



Blues Point Access Site Modification 8

Response to Submissions Report

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1 Introduction

1.1 Overview

Planning approval for Sydney Metro City & Southwest Chatswood to Sydenham (the approved project) was granted by the Minister for Planning (now the Minister for Planning and Public Spaces) under section 5.19 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 9 January 2017.

The approved project includes the construction and operation of a 16.5 kilometre metro line from Chatswood, under Sydney Harbour and through Sydney's CBD onto Sydenham. It also includes seven new metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo, as well as new underground metro platforms at Central Station.

This forms part of the larger Sydney Metro City & Southwest project which also includes the upgrade of the 125-year-old T3 Bankstown Line to metro standards between Sydenham and Bankstown. This component received separate planning approval on 19 December 2018. In 2024 when both parts of the project are completed, Sydney will have 31 metro railway stations and a 66 kilometre standalone metro railway system.

Since its determination, seven modifications have been approved to modify various aspects of the approved project. These approved modifications relate to Victoria Cross Station and Artarmon Substation, Central Walk, Martin Place Station, Sydenham Station and Sydney Metro Trains Facility South, Blues Point Acoustic Shed, and other administrative changes.

The approved project includes a temporary construction site at Blues Point including an acoustic shed to enable the retrieval of all elements of the tunnel boring machines launched from the Chatswood dive site and from Barangaroo. The Blues Point temporary site covers an area of about 2,100 square metres within Henry Lawson Reserve, at the end of Blues Point Road.

As with any major project of the size of Sydney Metro City & Southwest, the original sequence of works has undergone some changes to ensure the project is delivered as quickly and efficiently as possible. Since the project and modifications were approved and now that the tunnel excavation works have been completed, detailed construction planning has sought to identify the preferred access points to enable the completion of tunnel fit out works across the alignment, including in the under-harbour tunnels between Victoria Cross and Barangaroo. The Blues Point temporary site has been identified as the required location as other tunnel access points on either side (such as Victoria Cross and Barangaroo) are being used for station construction.

1.2 Overview of the proposed modification

The proposed modification would involve the following changes to the approved project at the Blues Point temporary site:

- use of the site as the primary access point to fit out the under-harbour section of the rail tunnels between Victoria Cross and Barangaroo
- continued use of the existing acoustic shed for up to an additional 12 months, with the shed to be removed prior to the Christmas/New Year's period in 2021/2022.

The approved site rehabilitation activities at Blues Point site would commence after the completion of the tunnel fit out works from early 2022.

The tunnel fit out works to be undertaken from the Blues Point temporary site involve:

- concrete pours to form the track slab and rail fastening
- rail installation and fixing
- cable and equipment installation
- overhead traction power installation
- other equipment installation including lighting (including emergency lighting), drainage, and fire and life safety systems (including walkways connecting to emergency egress and fire hydrant systems).

The tunnel fit out works would be undertaken by Sydney Metro's Line-Wide Contractor, Systems Connect (joint venture between CPB Contractors and UGL).

1.3 Purpose and structure of this report

During public exhibition of the Modification Report, 16 submissions were received by the Department of Planning, Industry and Environment which were provided to Sydney Metro and placed on the Major Projects portal. This report provides responses to the issues raised in submissions.

The structure and content of this report is as follows:

- Chapter 1 – Introduction (this chapter)
- Chapter 2 – Community and stakeholder involvement
- Chapter 3 – Submissions received
- Chapter 4 – Additional mitigation measure.

2 Community and stakeholder involvement

2.1 Consultation overview

Engagement with the community and stakeholders about the Blues Point temporary site began in February 2016 and continued through the preparation of the Chatswood to Sydenham Environmental Impact Statement and again in August 2018 as part of the modification application to install the acoustic shed. Prior to, and on a continuing basis outside of the Environmental Impact Statement process, Sydney Metro continues to proactively engage with the community and stakeholders.

Key stakeholders relevant to the Blues Point temporary site include (but are not necessarily limited to):

- NSW Government agencies
- North Sydney Council
- public utilities, business and industry groups near the project
- directly impacted communities
- the broader community.

2.2 Consultation undertaken for modification

Key government agencies have been consulted on the proposed modification, including:

- Department of Planning, Industry and Environment
- North Sydney Council.

Local community groups consulted on the proposed modification included:

- Union Precinct Committee
- North Sydney Sunrise Rotary Club.

Early consultation in relation to the proposed modification was undertaken with the community and stakeholders throughout June 2020. The consultation activities undertaken included distribution of a letter to targeted stakeholders, a project update to the local area outlining the proposed modification, an electronic version of the project update emailed to the Blues Point stakeholder distribution list, two interactive online information sessions, responses to individual email enquiries and phone calls to key stakeholders.

Due to the Covid-19 social distancing restrictions, briefings and information sessions were held via online platforms. At these sessions, senior Sydney Metro project team members provided details about the proposed modification and answered questions from the community and stakeholders. The sessions included an open Q&A where attendees could directly ask questions and provide their feedback to the project team.

A summary of the feedback received is provided in the Modification Report (see section 3.3).

The Department of Planning, Industry and Environment placed the Modification Report on public exhibition from 22 July 2020 to 5 August 2020 on the major projects portal: www.planningportal.nsw.gov.au/major-projects/project/38021. As a result of the current Covid-19 restrictions no hard copies of the document were placed on exhibition.

During the exhibition period, government agencies, stakeholders and the community were able to review the Modification Report and had an opportunity to make a written submission to the Department of Planning, Industry and Environment for consideration in its assessment of the proposed modification.

Consultation activities undertaken by Sydney Metro during the public exhibition included:

- contact points (i.e. Community Information Line and email address)
- project website
- email notification of the exhibition
- advertisement in local newspaper.

2.3 Future consultation and engagement

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

- ongoing communications with key stakeholders, local council and other government agencies
- provision of regular updates to the nearby community and Blues Point
- seeking community feedback on the draft park reinstatement design
- development and implementation of a site-specific 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).

3 Submissions received

3.1 Overview of respondents and issues raised

A total of 16 submissions were received by the Department of Planning, Industry and Environment on the proposed modification. Submissions included 14 objections (North Sydney Council and 13 public submissions). The remaining two submissions (Environment Protection Agency and one public submission) did not state a position of support or objection to the proposed modification.

Responses to issues raised in government and public submissions are provided in sections 3.2 and 3.3 respectively.

Key issues raised through consultation include:

- the need and justification for the proposed modification including alternatives to the use of the Blues Point site as an access point and consideration of other haulage options other than by road
- traffic impacts as a result of increased heavy vehicle movements and request for alternatives to be considered to road haulage
- traffic road noise impacts, particularly as a result of out of hours vehicle movements
- visual and social impacts as a result of the acoustic shed and work site remaining for an additional 12 months compared with the approved project
- pedestrian and road safety as a result of additional heavy vehicle movement along Blues Point Road
- other issues relating to amenity impacts, loss of open space, requests for compensation, clarification of the timing of the proposed modification and cumulative impacts.

3.2 Government submissions

The feedback received from government stakeholders during the public exhibition has been considered and a summary of issues raised within the submissions and responses have been provided in Table 1.

Table 1 Responses to submissions raised by government

Item	Submission issue	Response
North Sydney Council		
1.1	North Sydney Council objects to the continued use of the site for construction purposes for up to another two years.	<p>Sydney Metro notes the proposed modification is for the use of the Blues Point site for up to an additional 12 months from what is currently approved.</p> <p>As outlined in section 3.3 of the Modification Report, the Environmental Impact Statement and the 2018 Blues Point modification had the original timeline for use of the Blues Point site ending in Q1 2021. The acoustic shed was expected to be decommissioned prior to the 2020/2021 Christmas/New Year Period, with rehabilitation work to be completed in early 2021. With this proposal the shed would be removed up to one year later with rehabilitation work taking place in early 2022.</p> <p>The proposed modification identifies the impacts as a result of this additional 12 month use of the site and proposed condition of approval E57.1 be updated to state <i>'Notwithstanding E57, the acoustic shed at Blues Point temporary site must not be in place for more than one two Christmas/New Year's periods.'</i></p>
1.2	Council notes the increased use of the local road network to access the site by heavy construction vehicles and recommends that consideration is given to the use of barging to access the site to minimise impacts of surrounding residents.	<p>All viable options for alternatives to heavy vehicles delivering materials to site have been investigated. However as outlined in section 2.2.2 of the Modification Report, transport of the tunnel fit out materials would not be possible by barge to the Blues Point temporary site due to the:</p> <ul style="list-style-type: none"> • Inability to guarantee transport times for material delivery as required throughout the day given the dependence on maritime safety procedures, tides, weather conditions and the requirements of the Harbour Master. In particular, guaranteed transport times are critical for concrete deliveries due to setting and curing times. • Safety and environmental risks posed by transporting fully loaded concrete trucks on a barge through Sydney Harbour. <p>As such, to ensure safe and reliable access to the site for delivery of all tunnel fit out materials, it is proposed for deliveries to be transported by local road only.</p>
1.3	Council identifies traffic and parking impacts arising from both site access and employees parking.	<p>As outlined in section 5.1.2 of the Modification Report, the Environmental Impact Statement assessed the peak construction traffic impact at Blues Point with no change to the level of service for key intersections as a result of the traffic movements. As such, no additional traffic impacts are anticipated during the peak periods as a result of the proposed modification.</p>

Item	Submission issue	Response
	<p>Council noted that this proposal significantly increases the use of Blues Point Road by heavy vehicles needed to deliver steel, rails, concrete and other construction material to this site.</p>	<p>Sydney Metro notes however that the traffic predictions within the EIS were not realised due to the alternative spoil haulage management and that traffic movements would now be required to deliver materials to the Blues Point site over an additional 12 month period as a result of the proposed modification.</p> <p>No additional changes are proposed to pedestrian footpaths, parking arrangements or public transport services relative to the approved project.</p> <p>The proposed modification would be managed in accordance with relevant mitigation measures and conditions of approval, including condition of approval E82 requiring a Construction Traffic Management Plan to be prepared.</p>
1.4	<p>Council notes the potential noise and amenity impact would significantly affect residents during the construction period. Particular concern is raised regarding the movement of heavy vehicles, potentially on a 24-hour, 7 day a week basis.</p>	<p>As outlined in section 5.2.2 of the Modification Report, construction traffic would be similar in nature to the scenarios of heavy vehicle movements assessed in the Environmental Impact Statement.</p> <p>As a result of feedback from the community and stakeholders throughout this consultation period, Sydney Metro proposes an additional environmental mitigation measure to reduce the noise impacts to the surrounding community during the early morning as stated below and outlined in Table 3:</p> <p><i>Proposed environmental mitigation measure NV13:</i> Out of hours heavy vehicle movements to the Blues Point temporary site would not be undertaken between 12am to 7am, except where circumstances require larger (oversized) vehicle movements to be undertaken outside standards hours (after midnight), at the direction of NSW Police and/or Transport for NSW.</p> <p>Under circumstances where larger (oversized) vehicle movements are required out of hours (6pm to 12am) taking into account NV13, Sydney Metro would implement the approved out of hours work process in accordance with condition of approval E47.</p> <p>Up to two heavy vehicle movements per hour (up to eight per night in total) outside of standard hours would be required for the proposed modification. Due to proposed mitigation measure NV13, these heavy vehicle movements would only take place during the evening and night time hours from 6pm to 12am. The approved</p>

Item	Submission issue	Response
		<p>Environmental Impact Statement assessed up to one heavy vehicle per hour outside of standard hours for shaft excavation works, however the Modification Report identified one to two heavy vehicle movements per hour would be required. Heavy vehicle movements (particularly during outside of standard hours) would be scheduled to minimise impacts as far as practicable with the aim of achieving noise management levels in accordance with existing mitigation measures and the Construction Noise and Vibration Strategy.</p> <p>The majority of out of hours deliveries are required for the mechanical and electrical fitout works. These deliveries would generally only be for a six month period (from approximately May to October 2021).</p> <p>Materials to be delivered out of hours include:</p> <ul style="list-style-type: none"> • Concrete rail sleepers, although minimal deliveries expected out of hours • Steel walkway components, steel pipework, steel cable containment and various sized cables for the mechanical and electrical fitout works, would generally be delivered during out of hours. <p>Concrete deliveries would generally occur during standard construction hours. In the event that a concrete pour is required to be finalised, concrete truck movements may continue to ensure the concrete pour is completed in accordance with the out of hours work protocol (condition of approval E47). The two final concrete pours to close the tunnels would require an extended duration to complete this activity, and where required, would be undertaken in accordance with the out of hours work protocol (condition of approval E47).</p> <p>A detailed Construction Noise and Vibration Impact Statement (CNVIS) for the tunnel fit out works at Blues Point would be prepared in accordance with condition of approval E33 and section 9.2(b) of the Construction Environmental Framework (CEMF). The CNVIS will identify any mitigation measures required as a result of the proposed modification.</p>
1.5	Council identifies a public safety issue for pedestrians as a result of the proposed movement of heavy vehicles in the Blues Point area and through the McMahons Point village.	As outlined in the Modification Report in section 5.1.2, vehicular access, egress and ingress at the site would remain from Blues Point Road. No additional changes are proposed to pedestrian footpaths, parking arrangements or public transport services relative to the approved project. As outlined within the Environmental Impact

Item	Submission issue	Response
		<p>Statement, to ensure safety to pedestrians, cyclists and other motorists, safety audits would be carried out at the construction site and would address vehicular access and egress points and pedestrian, cyclist and motorist safety. Construction vehicle speed would be managed in accordance with mitigation measures as outlined within the Environmental Impact Statement.</p> <p>The proposed works would utilise the existing site set up as previously assessed with a minor setback of the construction hoarding to allow community access to the beach at the front of the site.</p> <p>Parking, traffic and pedestrian safety as a result of heavy vehicle movements, site access and employee parking will be managed for the proposed works in accordance with condition of approval E75 including consultation with the Traffic and Transport Liaison Group (TTLG) in accordance with condition of approval E77.</p>
1.6	<p>Council identifies Blues Point Reserve of national importance, given its location and expansive public views of the City, Harbour Bridge, Opera House and Darling Harbour and notes the proposed modification would create the ongoing restriction of public open space at Blues Point Reserve.</p> <p>Council notes the impacts on the use of Blues Point Reserve for the public participating in community events such as New Year's Eve and Australia Day for at least the next two years.</p>	<p>Landscape character and visual amenity impacts as a result of the temporary acoustic shed were assessed in the Modification Report for the Blues Point acoustic shed (MOD 5). Sydney Metro notes the Modification Report (MOD 8) outlined in section 5.3.1 that the temporary acoustic shed was assessed as a dominant element within this landscape character area, with a high adverse impact to the landscape character and high to moderate adverse visual impacts on the majority of surrounding viewpoints.</p> <p>The views and vistas of the World Heritage listed Sydney Opera House buffer zone and local heritage items in the vicinity of the Blues Point temporary site were identified in the Environmental Impact Statement and Modification Report for the Blues Point acoustic shed (MOD 5). Indirect heritage impacts were assessed as negligible due to the short term and reversible nature of the use of the site.</p> <p>As discussed in Item 1.1, the proposed modification identifies the impacts as a result of this additional 12 month use of the site and proposed condition of approval E57.1 be updated to state 'Notwithstanding E57, the acoustic shed at Blues Point temporary site must not be in place for more than one two Christmas/New Year's periods.'</p> <p>As such, views would be restored for the Christmas/New Year's period 2021/2022 with the park to be reinstated for community use in early 2022.</p>

Item	Submission issue	Response
		The Modification Report identifies the social impacts caused by the loss of green open space as a result of the proposed modification. The site boundary is proposed to be slightly set back to allow access to the beach on Sydney Harbour in front of the site as outlined in section 5.4.2 of the Modification Report.
1.7	North Sydney Council notes the original Interface Agreement that Council entered with Transport for New South Wales (TfNSW) was done so under the auspices of this site being a tunnel boring machine extraction site with minimal impacts of the local road network. The proposed change in use from a retrieval site to an active construction site, represents a significant and material change to what Council has previously agreed to in the Interface Agreement with TfNSW. If the current proposal is approved, it is imperative that the Interface Agreement be amended to meet this change in use.	Noted. Sydney Metro will discuss the interface agreement with North Sydney Council.
1.8	North Sydney Council also notes that the adjacent site, 1 Henry Lawson Drive is listed for acquisition by the State and has been for many years to expand and complete the existing Blues Point Reserve. It is understood by Council that the acquisition process has been commenced by the Department of Planning, Industry and Environment. Council notes that the completion of the acquisition process would be a considerable offset to the ongoing inconvenience caused by the repurposing of this site from tunnel boring machine retrieval to a full-on construction facility. Council suggested that the completion of this acquisition by the state should be a requirement of any consent issued.	The acquisition of 1 Henry Lawson Drive is subject to Department of Planning, Industry and Environment processes. Sydney Metro will work closely with the Department of Planning, Industry and Environment and North Sydney Council to include 1 Henry Lawson Drive in the reinstated park design if possible.
Environment Protection Authority		
2.1	The Environment Protection Authority (EPA) identifies that the Modification Report refers to existing planning conditions as the basis for 24/7 activities as opposed to exploring opportunities to limit hours of operation and associated impacts on the community.	As noted by the EPA, condition of approval E48 notes that station and tunnel fit out works and haulage and delivery of materials are approved to be undertaken as 24 hours 7 days a week activities. Sydney Metro notes this condition also states that for other works at Blues Point, they would also be undertaken 24 hours 7 days a week subject to compliance with condition of approval E44.

Item	Submission issue	Response
	<p>EPA requests Sydney Metro should be required to examine opportunities to reduce hours of operation of the Blues Point site where feasible and reasonable to reduce impacts on the community.</p> <p>The EPA recommends that DPIE carefully examine whether the subject works, which were not contemplated within the EIS, fall within the meaning and intent of the 24/7 allowances in condition E48 and whether 24/7 works are justified.</p>	<p>As outlined in Item 1.4, as a result of consultation with the community and stakeholders, Sydney Metro proposes an additional environmental mitigation measure to reduce the noise impacts to the surrounding community during the early morning by not undertaking out of hours heavy vehicle movements to the Blues Point temporary site between 12am to 7am, except where circumstances require larger (oversized) vehicle movements to be undertaken outside standard hours (after midnight), at the direction of NSW Police and/or Transport for NSW.</p>
2.2.	<p>The EPA raises concerns about cumulative impacts, specifically in regards to out of hours noise.</p>	<p>No other major surrounding developments have been identified. As such the proposed modification would not result in any additional cumulative impacts at the Blues Point temporary site from those identified for the approved project.</p> <p>As noted in the Modification Report section 5.2.2, the proposed works would extend the use of the Blues Point temporary site for up to an additional 12 months compared to the approved project. This would have an additional construction noise and vibration impact on the surrounding receivers as a result of both construction works and construction traffic noise.</p> <p>The relevant project-specific mitigation measures identified in the approval documentation would continue to apply to the project as proposed to be modified. These mitigation measures would adequately address the potential noise and vibration impacts.</p> <p>The proposed modification would be managed in accordance with relevant mitigation measures and conditions of approval, including condition of approval E39 relating to cumulative impacts relating to noise and vibration.</p> <p>As outlined in Item 1.4, Sydney Metro proposes an additional environmental mitigation measure to reduce the noise impacts to the surrounding community during the early morning by not undertaking out of hours heavy vehicle movements to the Blues Point temporary site between 12am to 7am, except where circumstances require larger (oversized) vehicle movements to be undertaken outside standard hours (after midnight), at the direction of NSW Police and/or Transport for NSW.</p>

Item	Submission issue	Response
2.3	The EPA note that conditions E84 and E85 required consideration of non-road transport options for spoil haulage to minimise impacts associated with road transport. The EPA noted that barging is not proposed for this aspect of the proposed modification and that concrete and other material deliveries will be via local roads.	<p>Sydney Metro notes condition of approval E84 relates to spoil haulage which would not be undertaken as part of the proposed works.</p> <p>Condition of approval E85 notes heavy vehicle haulage must not use local roads unless no feasible alternatives are available. As outlined in Modification Report section 2.2.2, barging was considered as an alternative to utilising local roads. However as outlined in Item 1.2, barging is not suitable for the proposed modification. The haulage route would utilise major roads before utilising Blues Point Road as the only road access to the Blues Point temporary site.</p>
2.4	The EPA noted the Modification Report outlined that construction traffic impacts would be consistent with the assessment in the EIS and relied on the assessment in the EIS and has not specifically considered the current proposal in the modification request. EPA notes that the traffic predictions within the EIS were not realised due to alternative spoil haulage management.	Refer to Item 1.3 for further discussion regarding traffic impacts as a result of the proposed modification.
2.5	<p>The EPA identified the noise management levels outlined within the Modification Report do not appear to be consistent with the <i>Interim Construction Noise Guideline</i> (EPA, 2017) for out of standard work periods and that the assessment of airborne construction noise in the Modification Report was qualitative only which is considered inadequate to enable an assessment of potential noise impacts. Additionally, EPA notes ground-borne noise and vibration has not been assessed, however the EPA notes that the activities are not likely to produce significant levels of vibration.</p> <p>The EPA notes specific consideration of noise mitigation measures for site activities has been deferred to the preparation of a Construction Noise and Vibration Impacts Statement as required under the current planning approval. The EPA recommends further detailed assessment be undertaken in support of the proposed modification.</p>	<p>Sydney Metro notes EPA's comments in regards to further noise and vibration impact assessment to support the proposed modification. As noted in section 5.2.2 of the Modification Report, due to the mitigation provided by the acoustic shed, noise impacts are anticipated to be consistent with the noise assessment within the Blues Point acoustic shed Modification Report (MOD 5), however noise impacts would be experienced over an additional 12 month period.</p> <p>Additionally, Sydney Metro note that tunnel fit out works are being undertaken along the alignment. The CNVIS prepared for such works identified only minor exceedances at a small number of residences when surface deliveries and welding occur concurrently and outside an acoustic shed. Welding works at Blues Point temporary site would only be undertaken within the tunnel and not on the surface. After the front wall and first bay of the acoustic shed is reinstalled, the majority of work would take place inside the shed or down in the tunnels, as such noise impacts would be minimised for the surrounding sensitive receivers. The shed door will be close, where possible, for material unloading.</p> <p>As such, based on a qualitative assessment comparing the construction activities undertaken to date (with the acoustic shed in place) and the proposed noise generating activities as a result of the proposed modification at Blues Point</p>

Item	Submission issue	Response
		<p>temporary site, the noise impacts as a result of the proposed modification are anticipated to be less than what has occurred to date for the approved project.</p> <p>As outlined in Item 1.4, a detailed Construction Noise and Vibration Impact Statement (CNVIS) for the tunnel fit out works at Blues Point would be prepared in accordance with condition of approval E33 and section 9.2(b) of the Construction Environmental Framework (CEMF). The CNVIS will identify any mitigation measures required as a result of the proposed modification.</p>

3.3 Public submissions

The feedback received from the community during the public exhibition has been considered and a summary of issues raised within the submissions and responses have been provided in Table 2.

Table 2 Responses to submissions raised by public

Item	Submission issue	Response
3	<i>Objection to the proposed modification</i>	
3.1	Thirteen public submissions object to the Proposed Modification based on the impacts to surrounding residents and visitors to Blues Point.	The community objections regarding the proposed modification are noted. As identified in section 2.2 of the Modification Report, the Blues Point temporary site has been identified as the required location for under-harbour tunnel fit out works as other tunnel access points on either side (such as Victoria Cross and Barangaroo) are being used for station construction.
3.2	Public submissions raised an objection on the basis of breach of trust established by Sydney Metro throughout the project regarding the use of the Blues Point temporary site.	Sydney Metro acknowledges the views of some of the local community regarding the proposal to use the Blues Point temporary site for up to an additional 12 months. Sydney Metro will continue to provide regular and informative communications and undertake engagement with the local community regarding the use of Blues Point temporary site.
4	<i>Approved Project at Blues Point- existing impacts / complaints</i>	
4.1	<p>Submissions raised concerns regards the existing/current works on site at Blues Point and the impacts to amenity including noise and vibration, traffic, air quality and visual impacts as result of Tunnel and Station Excavation Contractor works at Blues Point site.</p> <p>A submission noted that semi-trailers regularly park illegally, especially at the bus stop on the corner of Warung St, McMahon's Point and at night would idle for lengthy intervals. This would have an impact on safe views to exit the property. During the day they would block vision when trying to exit Warung St.</p>	<p>Sydney Metro notes works at Blues Point site have been ongoing to retrieve all components of the tunnel boring machines from Chatswood and Barangaroo. These works have now been completed by the Tunnel and Station Excavation Contractor.</p> <p>The Line-wide contractor would be required to work in accordance with the existing, amended and additional mitigation measures and conditions of approval to ensure impacts are minimised.</p> <p>Trucks associated with the Sydney Metro project operate under strict guidelines and are monitored. The Construction Traffic Management Plan (as required by condition of approval E82) does not allow for trucks to marshal outside the construction site.</p>

Item	Submission issue	Response
4.2	A submission raised a concern regarding the management of complaints as a result of the existing Project at Blues Point.	Complaints will be managed through the Project's Construction Complaints Management System (CCMS) which the Line-wide Contractor is required to follow in accordance with condition of approval B6.
5	<i>Consultation process</i>	
5.1	<p>Public submissions raised concerns regarding the level of public consultation for the proposed modification.</p> <p>A submission raised that some businesses within McMahons Point, residents along Blues Point Road and (in some cases) adjacent owners of the property may not have been informed of the proposed modification.</p> <p>It was noted that communications regarding the proposed modification were limited in particular as a result of reduced opportunities due to Covid-19 restrictions (including Sydney Metro project newsletters and advertisement in the local newspaper) and were insufficient to fully notify affected residents and businesses, and to seek comments.</p>	<p>Early consultation in relation to the proposed modification was undertaken with the community and stakeholders throughout June 2020. This provided the community with a detailed overview of the proposed modification, enabling them to ask informed questions and provide their feedback. Feedback received was incorporated into the Modification Report.</p> <p>The consultation activities undertaken included distribution of a letter to targeted stakeholders, a project update to the local area outlining the proposed modification, an electronic version of the project update emailed to the Blues Point stakeholder distribution list, two interactive online information sessions, responses to individual email enquiries and phone calls to key stakeholders.</p> <p>Due to the Covid-19 social distancing restrictions, briefings and information sessions were held via online platforms. At these sessions, senior Sydney Metro project team members provided details about the proposed modification and answered questions from the community and stakeholders. The sessions included an open Q&A where attendees could directly ask questions and provide their feedback to the project team. Online community sessions have been used widely and successfully by Sydney Metro during COVID-19 restrictions.</p> <p>The Blues Point newsletter, along with a letter from the City & Southwest Project Director, was distributed to properties within a 200 metre radius of the site. This included information about the community sessions and ways to contact Sydney Metro to ask questions and provide feedback. An email with the newsletter attached was sent to 809 stakeholders on the Blues Point email list. This also included information about the community sessions.</p>

Item	Submission issue	Response
		<p>In addition, phone calls were made to key stakeholders before the newsletter was distributed to the community to provide information about the proposal and community sessions, as well as an opportunity to ask questions.</p> <p>Sydney Metro placed an advertisement in the Mosman Daily on 30 July 2020.</p>
5.2	<p>Public submissions identified that the consultation sessions (webinars) that were held were information sessions only and that the decision on the Proposed Modification had already been made and that community objections or concerns would not be taken into account during decisions making.</p> <p>A submission raised the concern that the Modification Report did not appropriately address inputs from the community during early consultation.</p>	<p>The community consultation sessions were designed to present accurate and detailed information about the Proposal to enable community members to engage with the subject matter experts in attendance. The sessions were interactive, with the community encouraged to ask questions verbally or via the online chat function, as well as voice their views. Questions that were not answered at the session were followed up via email. Feedback and concerns raised by the community at the consultation sessions were addressed in the Modification Report in section 3.3. Every effort was made to include and address community concerns at the time of preparing the Modification Report.</p> <p>Sydney Metro would continue to engage with local stakeholders to provide timely and detailed information about the proposed works and answer any questions and concerns.</p> <p>The Department of Planning, Industry and Environment will undertake an assessment of the proposed modification and the Minister for Planning and Public Spaces will make the final determination.</p>
5.3	<p>A public submission noted that the period to comment on the proposed modification was not sufficient relative to the ongoing impact of the continued use of the site.</p>	<p>The proposed modification was placed on exhibition by the Department of Planning, Industry and Environment for a period of 15 days from 22 July 2020 to 5 August 2020. This exhibition period is consistent with exhibition timeframes for other similar modifications.</p> <p>As noted in Item 5.1, Sydney Metro also undertook early consultation throughout June 2020.</p>

Item	Submission issue	Response
5.4	A submission identified that at the time of lodging a submission a response was outstanding from the Sydney Metro project team in regards to a direct call to the Community Information Line in regards to the Proposed modification.	Sydney Metro has since responded to all phone calls from stakeholders and continues to respond to enquiries regarding the proposed modification.
6	<i>Assessment approach</i>	
6.1	<p>A submission raised the assessment approach undertaken was insufficient and a new Environmental Impact Statement with detailed assessment of impacts inviting public comment should be undertaken including further consultation with the local community.</p> <p>It was noted that the doubling of heavy vehicle movements per hour (during night time period) from one to two requires the submission of a new Environmental Impact Statement. It was also noted that safety of other road users and pedestrians was a primary driver requiring the submission of a new Environmental Impact Statement.</p>	Engagement with the Department of Planning, Industry and Environment was undertaken in relation to the proposed modification including a formal pre-lodgement meeting. A new Environmental Impact Statement was not deemed to be required and as such a Modification Report was prepared in accordance with section 5.25 of the <i>Environment Planning and Assessment Act 1979</i> .
7	<i>Project construction planning</i>	
7.1	<p>A number of clarifications and/or concerns were raised through submissions regarding the project construction planning and project schedule and the subsequent need to utilise Blues Point as an access point for tunnel fit out works. These included:</p> <ul style="list-style-type: none"> • requests to utilise Barangaroo site as the original preferred location for access for tunnel fit out works as per the original EIS and construction planning • the reason the restriction of access at Barangaroo and Victoria Cross to complete tunnel fit out was not previously known and questions why the use of Blues Point for tunnel fit out work was not included as part of the original application for use of the site, nothing that engineering design challenges and the archaeological finds made in 2018 would have been known to have created a delay and that the project knew earlier that the Blues Point site would be required for line-wide access. • Sydney Metro has had the opportunity to control other access points and that Sydney Metro has allowed design changes at Barangaroo which have rendered Barangaroo no longer viable. 	<p>The Blues Point temporary site has been identified as the required location for under-harbour tunnel fit out works as other tunnel access points on either side (such as Victoria Cross and Barangaroo) are being used for station construction. The original Barangaroo construction program was based upon a basic concept design. Changes throughout the design development phase, combined with the significant heritage find of Barangaroo Boat, have impacted the Barangaroo construction program and mean the site cannot be used for under-harbour fit out works as originally planned. Figure 1 shows the constraints in access from both Barangaroo and Victoria Cross.</p> <p>Figure 2 identifies the alternative access points considered for these fit out works.</p> <p>Some tunnel fit out activities are able to be undertaken from the Crows Nest Station construction site which has minimised the overall time Blues Point temporary site would be required. Rail will be delivered to Crows Nest Station to be welded before being placed along the length</p>

Item	Submission issue	Response
	<p>It was noted that the Modification Report did not address why development at Barangaroo was permitted to such an extent as to render alternative access shafts at Barangaroo unavailable.</p> <ul style="list-style-type: none"> • clarity on the delay at Barangaroo and how significant amount of time would be needed to recover the program • Barangaroo site is noted as a safer site due to the large construction site with existing safety infrastructure • options for creative engineering, planning and project management solutions should be considered to enable the use of the Barangaroo Site to avoid the continued use of Blues point for the proposed modification • the use of Blues Point site was identified by a Sydney Metro representative as 'more convenient' and that access at Barangaroo was difficult. • note that the Modification Report did not adequately address access from the Chatswood and Marrickville sites dive sites as outlined in the original Environmental Impact Statement • note that other Transport for NSW projects could be years late and that the delay would be acceptable if the Blues Point Reserve could be reinstated in 2020 • request for an independent review or clarification of the construction planning. 	<p>of the tunnels to Barangaroo. This tunnel fit out activity would be undertaken prior to access being blocked by the construction works at Victoria Cross Station. Once the rail is placed within the tunnels between Victoria Cross and Barangaroo, the remaining under-harbour tunnel fit out works are proposed to be undertaken from the Blues Point temporary site.</p> <p>Further details as to the alternative access locations considered were discussed in section 2.2.1 of the Modification Report.</p>
7.2	<p>A query was raised as to whether another application for extension would be sought by Sydney Metro to continue to utilise Blues Point reserve after this modification.</p>	<p>No further applications to extend the use of the Blues Point site are anticipated. As discussed in Item 1.6, to ensure the acoustic shed is removed prior to the 2021/22 Christmas and New Year period, Sydney Metro recommends condition of approval E48.1 is modified.</p>
7.3	<p>A clarification was raised as to if the impact of the Covid-19 restrictions has contributed to a delay in program and the impacts on number of construction workers within the tunnel.</p>	<p>Safe work practices are of paramount importance to Sydney Metro and the Project. Under workplace health and safety law, all employers or businesses are required to manage the risk of COVID-19 to workers and others in the workplace. This involves assessing the risk and looking for ways to minimise the spread of the virus, including complying with Public Health orders and encouraging social distancing and hygiene measures.</p> <p>There are currently allowances in place at construction sites across</p>

Item	Submission issue	Response
		NSW for some work to take place on Sundays and public holidays during COVID-19 to ensure workers can practice social distancing without a loss of productivity or jobs. Sydney Metro will notify the community of all works to take place, including on Sundays and public holidays.
7.4	A submission raised that the Modification Report does not address delivery of pre-cast track slab, as an alternative to in-situ concrete pours.	The delivery of a pre-cast slab is not a viable alternative as it would increase the timeframe for the work when compared with in-situ concrete pours.
8	<i>Alternatives to road transport</i>	
8.1	<p>Submissions raised that when the site was originally established it was recognised that Blues Point Road was unsuitable for large trucks and therefore the jetty and barging facility was built to enable the removal of spoil and other tunnelling equipment.</p> <p>It was raised that barging or other alternative to road transport should be further investigated for use for these works to avoid the increased heavy vehicle movements.</p>	<p>The Environmental Impact Statement assessed the likely use of Blues Point Road by construction vehicles, including heavy vehicles. The option of transporting large tunnel boring machine components by barge using the existing wharf facilities at the end of Blues Point Road was further investigated during detailed construction planning and implemented for this scope of work.</p> <p>As outlined in Item 1.2 on alternatives to road transport, all viable options for alternatives to heavy vehicles delivering materials to site have been investigated. However, transport of the tunnel fit out materials would not be possible by barge to the Blues Point temporary site.</p>
9	<i>Traffic and parking impacts</i>	
9.1	<p>Concerns were raised through public submissions regarding the proposed increase in heavy vehicle traffic along Blues Point Road during and outside standard construction hours. Submissions noted the arrivals and departures would be a significant increase from what is currently experienced and to the traffic movements outlined in the original Environmental Impact Statement and Construction Traffic Management Plan. These included:</p> <p>in addition to heavy vehicle movements, light vehicles (e.g. vans, utes and other vehicles associated with contractors and on-site workers) would increase traffic congestion within the area to the point of being unmanageable</p>	<p>Refer to Item 1.3 for further discussion regarding construction traffic and Item 1.4 regarding proposed out of hours material deliveries.</p> <p>As a result of feedback from the community and stakeholders throughout this consultation period, Sydney Metro proposes an additional environmental mitigation measure to reduce the noise impacts to the surrounding community during the early morning as outlined in Table 3 by not undertaking out of hours heavy vehicle movements to the Blues Point temporary site between 12am to 7am, except where circumstances require larger (oversized) vehicle</p>

Item	Submission issue	Response
	<p>the Modification Report sets out the heavy vehicle numbers proposed during the extended access period however the Modification Report does not specify proposed numbers on Saturdays, Sundays or public holidays. Clarification as to the timing of heavy vehicle movements on Saturdays, Sundays or public holidays was sought.</p> <p>out of hours heavy vehicle movements (after 6pm and on weekends) are proposed for 12 months which is significantly longer than the aggregate duration of the tunnel boring machine component retrievals (4 months with breaks in between).</p> <p>the lack of parking at Blues Point Reserve for residents and visitors as car spaces are taken by construction workers or reserved for trucks or cranes.</p>	<p>movements to be undertaken outside standards hours (after midnight), at the direction of NSW Police and/or Transport for NSW.</p>
9.2	<p>A submission raised that an updated dilapidation report be undertaken which would allow for compensation/restoration as a result of the additional duration of heavy vehicle movements.</p>	<p>The Linewide contractor would complete the required building condition surveys in accordance with condition of approval E59. The condition survey would be focused on the road infrastructure as a result of the heavy vehicle movements proposed.</p>
10	<p><i>Construction noise and vibration and proposed construction hours</i></p>	
10.1	<p>A number of submissions raised strong concerns regarding noise levels from heavy vehicle movements occurring during the day and night as a result of the proposed modification. These included:</p> <ul style="list-style-type: none"> noting the increase in traffic (including heavy vehicles) would result in a major disruption to McMahon's Point and its residents the significant grade of Blues Point Road which means that trucks were noisier as they descend and climb the hill. It was also noted the reversing beepers disturbed and awoke residents. noting heavy vehicles idle in after hour periods outside residential flats and homes causing residents to experience interrupted sleep for extended periods. <p>The proposed timing and frequency of out of hours heavy vehicle movements was requested to be clarified as part of the assessment process. The possibility of works 24 hours a day, 7 days a week was queried noting the current working hours are too long for residents.</p>	<p>Refer to Item 1.4 for further discussion on construction noise and vibration, and proposed out of hours material deliveries.</p>

Item	Submission issue	Response
	<p>Requests were identified for appropriate limits to be applied during out of hours works including:</p> <ul style="list-style-type: none"> • limiting heavy vehicle movements between 10pm and 6am • limiting concrete deliveries to before 1pm on Saturdays and no concrete deliveries on Sundays and public holidays (noting that no deliveries are intended, but this would provide certainty for the local residential community) • concrete pours to commence no less than 1 hour before end of standard construction hours, minimising the risk of concrete truck movements outside standard construction hours and to help protect the amenity of the local residential community. 	
11	<i>Timing of acoustic shed removal</i>	
11.1	<p>Clarification was sought by submissions as to the timeframe the acoustic shed would be in place on site. It was noted that although the shed was approved to be removed late in 2020 prior to the Christmas/New Year's period, the shed was scheduled to be removed by the TSE contractor in June/July 2020. As a result the actual increase in time was noted to be closer to 18 months rather than the 12 months outlined within the Modification Report.</p>	Refer to Item 1.1 for further discussion on the timing of the proposed modification.
12	<i>Public safety</i>	
12.1	<p>Public safety risks to the community in McMahons Point were raised through submissions predominantly as a result of potential conflicts with heavy vehicles and pedestrians and cyclists. These included:</p> <ul style="list-style-type: none"> • the need for heavy vehicle drivers to reduce and monitor speed and ensure awareness while driving within the McMahons Point precinct (particular along Blues Point Road) where streets are narrower to ensure public safety as well as to reduce the potential to damage other parked vehicles, the road surface and other road infrastructure (e.g. pedestrian refuges) • the size and number of the heavy vehicles that can safely travel along Blues Point Road noting that other vehicles need to stop and pull over to allow these heavy vehicles to pass safely 	Refer to Item 1.5 for further discussion regarding public safety management for the proposed modification.

Item	Submission issue	Response
	<ul style="list-style-type: none"> the Project makes Blues Point Reserve an unsafe place for visitors including buses from retirement villages and other institutions for people with a disability with conflicts between vehicles entering and exiting the site and pedestrians even with traffic marshals present. <p>A submission recommended:</p> <ul style="list-style-type: none"> site-specific driver training covering local pedestrian movements, speed management, noise mitigation and idling and parking along Blues Point Road and surrounding streets a temporary pedestrian walkway along the western side of Blues Point Road opposite the site ongoing safety audits. 	
13	<i>Visual amenity impacts and loss of green open space</i>	
13.1	<p>Submissions raised the significant impacts of the continued visual amenity impacts as a result of the acoustic shed including from its colour and size as a dominant feature in the area. These impacts extend from residents views from homes to visitors, weddings, events and photography. In particular the impacts as a result of the acoustic shed being in place during the New Year's Eve fireworks for a further year. It was noted this proposed modification breaks the firm understanding to residents and the public to restore the park to public use for New Years Eve 2020/2021.</p> <p>A submission raised concerns regarding the loss of Henry Lawson Reserve as green open space for the use of residents, community, visitors.</p>	<p>Refer to Item 1.6 for further discussion of visual amenity and social impacts as a result of the proposed modification.</p> <p>Sydney Metro acknowledges the views of some of the local community regarding the proposal to use the Blues Point temporary site for up to an additional 12 months. The acoustic shed needs to remain in place to mitigate noise impacts from the tunnel fit out work between Barangaroo and Victoria Cross.</p>
14	<i>Health and wellbeing impacts</i>	
14.1	<p>Submissions raised concerns regarding general health and wellbeing impacts as a result of the proposed modification including wellbeing impacts due to the reduced 'quiet enjoyment' of their homes and health risks due to pollution.</p>	<p>Sydney Metro acknowledges the additional impacts on the community and thanks local residents and businesses for their patience while work continues in the area. If approved, work will be carried out in accordance with the relevant conditions of approvals to minimise impacts to the community.</p>

Item	Submission issue	Response
15	<i>Cumulative impacts</i>	
15.1	<p>A submission identified the need for the cumulative impacts to be further considered as a result of the proposed modification with the length of time the approved project has had amenity and visual impacts on surrounding residents.</p> <p>A submission raised that the proposed modification would result in additional cumulative impacts at the Blues Point temporary site from those identified for the approved project as a result of the potential increase in night-time heavy vehicle movement increase from one per hour in the Environmental Impact Statement to up to two per hour (up to eight per night) as noted within the Modification Report.</p>	Refer to item 2.2 for further discussion of cumulative impacts as a result of the proposed modification.
16	<i>Light spill</i>	
16.1	<p>A query was raised as to the management and avoidance of night work within the Blues Point site to reduce light spill for surrounding residents.</p> <p>Light pollution including flashing lights from idling trucks was also raised as a concern from the movement of heavy vehicles along Blues Point Road.</p>	As outlined in section 5.3.2 of the Modification Report, any work at night which would require lighting would be undertaken in accordance with existing mitigation measures to avoid light spill, or would be undertaken within the acoustic shed.
17	<i>Compensation</i>	
17.1	Requests for compensation for landlords/owners were raised through submissions due to the duration of impacts to amenity and visual impacts.	While Sydney Metro appreciates the impacts on property owners and tenants, financial compensation is not offered as a result of project works performed in accordance with planning approvals provided by the Department of Planning, Industry and Environment.
18	<i>Rubbish</i>	
18.1	A submission raised a request for appropriate facilities for rubbish disposal facilities on site (including for cigarette butts, coffee cups) to ensure the harbour is not polluted.	Noted. These facilities are provided and would continue to be provided on site.

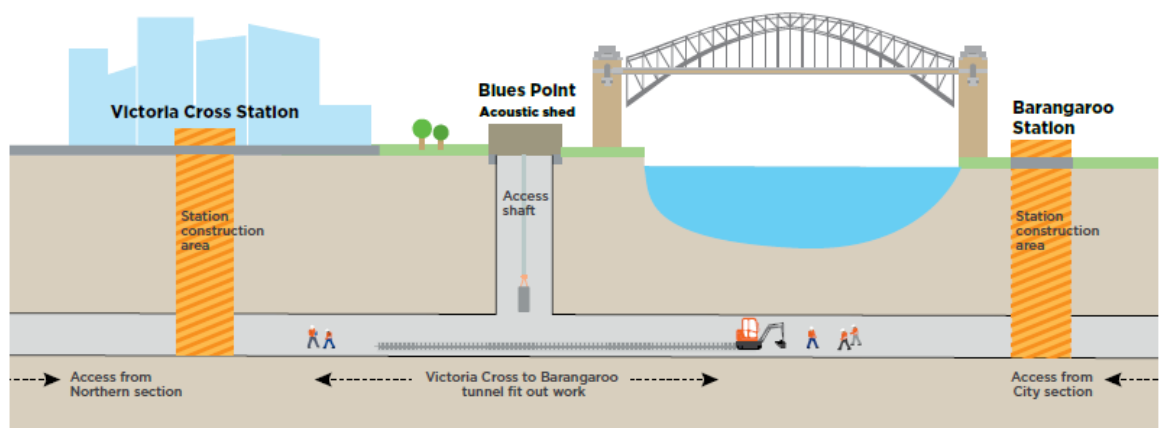


Figure 1 Construction access constraints



Figure 2 Alternative access points considered

4 Additional environmental mitigation measure

As a result of consultation with the community and stakeholders, Sydney Metro proposes an additional environmental mitigation measure to reduce the traffic noise impacts to the surrounding community during the early morning as outlined in Table 3. A full list of revised environmental mitigation measures is included in Appendix A.

Table 3 Additional mitigation measure

ID	Mitigation measure	Applicable location(s)
	<i>Construction noise and vibration</i>	
NV13	Out of hours heavy vehicle movements to the Blues Point temporary site would not be undertaken between 12am to 7am, except where circumstances require larger (oversized) vehicle movements to be undertaken outside standards hours (after midnight), at the direction of NSW Police and/or Transport for NSW.	BP- Blues Point temporary site

Appendix A- Revised Environmental Mitigation Measures

Revised environmental mitigation measures

The list of mitigation measures presented in the Submissions and Preferred Infrastructure Report and subsequent modification reports have been revised based on the assessment carried out for the proposed modification.

Table 4 provides the revised consolidated environmental mitigation measures. This table supersedes the mitigation measures presented in the Submissions and Preferred Infrastructure Report and modification reports. New mitigation measures or additions to existing mitigation measures are shown in bold text, with deletions shown with a strikethrough.

Due to recent machinery of government changes in NSW, all references in Table 4 should now be read as the following:

- Roads and Maritime Services and CBD Coordination Office - now known as Transport for NSW
- Barangaroo Development Authority- now known as Infrastructure NSW.

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 4 Revised environmental mitigation measures

ID	Mitigation measure	Applicable location(s)
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 	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s)
	<ul style="list-style-type: none"> ▪ 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. 	
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
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

ID	Mitigation measure	Applicable location(s)
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
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	VC

ID	Mitigation measure	Applicable location(s)
	would be retained during construction (in conjunction with suitable pedestrian management measures along the McLaren Street frontage).	
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
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, Blues Point, 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 	All

ID	Mitigation measure	Applicable location(s)
	<ul style="list-style-type: none"> ▪ 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>	
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 exceedances 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
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>	All

ID	Mitigation measure	Applicable location(s)
	<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. 	
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	Opportunities to minimise heavy vehicles movements on Randle Lane at night would be further investigated during detailed construction planning.	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	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.	VC

ID	Mitigation measure	Applicable location(s)
NV11	Opportunities to minimise heavy vehicle movements from the Victoria Cross Station northern construction site at night would be further investigated during detailed construction planning.	VC
NV12	Ballast tamping and rock breakers would not be undertaken during the night-time period (10pm to 7am) except where circumstances arise that require the use of this plant to ensure the rail corridor is made safe for the operation of trains by the conclusion of a scheduled rail possession.	STWS
NV13	Out of hours heavy vehicle movements to the Blues Point temporary site would not be undertaken between 12am to 7am, except where circumstances require larger (oversized) vehicle movements to be undertaken outside standards hours (after midnight), at the direction of NSW Police and/or Transport for NSW.	BP
Operational noise and vibration		
OpNV1	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). At property treatments would be offered where there are residual exceedances of the trigger levels.	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	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: <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 Industrial Noise Policy, 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	STWS

ID	Mitigation measure	Applicable location(s)
	reasonable mitigation measures taking into consideration the likely duration of the phased operations.	
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
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 McMahon's 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) 	CDS, VC, BP, MP, CS, WS, MDS, SS

ID	Mitigation measure	Applicable location(s)
	<ul style="list-style-type: none"> ▪ 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. 	
NAH2	The archaeological research design would be implemented. 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.	CDS, CN, VC, BP, BN, MP, PS, CS, WS, PSR
NAH3	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.	All except metro rail tunnels
NAH4	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, Waterloo Station and Sydenham Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.	CDS, VC, MP, PS, CS, WS, SS
NAH5	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.	VC, MP, CS
NAH6	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.	All
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

ID	Mitigation measure	Applicable location(s)
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
NAH19	<p>Subject to outcomes of consultation with the church, temporary and permanent works at the Congregational Church would:</p> <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

ID	Mitigation measure	Applicable location(s)
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 <i>Australian Standard AS4970 the 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
LV5	Opportunities for the retention and protection of existing trees would be identified during detailed construction planning.	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s)
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, BP, BN, MP, PS, WS, MDS
LV8	Tunnel boring machine retrieval works and tunnel fit out works at the Blues Point temporary site would be timed so that impacts from the acoustic shed would be minimised during to avoid key harbour viewing events, where possible. The installation of the acoustic shed at the Blues Point temporary site would occur after the New Year's period of 2018/2019 and the shed would be dismantled prior to the New Year's period of 2021/2022 .	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
LV20	The colour palette of the temporary acoustic shed at the Blues Point temporary site should adopt the following recommended colours, or similar: <ul style="list-style-type: none"> ▪ Acoustic shed roof: Colorbond monument ▪ Acoustic shed walls: Colorbond mangrove. 	BP
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-20 th 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

ID	Mitigation measure	Applicable location(s)
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
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	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	CDS, AS, VC, BP, BN, CS, WS, STWS, PSR

ID	Mitigation measure	Applicable location(s)
	<p>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 Camdenville 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>	
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
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 80 th 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

ID	Mitigation measure	Applicable location(s)
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 taxifoli</i> .	GI
Flooding and hydrology		
Construction		
FH1	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. Not worsen is defined as: <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	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.	MDS

ID	Mitigation measure	Applicable location(s)
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	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.	STW, AS, MDS, SS, STWS
FH5	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.	STW, AS, MDS, SS, STWS
FH6	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.	MDS, SS, STWS
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 	All except metro rail tunnels

ID	Mitigation measure	Applicable location(s)
	<ul style="list-style-type: none"> ▪ 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. 	
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
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

ID	Mitigation measure	Applicable location(s)
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, BP, 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

ID	Mitigation measure	Applicable location(s)
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
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

ID	Mitigation measure	Applicable location(s)
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
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: 	All

ID	Mitigation measure	Applicable location(s)
	<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. 	