

Review of Environmental Factors



New underground NSOOS access cavern at North Head Water Resource Recovery Facility

1 Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of construction of a new underground NSOOS access cavern at North Head Water Resource Recovery Facility (WRRF) and 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 to ensure the proposal is carried out as described in this REF. If the scope of work or work methods described in this REF change significantly following determination, additional environmental impact assessment may be required.

Decision Statement

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as noise, vibration, traffic and odour. Once complete, the new access cavern will enable desilting and NSOOS rehabilitation to improve network operation.

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. Accordingly, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

It is considered that, given the nature, scale and extent of impacts and implementation of the safeguards outlined in this REF, the proposed work is unlikely to have a significant impact on the environment. Accordingly, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

Certification

I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulations (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 and the information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
John Eames Snr Env Scientist Asset Lifecycle Sydney Water Date: 20 October 2022	Sally Spedding Lead Env Scientist Asset Lifecycle Sydney Water Date: 20/10/22	Paul Denyer Snr Project Manager Asset Lifecycle Sydney Water Date: 20/10/22	Jude Gregory A/Environment and Heritage Manager Asset Lifecycle Sydney Water Date: 21/10/2022





2 Proposed works and permissibility

Table 1 Description of proposal

Scope	Description
Project need/ objective	The proposal is required to support Sydney Water's major program of work for the desilting and rehabilitation of the tunnels for Section 1 of the Northern Suburbs Ocean Outfall Sewer (NSOOS). The desilting and rehabilitation works will restore the full operational capacity of the NSOOS Section 1 and will be assessed in a separate REF. It was originally envisaged access would be from the upstream end. However, a major collapse of the tunnel roof has caused a large bank of debris. Flow has backed up and there is insufficient clearance to move the desilting equipment in from the upstream end. Access for desilting/ rehabilitation of the NSOOS is now required from the downstream end. A cavern will be excavated about 60m deep below the treatment plant to launch desilting barges into the NSOOS downstream at the North Head WRRF.
Consideration of alternatives/options	Desilting can only be done effectively via downstream end (near the WRRF) due to a tunnel collapse further upstream. Placing the downstream entrance elsewhere would be difficult and not cost-effective due to the NSOOS's position at depth in a rock tunnel. The NSOOS flows to and through the WFRRF, as such the option of creating a new underground cavern for access and launching of desilting equipment at the WRRF is considered the most feasible option. It also keeps potential impacts of desilting operations within the confines of an existing SWC operational site, away from sensitive receivers. A do-nothing alternative was not considered as silt and debris issues are likely to worsen and failure of the asset due to blockage is not acceptable.
Location/ land ownership	The works are at the North Head WRRF ST0020, Lot 1 DP604428, in the Northern Beaches local government area.
Proposal description/ scope of work Note - all works occurring underground (depth ~60m) using existing access from WFRRF Refer to Appendix C for scope of work drawings/ photos	 Works will involve: 1. trialling of equipment movements within plant corridors 2. surveying works area to determine location of new tunnel break through position (including geologist inspection) 3. establishing controls within work area: sound barrier curtains dust suppression systems temporary ventilation ground protection movement controls debris bin lay down area outside roller door 4. relocating services away from new tunnelling area 5. stabilizing and increasing height of existing roof area adjacent to new tunnel break through area 6. excavating tunnel and chamber – to be completed progressively. Rock bolting and shotcreting to support excavation and other structures such as floors and walls 7. breaking through the chamber floor to create a new entrance to the NSOOS





- 8. installing entrance cover
- 9. installing desilting barge launching infrastructure such as steel support structure and gantry crane
- 10. installing doors / electrical / lighting / plumbing / ventilation.

There will be an estimated four to eight truck movements per day for removal of excavated material for up to 18 months.

Equipment:

- 5.5 Tonne Excavator (attachments: breaker/rock wheel/ drill/ bucket)
- 1.2 Tonne Excavator (attachments: breaker/rock wheel/drill/ bucket)
- mini tracked loader (skid steer) x 2
- forklift 1.5-ton x 2 (LPG or electric)
- concrete pump (trailer unit) x 1
- skip bins 1m³ x 4 (dumpable)
- ventilation fans x 4 (electric)
- grout pump (electric)
- air compressor (diesel)
- self tipping forklift bin
- rock bolting equipment
- shotcreting equipment
- high pressure water and slurry blasting equipment.

Access tracks and compound	The works compound will be within the WRRF The exact position will be determined by the Contractor in accordance with the safeguards in section 6. Works will use existing roads and no new access tracks are required.
Work hours	Deliveries and spoil removal will be scheduled to occur during standard daytime hours: 7am to 6pm, Monday to Friday and 8am to 1pm, Saturdays.
	Work is planned to take place in double shifts 7am – 6pm and 5pm – 4am Monday to Friday.
	The proposal will work to these hours where possible, however as works are within an operational asset sometimes works will be required outside agreed hours to allow normal operation of the treatment plant or for works such as the delivery of oversized equipment. Sydney Water's Project Manager can approve work outside of agreed hours, following the approval process described in the safeguards in section 6.
Proposal timing	Construction is expected to start December 2022 and take up to 18 months.



Consideration of principles of Ecologically Sustainable Development	Relevance to proposal
Precautionary principle	The proposal will not result in serious or irreversible environmental damage and there is no scientific uncertainty relating to the proposal. The proposal would reduce the likelihood of social and environmental impacts by helping to restore the full operational capacity of the NSOOS and maintain a safe and reliable sewerage service to customers.
Inter-generational equity	The proposal will help to meet the needs of future generations by providing a reliable wastewater service.
Conservation of biological diversity and ecological integrity	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal would help to maintain ecological integrity by helping to maintain the operational capacity of the NSOOS by allowing ongoing desilting works to take place preventing asset failure and overflows.
Improved valuation, pricing and incentive mechanisms	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

Table 2 Consideration of principles of ecologically sustainable development (ESD)





Figure 1 Location of proposal and environmental constraints

North Head WRRF Environmental Constraints

This information has been redacted to protect sensitive Aboriginal heritage information





3 Legislative requirements

Table 3 Consideration of environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Manly Local Environmental Plan 2013	The proposal is located on land zoned SP2.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126 (6) of the TISEPP permits development by or on behalf of a public authority for sewerage reticulation systems without consent on any land.
	As Sydney Water is a public authority, the proposal is permissible without consent.
SEPP (Resilience and Hazards) 2021	The works are on land to which Chapter 2 of this SEPP applies.
	The works are in an area mapped as coastal use and environmental area. Works are permitted without consent in these areas. In addition, works are contained underground and will not impact on the coastal zone.

Table 4 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations (POEO) Act 1997	The proposal is consistent with an existing NA activity under North Head wastewater ystem (EPL 378) and existing compliance equirements. Temporary relaxation of the EPL 378 is not required during construction/ commissioning. A variation to EPL 378 is not required for operation.		During, construction, Sydney Water
	The Contractor will notify EPA and all relevant authorities as soon as they become aware of any pollution incidents that have caused or threatened harm to the environment, in accordance with SWEMS0009.		
Biodiversity Conservation (BC) Act 2016	No threatened species or ecological communities are anticipated to be impacted by the proposal. Traffic safeguards will be applied to reduce risk to threatened bandicoot population.	NA	Pre-construction, Sydney Water
National Parks and	The proposal is not expected to impact any Aboriginal object or place and is not in a	NA	Pre-construction,





Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Wildlife (NPW) Act 1974	National Park. The proposal area is in the middle of the NH WRRF and therefore not adjacent to National Parks and Wildlife Service (NPWS) land (notification to NPWS under the TISEPP not required).		Sydney Water
Heritage Act 1977	The proposal will have a minor impact on the heritage values of the locally listed NSOOS. No other items listed on any heritage register, or any items classified as 'relics' under the Heritage Act would be impacted.	Local Heritage Impact Approval (Appendix C)	Pre-construction, Sydney Water
Water Act 1912/ Water Management Act 2000	The proposal is not anticipated to encounter groundwater or require dewatering that would trigger the need for a Water Supply Works Approval.	NA	Pre-construction, Contractor
Roads Act 1993	Minimal impacts to roads are expected. A maximum of four to eight trucks per day will be required for rock spoil removal.	NA	Pre-construction, Contractor
Environment Protection and Biodiversity Conservation (EPBC) Act 1999	No matters of national environmental significance (MNES) would be impacted by the proposal.	NA	Pre-construction, Sydney Water





4 Consultation

Community and stakeholder consultation

Our approach to community and stakeholder consultation is guided by the Guidelines for Community and Stakeholder Engagement (Sydney Water, 2021).

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, projects 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. The community and council will be notified of these works as part of the NH WRRF Community Reference Group which has been established for the NH WRRF. Community notifications/ leaflets will be distributed to notify residents of any potential impacts (eg. truck movements) prior to works as required.

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 (Part 2.2 Division 1 of the TISEPP).

Consideration of the TISEPP consultation requirements is included in Appendix B. The proposal will not directly impact or be adjacent to land administered under the *National Parks and Wildlife Act 1974* as works are within the treatment plant and 60m underground. NPWS will be informed of the truck movements to and from the WRRF prior to works commencing.

5 Environmental assessment

The works are 60m underground at the North Head WRRF ST0020, Lot 1 DP604428, in the Northern Beaches local government area. The site is at Blue Fish Point on the northern headland of Sydney Harbour and is surrounded by dense bushland of the Sydney Harbour National Park and adjacent to the Tasman Sea. The whole of North Head, excluding the WRRF is a listed National Heritage Place and locally heritage listed on the Manly Local Environmental Plan 2013 (ID: I179 – Quarantine Station and Reserve). Threatened flora (Sunshine Wattle) and a population of Long-nosed Bandicoot have been identified within the WRRF boundary.

Residential receivers are approximately 570m to the west of the worksite. Rock spoil from the excavation will be transported via existing access road to the WRRF and main roads to a disposal site or for offsite reuse.

The environmental impacts checklist (SWEMS0019.01) was completed for the works which considers all environmental aspects. Included in the table below are only those aspects which are potentially impacted.





Table 5 Key environmental aspects and potential impacts

Aspect	Potential impacts
Topography, geology and soils	No impact to topography geology and soils is expected as the works will be contained 60m underground within the WRRF. During construction there is potential for damage to both the NSOOS and NH WRRF. The chamber has been positioned to enable the existing roof of the NSOOS to be supported while the access chamber is under construction. In addition, during construction it has been recommended that stratigraphy is confirmed during works via investigative drilling. Rock deformation will also be monitored during excavation works to identify any ongoing risk of collapse.
Water and drainage	All works will be underground within the WRRF and as such no impact to waterways or drainage is expected. Any potential operational impacts on the WRRF from breaking into the NSOOS will be managed through implementation of a Flow Isolation and Flow Management (FIFM) plan.
Flora and fauna	All works are underground and as such no impact to flora and fauna is expected from work.
	The North Head population of the Long-nosed Bandicoot is present in the area surrounding the plant and is listed as an endangered population. There will be an estimated four to eight truck movements per day for delivery and removal of spoil, which will occur during standard daytime construction hours. Work vehicles must obey speed limits and drivers should be alert for the presence of Long-nosed Bandicoots in the area and take care to avoid impact while driving to site. Threatened flora (Sunshine Wattle) have also been identified within the WRRF boundary near to access routes however, no impact is expected to this flora.
Heritage	There is an AHIMS item (ID 45-6-0732) approximately 200m east of the works area. As all works are in excavated underground chambers and access to and from the plant will be on existing roads, impacts to this item are unlikely.
	Works will impact the NSOOS which is a locally listed item s170. The proposed works have been assessed and are approved: A Local Heritage Item, Impact Approval is attached as Appendix C.
Noise and vibration	Works are approximately 570m from sensitive receivers. Above-ground noise and vibration impacts are likely to be limited to truck movements for spoil transport. Truck movements will be limited to standard working hours and/or in accordance with site traffic management agreements to minimise impacts.
	3m and a machinery chamber (23m x 9m). Works will take place in double shifts (7am – 6pm and 5pm – 4am Monday to Friday). Rock excavation will be completed using a small 5.5T excavator using breaker, rock wheel, drill and bucket attachments. No blasting is proposed, and vibration monitoring will be continuous throughout the excavation phase to manage impacts to the WRRF



	and NSOOS. No vibration impacts are expected to sensitive receivers.
Air and energy	The proposed works will generate emissions through use of plant, vehicles, and equipment. The works themselves are underground so impacts will be limited to the transportation of the rock spoil from the excavation. No air quality impacts are anticipated during operation as a cover will be placed on the opening when not in use and double doors provided in the access tunnel to enable isolation of underground area and NSOOS. Truck movements have the potential to generate dust and emissions, all loads will be covered and truck movements limited to a maximum of 8 per day.
Waste and hazardous materials	5500 Tonnes of rock spoil are expected to be generated by the proposal – the excavated material will most likely be classified as VENM which will be reused if possible. There is potential for small amounts of silt and debris to be generated when working on NSOOS breakthrough this material is likely to be classified as GSW Putrescible.
Traffic and access	Four to eight trucks per day are required for spoil removal for the duration of the project. All workforce parking would be within the NH WRRF.
Social and visual	All works will be contained underground within the WRRF. Minor social impacts are associated with truck movements for spoil removal.
Cumulative and future trends	The North Head WRRF is subject to various works to upgrade and maintain the plant including proposed works to desilt the Northside Storage Tunnel Wet Well (separate Exempt Development Due Diligence).
	It is expected that there would be only a minor cumulative impact with the addition of these short/medium-term, localised excavation works at the NH WRRF and minor additional truck movements to and from the WRRF.
	The proposal is not likely to affect or be affected by future trends, such as increasing temperatures, rising sea level, and increased frequency and intensity of natural events (storms, bushfires etc.). In addition, the proposal would not involve any substantial processes or materials that may contribute to future trends.





6 Environmental safeguards

Table 6 Safeguards

Safeguards

General

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 meet the following principles:

- limit proximity to sensitive receivers
- no disruption to property access
- no impact to known items of non-Aboriginal and Aboriginal heritage
- outside high risk areas for Aboriginal heritage
- use existing cleared areas and existing access tracks
- no impacts to remnant native vegetation or key habitat features
- no disturbance to waterways
- potential environmental impacts can be managed using the safeguards in the EIA
- no disturbance of contaminated land or acid sulfate soils
- will be rehabilitated at the end of construction.

The 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.

The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.

Should the proposal change from the EIA, no further environmental assessment is required provided the change:

- · remains within the assessment area for the EIA and has no net additional environmental impact; or
 - is outside the assessment area for the EIA but:
 - reduces impacts to biodiversity, heritage or human amenity; or
 - avoids engineering (for example, geological, topographical) constraints; and
 - after consultation with any potentially affected landowners and relevant agencies.

The Contractor must demonstrate in writing how the changes meet these requirements, for approval by Sydney Water's Project Manager in consultation with the environmental and community representatives.

Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should specify licence, approval and notification requirements. Prior to the start of work, all project staff and contractors will be inducted in the CEMP.

The CEMP must be readily available on site and include a site plan which shows:

- Go/no go areas and boundaries of the work area including locations of lay-down and storage areas for materials
 and equipment
- location of environmental controls
- access routes

The CEMP will identify appropriate delineation with for no go zones, access routes etc. Delineate approved site and compound boundary before construction.

Prepare an Incident Management Plan (IMP) outlining actions and responsibilities during:

- predicted/onset of heavy rain during works
- spills
- unexpected finds (eg heritage and contamination)
- other potential incidents relevant to the scope of works.

All site personnel must be inducted into the IMP.





To ensure compliance with legislative requirements for incident management (eg Protection of the Environment Operations Act 1997), Sydney Water's employees and contractors will follow SWEMS0009. Attach SWEMS0009 to the CEMP/EWMS.

Promptly notify the Project Manager, Community Relations Representative (Program Delivery) and Environmental Representative (Program Delivery) of any complaints.

Topography, geology and soils

Investigative drilling recommended during works to confirm stratigraphy.

Monitor rock deformations during excavation work.

Water and drainage

Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Bunded areas to have 110% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled.

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.

Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.

Ensure FIFM is in place prior to breaking into NSOOS, in consultation with WRRF Plant Manager.

Flora and fauna

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.

All drivers should be inducted on the presence of Long-nosed Bandicoots at NH WRRF. All work vehicles to obey speed limits and drivers should be alert for the presence of Long-nosed Bandicoots in the area and take care to avoid impact while driving to site.

NPWS will be notified of truck movements to/ from the WRRF prior to works commencing.

Air and energy

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.

Cover all transported waste

Ensure ventilation is properly managed to control air draw into NSOOS and maintain existing plant ventilation regime.

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.





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 cannot be reused onsite or offsite, recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.

Review existing hazardous building materials (HBM) report and implement relevant safeguards. Conduct hazardous materials survey prior to commencement where works could impact hazardous materials not surveyed in previous HBM assessments.

Noise and vibration

Works must comply with the 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 the commencement:
 - describe the nature of works; the expected noise and vibration 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
- plant or machinery will not be permitted to warm-up near residential dwellings before the nominated working hours.
- appropriate plant will be selected for each task, to minimise the noise impact (eg all stationary and mobile plant will be fitted with residential type silencers)
- engine brakes will not be used when entering or leaving the work site(s) or within work areas.
- regularly inspect and maintain equipment in good working order
- arrange work sites where possible to minimise noise (eg 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).

If works beyond agreed work 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; 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.

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.

Traffic and access





Minimise traffic impacts near residential properties, schools and businesses by notifying them ahead of works

Undertake works in accordance with Sydney Water Communications policies and requirements including:

- notify impacted residents and businesses
- personnel treat community enquiries appropriately.

Social and Visual

Work sites will be restored to pre-existing condition or better.

Maintain work areas in a clean and tidy condition.



Appendix A: Section 171 checklist	REF finding
Any environmental impact on a community	There may be minor, short-term impacts on the community from trucks transporting spoil off-site (approximately four to eight per day). There will be environmental improvements by enabling essential maintenance work to ensure ongoing provision of a reliable wastewater service to the local community and wider community served by the NSOOS.
Any transformation of a locality	The proposed work will not result in the transformation of a locality.
Any environmental impact on the ecosystems of the locality	The proposed work will not result in environmental impacts to ecosystems of the locality. There will be environmental improvements by ensuring a reliable wastewater service will 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	The proposed work will not result in a reduction of 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 proposed work 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.
Any impact on the habitat of any protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)	The proposed work will not have any impact on the habitat requirements 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 proposed work will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air. Truck drivers will be inducted into the presence of Long-nosed Bandicoots to ensure no inadvertent impacts during transporting spoil off-site.
Any long-term effects on the environment	The proposed work will not have any long-term impacts on the environment but will have a long-term benefit by maintaining a reliable wastewater service for the area.
Any degradation of the quality of the environment	The proposed work will not cause the degradation of the quality of the environment.
Any risk to the safety of the	The proposed work will not increase risk to the safety of the





environment	environment.
Any reduction in the range of beneficial uses of the environment	The proposed work will not have any reduction in the range of beneficial uses of the environment.
Any pollution of the environment	Environmental safeguards will mitigate the potential for the proposed work to pollute the environment. No additional pollution of the environment is expected and the proposal will operate in accordance with EPL 378.
Any environmental problems associated with the disposal of waste	The disposal of wastes will be conducted in accordance with the environmental safeguards, 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 proposed work 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 proposed work will not have any 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 proposed work will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposed activity.
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 proposed work forms part of Sydney Water's major program of work on the desilting and rehabilitation of the NSOOS.
Any other relevant environmental factors.	The proposed work has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.



Appendix B: 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?		Ν
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		Ν
Involve connection to, and have a substantial impact on, the capacity of a council owned sewerage system?		Ν
Involve connection to, and use of a substantial volume of water from a council owned water supply system?		Ν
Involve installation of a temporary structure on, or enclosing, a public space under council's control that will cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential?		N
Involve excavation of the surface of, or a footpath adjacent to, a road for which the council is the roads authority that is not minor or inconsequential?		N
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?		N
Section 2.12, flood liable land – consultation with council		
Will the work be located on flood liable land (that is land that is susceptible to flooding by the probable maximum flood event) and will they alter flood patterns other than to a minor extent?		N
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be located on flood liable land (ie. 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)?		N
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?		N
Section 2.15, consultation with public authorities other than councils		
Will the proposal be located on land adjacent to land reserved under the National Parks and Wildlife Act 1974 or to land acquired under Part 11 of that Act? If so, consult with DPIE (NPWS).		N
Will the proposal be located on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone? If so, consult with DPIE (NPWS)		Ν
Will the proposal comprise a fixed or floating structure in or over navigable waters? If so, consult TfNSW		Ν
Will the proposal be located 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.		N
Will the proposal involve clearing of native vegetation on land that is not subject land (ie non-certified land)? If so, notify DPIE 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.		N

Local Heritage Item, Impact Approval Sydney







1. Item

For Sydney Water's heritage items of **local** heritage significance (Non-Aboriginal), as listed on Council's LEP *Heritage List* and / or Sydney Water's *S170 Heritage & Conservation Register*.

Item name: Northern Suburbs Ocean Outfall Sewer (NSOOS)

Item number: 4570286

Curtilage: The curtilage of NSOOS is defined by the structure plus three meters from the outer edge of the structure.

Statement of Significance: The Northern Suburbs Ocean Outfall Sewer (NSOOS) is of considerable significance, being the third major sewerage system built to service Sydney's growing wastewater needs. The primary significance of the system is embodied in the function it serves to the community of the northern and western areas of Sydney by channelling and managing its effluent, and in the careful and precise methods of achieving this. NSOOS is culturally significant as evidence of the growth of Sydney's sewerage system, the rapid development of the northern suburbs, and the substantial improvement in sanitary conditions for Sydney's inhabitants. Collectively the different components which make up NSOOS provide excellent examples of the major public works construction techniques of the early 1920's. The NSOOS system contains components which are in themselves highly significant items. The two major syphons associated with the system are fine examples of engineering methods. The Middle Harbour Syphon, in particular, is individually possibly the best example in the State of an inverted syphon on such a scale. The Lane Cove Syphon is a good example of the engineering tunnelling methods of the time. The architectural styles and engineering qualities of the associated pumping stations, aqueducts, vent stacks, syphons and surface fittings make a contribution to the city's streetscape. In particular, the valvehouse structures attached to the syphons have aesthetic significance. These structures are of architectural interest as early examples of the Art Deco style, displaying influence of Egyptian Architecture in civic industrial utility buildings. The various aqueducts located in the system display superior utilitarian design and detailing. The scale, colour, texture and detail of these structures make an effective contribution to the parks and tree covered slopes in which they are situated. The boundary and curtilage of NSOOS is to include all original fabric from 1933 from Parramatta to North Head outfall with a 2 metre buffer zone parallel to the existing structures. The curtilage is to include all overpasses, access points and settings along the existing alignment of the NSOOS.

2. Applicant

Name: Paul Denyer

Contact: Senior Project Manager, Program Management, Sydney Water

Level 3 Tower 2 475 Victoria Ave CHATSWOOD 2067 Phone: 8849 6428 Mobile: 0406 093 987

3. Proposed works

Address: 2 Bluefish Drive

Suburb: Manly NSW 2095

Proposal: Sydney Water is currently undertaking a major program of work on the desilting and rehabilitation of the tunnels for Sections 1 to 7 of the Northern Suburbs Ocean Outfall Sewer (NSOOS). Until recently it was envisaged that it would be possible to desilt the tunnel with access from the upstream end. A major collapse of the tunnel roof immediately downstream of the start of the tunnel at Ashburner Street, Manly has caused a large bank of debris which

has backed up flow such that flows are too deep and clearance above the flow insufficient. The only available alternative is to provide access from the downstream end with the most feasible access location being at the underground inlet works where the NSOOS enters the North Head WWTP.

The project team are proposing to build/excavate a new cavern in the treatment plant to launch desilting barges into the NSOOS. Accumulated silt and debris will be removed from this point and disposed of appropriately.

These works will involve excavating underground at the North Head Treatment Plant leading to and over the NSOOS upstream of a Brattice Gate. This excavation will include an access tunnel approximately 10m x 3m and a Machinery Chamber (23m x 9m). The chamber will accommodate 2 de-silting barges that will hang on a monorail gantry crane that can lower the barges into the NSOOS.

The chamber has been positioned to enable the existing roof of the NSOOS to be supported while access chamber is under construction. Once the Cavern is completed the NSOOS will have a new roof opening created (3.6m x 6.5m) in order to allow barge access. A lightweight cover will be placed on the opening when not in use. Once works are completed the access point will be retained for future access and maintenance of the NSOOS.

4. Analysis of proposal (heritage advisors to complete)

Appraisal:

This item of local heritage significance, listed on Council's LEP Heritage List and / or included on Sydney Water's S170 Register, will be impacted by the proposed works. The proposed works have been assessed and are approved.

Approved by:

Yvonne Kaiser-Glass, A/Heritage, Lead

Asset Lifecycle

13/09/2022

Entered in SWIM (/ Contribution Folders / Govern Sydney Water / ... / Heritage / Approvals)

Notes:

- Compliance with Part 6 of the *National Parks and Wildlife Act 1974* and Part 6 (Division 9) of the *Heritage Act 1977* is required.
- Compliance with clause 14 of the State Environmental Planning (Infrastructure) Policy 2007 may also be required.

References

Parent document number	Parent document title
SWEMS0031	Heritage Compliance Procedure

5. Documents provided

Rock Tunnel where Cavern access tunnel entry point will be excavated (approximate entry point shown)



Section of the NSOOS upstream of the Brattice Gate near where new roof opening in the sewer asset will be created.



Plan view of excavation (highlighted in yellow)

Doc no. SWEMS0031.08 Version: 10



Section of the Cavern excavation showing position of NSOOS and new roof opening





Side Section of the Cavern excavation showing position of NSOOS and new roof opening