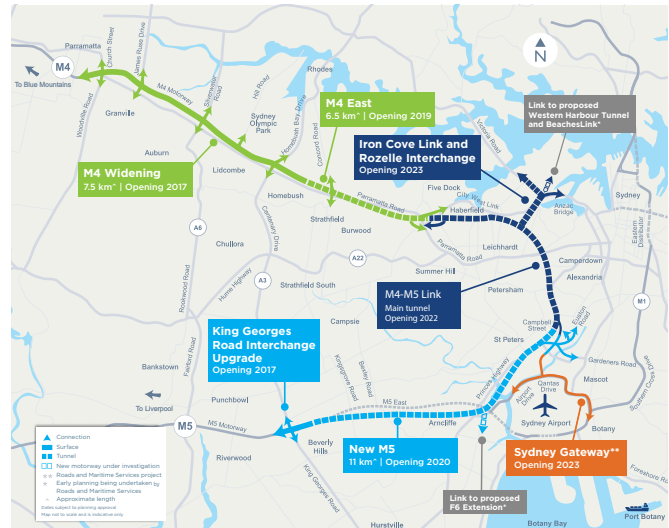
The street network context for the Central Precinct is dominated by its position at the confluence of major arterial traffic routes: George Street, Elizabeth Street, Chalmers Street and Eddy Avenue). The master plan study area is located at the intersection of three major arterials (Broadway, Lee Street and George Street) that, under current conditions, significantly constrain pedestrian connectivity between the station and surrounding city.

Traffic volumes

Figure 4.6 illustrates overall traffic volumes on roads in the vicinity of the Central Precinct. The north-south routes of Broadway, George Street, Lee Street and Chalmers Street/Elizabeth Street carry significant traffic volumes of up to 30,000-40,000 vehicles per day. If these streets are downgraded to accommodate lower traffic volumes, traffic can be redirected to alternative routes. The movement corridors of Broadway, Lee Street and Chalmers Street/Elizabeth Street to the south have the highest demand and provide the key movements into and out of the Sydney CBD.

Many of the signalised intersections in proximity to Central Station are congested in the peak periods predominantly due to large traffic and pedestrian demands. Congestion on the north-south routes can be attributed to high traffic volumes and bus priority lanes. Harris Street connecting Pyrmont to Central/Railway Square transport interchange is frequently congested during peak periods. The arterial corridors of Broadway, Lee Street and Chalmers Street/Elizabeth Street to the south are heavily congested in the peak periods due to high traffic volumes.

Figure 4.5 WestConnex projects (Source: Sydney Motorway Corporation)



WestConnex implications

The WestConnex programme of works (Figure 4.5) is a key enabler for changes to capacity and functionality of the road network in and around Central Station and CBD South. In particular, the M4-M5 Link Tunnel and Sydney Gateway project are likely to result in reductions in through-traffic demand on the following corridors:

- / Cleveland Street between Botany Road and City Road
- / Wattle Street and Harris Street between Broadway and Pyrmont Bridge Road

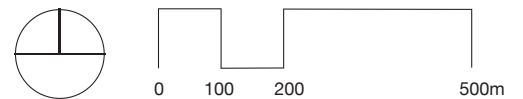
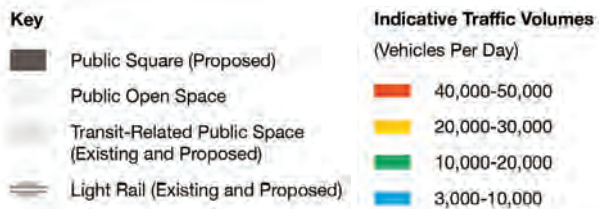
Traffic demands on these corridors are expected to reduce as traffic that currently travels from Mascot to M4 Motorway and north across Sydney Harbour via the Western Distributor uses the M4-M5 Link and potentially Western Harbour Tunnel as alternative routes. The reductions in travel demand associated with WestConnex are also likely to improve traffic conditions for eastbound and westbound traffic on Broadway that currently competes with northbound and southbound trips on Wattle Street and Harris Street, which may in turn reduce delay for buses travelling into Railway Square from Glebe and Leichhardt.

Opportunities and Constraints

Figure 4.6 Indicative traffic volumes



Note: Data shown for study area only.

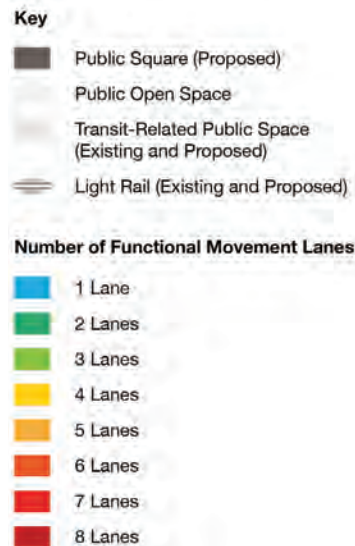


Street network opportunities

Figures 4.7 and 4.8 depict the potential reduction in the number of functional movement lanes for key arterial road corridors framing the master plan study area. Achieving this vision is considered to be an important step in facilitating realisation of the proposed new Central Square as a functional social space, while at the same time enabling a more effective integration between the Central Precinct (and Central Station) and the CBD. This is considered to be a long-term objective and will be contingent upon the achievement of a series of changes to the existing street network and accompanying modifications to existing patterns of traffic circulation. Key changes likely to be required in this regard include:

1. **Closure of Lee Street between Regent Street and George Street:** The closure of Lee Street would result in a general reduction in traffic along Regent Street between Cleveland Street and Harris Street, due to reduced capacity for this movement from Botany Road through to Harris Street or George Street. This traffic is likely to use Chalmers Street/Elizabeth Street and Goulburn Street as alternative routes.
2. **Two-way flow on Regent Street and Harris Street:** Closure of Lee Street will require the conversion of Regent Street and Harris Street to two-way operation to provide alternative routes for traffic currently travelling north and south along Lee Street. Reduced capacity along Regent Street and Harris Street resulting from this change would reduce traffic volumes on this corridor, with traffic likely to redistribute to Cleveland Street and Wattle Street (see Figures 4.9, 4.10, 4.11 and 4.12).
3. **Eddy Avenue:** Reductions in traffic capacity along George Street and Broadway are likely to reduce traffic volumes along Eddy Avenue for trips travelling east to west through CBD South. This traffic is likely to divert to Chalmers Street and Elizabeth Street.

Figure 4.7 Existing street network (indicative number of movement lanes)



Opportunities and Constraints

Figure 4.8 Proposed street network (indicative number of movement lanes)



4. **Quay Street:** A full closure of Quay Street would have a significant impact on the access for service vehicles using Quay Street and Ultimo Road. A partial closure could be accommodated by allowing two-way flow on Harris Street between Broadway and Ultimo Road and allowing a right-turn movement from Harris Street to Ultimo Road.

In addition the following changes to on-street parking and kerbside activity are also likely to be required:

5. **Bus stops along Lee Street:** Closure of Lee Street would result in the loss of existing bus stops at Railway Square (bus stops K and N). The 2013 EIS for the CBD and Eastern Suburbs Light Rail indicates that the majority of bus services using these stops will be discontinued following commencement of light rail services. Remaining bus services may potentially be relocated to Pitt Street and Rawson Place (see Section 4.6 below). This will need to be reviewed in light of TfNSW's final plan for bus services currently using bus stops K and N, which is yet to be released.
6. **Coach parking and loading on Pitt Street:** Redevelopment of the street frontage of Central Station on Pitt Street is contingent upon the discontinuation or relocation of existing intercity coach operations using the existing Pitt Street loading zones. Alternative uses for this location could include kiss-and-ride, point-to-point facilities to supplement or replace existing kiss and ride facilities on Railway Colonnade Drive at the concourse level, as well as time restricted loading space for commercial premises fronting Pitt Street.

7. **Parking on George Street and Quay Street:** The closure and widening of footpaths on George Street and Quay Street south of Valentine Street would remove existing parking and loading spaces. The majority of properties fronting George Street and Quay Street can be serviced from Pitt Street and Valentine Street, however access to these streets would be more circuitous, requiring service vehicles to access this area through a service lane from Ultimo Road. Ultimo Road is not currently readily accessible from Broadway and this scenario would require modifications to the surrounding road network to allow currently banned turns or removal of existing load limits on local streets (see "Quay Street" above).

An indicative schedule of street network rationalisations is included in Table 4.2 below.

Opportunities and Constraints



Figure 4.9 Existing one-way streets



Figure 4.10 Proposed future one-way streets

- Key**
- Public Square (Proposed)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Light Rail (Existing and Proposed)
 - One-Way Movement

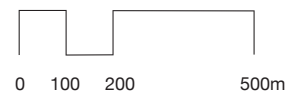
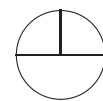


Table 4.2 Indicative street network rationalisations

Description	Existing Number of Lanes	Proposed Number of Lanes
1. Lee Street (between George Street and Little Regent Street)	Northbound: 3 general traffic lanes Southbound: 2 general traffic lanes	Closed to general traffic
2. Lee Street (between Little Regent Street and Regent Street)	Northbound: 2 general traffic lanes + 1 bus lane/turning lane Southbound: 2 general traffic lanes	Northbound: 1 general traffic lane Southbound: 1 general traffic lane
3. Harris Street (between Thomas Street and Broadway)	Southbound 5 general traffic lanes	Northbound: 2 general traffic lanes Southbound: 3 general traffic lanes
4. Regent Street (between Broadway and Lee Street)	Southbound: 4 general traffic lanes	Northbound: 2 general traffic lanes Southbound: 2 general traffic lanes
5. Regent Street (between Lee Street and Cleveland Street)	Northbound: 2 general traffic lanes Southbound: 3 general traffic lanes	Northbound: 2 general traffic lanes Southbound: 2 general traffic lanes + 1 cycle lane
6. Broadway (between City Road and George Street)	Eastbound: 3 general traffic lanes + 1 bus lane Westbound: 3 general traffic lanes + 1 bus lane	Eastbound: 2 general traffic lanes + 1 bus lane Westbound: 2 general traffic lanes + 1 bus lane
7. George Street (between Broadway and Pitt Street)	Eastbound: 3 general traffic lanes + 1 bus lane Westbound: 3 general traffic lanes + 1 bus lane	Eastbound: 2 general traffic lanes + 2 bus lanes Westbound: 2 general traffic lanes + 1 bus lane
8. George Street (between Rawson Place and Pitt Street)	Northbound: 2 general traffic lanes Southbound: 4 general traffic lanes	Northbound: 1 general traffic lane Southbound: 1 general traffic lane
9. Pitt Street (between George Street and Hay Street)	Northbound: 3 general traffic lanes Southbound: 4 general traffic lanes	Northbound: 1 through lane + 2 right turn lanes into Eddy Avenue Southbound: 2 general traffic lanes + 1 bus lane

Opportunities and Constraints

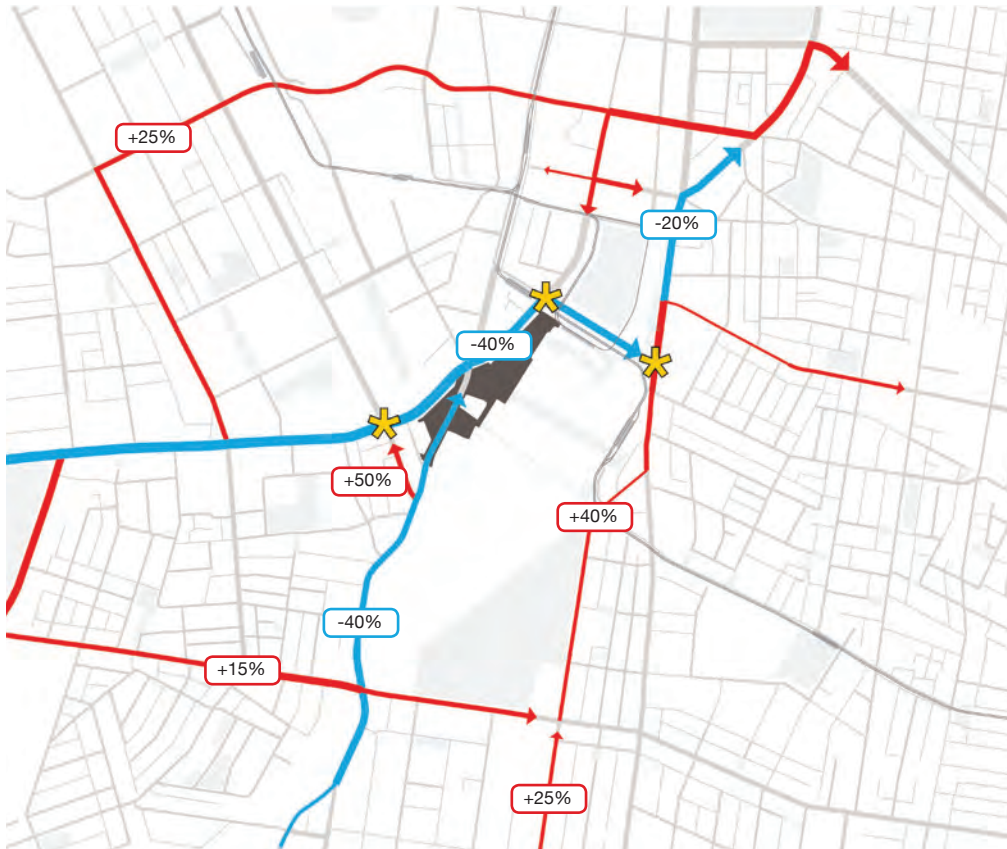


Figure 4.11 Estimated traffic volume changes, AM peak

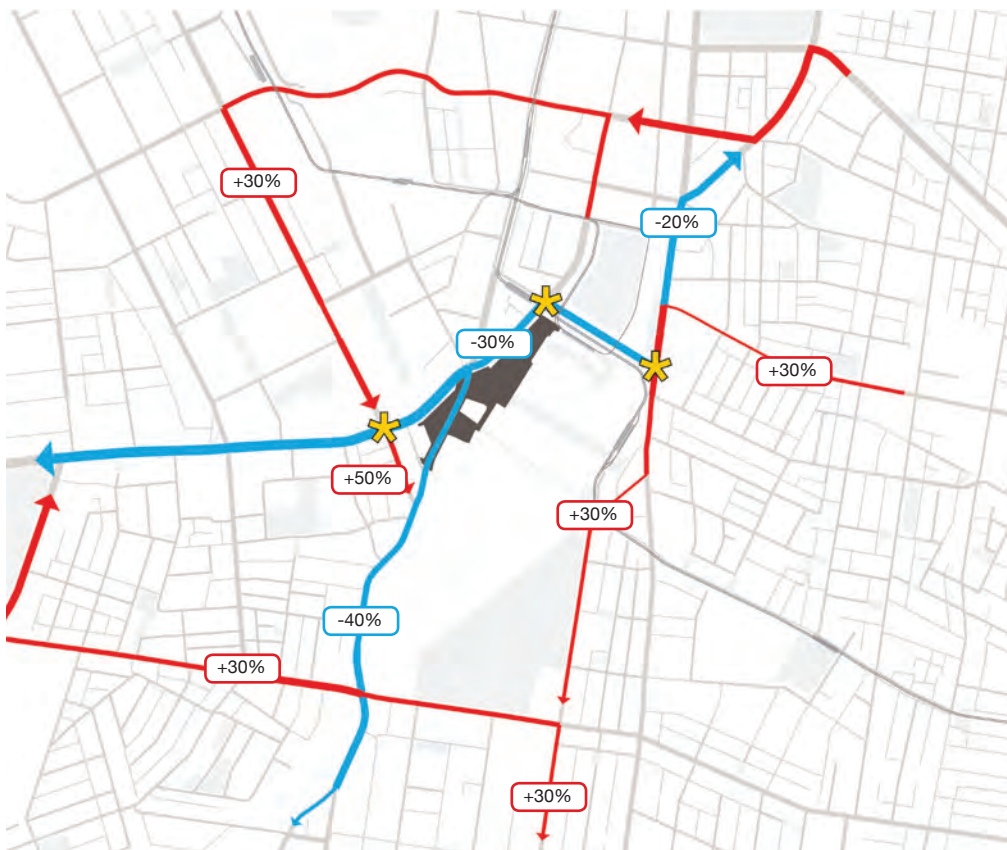
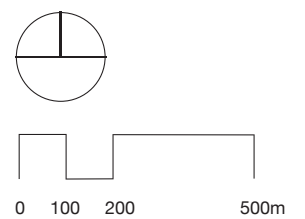


Figure 4.12 Estimated traffic volume changes, PM peak

- Key**
- Public Square (Proposed)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Light Rail (Existing and Proposed)
 - ✱ Traffic Constraint



TfNSW Movement and Place Framework

The Future Transport Strategy 2056 outlines a Movement and Place Framework (MPF) that aims to replace traditional standards-based approaches to the classification of roads and streets (Figure 4.13). The MPF seeks to categorise roads and streets based on an integrated interpretation of their transport and social space functions, resulting in a classification matrix composed of:

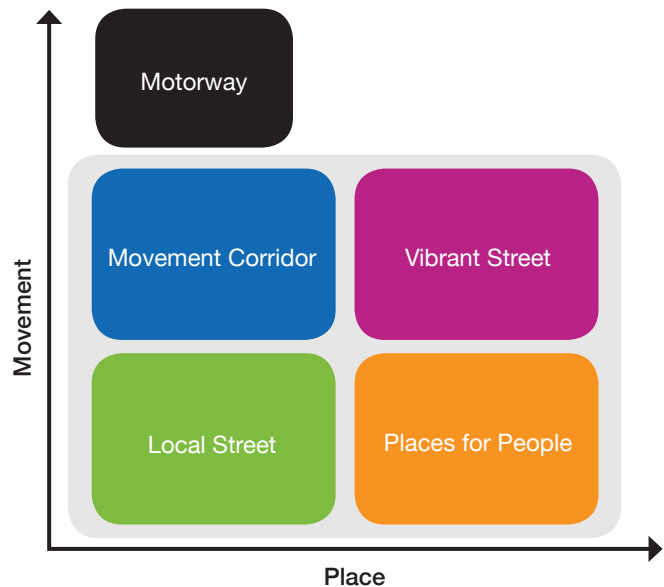
1. Movement corridors
2. Vibrant streets
3. Local streets
4. Places for people

Figure 4.14 describes the application of the Movement and Place Framework to the Sydney CBD as currently articulated by TfNSW (<https://access2018.mysydneycbd.nsw.gov.au>). While this application is only preliminary in nature, it nevertheless highlights a number of issues related to the way in which the MPF is interpreted within the context of the Sydney CBD.

Most significantly, application of the MPF relies on the subjective interpretation of its classification criteria; while “movement” is implicitly defined in quantitative terms (ie, number of vehicles per time period), ‘place’ is an inherently qualitative and multidimensional concept that is only nebulously defined within the framework’s description. While TfNSW is yet to release guidelines for interpreting the framework, it is unlikely that these will completely negate this issue.

On this basis, the MPF is considered to be suitable as a broad guide only. Given the historical complexity of the Sydney CBD’s street and public realm context, a more nuanced and locally-responsive typology of movement networks and social spaces is likely to be required to augment this approach.

Figure 4.13 Movement and Place Framework (TfNSW)



In the context of the Central Precinct and its environs, specific issues are:

- / Some street typologies are difficult to define on a consistent basis (eg, inner city streets and lanes) without more detailed criteria to guide this. This may ultimately require the City of Sydney to develop its own evaluation criteria.
- / Within the framework, TfNSW currently interprets Broadway as a “Vibrant Street”, however actual conditions within this corridor (high traffic volumes and low pedestrian amenity) mean that it is more appropriately defined as a “Movement Corridor”. As a general strategy, improvements within the master plan study area context should seek to address this mismatch by reducing Broadway’s role as a corridor for private vehicles, expanding its capacity for public transit and improving convenience and safety for pedestrians and cyclists.

Opportunities and Constraints

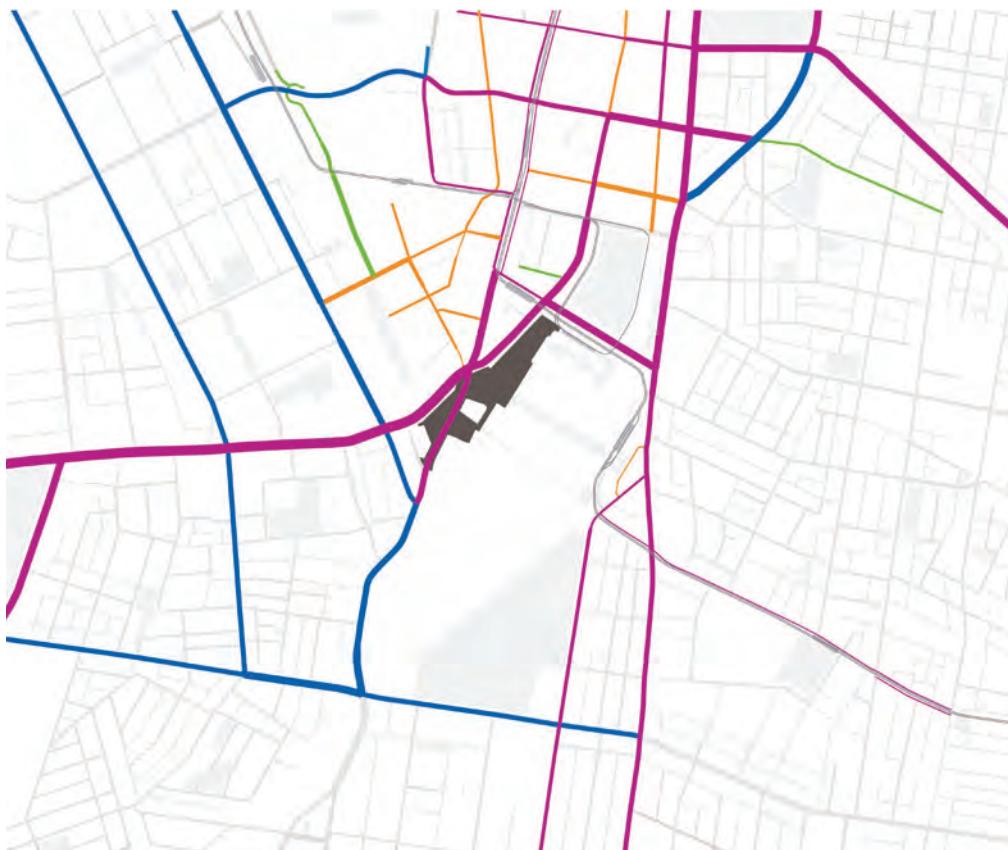


Figure 4.14 Movement and Place Framework as currently applied by TfNSW

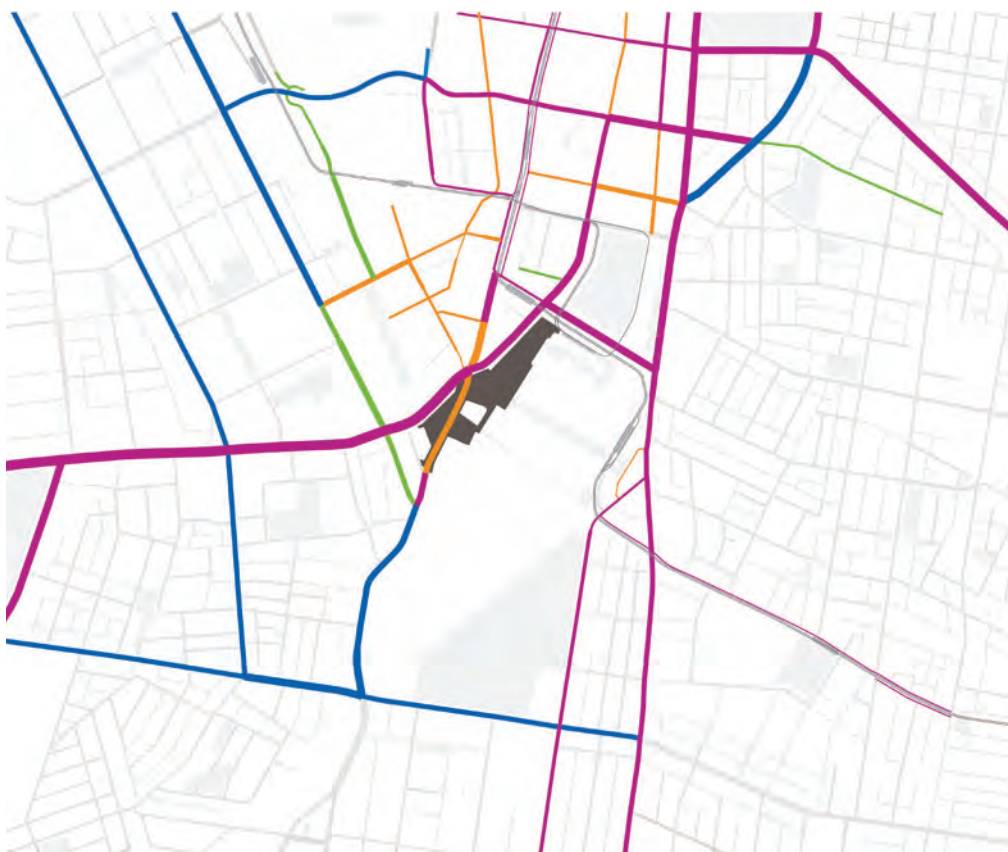


Figure 4.15 Proposed future Movement and Place Framework

- Key**
- Public Square (Proposed)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Light Rail (Existing and Proposed)

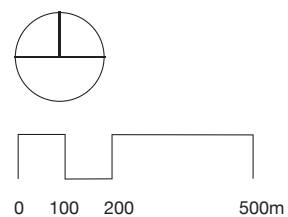


Figure 4.15 shows an idealised MPF application based on the master plan's strategic goals for the new Central Square. The overall approach seeks to prioritise pedestrians, cyclists and public transport within the core area surrounded by Broadway, George Street, Regent Street and Lee Street. This is based on the following key street network enablers:

- / Potential reallocation of road space at Regent Street, Lee Street, George St and Pitt Street to improve pedestrian amenity.
- / Speed control and traffic management at George Street and Quay Street (eg, creation of an access place/street).
- / Potential partial or full street closure for Lee Street (between Little Regent Street and Pitt Street).
- / A reduction in traffic volumes and improvements to pedestrian amenity along George Street, Lee Street and Pitt Street.
- / Conversion of Regent Street (south of Broadway) and Harris Street (south of Thomas Street) to two-way traffic movement.
- / Long-term capacity reductions for private vehicles using Broadway and Harris Street.

Based on these enablers the proposed MPF seeks to incorporate:

- / Lee Street (between Pitt Street and Little Regent Street), Quay Street (between George Street and Ultimo Road) and George Street (between Quay Street and Rawson Place) to be classified as "places for people".
- / Regent Street (between Broadway and Lee Street) and Harris Street (between Broadway and Ultimo Road) to be classified as "local streets".

4.4 Rail network

Existing Rail

Figure 4.16 shows the existing rail context for the master plan study area. Central Station has a core rail transit role serving:

- / Sydney Trains suburban rail lines (T1-T4 over 10 platforms)
- / Intercity rail lines (South Coast, Blue Mountains, Central Coast and Newcastle)
- / Other NSW TrainLink services to regional NSW and interstate
- / Indian Pacific rail services
- / Heritage Tourist services

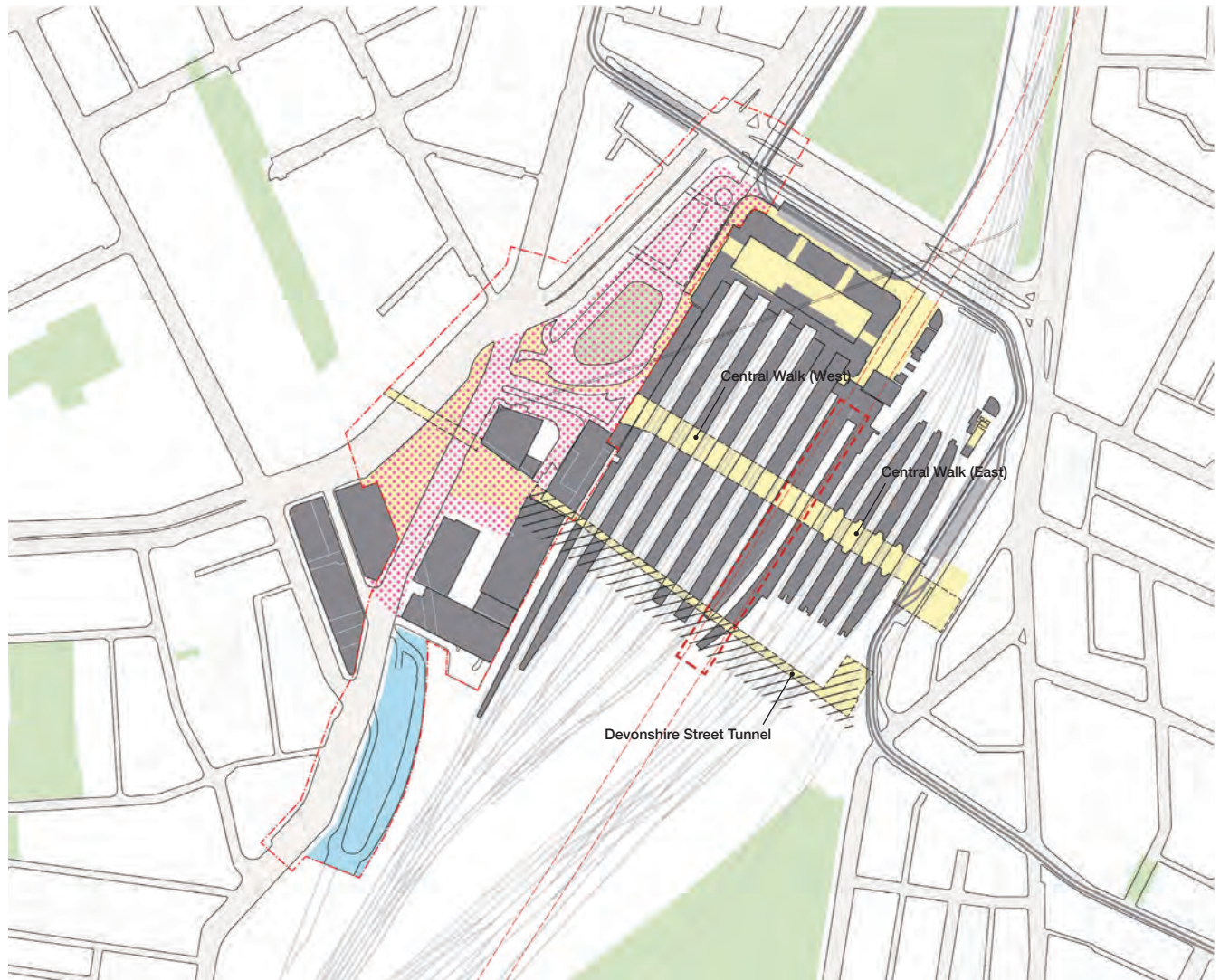
Central Station also serves as a major transit interchange incorporating:

- / Buses at Railway Square, Chalmers Street and Eddy Avenue
- / Intercity and interstate coaches
- / Light rail, comprising the Inner West Light Rail and CBD and South East Light Rail (due to commence operations in December 2019)

Passenger use of Central Station varies significantly depending on the type of rail service used (terminating or through service). It is estimated that about half of all passengers on Intercity services interchange between suburban lines from Platforms 1 to 15 and Platforms 16 to 25. Of all suburban rail passengers disembarking at Central Station during the AM peak, around 50% transfer to other rail lines, with the remaining 50% exiting the station.

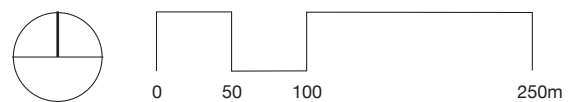
Opportunities and Constraints

Figure 4.16 Existing and emerging suburban and metro rail context



Key

- Master Plan Study Area
- Central Square (Indicative)
- Public Open Space
- Transit-Related Public Space (Existing and Proposed)
- Suburban and Inter-City Rail
- Sydney Metro City and Southwest Station (Indicative)
- Over-Station Development (Indicative)
- Light Rail Route and Stop
- Lee Street Bus Layover

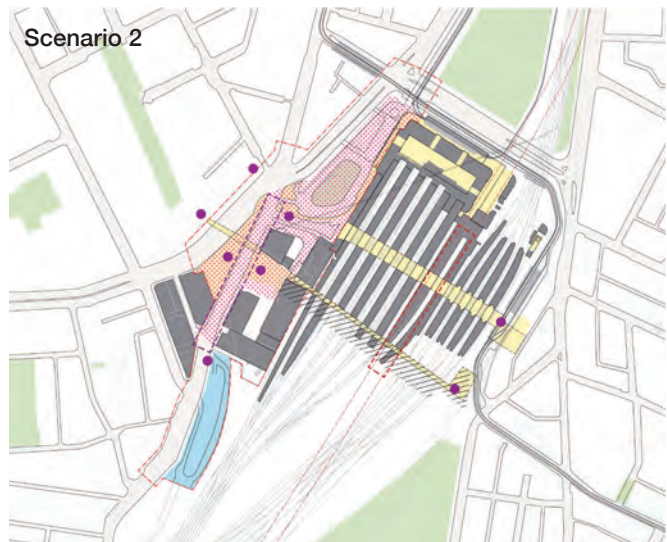
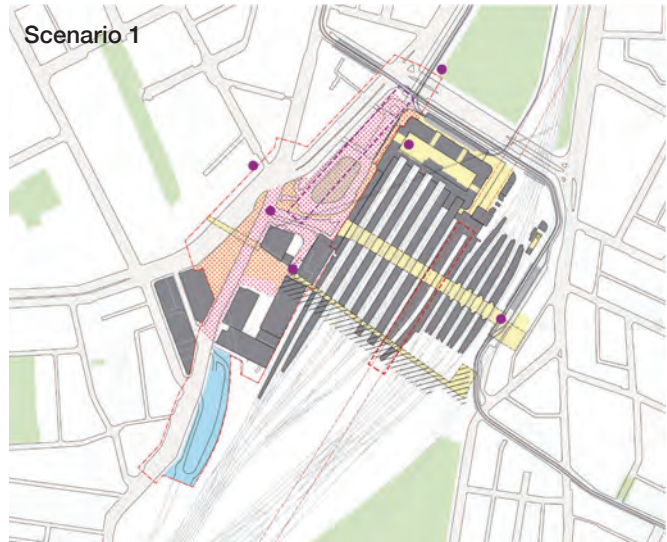


Sydney Metro City and Southwest

The Sydney Metro City and Southwest (SMCSW) is a new metro railway currently under construction and due to commence operations in 2024. When completed, the line will extend from Chatswood to Bankstown via the Sydney CBD, including a new Sydney Harbour Crossing and 18 metro stations. The service will connect to the Sydney Metro Northwest, which commenced operations in May 2019 and which operates between Tallawong and Chatswood. The combined service aims to provide fast, high frequency services, with a target capacity of around 40,000 people per hour.

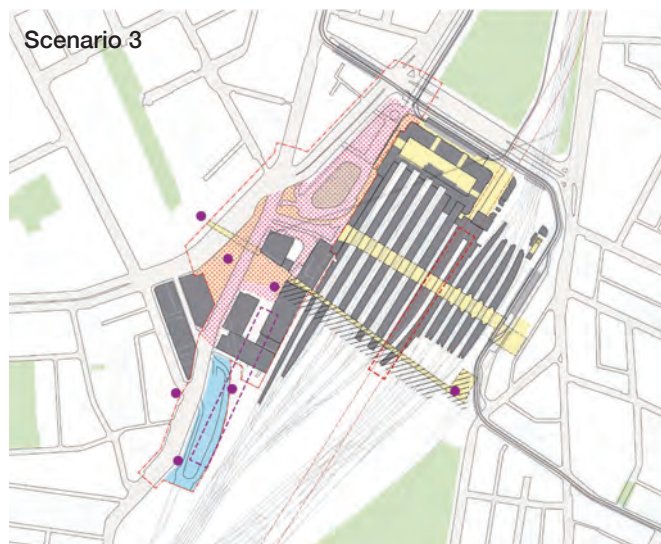
The SMCSW line will include a station located at Central Station (under Platforms 13 to 15). This will include the construction of a new 19m-wide concourse (Central Walk) linking the new station with Chalmers Street (Figure 4.16).

The line will relieve capacity on the existing T1 Western Line. New stations are planned at Waterloo, Pitt Street, Martin Place, Barangaroo, Victoria Cross and Crows Nest, and the line will connect to existing stations between Sydenham and Bankstown and Central.



Key			
	Master Plan Study Area		Over-Station Development (Indicative)
	Central Square (Indicative)		Light Rail Route and Stop
	Public Open Space		Lee Street Bus Layover
	Transit-Related Public Space (Existing and Proposed)		
	Sydney Metro City and Southwest Station (Indicative)		
	Sydney Metro West Station (Scenario)		
	Potential Station Access		

Opportunities and Constraints



Sydney Metro West

Sydney Metro West is a planned major public transport connector intended to serve trips between the Sydney CBD and Westmead, including serving key centres at Parramatta, Olympic Park and Bays Precinct. The siting of a metro station box for Central Station is in the early stages of investigation and planning, with a location yet to be confirmed. It is highly likely that any future station at Central will need to integrate directly with the proposed new Central Square. Figure 4.17 shows a series of high level scenarios to illustrate how this may occur.

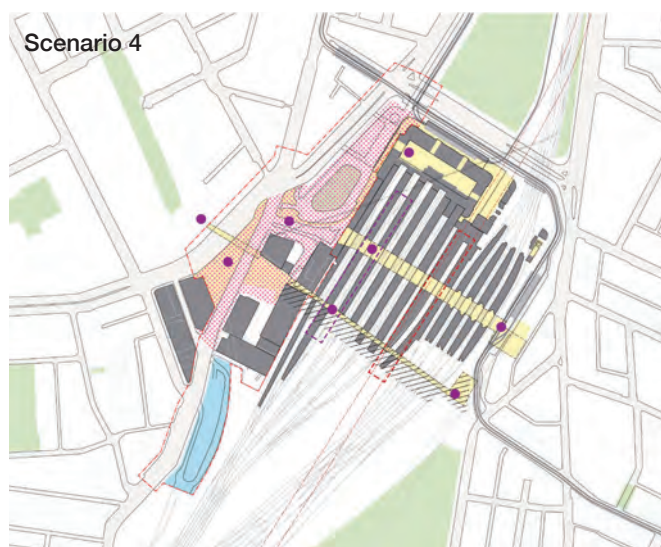


Figure 4.17 Indicative Sydney Metro West station box scenarios

4.5 Light rail network

Figure 4.18 shows the light rail context for the master plan study area.

Inner West Light Rail and CBD and South East Light Rail networks

Central Station acts as an interchange for the both the existing Inner West Light Rail (IWLR), operating between Dulwich Hill and Central Station, and the planned CBD and South East Light Rail (CSELR), planned to operate between Circular Quay and two separate branch lines (Randwick and Kingsford). IWLR services run approximately every 8 minutes from 7am to 7pm.

The CSELR will operate from Circular Quay along George Street to Central Station along Eddy Avenue and Chalmers Street, through Surry Hills on Devonshire Street to Moore Park. Branch lines will then operate to Kingsford via Anzac Parade and Randwick via Alison Road and High Street.

The Randwick branch line of the CSELR is due to commence operations in December 2019, while the Kingsford branch line is due to commence operations in March 2020. Upon completion, the CSELR is projected to carry up to 450 people per vehicle and will provide services every four minutes during peak hours.

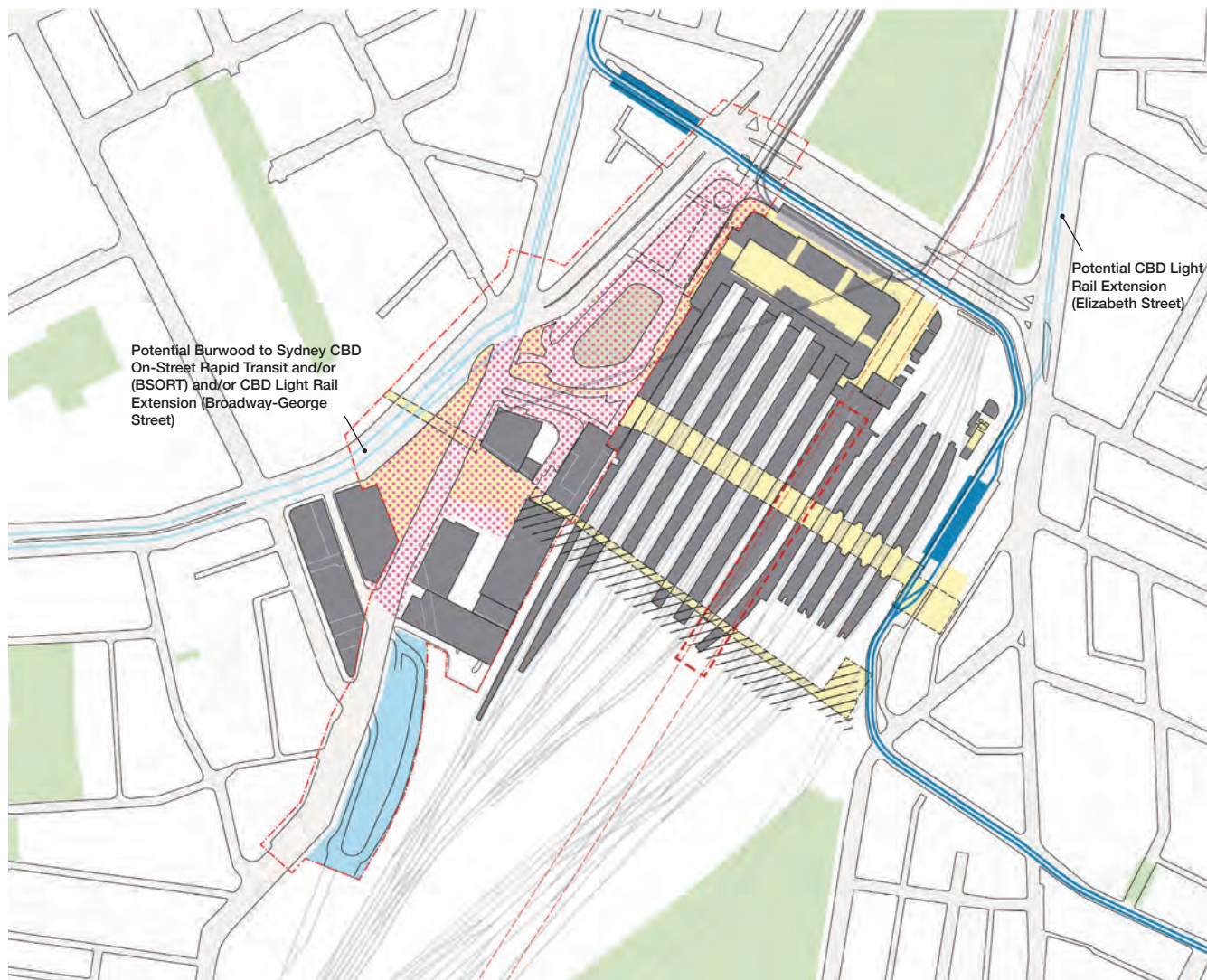
Potential Burwood-Sydney CBD rapid transit

In 2016 TfNSW assessed options for a Burwood to Sydney CBD On-Street Rapid Transit (BSORT) service intended to increase public transport capacity along Parramatta Road and Broadway. The three options were:

1. **Kerbside Partial Bus Lanes (Standard Priority):** Provision of additional bus lanes along Parramatta Road between Burwood Road and Rogers Avenue to supplement the existing bus lanes between Flood Street (Leichhardt) and Railway Square.
2. **Bus Rapid Transit:** Centre-running (segregated) bus lanes on Parramatta Road between Burwood Road and Harris St (Broadway).
3. **Light Rail:** Centre-running light rail between Burwood Road and Railway Square, and continuing on to interchange with the CSELR. This would potentially enable the rationalisation of competing bus services and stops, supported by the addition of new feeder bus services.

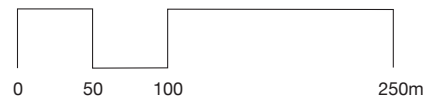
Opportunities and Constraints

Figure 4.18 Existing and emerging light rail context



Key

- Master Plan Study Area
- Central Square (Indicative)
- Public Open Space
- Transit-Related Public Space (Existing and Proposed)
- Sydney Metro City and Southwest Station (Indicative)
- Inner West Light Rail
- CBD and South East Light Rail (Under Construction)
- Potential Future Light Rail/Rapid Transit (Indicative Alignments)
- Lee Street Bus Layover
- Over-Station Development (Indicative)



4.6 Bus network

Existing bus routes and volumes

Figure 4.20 shows the existing and planned commuter bus routes in the vicinity of the Central Precinct. These are based on current route data, planning documentation for the CBD and South East Light Rail (CSELR) project (Rawson Place) and the Sydney City Centre Access Strategy (December 2013). As indicated in the figure, the Sydney City Centre Access Strategy proposed a significant rationalisation of bus routes within the CBD that is yet to be fully implemented.

Existing bus flows

Estimated AM peak hour bus flows from 2015 are shown in Figure 4.19. George Street at Railway Square is the second busiest gateway with approximately 200 buses per hour entering the Sydney City Centre during the morning peak hour. The Sydney Harbour Bridge carries the highest number of buses entering the CBD during a weekday morning peak hour, with approximately 380 buses per hour. Lee Street carries significantly lower bus volumes, in the order of 25 to 50 buses per hour.

Anticipated bus route changes due to CSELR

Bus routes currently using Lee Street (Stops K and N) are shown in Figure 4.21. Anticipated changes to these routes as a result of the CSELR are identified in the 2013 EIS for the CSELR and are shown in Table 4.3. Based on this data, it is anticipated that 11 services using Stops K and N will be reduced to 6 services once the CSELR is fully operational in March 2020. This will further reduce bus volumes using Lee Street from December 2019 onwards (see Section 4.5 above). These assumptions will need to be reviewed in light of TfNSW's final plan for these bus services, which is yet to be released.

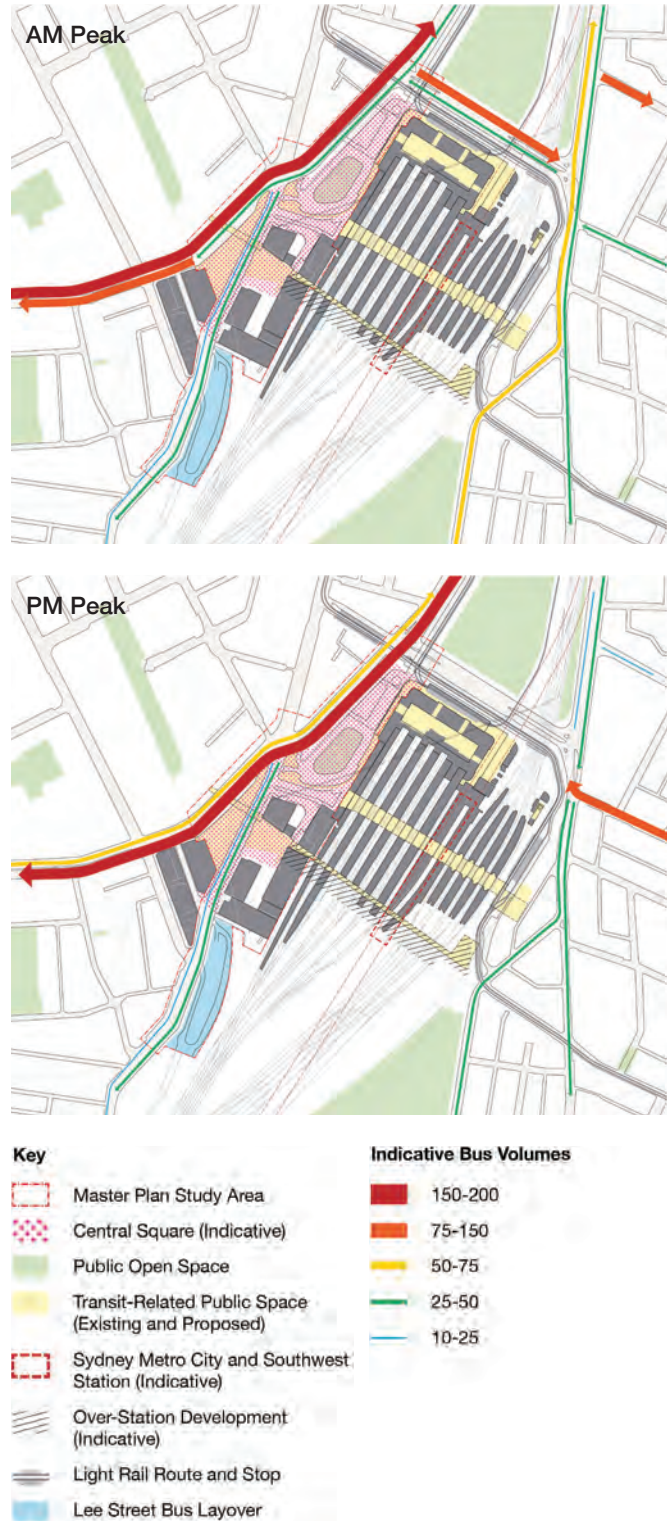
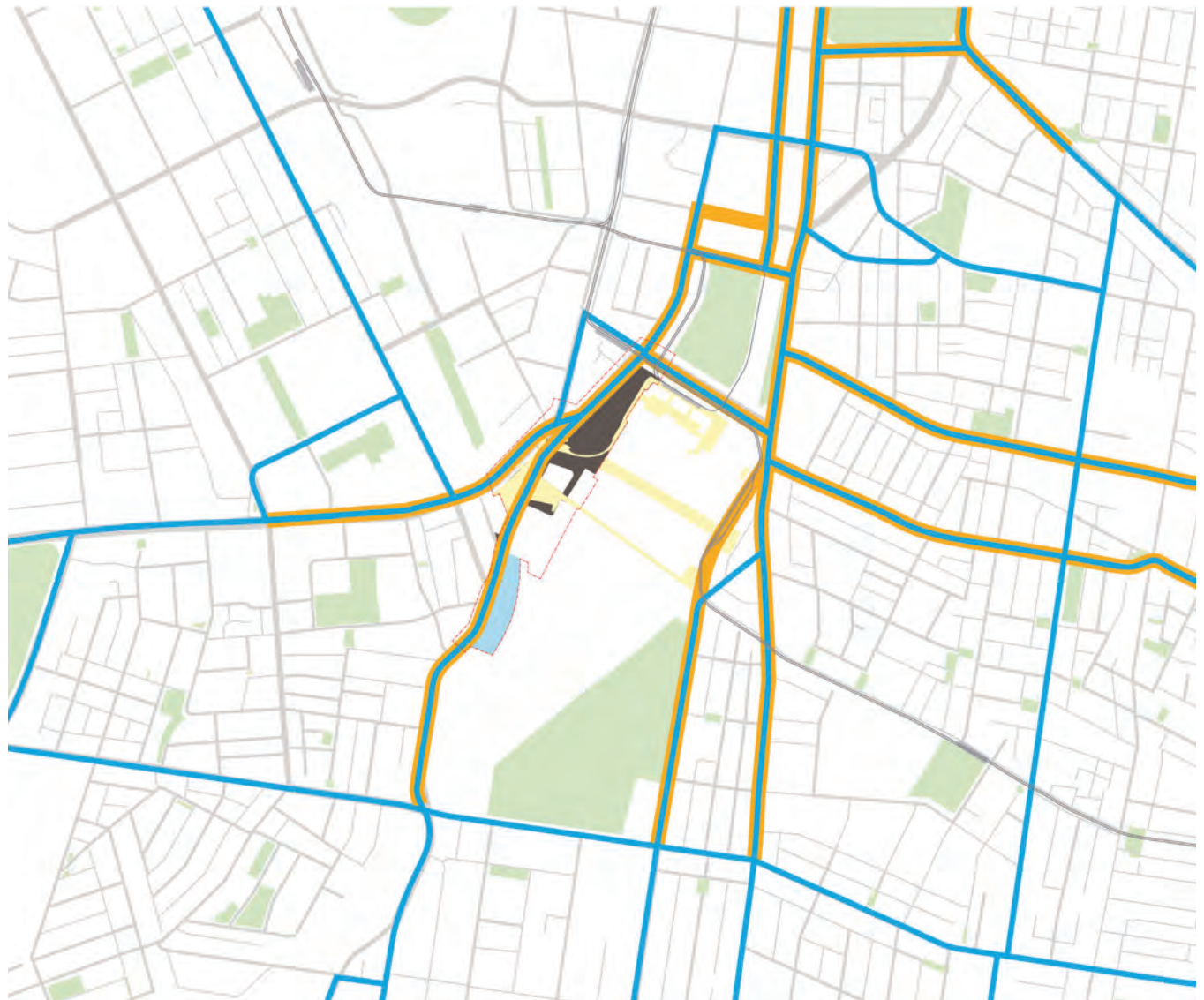


Figure 4.19 Indicative peak bus volumes (2015)

Opportunities and Constraints

Figure 4.20 Existing and planned bus routes



Key

- Master Plan Study Area
- Public Square (Proposed)
- Public Open Space
- Transit-Related Public Space (Existing and Proposed)
- Light Rail (Existing and Proposed)
- Bus Layover
- Bus Route (Existing and Proposed)
- Bus Route Proposed by SCCAS



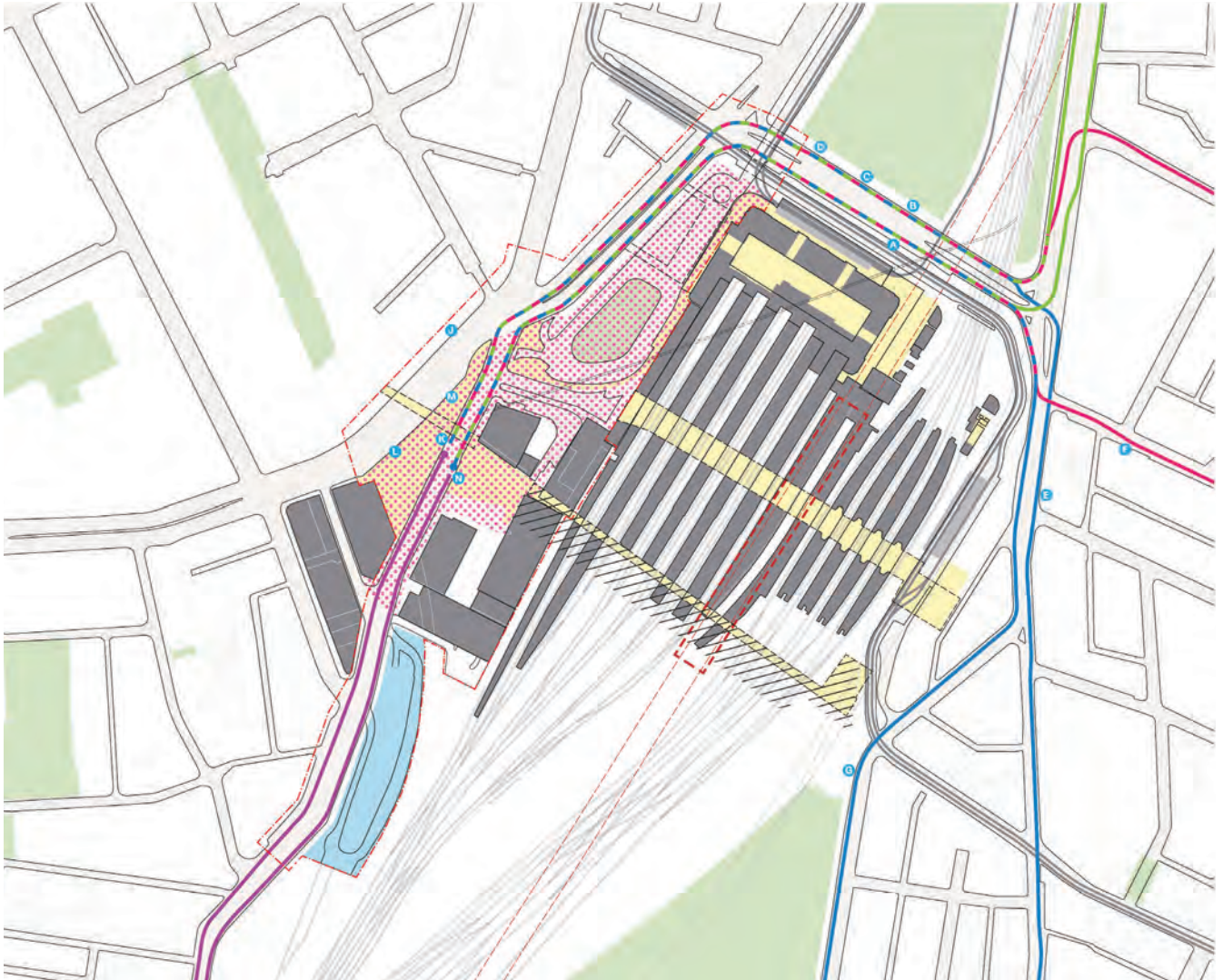
Table 4.3 Bus routes currently using Lee Street (Stops K and N) - Anticipated changes resulting from CBD and South East Light Rail operation

Route Number	Description	Likely Changes
309	Banksmeadow-Central Railway Square	Continued operation
309X	Port Botany-Central Railway Square (Express)	Continued operation
310	Banksmeadow-Central Railway Square (Express)	Continued operation
311	Millers Point-Central Railway Square	Continued operation
338	Clovelly-Central Railway Square	Continued operation
372	Coogee-Central Railway Square	Continued operation (connects to Routes 412 and 413)
376	Maroubra Beach-Central Railway Square	Route cancelled
391	La Perouse-Central Railway Square	Continued operation between La Perouse and Todman Avenue (Kensington)
393	Little Bay-Central Railway Square	Continued operation between Little Bay and Todman Avenue (Kensington)
X93	Little Bay-Central Railway Square (Express)	Continued operation between Little Bay and Todman Avenue (Kensington)
395	Maroubra Beach-Central Railway Square	Route cancelled (replaced with extended Route 343)

Source: CBD and South East Light Rail Project EIS Volume 2, Technical Paper 1: Transport Operations Report (Booz & Co and AECOM, November 2013). Information shown is subject to refinement by TfNSW.

Opportunities and Constraints

Figure 4.21 Bus routes currently using Lee Street (Stops K and N)

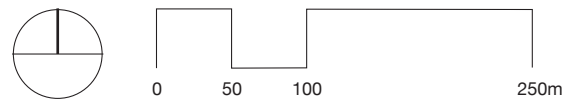


Key

- Master Plan Study Area
- Central Square (Indicative)
- Public Open Space
- Transit-Related Public Space (Existing and Proposed)
- Sydney Metro City and Southwest Station (Indicative)
- Over-Station Development (Indicative)
- Light Rail Route and Stop
- Lee Street Bus Layover

Bus Stops and Routes

- Bus Stop
- Route 309X (Port Botany-Central)
- Route 309 (Banksmeadow-Central)
- Route 310X (Banksmeadow-Central)
- Route 372 (Coogee-Central)
- Route 393 (Little Bay-Central)
- Route X93 (Little Bay-Central)
- Route 395 (Maroubra Beach-Central)
- Route 311 (Millers Point-Central)
- Route 338 (Clovelly-Central)
- Route 376 (Maroubra Beach-Central)



Bus and CSELR integration

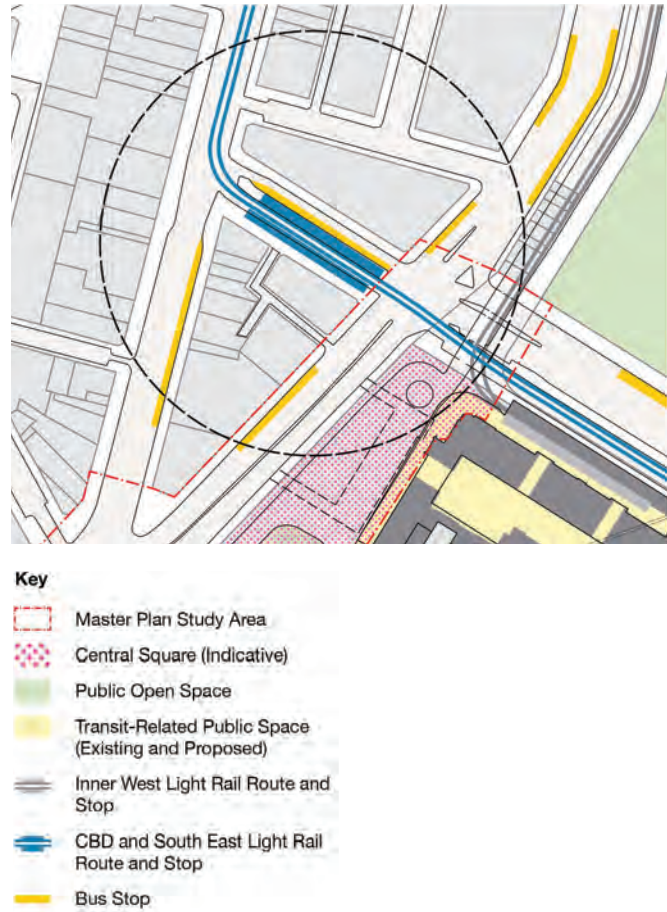
Figure 4.22 shows the proposed Rawson Place bus and light rail interchange for the CSELR, as currently planned by TfNSW. Three new bus stops are proposed to be located in the vicinity of the new light rail stop: Rawson Place (1 stop) and George Street (2 stops). Rawson Place will be an important transfer location requiring good quality pedestrian access to Central Station and the proposed Central Square.

Rawson Place has been proposed to be an ‘around-the-corner’ transfer serving the western edge of Central Station. This is to accommodate near-side CBD termination of bus services using Broadway. The number of buses estimated to turn left from Pitt Street into Rawson Place (westbound) is in the order of 50 to 70 buses per hour during peak periods. Buses turning left from Rawson Place into George Street will have to cross the light rail tracks, requiring measures to ensure safe turning movements. The intersection of high frequency movement of buses and light rail vehicles may create delays for those turning movements, with buses required to wait for light rail vehicles to pass and vice versa.

Lee Street Bus Layover access

Figure 4.23 depicts the existing access and circulation arrangement for vehicles using the Lee Street Bus Layover. This arrangement is highly problematic for pedestrians and cyclists using Regent Street (eastern side). The proposed closure of Lee Street and redirection of traffic movements in Regent Street into the long-term will allow access to the bus layover to be consolidated in a single signalised point of entry-exit (Figure 4.24). This is subject to the continued use of the site as a bus layover, which is yet to be confirmed. The site is earmarked for redevelopment as a mixed-use sub-precinct by the Draft Central Precinct Strategic Vision (see Section 2.1 above).

Figure 4.22 Rawson Place bus and light rail interchange (as currently planned)



Coach terminal

The Sydney coach terminal is currently located at the western edge of Central Station, with coach bays located on the eastern side of Pitt Street and within the Western Concourse. For the purposes of the current master plan, it is assumed that the terminal will be relocated, either outside of the CBD altogether or elsewhere in the vicinity of the Central Precinct.

Bus stabling and coach access to the precinct is discussed in more detail in Section 4.8 below.

Opportunities and Constraints

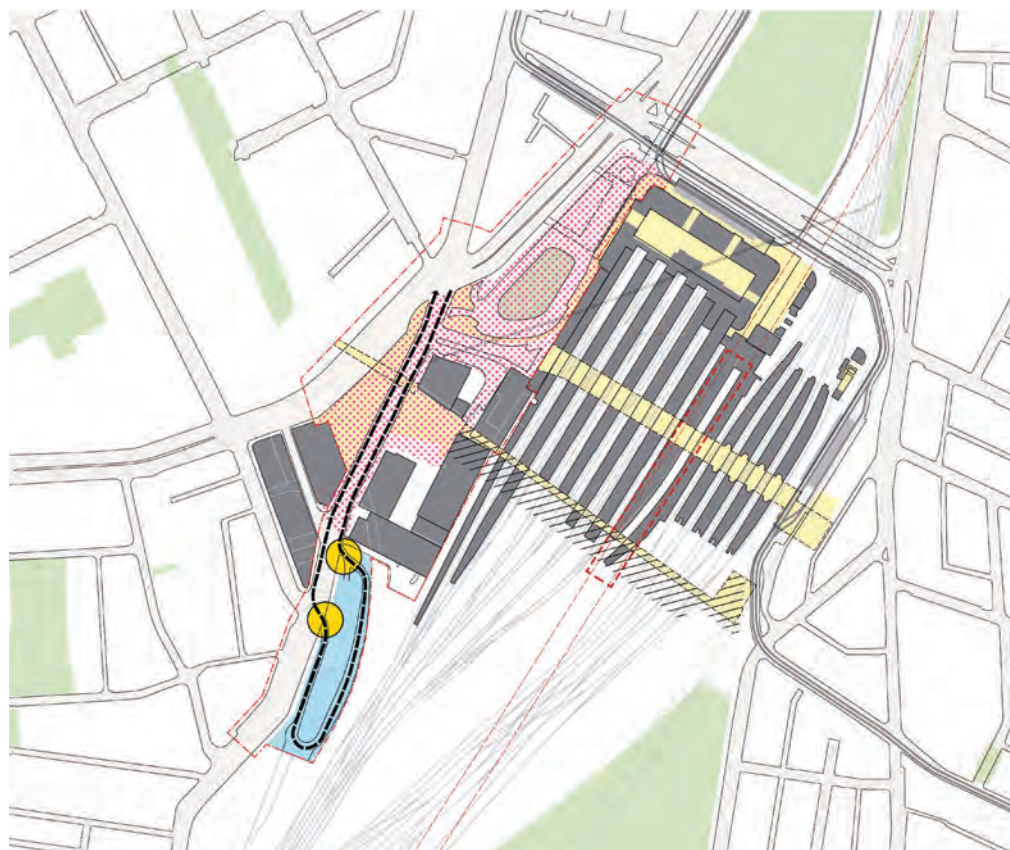


Figure 4.23 Existing Lee Street Bus Layover access

- Key**
- Master Plan Study Area
 - Central Square (Indicative)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Sydney Metro City and Southwest Station (Indicative)
 - Over-Station Development (Indicative)
 - Light Rail Route and Stop
 - Lee Street Bus Layover
 - Bus Movement
 - Vehicle Access Point

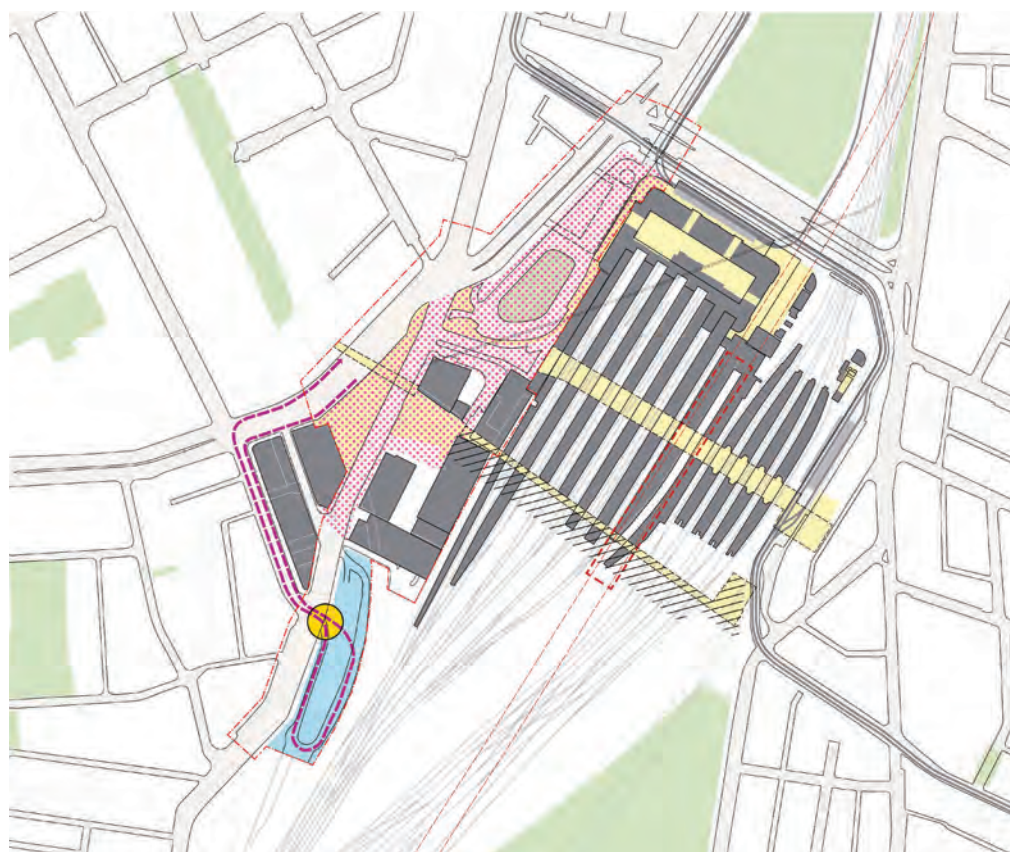


Figure 4.24 Potential Lee Street Bus Layover access

- Key**
- Master Plan Study Area
 - Central Square (Indicative)
 - Public Open Space
 - Transit-Related Public Space (Existing and Proposed)
 - Sydney Metro City and Southwest Station (Indicative)
 - Over-Station Development (Indicative)
 - Light Rail Route and Stop
 - Lee Street Bus Layover
 - Bus Movement
 - Vehicle Access Point

4.7 Cycle network

Figure 4.25 shows the existing cycle network surrounding the Central Precinct. This is based on an amalgam of the City of Sydney’s Open Data data set and Sydney Cycling Map (June 2019), the Sydney City Centre Access Strategy (December 2013) and the Draft Central Sydney Planning Strategy 2016-2036 (July 2016). Overall planning for the network is defined by the City of Sydney’s Cycling Strategy and Action Plan 2018-2030.

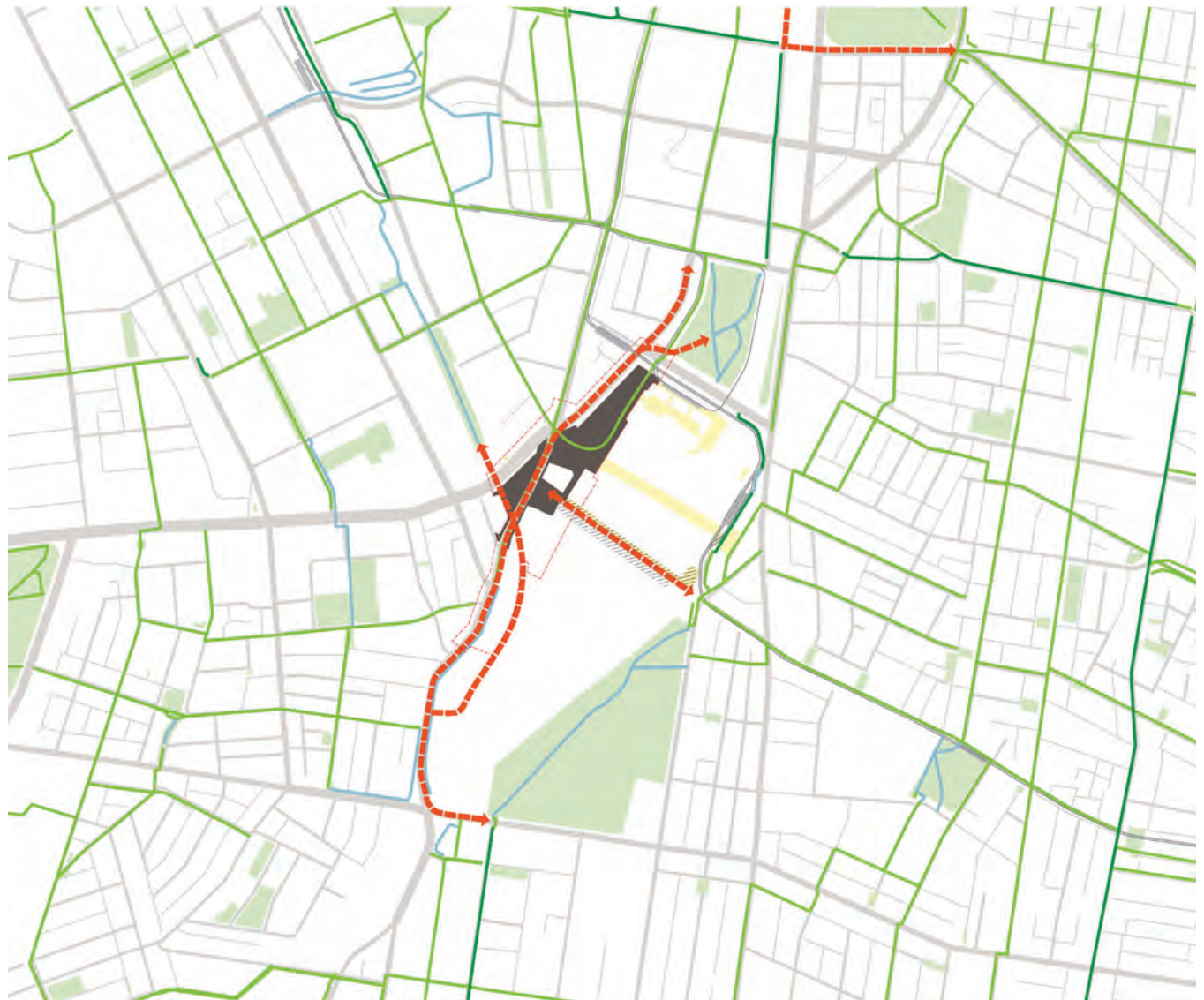
The Central Precinct is a hub for regional (Circular Quay to Mascot and Pyrmont to Moore Park) and local cycle routes. However, these are compromised by the lack of matching connectivity through the precinct itself. The creation of the proposed Central Square, along with other public domain opportunities flagged in the Draft Central Precinct Strategic Vision, provides a catalyst for ‘completing’ these links and enabling Central Station to more fully integrate with the city’s cycle network. Key opportunities in this regard are described in Table 4.4.

Table 4.4 Cycle network opportunities

Location	Description
1. Quay Street	Improve cycle and pedestrian facilities to strengthen connection to/from Darling Harbour.
2. Regent Street-Lee Street-Pitt Street-Belmore Park	New north-south cycle link replacing existing shared path along Regent Street. This would incorporate a mix of dedicated cycleways (Regent Street) and shared cycle/pedestrian spaces (eg, Central Square). This link would also connect directly to the new Central Square.
3. The Goods Line	New sub-grade Goods Line cycle link between George Street and Regent Street and connecting to the existing Goods Line open space west of George Street.
4. Central Walk	New east-west cycle link (possible shared cycle and pedestrian space). The form of this link is subject to final design of the proposed Central Walk.
5. Devonshire Street Tunnel	Provision of a new east-west cycle link within and/or above the existing Devonshire Street Tunnel alignment, subject to future over-station development (OSD).
6. Cleveland Street (between Prince Alfred Park and Regent Street)	New strategic east-west link to supplement the proposed enhancement of cycleway infrastructure in Regent Street (north of Cleveland Street).

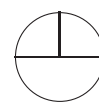
Opportunities and Constraints

Figure 4.25 Cycle network opportunities



Key

- | | |
|--|---|
|  Master Plan Study Area |  Cycleway (Separated) |
|  Public Square (Proposed) |  Off-Street Shared Path |
|  Public Open Space |  On-Street Cycling Route |
|  Transit-Related Public Space (Existing and Proposed) |  Cycling Network Opportunities |
|  Light Rail (Existing and Proposed) | |
|  Over-Station Development (Indicative) | |



4.8 Service and visitor vehicle access

Existing service and visitor access

Existing service vehicle access western sub-precincts of the Central Precinct is currently distributed across up to ten locations (Figures 4.26, 4.27 and 4.28). The current configuration of access points and internal routes entail significant conflicts with pedestrian movements, compromising both the efficient operation of service access and the functionality of Central Station as a transit interchange and social space.

The completion of Central Walk, with a substantial increase in pedestrian volumes to and from Sydney Metro will substantially increase the potential for conflict between pedestrians and service vehicles. Rationalisation of service access to Central Station and adjacent properties will be required to manage conflicts between pedestrians and service vehicles at this location.

Existing station, bus layover and utility access

Central Station is used by a number of bus and coach services for both loading and operations as well as for layover. Interstate coach operations currently take place on Pitt Street between Eddy Avenue and George Street, with some coaches using Railway Colonnade Drive for layovers, as well as the Lee Street bus layover south of Little Regent Street.

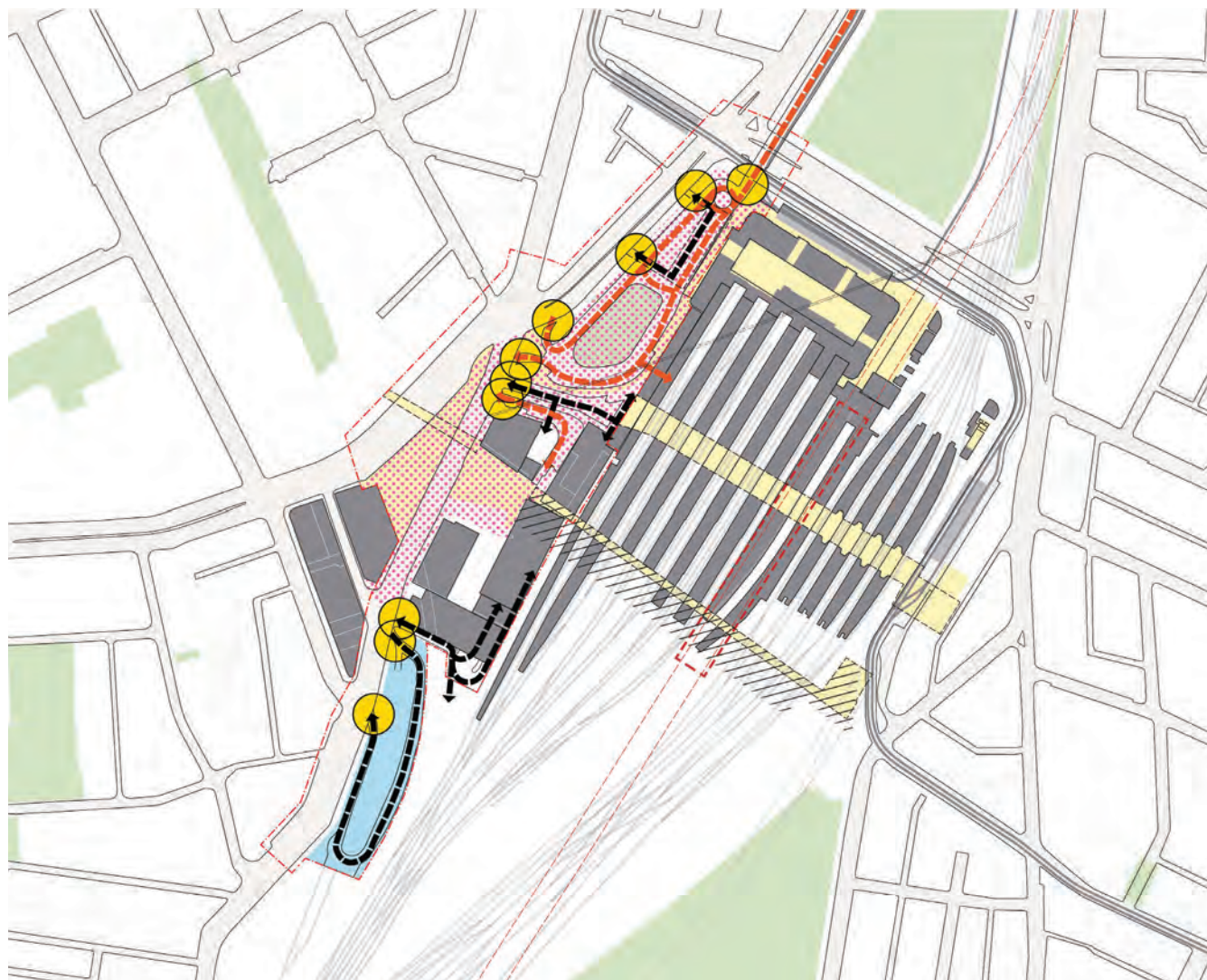
The primary use of the Lee Street Bus Layover is for Sydney Buses services to and from the Eastern Suburbs. With the introduction of the CSELR, any future relocation of coach operations is likely to reduce demand for the layover. This will create opportunities to rationalise and consolidate access to the layover, either from a standalone access point to Regent Street or as a combined access point integrated with the proposed 'super dock' access for the Western Gateway Sub-Precinct (see Sections 4.5 and 4.6 above).

Existing access to private developments

Existing access to private properties within the Western Gateway Sub-Precinct is currently split between Ambulance Avenue (serving the Adina Hotel and Atlassian sites) and Lee Street (serving the Dexus-Frasers site). There is currently no connection between these accesses, meaning access for private vehicles to the Adina and Atlassian site will need to be maintained from Lee Street unless a connection can be provided below-grade between these properties (as per the proposal for a 'super dock' described in the submitted rezoning proposals for the Atlassian and Dexus-Frasers properties).

Opportunities and Constraints

Figure 4.26 Existing service and visitor vehicle access



Key

- Master Plan Study Area
- Central Square (Indicative)
- Public Open Space
- Transit-Related Public Space (Existing and Proposed)
- Sydney Metro City and Southwest Station (Indicative)
- Over-Station Development (Indicative)
- Light Rail Route and Stop
- Lee Street Bus Layover
- Street Level and Below Street Level Access
- Above Street Level Access
- Vehicle Access Point

Note: Data shown for study area only.

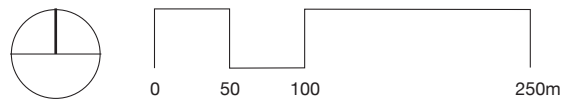


Figure 4.27 Existing service and visitor vehicle access (above street level)

Note: Data shown for study area only.

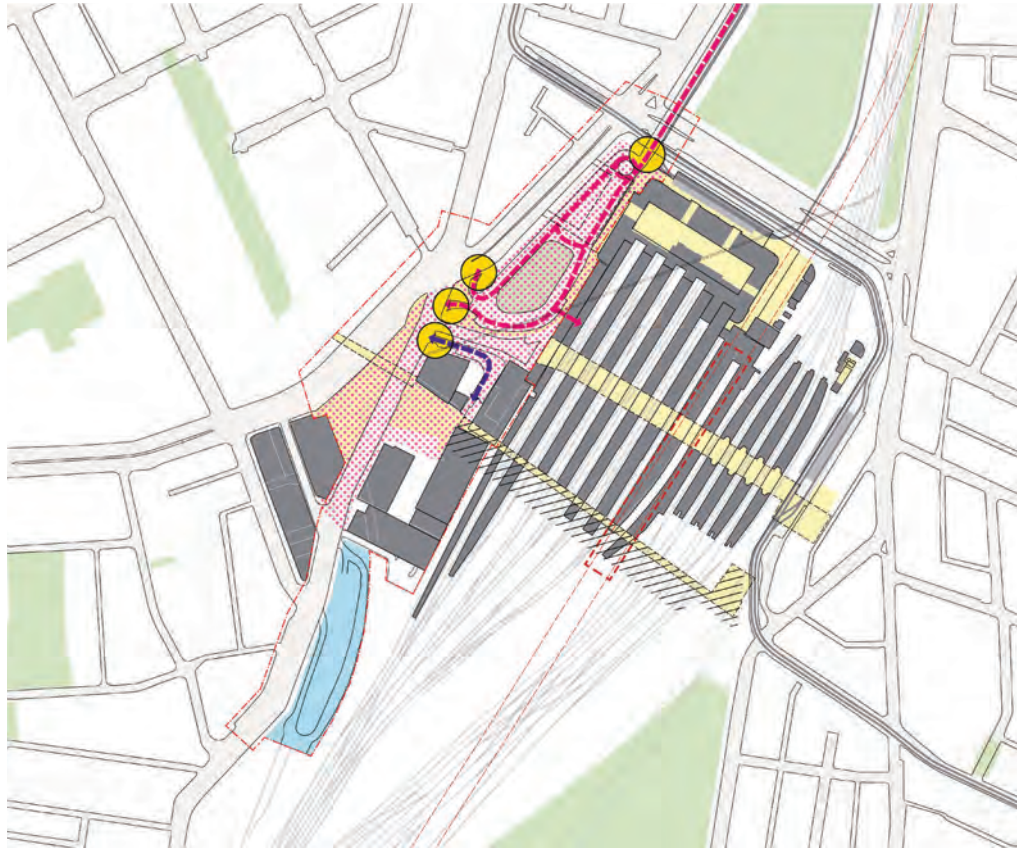
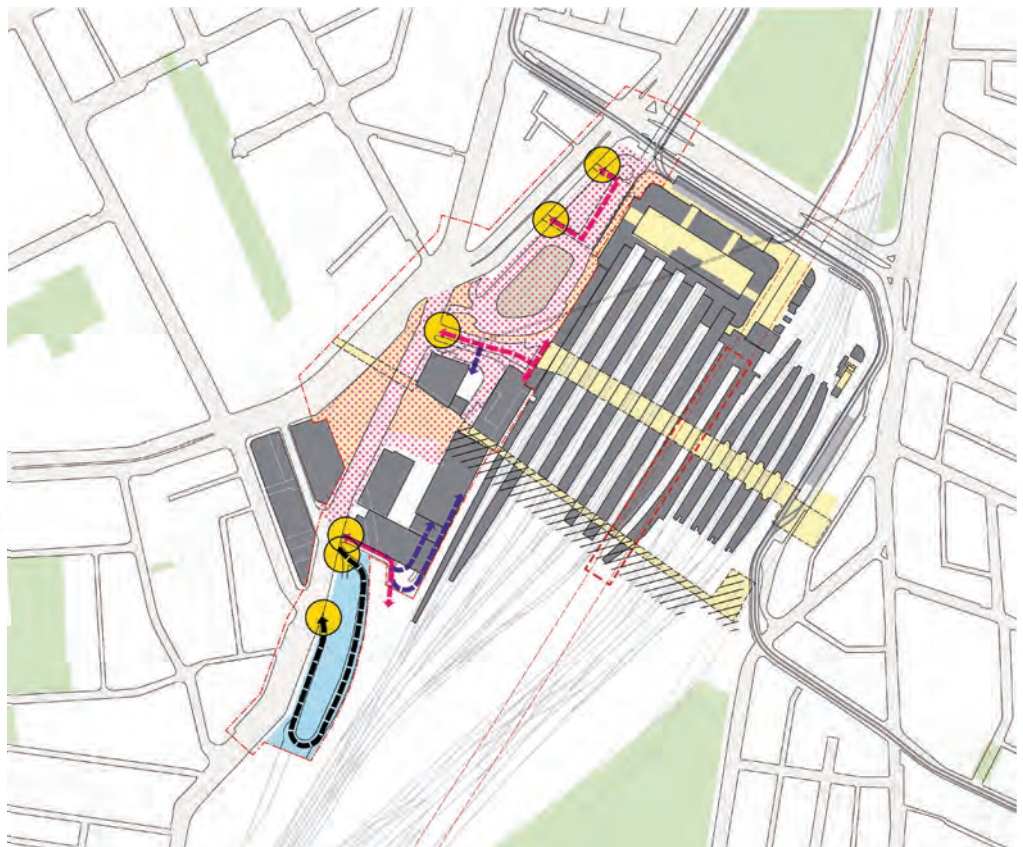


Figure 4.28 Existing service and visitor vehicle access (street level and below)

Note: Data shown for study area only.



Enabling Projects and Access Scenarios

