



# Planning Approval Consistency Assessment Form

SM ES-FT-414

Sydney Metro Integrated Management System (IMS)

<b>Assessment Name:</b>	Cooling water supply to Barangaroo Station
<b>Prepared by:</b>	Sydney Metro
<b>Prepared for:</b>	Sydney Metro
<b>Assessment number:</b>	TfNSW 43
<b>Status:</b>	Final
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<b>Planning approval:</b>	SSI 15_7400
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The Planning Approval Consistency Assessment Form should be completed in accordance with the Sydney Metro Planning Approval Consistency Assessment Procedure (SM ES-PW-314) and Sydney Metro Environmental Planning and Approval Manual (SM ES-ST-216)

## 1.0 Existing Approved Project

Planning approval reference details (Application/Document No. (including modifications)):

SSI\_7400 Sydney Metro City & Southwest – Chatswood to Sydenham, as modified.

Modification 1 – Relocation of Victoria Cross northern services building, additional station entry and relocation of Artarmon Substation

Modification 2 – Central Walk

Modification 3 – Martin Place Metro Station

Modification 4 – Sydenham Station and Sydney Metro Trains Facility South

Modification 5 – Blues Point acoustic shed

Modification 6 – Administrative Changes

Modification 7 – Modify condition E100/E46

Modification 8 – Blues Point site access

Date of determination:

SSI 15\_7400 – 9 January 2017

Mod 1 – 18 October 2017

Mod 2 – 21 December 2017

Mod 3 – 22 March 2018

Mod 4 – 13 December 2017

Mod 5 – 2 November 2018

Mod 6 – 21 February 2019

Mod 7 – 29 June 2020

Mod 8 – 25 November 2020

Type of planning approval:

Division 5.2 – critical State significant infrastructure

Description of existing approved project you are assessing for consistency:

The Chatswood to Sydenham component of Sydney Metro City & Southwest comprises a new metro rail line, approximately 16 kilometres long, between Chatswood and Sydenham. New metro stations would be provided at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo, as well as new underground metro platforms provided at Central Station.

Section 6.6.3 of the Environmental Impact Statement outlines the description of the approved infrastructure at Barangaroo Station.

Consistency assessment TfNSW 7 assessed the change in design to the approved traction substation at Barangaroo Station and its relocation underground. The assessment noted that the underground location would require a cooling system to be installed. At the time of that assessment, there were a number of options available for cooling, including connections to cooling system infrastructure being delivered by Barangaroo Delivery Authority (BDA) (now Infrastructure NSW (INSW)). The assessment noted that the potential impacts of the final design of the cooling system would be undertaken as detailed design is developed.

Relevant background information (including EA, REF, Submissions Report, Director General's Report, MCoA):

Chatswood to Sydenham Environmental Impact Statement May 2016

Chatswood to Sydenham Submissions and Preferred Infrastructure Report October 2016

Chatswood to Sydenham conditions of approval 29 June 2020, as modified

Modifications 1-8 Modification Reports and Submission Reports

All proposed works identified in this assessment would be undertaken in accordance with the mitigation measures identified in the EIS, SPIR, modification reports, submission reports and the Infrastructure Approval, as modified.

## 2.0 Description of proposed development/activity/works

Since the completion of Consistency assessment TfNSW 7, ongoing design development has been undertaken and a preferred solution (referred to as Option 3) for the cooling water supply and associated connections has been identified.

The preferred cooling water supply and associated connections involve seawater cooling via:

- Building a new seawater energy transfer plantroom located within the existing INSW plantroom, within the Cutaway in Barangaroo Reserve (also refer to as Headland Park). The plantroom would include seawater titanium heat exchangers and variable speed pumps and seawater basket and automatic strainers
- The existing plantroom is also provisioned with dual 400mm diameter flow and return pipes
- Two new sets of 300mm diameter condenser water pipework would be installed from Barangaroo Station to the energy transfer plantroom
- Building management and control systems.

The proposed cooling system for Barangaroo Station would also provide cooling for a potential Art Gallery within INSW land. An allowance of 2,700kW cooling has been made for the Art Gallery and 2,100 kW cooling for Barangaroo Station. The existing plantroom and associated flow and return pipes form part of the SSD approval for the Barangaroo Headland Park and Northern Cove (MP10\_0048). This planning application considered the environmental impacts of the use of seawater cooling. The assessment concluded that provided the detailed design of the cooling system addresses the identified design issues (such as temperature differential, velocity discharge, separate of intake and discharge pipes, and the use of anti-fouling agent and filters etc), then seawater cooling system would not cause any adverse environmental impacts on Sydney Harbour. These recommendations were incorporated into the detailed design of the existing INSW cooling system.

The Proposal must be assessed for consistency against the approval to understand whether a modification is required. The relevant condition of approval for the Proposal is E107:

*The CSSI must be constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.*

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Appendix A is the Marine Ecological Impact Assessment which assesses the impact of the Proposal on the marine ecological conditions, in accordance with the requirements of the NSW Water Quality Objectives and relevant legislation. To support the impact assessment a marine ecology assessment was undertaken by Niche Environment and Heritage (Niche) and discharge modelling undertaken by MetOcean Solutions. Consultation has been undertaken with the EPA on the assessment prepared for the proposed works. The outlet and intake locations is shown in Figure 1.

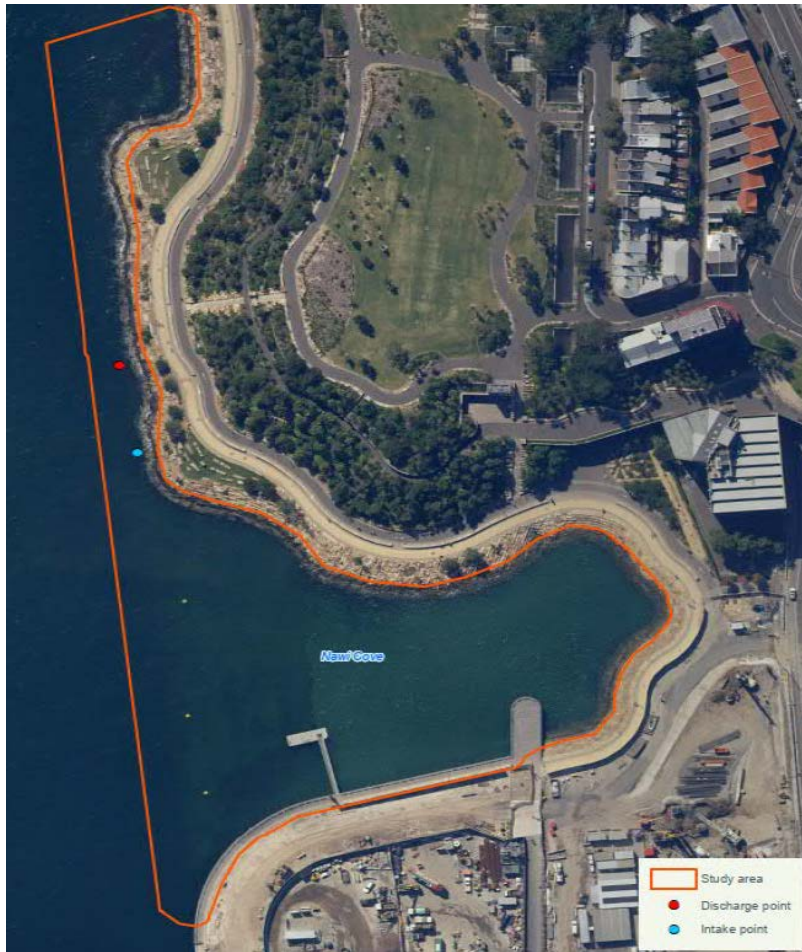


Figure 1: Marine study area and location of existing INSW intake and outlets

(Uncontrolled when printed)

This consistency assessment also relates to the new connection pipework from the existing plant to Barangaroo Station. The new pipework would require trenching from the Cutaway to the station development, as shown in blue in Figure 2. The proposed trenching is located in areas recently disturbed and developed as part of the Barangaroo Headland works. The impacted area would be reinstated to existing conditions following the trenching works.

The trenching works would occur from the Station Box to the Entrance to the 'cutaway'. This would involve excavation, muck away and laying of pipes, pit and conduits. The plant and equipment required for this general civil works would include using a small excavator, a dumper and a spoil truck.

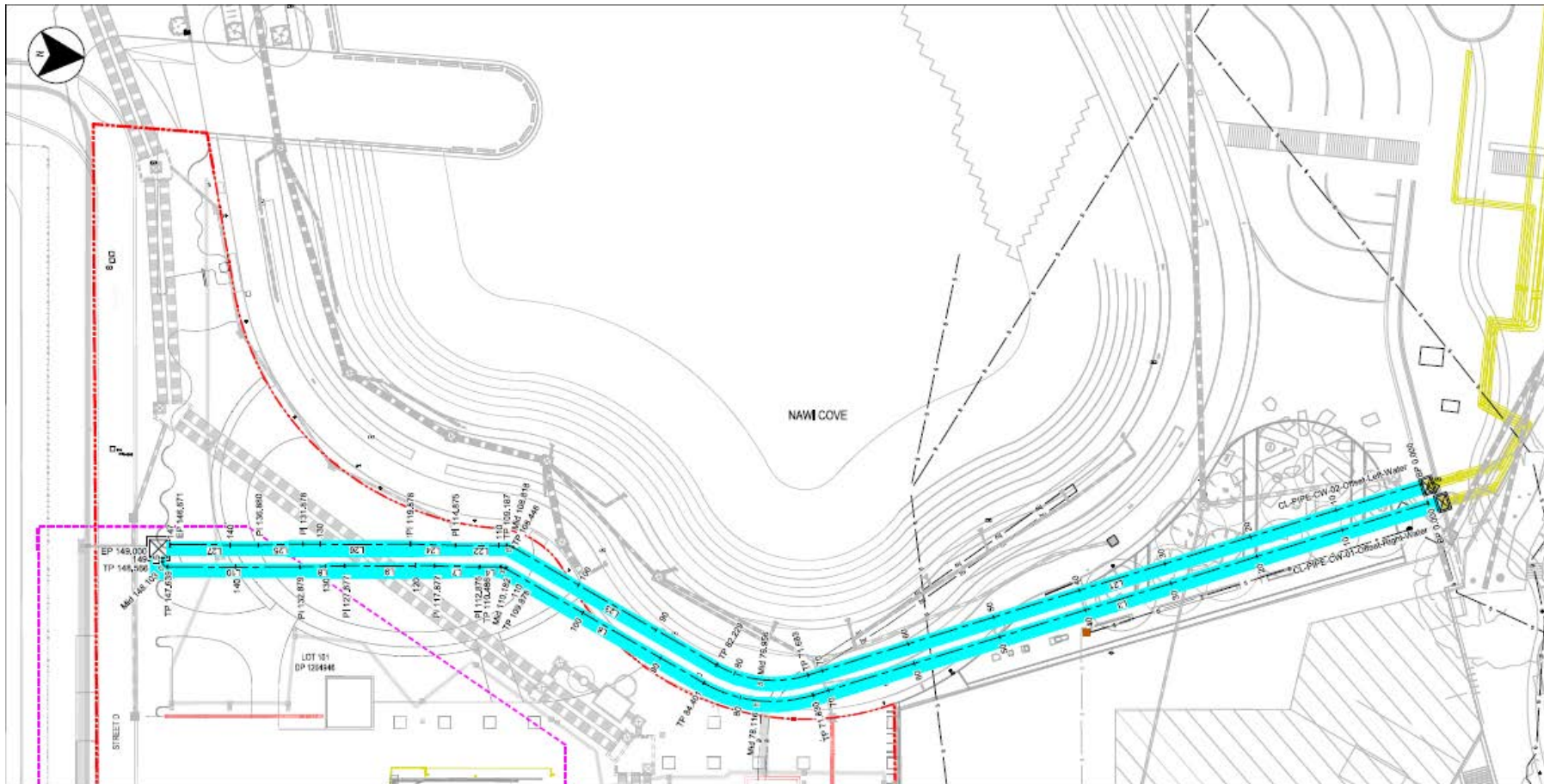


Figure 2: Proposed pipework connection (blue)

### 3.0 Timeframe

There is no change to the proposed duration of works at Barangaroo Station. Works at the site are anticipated to be completed by mid 2023, followed by testing and commissioning.

### 4.0 Site description

The proposed cooling water supply and connections are located between Hickson Road and Sydney Harbour, within the suburb of Barangaroo and to the north of the Central Barangaroo development. The proposed cooling water supply and connections would be located on Lot 101, DP 1204946.

### 5.0 Site Environmental Characteristics

Barangaroo Reserve is located to the north of the works and the Central Barangaroo development is located to the south, with Hickson Road to the east. Sydney Harbour and Nawi Cove are located to the west of the proposed site. The Barangaroo Central development is located to the south of the proposed construction site and currently comprises construction sites. The Cutaway cultural space is located within Barangaroo Reserve. Residential properties are located to the east of Hickson Road, above the Hickson Road retaining wall.

The site of the proposed trenching comprises recently landscaped elements associated with the plaza and pavilion that provides a southern entry to Barangaroo Reserve, at Nawi Cove. The proposed works would not impact on the foreshore area of Barangaroo Reserve, referred to as Wulugul Walk. Access along Wulugul Walk would be maintained and pedestrian diversion routes provided within the southern entry to Barangaroo Reserve where required.

The marine habitats around the discharge point are composed almost entirely of soft silt sediment and rock/reef structures (refer to Figure 3). Sensitive receptors to temperature change and/or anti-fouling discharge would be sessile invertebrates and algal assemblages located on the shoreline wall near to the outlet. Key species that are present are Blue Mussels and the bryozoan *B. neritina*.



Figure 3: Marine study area habitats



## 6.0 Justification for the proposed works

Cooling water is required to support Barangaroo Station and the underground traction substation. Initially options for the chilled water supply to be provided by INSW from within the Central Barangaroo Development (CBD) were being investigated. However, as the Station will be operational before the construction of the CBD is completed, obtaining water from the adjacent development is not possible.

As such, alternative options were investigated. Options included temporary air cooled chillers at two different locations, seawater cooling, and air cooled fluid coolers at a remote location.

Option 3 was identified as the preferred option as it provides the best overall system resilience, has the least environmental impact and is also the most cost effective solution. The preferred solution would also not result in any visual disturbance to Barangaroo headland or reserve. The use of seawater for cooling also reduces the need for use of fresh water.

Consultation has been undertaken with INSW to develop options and agree on the proposed preferred option. Sydney Metro continues to liaise with INSW through the design of the proposed activity to ensure integration with their existing infrastructure.

Consultation has been undertaken with Environment Protection Authority (EPA) regarding the Marine Ecology Impact Assessment (Appendix A) including hydrodynamic modelling for the proposed works as it relates to the water quality objectives. Sydney Metro presented this assessment outcomes to EPA on the 29 July 2020 and provided EPA with the draft Marine Ecology Impact Assessment report for review following the presentation. The EPA provided written feedback on 21 August 2020 to clarify the modelling results specifically for near-field mixing zone to ensure temperature and anti-fouling concentrations met the water quality objectives and requested EPA have input to the proposed monitoring program prior to its implementation. The EPA had no further comments on the proposed works ability to meet the water quality objectives.

Sydney Metro provided a written response to EPA on 4 November 2020, including the results of the further near-field mixing zone modelling which demonstrated that the nearfield zone is away from the shoreline, that the discharge would be compliant with the NSW Water Quality Objectives and the shoreline and seabed would not be subjected to antifoulant concentrations that would impact marine habitats, precluding the need to redesign the discharge pipe arrangement. The EPA response also included a proposed monitoring program. These updates were included within the Final Marine Ecology Impact Assessment (Appendix A).

## 7.0 Environmental Benefit

The preferred solution for the use of seawater cooling would reduce the need for the use of fresh water resources.

## 8.0 Control Measures

Will a project and site specific EMP be prepared? Yes

Are appropriate control measures already identified in an existing EMP? No.

An Operational EMP (as required by Condition of Approval D1) or EMS (or if Condition of Approval D2 applies) would be prepared or updated with the proposed control measures outlined within this consistency assessment and implemented by the appropriate parties to ensure operational monitoring requirements are implemented.

## 9.0 Climate Change Impacts

Is the site likely to be adversely affected by the impacts of climate change? No



If yes, what adaptation/mitigation measures will be incorporated into the design? Not applicable

## 10.0 Impact Assessment – Construction

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Flora and fauna	No change from the approved project.	No additional measures required.	Y	Y	
Water	The proposed trenching works would be undertaken in close proximity to Nawi Cove and Sydney Harbour. Appropriate erosion and sediment control measures would be installed for the proposed works (as per mitigation measure SCW3).	No additional measures required.	Y	Y	
Air quality	The proposed trenching works would generate minor dust emissions and involve the use of plant. The proposed works would be undertaken in accordance with existing air quality mitigation measures (AQ1 to AQ7).	No additional measures required.	Y	Y	
Noise vibration	The proposed trenching works would generate minor, short term noise impacts associated with the use of plant. The proposed works would be undertaken in accordance with existing noise and vibration mitigation measures and the Construction Noise and Vibration Strategy (as per mitigation measure NV1).	No additional measures required.	Y	Y	
Aboriginal heritage	The proposed works would be undertaken in recently disturbed areas of the southern entry of Barangaroo Reserve. As such, the potential of encountering areas of Aboriginal significance is low. Condition of Approval E19 for unexpected finds would continue to apply.	No additional measures required.	Y	Y	
Non-Aboriginal heritage	The proposed works would be undertaken in recently disturbed areas of the southern entry of Barangaroo Reserve. As such, the potential of encountering areas of archaeological significance is low. No listed heritage items would be directly affected by the proposed works. Condition of Approval E19 for unexpected finds would continue to apply.	No additional measures required.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Community and stakeholder	Visitors to Nawi Cove and the Barangaroo Headland may be temporarily disrupted as a result of the proposed works through the use of pedestrian diversion routes. However, access to the Reserve and Wulugul Walk would be maintained during the proposed works.	No additional measures required.	Y	Y	
Traffic	There would be negligible impacts to the traffic network as a result of the proposed works. Pedestrian access to Barangaroo Reserve and Wulugul Walk would be maintained during the proposed works.	No additional measures required.	Y	Y	
Waste	Minor amounts of spoil would be generated from the trenching works. Waste would be managed in accordance with the approved project.	No additional measures required.	Y	Y	
Social	No change from the approved project.	No additional measures required.	Y	Y	
Economic	No change from the approved project.	No additional measures required.	Y	Y	
Visual	The proposed works would result in the temporary visual impact to the recently completed pavilion and southern entry of Barangaroo Reserve. This impact would be short term in nature and it is noted that there are a number of large construction sites to the south of the proposed trenching works.	No additional measures required.	Y	Y	
Urban design	The proposed works would be located in the recently completed pavilion and southern entry to Barangaroo Reserve. Following completion of the works, the exiting landscaping and urban design elements would be reinstated as per their current condition.	No additional measures required.	Y	Y	
Geotechnical	No change from the approved project.	No additional measures required.	Y	Y	
Land use	No change from the approved project.	No additional measures required.	Y	Y	
Climate Change	No change from the approved project.	No additional measures required.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Risk	No change from the approved project.	No additional measures required.	Y	Y	
Other	No change from the approved project.	No additional measures required.	Y	Y	
Management and mitigation measures	No change from the approved project.	No additional measures required.	Y	Y	

## 11.0 Impact Assessment – Operation

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Flora and fauna	<p>Appendix A includes a Marine Ecology Impact Assessment for the proposed works. Below is a summary of the findings of this report as it relates to impacts on flora and fauna.</p> <p>Comparison of the modelling results and the location of protected habitats demonstrates that the Proposal's discharge would not impact the nearby protected areas at Balmain East and Goat Island.</p> <p>The marine habitats around the discharge point are composed almost entirely of soft silt sediment and rock/reef structures. Sensitive receptors to temperature change and/or anti-fouling discharge would be sessile invertebrates and algal assemblages located on the shoreline wall near to the outlet. Key species that are present are Blue Mussels and the bryozoan <i>B. neritina</i>. However, given the temperature-resilience of the species present, the natural variability of ambient water temperature in Sydney Harbour and the limited modelled change in temperature along the shoreline as a result of the proposed discharge, the expected impact to sessile organisms is not considered significant. Similarly, impacts on mobile fauna, included the protected species (listed in Appendix A Table 4-1), from the Proposal are also expected to be negligible.</p> <p>No significant impact is predicted from the discharged anti-foulant due to its low toxicity, low discharge concentration and short duration of discharge. Planktonic larvae, phytoplankton and zooplankton, less mobile marine species and drifting marine vegetation would be susceptible to entrainment as many are typically passive and migrate through the water body with the aid of currents and natural water movements. In general, the impacts of entrainment in this area are considered minimal and not expected to have a</p>	Refer to mitigation measure 1 below.	Y	Y	

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Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	<p>substantial impact on the recruitment of any locally important species.</p> <p>As such, the proposed works would remain consistent with the impacts from the approved project.</p> <p>Potential impacts from the proposed works should be managed through implementation of mitigation measures and monitoring.</p>				
Water	<p>Appendix A includes a Marine Ecology Impact Assessment including hydrodynamic modelling for the proposed works. Below is a summary of the findings of this report as it relates to impacts on water quality.</p> <p>The proposed system would abstract water through the existing intake pipes (maximum normal operation velocity of 0.785m/second) and discharge it through the outlet pipes at a rate of approximately 330L/second. The quality of the proposed discharge is provided in the table below.</p> <p>All other parameters of the discharge water would be consistent with the ambient water temperature.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>• Temperature- 5.5°C above ambient</li> <li>• Anti-fouling agent- 6ppm (0.006ml/L) – discharged for one hour/day</li> </ul> <p>Key conclusions of the modelling were:</p> <ul style="list-style-type: none"> <li>• The nearfield mixing zone is away from the shoreline for both the temperature and antifouling agent</li> <li>• In the near field, the discharge plume will cool rapidly, resulting in less than 0.9°C above ambient levels within 10m of the discharge point for all current speeds.</li> <li>• The discharge plume will remain within the surface layers</li> </ul>	<p>1. A detailed monitoring program would be developed in consultation with the EPA six months prior to the commencement of commissioning. . The monitoring program should include the following:</p> <ul style="list-style-type: none"> <li>• The modelling prediction would be validated within three months of operation by:                             <ul style="list-style-type: none"> <li>○ Sampling water temperature at intervals from the discharge point along the shoreline and seabed.</li> <li>○ Using the data to compare the actual extent of the elevated temperature plume compared to the model predictions. This should include sampling of a reference site.</li> </ul> </li> <li>• Monitor impingement rates for the first three months of operations. Retrofit design</li> </ul>	Y	Y	

(Uncontrolled when printed)

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	<ul style="list-style-type: none"> <li>The increased temperature plume could spread to nearly 200m from the outlet, albeit infrequently and at temperatures less than 0.2°C.</li> <li>The change in temperature at the shoreline is expected to range from 0.11-0.83°C from the ambient water temperature</li> <li>The anti-fouling agent gets rapidly diluted after being released in the environment. Concentrations of the antifouling agent are shown to be near zero ppm when the plume attaches to the shoreline.</li> <li>Based on the available information it does not appear that the discharge will interact with other heat exchange discharge plumes and lead to a significant cumulative increase in temperature.</li> </ul> <p>Modelling of the near field mixing zone demonstrates the Proposal's discharge would generally not exceed the 80th percentile trigger value at the near field, including along the shoreline. There is a small risk for a minor exceedance (0.1°C) away from the shoreline under certain current speeds (only 0.1 m/s) during winter. All other current speeds do not exceed the trigger value. The discharge is therefore not considered to constitute thermal water pollution under the Protection of the <i>Environment Operations Act 1997</i> (POEO Act) and would comply with the NSW Marine Water Quality Objectives (i.e. the proposal would comply with Condition of Approval E107).</p> <p>As such, the proposed works would be consistent with the approved project.</p> <p>Potential impacts from the proposed works should be managed through implementation of mitigation measures and monitoring.</p>	<p>solutions in case significant impingement is evident</p> <ul style="list-style-type: none"> <li>Annual testing for at least five years to confirm against water quality objectives for:                             <ul style="list-style-type: none"> <li>water and sediment samples within the local area for active ingredients of MEXEL 432, compared against a reference site</li> <li>collected shoreline and seabed organisms within the local area for active ingredients of MEXEL 432, compared against a reference site.</li> </ul> </li> </ul>			
Air quality	No change from the approved project.	No additional measures required.	Y	Y	



Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Noise vibration	No change from the approved project.	No additional measures required.	Y	Y	
Aboriginal heritage	No change from the approved project.	No additional measures required.	Y	Y	
Non-Aboriginal heritage	No change from the approved project.	No additional measures required.	Y	Y	
Community and stakeholder	No change from the approved project.	No additional measures required.	Y	Y	
Traffic	No change from the approved project.	No additional measures required.	Y	Y	
Waste	No change from the approved project.	No additional measures required.	Y	Y	
Social	No change from the approved project.	No additional measures required.	Y	Y	
Economic	No change from the approved project.	No additional measures required.	Y	Y	
Visual	The proposed pipework connections would be underground so no operational visual impacts would occur.	No additional measures required.	Y	Y	
Urban design	Following the completion of the trenching works, the existing landscaping elements would be reinstated.	No additional measures required.	Y	Y	
Geotechnical	No change from the approved project.	No additional measures required.	Y	Y	
Land use	No change from the approved project.	No additional measures required.	Y	Y	
Climate Change	No change from the approved project.	No additional measures required.	Y	Y	
Risk	No change from the approved project.	No additional measures required.	Y	Y	
Other	No change from the approved project.	No additional measures required.	Y	Y	
Management and mitigation measures	No change from the approved project.	No additional measures required.	Y	Y	

## 12.0 Consistency with the Approved Project

<p>Based on a review and understanding of the existing Approved Project and the proposed modifications, is there is a transformation of the Project?</p>	<p>No. The proposed works would not transform the project. The project would continue to provide a new metro rail line from Chatswood to Sydenham.</p>
<p>Is the project as modified consistent with the objectives and functions of the Approved Project as a whole?</p>	<p>Yes. The proposed works would be consistent with the objectives and functions of the approved project.</p>
<p>Is the project as modified consistent with the objectives and functions of elements of the Approved Project?</p>	<p>Yes. The proposed works would be consistent with the objectives and functions of the construction elements of the approved project.</p>
<p>Are there any new environmental impacts as a result of the proposed works/modifications?</p>	<p>Minor environmental impacts are expected as a result of the proposed works as a result of discharge into Sydney Harbour.</p>
<p>Is the project as modified consistent with the conditions of approval?</p>	<p>Yes. The proposed works would be consistent with the conditions of approval.</p>
<p>Are the impacts of the proposed activity/works known and understood?</p>	<p>Yes. The impacts of the proposed works are understood.</p>
<p>Are the impacts of the proposed activity/works able to be managed so as not to have an adverse impact?</p>	<p>Yes. The impacts of the proposed works can be managed so as to avoid an adverse impact.</p>

## 13.0 Other Environmental Approvals

Identify all other approvals required for the project:

Not applicable

## Author certification

To be completed by person preparing checklist.

I certify that to the best of my knowledge this Consistency Checklist:

- Examines and takes into account the fullest extent possible all matters affecting or likely to affect the environment as a result of activities associated with the Proposed Revision; and
- Examines the consistency of the Proposed Revision with the Approved Project; is accurate in all material respects and does not omit any material information.

Name:	Katie Mackenzie	Signature:	
Title:	Manager Planning Approvals		
Company:	Sydney Metro	Date:	14/01/2021

## Environmental Representative Review

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed the information provided in this assessment. I am satisfied that mitigation measures are adequate to minimise the impact of the proposed work.

Name:	Jo Robertson	Signature:	
Title:	Environmental Representative	Date:	19 January 2021


This section is for Sydney Metro only.

### Application supported and submitted by

Name:	Yvette Buchli	Date:	19/01/2021
Title:	Associate Director Planning Approvals	Comments:	Ensure recommended mitigation measure 1 regarding the monitoring program is implemented.
Signature:			

Based on the above assessment, are the impacts and scope of the proposed activity/modification consistent with the existing Approved Project?

- Yes  The proposed activity/works are consistent and no further assessment is required.
- No  The proposed works/activity is not consistent with the Approved Project. A modification or a new activity approval/ consent is required. Advise Project Manager of appropriate alternative planning approvals pathway to be undertaken.

Endorsed by			
Name:	Fil Cerone	Date:	25 January2021
Title:	Director, City & Southwest, Sustainability, Environment & Planning	Comments:	Ensure recommended mitigation measure 1 regarding the monitoring program is implemented and incorporated into existing compliance tracking for this project.
Signature:			

## Addendum 1 – Tree removal at Barangaroo Metro Station

This Addendum has been prepared to allow tree removal to enable pipeworks for the establishment of the cooling water supply to Barangaroo Station. Tree removal was not identified as part of the *TfNSW 43 Cooling water supply to Barangaroo Station* consistency assessment, hence this addendum.

The following information includes the identification of any impacts during construction and operation and confirms that no changes are required to the endorsed *TfNSW 43 Cooling water supply to Barangaroo Station* consistency assessment.

### 1. Existing Approved Project

Planning approval reference details (Application/Document No. (including modifications)):  
No changes to that outlined in Section 1.0

Date of determination:  
No changes to that outlined in Section 1.0

Type of planning approval:  
No changes to that outlined in Section 1.0

Description of existing approved project you are assessing for consistency:  
No changes to that outlined in Section 1.0

Relevant background information (including EA, REF, Submissions Report, Director General’s Report, MCoA):

- *Barangaroo TfNSW 43 Cooling water supply to Barangaroo Station* (approved by Sydney Metro 21 January 2021) (the Consistency Assessment)
- *Barangaroo Metro Station Tree Report* (Version A, 21 March 2022) (the Tree Report)
- *Arboricultural Impact Assessment - Barangaroo Metro Station* (Version 2, March 2022) (the Arboricultural Assessment)

### 2. Description of proposed development/activity/works

Describe ancillary activities, working hours, machinery, staffing levels, impacts on utilities/authorities, wastes generated or hazardous substances/dangerous goods used.

The proposed works are described in Section 2.0. An update to the scope of works has been proposed through further design development and construction planning. This includes an adjustment of pipework from the existing plant to Barangaroo Station alignment in a section closer to the cutaway to be redirected north-west as shown in Figure 1.

The addendum has been prepared to address the removal of trees within the full alignment of the pipework from the existing plant to Barangaroo Station.

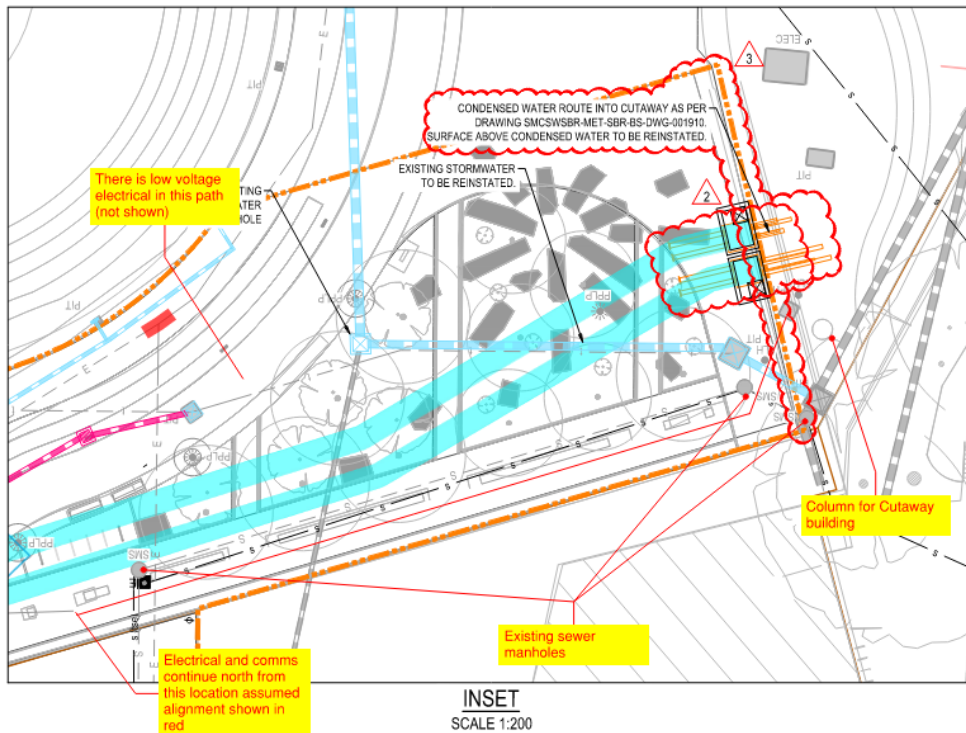


Figure 1: Proposed pipework connection adjustment (in blue)

### 3. Timeframe

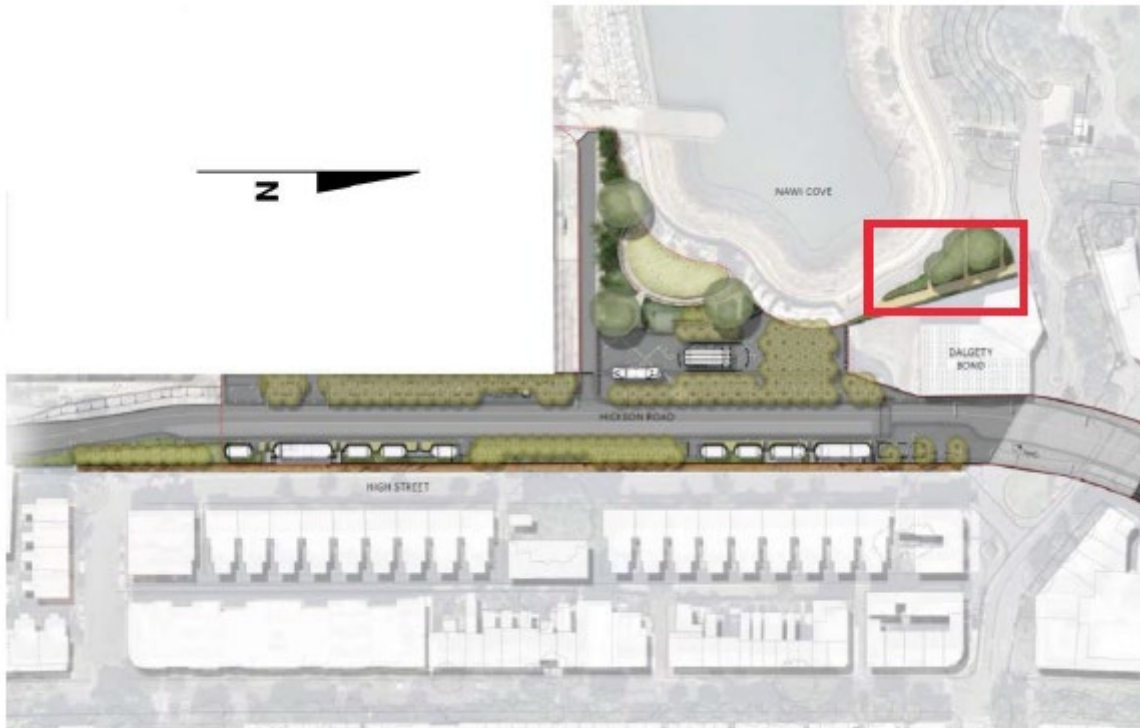
When will the proposed change take place? For how long?

No changes to that outlined in Section 3.0. Specifically, the pipework is planned to start 5 April 2022.

### 4. Site description

Provide a description of the site on which the proposed works are to be carried out, including, Lot and Deposited Plan details, where available. Map to be included here or as an appendix. Detail of land owner.

No changes to that outlined in Section 4.0. The trees are within an area along the Nawi Cove foreshore between 25 Hickson Rd and Nawi Cove at Barangaroo Metro Station adjacent to the Headland Park as shown in Figure 2. The area is within the City of Sydney Council Local Government Area. The site area landowner is Infrastructure NSW.



**Figure 2: Area that requires tree removal (highlighted in red) at Barangaroo Metro Station (Source: *Barangaroo Metro Station Tree Report*)**

## 5. Site Environmental Characteristics

Describe the environment (i.e., vegetation, nearby waterways, land use, surrounding land use), identify likely presence of protected flora/fauna and sensitive area.

No changes to that outlined in Section 5.0, with exception of the trees identified in this area. Since the Consistency Assessment was endorsed, a total of 12 individual trees have been recorded on site, including:

- seven subject trees (id: 1-5, 11 & 12) of 'low' retention value
- five subject trees (id: 6-10) of 'medium' retention value.

## 6. Justification for the proposed works

Address the need for the proposed works, whether there are alternatives to the proposed works (and why these are not appropriate), and the consequences with not proceeding with the proposed work.

Consideration was undertaken by Sydney Metro as part of the design of the station and it was found that the works necessitating the removal of the trees could not be relocated or redesigned due to the area being constrained, and heavily restricted by other services.

The corridor between 25 Hickson Road and Nawi cove is quite narrow with a significant number of existing services. With respect to the chosen condensed water alignment, there are a number of existing services on the eastern side immediately adjacent to 25 Hickson Road and within the adjacent footpath on the western side. If the condensed water route was moved either to the east



or the west these existing services would need to be routed into the chosen condensed water corridor.

Additionally, the route into the cutaway structure is constrained by the High Voltage substation to the east and by the structural column for the building to the west. The scope for proposed works was discussed with Infrastructure NSW.

## 7. Environmental Benefit

Identify whether there are environmental benefits associated with the proposed works. If so, provide details:

No changes to that outlined in Section 7.0.

## 8. Control Measures

Will a project and site specific EMP be prepared? Are appropriate control measures already identified in an existing EMP?

The proposed works would be undertaken in accordance with the Flora and Fauna Procedure (the procedure) which falls under the approved Construction Environmental Management Plan (CEMP), approved by the Department of Planning, Industry and Environment. The procedure would be updated with recommendations, including additional mitigation measures, from the Tree Report (that includes the Arboricultural Assessment).

## 10.0 Impact Assessment – Construction

There are minor changes to the construction impacts described in the Approved Project (see Section 10) and this addendum is considered consistent with the approved project.

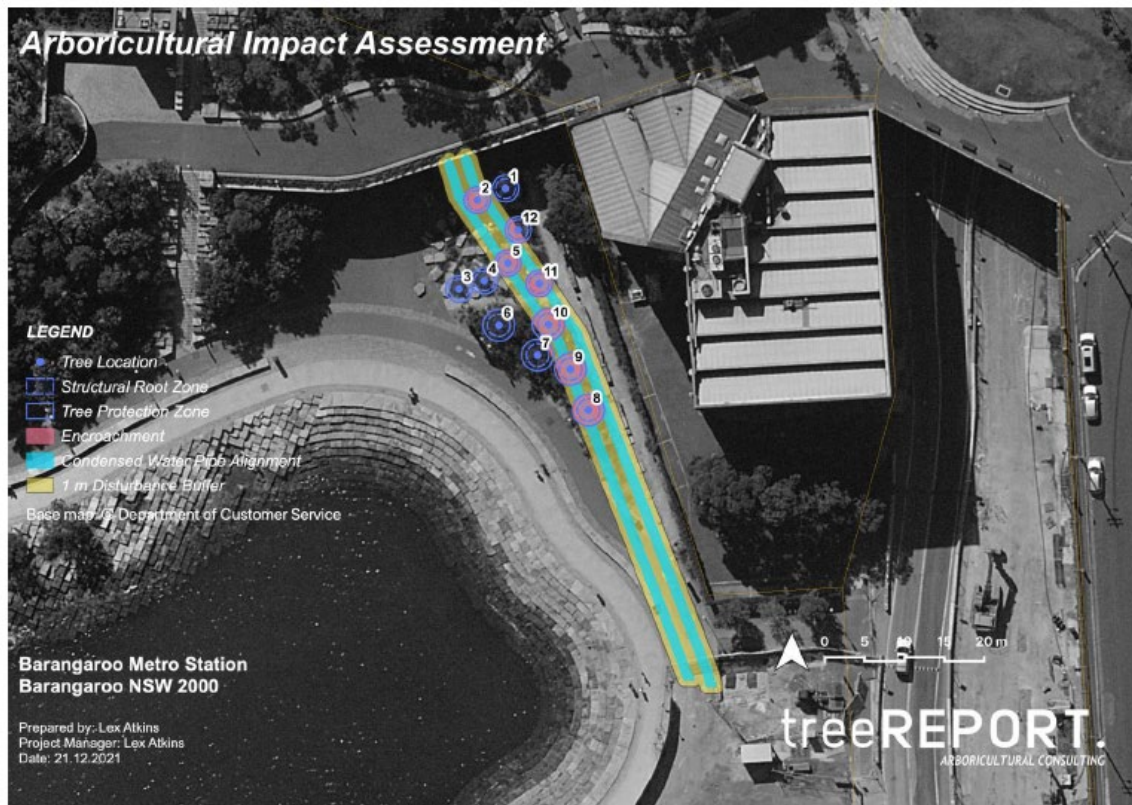
The Arboricultural Assessment states the pipework would:

- require removal of seven trees (subject trees id: 2, 5 & 8-12)
- have the potential to impact five trees adjacent to the pipework (subject trees id: 1,3, 4, 6 & 7). These trees would only be removed if construction necessitate this, or if required for safety activities.

The trees impacted at Barangaroo Metro Station are shown in Figure 3.

Consistent with Condition of Approval E6, any trees that need to be removed would be replaced such that there is a net increase in the number of trees. The size of the replacement trees would be determined in consultation with Infrastructure NSW and City of Sydney Council.

Further recommendations made in the Tree Report would be implemented as described in this Addendum Section 8.0.



**Figure 3: Trees impacted at Barangaroo Metro Station**  
 (Source: *Arboricultural Impact Assessment - Barangaroo Metro Station*)

### 11.0 Impact Assessment - Operation

No change to the operational impacts described in the Approved Project (see Section 11) and this addendum is considered consistent with the approved project

### 12.0 Consistency with the Approved Project

Is the project consistent with the approved project?

The proposed activities to be undertaken as part of this Addendum are consistent with the activities associated with those approved project. The proposed works:

- would not transform the project
- are consistent with objectives and functions of the approved project as a whole and function of elements of the approved project
- minor environmental impacts are expected as a result of the proposed works due to the removal of the trees at Barangaroo Station
- the proposed works are consistent with the conditions of approval (including Condition E6)
- the impacts of the proposed works would be managed to avoid adverse impacts.

For further information on how compliance with condition of approval E6 is met, refer to Section 1.1 of Tree Report.

### 13.0 Other Environmental Approvals

Are other environmental approvals required as a result of the proposed works?

Landowner consent is required from Infrastructure NSW prior to the proposed works.

## Author certification

To be completed by person preparing checklist.

I certify that to the best of my knowledge this Consistency Checklist:

- Examines and takes into account the fullest extent possible all matters affecting or likely to affect the environment as a result of activities associated with the Proposed Revision; and
- Examines the consistency of the Proposed Revision with the Approved Project; is accurate in all material respects and does not omit any material information.

Name:	Ari Stypel	Signature:	
Title:	Manager Planning Approvals		
Company:	Sydney Metro	Date:	31 <sup>st</sup> March 2022

## Environmental Representative Review


(Additional step for City & Southwest projects only)

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed the information provided in this assessment. I am satisfied that mitigation measures are adequate to minimise the impact of the proposed work.

Name:	Jo Heltborg	Signature:	
Title:	Environmental Representative	Date:	31 <sup>st</sup> March 2022

This section is for Sydney Metro only.

### Application supported and submitted by

Name:	Yvette Buchli	Date:	31/03/2022
Title:	Associate Director Planning Approvals	Comments:	
Signature:			

Based on the above assessment, are the impacts and scope of the proposed activity/modification consistent with the existing Approved Project?

Yes  The proposed activity/works are consistent and no further assessment is required.

No The proposed works/activity is not consistent with the Approved Project. A modification or a new activity approval/ consent is required. Advise Project Manager of appropriate alternative planning approvals pathway to be undertaken.

Endorsed by			
Name:	Fil Cerone	Date:	31 March 2022
Title:	Director City & Southwest, Environment, Sustainability & Planning	Comments:	
Signature:			

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## Appendix A - Marine Ecological Impact Assessment – Barangaroo Station cooling water discharge