

CHATSWOOD TO SYDENHAM
**CENTRAL WALK
MODIFICATION
SUBMISSIONS REPORT**

EXECUTIVE SUMMARY



Executive summary

Sydney Metro City & Southwest has been developed within the framework of the transport and planning strategies identified in State government policies. This includes the 12 NSW Premier priorities (established to grow the economy, deliver infrastructure, and improve health, education and other services across NSW), *Sydney's Rail Future: Modernising Sydney's Trains*, Draft Metropolitan Strategy for Sydney 2031 and the NSW Long Term Transport Master Plan. The project responds to these challenges delivering a step-change in the capacity of Sydney's rail network by providing a fully automated rail system across Sydney, supporting high demand with a high capacity, turn-up-and-go service.

Planning approval for Sydney Metro City & Southwest Chatswood to Sydenham was granted by the Minister for Planning under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 9 January 2017.

Transport for NSW is seeking to modify the approved project in relation to proposed changes at Central Station in accordance with section 115ZI of the EP&A Act. A modification report was lodged with the Department of Planning and Environment and publically exhibited from 21 June 2017 to 2 August 2017.

Purpose of this report

During public exhibition of the modification report, 16 submissions were received by the Department of Planning and Environment. The Secretary of Department of Planning and Environment provided copies of the submissions to Transport for NSW.

This report provides:

- Clarifications to the information presented in the modification report
- Responses to the issues raised in submissions.

Clarifications

The clarifications provided in this report relate to:

- an error on the printed versions of the modification report in the section that discusses the phasing of pedestrian flows within Central Station during construction
- the process for property acquisition.

Overview of submissions

The Department of Planning and Environment received 16 submissions during the modification report exhibition period. Of these submissions, three were from government agencies and one was from the local council. These agencies raised a range of issues relevant to their respective areas of interest and responsibility. Further information on key issues raised by each group is provided in Chapter 4 (Submissions received).

A total of 12 submissions were received from the community (including individuals and organisations). These submissions raised a range of issues of personal interest or relevance.

Chapter 5 and Chapter 6 of this report present the issues raised in submissions and provide responses to these issues.

Next steps

The Department of Planning and Environment will, on behalf of the NSW Minister for Planning, review the modification report and this submissions report. Once the Department of Planning and Environment has completed its assessment, a draft assessment report will be prepared, which may recommend additional or revised conditions of approval.

The assessment report will then be provided to the NSW Minister for Planning (or delegate) for consideration. The Minister for Planning (or delegate) will then determine the application for the proposed modification and, if approved, may include any revised or additional conditions considered appropriate.

The NSW Minister for Planning's (or delegate's) determination, including any revised conditions of approval and the assessment report, will be published on the Department of Planning and Environment's website immediately after determination, together with a copy of this submissions report.

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INTRODUCTION

CHAPTER ONE



1 Introduction

1.1 Overview

Planning approval for Sydney Metro City & Southwest Chatswood to Sydenham was granted by the Minister for Planning under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 9 January 2017.

Works at Central Station as part of the approved project involve:

- New underground metro platforms and concourse below the existing suburban rail service platforms 12, 13, 14 and 15, and associated vertical transport (lifts and escalators)
- Reinstatement of platforms 12, 13 and 14 over the metro cavern
- Adjustments to the North Concourse and associated shortening of platforms 9 to 14 at the northern end, and a corresponding lengthening at the southern end.
- New canopies over the reinstated platforms 12 to 14 and between the Central Electric Building and the northern end of platforms 12 to 14
- A permanent access bridge for maintenance vehicles from Regent Street to Sydney Yard, located between the suburban and intercity rail lines (referred to as the Sydney Yard Access Bridge).

Transport for NSW is seeking to modify the approved project in relation to proposed changes at Central Station in accordance with section 115ZI of the EP&A Act. A modification report was lodged with the Department of Planning and Environment and publically exhibited from 21 June 2017 and 2 August 2017.

1.2 Need for the proposed modification

Around 270,000 people enter or exit at Central Station every weekday, more than any other station on the NSW rail network. Many more customers interchange within Central Station, transferring between rail services, light rail, coaches, taxis and the bus network. The need for easy and safe customer transfer and improved pedestrian flows at Central Station will become even more critical with the introduction of a new light rail stop on Chalmers Street as part of the CBD and South East Light Rail and the new underground metro platforms to be delivered as part of Sydney Metro City & Southwest.

The large number of passenger movements into, out of and through Central is forecast to increase significantly due to the growth of the transport network and public transport demand in Sydney. Based on patronage modelling carried out by Transport for NSW, the number of passengers interchanging at Central Station is expected to grow by 79 per cent between 2014 and 2026, and a further 15 per cent between 2026 and 2036.

Central Station has been developed over many decades leading to its current layout and configuration which hinders efficient customer movement and transfer. There are multiple level changes between each of the existing concourses, many of which no longer comply with current design standards. The only accessible route at the station that connects all platforms is via the North Concourse under the suburban platforms.

Several of the existing pedestrian tunnels under the suburban platforms have been converted from back of house baggage corridors which were not originally designed for public access. The various level changes, line-of-sight issues and dead end corridors create a potentially confusing pedestrian environment heavily reliant on signage and active surveillance.

On 15 September 2016, the Minister for Transport and Infrastructure announced the Government's intention to revitalise Central Station and commence a process of public and industry consultation. This announcement identified that, in addition to the core transport customer requirements, Central Station has the potential to be a destination itself for domestic and international visitors. By building on the primary function of transport operations, the opportunity exists to activate the public spaces, showcase the heritage elements of the station and unlock the potential of the precinct. Feedback received during this consultation process identified the need to provide improved access, connectivity and legibility within the station and across the precinct.

Delivery of the proposed modification would provide improved transport interchange efficiency between the future metro services at Central Station, suburban rail services and the future light rail stop on Chalmers Street. The proposed modification would also reduce congestion and improve customer amenity on the aboveground suburban platforms.

The proposed modification would provide a range of customer experience benefits, passenger movement and interchange benefits, and better integration with the surrounding precinct. Without the proposed modification, the future operation of the station could become compromised from excessive congestion and queuing on the suburban platforms affecting train services. A new underground concourse with efficient access that is easy to use for customers would assist with redistribution of customers within the station and improve the customer experience. These improvements to transport functionality would also be a precursor to broader precinct renewal and revitalisation opportunities.

Delivering the proposed modification and the approved project works concurrently would minimise construction impacts to customers and deliver cost, program and interface efficiencies.

1.3 Overview of the proposed modification

The proposed modification would involve the addition to the following key features (as shown on Figure 1-1) to the approved project at Central Station:

- **East concourse** – the concourse would provide an accessible connection to the suburban and metro platforms at a common floor level and cater for the growing demands at the station now and in the future. Escalators and a lift would connect the concourse to each of the aboveground suburban platforms
- **Eastern entry** – a new entry / exit would be provided to Central Station and the east concourse from Chalmers Street
- **Platform works** – general upgrade of lighting, signage and finishes, removal of platform clutter, and platform raising / re-leveling to provide a consistent height and finish across the aboveground suburban platforms.

The design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

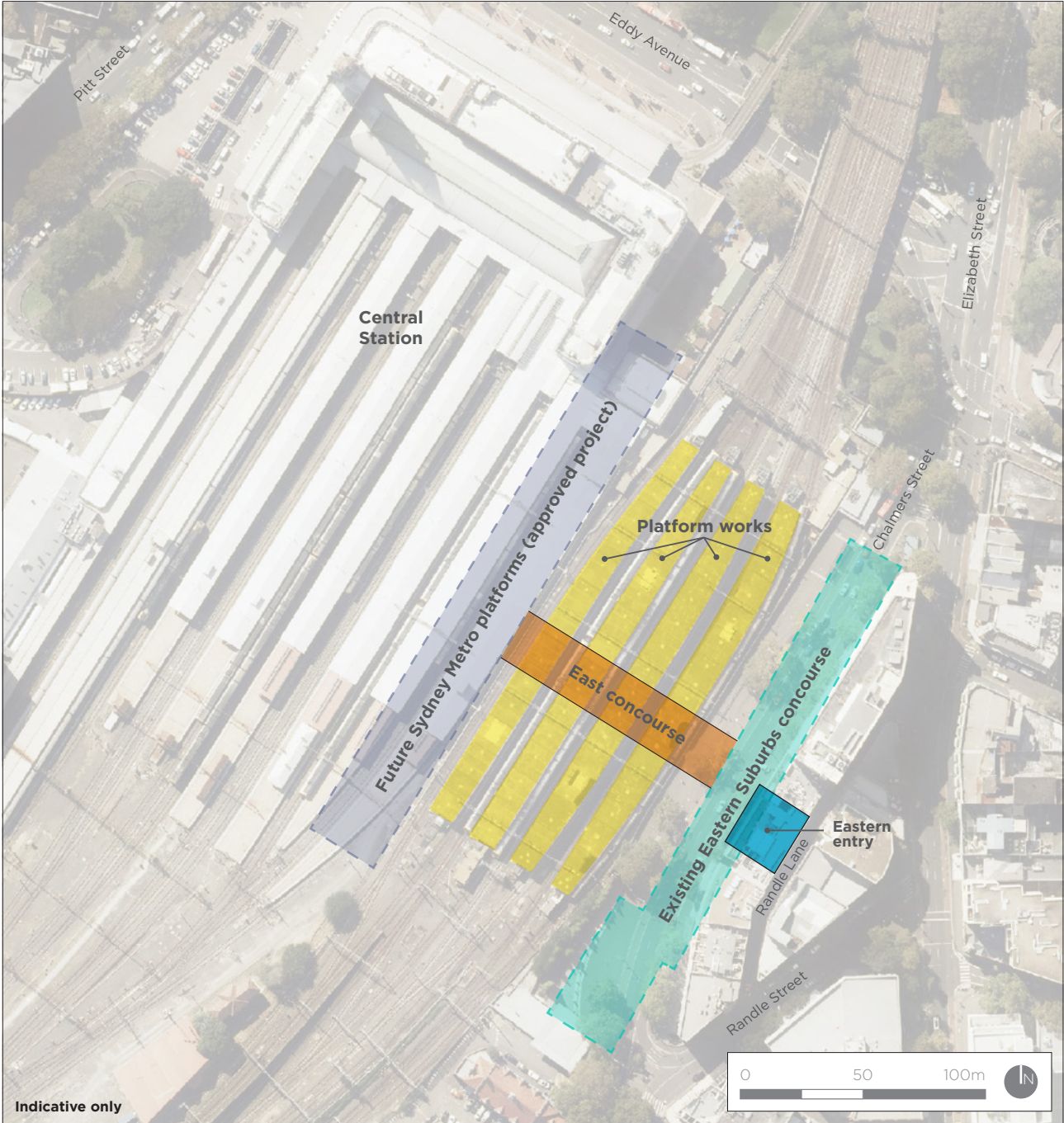


Figure 1-1 Key features of the proposed modification

1.4 Purpose of this report

During public exhibition of the modification report, 16 submissions were received by the Department of Planning and Environment. The Secretary of Department of Planning and Environment provided copies of the submissions to Transport for NSW.

This report provides:

- Clarifications to the information presented in the modification report
- Responses to the issues raised in submissions

The structure and content of this report are outlined in Table 1-1.

Table 1-1 Structure of this report

Chapter	Description
Chapter 1	Introduction (this chapter) Provides an overview of the proposed modification and outlines the purpose and content of this report.
Chapter 2	Clarifications Provides clarifications to the information presented in the modification report.
Chapter 3	Community and stakeholder involvement Provides details of the consultation, and community and stakeholder involvement activities carried out during the development of the modification report, during exhibition of the modification report and future consultation should the proposed modification be approved.
Chapter 4	Submissions received Provides a summary of the submissions received during the public exhibition of the modification report.
Chapter 5	Government submissions Identifies the issues raised by government agencies and local council, and provides responses to those submissions.
Chapter 6	Community submissions Identifies the issues raised by the community and provides responses to those submissions.
Chapter 7	Revised environmental mitigation measures Presents an updated consolidated list of environmental mitigation measures for the project.

MODIFICATION REPORT CLARIFICATIONS

CHAPTER TWO



2 Modification report clarifications

This chapter clarifies information included in the modification report in relation to:

- The phasing of pedestrian flows within Central Station during construction
- The property acquisition process.

2.1 Phasing of pedestrian flows within Central Station during construction

Section 7.8.7 of the modification report provided a description of how pedestrian flows within Central Station would be phased during construction to maintain connectivity and minimise disruption. This description of pedestrian phases was correct, however there were some omissions on the associated figures in the printed versions of the document.

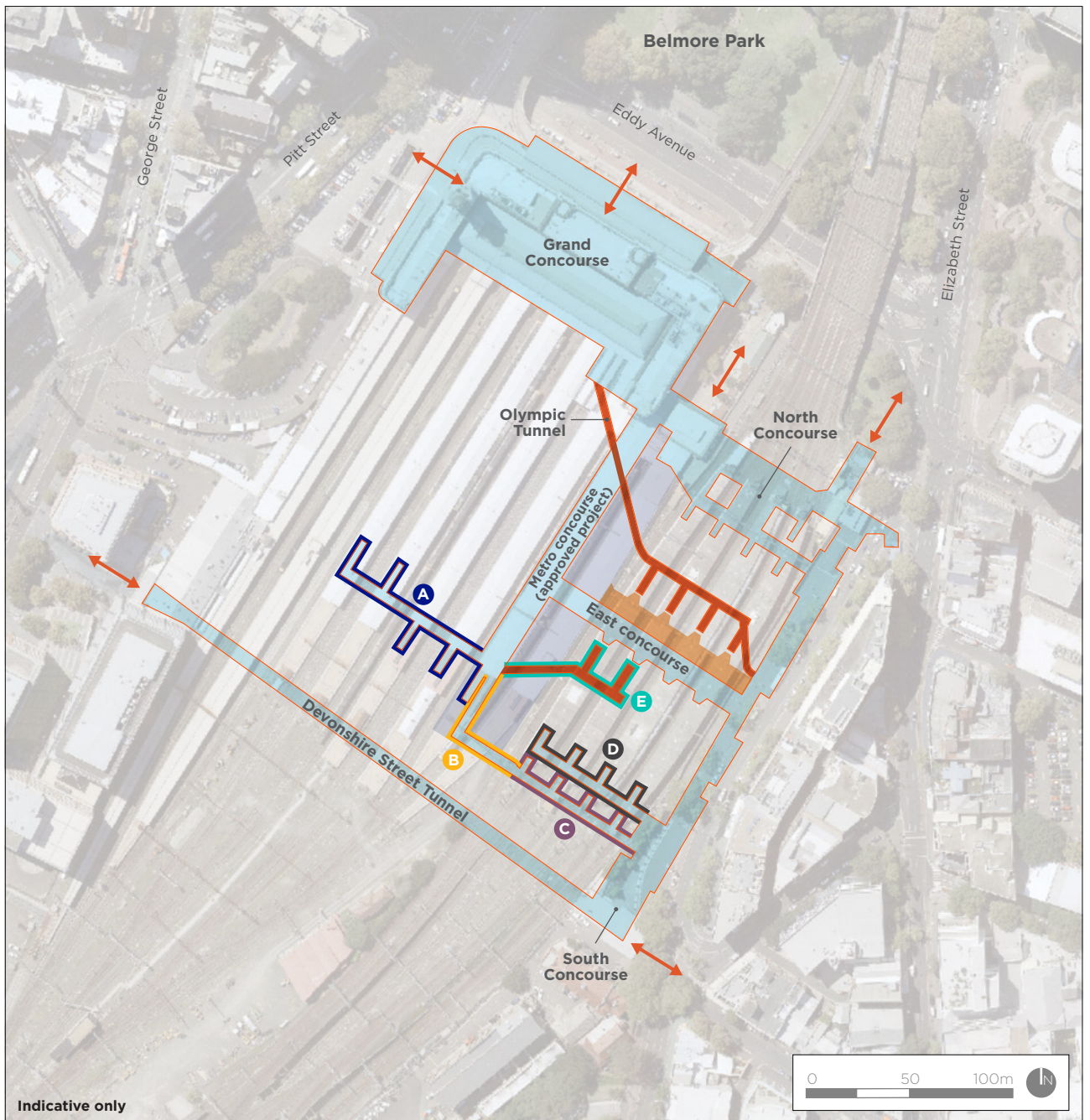
For clarity, the phasing of pedestrian activities in relation to pedestrian flows is described again below and shown on Figures 2-1a-c (for ease, the pedestrian interchange tunnels at the south of the platforms have been named A to E):

- Phase 1 (this would be the arrangement for the majority of the construction period and is consistent with the construction pedestrian arrangement within the station for the approved project):
 - ◆ The majority of existing staircases (and the future stairs from the Olympic Tunnel to platforms 20-23) and walkways would remain open
 - ◆ Closure of pedestrian tunnel E and its stairs to platforms 16-19.
- Phase 2:
 - ◆ Opening of the southern portion of the east concourse and the southern escalators to platforms 16-23, and the western portion of the approved metro concourse
 - ◆ Closure of the Olympic Tunnel and its stairs to platforms 16-23
 - ◆ Pedestrian tunnel E and its stairs to platforms 16-19 would remain closed.
- Phase 3 (this is effectively the end-state arrangement):
 - ◆ Opening of the northern portion of the east concourse and the northern escalators and lifts to platforms 16-23
 - ◆ Closure of pedestrian tunnel D and its stairs to platforms 16-23
 - ◆ The Olympic Tunnel and pedestrian tunnel E and their stairs to the platforms would remain closed.



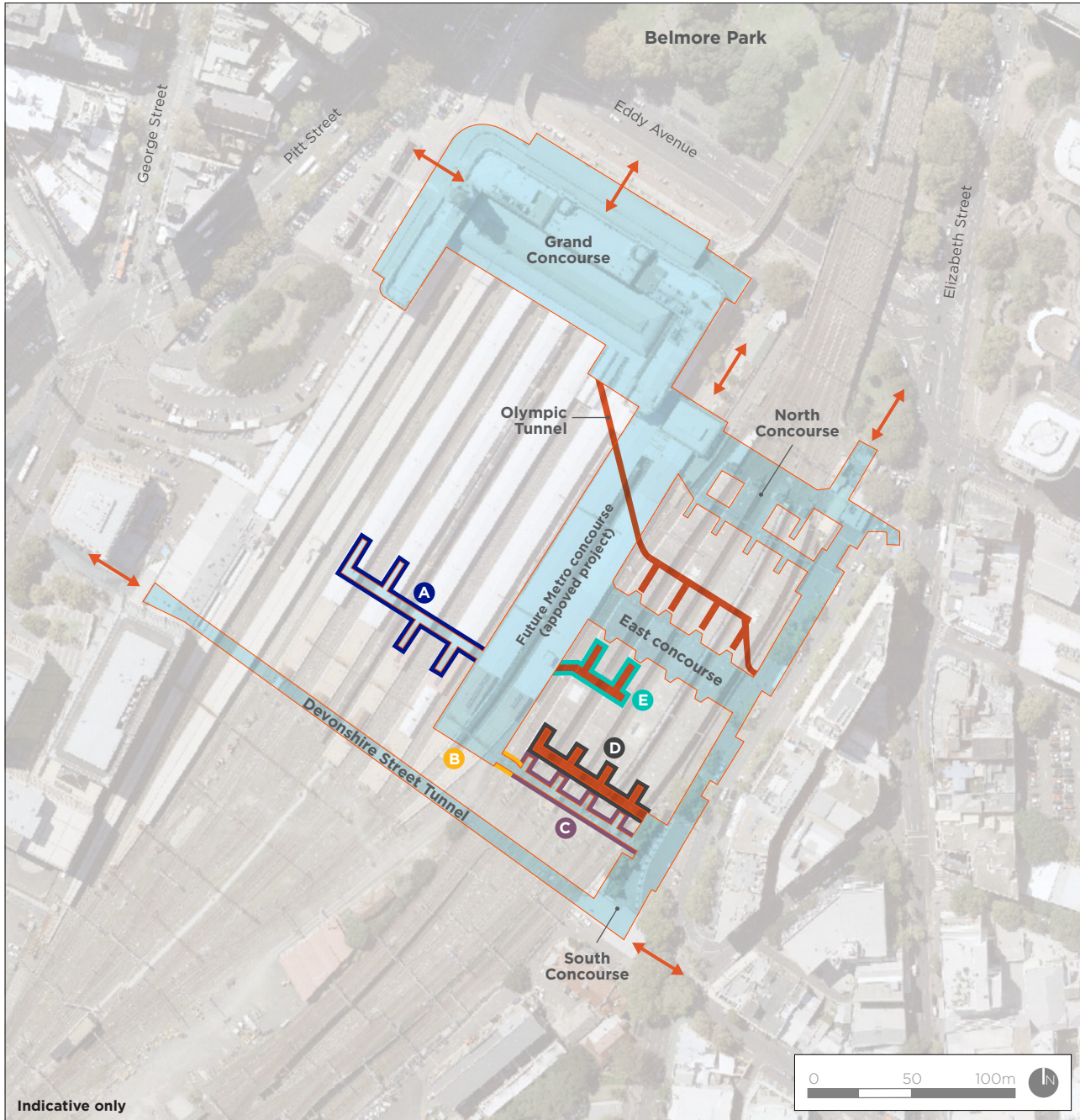
KEY		
	Entry and exit points	
	Pedestrian flow area	
	Closed pedestrian flow area	

Figure 2-1a Pedestrian movement Phase 1



KEY		
	Entry and exit points	
	Pedestrian flow area	
	Closed pedestrian flow area	

Figure 2-1b Pedestrian movement Phase 2



KEY		
	Entry and exit points	
	Pedestrian flow area	
	Closed pedestrian flow area	

Figure 2-1c Pedestrian movement Phase 3

2.2 Property acquisition process

Section 13.3 of the modification report states that property acquisition would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. In relation to proposed acquisition for the Central Walk modification, the *Land Acquisition (Just Terms Compensation) Act 1991* would apply to the identified privately owned freehold property interests, including any associated leasehold interests.

COMMUNITY AND STAKEHOLDER INVOLVEMENT

CHAPTER THREE



3 Community and stakeholder involvement

3.1 Consultation overview

The modification report was exhibited from 21 June 2017 to 2 August 2017. During this time, consultation activities were carried out to engage key stakeholders and the community on information in the modification report, encourage participation in exhibition activities and provide guidance on the submissions process.

Submissions on the proposed modification were received by the NSW Department of Planning and Environment during the exhibition period. The issues raised, and responses to them, are presented in Chapters 5 and 6.

3.2 Consultation prior to modification report exhibition

Engagement with the community and stakeholders about Sydney Metro City & Southwest began in June 2014 and continued through the preparation of the Chatswood to Sydenham Environmental Impact Statement.

On 15 September 2016, the NSW Government announced the opportunity to reimagine Central Station. The announcement initiated a round of community, stakeholder and industry consultation on the revitalisation of Central Station. This included doorknocks with shop keepers, online surveys and discussion forums, face to face intercept surveys and distribution of newsletters.

Further consultation was carried out following the announcement of Central Walk on 22 March 2017. This consultation included a media release, fact sheet, overview video and contact with a range of stakeholders.

Key stakeholder consultation has also occurred with relevant State agencies, the City of Sydney Council, and directly impacted communities and businesses.

Feedback received during consultation activities has been considered in ongoing development of the proposed modification.

3.3 Consultation during modification report exhibition

The modification report was made available to view on the Department of Planning and Environment's website: www.majorprojects.planning.nsw.gov.au and the project website: www.sydneymetro.info.

Hard copies of the document were also available at Community Information Sessions and at the following locations:

- City of Sydney Council Chambers: Town Hall House, Level 2, 456 Kent Street, Sydney
- State Library: Macquarie Street, Sydney
- Haymarket Library: 744 George Street, Sydney
- Waterloo Library: Waterloo Town Hall, 770 Elizabeth Street, Waterloo.

The Sydney Metro project team supported the public exhibition of the modification report through a variety of engagement methods and communication materials, as outlined below.

3.3.1 Community contact and information points

Table 3-1 outlines community contact and information points in use on the project.

Table 3-1 Community contact and information points

Activity	Detail
Community information line (toll free)	1800 171 386
Community email address	sydneymetro@transport.nsw.gov.au
Website	www.sydneymetro.info
Postal address	Sydney Metro City & Southwest: PO Box K659, Haymarket, NSW 1240
Transport for NSW community information centre	388 George Street, Sydney

3.3.2 Community information sessions

The project team hosted a series of community information sessions where displays and information about the proposed modification were available.

All members of the community were invited to attend these sessions and meet expert members of the project team and have any questions answered. There was no need to make a booking; visitors could drop in anytime within the advertised times.

There were 45 visitors at the two community information sessions. Table 3-2 outlines the date, time and location of community information sessions.

Table 3-2 Community information sessions

Date and time	Location	Attendees
Wednesday 28 June, 4pm – 7pm	Rendezvous Hotel Sydney Central – corner of George and Quay Streets, Sydney	34
Saturday 1 July, 10am – 1pm	Rendezvous Hotel Sydney Central – corner of George and Quay Streets, Sydney	11

Invitations to attend the sessions were included in:

- Postcard flyers handed out at Central Station and delivered to properties within 500 metres of the station
- The Modification Summary document
- The Sydney Metro website
- Advertisements in local newspapers
- The Sydney Metro Facebook feed.

At the information sessions, copies of the modification report were available for visitors to view as were copies of the Modification Summary, project newsletter. Information boards were also presented around the room with key information regarding the approved project and the proposed modification.

3.3.3 Place Managers

Place Managers build relationships and act as a feedback mechanism to help ensure community and stakeholder aspirations are consistently considered in the planning process. Their role is to be a direct point of contact between affected members of the community and the project team.

Place Managers will continue to play a vital role in maintaining close and ongoing contact with local communities and stakeholders during the design and delivery of Sydney Metro.

Place Managers have engaged impacted residents, tenants and businesses throughout the exhibition period (by phone, email, newsletter or doorknock) to ensure they were aware of the modification report, invite them to community information sessions and ensure they had the information they needed to make a submission on the proposed modification.

Place Managers can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

3.3.4 Postcard flyers

Postcard flyers were developed to provide information about the proposed modification and advise the date and location of community information sessions. Around 1,200 flyers were handed out at Central Station on 22 and 23 June 2017. Flyers were also delivered to properties located within 500 metres of the proposed modification.

3.3.5 Newspaper advertisements

Advertisements advising of the public exhibition of the proposed modification were placed in the following newspapers:

- Central Courier – 21 June 2017
- Sydney Morning Herald – 21 June 2017.

3.3.6 Email alerts to the project mailing list

Details regarding the proposed modification and the community information sessions were sent via email to the project mailing list in June 2017.

3.3.7 Facebook

Sydney Metro posted invitations and reminders regarding the community information sessions on its Facebook feed which has over 13,500 followers.

3.3.8 Website

Information on where to view the modification report and the community information sessions was made available on the project website and the NSW Government's 'Have your Say' community engagement website.

3.3.9 Modification report summary document

A modification report summary document was prepared and made available electronically on the project website and also in hard copy. Hard copies were available at the community information centres, community information sessions, via place managers and other team members during meetings, briefings, doorknocks, and by request.

This summary document provided an overview of the approved Chatswood to Sydenham component of Sydney Metro City & Southwest and the proposed modification. Readers were also encouraged to review the modification report on the Department of Planning and Environment's website.

3.4 Consultation and engagement during construction

Should the proposed modifications be approved, the project team would continue to consult with the community and key stakeholders during the planning and construction of the project. In general, this ongoing consultation would involve:

- Provision of information to key stakeholders, local councils and other government agencies
- Provision of regular updates to commuters and the nearby community
- Development and implementation of a Community Communications Strategy.

Further details regarding stakeholder and community involvement requirements during project delivery are outlined in the Construction Environmental Management Framework (provided as part of the Submissions and Preferred Infrastructure Report for the approved project).

**SUBMISSIONS
RECEIVED**

CHAPTER FOUR



4 Submissions received

4.1 Respondents

The Department of Planning and Environment received 16 submissions in response to the modification report during the public exhibition period (21 June 2017 to 2 August 2017). Submissions were accepted by:

- Electronic submission (online) – www.majorprojects.planning.nsw.gov.au/page/on-exhibition
- Post – Department of Planning and Environment, GPO Box 39, Sydney, NSW 2001.

The number of submissions received by respondent type is presented in Table 4-1.

Table 4-1 Submissions received by respondent type

Respondent type	Number of submissions
Government agency	3
Local council	1
Community, business and other	12
Total	16

4.2 Overview of issues raised

Submissions included two objections and four identified as being in support. The remainder of submissions did not state a position of support or objection to the proposed modification. Responses to issues raised in submissions is provided in Chapters 5 and 6.

4.2.1 Government agencies

Three government agencies made submissions, raising a range of issues relevant to their respective areas of interest and responsibility. A summary of each agency's issues is provided below. Detailed responses are provided in Chapter 5.

Department of Primary Industries

The submission from the Department of Primary Industries raises issues regarding groundwater and Crown land.

Environment Protection Authority

The submission from the Environment Protection Authority raises issues regarding:

- The potential interface with contaminated soil and water
- Potential increased construction noise and vibration impacts.

Heritage Council of NSW

The submission from the Heritage Council of NSW raises issues regarding the level of detail contained within the non-Aboriginal heritage assessment, however it also identifies future processes through the conditions of approval for further detail to be provided to the Heritage Council. The submission also makes recommendations regarding additional mitigation measures.

4.2.2 City of Sydney Council

The submission from City of Sydney is generally supportive of the proposed modification, however the submission also raises issues regarding:

- Additional opportunities including the need for the concourse to be extended to the west and the creation of a new western entry, an additional entry to the concourse on the western side of Chalmers Street and additional entries to the east
- Quality of design and finishes
- Management of heritage impacts to the Bounce Hostel (former MGM building)
- Potential increased construction noise and vibration impacts, particularly around the eastern entry.

Detailed responses to the issues raised by the City of Sydney are provided in Chapter 5.

4.2.3 Community

The community including individuals, organisations and members of parliament raised a range of issues of personal interest or relevance. The most common issue raised was related to improvements in connectivity of the station with areas of the west and south-west. Detailed responses are provided in Chapter 6.

GOVERNMENT SUBMISSIONS

CHAPTER FIVE



5 Government submissions

5.1 Department of Primary Industries

Issue raised

The proponent should estimate the volume of groundwater that is likely to be taken and identify how monitoring and reporting will be adopted to meet any legislation requirements.

Response

As identified in Section 17.3 of the modification report, excavation work for the proposed modification would be likely to intercept the surface groundwater aquifer only. This aquifer exists in the residual fill and soil layer and is recharged through rainfall and runoff from impervious surface such as roads, footpaths, platforms and platform canopies. Due to this, and the distance to the closest groundwater user, no additional impacts (beyond the approved project) are anticipated to any nearby groundwater user.

The Environmental Impact Statement for the approved project provided estimated groundwater inflow rates for project infrastructure, including for Central Station. Target changes to groundwater levels at surrounding land uses were also provided. These target changes would continue to apply to the project as proposed to be modified.

As the proposed modification would not change potential groundwater impacts from the approved project, management would occur as described in the Environmental Impact Statement. This includes the development of a geotechnical model for the project and a groundwater monitoring program where significant exceedances of target changes to groundwater levels are predicted. The model and monitoring program would be developed in consultation with the Department of Primary Industries (Water).

Issue raised

Although it is not envisaged from information provided that any Crown land is affected, any Crown land required for this modification will need to be compulsorily acquired under provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

Response

As identified in Section 4.2 of the modification report, the proposed modification would not be carried out on Crown Land.

As further identified in Section 12.3.1 of the modification report and clarified in Section 2.2 of this report, all property acquisition would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. The changes made to the land acquisition process as a result of the Russell Review would also be implemented.

5.2 Environment Protection Authority

5.2.1 Contaminated soil and water

Issues raised

The modification report provides a qualitative risk assessment of the potential of each identified potential source to have contaminated the soil and ground water of the site. This assessment appears to be appropriate for this stage of the investigation, but further investigation into the presence of contamination of the site is required.

The Environment Protection Authority recommends the following general conditions:

- The processes outlined in State Environmental Planning Policy 55 be followed in order to assess the suitability of the land and any remediation required in relation to the proposed use
- Where contamination which meets the trigger in the Guidelines for the Duty to Report Contamination is encountered, the contamination should be notified in accordance with the requirements of section 60 the *Contaminated Land Management Act*
- The proponent must ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site so as to result in significant contamination
- The following guidance should be considered in accordance with the proposal:
 - ◆ Technical Note: Investigation of Service Station Sites
 - ◆ NSW EPA Sampling Design Guidelines
 - ◆ Guidelines for the NSW Site Auditor Scheme (2nd edition) 2006
 - ◆ Guidelines for Consultants Reporting on Contaminated Sites 2011
 - ◆ The National Environment Protection (assessment of contamination) Measures 2013 as amended.

The Environment Protection Authority considers that the conditions applying to the approved project (E66-E70) as appropriate and should apply to the modification.

Response

The intent of the conditions suggested by the Environment Protection Authority are met by existing mitigation measures and conditions of approval including:

- Mitigation measure SCW1 relating to an updated desktop assessment, and (if required) a detailed contamination assessment and development of a Remedial Action Plan in accordance with State Environmental Planning Policy 55 guidelines
- Conditions E66 and E67 (Site Contamination Report), Condition E68 (Site Audit Statement and Site Audit Report), and Conditions E69 and E70 (Unexpected Contaminated Land and Asbestos Finds Procedure).

All relevant guidelines made or approved by the Environment Protection Authority under the *Contaminated Land Management Act* would be followed for future assessment, management and reporting of contaminated sites.

Duty to report requirements are noted. Transport for NSW would comply with all applicable legislation.

5.2.2 Noise

Issues raised

The Environment Protection Authority notes that there was incomplete information in the modification report. For example, not all noise monitoring location are shown on Figure 11-2 and the inclusion or absence of some entries in Table 11-3, 11-6, 11-7 and 11-12 is unclear.

However, the measured noise levels are consistent with expectations for the urban area around Central Station and the predicted levels are consistent with the Environment Protection Authority's experience of similar construction projects, indicating the noise modelling is suitably accurate.

Response

The noise and vibration chapter and technical appendix of the modification report provide the necessary information to understand the relative change in noise impact of the proposed modification when compared to the approved project.

The assessment tables in the noise and vibration chapter of the modification report provide information where the proposed modification results in a change in impact from the approved project. A blank cell indicates that the proposed modification does not change the airborne noise impact for those receivers, and a cell with 'NA' indicates that those receivers are typically not in use during that time period.

Issue raised

The Environment Protection Authority considers that the conditions applying to the approved project are appropriate and should apply to the modification.

The Environment Protection Authority recommends a condition be added to the approval requiring the proponent to maximise as much as practicable the use of works trains to minimise heavy vehicle movements.

Response

The Environment Protection Authority's comment regarding the conditions of approval are noted. As identified in the modification report, the existing conditions of approval would apply to the proposed modification.

The modification report identifies that, for surface works within the station, some materials may be delivered by work trains. As the works to excavate and construct the east concourse would be mainly supported from the eastern entry construction site, the use of works trains would not be feasible for the removal of this spoil and the delivery of material for this component of the proposed modification.

Consideration of alternative transport options was also provided in the Sydney Metro City & Southwest Chatswood to Sydenham Environmental Impact Statement. This assessment identified that the use of rail for construction purposes at Central Station was unlikely to be feasible due to the need to construct a rail siding and associated facilities, and the need to secure train paths which could impact on passenger rail operations.

Issue raised

The Environment Protection Authority is aware of impacts occurring on major infrastructure projects through a lack of coordination between infrastructure contractors and agencies conducting maintenance on essential utility services. This has resulted in out-of-hours works causing noise impacts when respite periods have been planned. The Environment Protection Authority recommends that conditions of approval be added requiring a Utility Management Coordination Agency and development and implementation of a Utility Management Strategy.

Response

The Environment Protection Authority's concerns are acknowledged. The project has committed to a robust method to identify and manage potential cumulative impacts. This includes coordination with, amongst others, the relevant utility providers. In addition, a Sydney Metro Utility Working Group has already been established by Sydney Metro to identify, manage and coordinate proposed utility works. Representatives from the affected utility providers form part of this working group. This working group would ensure that the proposed works are coordinated with the planned activities of relevant utility providers.

5.3 Heritage Council of NSW

5.3.1 General comments

Issue raised

The design information and heritage impact assessment submitted as part of the modification report does not provide sufficient details of the proposed works to enable a proper understanding of the impacts of the proposal on the State significant fabric and heritage significance of the Sydney Terminal and Central Railway Stations Group.

Further detailed design is required for various components of the proposal. The Sydney Metro Design Review Panel (DRP), in accordance with Condition E100 of the approved project, should be involved in all major changes to the heritage core of Central Station. The following matters should specifically be taken into their consideration:

- Detailed design to ensure that the distinct layers of historic development at Central Station remain legible and to retain the individual character of Sydney Terminal, Central Electric, the Sydney Yards, the Eastern Suburbs Railway, and the Devonshire Street Tunnel precinct elements. Upgrade works to Platforms 16-23 should respond to the unique character of Central Electric and should not automatically attempt to transform this visual character through an adherence to the bold new design intent of the Sydney Metro project
- The proposed removal of buildings and staircases on platforms 16-23, and of balustrades, metal folding screens and additional stairs on platforms 16-19 should be carefully designed based on the significance of the elements. Fabric, visual and character impacts should be minimised as much as possible
- A new combined services gantry is proposed south of Platforms 4/5. The project description notes that the design of the gantry would follow the Sydney Metro Design Guidelines, and services would be encased to minimise visual impacts. In addition, the gantry should be sized, sited and painted to reduce visual impacts as much as possible
- The Devonshire concourse would be modified for installation of a new services shaft, reconfigured gate line, demolition of a services rooms, and partial removal and reinstatement of brick boundary walls on Chalmers Street. The detailed design of these works should minimise impacts on significant fabric related to the Eastern Suburbs Railway and minimise visual impacts of new work. Heritage experts should oversee the removal and reinstatement of portions of the Chalmers Street wall.

Response

The modification report provides an appropriate level of detail for this stage of assessment. In relation to potential non-Aboriginal heritage impacts to Sydney Terminal and Central Railway Station Group, the assessment of the proposed modification provides a more refined and detailed assessment compared to the assessment of the approved project and compared to the typical level of detail of environmental assessments at a similar stage. This assessment considers the potential impacts on the items, elements and precincts that contribute to the heritage significance of the Sydney Terminal and Central Railway Station Group.

The detailed design at Central Station would be guided by the Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines (available at www.sydneymetro.info), and works would be managed through the implementation of the mitigation measures and conditions of approval. This includes:

- Mitigation measure NAH9 and Condition E21 in relation to a heritage interpretation plan for Central Station
- Mitigation measure NAH13 in relation to retention, conservation and / or reuse of heritage fabric at Central Station
- Mitigation measure NAH18 in relation to oversight of a heritage specialist for works at Central Station.

Additionally, this design would be subject to review by the Design Review Panel (required by Condition E100) through which consultation with the Heritage Council of NSW (or its delegate) would occur.

Issue raised

A future western entry and extension of the proposed eastern concourse to the west to provide access from Lee Street / Railway Square would require further approval and should be referred to the Heritage Council for comments in relation to potential physical and visual impacts on Sydney Terminal and Central Railway Stations Group and other State heritage register items located in the broader vicinity. Similarly, any future overdevelopment to the proposed eastern entry site would require further approval and should be referred to the Heritage Council of NSW for comments in relation to potential visual impacts on Central Station and other heritage items in the vicinity.

Response

Any such developments would be subject to a separate assessment process including necessary consultation with the Heritage Council of NSW.

Issue raised

Archaeological matters are addressed in Appendix F of the modification report which is a specialist 'Addendum Archaeological Research Design – Central Walk' that has assessed the likelihood of the proposed modification area to contain historical archaeological 'relics'. Archaeological resources previously considered for the proposed modification include remains related to the Devonshire Street Cemetery (Low potential, but if found of State significance), the First and Second Sydney Railway Stations, and Third Railway Station early phases (Moderate potential, local significance); and early services such as drainage etc. (Low potential, local significance). A new item assessed to be of local significance and with high potential to survive is the remains of former residences in Railway Place below the former MGM Building and Chalmers Street.

The existing archaeological mitigation measures identified for the approved project would continue to apply to the project as proposed to be modified. If the Addendum to the Historical Archaeological Assessment and Research Design is implemented, then the project's impacts on archaeology would remain substantially the same and no further conditions of approval would be needed to manage the affected archaeology.

Response

The Heritage Council of NSW's comments are noted.

5.3.2 Recommended mitigation measures

Issue raised

The existing Non-Aboriginal heritage, landscape character and visual amenity, and noise and vibration mitigation measures identified for the approved project would continue to apply to the modified project. It is noted that the approved mitigation measures have been modified to incorporate archival recording and reporting (NAH1) and salvage of heritage fabric (NAH5) for the locally-listed Former MGM building (or 'Bounce Hostel') proposed to be demolished in the vicinity of Central Station. However, no additional mitigation measures for Central Station have been proposed in Chapter 21 of the Modification Report. Considering the additional impacts of the modification at Central Station and the cumulative impacts of the overall project, the following recommendations are made on the proposed mitigation measures:

- NAH5 Pending detailed design of the works proposed to the suburban platforms 16-23, the Eastern Suburbs Railway concourse and Devonshire Street Tunnel, any significant fabric proposed to be impacted or removed such as iron work, wall tiles and period furniture, should be identified, salvaged and stored for re-use at Central Station or in an appropriate heritage context
- NAH9 Heritage interpretation at Central Station should convey the evolution of the site and the cumulative impacts on the station as a result of the Sydney Metro project. The Plan should focus on areas where heritage has been most impacted, and consider the new east and metro concourses where customer traffic will be high. The Plan should consider existing interpretation and provide a holistic approach. Where existing interpretation media will be impacted, these impacts should be mitigated by the new Plan
- NAH11 All significant elements of Central Station which will not be impacted by the project should be adequately protected during the construction phase to prevent unforeseen physical impacts. Appropriate management measures should be provided in a detailed Temporary Protecting Plan for Central Station and the Railway Institute Building (SHR No. 01257) located in the vicinity.

Response

The outcome of the recommended mitigation measures by the Heritage Council of NSW are achieved by existing mitigation measures, including:

- Mitigation measure NAH13 relates to retention, conservation and / or re-use of significant fabric at Central Station
- Mitigation measure NAH9 relating to heritage interpretation at Central Station would continue to apply to the project as proposed to be modified. Additionally, Condition E21 requires a heritage interpretation plan to be prepared
- Mitigation measure NAH11 relating to avoidance of impacts would continue to apply to the project as proposed to be modified.

Issue raised

In regard to landscape character and visual amenity, the proposed mitigation measures do not respond to the impacts of the modification. Therefore, the following additional mitigation measures are recommended:

- The gantry to carry the modified combined services route to the south of the intercity platforms should be avoided or designed to minimise visual impacts as much as possible
- City of Sydney Council should be consulted during detailed design stage and invited to comment where urban character and local heritage items would be affected by the modified project and the demolition of the former MGM Building ('Bounce Hostel').

Response

The proposed landscape character and visual amenity impacts would be managed through the implementation of the existing landscape character and visual amenity mitigation measures and conditions of approval. Potential indirect impacts to heritage items such as changes to the visual setting would be managed through the implementation of the relevant non-Aboriginal mitigation measures and conditions of approval, including mitigation measures NAH7 related to sympathetic design to minimise impacts to the setting of heritage items.

The proposed permanent section of the services gantry would be designed to meet the intent of the Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines. Specifically, the services would be encased on the gantry to minimise visual impact. Additionally, the design would be subject to review by the Design Review Panel (required by Condition E100) through which consultation with the Heritage Council of NSW (or its delegate) would occur.

Consultation with City of Sydney has occurred and will continue through the detailed design and construction phases. A submission has been received from the City of Sydney and responses to issues raised, including in relation to the former MGM Building, are provided in Section 5.4 of this report.

Issue raised

The mitigation measures provided in Chapter 21 of the modification report as well as the mitigation measures stated above must be taken into consideration as a minimum to minimise the project's impacts on non-Aboriginal heritage, landscape character and visual amenity.

However, it must be re-iterated that the cumulative impacts of the approved project and the proposed modification will result in major physical and visual impacts on the iconic Sydney Terminal and Central Railway Stations Group. The works have the potential to impact the legibility of historic layers and affect the place's State significance values. It is therefore crucial that these impacts are minimised through ongoing consultation with the Design Review Panel and independent heritage experts throughout the detailed design stage. In addition, the detailed designs should be made available to the Heritage Council of NSW on a regular basis for comment.

Response

The mitigation measures in Chapter 21 of the modification report and the existing conditions of approval would be implemented for the project as proposed to be modified. This includes mitigation measure NAH18 in relation to heritage specialists overseeing works at Central Station, and Condition E100 requiring the establishment of a Design Review Panel (including Heritage Council of NSW representation).

The non-Aboriginal heritage assessment undertaken as part of the modification report considered the combined impact of the approved project and the proposed modification on the overall heritage significance of Sydney Terminal and Central Railway Station Group. This assessment found that the project as proposed to be modified:

- Would allow Central Station to remain a viable and highly functioning transport hub
- Would not lessen Central Station's State significant historic heritage values
- Would not adversely impact on the State heritage significance of the Sydney Terminal and Central Railway Station Group.

5.4 City of Sydney

5.4.1 Support for Central Walk

Issue raised

The City of Sydney strongly supports the implementation of Central Walk as it will enhance the safety, comfort and convenience of people accessing the existing heavy rail, new light rail and future metro lines from Surry Hills.

Given the significant numbers of people walking and cycling around the site, it will be important to put in place a construction management access plan that deals with the people activity in this area.

Response

The support for the Central Walk modification is noted.

Pedestrian and cyclists around the construction works at Central Station would be managed through the implementation of mitigation measures identified in Chapter 21 of the modification report (in particular a new mitigation measure, T23, was included as part of the modification report to manage customer movements during construction) and the Construction Traffic Management Framework (required by Condition E81) and site-specific Construction Traffic Management Plan (required by Condition E82).

5.4.2 The need to construct the western section of Central Walk

Issue raised

Implementing only the eastern section of Central Walk is considered insufficient. The project should include constructing the western section now as a greater number of transport customers (particularly associated with metro) will be seeking to access the western side of the station. The western side also has a higher special event demand and implementing the western section would reduce these peaks at Town Hall Station. In addition the projections for growth in passenger demand to the west are higher than to the east.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

5.4.3 Access to Central Walk from the western side of Chalmers Street

Issue raised

The City of Sydney notes that the current design provides for access to the eastern section of Central Walk from the eastern side of Chalmers Street only. There should also be provision for access and vertical circulation on the western side of Chalmers Street by lift and escalators in order to serve the large number of customers moving between the inbound light rail platform and Central Station and reduce the conflicts between people crossing Chalmers Street and light rail vehicles. Reduced conflict would improve safety for all and improve the reliability of light rail operations. This will be particularly important during peak periods and special events.

Response

Section 3.4 of the modification report provides consideration of a new entry on the western side of Chalmers Street. This entry location was not progressed as there would be insufficient space to accommodate a new entry due to the construction and operation of light rail. Alternative existing station entries are available to customers on this side of Chalmers Street without the need to cross the light rail tracks.

5.4.4 Compatibility with future plans

Issue raised

The design of the initial stage of Central Walk must allow for its extension to the west and to a future expanded Railway Square. Levels and alignments should therefore be determined with the design of Railway Square, and potential future metro stations (such as under Lee Street or the Western Concourse of Central Station) in mind.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

5.4.5 Design and finishes of Central Walk structures

Issue raised

Central Walk will be a major civic landmark as a new major address / access point to the Central Station transport hub. It is in a location with a clear and predominant masonry street wall and should be designed as a high quality infill to this context. The functional need for large access portals and windows for daylighting the subgrade escalators and stairs will need to be balanced with passive solar control measures to deal with heat gain and glare arising from the north west aspect of the primary façade.

The rear elevation of the building to Randle Lane should also be of high quality to complement proposed developments currently under assessment on the facing east side of Randle Lane, and should be designed to improve the activation and supervision of Randle Lane.

Response

The design of the eastern entry would be undertaken in accordance with the Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines. This includes specific requirements for eastern entry. A copy of the design guidelines was provided as Appendix B of the modification report and can be found at www.sydneymetro.info.

The design would also be subject to the Station Design and Precinct Plan (required by Condition E101). City of Sydney would be consulted as part of the development of this plan.

5.4.6 Address access and safety issues associated with the Dental Hospital

Issue raised

The project should also seek to reconfigure vehicular access to the Dental Hospital to be off Randle Lane and remove the access from Chalmers Street. This would resolve a number of outstanding safety and access issues plaguing the CBD and South East Light Rail project.

Response

Reconfigured vehicular access to the Sydney Dental Hospital as a result of light rail are a matter for the CBD and South East Light Rail project and the Sydney Dental Hospital.

The continued vehicle access arrangements to the Dental Hospital provided by light rail would not be impacted by the proposed modification.

5.4.7 Strategic opportunities

Issue raised

The extension of the axis of Central Walk through 20-28 Chalmers Street and beyond to the east, transecting the existing building at 7 Randle Street could provide a potential pedestrian entrance at the intersection of Randle Street, Elizabeth Street and Cooper Street. This would have the potential benefit of spreading pedestrian movements from the heavily congested east-west pedestrian axes of Devonshire and Foveaux streets to an additional east-west pedestrian route along Cooper Street.

7-13 Randle Street is currently the subject of a planning proposal for additional height and floor space for a hotel development. The City of Sydney is of the view that the strategic transport planning significance of the 7 Randle Street site should be explored by Transport for NSW.

Response

Broader pedestrian improvements (beyond the proposed eastern entry) to the precinct to the east of Central Station is not within the scope of this project and is being investigated separately as part of the wider Central Station precinct renewal. The design of the eastern entry allows for a future connection through to Randle Lane and / or Elizabeth Street.

Transport for NSW is liaising with City of Sydney in regards to the current planning proposal at 7-13 Randle Street and will continue to do so throughout any future planning phases of this proposal.

5.4.8 Heritage

Issue raised

Given the crucial civic role of the new exit building, the City of Sydney believes that demolition of the Bounce Hotel (MGM) building is potentially acceptable provided that it is recorded in archives, and that key building elements are salvaged for onsite interpretation and / or reuse for other conservation projects.

The interesting history of the building, and its intact and salvageable architectural features present excellent opportunities to interpret the history of the site in the public space of the new access building. In particular, the spectacular terrazzo entry vestibule floor and architectural ironwork on the façade could be integrated into a permanent interpretative display. This should be required by consent condition.

The City of Sydney provides some recommended conditions related to:

- Archival Photographic recording
- Archival Measured Drawings
- Salvage.

Response

The options assessment provided in Section 3.4 of the modification report provides a justification for the location of the eastern entry.

Transport for NSW agree with the intent of the conditions recommended by the City of Sydney. The modification report recommends that existing Conditions E13 (relating to archival recording) and E16 (relating to heritage salvage) are amended to include the former MGM building.

5.4.9 Noise and vibration

Issue raised

The relevant vibration criteria for heritage items appears to reference a criteria of 7.5 mm/s which the City of Sydney understands is consistent with the approval. However, the Environmental Impact Statement for Sydney Metro City & Southwest (Chatswood to Sydenham) has also referenced the DIN 4150 as relevant for intrinsically vibration sensitive structures. The modification does not give regard to this.

Response

The methodology for the assessment of noise and vibration for the proposed modification is consistent with the methodology used for the assessment of the approved project. Both assessments adopt vibration screening criteria of 25 mm/s for reinforced or framed structures, and 7.5 mm/s for unreinforced or light framed structures and heritage items.

DIN 4150 is referenced as a consideration in certain circumstances in the Construction Noise and Vibration Strategy (which is applicable to the proposed modification).

Issue raised

As a general comment, it was hard to ascertain the extent of the proposed works encapsulated by the modification. The main impact of the new works will be the new mining and excavation for the eastern concourse and its egress which will be underneath Chalmers Street between the adjacent private uses and Central Station, and emerge next to Chalmers Street between the Sydney Dental Hospital and the Central Hotel.

Response

The works as part of the proposed modification are described in Chapters 6 and 7 of the modification report. These chapters should be read in conjunction with the assessment chapters.

Issue raised

The report emphasises that at most locations that surround Central Station there will be no more than a one per cent increase in noise associated with the modification works. However the City of Sydney points out that the works associated with the modification are localised and the impacts at that locality can be expected to be produced.

The construction activities for the proposed modification would result in some additional exceedances for some receivers. The receivers which would experience the largest potential change in impacts are those located in the immediate vicinity of the proposed eastern entry. These properties are:

- Residential at 30-34 Chalmers Street
- Sydney Dental Hospital at 2 Chalmers Street
- Residential at 17 Randle Street
- Residential at 38 Chalmers Street
- Residential at 86-92 Chalmers Street
- Commercial at 11 Randle Street
- Commercial at 405 Elizabeth Street.

This is likely to significantly increase with the modification given the expanded footprint of the station works. Some criterion exceedances over 20 dB will occur, but the acoustic assessment provides no further guidance on how far these exceedances will go. In the City of Sydney's experience demolition noise impact can be quite significant, as associated with the activities proposed. This is liable to cause significant duress, and may not be mitigated without substitution of activities like impact hammering to demolish the building, or strict and meaningful respite.

The receivers noted above are likely to be impacted by noise levels in the order of up to and over 20 dB above the set noise criteria. This will result in day, evening, and night noise levels of 86 to 88 dB, 78 to 81 dB and 70 to 77 dB respectively at residential receivers. It is understood that the Sydney Dental Hospital has an internal noise criteria of 45 dB set, and is indicated as having noise criteria exceedance in the order of or over 20 dB, effectively meaning internal noise levels of 65+ dB. Similarly, commercial noise receivers subject to 20 dB criteria exceedances will be subject to noise levels of 70 dB where they have an internal noise level of 50 dB.

The City of Sydney is of the view that this degree of noise impact will potentially have considerable effect on the occupants of the building, particularly the residents and the dental hospital, and that the targeted consultation with these receivers is appropriate in addition to planning to implement alternative treatments, noise mitigations and processes instead of waiting for associated complaints to occur in the future

Response

The modification report does not suggest that at most locations there will be no more than a one per cent increase in noise associated the proposed modification. The modification report states that, for most receivers, the relative increase compared to the approved project would be less than 1 dB.

Notwithstanding, the report also acknowledges that some receivers would experience greater impacts due to the proposed modification. In some cases, these impacts (from the approved project and proposed modification combined) would be in excess of 20 dB above the relevant noise management level.

These impacts would be managed through implementation of the project-specific mitigation measures, including those identified in the Construction Noise and Vibration Strategy, and the conditions of approval, in particular Condition E33 which requires Construction Noise and Vibration Impact Statements to be prepared for each construction site and the development of specific mitigation measures identified through consultation with affected sensitive receivers.

Issue raised

The analysis of potential daytime ground-borne noise impacts of the proposed modification indicates three residences located around the eastern entry would have exceedances of the Noise Management Level of greater than 20 dB. Around four commercial receivers located around the eastern entry would have exceedances greater than 20 dB. These include:

- The Sydney Dental Hospital would have an exceedance of the criteria by more than 20 dB
- Two additional residences located around the eastern entry would have exceedances of 10 dB to 20 dB
- Two additional residences located around the eastern entry would have exceedances of up to 10 dB.

In residences and the dental hospital, this will effectively mean that noise levels in the order of 65 dB will occur, with commercial receivers experiencing up to 70 dB of noise. This is not necessarily in the absence of airborne noise impact. Planning to implement alternative mitigations and treatments and bringing forward detailed assessments of site impact are relevant here.

High impact activities will be caused by mining machinery and impact hammers. It is considered worthwhile planning to avoid these impacts where possible, particularly with consideration of the use of less impact hammers such as high inertia, reduced impact time hammers for use in breaking up rock rather than smaller low inertia hammers. The use of Cardox and Nonex systems as substitutes where the impact is known with a high confidence interval to be high.

Whilst the report points out that these impact levels (airborne, ground-borne and vibration) will not occur all the time, it concedes that on these working days the impacts could occur up to 50 per cent of the time. The City of Sydney considers that as the high impact mining and excavation works move further from the sensitive location, levels will decrease and this is relevant to the issue above.

It is anticipated that these levels will be detrimental to activities in the Sydney Dental Hospital that require considered precision of dexterity, such as surgery. Further planning and consultation around the impact on this receiver is considered important.

Response

The potential ground-borne noise impacts associated with the proposed modification are described and assessed in Section 11.5.2 of the modification report. For some receivers, potential ground-borne noise impacts are predicted to be greater than 20 dB above the noise management levels.

These impacts would be managed through implementation of the project-specific mitigation measures, including those identified in the Construction Noise and Vibration Strategy, and the conditions of approval. This includes:

- Consideration of alternative excavation techniques in accordance with Condition E35
- As a requirement of the Construction Noise and Vibration Strategy, further consultation with receivers which may have vibration sensitive equipment such as the Sydney Dental Hospital.

Issue raised

The modification report proposes a vibration particle velocity criteria of 7.5 mm/s based on the British Standard BS 7385 relevant to both unreinforced or light framed structures and heritage items for this modification. The City of Sydney note the Environment Impact Statement prepared on basis of the main approval, recommends that heritage items which are found to be structurally unsound should be managed to the stricter DIN 4150 criteria of 2.5 mm/s.

The City of Sydney is concerned that buildings which may be impacted by the proposed modification which are and are not heritage listed, are susceptible to vibration in at least a way that could cause cosmetic damage. The typically accepted basis of control of vibration impact in these circumstances provides that structural damage will not occur whereby cosmetic damage would not occur.

Whether buildings are heritage or not but of a construction methodology that is known to be sensitive to cosmetic damage from vibration (eg period construction stone cladding, blockwork, architraves and ornamental plaster), the City of Sydney considers the appropriate criteria is 2.5 mm/s within the German DIN 4150 technical standard unless the finishes of the building are certified by an appropriately person to be resilient to a higher level of vibration impact.

Buildings which contain original period glazing and ornate plaster could stand to be adversely affected from a cosmetic damage standpoint at levels of around 7.5 mm/s, pieces of blocks render and plaster can become dislodged, falling off and affecting occupants. These levels are also likely to cause severe annoyance.

The modification report states that during excavation of the station, vibration levels associated with the modification are anticipated to exceed criteria at two station platforms and three commercial buildings located to the east and around the northern corner of Prince Alfred Park. It also notes that vibration levels associated with the modification works would exceed a cosmetic damage screening criteria of (taken to be 7.5 mm/s in the report) at the heritage listed premises of the RC Henderson Factory, Railway Institute Building and Sydney Dental Hospital.

The City of Sydney notes that a detailed assessment is indicated as necessary, and urge that this assessment considers the finer grain detail of the affected building and any inherent vibration sensitivity it may have. This should focus on vetting any potential injury to occupants from cosmetic damage to the building and preventing annoyance. The City of Sydney cautions against an approach which permits a degree of damage to any heritage structures to occur with a focus to 'making them good after' in that it is not always possible to repair the damage to an original standard and what is of heritage or otherwise cosmetic value is then lost.

The modification report indicates that a criteria of 25 mm/s may be more appropriate for some of the heritage receivers that are in the locality of the proposed modification works. The City of Sydney cautions against this and recommend that the City of Sydney reviews the site specific assessment reports.

The City of Sydney further note that although not all the adjacent buildings are heritage listed, many are of a stonework cladding or blockwork structure and may include construction elements that are vibration sensitive and nonetheless may need consideration against the DIN 4150 standard. The City of Sydney are cautioning against identifying a structure as vibration sensitive only on the basis of whether that structure is heritage listed.

Response

The methodology for the assessment of noise and vibration for the proposed modification is consistent with the methodology used for the assessment of the approved project. Both assessments adopt cosmetic damage vibration screening criteria of 25 mm/s for reinforced or framed structures, and 7.5 mm/s for unreinforced or light framed structures and heritage items.

DIN 4150 is referenced as a consideration in certain circumstances in the Construction Noise and Vibration Strategy (which is applicable to the proposed modification). This includes circumstances when a heritage building is found to be structurally unsound.

As per the requirements of mitigation measure NV3, where vibration levels are predicted to exceed the screening criteria, a more detailed assessment would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure.

5.4.10 Mitigation and management

Issue raised

Conditions A37, A38, A39 and A40 relate to an Environmental Audit Program to ensure all associated mitigation measures or actions to improve the environmental performance of the construction and operation of the project. These must be incorporated in the proposed modification.

These mitigation measures should form part of any approval of the modification. It is also recommended that additional and extensive community consultation of this modification be undertaken, covering the construction phase of the development.

Response

The existing conditions of approval and mitigation measures would be applied to the proposed modification. This includes community consultation requirements as per Conditions B1 to B15, and as outlined in the Construction Environmental Management Framework (Appendix B to the Sydney Metro City & Southwest Chatswood to Sydenham Submissions and Preferred Infrastructure Report).

COMMUNITY SUBMISSIONS

CHAPTER SIX



6 Community submissions

6.1 Andrew Scott

Issue raised

Consider the need for an undercover secure bike storage area at Central Station, similar to ones currently being implemented across other stations in Sydney.

The small amount of outdoor bike racks are insufficient to meet the current demand, and are subject to bike theft and weather. Secure, high capacity bike storage at major trains stations mean that commuting cyclists that use the train can leave the bike at a station rather than bring it on a train with them.

Bike storage is cheap and easy to implement, and can provide for many more people than the equivalent number of car spaces.

Response

Transport for NSW is currently investigating opportunities to provide additional cycle parking at Central Station. As identified in Section 6.4 of the modification report, cycle parking would be provided within 50 metres of the station entries where feasible.

6.2 Julian Foster

Issue raised

The overall concept of Central Walk is excellent. However, it should be extended to go all the way through the station to connect to the Broadway side as well. It is obvious that is needed and adding it in the future will only be more expensive. Platforms 1-12 have a fair bit of spare capacity at the moment so, even if the extended tunnel couldn't be mined and had to be done as cut-and-cover, taking some of those platforms out of service periodically as the tunnel progressed wouldn't affect operations.

Users from the Broadway side accessing the suburban platforms currently have to walk all the way through Devonshire Street Tunnel (which is often very crowded and only going to get worse) or the Grand Concourse. If in future they are accessing the Sydney Metro platforms they will either still have to use the Devonshire Street Tunnel then come half way back through Central Walk - or walk above ground through the Grand concourse and then down to the Sydney Platforms.

Another possibility might be to at least add a link from the Devonshire Street Tunnel down to the southern end of the Sydney Metro platforms.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

An option of connecting the future metro concourse to the Devonshire Street Tunnel was considered (refer to Section 3.2.3 of the modification report). Although this would provide improved access for customers to and from the west, it would not meet the long term demands of the station.

A future extension of the concourse to the west and a new western entry would better meet the long term demands of the station by providing a wider concourse, a new western entry, a new east-west connection, and interchange opportunities to all above ground platforms.

6.3 Geoff Thiel

Issue raised

Suggest that Central Walk should include a tunnel under Elizabeth Street, with an entry / exit point at Centennial Plaza. During peak hours, there are too many pedestrians queuing in front of Woolworths, with pedestrians sometimes being forced onto the street. A station access point at Centennial Plaza would mean people coming and going from north east Surry Hills could access the tunnel.

Response

Broader pedestrian improvements (beyond the proposed eastern entry) to the precinct to the east of Central Station is not within the scope of this project and is being investigated separately as part of the wider Central Station precinct renewal. The design of the eastern entry allows for a future connection through to Randle Lane and / or Elizabeth Street.

6.4 Roisin Kelly

Issue raised

The eastern entrance proposed at 20-28 Chalmers Street should open onto Randle Lane at the rear of the site as well as Chalmers Street to provide easy access to the area south-east of Central Station.

Response

Randle Lane is currently used for back of house access to properties fronting Chalmers Street, Randle Street and Elizabeth Street. The lane has narrow footpaths and is not currently conducive to supporting pedestrian flows in and out of a station entry.

Notwithstanding, the design of the eastern entry safeguards a future connection of the entry to Randle Lane should this become viable based on future developments or the wider Central Station precinct planning.

6.5 10,000 Friends of Greater Sydney

Issue raised

10,000 Friends of Greater Sydney generally support the proposal. However, there is a need for the new pedestrian walkway to connect to destinations on the western side of Central Station, especially to the major tertiary institutions and the existing bus interchange.

It will also be important to provide clear signage for users to capture the accessibility benefits of the proposal.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

A future extension of the concourse to the west and a new western entry would better meet the long term demands of the station by providing a wider concourse, a new western entry, a new east-west connection, and interchange opportunities to all above ground platforms.

Effective wayfinding and signage is a critical component of Sydney Metro. Requirements for wayfinding are identified in the Sydney Metro City & Southwest Design Guidelines. The latest version of this document was provided as Appendix B of the modification report and can be found at www.sydneymetro.info.

6.6 Anonymous 1

Issue raised

It is disappointing that this plan will do nothing to alleviate the existing peak hour crowding in the Devonshire Street Tunnel. Indeed, it will probably make crowding worse. This walkway is usually at, and often over, safe capacity during peak hours. There are often examples of ‘pedestrian rage’ and many encounters which could easily head that way. The tunnel is a prime target for people who want to cause trouble.

Response

Operational pedestrian modelling of customer movements was carried out as part of the modification report (refer to Section 10.3.1 of the modification report). This modelling shows that the level of service along the majority of the Devonshire Street Tunnel would not change as a result of the proposed modification. There may be some locations, particularly at the western extent of Devonshire Street Tunnel, which may experience some deterioration in level of service, however this would remain at generally acceptable levels.

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms. A future west concourse and western entry would alleviate pedestrian congestion and crowding within Devonshire Street Tunnel.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

6.7 Anonymous 2

Issue raised

The proposed modification of the approved Sydney Metro project to include a new eastern concourse and entry on Chalmers Street is supported.

As depicted in Figure 2-2 of the modification report, the existing concourse for the Eastern Suburbs railway, as constructed in the 1970s, provides the only north to south accessible flow between Central Station's other concourses, and from the Devonshire Street Tunnel.

This degree of connectivity is not being replicated with the new north to south Sydney Metro concourse indicated in the approved project – namely, there is no reference to a southern entry and exit from the Sydney Metro concourse.

It is appreciated that some 'back of house' infrastructure may be required in association with the concourse level of Sydney Metro. However, it remains a substantial missed opportunity not to contemplate a ticketed entry into the Sydney Metro concourse from the Devonshire Street Tunnel. This would reduce the interchange distance for pedestrians from the Railway Square bus interchange by around 200-250 metres.

Response

An option of connecting the future metro concourse to the Devonshire Street Tunnel was considered (refer to Section 3.2.3 of the modification report). Although this would provide improved access for customers to and from the west, it would not meet the long term demands of the station.

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

A future extension of the concourse to the west and a new western entry would better meet the long term demands of the station by providing a wider concourse, a new western entry, a new east-west connection, and interchange opportunities to all above ground platforms. Any future west concourse and western entry would be fully accessible.

6.8 Ian Hill

Issue raised

This project places the metro platforms in the wrong location. The metro platforms should be located east of the current Central Station platforms 16 to 24. This would:

- Preserve the heritage status of Sydney Terminal consistent with the objective to ‘accentuate Central Station as a grand heritage asset’
- Allow for future expansion of terminating trains at Central Station such as for high speed rail links
- Reduce the congestion at Central Station caused by placing the Sydney Metro platforms inconveniently under platforms 12, 13, 14 and 15, and introducing the associated vertical transport (lifts and escalators).

Public transport use is increasing by 68 per cent on weekends as well as increases yearly for commuter work requirements and general travel. The need for more terminating platforms at Central Station will arise quite quickly in the coming decade requiring a more terminals and maximum space.

By placing the Sydney Metro platforms to the east of Central Station platforms 16 to 24 would help achieve the objectives stated on Page 23 of the modification report as follows:

1. Provide an intuitive and easy to use station environment for customers – the new platforms would be intuitive and easy to access from the east
2. Accentuate Central Station as a grand heritage asset – the heritage nature of the building would be preserved and there would be no damage during any construction phase for the new railway
3. Re-establish Central as an iconic destination within an expanded CBD footprint – Central Station is already one of the leading iconic buildings in Sydney and has been since construction and its opening on 4 August 1906. Placing the new railway to the east would expand its footprint.
4. Develop a highly functional multi-modal transport interchange that accommodates long-term demand – this proposal would make the interchange faster without having to build a further tunnel system under Central Station. The more tunnels the greater the threat of terrorism and loss of safety with underground evacuation and rescue
5. Improve accessibility, permeability and connectivity within and across the station precinct – by placing the new platforms east of platforms 16 to 24 it would be easier to exit the station and congestion would be reduced. This could be achieved by widening the existing northern pedestrian tunnel system.

The Executive Summary also states that the proposed modification would primarily support the objectives regarding the efficient operation of the station, but despite this, a number of adverse environmental impacts would remain including direct and indirect impacts to the State heritage listed Sydney Terminal and Central Railway Station group, and demolition of the locally listed Bounce Hostel (former MGM) building. Building the new platforms east of platforms 16 to 24 would remove this impact.

This suggestion would be quite cost effective saving excessive tunnelling under platforms 16 to 24. It would also save the cost of moving the platforms 1 to further out in to Sydney Yard.

Any further intensification of suburban traffic in or around the terminating platforms of Central Station platforms 1 to 15 is opposed.

Response

The location of the Sydney Metro platforms at Central Station forms part of the approved project and is not within the scope of this proposed modification.

Options for and the justification of the location of the Sydney Metro platforms at Central Station was provided in Section 4.8.2 of the Sydney Metro City & Southwest Chatswood to Sydenham Environmental Impact Statement. This included consideration of the option of constructing the metro platforms to the east of the existing station. A summary is provided below.

The introduction of underground metro platforms at Central Station would have material impacts to the station irrespective of the option chosen. Decision-making on the placement of the underground metro platforms seeks to balance the substantial benefits with the recognised constraints and challenges associated with its introduction.

Options to locate the metro platforms on the eastern side of Central Station did not maximise the efficiency of interchange for customers between metro and suburban and intercity rail and other transport modes. Other concerns related to potential property impacts, heritage impacts and the required depth of the new platforms, which would affect the quality of the transport experience for customers.

The proposed location for the new underground platforms below platforms 13 to 15 at Central Station has been selected for the following key reasons:

- It provides the most efficient interchange for customers between suburban and intercity platforms (and associated travel time benefits)
- The interchange and travel time benefits result in customer preference for interchange at Central Station rather than at Wynyard or Town Hall stations, providing congestion relief at these stations
- It best encourages the use of Sydney Metro as a service, resulting in a reduction in the use of crowded Central Station suburban platforms such as platforms 16 and 17
- It allows for an efficient construction method (shallow cut-and-cover arrangement) that minimises construction duration and disruption to customers using Central Station.

6.9 YHA Australia

Issue raised

YHA has two properties located directly adjacent to Central Station, being the Sydney Central YHA located at 11 Rawson Place, and the Railway Square YHA located at 8-10 Lee Street. Both properties are popular year round hosting local, interstate and international travellers in budget accommodation.

YHA requests that no demolition works, underground excavation or above ground new construction or related works that impact on YHA guests be permitted after 9pm and before 9am seven days per week.

Response

The proposed construction hours for each element of the proposed modification is provided in Section 7.8.9 of the modification report. The majority of construction work would be carried out during the standard daytime construction hours (7am to 6pm Monday to Friday, 8am to 1 pm Saturday and no work on Sundays or public holidays).

However, substantial construction activities would need to be carried out outside these hours to maintain safety of the public, construction and rail workers, to protect rail assets and to minimise disruptions to the transport network. In particular, any activities requiring rail possessions or that require possession of areas within Central Station would be carried out up to 24 hours per day and seven days per week.

The potential noise impacts of these works are assessed in Chapter 11 of the modification report. In relation to the two YHA properties, the following impacts are predicted during activities outside standard daytime construction hours:

- At the Sydney Central YHA, exceedances of up to 10 dB of the noise management level during enabling works, excavation works and construction works
- At the Railway Square YHA, exceedances of between 10 and 20 dB of the noise management level during enabling works, excavation works and construction works.

These potential impacts would be further refined as part of the Construction Noise and Vibration Impact Statements that are required to be prepared in accordance with Condition E33, as the details of the construction methods are developed. Any potential impacts would be managed through implementation of site-specific mitigation measures identified through consultation with affected sensitive receivers, the Construction Noise and Vibration Strategy and the conditions of approval.

6.10 Eagle Partners

Issue raised

Transport for NSW's Design Guidelines for Sydney Metro require that station designs 'optimise timeliness' and 'reflect pedestrian desire lines'.

Earlier public documents released by Sydney Metro confirmed the need to reduce door-to-door travel times, and not just the on-train travel times. Chapter 6 of the Central Walk Modification Report continues to refer to improving accessibility and connectivity. However, it only promises that 'provision' has been made for extending Central Walk to the west, or to the Pitt Street end of the station at some indeterminate future date.

The report records that, of customers leaving the station in the morning peak, 36 per cent exit to the west. This figure is higher than that for any of the other station exits.

The report's analysis of expected pedestrian movements in the underground passages is noted (Chapter 10). However, that analysis focuses on coping with anticipated congestion. It does not consider minimising passenger walk-up times, or pedestrian desire lines.

If this proposed modification is approved as is, pedestrians from the west of the station must continue to access the station via the northern concourse or the eastern concourse. Both routes are circuitous and therefore time-consuming.

There are at least four major tertiary institutions immediately to the west of Central Station which generate large numbers of public transport trips. There is also a large bus interchange at Railway Square. These significant generators of train and Sydney Metro passengers deserve infrastructure which will minimise walk-up times.

Pedestrian access between the southern end of the Sydney Metro concourse and Railway Square must therefore be improved. One option would be a 150 metre long pedestrian tunnel between the southern end of the Sydney Metro concourse and Henry Deane Plaza. Given the density of current pedestrian flows to and from the west and south-west of the station, and the likelihood that those numbers will increase markedly over time, such a pedestrian tunnel can be justified on cost-benefit grounds and should be in place for the commencement of Sydney Metro services.

It should be a condition of any approval of this application that direct pedestrian access be provided between the Sydney Metro concourse and Henry Deane Plaza.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

A future extension of the concourse to the west and a new western entry would better meet the long term demands of the station by providing a wider concourse, a new western entry, a new east-west connection, and interchange opportunities to all above ground platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

Issue raised

Sydney Metro's 'Central Walk' brochure dated June 2017 states that 'State-of-the-art technology will keep customers connected at all stages of their journey, from smart phone travel apps, to real-time journey information at metro stations and on-board trains'. Incorporation of modern technology is understood and commended, but it should not be at the expense of making life more difficult for those passengers not immediately equipped to take advantage of it.

There is a need for a satisfactory level of 'low-tech', or paper-based Sydney Metro information, required by those in the community who may not have access to hand-held electronic devices.

The Legislative Assembly Committee on Community Services, in its December 2016 Report, said, in Recommendation No. 11, 'That Transport for NSW publish travel information in paper format. It should be in locations where it is easily available to people who do not have access to online information, such as community centres and doctors' surgeries in rural and regional areas.'

The NSW Government, in its response dated April 2017, supported the Committee's recommendations. It is expected that Transport for NSW and Sydney Metro will comply with government policy. Such compliance should be a condition of any approval of this application.

Response

The proposed use of modern technology to provide customer information as part of Sydney Metro will not be at the expense of other forms of customer information. Other forms of information, similar to those currently available for Sydney Trains services would also be available for Sydney Metro, noting that Sydney Metro would provide a turn-up-and-go service without the need for timetables.

Effective wayfinding and signage is a critical component of Sydney Metro. Requirements for wayfinding are identified in the Sydney Metro City & Southwest Design Guidelines. The latest version of this document was provided as Appendix B of the modification report and can be found at www.sydneymetro.info.

Issue raised

At an appropriate time, the 'Sydney Metro' branding for this project should cease. So far as the travelling public is concerned, this new railway is just that – a new railway. Retaining the Sydney Metro brand is unnecessary. It will be confusing for the thousands of travellers who will use Sydney's railway network over the coming years and will complicate the provision of wayfinding and service information. The potential for this confusion is already illustrated by the unnecessarily complex destination signage depicted in the artist's impressions of Central Walk in the public promotional material. Also, the artist's impressions in the Central Walk brochure dated June 2017 clearly show Sydney Metro Northwest as part of the Sydney Trains network, which it is not.

Sydney Metro's ticketing and fares are to be integrated with the other modes of public transport in Sydney; specifically, Sydney Trains. The new railway's service information, wayfinding, stations and platforms should be similarly integrated. In particular, the Sydney Metro platforms at Central Station should be numbered sequentially to reflect their physical location, and to conform with the platform numbers already in existence at Central, even if some existing platforms would need to be re-numbered. It would help in wayfinding.

Response

The Sydney Metro network is being progressed as a differentiated service to the Sydney Trains network. The reasons for and justification of this decision are summarised in Chapter 4 of the Sydney Metro City & Southwest Chatswood to Sydenham Environmental Impact Statement and in *Sydney's Rail Future*. The Sydney Metro branding is an important component of this service differentiation.

Notwithstanding, the Sydney Metro network will include interchange capability with the existing Sydney Trains network at strategic locations. This includes Martin Place and Central stations. Interchange would also be available at Epping, Chatswood and Sydenham stations as part of other stages of Sydney Metro.

Effective wayfinding and signage is a critical component of Sydney Metro. Requirements for wayfinding are identified in the Sydney Metro City & Southwest Design Guidelines. The latest version of this document was provided as Appendix B of the modification report and can be found at www.sydneymetro.info. This will provide clear information to customers.

Issue raised

In November 2016 the government announced plans for Sydney Metro West, to be operational some time after 2025. There has been no public announcement as to whether, or where, the two metro lines will intersect. On the assumption that they will intersect, it is important to minimise overall travel times for passengers by minimising transfer times between the two lines. One obvious point of intersection to be considered would be Central Station.

Whilst it is too late for Sydney Metro West to be considered under this Application to modify the approval, the Department of Planning and Environment (or other body) should promptly initiate measures to arrange for the Sydney Metro platforms at Central Station, as currently planned, to be reconfigured into a 'stacked' arrangement, one above the other, to leave open the option of having the two Sydney Metro West platforms arranged alongside, for 'across-the-platform, same-direction' interchange between the two Sydney Metro lines.

It should be a condition of any approval for this application that a cost / benefit analysis of the reconfigured Sydney Metro platforms at Central Station be investigated.

Response

Early planning work has begun on Sydney Metro West with key precincts to be serviced identified as Parramatta, Sydney Olympic Park, the Bays Precinct and Sydney CBD. The location of a station in the Sydney CBD is currently under investigation.

The Sydney Metro City & Southwest Chatswood to Sydenham Submissions and Preferred Infrastructure Report provided information on how future extensions could be built. This identified that the Sydney Metro network could be extended by:

Direct connections to the tunnels proposed as part of this project. This approach could result in disruption to the metro network during construction, and would need to be considered at the time of any proposed extension. This approach would, however, provide flexibility in determining how and where the network should be extended

Separate independent metro alignments that provide connectivity through strategic interchange points.

These connection options would be considered during the design of Sydney Metro West to provide appropriate and efficient interchange between the metro lines.

6.11 Action for Public Transport NSW

Issue raised

Action for Public Transport NSW is concerned that proper attention has not been given to the thousands of people who use the Devonshire Street Tunnel daily. The modification report provides a discussion regarding the option of connecting to the Devonshire Street Tunnel. This section concludes that due to technical complexities of tunnel widening and the limited customer benefits, this option has not been progressed.

If the tunnel cannot be widened it should be duplicated. This could be done either to the south with a completely new tunnel about 220 metres long or to the north by extending paid area tunnels about 60 metres to Ambulance Avenue. The work should be included in the Sydney Metro Chatswood to Sydenham project and is justified by the expected increase in passenger numbers when Sydney Metro is operational. The work should be arranged so that at least one tunnel between Chalmers Street and Henry Deane Plaza is open at all times. Importantly, the southern end of the Sydney Metro platforms should have direct access to the paid area tunnel under platform 14.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

An option of connecting the future metro concourse to the Devonshire Street Tunnel was considered (refer to Section 3.2.3 of the modification report). Although this would provide improved access for customers to and from the west, it would not meet the long term demands of the station. Additionally, duplication of the Devonshire Street Tunnel would face similar challenges to tunnel widening (the impacts of which are discussed in Section 3.2 of the modification report).

A future extension of the concourse to the west and a new western entry would better meet the long term demands of the station (including relieving congestion in Devonshire Street Tunnel) by providing a wider concourse, a new western entry, a new east-west connection, and interchange opportunities to all above ground platforms.

6.12 Alex Greenwich MP

Issue raised

Constituents are concerned that the proposed Central Walk does not improve access to the southern end of the train platforms through to Devonshire Street and Railway Square. A significant portion of passengers using both current train services and future Sydney Metro services will use this access and it should be included in the current project rather than being left to possible future proposals.

Response

As identified in the modification report, the design and delivery of Central Walk would allow for a new western entry through the extension of the underground concourse to the west of the metro platforms.

Construction of the extension of the underground concourse to the west of the metro platforms would likely involve cut-and-cover construction, and would be completed in coordination with the renovation of Central Station as part of the Central Precinct Renewal Project. To maintain intercity and regional rail services at Central Station, the construction of a west concourse and western entry cannot commence until platforms 13 and 14 have been reinstated as part of the approved Sydney Metro works. As such, these works are suited to being progressed as a separate project in the future. This would also allow additional time to identify the optimal solution for the west concourse and western entry and proposed pedestrian connections to ensure integration with the surrounding precinct and plans for its revitalisation.

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**REVISED
ENVIRONMENTAL
MITIGATION MEASURES**

CHAPTER SEVEN



7 Revised environmental mitigation measures

The list of mitigation measures presented in Chapter 21 of the modification report has been revised based on the submissions received.

Table 7-1 provides the revised consolidated environmental mitigation measures. This table supersedes the mitigation measures presented in the submissions report for the Victoria Cross Station and Artarmon Substation modification. New mitigation measures or additions to existing mitigation measures are shown in **bold** text, with deletions shown with a ~~striketrough~~. This table assumes that the Victoria Cross Station and Artarmon Substation, Martin Place Station and Sydenham Station and Sydney Metro Trains Facility South modifications are approved without changes.

As per the approach for the approved project, the location(s) applicable to each mitigation measure are identified by using a unique identifier as follows:

- STW – Surface track works
- CDS – Chatswood dive site
- AS – Artarmon substation
- CN – Crows Nest Station
- VC – Victoria Cross Station
- BP – Blues Point temporary site
- GI – Ground improvement works
- BN – Barangaroo Station
- MP – Martin Place Station
- PS – Pitt Street Station
- CS – Central Station
- WS – Waterloo Station
- MDS – Marrickville dive site (this area also includes the necessary mitigation measures for the Sydney Metro Trains Facility South)
- SS – Sydenham Station
- STWS – Surface track works south
- Metro rail tunnels – Metro rail tunnels not related to other sites (eg TBM works)
- PSR – Power supply routes.

Table 7-1 Revised environmental mitigation measures

ID	Mitigation measure	Applicable location(s) ¹
Construction traffic and transport		
T1	Ongoing consultation would be carried out with (as relevant to the location) the CBD Coordination Office, Roads and Maritime Services, Sydney Trains, NSW Trains, the Port Authority of NSW, Barangaroo Delivery Authority, local councils, emergency services and bus operators in order to minimise traffic and transport impacts during construction.	All except metro rail tunnels
T2	Road Safety Audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety.	All except metro rail tunnels
T3	Directional signage and line marking would be used to direct and guide drivers and pedestrians past construction sites and on the surrounding network. This would be supplemented by Variable Message Signs to advise drivers of potential delays, traffic diversions, speed restrictions, or alternate routes.	All except metro rail tunnels
T4	In the event of a traffic related incident, co-ordination would be carried out with the CBD Coordination Office and / or the Transport Management Centre's Operations Manager.	All except metro rail tunnels
T5	The community would be notified in advance of proposed road and pedestrian network changes through media channels and other appropriate forms of community liaison.	All except metro rail tunnels
T6	Vehicle access to and from construction sites would be managed to ensure pedestrian, cyclist and motorist safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modifications to existing signals or, on occasions, police presence.	All except metro rail tunnels
T7	<p>Additional enhancements for pedestrian, cyclist and motorist safety in the vicinity of the construction sites would be implemented during construction. This would include measures such as:</p> <ul style="list-style-type: none"> ○ Use of speed awareness signs in conjunction with variable message signs near construction sites to provide alerts to drivers ○ Community educational events that allow pedestrians, cyclists or motorists to sit in trucks and understand the visibility restrictions of truck drivers, and for truck drivers to understand the visibility from a bicycle; and a campaign to engage with local schools to educate children about road safety and to encourage visual contact with drivers to ensure they are aware of the presence of children ○ Specific construction driver training to understand route constraints, expectations, safety issues, human error and its relationship with fitness for work and chain of responsibility duties, and to limit the use of compression braking ○ Use of In Vehicle Monitoring Systems (telematics) to monitor vehicle location and driver behavior ○ Safety devices on construction vehicles that warn drivers of the presence of a vulnerable road user located in the vehicles' blind spots and warn the vulnerable road user that a vehicle is about to turn. 	All except metro rail tunnels
T8	Access to existing properties and buildings would be maintained in consultation with property owners.	All except metro rail tunnels
T9	All trucks would enter and exit construction sites in a forward gear, where feasible and reasonable.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
T10	Any relocation of bus stops would be carried out by Transport for NSW in consultation with Roads and Maritime Services, the CBD Coordination Office (for relevant locations), the relevant local council and bus operators. Wayfinding and customer information would be provided to notify customers of relocated bus stops.	All except metro rail tunnels
T11	For special events that require specific traffic measures, those measures would be developed in consultation the CBD Coordination Office (for relevant locations), Roads and Maritime Services, Barangaroo Delivery Authority (for relevant locations) and the organisers of the event.	BN, MP, PS, CS
T12	<p>Construction sites would be managed to minimise construction staff parking on surrounding streets. The following measures would be implemented:</p> <ul style="list-style-type: none"> ○ Encouraging staff to use public or active transport ○ Encouraging ride sharing ○ Provision of alternative parking locations and shuttle bus transfers where feasible and reasonable. <p>Transport for NSW would work with local councils to minimise adverse impacts of construction on parking and other kerbside use in local streets, such as loading zones, bus zones, taxi zones and coach zones.</p>	All except metro rail tunnels
T13	Construction site traffic would be managed to minimise movements in the AM and PM peak periods.	All except metro rail tunnels
T14	Construction site traffic immediately around construction sites would be managed to minimise movements through school zones during pick up and drop off times.	All except metro rail tunnels
T15	Pedestrian and cyclist access would be maintained at Crows Nest during the temporary closure of Hume Street, and at Martin Place during the temporary partial closure of Martin Place. Wayfinding and customer information would be provided to guide pedestrians and cyclists to alternative routes.	CN, MP
T16	Timing for the temporary closure of the Devonshire Street tunnel would avoid periods of peak pedestrian demand. Wayfinding and customer information would be provided to guide pedestrians to alternative routes.	CS
T17	Consultation would occur with the Harbour Master, Roads and Maritime Services and Sydney Ferries' to ensure shipping channels are maintained during the Sydney Harbour ground improvement works.	GI
T18	During the closure of existing entrances to Martin Place Station, marshalls would be provided during the AM and PM peak periods to direct customers to available access and egress points.	MP
T19	Where existing parking is removed to facilitate construction activities, alternative parking facilities would be provided where feasible and reasonable.	All except metro rail tunnels
T20	Alternative pedestrian routes and property access would be provided where these are affected during the construction of the power supply routes.	PSR
T21	The potential combined impact of trucks from multiple construction sites would be further considered during the development of Construction Traffic Management Plans.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
T22	Where existing footpath routes used by pedestrians and / or cyclists are affected by construction, a condition survey would be carried out to confirm they are suitable for use (eg suitably paved and lit), with any necessary modifications to be carried out in consultation with the relevant local council.	All except metro rail tunnels
T23	Specific station management measures would be implemented during pedestrian movement Phase 2. This would include strategies such as encouraging passengers to exit platforms at the closest stair case or escalator, signage and marshalling of passengers waiting to board to minimise those waiting adjacent to hoarding and to direct passengers so that there is even distribution along the platform.	CS
T24	The temporary closures of footpaths on Chalmers Street would not occur at the same time as the temporary closure of the Devonshire Street Tunnel.	CS
T25	During the closure of Randle Lane, traffic control would be provided at either end. Reversing movements out of Randle Lane onto Elizabeth Street would not be carried out during the peak periods of 7 am to 10 am and 3 pm to 7 pm.	CS
T26	During the closure of Randle Lane, access to basement car parking would be maintained where feasible and reasonable. If access cannot be maintained, alternative parking would be arranged subject to consultation and agreement of affected owners or residents .	CS
T27	Detailed construction planning would be coordinated with the Sydenham to Bankstown project and the Temporary Transport Strategy arrangements to minimise impacts on the traffic and transport network.	SS
T28	The connectivity provided by the pedestrian route that extends from Elliot Street along the eastern boundary of 52 McLaren Street to McLaren Street would be retained during construction (in conjunction with suitable pedestrian management measures along the McLaren Street frontage).	VC
Operational traffic and transport		
OpT1	Enhancement of pedestrian infrastructure in the vicinity of Victoria Cross and Martin Place stations would be investigated further in consultation with (as relevant to the location) the CBD Coordination Office, Roads and Maritime Services and the relevant local council.	VC, MP
OpT2	Access would be maintained to neighbouring properties.	All except metro rail tunnels
OpT3	The design of the interface between the Frank Channon Walk extension and the signalised intersection at Mowbray Road / Hampden Road (including any shared zone proposal) would be developed in consultation with Roads and Maritime Services and Willoughby Council.	CDS
OpT4	Transport for NSW would work with local councils to minimise adverse impacts of operation on parking and other kerbside use in local streets, such as loading zones, bus zones, taxi zones and coach zones.	All except metro rail tunnels
OpT5	During detailed design, Transport for NSW would consult with Inner West Council, Roads and Maritime Services and other stakeholder on strategies to reduce the number of staged pedestrian marked foot crossings at the Edinburgh Road / Edgeware Road intersection.	MDS
OpT6	Transport for NSW would work with the Inner West Council to facilitate staged completion of relevant sections of the proposed active transport corridor between Sydenham and Bankstown subject to funding.	SS
OpT7	Transport for NSW would work with the Inner West Council to complete a parking study to manage the long term impacts of parking loss around Sydenham Station.	SS

ID	Mitigation measure	Applicable location(s) ¹
Construction noise and vibration		
NV1	<p>The Construction Noise and Vibration Strategy would be implemented with the aim of achieving the noise management levels where feasible and reasonable.</p> <p>This would include the following example standard mitigation measures where feasible and reasonable:</p> <ul style="list-style-type: none"> ○ Provision of noise barriers around each construction site ○ Provision of acoustic sheds at Chatswood dive site, Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and Marrickville dive site ○ The coincidence of noisy plant working simultaneously close together would be avoided ○ Offset distances between noisy plant and sensitive receivers would be increased ○ Residential grade mufflers would be fitted to all mobile plant ○ Dampened rock hammers would be used ○ Non-tonal reversing alarms would be fitted to all permanent mobile plant ○ High noise generating activities would be scheduled for less sensitive period considering the nearby receivers ○ The layout of construction sites would consider opportunities to shield receivers from noise. <p>This would also include carrying out the requirements in relation to construction noise and vibration monitoring.</p>	All
NV2	<p>Unless compliance with the relevant traffic noise criteria can be achieved, night time heavy vehicle movements at the Chatswood dive site, Crows Nest Station, Victoria Cross Station (southern) and Waterloo Station sites would be restricted to:</p> <ul style="list-style-type: none"> ○ The Pacific Highway and Mowbray Road at the Chatswood dive site ○ The Pacific Highway, Hume Street and Oxley Street at the Crows Nest Station construction site ○ McLaren Street, Miller Street and Berry Street at the Victoria Cross Station southern construction site ○ Botany Road and Raglan Street at the Waterloo Station construction site. 	CDS, CN, VC, WS
NV3	<p>Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure.</p> <p>For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.</p>	All except metro rail tunnels
NV4	<p>Feasible and reasonable measures would be implemented to minimise ground borne noise where exceedences are predicted.</p>	All
NV5	<p>Feasible and reasonable mitigation measures would be implemented where power supply works would result in elevated noise levels at receivers. This would include:</p> <ul style="list-style-type: none"> ○ Carrying out works during the daytime period when in the vicinity of residential receivers ○ Where out of hours works are required, scheduling the noisiest activities to occur in the evening period (up to 10 pm) ○ Use of portable noise barriers around particularly noisy equipment such as concrete saws. 	PSR

ID	Mitigation measure	Applicable location(s) ¹
NV6	<p>Transport for NSW would engage an Independent Acoustic Advisor to act independently of the design and construction teams and provide oversight of construction methods, construction noise and vibration planning, management and mitigation, and construction noise and vibration monitoring and reporting. The key responsibilities of the Independent Acoustic Advisor would include:</p> <ul style="list-style-type: none"> ○ Assurance of contractor noise and vibration planning, modelling, management and monitoring practices ○ Verification of compliance with relevant guidelines and approval requirements ○ Audit noise and vibration management practices. 	All
NV7	<p>Alternative demolition techniques that minimise noise and vibration levels would be investigated and implemented where feasible and reasonable. This would include consideration of:</p> <ul style="list-style-type: none"> ○ The use of hydraulic concrete shears in lieu of hammers/rock breakers ○ Sequencing works to shield noise sensitive receivers by retaining building wall elements ○ Locating demolition load out areas away from the nearby noise sensitive receivers ○ Providing respite periods for noise intensive works ○ Methods to minimise structural-borne noise to adjacent buildings including separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition ○ Installing sound barrier screening to scaffolding facing noise sensitive neighbours ○ Modifying demolition works sequencing / hours to minimise impacts during peak pedestrian times and / or adjoining neighbour outdoor activity periods. 	All except metro rail tunnels
NV8	<p>Opportunities to minimise heavy vehicles movements on Randle Lane at night would be further investigated during detailed construction planning.</p>	CS
NV9	<p>Measures would be implemented to reduce work health and safety noise exposure for station workers, retail staff and members of the public within Central Station. These would include:</p> <ul style="list-style-type: none"> ○ The use of hoarding and / or temporary noise barriers around construction sites ○ Providing hearing protection to station staff employees where appropriate ○ Providing specific work health and safety noise training to commercial receiver employers including guidance on managing their employees during highly noisy periods ○ The use of signage around construction sites to inform the general public of high noise exposure areas. 	CS
NV10	<p>Further background monitoring would be conducted at a receiver addressing McLaren Street during the preparation of the Construction Noise and Vibration Impact Statements to confirm the applicable noise management levels for construction.</p>	VC
NV11	<p>Opportunities to minimise heavy vehicle movements from the Victoria Cross Station northern construction site at night would be further investigated during detailed construction planning.</p>	VC

ID	Mitigation measure	Applicable location(s) ¹
Operational noise and vibration		
OpNV1	<p>The height and extent of noise barriers adjacent to the northern and southern surface track works would be confirmed during detailed design with the aim of not exceeding trigger levels from the <i>Rail Infrastructure Noise Guidelines</i> (Environment Protection Authority, 2013).</p> <p>At property treatments would be offered where there are residual exceedances of the trigger levels.</p>	STW, STWS
OpNV2	Track form would be confirmed during the detailed design process in order to meet the relevant ground-borne noise and vibration criteria from the <i>Rail Infrastructure Noise Guidelines</i> (EPA, 2013) and the <i>Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects</i> (DECC, 2007a).	Metro rail tunnels
OpNV3	Stations and ancillary facilities including train breakout noise from draught relief shafts would be designed to meet the applicable noise criteria derived from the <i>Industrial Noise Policy</i> (EPA, 2000).	All except metro rail tunnels
OpNV4	<p>Procedural mitigation measures would be implemented to minimise noise emissions from the Sydney Metro Trains Facility South with the aim of meeting the relevant criteria derived from the <i>Industrial Noise Policy</i> (Environment Protection Authority, 2000). This would consider measures such as:</p> <ul style="list-style-type: none"> ○ Minimising the number of trains being cleaned simultaneously ○ Cleaning trains without air conditions systems in use ○ Limit cleaning and start-up operations during the night-time and early morning periods to the trains stabled furthest from the most affected residences. ○ In the event that procedural measures are not sufficient to achieve compliance with the criteria derived from the <i>Industrial Noise Policy</i>, at-property treatments would be offered to affected receivers. 	MDS
OpNV5	Further detailed investigations would be undertaken of the phased operations once the detail of these changes are determined. This investigation would include determination of the likely change in noise levels at receivers and consideration of the need for any feasible and reasonable mitigation measures taking into consideration the likely duration of the phased operations.	STWS
Land use and property		
LP1	Opportunities to integrate the eastern entry with local strategic planning initiatives would be investigated in consultation with City of Sydney Council.	CS
Business impacts		
BI1	Specific consultation would be carried out with businesses potentially impacted during construction. Consultation would aim to identify and develop measures to manage the specific construction impacts for individual businesses.	All
BI2	A business impact risk register would be developed to identify, rate and manage the specific construction impacts for individual businesses.	All
BI3	Appropriate signage would be provided around construction sites to provide visibility to retained businesses.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
Non-Aboriginal heritage		
NAH1	<p>Archival recording and reporting of the following heritage items would be carried out in accordance with the NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998a), and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006):</p> <ul style="list-style-type: none"> ○ The internal heritage fabric and any non-original elements removed from within the curtilage of Mowbray House, Chatswood ○ The interior, exterior and setting of the shop at 187 Miller Street, North Sydney ○ The fabric and setting of the North Sydney bus shelters requiring removal and temporary relocation at Victoria Cross Station and Blues Point temporary site ○ Any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features ○ Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station ○ The interior, exterior and setting of the 'Flat Building' at 7 Elizabeth Street, Sydney ○ Martin Place, between Elizabeth and Castlereagh streets, Sydney ○ The heritage fabric of areas of the existing Martin Place Station affected by the project ○ The Rolling Stock Officers Garden, Rolling Stock Officers Building and Cleaners Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered ○ The Bounce Hostel building (former MGM building) ○ Directly impacted parts of the Congregational Church at Waterloo ○ Sydenham Pit and Drainage Pumping Station 1 ○ Sydenham Railway Station Group: Platform 6 building and Platform 1 Parcels Office. 	CDS, VC, BP, MP, CS, WS, MDS, SS
NAH2	<p>The archaeological research design would be implemented.</p> <p>Significant archaeological findings would be considered for inclusion in heritage interpretation (as per NAH8) for the project and be developed in consultation with the relevant local council.</p>	CDS, CN, VC, BP, BN, MP, PS, CS, WS, PSR
NAH3	<p>An Exhumation Policy and Guideline would be prepared and implemented. It would be developed in accordance with the <i>Guidelines for Management of Human Skeletal Remains</i> (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013). It would be prepared in consultation with NSW Heritage Office and NSW Health.</p>	All except metro rail tunnels
NAH4	<p>The method for the demolition of existing buildings and / or structures at Chatswood dive site, Victoria Cross Station, Martin Place Station, Pitt Street Station, Central Station and Waterloo Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.</p>	CDS, VC, MP, PS, CS, WS
NAH5	<p>Prior to total or partial demolition of heritage items at Victoria Cross and Martin Place stations, and the Bounce Hostel building (former MGM building at Central Station), heritage fabric for salvage would be identified and reuse opportunities for salvaged fabric considered. This would include salvage and reuse of heritage tiles to be impacted at Martin Place Station.</p>	VC, MP, CS
NAH6	<p>An appropriately qualified and experienced heritage architect would form part of the Sydney Metro Design Review Panel and would provide independent review periodically throughout detailed design.</p>	All

ID	Mitigation measure	Applicable location(s) ¹
NAH7	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station, Central Station, Sydenham Station and the aqueduct over the Sydenham Pit and Drainage Pumping Station would be developed with input from a heritage architect.	STW, CDS, CN, VC, BN, MP, PS, CS, WS, MDS, SS
NAH8	Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the NSW Heritage Manual, the NSW Heritage Office's <i>Interpreting Heritage Places and Items: Guidelines</i> (August 2005), and the NSW Heritage Council's <i>Heritage Interpretation Policy</i> .	CDS, CN, VC, BP, BN, MP, PS, WS
NAH9	A Central Station heritage interpretation plan would be developed and implemented. It would be consistent with the <i>Central Station Conservation Management Plan</i> (Rappoport and Government Architects Office, 2013) and in accordance with the guidelines identified in NAH8.	CS
NAH10	The detailed design of the Sydney Yard Access Bridge would be carried out in accordance with the relevant specific element principles in the Design Guidelines.	CS
NAH11	<p>Except for heritage significant elements affected by the project, direct impact on other heritage significant elements forming part of the following items would be avoided:</p> <ul style="list-style-type: none"> ○ The Blues Point Waterfront Group (including the former tram turning circle, stone retaining wall, bollards and steps) ○ The Millers Point and Dawes Point Village Precinct ○ The existing Martin Place Station ○ Sydney Terminal and Central Railway Stations group ○ Sydney Yard (including the Shunters Hut and Prince Alfred Sewer) ○ The existing Sydenham Station ○ Brick retaining walls near Sydenham Station. 	BP, BN, MP, CS, SS, STWS
NAH12	Power supply works would be designed and constructed to avoid impacts to the Tank Stream and Bennelong Stormwater Channel.	PSR
NAH13	<p>The design and detailed construction planning of work at Central Station would consider the requirements of the <i>Central Station Conservation Management Plan</i> (Rappoport and Government Architects Office, 2013) and include consideration of opportunities for the retention, conservation and / or reuse of original and significant heritage fabric and movable heritage items.</p> <p>Consultation would be carried out with Sydney Trains and the Heritage Council of NSW during design development.</p>	CS
NAH14	The final design and location of the new connection and opening at Martin Place Railway Station would minimise removal of the significant red ceramic tiling where feasible and reasonable.	MP
NAH15	Opportunities for the reuse of any tiles at Martin Place Railway Station that are removed would be investigated.	MP
NAH16	Opportunities for the reuse of the circular seating within Martin Place Station would be investigated.	MP
NAH17	Opportunities for the salvage and reuse of the bus shelters temporarily removed at Victoria Cross and Blues Point would be investigated in consultation with North Sydney Council.	VC, BP
NAH18	Works at Central Station would be carried out with the oversight of heritage specialists.	CS

ID	Mitigation measure	Applicable location(s) ¹
NAH19	Subject to outcomes of consultation with the church, temporary and permanent works at the Congregational Church would: <ul style="list-style-type: none"> ○ Minimise impacts to heritage fabric ○ Be sympathetic to the heritage values and architectural form of the building. 	WS
NAH20	The design and detailed construction planning of works directly impacting the Sydenham Pit and Drainage Pumping Station would consider the requirements of the <i>Sydenham Pit & Drainage Pumping Station 1 Conservation Management Plan</i> (Sydney Water, 2004).	MDS
NAH21	The internal and external finishes of the infilled openings between 9-19 Elizabeth Street and the Commonwealth Bank of Australia building would be developed in consultation with a heritage architect.	MP
Aboriginal heritage		
AH1	Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.	All
AH2	The cultural heritage assessment report would be implemented.	All
AH3	Archaeological test excavation (and salvage when required) would be carried out where intact natural soil profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Marrickville dive site. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report	BP, BN, MP, PS, CS, WS, MDS
AH4	Appropriate Aboriginal heritage interpretation would be incorporated into the design for the project in consultation with Aboriginal stakeholders.	All
AH5	Feasible and reasonable mitigation at the ground improvement locations would be identified in consultation with the Office of Environment and Heritage.	GI
AH6	The Aboriginal cultural heritage assessment report would address areas of archaeological potential associated with the power supply routes.	PSR
AH7	The cultural heritage assessment report would be updated to include the scope of the proposed modification.	CS
Landscape character and visual amenity		
Construction		
LV1	Where feasible and reasonable, the elements within construction sites would be located to minimise visual impacts, for example materials and machinery would be stored behind fencing.	All except metro rail tunnels
LV2	Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the <i>Australian Standard for Protection of Trees on Development Sites and Adjoining Properties</i> .	All except metro rail tunnels
LV3	Lighting of construction sites would be oriented to minimise glare and light spill impact on adjacent receivers.	All except metro rail tunnels
LV4	Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction, and remain for the duration of the construction period.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
LV5	Opportunities for the retention and protection of existing trees would be identified during detailed construction planning.	All except metro rail tunnels
LV6	The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts, including the prompt removal of graffiti. Public art opportunities would be considered.	All except metro rail tunnels
LV7	The selection of materials and colours for acoustic sheds would aim to minimise their visual prominence.	CDS, CN, VC, BN, MP, PS, WS, MDS
LV8	Tunnel boring machine retrieval works at the Blues Point temporary site would be timed to avoid key harbour viewing events.	BP
LV9	Benching would be used where feasible and reasonable at Blues Point temporary site to minimise visual amenity impacts.	BP
LV10	Temporary impacts to public open space would be rehabilitated in consultation with the relevant local council and / or landowner.	All except metro rail tunnels
Operation		
LV11	Cut off and direct light fittings (or similar technologies) would be used to minimise glare and light spill onto private property.	CDS, AS, CS, MDS
LV12	Where feasible and reasonable, vegetation would be provided to screen and visually integrate sites with the surrounding area.	STW, CDS, AS, MDS
LV13	Identify and implement appropriate landscape treatments for Frank Channon Walk.	STW, CDS
LV14	The architectural treatment of Artarmon substation would minimise visual amenity and landscape character impacts.	AS
LV15	The Harbour cycles sculpture at North Sydney would be reinstated at a location determined in consultation with North Sydney Council.	VC
LV16	The P&O Fountain, the mid-20th century bas relief sculpture and the Douglas Annand glass screen at 55 Hunter Street would be reinstated at a location determined in consultation with City of Sydney Council.	MP
LV17	Opportunities would be investigated to provide a permanent wall for street art at Marrickville dive site in consultation with Marrickville Council.	MDS
LV18	Noise barriers would be transparent where they are augmenting existing transparent noise barriers.	STW
LV19	Notification processes in relation to moral rights for public art and architecture under Commonwealth <i>Copyright Act 1968</i> would be carried out.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
Groundwater and geology		
GWG1	<p>A detailed geotechnical model for the project would be developed and progressively updated during design and construction. The detailed geotechnical model would include:</p> <ul style="list-style-type: none"> ● Assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain ● Predicted changes to groundwater levels, including at nearby water supply works. <p>Where building damage risk is rated as moderate or higher (as per the CIRIA 1996 risk-based criteria), a structural assessment of the affected buildings / structures would be carried out and specific measures implemented to address the risk of damage.</p> <p>With each progressive update of the geotechnical model the potential for exceedance of the following target changes to groundwater levels would be reviewed:</p> <ul style="list-style-type: none"> ● Less than 2.0 metres – general target ● Less than 4.0 metres – where deep building foundations present ● Less than 1.0 metre – residual soils ● Less than 0.5 metre – residual soils (Blues Point) (fill / Aeolian sand). <p>Where a significant exceedance of target changes to groundwater levels are predicted at surrounding land uses and nearby water supply works, an appropriate groundwater monitoring program would be developed and implemented. The program would aim to confirm no adverse impacts on groundwater levels or to appropriately manage any impacts. Monitoring at any specific location would be subject to the status of the water supply work and agreement with the landowner.</p> <p>The geotechnical model and groundwater monitoring program would be developed in consultation with the Department of Primary Industries (Water).</p>	All
GWG2	Condition surveys of buildings and structures in the vicinity of the tunnel and excavations would be carried out prior to the commencement of excavation at each site.	All
Soils, contamination and water quality		
Construction		
SCW1	<p>Updated desktop contamination assessments would be carried out for Chatswood dive site, Victoria Cross Station, Artarmon substation, Blues Point temporary site, Barangaroo Station, Central Station, Waterloo Station and the Sydenham Maintenance Centre site within surface track works south. If sufficient information is not available to determine the remediation requirements and the impact on potential receivers, then detailed contamination assessments, including collection and analysis of soil and groundwater samples would be carried out.</p> <p>Detailed contamination assessment would also be carried out for the Barangaroo power supply route within Hickson Road and the Marrickville power supply route adjacent to Sydney Park and Camdensville Oval.</p> <p>In the event a Remediation Action Plan is required, these would be developed in accordance with <i>Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land</i> (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) and a site auditor would be engaged.</p>	CDS, AS, VC, BP, BN, CS, WS, STWS, PSR
SCW2	<p>Prior to ground disturbance in high probability acid sulfate areas at Barangaroo Station, Waterloo Station, Marrickville dive site, Sydenham Station and the surface track works south, testing would be carried out to determine the presence of acid sulfate soils.</p> <p>If acid sulfate soils are encountered, they would be managed in accordance with the <i>Acid Sulfate Soil Manual</i> (Acid Sulfate Soil Management Advisory Committee, 1998).</p>	BN, WS, MDS, SS, STWS

ID	Mitigation measure	Applicable location(s) ¹
SCW3	Erosion and sediment control measures would be implemented in accordance with <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (Landcom, 2004) and <i>Managing Urban Stormwater: Soils and Construction Volume 2</i> (Department of Environment and Climate Change, 2008a). Measures would be designed as a minimum for the 80th percentile; 5-day rainfall event.	All except metro rail tunnels
SCW4	Discharges from the construction water treatment plants would be monitored to ensure compliance with the discharge criteria in an environment protection licence issued to the project.	All except metro rail tunnels
SCW5	A silt curtain would be used around the Sydney Harbour ground improvement work barges.	GI
SCW6	<p>A water quality monitoring program would be implemented to monitor water quality within Sydney Harbour during ground improvement work.</p> <p>The water quality monitoring program would be carried out to detect any potential impacts on the water quality of Sydney Harbour from the ground improvement work and inform management responses in the event any impacts are identified.</p> <p>Specific monitoring locations and frequencies would be determined during the development of the program in consultation with the Environment Protection Authority.</p>	GI
Operation		
SCW7	Discharges from the tunnel water treatment plant would be monitored to ensure compliance with the discharge criteria determined in consultation with the NSW Environment Protection Authority.	MDS
Social impacts and community infrastructure		
SO1	Direct impacts to public open space at the Blues Point temporary site would be minimised.	BP
SO2	Specific consultation would be carried out with sensitive community facilities (including aged care, child care centres, educational institutions and places of worship) potentially impacted during construction. Consultation would aim to identify and develop measures to manage the specific construction impacts for individual sensitive community facilities.	All except metro rail tunnels
Biodiversity		
B1	An ecologist would be present during the removal of any hollow-bearing trees.	CDS
B2	Potential bat roosting locations at Central Station, Waterloo Station and Marrickville dive site, Sydenham Station and the surface track works south would be checked by a qualified ecologist or wildlife handler prior to demolition. Any bats found would be relocated, unless in torpor, in which case the relocation would be delayed until the end of the torpor period.	CS, WS, MDS, SS, STWS
B3	The local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.	All except metro rail tunnels
B4	Procedures would be developed and implemented, in accordance with the National System for the Prevention and Management of Marine Pest Incursions, during Sydney Harbour ground improvement works to avoid transportation of marine pests from other locations, particularly the marine alga <i>Caulerpa taxifolia</i> .	GI

ID	Mitigation measure	Applicable location(s) ¹
Flooding and hydrology		
Construction		
FH1	<p>Detailed construction planning would consider flood risk at Barangaroo Station, Martin Place Station and the Waterloo Station construction sites. This would include identification of measures to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year annual recurrence interval event in the vicinity of the project.</p> <p>Not worsen is defined as:</p> <ul style="list-style-type: none"> ○ A maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval flood event ○ A maximum increase in time of inundation of one hour in a 100 year Average Recurrence Interval flood event ○ No increase in the potential for soil erosion and scouring from any increase in flow velocity in a 100 year Average Recurrence Interval flood event. 	BN, MP, WS
FH2	<p>The site layout and staging of construction activities at Marrickville dive site would avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required.</p>	MDS
FH3	<p>Overland flow diversions during construction at the Marrickville dive site would meet the following criteria, where feasible and reasonable:</p> <ul style="list-style-type: none"> ○ Not worsen existing flooding characteristics up to and including the 100 year annual recurrence interval event in the vicinity of the project ○ Dedicated evacuation routes would not be adversely impacted in flood events up to and including the probable maximum flood. This may include the requirement for changes to existing arrangements for flood warning systems and signage. <p>Construction planning for the Marrickville dive site would be carried out in consultation with the State Emergency Services and Inner West Council.</p> <p>Not worsen is defined as:</p> <ul style="list-style-type: none"> ○ A maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval flood event ○ A maximum increase in time of inundation of one hour in a 100 year Average Recurrence Interval flood event ○ No increase in the potential for soil erosion and scouring from any increase in flow velocity in a 100 year Average Recurrence Interval flood event. 	MDS
Operation		
FH4	<p>Where feasible and reasonable, detailed design would result in no net increase in stormwater runoff rates in all storm events unless it can be demonstrated that increased runoff rates as a result of the project would not increase downstream flood risk.</p>	STW, AS, MDS, SS, STWS
FH5	<p>Where space permits, on-site detention of stormwater would be introduced where stormwater runoff rates are increased. Where there is insufficient space for the provision of on-site detention, the upgrade of downstream infrastructure would be implemented where feasible and reasonable.</p>	STW, AS, MDS, SS, STWS
FH6	<p>Detailed design would occur in consultation with Inner West Council to ensure future drainage improvement works around the Marrickville dive site, Sydenham Station and the surface track works south would not be precluded.</p>	MDS, SS, STWS

ID	Mitigation measure	Applicable location(s) ¹
FH7	Consultation would be carried out with Inner West Council to ensure flood-related outcomes of the project are consistent with any future floodplain risk management study and / or plan developed for the Marrickville Valley Catchment.	MDS, SS, STWS
FH8	The frequency of Sydney Trains rail service disruptions due to flooding would not be increased in the vicinity of the Marrickville dive structure, Sydenham Station and the surface track works south.	MDS, SS, STWS
FH9	<p>Design of the project would be reviewed to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year annual recurrence interval event in the vicinity of the project. Detailed flood modelling would consider:</p> <ul style="list-style-type: none"> ○ Potential changes to flood prone land and flood levels ○ Potential changes to overland flow paths ○ Redistribution of surface runoff as a result of project infrastructure ○ Behaviour of existing stormwater runoff ○ Potential changes required to flood evacuation routes, flood warning systems and signage. <p>Flood modelling to support detailed design would be carried out in accordance with the following guidelines:</p> <ul style="list-style-type: none"> ○ <i>Floodplain Development Manual</i> (NSW Government, 2005b) ○ <i>Floodplain Risk Management Guideline: Practical Consideration of Climate Change</i> (DECC, 2007b) ○ <i>Floodplain Risk Management Guide: Incorporating Sea Level Rise Benchmarks in Flood Risk Assessments</i> (DECCW, 2010c) ○ <i>New guideline and changes to section 117 direction and EP&A Regulation on flood prone land, Planning Circular PS 07-003</i> (NSW Department of Planning, 2007). <p>Flood modelling and consideration of mitigation measures would be carried out in consultation with the relevant local councils, the Office of Environment and Heritage and the State Emergency Services.</p> <p>Not worsen is defined as:</p> <ul style="list-style-type: none"> ○ A maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval flood event ○ A maximum increase in time of inundation of one hour in a 100 year Average Recurrence Interval flood event ○ No increase in the potential for soil erosion and scouring from any increase in flow velocity in a 100 year Average Recurrence Interval flood event. 	All except metro rail tunnels
FH10	<p>During detailed design, project infrastructure would be designed to meet the following criteria, where feasible and reasonable:</p> <ul style="list-style-type: none"> ○ Locate station and service entrances to underground stations above the greater of the 100 year annual recurrence interval flood level plus 500mm or the probable maximum flood level ○ Provide site surface grading and drainage collection systems at the Chatswood and Marrickville dive structures to manage the risk of local catchment and overland flooding for events up to and including the probable maximum flood event ○ Locate aboveground rail system facilities (such as traction power supply sub stations) at least above the 100 year annual recurrence interval flood level plus 500mm ○ Protect facilities that are identified as being critical to emergency response operations from the probable maximum flood level. 	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s) ¹
Air quality		
AQ1	The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.	All
AQ2	Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of pre-acceptance checks.	All
AQ3	Construction site layout and placement of plant would consider air quality impacts to nearby receivers.	All except metro rail tunnels
AQ4	Hard surfaces would be installed on long term haul routes and regularly cleaned.	All except metro rail tunnels
AQ5	Unsurfaced haul routes and work area would be regularly damped down in dry and windy conditions.	All except metro rail tunnels
AQ6	All vehicles carrying loose or potentially dusty material to or from the site would be fully covered.	All except metro rail tunnels
AQ7	Stockpiles would be managed to minimise dust generation.	All except metro rail tunnels
AQ8	Demolition would be managed to minimise dust generation.	All except metro rail tunnels
AQ9	Ventilation from acoustic sheds would be filtered.	CDS, CN, VC, BN, MP, PS, WS, MDS
Hazard and risk		
Construction		
HR1	All hazardous substances that may be required for construction would be stored and managed in accordance with the <i>Storage and Handling of Dangerous Goods Code of Practice</i> (WorkCover NSW, 2005) and <i>Hazardous and Offensive Development Application Guidelines: Applying SEPP 33</i> (Department of Planning, 2011).	All
HR2	Dial before you dig searches and non-destructive digging would be carried out to identify the presence of underground utilities.	All
HR3	A hazardous material survey would be completed for those buildings and structures suspected of containing hazardous materials (particularly asbestos) prior to their demolition. If asbestos is encountered, it would be handled and managed in accordance with relevant legislation, codes of practice and Australian standards.	CDS, CN, VC, MP, PS, CS, WS, MDS, SS
HR4	The method for delivery of explosives would developed prior to the commencement of blasting in consultation with the Department of Planning and Environment and be timed to avoid the need for on-site storage.	CN, VC, BN, MP, PS, WS
Operation		
HR5	All hazardous substances that may be required for operation would be stored and managed in accordance with the <i>Storage and Handling of Dangerous Goods Code of Practice</i> (WorkCover NSW, 2005) and <i>Hazardous and Offensive Development Application Guidelines: Applying SEPP 33</i> (Department of Planning, 2011).	All

ID	Mitigation measure	Applicable location(s) ¹
Waste management		
Construction		
WM1	All waste would be assessed, classified, managed and disposed of in accordance with the <i>NSW Waste Classification Guidelines</i> .	All
WM2	100 per cent of spoil that can be reused would be beneficially reused in accordance with the project spoil reuse hierarchy.	All
WM3	A recycling target of at least 90 per cent would be adopted for the project.	All
WM4	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging.	All
Operation		
WM5	Generation of operation phase waste would be minimised.	All
Sustainability		
Construction		
SUS1	Sustainability initiatives would be incorporated into the detailed design and construction of the project to support the achievement of the project sustainability objectives.	All
SUS2	A best practice level of performance would be achieved using market leading sustainability rating tools during design and construction.	All
SUS3	A workforce development and industry participation strategy would be developed and implemented during construction.	All
SUS4	Climate change risk treatments would be incorporated into the detailed design of the project including: <ul style="list-style-type: none"> ○ Ensuring that adequate flood modelling is carried out and integrated with design ○ Testing the sensitivity of air-conditioning systems to increased temperatures, and identify potential additional capacity of air-conditioning systems that may be required within the life of the project, with a view to safeguarding space if required ○ Testing the sensitivity of ventilation systems to increased temperatures and provide adequate capacity. 	All
SUS5	An iterative process of greenhouse gas assessments and design refinements would be carried out during detailed design and construction to identify opportunities to minimise greenhouse gas emissions. Performance would be measured in terms of a percentage reduction in greenhouse gas emissions from a defined reference footprint.	All
SUS6	25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction would be offset.	All
Operation		
SUS7	Sustainability initiatives would be incorporated into the operation of the project to support the achievement of the project sustainability objectives.	All
SUS8	Periodic review of climate change risks would be carried out to ensure ongoing resilience to the impacts of climate change.	All
SUS9	A workforce development and industry participation strategy would be developed and implemented during operation.	All
SUS10	100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation would be offset.	All

ID	Mitigation measure	Applicable location(s) ¹
Cumulative impacts		
CU1	<p>Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time. Co-ordination and consultation with the following stakeholders would occur, where required:</p> <ul style="list-style-type: none"> ○ CBD Coordination Office ○ Department of Planning and Environment ○ Roads and Maritime Services ○ Sydney Trains ○ NSW Trains ○ Sydney Buses ○ Sydney Water ○ Port Authority of NSW ○ Willoughby Council ○ North Sydney Council ○ City of Sydney Council ○ Marrickville Council ○ Sydney Motorways Corporation ○ Barangaroo Delivery Authority ○ Emergency service providers ○ Utility providers ○ Construction contractors. <p>Co-ordination and consultation with these stakeholders would include:</p> <ul style="list-style-type: none"> ○ Provision of regular updates to the detailed construction program, construction sites and haul routes ○ Identification of key potential conflict points with other construction projects ○ Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve: <ul style="list-style-type: none"> ◆ Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects ◆ Co-ordination of traffic management arrangements between projects. 	All

¹ STW: Surface track works; CDS: Chatswood dive site; AS: Artarmon substation; CN: Crows Nest Station; VC: Victoria Cross Station; BP: Blues Point temporary site; GI: Ground improvement works; BN: Barangaroo Station; MP: Martin Place Station; PS: Pitt Street Station; CS: Central Station; WS: Waterloo Station; MDS: Marrickville dive site (including the Sydney Metro Trains Facility South); SS: Sydenham Station; STWS: Surface track works south Metro rail tunnels: Metro rail tunnels not related to other sites (eg TBM works); PSR: Power supply routes.

CHATSWOOD TO SYDENHAM
CENTRAL WALK MODIFICATION SUBMISSIONS REPORT