



Review of Environmental Factors Addendum

Project title: Wastewater System Upgrade, Balmain

Determination

This Review of Environmental Factors Addendum (REFA) assesses potential environmental impacts for the Wastewater System Upgrade, Balmain. The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

The Sydney Water Project Manager is accountable for ensuring the proposal is carried out as described in this REFA and the approved REF. Additional environmental impact assessment may be required if the scope of work or work methods described in this REFA change significantly following determination.

Certification


I certify that I have reviewed and endorsed this REFA and, to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation). The proposal has been considered against matters listed in section 171 (Appendix A) and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed and endorsed by:	Endorsed by:
 Stuart Dawson Senior Environmental Scientist Sydney Water Date: 13/05/2025	 Sarah Mitchell A/ Environmental Assessment Team Manager, Sydney Water Date: 14/05/2025	 Ananta Mukherjee Senior Project Manager Sydney Water Date: 05/06/2025

Decision Statement

The main potential additional construction environmental impacts of the proposal change noise impacts to receivers and businesses not identified in previous assessments, visual amenity and traffic. During operation, no impacts are expected as all components will be underground. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

Determined by:	 Murray Johnson Senior Environment and Heritage Services Manager Sydney Water Date: 13/06/2025
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1. Proposal description

Table 1-1 Proposal need, objectives and consideration of alternatives

Aspect	Relevance to proposal
Approved REF and Approved REFA	Sewerage System Upgrade, Mort Street, Balmain REF (March 2021) and Sewerage System Upgrade, Mort Street, Balmain REF Addendum (July 2022).
Proposal need and objectives	<p>The proposal is required to provide a long-term solution to overflows within the local catchment area, that discharge to Mort Bay, as well as reduce the potential for future failures and provide a more reliable wastewater service for the community. The proposal will assist in maintaining compliance with Sydney Water's existing EPL under the <i>Protection of the Environment Operations Act 1997</i>.</p> <p>The objective of the proposal is to:</p> <ul style="list-style-type: none"> • ensure efficient wastewater flow • minimise maintenance costs • minimise the potential for failures that could lead to environmental harm or service interruptions.
Proposal change description and methodology	<p>The existing approved scope includes:</p> <ul style="list-style-type: none"> • the installation of about 200 m of DN225 pipe (micro tunnelled) along Cameron Street and College Street • the installation of about 80 m of DN225 pipe (pipe burst) • the installation of about 50 m of DN225 (trenched) • the construction of two new maintenance holes (MH) along Mort Street. <p>The proposed change would include the modification and installation of wastewater infrastructure (pipelines and MHs). Additionally, the proposed changes will result in associated wastewater flows being directed to SP0675, instead of SP0010. Launch and receival pits will be required on Church Street and Cameron Street. This infrastructure will be installed using a combination of trench and trenchless construction methodologies.</p> <p>The proposed amended project scope will include:</p> <ul style="list-style-type: none"> • the trenchless installation of about 120 m of new DN225 unplasticised polyvinyl chloride (uPVC) wastewater main along Cameron Street, Church Street, McKell Street and into Mort Bay Park (there is a potential for about 25 m of the 120 m of wastewater main to be trench) • excavation of 4 launch receival pits • four new MHs

Aspect	Relevance to proposal
	<ul style="list-style-type: none"> raising of 2 existing MH (MH F and MH D-1) by pouring concrete and modifying accordingly to match the invert level of the incoming connection plugging of existing DN150mm outlet by grouting.
Justification for proposal change	<p>Detailed site investigations identified extensive underground services along Cameron Street and Mort Street. This rendered the approved proposal unfeasible.</p> <p>An alternative option to divert wastewater to a different wastewater catchment (draining to SP0675) was considered and preferred. This option also reduces potential impacts within Mort Bay Park, which is listed on the State heritage Register.</p>
Location and land ownership	<p>The proposal is adjacent to Mort Bay Park, Balmain. Works are proposed along Cameron Street and continue northeast along McKell Street.</p> <p>The proposal will occur in and/or adjacent to the following Lot & DPs:</p> <ul style="list-style-type: none"> 24/-/1031154 23/-/DP1031154 3/-/DP614033 4/-/DP614033 1/-/DP65627 D/-/DP323118 CP/-/SP10766.
Site establishment and access tracks	<p>Site establishment will include establishing storage areas for material laydown along McKell Street, and when required, closing sections of the road along Cameron Street and McKell Street. The work areas are accessible from local roads. Work areas will be contained and fenced off from the public.</p>
Ancillary facilities (compounds/laydown areas)	<p>A compound location will be confirmed prior to construction. Previously chosen sites for the compound along McKell Street and within Mort Bay Park were discounted based on site topography and heritage constraints. Therefore, it is likely that the compound location will be outside of the general area of the proposal and will be subject to approval by the Project Manager with consideration of environmental matters outlined in the relevant mitigation measure in Table 4-2.</p> <p>Storage areas for material laydown have been selected along McKell Street as show in Figure 1-1. Site establishment is required for these areas, including activities such as the laying of geofabric and DGB 20/40 road base and the erection of fencing.</p>



Aspect	Relevance to proposal
Work hours	<p>Work and deliveries will be scheduled during standard daytime hours:</p> <ul style="list-style-type: none">• 7 am to 6 pm, Monday to Friday• 8 am to 1 pm, Saturdays. <p>Generally, the proposal is expected to occur during standard construction work hours. However, some activities may need to be undertaken outside of these hours, such as decommissioning (plugging) an old wastewater pipe. Sydney Water's Project Manager can approve work outside of standard daytime hours. The approval process is described in the mitigation measures in Table 4-2.</p>
Proposal timing	Construction is expected to start mid-2025 and take about 1 year to complete.



Legend

Proposal scope

- Existing MH
- New MH
- Proposed alignment
- Storage/ laydown
- Pits/ excavation

- Existing MH
- Existing wastewater network

Heritage (State)

- Morts Dock

Heritage (LEP)

- Archeological item
- General item

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 NSW Department of Planning, Industry & Environment
 NSW Spatial Services
 Australian Government Department of Environment
 Date Created: 4/04/2025



Figure 1-1 Location of proposal change and heritage constraints

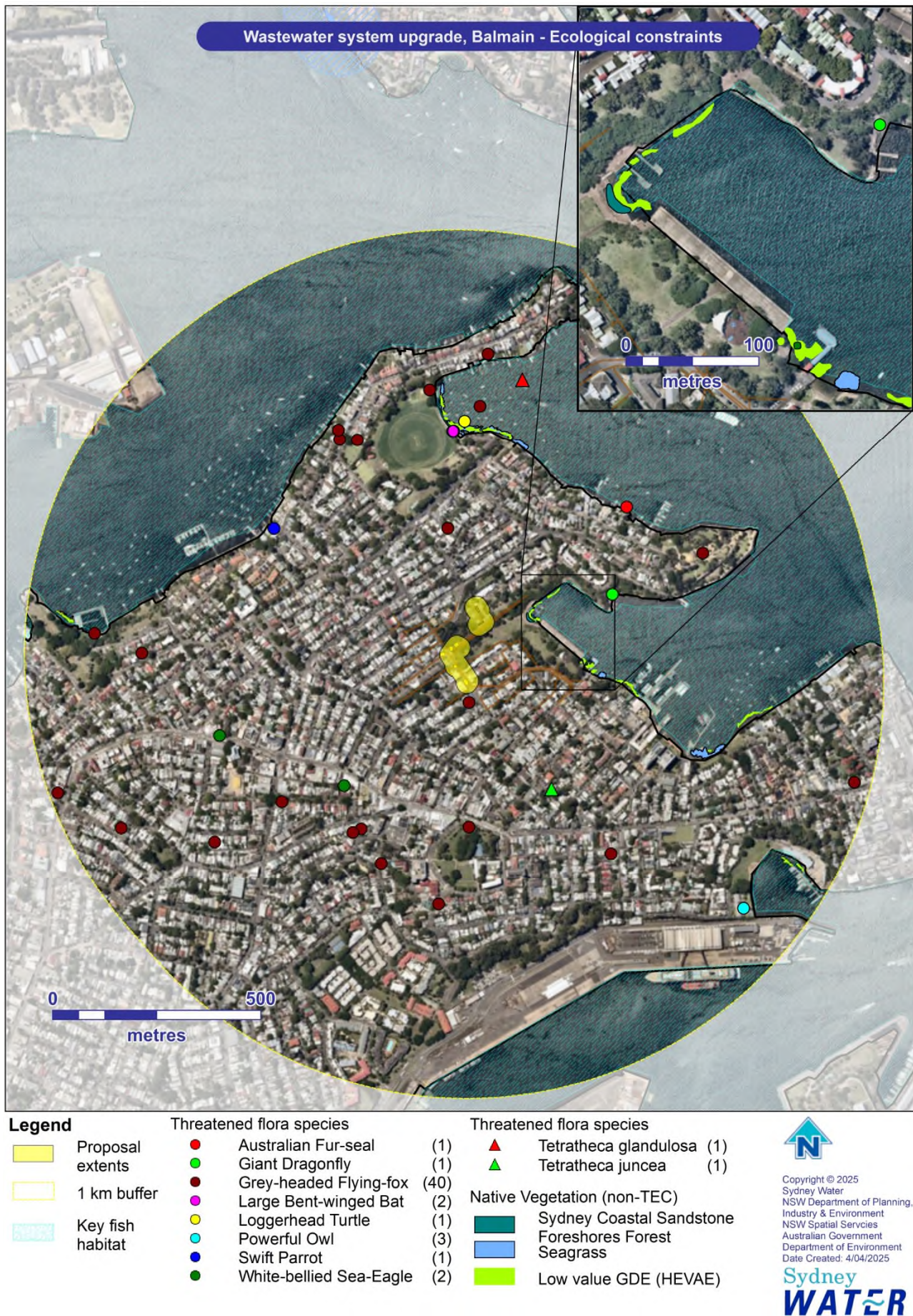


Figure 1-2 Proposal extents and key ecological constraints within 1 km.



2. Consultation

Additional consultation matters above those already assessed in the approved REF are detailed below.

2.1 Community and stakeholder consultation – proposal

Sydney Water has been in ongoing consultation with the Inner West Council regarding the proposal which has included a site visit on 26 February 2025 and a meeting on 11 April 2025. Matters discussed during consultation included the potential locations for laydown areas and the proposals interaction with heritage listed items, particularly Mort's Dock, and Sydney Waters approval pathway under the s.57 Agency Specific Exemptions. Sydney Water and the contractor have provided figures of the proposal and project information for Councils consideration. Sydney Water and the contractor will continue to share project updates and provide information as requested to support ongoing discussions. Sydney Water will consider matters raised during consultation with Inner West Council.

2.2 Consultation required under State Environmental Planning Policies and other legislation

Sydney Water must consult with councils and other authorities for work in sensitive locations or where the work may impact other agencies' infrastructure or land. This is specified in the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP).

Consultation is required under section 2.10 as the proposal impacts council related infrastructure and services which include:

- excavating (trenching and shaft excavation) within roads and land managed/owned by council for new maintenance holes, the installation of wastewater mains, and connection to existing assets
- temporary structures in a public space under councils' control, for site compounds and construction footprints (Cameron St, McKell St and Mort Bay Park).

Council was notified under section 2.10 on 5 March 2025. Council responded on 19 March 2025 indicating that the proposal is close to areas designated as Natural Areas (see image below). These areas are considered important restoration areas for the community and Councils biodiversity goals. Sydney Water and the contractor will avoid encroachment into these areas. Of the proposal, only the storage areas are directly adjacent to these Natural Areas. As detailed in Table 4-2, no impacts to vegetation are permitted during the establishment or use of the designated storage areas.

Further detail on requirements of TISEPP consultation is provided in Appendix B.



Figure 2-1 Natural Areas as designated by Inner West Council. Figure provided by Inner West Council

3. Legislative requirements

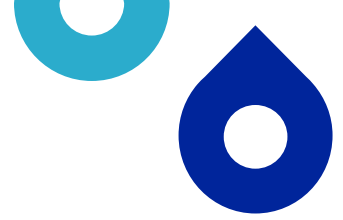
Updated legislative requirements above those already assessed in the approved REF are discussed below. The Local Environment Plan for the area has since been updated and further details are provided in Table 3-1. Table 3-2 discusses the consideration of the *Heritage Act 1977* in relation to Mort's Dock.

Table 3-1 Environmental planning instruments relevant to the proposal change

Environmental Planning Instrument	Relevance to proposal
Inner West Council Local Environmental Plan (LEP) 2022	<p>The Inner West Council LEP 2023 has replaced the Leichhardt LEP 2013. The proposal is located on land zoned:</p> <ul style="list-style-type: none"> • R1 General Residential • RE1 Public Recreation.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	<p>Section 2.126 of the TISEPP permits development by or on behalf of a public authority for sewerage without consent on any land in a prescribed zone.</p> <p>The proposal involves development of a sewerage and is in land zoned R1 and RE1, which is considered a 'prescribed zone'.</p> <p>As Sydney Water is a public authority, the proposal is permissible without consent.</p>

Table 3-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
<i>Heritage Act 1977</i>	<p>Permits have been obtained under Section 60 of the Heritage Act 1977 for works approved under the REF (2021) (S60/2021/067) and under Section 65(a) for the REFA (2022) (HMS ID 1178).</p> <p>A Memorandum of Advice (MoA), provided in Appendix D, has been undertaken by AECOM Australia Pty Ltd (AECOM) to assess the proposed changes.</p> <p>The MoA assessed that the proposal is consistent with and can be carried out under Sydney Water Agency Specific S.57 Exemptions.</p> <p>The Sydney Water Agency Specific S.57 Exemptions contain the following exemptions for specified activities or works:</p>	Sydney Water Agency Specific Section 57 Exemptions.	Pre-construction, Sydney Water



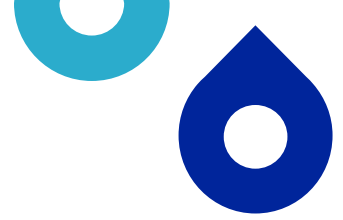
Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	<p><i>(r) Directional drilling (micro tunnelling) through strata below the layer of archaeological significance.</i></p> <p>Relevant standard:</p> <p><i>(s) Directional drilling may only be done where the launch and exit pits have been positioned in areas assessed as having no archaeological significance, in existing trenches or areas of previous disturbance. Only applicable where the previous disturbance extends to the depths required for each pit.</i></p> <p><i>(t) Directional drilling must not compromise the structural integrity of any structure listed on the SHR or subject to an Interim Heritage Order (IHO), including significant landscape elements, as identified in a SHR listing, statement of significance, Conservation Management Plan and/or Conservation Management Strategy (CMS).</i></p> <p>It is assessed that the proposed micro tunnelling is consistent with this exemption.</p> <p>In the unlikely event that excavation and trenching is required to access the existing infrastructure, those works would be compliant with the specified activity or work of exposing, inspecting, testing, replacing, installing, maintaining and repairing Sydney Water Corporation's infrastructure and so could also be undertaken under the Sydney Water Agency Specific S.57 Exemptions.</p>		

4. Environmental assessment

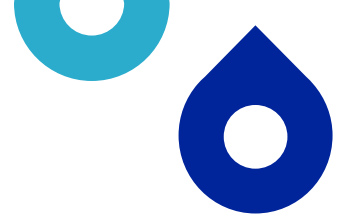
The environmental impacts checklist (SWEMS0019.01) was considered for the proposal change. Table 4-1 includes only the potentially impacted/ changed aspects and Table 4-2 lists additional mitigation measures. All other environmental impacts in the approved REF remain the same and will be incorporated into the contractor's CEMP.

Table 4-1 review of environmental aspects

Aspect	Potential additional impacts															
Topography, geology and soils	The site is located on Disturbed Terrain soil landscape, and has been extensively disturbed by human activity, including the complete disturbance, removal or burial of the soil.															
	The proposed excavations include a total of 4 launch/receival pits. Approximate depth and dimensions are provided below:															
	<table><thead><tr><th>Location</th><th>Dimension (m)</th><th>Depth (m)</th></tr></thead><tbody><tr><td>MH B</td><td>6 x 5</td><td>4</td></tr><tr><td>MH C</td><td>3.5 x 3.5</td><td>3.6</td></tr><tr><td>MH D</td><td>3.5 x 3.5</td><td>2.7</td></tr><tr><td>MH E</td><td>6 x 3.5</td><td>2.8</td></tr></tbody></table>	Location	Dimension (m)	Depth (m)	MH B	6 x 5	4	MH C	3.5 x 3.5	3.6	MH D	3.5 x 3.5	2.7	MH E	6 x 3.5	2.8
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	MH D	3.5 x 3.5	2.7													
	MH E	6 x 3.5	2.8													
	Additional excavations may be required around existing MHs and, while the preferred construction methodology is micro tunnelling, trenching may be required for sections of the alignment.															
	There is the potential for some rock breaking. Based on geotechnical investigations, moderate strength sandstone may present at around 2 m in depth in the vicinity of MH E and about 3.5 m depth around MH B.															
The proposal may result in excavated soil being stockpiled for longer durations due to the launch receival pits.																
There is the potential for erosion and sedimentation to occur, especially in the event of heavy rain.																
The proposed changes can be managed using the environmental mitigation measures outlined in the existing approvals.																
Water and drainage	Excavations associated with the launch receival pits and trenching could result in the off-site movement of soil leading to an increase in sedimentation and turbidity in Mort Bay via stormwater drainage.															
	Geotechnical investigations identified groundwater in some of the boreholes at a depth from about 3 m. Launch receival pits will be excavated up to about 4 m in depth and are expected to remain open for several weeks. Therefore, there is the potential for groundwater ingress and the need to dewater. A Water Supply Works Approval (WSWA) must be held prior to the extraction of any groundwater.															



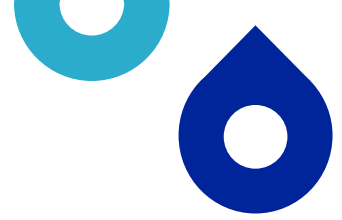
Aspect	Potential additional impacts
	<p>Groundwater ingress calculations predict the need to dewater about 0.002 ML of groundwater. As the expected groundwater extraction volume is below 3 ML, a Water Access Licence is not required. Considering the small volume and short duration of groundwater dewatering, no impacts to nearby vegetation is anticipated.</p> <p>Flood studies available on the Inner West Council website indicate that sections of Cameron St are prone to flooding, based off an indicative 5-year Average Recurrence Interval (ARI) flood extent (up to 0.3 m depth). Like a large majority of the LGA, flooding occurs outside of the main creek systems, when capacity of stormwater pits and pipes are exceeded. When this occurs, overland flows proceed down roads and through properties. The proposal will not permanently alter drainage patterns nor exacerbate potential flooding.</p> <p>During a flood event material such as spoil may be transferred off-site, particularly from work areas within the road alignment which are more susceptible to these impacts. This could negatively affect receiving waterbodies by reducing water quality.</p> <p>The proposed changes can be managed using the environmental mitigation measures outlined in the existing approvals.</p>
Flora and fauna	<p>The proposal is in an area that has been subject to extensive disturbance with all original vegetation completely cleared.</p> <p>No threatened ecological communities (TECs) are located within 200 m of the proposal. No registered threatened flora sightings are recorded within 200 m of the proposal. As shown in Figure 1-2, Forty-five threatened fauna species are recorded within 1 km of the proposal, many of which are considered highly mobile.</p> <p>Inner West Council has designated Natural Areas (see Figure 2-1) that are located close to the proposal. These areas are considered important restoration areas and important for Councils biodiversity goals.</p> <p>An Arboricultural Impact Assessment was undertaken for the proposal (Appendix E). The findings of the assessment are summarised below.</p> <p>Based on the alignment and the location of the launch and retrieval shafts, three trees are subject to tree protection zone (TPZ) encroachment. Two trees are subject to major encroachment (tree number 3 and 9), while one tree (number 6) will be subject to minor encroachment. Considering all excavations are confined within the roadway, which has likely resulted in compacted soil conditions that inhibit root growth, structural root disturbance is not anticipated.</p> <p>The proposed storage areas are adjacent to trees within Mort Bay Park. Neither storage area encroaches into TPZ of adjacent trees.</p> <p>Key recommendations of the assessment include:</p>



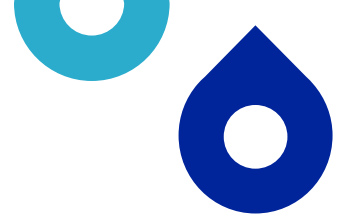
Aspect	Potential additional impacts												
	<ul style="list-style-type: none">tree removal: no trees are recommended for removal due to project impactstree pruning: while pruning is not recommended for specific trees, minor pruning may be required for some treesspecific tree measures: two trees (tree number 3 and 9) require specific construction methods and recommendations to be implemented. <p>More details of the specific tree measures are detailed below.</p> <table><tr><th>Tree ID</th><th>Tree species</th><th>Origin</th><th>Comment and Recommendation</th></tr><tr><td>3</td><td><i>Fraxinus angustifolia</i></td><td>Exotic</td><td>Major TPZ encroachment due to alignment through TPZ. This tree will remain viable provided installation is conducted as designed, i.e., using underground micro-tunnelling</td></tr><tr><td>9</td><td><i>Corymbia maculata</i></td><td>Indigenous</td><td>Major TPZ encroachment due to alignment through TPZ. This tree will remain viable provided installation is conducted as designed, i.e., using underground micro-tunnelling</td></tr></table> <p>The minor encroachment into the TPZ of tree 6 is not expected to have any significant impacts provided tree protection measures are installed and maintained during construction.</p> <p>Should excavation be required, it is possible that encroachment into the TPZ of trees 3 or 9 may result in the need to remove the tree. Both these trees were observed with deadwood, while tree 9 was observed with decay and wounds, and was considered in fair health. Further, tree 3 is of exotic origin. While the landscape value of these trees may be high, there are other prominent trees nearby and in the surrounding landscape with high landscape value. Considering the location and presence of the surrounding vegetation, the removal of these trees, if required, would not have a significant environmental impact.</p> <p>No trees were observed to possess hollow bearing parts capable of supporting large fauna.</p> <p>Potential impacts to trees were minimised during design by relocating the compound and storage area outside vegetated areas. Further, in comparison to open-cut trenching, the proposal minimises impacts to vegetation.</p> <p>No impacts are proposed in any of the Natural Areas identified in Figure 2-1.</p> <p>Potential impacts can be adequately managed with the application of mitigation measures from the approved REF and additional mitigation measures in Table 4-2.</p>	Tree ID	Tree species	Origin	Comment and Recommendation	3	<i>Fraxinus angustifolia</i>	Exotic	Major TPZ encroachment due to alignment through TPZ. This tree will remain viable provided installation is conducted as designed, i.e., using underground micro-tunnelling	9	<i>Corymbia maculata</i>	Indigenous	Major TPZ encroachment due to alignment through TPZ. This tree will remain viable provided installation is conducted as designed, i.e., using underground micro-tunnelling
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Heritage

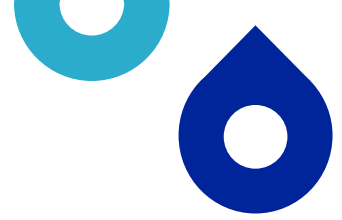
A memorandum of advice (AECOM, April 2025) has been prepared for the current proposal and has been summarised below.



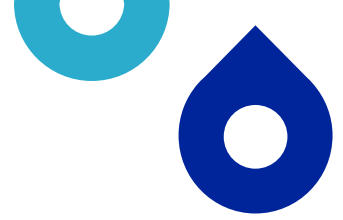
Aspect	Potential additional impacts
	<p>The proposal is:</p> <ul style="list-style-type: none">• partially located within the state heritage curtilage of Mort's Dock, with the remainder outside but adjacent to that curtilage• adjacent to LEP listed Dry Dock Hotel• wholly within the "Town of Waterview" heritage conservation area (HCA). <p>The heritage significance of the Dry Dock Hotel and the Town of Waterview HCA are both reliant on their form and fabric, as well as their history. Given that the proposal comprises works that are at or below ground level, it is assessed that the proposal will not impact either the Dry Dock Hotel or the Town of Waterview HCA. Potential impacts to the Dry Dock Hotel from vibration are discussed in more detail in the noise and vibration section below.</p> <p>The following Statement of Significance for Mort's Dock is taken from the State heritage listing:</p> <p><i>Mort's Dock was the largest shipyard and engineering workshop in Australia in the latter half of the 19th century. The site developed into the colony's largest private enterprise and in many ways helped establish the colony and Sydney as Australia's premier maritime port. The archaeological remains are possibly the only remains of a dry dock of this size preserved in situ.</i></p> <p>(Heritage NSW, 2011)</p> <p>Although the works within the curtilage of Mort's Dock are proposed to be trenchless, this assessment has also assessed the potential impacts should excavation be required to access the existing infrastructure.</p> <p>The nearest archaeological element of the item to the proposal is the dam located about 16 m south of the existing MH A, with the dry dock about 37 m southeast. The area within the curtilage that is to be micro tunnelled can be characterised as parkland, with a mix of native and exotic trees, grass and paths</p> <p>The installation of existing infrastructure, including MH A, would have disturbed the surrounding area, including any surviving archaeological features. Therefore, in situ deposits within the proposal area are considered unlikely to occur. Further, if archaeological remains relating to the buildings north of the dry dock are present, they would not be considered to be significant.</p> <p>It is therefore considered unlikely that any archaeological remains will be disturbed by micro tunnelling, or excavation should it be required, and the proposal is not likely to cause any heritage or archaeological impact to any known heritage items or archaeological deposits.</p> <p>Potential impacts can be adequately managed with the application of mitigation measures from the approved REF and additional mitigation measures in Table 4-2.</p>



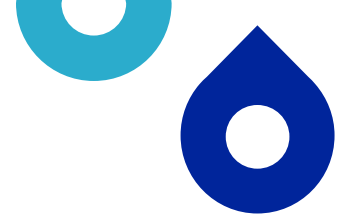
Aspect	Potential additional impacts																		
Noise and vibration	<p>A construction noise and vibration assessment memo (Appendix F) was produced for the proposal. The proposal is anticipated to occur mostly during standard construction work hours. There is a possibility of out of hours work (OOHW) for some activities such as the plugging of a wastewater pipe. The assessment is summarised below.</p> <p>Noise</p> <p>The areas surrounding the proposal are subject to relatively low background noise levels, influenced by distant road traffic noise and relatively low volumes of traffic on local roads.</p> <p>Based on the EPA’s Draft Noise Construction Guideline (2020) a quantitative assessment was undertaken to assess the potential noise impacts of the proposal.</p> <p>While the proposal is anticipated to be complete in about 1 year, construction activities, specifically noisy works, are expected to be completed in about 6-7 months. The noisiest works anticipated to occur during the proposal, their expected duration and noisiest plant are listed below</p>																		
	<table><tr><th>Activity</th><th>Duration</th><th>Noisiest Equipment / plant</th></tr><tr><td>Shaft Excavation & Backfilling for MHE</td><td>About 2 weeks</td><td>24T & 30T Excavator (potentially with Hydraulic hammer)</td></tr><tr><td>Shaft Excavation & Backfilling for MHD</td><td>About 2 weeks</td><td>24T & 30T Excavator (potentially with Hydraulic hammer)</td></tr><tr><td>Shaft Excavation & Backfilling for MHC</td><td>About 2 weeks</td><td>24T & 30T Excavator</td></tr><tr><td>Shaft Excavation & Backfilling for MHB</td><td>About 2 weeks</td><td>24T & 30T Excavator</td></tr><tr><td>Micro-tunnelling</td><td>About 4 weeks each drive</td><td>24T & 30T Excavator</td></tr></table>	Activity	Duration	Noisiest Equipment / plant	Shaft Excavation & Backfilling for MHE	About 2 weeks	24T & 30T Excavator (potentially with Hydraulic hammer)	Shaft Excavation & Backfilling for MHD	About 2 weeks	24T & 30T Excavator (potentially with Hydraulic hammer)	Shaft Excavation & Backfilling for MHC	About 2 weeks	24T & 30T Excavator	Shaft Excavation & Backfilling for MHB	About 2 weeks	24T & 30T Excavator	Micro-tunnelling	About 4 weeks each drive	24T & 30T Excavator
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Micro-tunnelling	About 4 weeks each drive	24T & 30T Excavator																	
<p>Noise impacts were assessed by assigning a noise area category to the environment surrounding the proposal. This applies typical background noise levels and noise management levels (NML). Where the assessment identifies noise impacts above the NML, reasonable and feasible mitigation measures have been identified and should be applied (see Section 4 of Appendix F)</p> <p>Nearby non-residential noise sensitive receivers have been grouped by land use category and are listed below.</p>																			
<table><tr><th>Land use category</th><th>Name</th><th>Address</th><th>Distance from proposal</th></tr></table>	Land use category	Name	Address	Distance from proposal															
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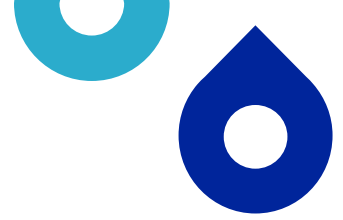
Aspect	Potential additional impacts			
	Passive recreation	The Dry Dock Hotel	22 Cameron Street, Balmain	7 m west
		Mort Bay Park	Mort Bay Park, Birchgrove	Adjacent
		Sadaf Persian Restaurant	68 Mort Street, Balmain	35 m southeast
		College Street Playground	56-76 College Street, Balmain	70 m southwest
		Royal Oak Hotel	38 College Street, Balmain	195 m southwest
		Bay Street Reserve	115A Short St, Birchgrove	110 m north
	Offices, retail	Offices	81a College Street, Balmain	Adjacent
	Classrooms at school and other educational institutions	John McMahon Early Learning Centre	45 McKell Street, Birchgrove	115 m northeast
		Balmain Care for Kids Preschool	5 Thames St, Balmain	190 m south-southwest
	Places of worship	Campbell Street Presbyterian Church	7 Campbell Street, Balmain	285 m southeast
<p>Figures displaying predicted noise impacts are shown in Appendix A of the Construction noise and vibration assessment memo (Appendix F).</p> <p>During standard hours the following non-residential receivers are predicted to be highly affected, experiencing noise 75 dB or greater:</p> <ul style="list-style-type: none"> • The Dry Dock Hotel • Sadafs Restaurant • Offices at 81a Cameron Street • Mort Bay Park • Bay Street Reserve • John McMahon Early Learning Centre. 				



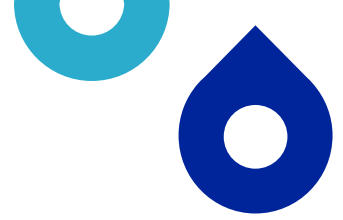
Aspect	Potential additional impacts
	<p>During OOHW period, some of these receivers remain operational or in use and therefore have the potential to be noise impacted. This includes The Dry Dock Hotel and Mort Bay Park, predicted to experience noise levels greater than 25 dB above NML, and Sadafs Restaurant and Bay Street Reserve predicted to experience noise levels 15-25 dB above NML.</p> <p>The nearest residential receivers to the proposal are within 5 m:</p> <ul style="list-style-type: none">• 26 Cameron Street, adjacent to MH D• 83 College Street, adjacent to MH E. <p>Generally, the proposal will occur during standard construction hours. For the noisiest works during these periods residential receivers within 180 m are predicted to be noise impacted. Receivers within 70 m of the proposal who have line of sight are predicted to be highly affected by noise impacts.</p> <p>Most receivers are shielded from the proposal and do not have line of site. For these receivers behind substantial barriers, highly intrusive noise impacts are predicted to affect those within 20 m, while moderately intrusive noise impacts are predicted up 70 m.</p> <p>In the event that noisy works are required during out of hours, predicted affected distances are greater, and for those behind substantial barriers, it is possible that noise impact would extend to 280 m. All line of sight receivers would be impacted, with most being highly affected, or experiencing highly intrusive noise impacts.</p> <p>The assessment is based off the noisiest works which have been applied across the entire proposal. In reality, the noisiest works will not persist for the entire proposal, and they are expected to be restricted to the excavations for the launch and retrieval pits. Therefore, the noise estimator provides a conservative assessment and can be considered worst case scenario.</p> <p>An additional assessment was conducted to account for the potential use of a generator, used to power lighting, during out of hours periods. The need for this activity during this period is considered more likely than the need for general construction activities that would generate more noise. By assessing the use of a generator during out of hours periods there is an appropriate and representative assessment available depending on the activity to be undertaken. For this activity, clearly audible noise impacts up to 95 m are predicted, with those within 10 m and with line of sight being highly affected.</p> <p>Additional mitigation measures were formulated as part of the noise and vibration assessment memo (Appendix F) and have been incorporated into Table 4-2.</p> <p>Vibration</p> <p>Due to the proximity of the heritage listed Dry Dock Hotel to the proposal, a vibration assessment was undertaken (Heilig & Partners, 2024). The assessment is summarised below and is included as Appendix B in the Construction noise and vibration assessment memo (Appendix F).</p>



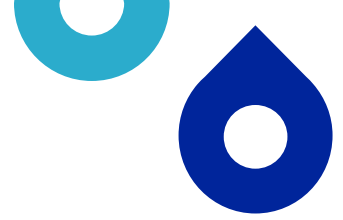
Aspect	Potential additional impacts
	<p>The assessment was based off a previous design that included an alignment and excavations that were about 6 m west of the current design and therefore closer to sensitive receivers such as the Dry Dock Hotel. The assessment considered micro tunnelling as the primary scope, while also considering excavations in certain area should they be required. The activities assessed include:</p> <ul style="list-style-type: none">• micro tunnelling between MH C and MH D• micro tunnelling between MH D to MH E• excavation of launch and receival pits at MH C, MH D and MH E with;<ul style="list-style-type: none">○ 20 tonne excavator, without hydraulic hammer○ 30 tonne excavator, without hydraulic hammer.• excavation of pit at MH E with;<ul style="list-style-type: none">○ 20 tonne excavator, with 950 kg hydraulic hammer○ 30 tonne excavator, with 1880 kg hydraulic hammer.• an alternative methodology of open cut trenching between MH D to MH E with;<ul style="list-style-type: none">○ 20 tonne excavator, without hydraulic hammer○ 30 tonne excavator, without hydraulic hammer○ additional assessment for half of the open trench nearest to MH E as requiring hydraulic hammer (950 kg and 1880 kg sizes) to excavate the base of the trench where medium strength sandstone could be encountered. <p>The modelling applied the German Standard DIN4150-3:2016, specifically “Line 3”. Line 3 of this standard is more commonly reserved for significant and critical elements within sensitive structures such as ornate plaster work, gargoyles, glass works or large suspended ceilings. Applying this standard is considered a conservative approach.</p> <p>The modelling results indicate that the level of vibration at the heritage listed Dry Dock Hotel from the excavation of launch and receival pits will be minor. The modelled levels of vibration are compliant with the Line 3 of the German Standard DIN4150-3. The vibration from the small micro-tunnelling is modelled to be very low and less than 1mm/s at the surface. For the alternative assessment of open trench for the section between MH D and E, the assessment confirms that there is no requirement to limit the size of the excavator or the hydraulic hammer that may be required to develop the section of the trench in the medium strength sandstone. For the excavation of the closer MH D shaft to the Dry Dock Hotel, the vibration may be marginally perceptible to persons within the building.</p> <p>A subsequent assessment (Heilig & Partners, 2025) included as Appendix C in the Construction noise and vibration assessment memo (Appendix F) considered potential vibration impacts on sensitive assets, namely existing water and storm water pipes underground. This assessment is based off the proposed scope and provides required offset distances based on the use of a range of equipment and</p>



Aspect	Potential additional impacts
	<p>the potential condition of the sensitive asset. The condition of the sensitive assets will be confirmed by the contractor. With the adoption of the appropriate equipment type and offset distance, as outlined in the assessment (Heilig & Partners, 2025), it is expected that the integrity of the sensitive assets will be maintained.</p> <p>Potential impacts can be adequately managed with the application of mitigation measures from the approved REF and additional mitigation measures in Table 4-2.</p>
Waste and hazardous materials	<p>The proposal involves an increase in micro tunnelling and a reduction in trenching. Therefore, the proposal may result in an increase in waste drill cuttings and drilling fluids, while the reduction in trenching will reduce the volume of excavated material and spoil.</p> <p>The proposed changes can be managed using the environmental mitigation measures outlined in the existing approvals.</p>
Traffic and access	<p>No state or regional roads are intersected by the proposal.</p> <p>Potential impacts to traffic include:</p> <ul style="list-style-type: none">• closure of local roads• reduction in availability of street parking• work on quiet roads. <p>Road closures will be temporary and managed in accordance with permits obtained, such as a Road Occupancy Licence, to minimise impacts to local traffic. Where possible road closures would be limited to one lane to allow traffic to pass. To further minimise potential impacts, where possible, sites will be struck at end of each shift to allow for closed lanes to be reopened.</p> <p>There is a high demand for street parking in the local area, in particular along Cameron and McKell Street. Work machinery and vehicles will be parked along McKell Street when not in use. Street parking closer to the work area may be occupied during standard construction work hours. A reduction in the availability of street parking is likely, however this impact will be temporary.</p> <p>The local streets surrounding the proposal are generally relatively quiet. Potential noise impacts from an increase in work vehicles and large machinery have been assessed in Appendix F and have been captured in the above noise and vibration section.</p> <p>The proposed changes can be managed using the environmental mitigation measures outlined in the existing approvals.</p>
Social and visual	<p>The proposal will temporarily disrupt visual amenity. Visual impacts will mainly be associated with the erection of fencing and barriers around the indicative laydown area and launch and receival pits as well as stockpiles of excavated material.</p>



Aspect	Potential additional impacts
	<p>These visual impacts will persist for the duration of the works, though they will be temporary.</p> <p>Storage areas will be within areas of Mort Bay Park, along the northern side of McKell Street and near recreation areas utilised by local residents. The proposal is not expected to impact on the use of the recreational area and access will be maintained.</p> <p>Mort Bay Park is a popular site for gatherings particularly during New Years Eve celebrations. There is potential for the proposal to reduce recreational space available to the public during these periods. However, the current proposal reduces the footprint of the works within Mort Bay Park which would reduce the overall impact on recreation access identified in the previous assessments.</p> <p>The diversion of a wastewater assets in the vicinity of MH D and E will be undertaken during standard work hours and is expected to be completed within 8 hours. This is within the retention time of the system. Therefore, no interruption to wastewater services is expected. Potential impacts to existing services have been minimised during detailed design and potential impacts due to vibration have been discussed in the noise and vibration section above.</p> <p>Potential impacts can be adequately managed with the application of mitigation measures from the approved REF and additional mitigation measures in Table 4-2.</p>
Cumulative and future trends	<p>The Inner West Council is investing \$2 million to upgrade Mort Bay Park. The upgrades will include the following improvements:</p> <ul style="list-style-type: none">• playground upgrades• a new toilet near the playground and ferry wharf• fixing park drainage and muddy areas• improving lighting throughout the park to make night-time use safer• table tennis tables• picnic tables• BBQs• seating• outdoor gym equipment. <p>At the time of writing, the project timeline for these works indicates that construction for the playground upgrades was due to commence in February 2025 and the remaining upgrades in Mort Bay Park starting in March 2025. The playground upgrades are expected to be complete by June 2025. The playground area is on the opposite side of Mort Bay Park and is located about 190 m from the works at its closest point (southeast). It is likely that the proposal will be occurring concurrently with these upgrades.</p>



Aspect	Potential additional impacts
	<p>Cumulative impacts include increased area of disturbance and restriction of recreation within Mort Bay Park and further potential impact to visual amenity.</p> <p>The upgrades works are staged, and potential cumulative impacts will vary over time. Regular consultation with council regarding these works will enable Sydney Water and Inner West Council to minimise any cumulative impacts or disruption. As a result, the proposal is not expected to have a significant cumulative effect with other existing or likely future activities.</p>

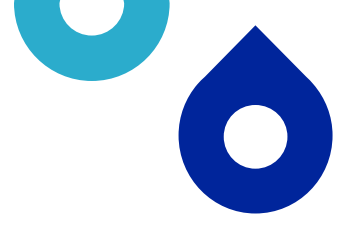
Table 4-2 Mitigation measures

Mitigation measures
<p>Sydney Water's Project Manager (after consultation with the environmental and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities:</p> <ul style="list-style-type: none">• limit proximity to sensitive receivers• do not disrupt property access• have no impact to known items of non-Aboriginal and Aboriginal heritage• are outside high risk areas for Aboriginal heritage• use existing cleared areas and existing access tracks• have no impacts to remnant native vegetation or key habitat features• have no disturbance to waterways• do not require additional safeguards beyond those included in the EIA• do not disturb contaminated land or acid sulfate soils• will be rehabilitated at the end of construction. <p>The Delivery Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment.</p> <p>The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.</p>

Trees marked for retention within protection areas are not to be damaged. Vehicles and heavy machinery used by contractors are also to be kept clear of these protection areas

To restrict activities within the TPZ which may adversely affect the health of a tree, install TPZ fencing and signage. Where impractical, install trunk and ground protection where machine access is required.

Should pruning of a tree be required that has not been recommended in the Arboricultural Impact Assessment (Canopy Consulting, 2025) the impact on the tree is to be assessed by an Arborist and their recommendations followed.



Mitigation measures

Trees are to be pruned in accordance with AS 4373-2007 Pruning of Amenity Trees (Standards Association of Australia, 2007) and in a manner as to avoid damage to adjacent or understorey vegetation and structures.

Pruning should be completed by, or under the direct supervision of a minimum AQF Level 3 Arborist.

Should the need to remove any tree be identified after the REF is determined, notification and consultation with Council is required.

Should a tree require removal, it is to be dismantled/felled without damaging adjacent or understory vegetation.

Any removed tree is to be offset in accordance with the *Sydney Water Biodiversity Offset Guideline (SWEMS0019.13)*. For example, locally native trees must be offset with a 3 to 1 multiplier. Trees are to be replaced in consultation with Council.

Minimise the presence of work vehicles and machinery as far as practical to reduce impact on the availability of street parking.

Ensure proposal areas do not encroach into the Natural Areas designated by Inner West Council, as shown in Figure 2-1. No vegetation impacts are permitted in these areas.

After confirming the condition of underground sensitive assets, implement the equipment type and offset distance recommendations as outlined in Heilig & Partners (2025).

Community engagement is to commence before work starts, with notification to impacted residents within the predicted affected distances. Residents and businesses within these areas will be notified about 1 month prior to the commencement of works. Consultation will include information on the scheduling of works and mitigation measures to be adopted. Notification is to be provided again 14 days before the start of works

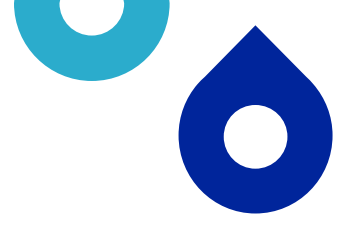
Ongoing engagement is to continue on an ad-hoc basis. For sensitive receivers / highly impacted residents, regular follow-up are required (i.e. one-on-one meetings, emails, texts, phone discussions).

Engagement during construction will be ongoing and include proactive management of issues to minimise complaints. Where complaints and enquiries arise, action will be taken to address these with appropriate mitigation adopted.

Regular project updates such as notification letters/newsletters will be sent to surrounding community and emailed to key stakeholders.

Residents will be notified of out of hours work at least seven days in advance of work starting.

An Out of Hours Work Plan (OHWP) will be completed in advance of work starting.



Mitigation measures

Community complaints will be managed by a Community Engagement Advisor assigned to the project, and in accordance with Sydney Water's Customer Complaints Policy. All consultation with community and stakeholders will be recorded on Sydney Water's Consultation Manager database.

A daily register is to be incorporated as part of site diary entry and pre-start meetings to discuss and record potential community and environmental issues and impacts. Mitigation measures to be adopted will be discussed, based on planned construction activities, weather and site conditions. Mitigation measures will be put in place in advance to address potential issues.

Consider less noise and vibration intensive methodologies where practicable and use only the necessary sized and powered equipment.

Attended monitoring is required to evaluate construction noise and where appropriate, vibration levels. Recordings will be measured to evaluate whether mitigation measures are adequate or require revision, and to address complaints. Continuous monitoring should be considered if complaints are received.

Monitor compliance with the recommended vibration levels in DIN 4150-3 1999: Structural Vibration – Part 3; Effects of vibration on structures.

Noise barriers will be installed between the work area and nearby residences and businesses on Cameron Street.

Noise mitigation, such as noise blankets/barriers, is to be used around the generators which will be located as far from sensitive receivers as practicable.

Where feasible, perform respite during noisy works (e.g., continuous blocks of up to 3 hours work, followed by at least one hour break).

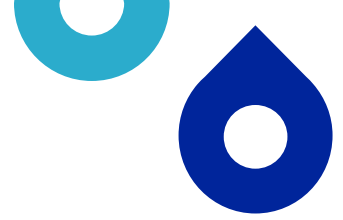
For high impact noise affected residents, identified during community engagement consultation, the following provisions, or similar, may apply:

- earplugs for out of hours work, or as requested during community consultation
- vouchers/gift card.

Specific signage notifying residents and business about upcoming and ongoing noisy activities and containing relevant information i.e., timings and duration, will be used where deemed appropriate to aid in communicated potential impacts to the community.

Conduct a dilapidation survey / asset condition assessment prior to works which have potential to damage existing structures

Maintain regular contact with Inner West Council in regards to the concurrent upgrades being undertaken in Mort Bay Park and seek to minimise any cumulative impact of the works. For example, this may include but should not be limited to:



Mitigation measures

- coordinating deliveries of materials to minimise impacts on traffic and recreational use of Mort Bay Park
- coordinate construction schedules to minimise noise pollution.



5. Conclusion

Sydney Water has prepared this REFA to assess the potential environmental impacts of the Wastewater System Upgrade, Balmain. This proposal change was required to avoid impacting existing underground services.

The main potential additional construction environmental impacts of the proposal change include noise impacts to receivers and businesses not identified in previous assessments, visual amenity and traffic. A requirement for a modification to existing heritage approvals has also been identified. During operation, no impacts are anticipated as all components of the proposal are underground. There will be improvements to the wastewater network which will reduce the likelihood of wastewater overflow and there reduce potential environmental impacts. Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REFA and the approved REF, the proposal is unlikely to have a significant impact on the environment. Therefore, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

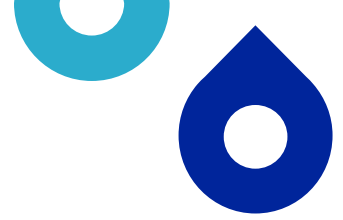
The REF considers how the proposal aligns with the principles of ESD. The proposal will result in positive long-term environmental improvements. The proposal will not result in the degradation of the quality of the environment and will not pose a risk to the safety of the environment.



Appendix A – Section 171 checklist

Requirements in addition to the approved REF are considered in the table below.

Section 171 checklist	REF finding
Any environmental impact on the ecosystems of the locality	The proposal will not result in environmental impacts to ecosystems of the locality. The TPZ of three trees will be subject to encroachment however potential impact is not expected to be significant and can be managed with the prescribed mitigation measures. No tree removal is required for the proposal. The proposal will lead to environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	<p>The proposal will occur in landscapes the have been disturbed by existing landuse, i.e., a road corridor and sections of Mort Bay Park. During construction the proposal may result in a localised and temporary reduction of aesthetic and recreational values of Mort Bay Park.</p> <p>The work area will be restored to pre-existing condition or better and will not result in a reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality.</p>
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will not have any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific, or social significance or any other special value for present or future generations. The changes proposed, and subject to this REF Addendum, reduce there area of the proposal within the State listed Mort's Dock. It has been assessed that the proposal will not impact any heritage or archaeological relics, deposits or structures associated with the Mort's Dock or The Dry Dock Hotel.
Any cumulative environmental effect with other existing or likely future activities	Council upgrades to Mort Bay Park are likely to be concurrent to the proposal. The upgrades works are staged, and potential cumulative impacts will vary over time. Regular consultation with council regarding these works will enable Sydney Water and Inner West Council to minimise any cumulative impacts ore disruption. As a result, the proposal is not expected to have any significant cumulative effect with other existing or likely future activities.

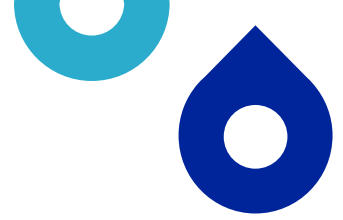


Appendix B – Consideration of Ecologically Sustainable Development

There are no ESD consideration in addition to those covered in the approved REF.

Appendix C – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		✓
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		✓
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		✓
Connect to, and use a substantial volume of water from a council owned water supply system?		✓
Require temporary structures on, or enclose, a public space under council's control that will disrupt pedestrian or vehicular traffic that is not minor or inconsequential?	✓	
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?	✓	
Section 2.11, local heritage – consultation with council		
Is the work likely to affect the heritage significance of a local heritage item, or of a heritage conservation area (not also a State heritage item) more than a minor or inconsequential amount?		✓
Section 2.12, flood liable land – consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		✓
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div.16 (Research/ monitoring stations), (i) Div.20 (Stormwater systems)?		✓
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		✓
Section 2.15, consultation with public authorities other than councils		



TISEPP section	Yes	No
Will the proposal be on land adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> or land acquired under Part 11 of that Act? <i>If so, consult with DPE (NPWS).</i>		✓
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? <i>If so, consult with DPE (NPWS).</i>		✓
Will the proposal include a fixed or floating structure in or over navigable waters? <i>If so, consult TfNSW.</i>		✓
Will the proposal be on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ? <i>If so, consult with Subsidence Advisory NSW.</i>		✓
Will the proposal be on land in a Western City operational area specified in the <i>Western Parkland City Authority Act 2018</i> , Schedule 2 and have a capital investment value of \$30 million or more? <i>If so, consult the Western Parkland City Authority.</i>		✓
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? <i>If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).</i>		✓



Appendix D – AECOM Non-Aboriginal Heritage Memorandum of Advice, April 2025



Appendix E - Arboricultural Impact Assessment, Canopy Consulting, November 2024



Appendix F – Construction noise and Assessment Memo

Prepared by:

Stuart Dawson

Senior Environmental Scientist

Date

25/04/2025

Reviewed by

Sarah Mitchell

Senior Environmental Scientist

Date:

23/05/2025