Review of Environmental Factors

Tank Stream Reinstatement, Circular Quay

1 Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Tank Stream Reinstatement. 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 REF. Additional environmental impact assessment may be required if the scope of work or work methods described in this REF change significantly following determination.

Decision Statement

The main potential construction environmental impacts of the proposal include heritage impacts and other typical construction impacts such as noise and air quality. During operation, it is unlikely that any additional impacts will be experienced. 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.

Certification

I certify that I have reviewed and endorsed this REF 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 REF considers how the proposal aligns with the principles of ecologically sustainable development (Appendix B). The information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
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2 Proposal description

Table 1 Description of proposal

Aspect	Detailed description
Proposal need and objectives	The proposal is part of the stormwater condition assessment program. This program inspects underground stormwater assets every 5 or 10 years for high risk or heritage listed assets. The initial investigation work confirmed that a section of the Tank Stream is in poor condition with significant stability concerns and risk of failure (Figure 1). A catastrophic failure of the Tank Stream has the potential to result in widespread flooding of Sydney CBD during rainfall and pose a public safety hazard for pedestrians over the asset. The proposal objective is to address the above risk by restoring the damaged section of the Tank Stream.
Consideration of alternatives/options	Alternatives and options for the proposal were considered. Each option was considered against both qualitative and quantitative criteria to assess its feasibility. The following options were considered: • Option 1: Do nothing • Option 2: Complete reconstruction of the arch only • Option 3: Complete reconstruction of the arch and floor above base slab • Option 4: Reconstruction of the Tank Stream within a concrete box culvert • Option 5: Partial reconstruction of arch • Option 6: Modern engineering solution (box culvert) The option assessment outcome indicates that Option 1 and 4 were dismissed due to their failure to meet the proposal's criteria for success. Option 2 was ranked favourably from a quantitative and qualitative perspective above other options. As Option 2 assumes that no extensive restoration is required on the Tank Stream's floor and foundation, a contingency option will need to be considered if future investigations deem the need for significant repairs to the floor. Option 3 is the preferred contingency option as this option balances heritage preservation with structural remediation. The option assessment concludes that the proposal should start with Option 2, with a contingency to transition to Option 3 based on evaluation of the floor and subsoil conditions.
Site establishment and access tracks	Site establishment will include the installation of structures such as erosion and sedimentation controls, traffic controls and erection of signage. It may also include surveys, service location, geotechnical investigations or other investigations required prior to construction. Service relocation where services are identified that may be impacted by works may also be required.

Aspect	Detailed description
	No new access tracks are required.
Ancillary facilities (compounds)	Construction compound(s) will likely be required to house site sheds, construction amenities and materials laydown. An indicative location for the compound is shown on Figure 2 and Figure 3. Any additional compounds will be chosen by the contractor in consultation with the landowner(s) and approved by Sydney Water's Project Manager as described in the mitigation measures in Section 6.
Proposal description and methodology	The methodology shared between Option 2 and 3 includes: • establishing site (see above) • relocating the back-up SP0016 generator to a temporary location • vegetation removal • installing twin pipes as temporary internal support system with expanding foam filler • removing bricks and paving on garden bed • injecting polyurethane grout into the ground surrounding Tank Stream for soil stabilisation • excavating using non-destructive excavation and installing shore box • excavating (about 15 m) to fully expose the damaged Tank Stream section (about 10 m) • deconstructing tunnel arch block by block including cataloguing each block and moving blocks to a safe storage location • installing upstream and downstream flow controls. Following arch deconstruction, a ground condition investigation within the excavated area surrounding Tank Stream will be undertaken. A section of the floor block may need to be removed to expose the subbase to facilitate further investigation. The investigation outcome will determine the appropriate option. **Option 2** If the subbase is in sound condition, Option 2 will be adopted and include: • carrying out minor floor repairs (e.g. repointing all block work in tunnel floor) • constructing temporary internal arch formwork • reconstructing the tunnel arch using the original blocks and replacing any missing blocks • completing internal repointing of blocks • removing internal temporary arched formwork

Aspect	Detailed description
	• placing geofabric on arched roof then backfilling with stabilised material. **Option 3** If the subbase is identified to be defective, Option 3 will be adopted and includes: • deconstructing tunnel floor block by block including cataloguing each block and moving blocks to a safe storage location • excavating to required depth for reconstructing the supporting floor slab and piles • installing stabilised structural fill • drilling multiple piles to the adequate level • installing slab reinforcement and pouring base slab • laying stabilised sand bed onto newly constructed base slab followed by reconstructing tunnel floor with original blocks • constructing temporary internal arch formwork • reconstructing the tunnel arch using the original blocks and replacing any missing blocks • removing internal temporary arched formwork • completing internal repointing of blocks • placing geofabric on arched roof then backfilling with stabilised material. Following construction, the work site will be restored to the pre-existing condition following consultation with landowners and/or local council. The Construction Environmental Management Plan (CEMP) will detail site restoration works to be undertaken once construction works are finished.
Equipment	Materials/ equipment may include the following: • hook lift bin truck • concrete trucks • demolition saw • diesel air compressor • diesel concrete pump • diesel generator • excavator with rock hammer (20 tonne) • flood light • forklift • franna crane

Aspect	Detailed description
	• fuel storage • mini skid steer unit • mobile crane • skip bins • submersible pump • tipper truck • vacuum bins • vacuum truck • work vehicle.
Location and land ownership	The proposal is located in the suburb of Circular Quay within City of Sydney Local Government Area (LGA). The proposal is on the garden bed and pedestrian walkways at First Fleet Park and is on land managed by Place Management NSW. The proposal and the construction compounds are located at: • Lot 7002 Alfred Street (DP1057990 Lot 7002) • Lot 4 Circular Quay (DP787934 Lot 4) • Lot 3 Circular Quay (DP787934 Lot 3) • Lot 14 Circular Quay (DP787934 Lot 14). The nearby Circular Quay Station is owned by the Transport Asset Holding Entity (TAHE). The wharves and seabed of Sydney Harbour are owned and managed by Transport for NSW.
Work hours	Work and deliveries will be scheduled during standard daytime hours: 7 am to 6 pm, Monday to Friday, 8 am to 1 pm, Saturdays, where possible. However, subject to tidal flows, community engagement outcomes and event management requirement, the proposal is likely to require work outside the above hours. This has been assessed and mitigation measures are provided in Section 6.
Proposal timing	Construction is expected to start mid 2024 and take about 12 months subject to weather conditions (e.g. excessive wet weather events will prevent construction work).
Operational requirements	No additional operational requirements are expected and there will be no change to the existing inspection regime for Tank Stream.

Figure 1 Example of sections in poor conditions (arch deformation and block displacement)

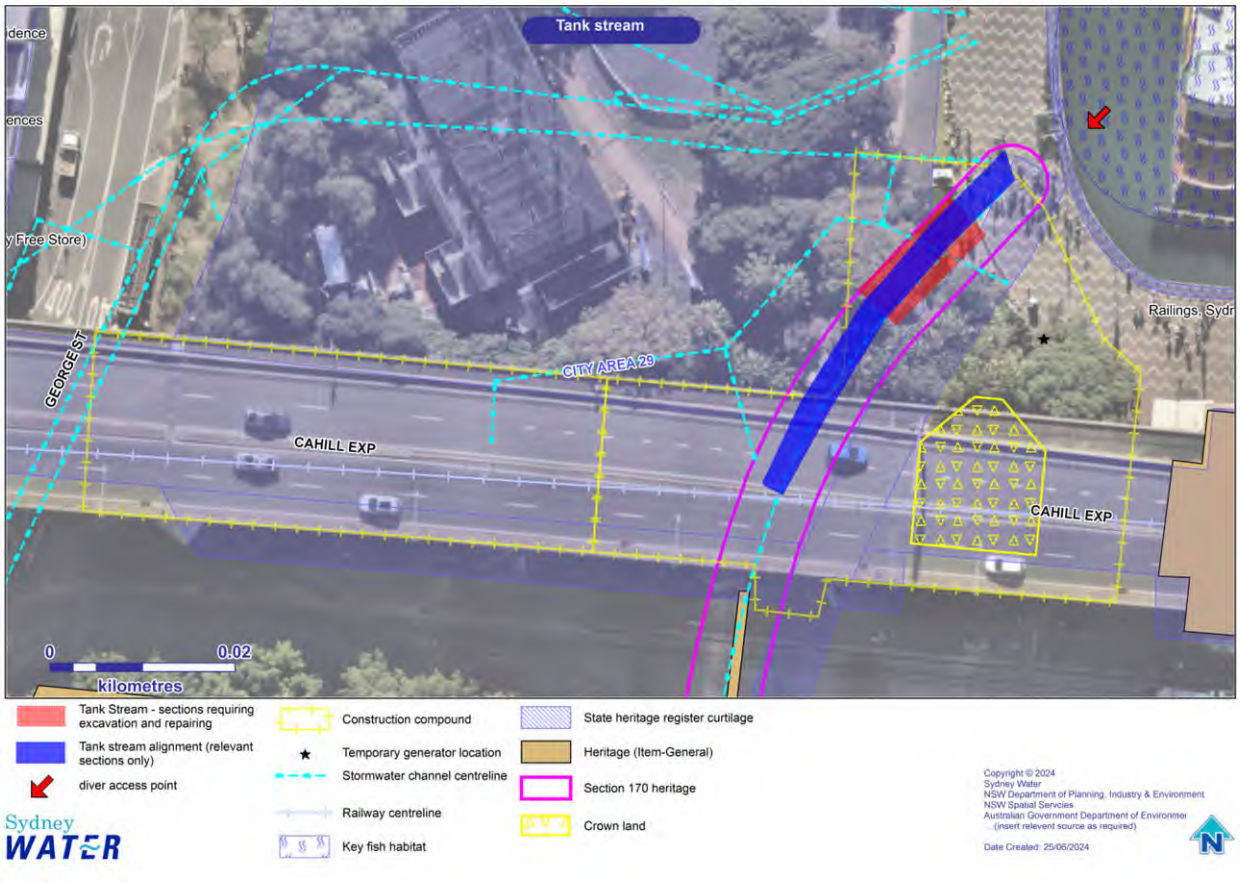

Figure 2 Location of proposal and environmental constraints

Figure 3 Site layout

3 Consultation

Community and stakeholder consultation – general

Our approach to community and stakeholder consultation is guided by Sydney Water's community and stakeholder engagement guidelines.

Stakeholder and community engagement is a planned process of initiating and maintaining relationships with external parties who have an interest in our activities. Community and stakeholder engagement:

- enables us to explain strategy, policy, proposals, proposal or programs
- gives the community and stakeholders the opportunity to share their knowledge, issues and concerns
- enables us to understand community and stakeholder views in our decision-making processes alongside safety, environment, economic, technical and operational factors.

The nature, scale and extent of the proposal's potential impact has been evaluated in this REF. If our work impacts the community in some way, we will consult with affected groups throughout the proposal. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions.

We will also provide local councils with reasonable notice when we would like to commence works. City of Sydney Council will be consulted about matters identified in environmental planning instruments such as public safety issues, temporary works on council land, and full or partial road closures of council managed roads (refer below).

Community and stakeholder consultation – proposal

Consultation with Place Management NSW (PMNSW) on 5th July 2024 confirmed that the proposal is acceptable for the use of Place Management NSW exemption (Agency Specific Exemption No.2 – Repairs and Reconstruction) under section 57(2) of the *Heritage Act 1977*. Sydney Water, as the proponent of the work will be applying Place Management NSW exemption for the proposal.

Consultation with Heritage NSW on 3 April 2024 has no objection to the above approach.

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 was required under section 2.10 as the proposal involves installing temporary structure and enclosing public space under City of Sydney Council control. City of Sydney Council has been notified on 3 June 2024 and confirmed the proposal has the potential to increase pedestrian loads onto City of Sydney Council footway. Mitigation measures in Section 6 will be implemented to manage any potential traffic and access impact. Further detail is provided in Appendix C.

Consultation with Transport for NSW (TfNSW) was required under section 2.15 as the proposal involves installing a temporary barge in Sydney Harbour to help diver access the outfall of Tank Stream. TfNSW has been notified on 31 May 2024 and no response has been received.

Department of Primary Industry (DPI Fisheries) was notified under s199 of the *Fisheries Management Act 1994* during REF preparation, as the proposal involves diver access in Sydney Harbour, a Key Fish Habitat. DPI Fisheries raised no objection on 4 July 2024 to the proposal provided that the mitigation measures in Section 6 are implemented.

Consultation with PMNSW on 28 May 2024 has confirmed that PMNSW manage the Crown Land to the south of the proposal. The contractor will carry out ongoing consultation with PMNSW regarding the proposal.

4 Legislative requirements

Table 2 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Sydney Cove Redevelopment Authority Scheme	The proposal is on land which is covered by the Sydney Cove Redevelopment Authority Scheme (SCRA) Scheme managed by the Sydney Harbour Foreshore Authority (now Place Management NSW). The SCRA Scheme was prepared under the former *Sydney Cove Redevelopment Authority Act 1968.*This scheme has equivalent status to a Local Environmental Plan (LEP).
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.137 (1) of the TISEPP permits development by or on behalf of a public authority for stormwater management system without consent on any land. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** The proposal is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) states: '*This Policy does not affect the provisions of any other SEPP….*', and as the works are permissible under the TISEPP, a council permit to clear vegetation under this SEPP is not required. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Sydney Harbour Catchment, a regulated catchment area. Section 5 of this REF assessed the potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minimal and meet the requirements of part 6.2 of the SEPP. The proposal is within the boundary of Sydney Harbour Foreshores and Waterways Area on land zoned as Zone 1 Maritime Waters. The proposal is consistent with the planning principles of the Foreshores and Waterways area of the planning instrument in that the proposal is for the

Environmental Planning Instrument	Relevance to proposal
	public good by reducing public safety hazards for pedestrians on the harbour foreshore.

Table 3 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Place Management NSW Act 1998	The *Place Management NSW Act 1998* establishes Place Management NSW (PMNSW) as a statutory body with control over the management of certain land in NSW. The is predominantly the foreshore areas of Sydney Harbour and The Rocks. One of the functions of PMNSW established in the Act is to protect and enhance the natural and cultural heritage of the foreshore area. As the proposal is in area owned by PMNSW, PMNSW's landowner consultation is required. Consultation with PMNSW has been carried out and will continue throughout the proposal. A separate LOC application will need to be lodged with Place Management NSW for above ground works including site prior to works.	REF	Pre-construction, Sydney Water Pre-construction, contractor
Heritage Act 1977	The *Heritage Act 1977* aims to promote conservation of heritage items in NSW. Part 3A establishes a State Heritage Register for the listing of heritage items including places, buildings, works, relics, moveable objects, precincts or land. Section 57(1) states that a person must not, amongst other things, carry out any development in relation to the land where an item that is listed on the State heritage register is situated. A permit under section 60 of the *Heritage Act 1977* is required for works that may impact a site listed on the State heritage register, except for works that comply with an exemption under section 57(2).	Section 57(2) exemption	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Consultation with PMNSW on 5th July 2024 confirmed that the proposal is acceptable for the use of PMNSW (Agency Specific Exemption No.2 – Repairs and Reconstruction) under section 57(2) of the *Heritage Act 1977*. This exemption approach proposed by PMNSW and Sydney Water Heritage Advisor was supported by Heritage NSW in a meeting on 2 April 2024. No additional heritage approval is required for the proposal.		
Protection of the Environment Operations Act 1997 (POEO Act)	There is no Environment Protection Licence (EPL) required for the proposal, and none applies. Any pollution incidents occur during construction must be reported and managed in accordance with SWEMS0009 Responding to incidents with an environmental impact.	N/A	N/A
Biodiversity Conservation Act 2016 (BC Act)	No threatened species, ecological communities or their habitats are expected to be impacted by the proposal. Tree removal will be required for the proposal and managed in accordance with the mitigation measures in Section 6	REF	Pre-construction, Sydney Water
Fisheries Management Act 1994 (FM Act)	As the proposal involves diver access in Sydney Harbour, a mapped key fish habitat, Sydney Water has consulted Department of Primary Industries (DPI – Fisheries) in accordance with section 199 of FM Act. DPI Fisheries has reviewed the proposal on 4 July 2024 and had no objections to the proposal, provided that the mitigation measures in Section 6 are implemented.	Notification	Pre-construction, Sydney Water
Roads Act 1993	Section 138 of the Roads Act 1993 states a person must not carry out work in, on or over a public road without consultation and consent of the appropriate road authority.	Road Occupancy Licence	Pre-construction, contractor

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	A Road Occupancy Licence (ROL) would be required from Transport for NSW as the proposal is within 100 m of a traffic signal on Alfred Street. Potential impacts of the proposal on traffic and access, including road works, are assessed in Section 5.		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the principal environmental law administered by the Commonwealth. It provides for the protection of matters of national environmental significance. Under the EPBC Act, an action that is likely to have a significant impact on a matter of national environmental significance must be referred to the Commonwealth Minister for the Environment and Energy. The project is not likely to have a significant impact on a matter of national environmental significance and accordingly it is not required to be referred.	N/A	N/A

5 Environmental assessment

The proposal is located at First Fleet Park, a public space within a highly urbanised area. The Tank Stream is located beneath the park at Circular Quay. There are two maintenance holes located adjacent to the public footpath at First Fleet Park which provides access to Tank Stream.

The environmental impacts checklist (SWEMS0019.01) was completed for the works which considers all environmental aspects. Table 4 includes only the potentially impacted aspects.

Table 4 Key environmental aspects and potential impacts of construction and operation

Aspect	Potential impacts
Historic heritage	The proposal is within the curtilage of: • Tank Stream, a listed heritage item on the State Heritage Register (SHR) and section 170 heritage (Significance: State) • Sydney Cove West Archaeological Precinct, a listed heritage item on the SHR. The damaged section of Tank Stream requiring work is a 10 m section which represents only 1% of the total length of the SHR listed asset. The proposal is expected to have only a negligible heritage impact due to the temporary and minimal impact on the overall significance of Tank Stream. The Tank Stream section associated with this proposal was constructed on reclaimed land that has no archaeological potential (Personal Communication 28 May 2024 with Sydney Water Heritage Advisor). The proposal is not expected to impact archaeological resources within the SHR curtilage of Sydney Cove West Archaeological Precinct. Consultation with Place Management NSW (PMNSW) on 5th July 2024 confirmed that the proposal is acceptable for use of the Place Management NSW exemption (Agency Specific Exemption No.2 – Repairs and Reconstruction) under section 57(2) of the Heritage Act 1977. This exemption approach proposed by PMNSW and Sydney Water Heritage Advisor was supported by Heritage NSW in a meeting on 2 April 2024 (Section 57 Exemption Record of Use consideration attached: Appendix D). No additional heritage approvals are required. Upon completion, the interior of the reconstructed section of Tank Stream will match the location, existing form and function of Tank Stream. Additionally, the proposal will allow Tank Stream to continue to perform its function as a stormwater channel. Mitigation measures in Section 6 will be implemented to minimise any potential heritage impacts.
Aboriginal heritage	There are no recorded Aboriginal sites or places within 200 m of the proposal. The proposal is in a high-risk landscape for Aboriginal Heritage (<200 m from a waterway). However, the proposal has been highly disturbed during the construction of the existing infrastructure. The proposal is therefore unlikely to impact any Aboriginal heritage.
Topography, geology and soils	The Geotechnical Assessment (WSP, 2024) indicates that the proposal site is underlain by anthropogenic material. An eSPADE search on acid sulfate soil probability was conducted on 17 May 2024. The proposal is in an area mapped as disturbed terrain, indicating that the area has

Aspect	Potential impacts
	been mined or filled or has been subjected to other significant soil disturbance activities. The proposal is not in an area of salinity hazard. There are no notified contaminated sites managed by the EPA within 100 m of the study area. The main potential impacts to topography, geology and soils during construction are erosion and sedimentation. Construction activities involve excavation and temporary stockpiling of excavated material. In the event of rainfall, stockpiled material and any exposed excavations have the potential to erode and lead to sedimentation on land and within Tank Stream. Mitigation measures in Section 6 will be implemented to minimise any potential erosion and sedimentation impacts. The proposal is not expected to permanently change surface slope or topography.
Water and drainage	The Tank Stream collects and conveys stormwater throughout the Sydney Central Business District and discharges flow into Sydney Harbour beneath the Circular Quay promenade (Figure 4). The culvert is also subject to inundation from tidal actions, leading to partial to full submersion of downstream sections during high tides. During construction, excavation and construction activities have the potential to impact water flow within Tank Stream. Flow controls will be implemented to manage both stormwater and tidal flow, ensuring efficient management of flows within Tank Stream. The following flow controls will be implemented to manage both stormwater and tidal flow: • For upstream flows, prior to removing the arch, a temporary twin pipe supporting system will be installed through the outlet with annular gap filled with expanding foam fill (Figure 5). Once arch is removed, a weir will be constructed along with temporary submersible pumps to divert upstream flows around the work area. At the end of each shift or during wet weather event, the temporary pumps will be removed and the flow through valves will be opened to allow normal flow to pass through and flood flows to pass over the weir. • For downstream flows, a steel stopboard will be installed with a gantry to isolate the work area from tidal flow. The proposed excavation work and construction activities have the potential to impact on water quality due to increased erosion and sedimentation from exposed soil. Sediment in runoff could increase turbidity and result in decline in water quality in Tank Stream and Circular Quay. Additionally, fuels, chemicals or wastewater from accidental spills during construction could potentially enter the stormwater flows in Tank Stream. The proposed polyurethane grout will stabilise the soil and minimise any potential sedimentation impact when the work area is submerged during high tide and wet weather event. If subbase is identified to be defective

Aspect	Potential impacts
	and require repair, any exposed subbase will be repaired with concrete at the end of each shift to minimise any exposed soil surface. Mitigation measures in Section 6 will be implemented to minimise the above impacts. In the unlikely scenario of tidal flow ingress from the subbase, the water will be pumped to a filtration system before disposing back into Tank Stream. Any water ingress will also be pumped to a tank, filtered and disposed back into Tank Stream. No washing of equipment is expected. However, if required, the washing of equipment will be carried out in a bunded area. The proposal is not expected to result in alterations to drainage regime.
Traffic and access	The proposal is in the south eastern corner of Circular Quay ferry terminal and is in an high pedestrian traffic area. There will be restrictions to access around the worksite, appropriate diversions and signage will be put in place to to manage this. The access for the proposal is as below: • Heavy vehicle access such as excavator would be via George Street from the West and potentially via Alfred Street from the south under Cahill expressway. Traffic control will be required to facilitate access. The vegetation on the garden bed located on the eastern side will be removed to facilitate access and movement of the excavator. • Diver access through the culvert of Tank Stream will be required to facilitate installation of temporary support systems and downstream flow controls. A barge will be moored to the existing wharf structure (all moorings above the water line) to help facilitate diver access for 2 shifts of up to 8 hours. Heavy vehicles (e.g. excavator, concrete trucks, franna and mobile crane) would be parked at the fenced area within the construction compound. Light vehicles will be parked at local streets or a designated area in consultation with the landowner. No partial or full road closure is required. Traffic control will be required to facilitate vehicle access. No new access tracks are required. Traffic and access impacts are expected to be minor and will be managed through mitigation measures in Section 6. Ongoing consultation with TfNSW and PMNSW will be required, and the contractor must adhere to any conditions raised by these agencies.
Flora and fauna	The proposal would require diver access from Sydney Harbour, a key fish habitat. DPI Fisheries has reviewed the proposal on 4 July 2024 and had no objections to the proposal, provided that the mitigation measures in Section 6 are implemented.

Aspect	Potential impacts
	The proposal is within the study area of the Circular Quay Renewal Marine Significant Impact Assessment (Stantec, 2023). Two species were considered to have a moderate to high likelihood of occurrence due to the presence of suitable habitat in the study area and/or known populations in Sydney Harbour: • White's Seahorse (*Hippocampus whitei*) listed as endangered under the EPBC Act is considered to have high likelihood of occurrence. • Black Rockcod (*Epinephelus daemelii*) listed as vulnerable under the EPBC Act is considered to have moderate likelihood of occurrence. The proposal is located in area primarily consisting of uniform soft sediment which provides no high-value habitat for Black Rockcod. Additionally, any temporary disturbance caused by the diver is expected to be minimal due to the temporary nature of work. Habitat condition within the area would naturally return following completion of work as the sources of disturbance no longer exist. The study area is considered to provide extensive suitable habitat for a population of White's Seahorse through the piles of the existing wharf structure and promenade. The proposal would involve divers guiding the pipes into the culvert during low tide. Works are minor and temporary and would not involve any works on the piles. No impacts are expected on the White's Seahorse. The proposal is not on any mapped threatened vegetation community. The proposal would be on existing grassed area within First Fleet Park. Trees on the garden bed to the East of the excavation will be removed to facilitate the establishment of construction compound and movement of excavator. If possible, the Jacaranda at the far East of the eastern garden bed will be retained, if removal is required see consultation requirements in Section 6. Trees on the garden bed to the West may also require removal and or trimming, this will be determined in consultation with the Arborist. One Fan Palm on the western garden bed will be removed, stored and replanted after the works. In addition, the Jacaranda on the western side of the excavation may require trimming or removal to facilitate works see consultation requirements in Section 6. Mitigation measures in Section 6 will be implemented to minimise any potential biodiversity impacts.
Noise and vibration	The likelihood of noise impact from the proposal was reviewed against risk factors (based on Table 2 of the EPA's 2020 Draft Construction Noise Guideline). The review indicated that the construction noise impact would be a low-medium risk and therefore a qualitative noise impact assessment was undertaken. The Transport for NSW (TfNSW)

Aspect	Potential impacts

	Construction and Maintenance noise estimator tool (TfNSW, 2022) was used for the assessment.
	
	The purpose of the noise assessment is to assess the predicted worst-case noise impacts to surrounding receivers. Quantifying these impacts will assist in identifying how many receivers may be impacted at different times and during different activities. Where receivers are predicted to experience noise impacts, recommended mitigation measures at different noise impact levels have been identified, which will guide the community engagement for the sites.
	
	Existing environment
	
	The proposal is at First Fleet Park, a public recreation area in Circular Quay. Land use surrounding the proposal includes roads, public recreation, transport infrastructure and businesses. The existing noise environment is primarily influenced by the railway corridor, ferry, light rail and road traffic on Cahill Expressway and George Street.
	
	Sensitive receivers within proximity include the following:
	
	• The closest residential receiver is the Russell Boutique Hotel located about 110 m to the north-west of the proposal.
	• The closest passive recreation area is adjacent at First Fleet Park.
	• The closet retail outlet is the Royal Copenhagen Ice Cream, located about 20 m to the south-east of the proposal.
	
	The modelled scenarios comprised of the following inputs:
	
	• Representative noise environment – R5
	• Distance based noisiest plants – 13.5 tonne excavator with hammer (similar noise level as a 20 tonne excavator with hammer)
	• Standard hours and out of hours work (OOWH)
	• A different line of sight (LOS) scenario was selected based on the type of receivers:
	  ○ No LOS (behind solid barrier) (NLOS) is selected for residential receiver as the proposal is not visible to the closest residential receiver.
	  ○ LOS is selected for passive recreation user as the proposal is within First Fleet Park. Passive recreation users to the north at Tallawoladah Lawn will also have LOS.
	  ○ LOS is selected for retail outlet as the retail store has visibility on the proposal within First Fleet Park.
	
	Noise impact

Aspect	Potential impacts
	Noise impacts during construction are as follows: • The worst-case noise impacts will require up to 50% of night shifts over the 12 month work period if tidal ingress is unable to be controlled. However, the works plan to control tidal ingress and in this planned scenario approximately only 10% of shifts would be at night, subject to event management requirements etc. • The noisiest activity would be the use of 20 tonne excavator with hammer to remove brickwork and garden bed paving over a 2-week period. This proposed activity is expected to occur during standard construction hours. However, there is potential for this activity to occur beyond standard construction hours subject to stakeholder requirements. • Vacuum excavation will be conducted with a vacuum truck to expose the arch of the damaged Tank Stream sections over a 8 week period. • The proposal requires construction activities 5 shifts a week pending weather, ROLs, community engagement outcomes and any other unforeseen events. Night shifts will predominantly happen on weekdays. There will also be occasional weekend night shifts subject to tidal flow and event management requirement. The worst-case scenario for noise impact is the use of excavator (13.5 tonne) with hammer during both standard hours and out of hours work (OOHW). (Note that this worse case noise impact will be for a maximum of two weeks). The noise impacts for specific type of receiver are listed below and in Figure 6 to Figure 8. *Residential receiver* As the closest residential receiver is located at 110 m from the proposal, only impacts for receiver at or beyond 110 m are considered relevant for this proposal. As the second closest residential receiver is located few buildings behind Russell Boutique Hotel, the output from NLOS (behind substantial solid barrier) is more appropriate to determine the worst-case impacts for receivers located beyond 110 m from the proposal. During OOHW evening (NLOS – behind solid barrier), noise impacts for residential receiver of up to 110 m are predicted to be clearly audible (10 to 20 dB(A) above background). During OOHW night (NLOS- behind substantial solid barrier), noise impacts for residential receiver of up to 170 m are predicted to be noticeable (5 to 10 dB(A) above background). *Passive recreation user*

Aspect	Potential impacts
	During the day (LOS), passive recreation users: • within 70 m are predicted to be highly affected (75 dB(A) or greater) • within 110 m are predicted to experience noise level 10 to 20 dB(A) above background noise. During evening, passive recreation users: • within 22 m are predicted to experience noise level more than 25 dB(A) above background noise • within 70 m are predicted to experience noise level 15 to 25 dB(A) above background noise • within 170 m are predicted to experience noise level 5 to 15 dB (A) above background noise. *Retail outlet* During the day, retail outlets within 70 m are predicted to be highly affected (75 dB(A) or greater). During both evening and night, retail outlets: • within 22 m are predicted to experience noise level 15 to 25 dB(A) above background noise • within 70 m are predicted to experience noise level 5 to 15 dB(A) above background noise. Retail outlets at or beyond 70 m are not expected to have LOS to the proposal. Affected distance under a NLOS (behind solid barrier) does not go beyond 70 m. The noise estimator recommended mitigation measures at different distances. These are to be considered by the community team and offered where appropriate. The recommended mitigation measures for each type of receiver are summarised in Table 5 and include: • N: Notification (e.g. letterbox drop) • R1: Respite Period 1 (work up to 3 nights a week and 6 nights a month, with at least a week between the blocks of 3 shifts. This schedule does not require community consultation) • R2: Respite Period 2 (work up to 2 nights a week and 6 nights a month, with at least a week between the blocks of 2 shifts. This schedule does not require community consultation) • RO: Respite Offer (e.g. work blocks of 2 hours with one hour breaks in between) • DR: Duration Respite (completing the works over more nights a week than R1 or R2 following community engagement and support of the work schedule)

Aspect	Potential impacts
	• SN: Specific notification (e.g. door knock) • PC: Phone calls. Appropriate mitigation measures have been identified in Section 6 to reduce the risk of construction noise impacts. Agreement from the community will be required for more than 2 nights per week of night work. **Vibration** Vibration may be experienced during use of excavator with hammer. Impacts would be intermittent and can be managed through the mitigation measures in Section 6.
Air and energy	Given the proposal's small excavation footprint, the proposal is expected to have only a negligible impact on air quality or energy use from the use of vehicles. Mitigation measures in Section 6 will be implemented to minimise potential impacts.
Waste and hazardous materials	The proposal is not expected to generate more than 1,000 tonnes of waste from the following waste streams: • excavated waste material • general construction waste such as excess concrete and metal • domestic waste including food scraps, plastic and paper containers generated by site construction personnel • excavated soil • contaminated material (if encountered). Waste management would be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). The CEMP would identify all potential waste streams associated with the work and outline method of reuse, recycling or waste disposal at appropriately licensed facilities along with other onsite management practices such as keeping areas free of rubbish. The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP. With the implementation of the mitigation measures in Section 6, the proposal is unlikely to have a significant construction waste impact.
Social and visual	The proposal is located at First Fleet Park, a public space within a highly urbanised area. All potentially impacted businesses will be notified prior to commencing the proposal. The proposal may have a temporary impact on park users due to partial park closure. This proposal is expected to be carried out at times with lower pedestrian traffic in consultation with PMNSW. Additional artificial lighting will be required to carry out the proposal at night.

Aspect	Potential impacts
	Mitigation measures in Section 6 will be implemented to minimise potential impacts.
Cumulative and future trends	There are multiple ongoing developments at Circular Quay and at the Rocks. Potential cumulative impacts from these developments include: • noise and vibration from construction plant and equipment • air quality impacts from dust caused by excavation and emissions from construction plant and equipment • increased traffic volume related to construction activities such as delivery of plant and equipment and construction staff. The SP016 maintenance work on the northern side of First Fleet Park will be carried out in the same timeframe as the proposal. Ongoing consultation with Sydney Water Operations team and relevant agencies (e.g. PMNSW) has been carried out and will continue to minimise the potential for interaction as far as practicable. The proposal site layout has been developed in consultation with Sydney Water operation team.

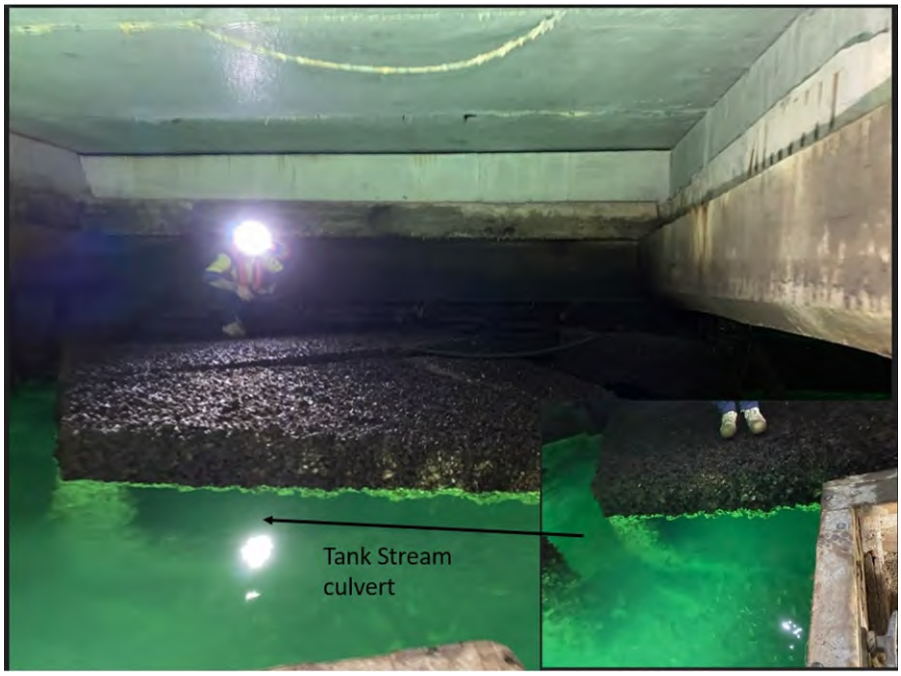

Figure 4 Tank Stream culvert

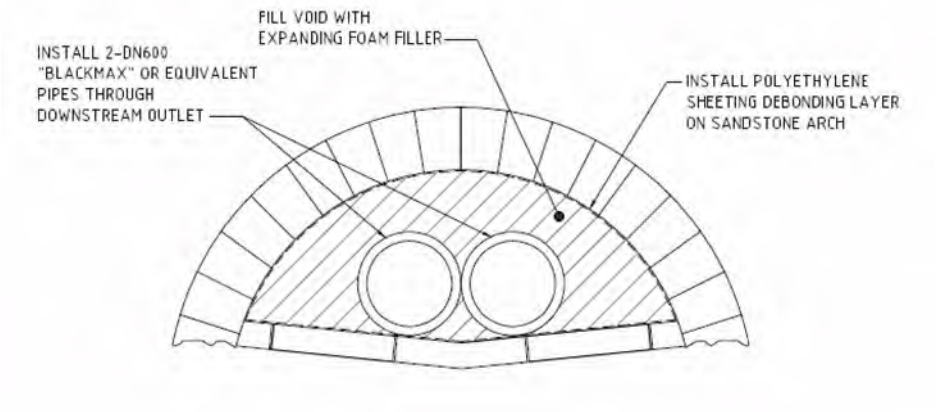

Figure 5 Temporary support

Table 5 Recommended noise mitigation measures

	Noise impacts (affected distance)	Recommended mitigation measures
Residential receiver		
OOWH evening (NLOS – behind solid barrier)	110 m	N, R1, DR
OOWH night (NLOS - behind substantial solid barrier)	170 m	N
Passive recreation user		
Day (LOS)	70 m	N, PC, RO
Day (LOS)	110 m	N
OOWH evening (LOS)	22 m	N, R1, DR, PC, SN
OOWH evening (LOS)	70 m	N, R1, DR
OOWH evening (LOS)	170 m	N, R1, DR
Retail outlets		
Day (LOS)	70 m	N, PC, RO
OOWH evening (LOS)	22 m	N, R1, DR
OOWH evening (LOS)	70 m	N, R1, DR
OOWH night (LOS)	22 m	N, PC, SN, R2, DR
OOWH night (LOS)	70 m	N, R2, DR

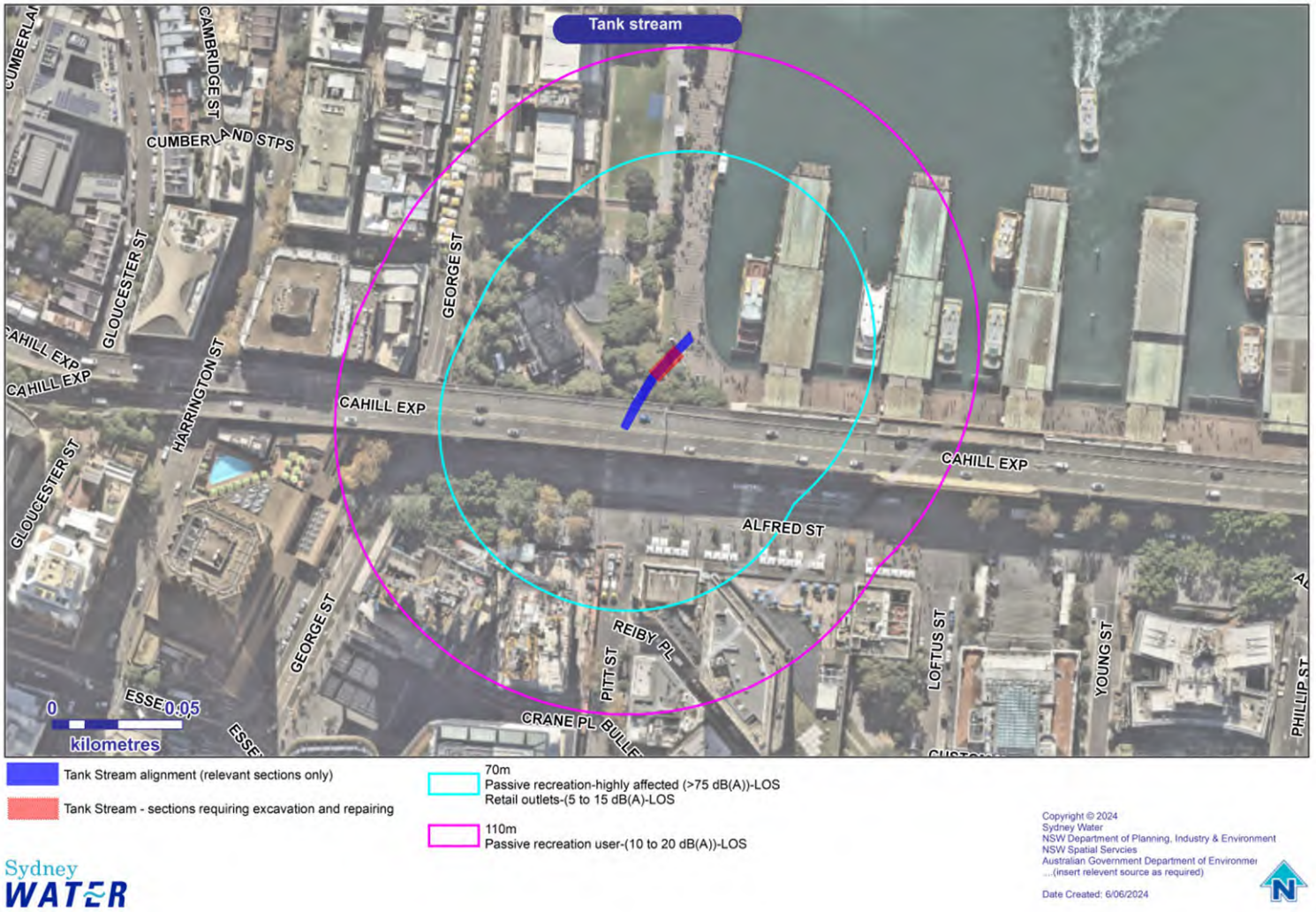

Figure 6 Receivers predicted to be impacted by noise during standard construction hours (7am to 6pm weekdays, 8am to 1pm Saturdays).

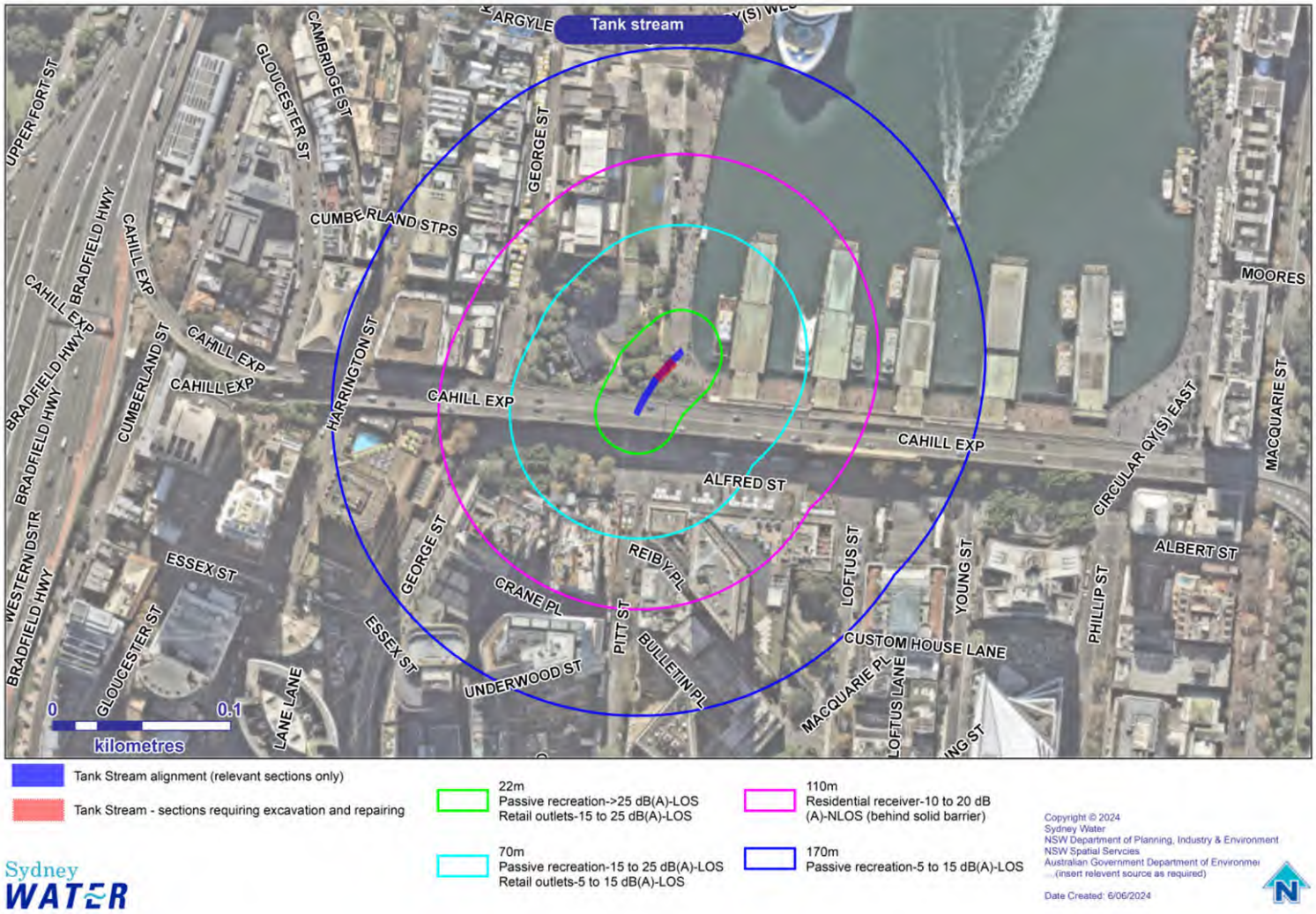

Figure 7 Receivers predicted to be impacted by noise during OOHW evening (6:00 pm to 10:00 pm)

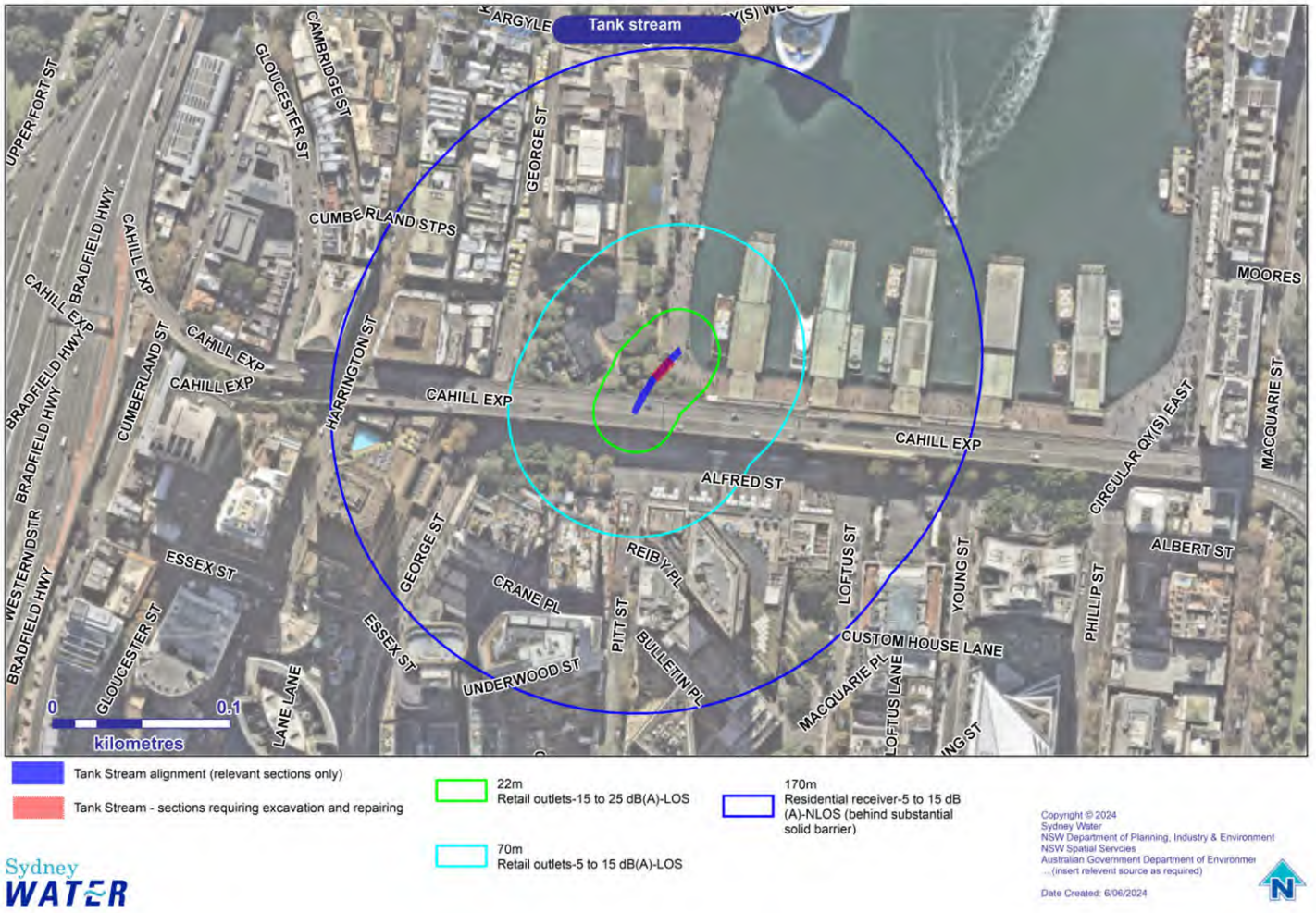

Figure 8 Receivers predicted to be impacted by noise during OOHW night (10:00 pm to 7 am)

6 Environmental mitigation measures

Table 6 Mitigation measures

Mitigation measures
Historic and Aboriginal heritage
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.
A photographic record must be taken prior to alterations and throughout the construction process, to document changes. The photographic record must be forwarded to Sydney Water's Heritage Advisor.
Prior to commencing work, Sydney Water will provide FAQs to Heritage NSW and Place Management NSW to enable the agencies to answer enquiries from the public and/or media during the works.
Invite Heritage NSW and Place Management NSW to visit the Tank Stream works during construction.
Install on-site interpretive sign in consultation with Transport for NSW to honour the story of Tank Stream.
All site personnel must be inducted by a heritage specialist (or delegate) before starting work. The induction should include clear explanation of heritage constraints, go and no-go areas, measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
Topography, geology and soils
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Property Portfolio Environmental team) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.

Mitigation measures
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.
Manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998). Prepare an Acid Sulfate Soils Management Plan (ASSMP) (if required).
Water and Drainage
Use appropriate controls to avoid potential sedimentation to waterbodies (e.g. floatation boom).
For works in marine/estuarine areas: • analyse tides to schedule works at appropriate times • keep materials, plant, equipment and stockpiles outside of tidal zone
Bund potential contaminants and store on robust waterproof membrane, away from drainage lines.
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills and aquatic spill kit on site for clean-up of accidental chemical/fuel spills in mapped key fish habitat. Keep the spill kits stocked and located for easy access.
Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and flood prone areas.
Discharge all water in accordance with Sydney Water's Water Quality Management During Operational Activities Policy (D0001667) including erosion controls, discharge rate, dechlorination, monitoring. Re-use potable / groundwater water where possible.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Ensure bunded areas have 110% capacity of the largest chemical container, or an additional 25% capacity of the total volume stored within (whichever is greater). Tightly secure chemicals and fuels in vehicles. Clearly label all chemicals.
Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Conduct any equipment wash down within a designated washout area.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.
Prepare a Flow Isolation Flow Management Plan (FIFM).
All water ingress into the work area must be filtered before discharging back to the Tank Stream.
Traffic and access
Prepare a Traffic Management Plan (TMP) in consultation with TfNSW. Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The deliver contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100m of traffic signals when construction commences.
Prepare a Pedestrian Management Plan in consultation with Place Management NSW.

Mitigation measures
Develop management measures to minimise traffic impacts near businesses by consulting with them.
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Consult with the TfNSW and PMNSW about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required. The contractor must adhere to any raised conditions from the above agencies.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility, or business access unless necessary and only if appropriate notification has been provided.
No vehicles above 3 tonnes are allowed on top of Tank Stream. If required, additional approval from the Sydney Water Project Manager is required.
The contractor will consult with relevant waterway authority for waterway access.
Consult with PMNSW on designated area for light vehicle parking.
Flora and fauna
Minimise vegetation clearance and disturbance. Where possible, tie back or limit clearing to trimming rather than the removal of whole plants.
Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.
Protect trees in accordance with the requirements of Australian Standard 4970-2009 for the Protection of Trees on Development Sites. Do not damage tree roots unless absolutely necessary, and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone.
Inspect vegetation for potential fauna prior to clearing or trimming. If fauna is present, or ecological assessment has determined high likelihood of native fauna presence (including hollow bearing trees), engage WIRES or a licenced ecologist to inspect and relocate fauna before works.
If native fauna is encountered on site, stop work and allow the fauna to move away unharassed. Engage WIRES or a licenced ecologist if assistance is required to move fauna.
If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Project Manager. Work will only recommence once the impact on the species has been assessed and appropriate control measures implemented.
If any damage occurs to vegetation outside of the study area (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.
For works in marine/estuarine areas: • Do not place anchors on or drag them across marine vegetation. • Identify and follow the conditions on any special signs or buoys about seagrass beds close to works.

Mitigation measures
• Mooring of barge above the waterline only, to minimise potential impacts to White's Seahorse habitat.

Offset residual impacts to native vegetation and trees in accordance with the Biodiversity Offset Guideline (SWEMS0019.13). Prior to construction, the contractor must engage a qualified Arborist to determine extent of tree removal. The contractor must adhere to the following conditions:

- Any trees deemed suitable for replanting (e.g. Palm tree) will be relocated temporarily offsite during construction and replant on site following completion of work.
- Notify PMNSW of any tree removal. If any Jacaranda at First Fleet Park is deemed to be trimmed or removed, the contractor will need to provide sufficient justification to PMNSW and seek written confirmation from PMNSW prior to work.
- Vegetation will be planted on-site in consultation with PMNSW.

Erosion and sediment mitigation devices are to be erected in a manner consistent with current Best Management Practice (i.e. Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. These are to be maintained in good working order for the duration of the works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.

There is to be no complete blockage of fish passage during the works. Environmental protection measures are to be erected so that fish passage is maintained in the waterway. These measures are to be removed from the site once the site has been stabilised and the risk of sediment movement is minimal.

Any material removed from the waterway that is to be temporarily deposited or stockpiled on land is to be located well away from the waterway and to be contained by appropriate erosion and sediment control devices.

Machinery is not to enter or work from the waterway unless in accordance with the proposed works.

Berthing or mooring above seagrass must be limited to periods of less than 48 hours.

Adequate water depth must be maintained underneath all barges and propellers to ensure that seagrass is not impacted at any time. At least 600mm clearance must be maintained between the hull and the river bed, and also between the propeller and the river bed. Where adequate clearances beneath barges cannot be maintained at low tide, works should be restricted to high tide conditions.

When working near marine vegetation (seagrass, mangroves and saltmarsh), these areas need to be identified and appropriately delineated as "No Go" areas.

The deployment of ropes, anchors, blocks, chains or similar devices is strictly prohibited within seagrass. Ropes are permitted only if they are made buoyant with floats so that they don't drag through seagrass.

If any threatened species are detected within the work area, please contact DPIRD Fisheries.

Prior to use at the site and/or entry into the waterway, machinery is to be appropriately cleaned, degreased and serviced. Spill kits are to be available on site at all times during the works.

Works are to be undertaken during low flows in the waterway.

Mitigation measures

Should any dewatering be required, then:

- pumps used in waterways are to be screened with mesh of no greater than 6mm in diameter,
- daily checks of the sediment levels in the dewatering sediment dams are to be conducted to
- ensure adequate storage capacity,
- dewatering operations must ensure retention of spoil for a long enough period to allow mobilised
- sediments to settle out,
- a visual inspection of the waterway is to be conducted at all times during dewatering operations
- to ensure that no visible plumes are generated within the waterway from dewatering operations.

DPIRD Fisheries (1800 043 536) and the Environment Protection Authority (EPA) (131 555) are to be notified immediately if any fish kills occur in the vicinity of the works. In this situation, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPIRD Fisheries and/or the EPA for the works to proceed.

Noise and vibration

Works must comply with the EPA Construction Noise Guideline (Draft, 2021), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sunday nights or public holidays. Any proposed work outside of these hours must be justified.
The proposal will also be carried out in accordance with: Sydney Water's Noise Management Procedure SWEMS0056.

All reasonable and feasible noise mitigation measures should be justified, documented and implemented on-site to mitigate noise impacts.

Incorporate standard daytime hours noise management safeguards into the CEMP, including but not limited to:

- Identify and consult with the potentially affected residents prior to commencement of works. This should:
    - describe the nature of works, the expected noise impacts, approved hours of work, duration, complaints handling and contact details
    - determine need for, and appropriate timing of respite periods (eg times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences).
- Implement a noise complaints handling procedure.
- Do not warm-up plant or machinery near residential dwellings before the nominated working hours.
- Select appropriate plant for each task, to minimise the noise impact (eg all stationary and mobile plant will be fitted with residential type silencers).
- Do not use engine brakes when entering or leaving the work site(s) or within work areas.
- Regularly inspect and maintain equipment in good working order.

Mitigation measures

- Arrange work sites where possible to minimise noise (e.g. generators away from sensitive receivers, site set up to minimise use of vehicle reversing alarms, site amenities and/ or entrances away from noise sensitive receivers).
- Use natural landforms/ mounds or site sheds as noise barriers.
- Schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

As works beyond standard daytime hours are needed, the contractor would:

- justify the need for out of hours work (OOHW) and why it is not possible to carry out the works during standard daytime hours
- consider potential noise impacts and implement the relevant standard daytime hours safeguards, follow Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and document all reasonable and feasible management measures to be implemented
- identify additional community notification requirements and outcomes of targeted community consultation
- seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.

As nightworks are required, the contractor would:

- justify the need for night works
- consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and document consideration of all reasonable and feasible management measures
- identify community notification requirements (ie for scheduled night work (not emergency works))
- notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work
- seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.

As works on Sundays or public holidays are required, the contractor would:

- justify why all other times are not feasible
- consider potential noise impacts and implement relevant standard daytime, out of hours and night-time safeguards and other reasonable and feasible management measures
- identify community notification requirements
- seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.

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

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

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

The contractors should explore opportunities to move works (e.g. removing brickwork) to standard daytime hours where possible.

Community consultation in advance of work starting will determine the number of nights, if work is to extend beyond 2 nights per week.

Mitigation measures
Carry out ongoing community engagement on an ad-hoc basis including regular follow-up (e.g. phone discussions) for sensitive receivers/ highly impacted residents.
Send regular project update newsletters to surrounding community and key stakeholders fortnightly (or as required).
Complete an Out of Hours Work Plan (OHWP) in advance of work starting.
Record all consultation with community and stakeholders on Sydney Water's Consultation Manager database.
Carry out attended monitoring to evaluate construction noise and vibration levels.
Conduct a toolbox talk in advance of work starting to induct all site crew members on the noise and vibration mitigation measures of the CEMP.
The contractor will need to provide sufficient justification if groundbreaking activity is to occur beyond standard construction hours.
Air and energy
Use alternatives to fossil fuels where practical and cost-effective.
Track energy use as per SWEMS0015.28 Contractor NGER template.
Maintain equipment in good working order, comply with the clean air regulations of the *Protection of the Environment Operations Act 1997*, have appropriate exhaust pollution controls, and meet Australian Standards for exhaust emissions.
Switch off vehicles/machinery when not in use.
Implement measures to prevent offsite dust impacts, for example: • Cover exposed areas including stockpiles with tarpaulins or geotextile fabric. • Modify or cease work in windy conditions. • Modify site layout (place stockpiles away from sensitive receivers).
Cover all transported waste.
Waste and hazardous materials
Manage waste in accordance with relevant legislation and maintain records to show compliance eg waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise stockpile size and ensure delineation between different stockpiled materials.
Minimise the generation of waste and sort waste streams to maximise reuse/recycling in accordance with the legislative requirements.
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or

Mitigation measures
cannot be reused onsite or offsite, recycle where appropriate. Recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Prevent pollutants from escaping including by covering skip bins.
If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water's Asbestos Management – Minor Works procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with Property Portfolio Environmental team propertyenvironmental@sydneywater.com.au).
Social and visual
Undertake works in accordance with Sydney Water Communications policies and requirements including: • Notify impacted residents and businesses. • Erect signs to inform the public on nature of work. • Treat community enquiries appropriately.
Restore work sites to pre-existing condition or better.
Minimise visual impacts (e.g. retain existing vegetation where possible).
Direct artificial light away from sensitive receivers where possible (ie residents, fauna or roadways).
Maintain work areas in a clean and tidy condition.
Consult with Place Management NSW on work hours for the proposal.
Cumulative and future trends
The contractor will consult with Sydney Water operation team and other agencies (e.g. Place Management NSW) to minimise potential interaction as far as practicable.

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise and partial closure of First Fleet Park. However, there will be environmental improvements by providing a reliable stormwater service to the community.
Any transformation of a locality	The proposal will not result in the transformation of a locality as area will be restored to its pre-existing condition.
Any environmental impact on the ecosystems of the locality	The proposal will not result in environmental impacts to ecosystems of the locality as it would involve low impact remediation works only. The proposal will lead to environmental improvements by ensuring a reliable stormwater service, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality.
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 repair damaged sections of Tank Stream, a listed heritage item on the SHR and section 170 heritage. The proposal will have a negligible heritage impact on Tank Stream. Upon completion, the interior of the reconstructed section will match the location, existing form and function of the original Tank Stream. Additionally, the proposal will allow Tank Stream to continue to perform its function as a stormwater channel.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will have minimal impact on the habitat of protected animals.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.
Any long-term effects on the environment	The proposal will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern stormwater service for the area.
Any degradation of the quality of the environment	The proposal will not cause the degradation of the quality of the environment.
Any risk to the safety of the environment	The proposal will not increase risk to the safety of the environment.
Any reduction in the range of beneficial uses of the environment	The proposal will not reduce the range of beneficial uses of the environment.

Section 171 checklist	REF finding
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The proposal will have a minimal cumulative environmental effect with other existing or likely future activities.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will have a minimal impact on coastal processes or hazards, and coastal processes and coastal hazards during construction. However, during operation no change is expected.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	There are no applicable strategic planning statements or plans, as the proposal forms part of a renewals program.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Appendix B – Consideration of principles of ecologically sustainable development (ESD)

Principle	Proposal alignment
Precautionary principle - *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and there is no scientific uncertainty relating to the proposal.
Inter-generational equity - *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposal will help to meet the needs of future generations by providing a reliable stormwater service.
Conservation of biological diversity and ecological integrity - *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity.
Improved valuation, pricing and incentive mechanisms - *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

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		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act? *If so, consult with DPE (NPWS).*		✓
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? *If so, consult with DPE (NPWS).*		✓
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*	✓	
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? *If so, consult with Subsidence Advisory NSW.*		✓
Will the proposal be on land in a Western City operational area specified in *the Western Parkland City Authority Act 2018,* Schedule 2 and have a capital investment value of $30 million or more? *If so, consult the Western Parkland City Authority*.		✓
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? *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).*		✓

Appendix D – Section 57 Exemption Record of Use Exemption

Transport for NSW

Section 57 Exemption Record of Use

Place Management NSW

V3.0 07/10/2022

NSW GOVERNMENT

Instructions

Complete this form to accompany your application for Land Owners Consent for Standard Exemptions under section 57(2) of the Heritage Act 1977. Find more information of **Standard Exemptions** here and **Agency Specific Exemptions** here

The applicant must retain a copy of the completed 'Record of Use' form and any relevant information for your records and must comply with the general conditions of use of s57 Standard Exemptions and Agency Specific Exemptions.

Applicant's Details

Name:	Mike Alaaeddin
Role / Organisation:	Senior Project Manager, Sydney Water
Postal Address:	1 Smith Street, Parramatta NSW 2150
Email:	[redacted]
Phone Number:	[redacted]
Contact information of Owner: *(Name of heritage owner if not the contact)*	Heritage item owner = Sydney Water Land owner = Place Management NSW
Signature of Applicant:	
Date:	19/03/2024

Heritage Item

Name of Heritage Item:	Tank Stream

(As it appears on the State Heritage Register or Interim Heritage Order)

Street Address:	Circular Quay north of Alfred St
Suburb:	Sydney Water

State Heritage Register / Interim Heritage Order Reference Number:	SHR 00636

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Activity / Works Proposed:

Description of proposed activity / works:
Urgent reconstruction of a 10-metre section of the Tank Stream is required (especially of the sandstone arched roof) due to subsidence of the floor that has left the section unstable (refer to photographs taken in Feb 2024 and August 2023, attached. Last attachment shows the location of the 10-metre section). This 10m section is situated within First Fleet Park (Sydney Cove West Archaeological Precinct, SHR01860). The proposed works are wholly within previously disturbed land and comprise of dismantling of the unstable section and re-assembly off-site to facilitate piling and construction of a V-shaped concrete box culvert. This approach will ensure a much reduced excavation footprint (compared to in-situ reconstruction of the arch only), out of respect for First Fleet Park (Sydney Cove West Archaeological Precinct, SHR01860). The interior of the reconstructed section of Tank Stream will match precise the location, existing form and function of the Tank Stream. It will sit on a bed of sand inside the culvert. The culvert will act as an exo-skeleton ensuring greater load bearing capacity of this significant heritage item. The modern piling system under the culvert will further ensure a greater service life of the item/asset (both are significant positive ESD& Intergenerational Equity outcomes for future generations). The culvert and piling system provide the greatest structural integrity which is important due to the significant redevelopment of Circular Quay in 2025. The proposed works will require a temporary by-pass for flows to ensure ongoing functionality and safety of on-site crew. On-site interpretation to honour the story of the Tank Stream will be included as a mitigation. The reconstruction represents 1/92 or 1% of the total SHR-listed Tank Stream alignment.

(Include at a minimum what the activity/work is, how it will be carried out, what parts of the item it affects, what materials will be used)

1. Standard Exemption (Check relevant):

☐ 1. Maintenance and cleaning	☐ 12. Temporary structures
☐ 2. Repairs to non-significant fabric	☐ 13. Vegetation
☐ 3. Alterations to non-significant fabric	☐ 14. Burial Sites and Cemeteries
☐ 4. Alterations to interiors of non-significant buildings	☐ 15. Signs
☐ 5. Repair or replacement of non-significant services (mechanical, electrical and plumbing)	☐ 16. Filming
☐ 6. Non-significant telecommunications infrastructure	☐ 17. Temporary relocation of movable heritage items
☐ 7. Fire safety detection and alarm systems	☐ 18. Compliance with Minimum Standards and Orders
☐ 8. Excavation	☐ 19. Safety and Security
☐ 9. Painting	☐ 20. Emergency Situations and Lifesaving
☐ 10. Restoration of fabric that forms part of the significance of the item (significant fabric)	☐ 21. Change of Use
☐ 11. Subdivision of non-significant buildings	s139 Exception Record of Use - V1.0

Was professional advice required to use the Standard Exemption?	Yes	Yes	No	

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2. Agency Specific Exemption (Check relevant):

Use of Agency Specific Exemption requires consultation with Design and Place Heritage Officer prior to application

☐ 1. Maintenance and Cleaning	☐ 6. Filming
■ 2. Repairs and Reconstruction	☐ 7. Recovery Works
☐ 3. Painting – Internal and External	☐ 8. Investigating the Conditions of Significant Fabric
☐ 4. Vegetation	☐ 9. Minor Internal Activities and Works to Significant Fabric
☐ 5. Signage	

If yes to Question 1 and/or professional advice has been sought for 2, complete the table below *(add additional rows if required)*:

Name of company/person who advised:	Yvonne Kaiser-Glass (Sydney Water) & Wayne Johnson (Place Management NSW)
Date of Heritage Advice:	28 February 2024
Title of any document containing the advice:	

Estimated Costs:

Estimated cost of works:	$ 10M

Estimated Dates:

Start Date:	June 2024
Proposed Completion Date:	June 2025

Heritage impact: *(Summarise how the activity / work will change the heritage item)*

- What elements of the item will be affected?
- Are those elements significant or non-significant?
- How will those elements change?
- Is the change permanent or temporary and will the change be reversible?
- Does the change to those elements affect their significance and/or the item's overall significance?

Remember there must be no impact to the item's overall significance to work under an Exemption.

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Heritage Controls

What measures were put in place to minimise or avoid impact from the activity/ work to significant elements, fabric, values and the item's overall heritage significance?

Photographic archival recording before works commence and at their completion

Statement of Significant Referred to:	■ State Heritage Register ☐ Conservation Management Documents ☐ Written advice from suitably qualified and experienced heritage professional ☐ Other

Attach supporting documents - Supporting documents must include:

☐ **Scope of works and works documentation** that provides a detailed description of the proposed activities/works and how this changes the existing fabric/item
☐ **Heritage Impact Statement** - an assessment of whether the activities/work impact the item's heritage significance (following the Statement(s) of Heritage Impact guidelines)
☐ **Details of any advice** received from a suitably qualified and experienced heritage professional.
☐ **Other relevant records** e.g. plans, quotes of heritage advice received and before and after photos as attachments

Important Note

Use of Exemptions is self-assessed. In completing this document, you acknowledge that this record is not for assessment purposes and does not represent approval under the Planning Act or an endorsement by the Heritage Council of NSW for the work or use of Exemptions. Information supplied in the form may be requested as part of an audit or compliance investigation by Heritage NSW. This document cannot be relied on as a defence to prosecution.

Submit Application

Please submit the application and relevant attachments electronically to:

Placement Management NSW [redacted]
For more information, please contact Place Management NSW on (02) 9240 8500 or by [redacted]

PLEASE NOTE THAT WHILE WE ENDEAVOUR TO PROCESS ALL APPLICATIONS IN A TIMELY MANNER, INCOMPLETE OR MISSING INFORMATION MAY DELAY THE PROCESSING OF YOUR APPLICATION

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PMNSW has considered your application and based on the information provided, grants landowner's consent, please refer to the Land Owners Consent approval letter for any conditions that have been applied to your application.

Name of Place Management Delegate:	[redacted]
Signature of Delegate	[redacted]
Date:	[redacted]
Place Management NSW Approval Stamp:	

LOC Number:	12432
LOC Reference Number:	PAG24/00002-148

FOR OFFICE USE ONLY – (To be finalised upon completion of works)

Were any inspections undertaken	**Yes**		**No**	

If yes, please complete below *(add additional rows if required)*:

Date of Inspection:	
Who inspected (name and organisation:	
Purpose of Inspection:	
Inspection Findings:	

Challenges encountered and/or change of plans:

(Describe here the challenge or change and how you managed it. Remember, any change of plans that would not comply with the Standard Exemption require approval under the Heritage Act 1977 before activity/works can be undertaken.)