

# Review of Environmental Factors

## WS0078 Mt Nebo Upper Reservoir Roof Repair & Relining

### 1 Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of roof repair and relining at Mt Nebo Upper Reservoir (WS0078). 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.


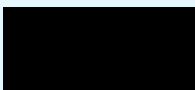

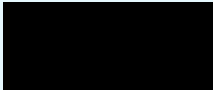
#### Decision Statement

The main potential construction environmental impacts of the proposal include impacts to biodiversity. During operation, no impacts are anticipated. 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


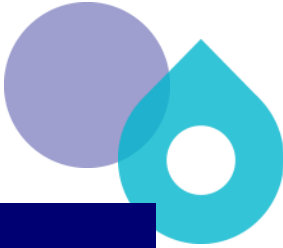
I certify that I have reviewed and endorsed this REF and, to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation). The proposal has been considered against matters listed in section 171 (Appendix A) and the guidelines 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:
 Andrea Glass REF author Sydney Water Date: 24/09/2024	 Grace Corrigan Environment Representative Sydney Water Date: 25/09/2024	 Stuart Milne Project Manager Sydney Water Date: 26/09/2024	 Murray Johnson Environment and Heritage Services Senior Manager Sydney Water Date: 27/09/2024

## 2 Proposal description

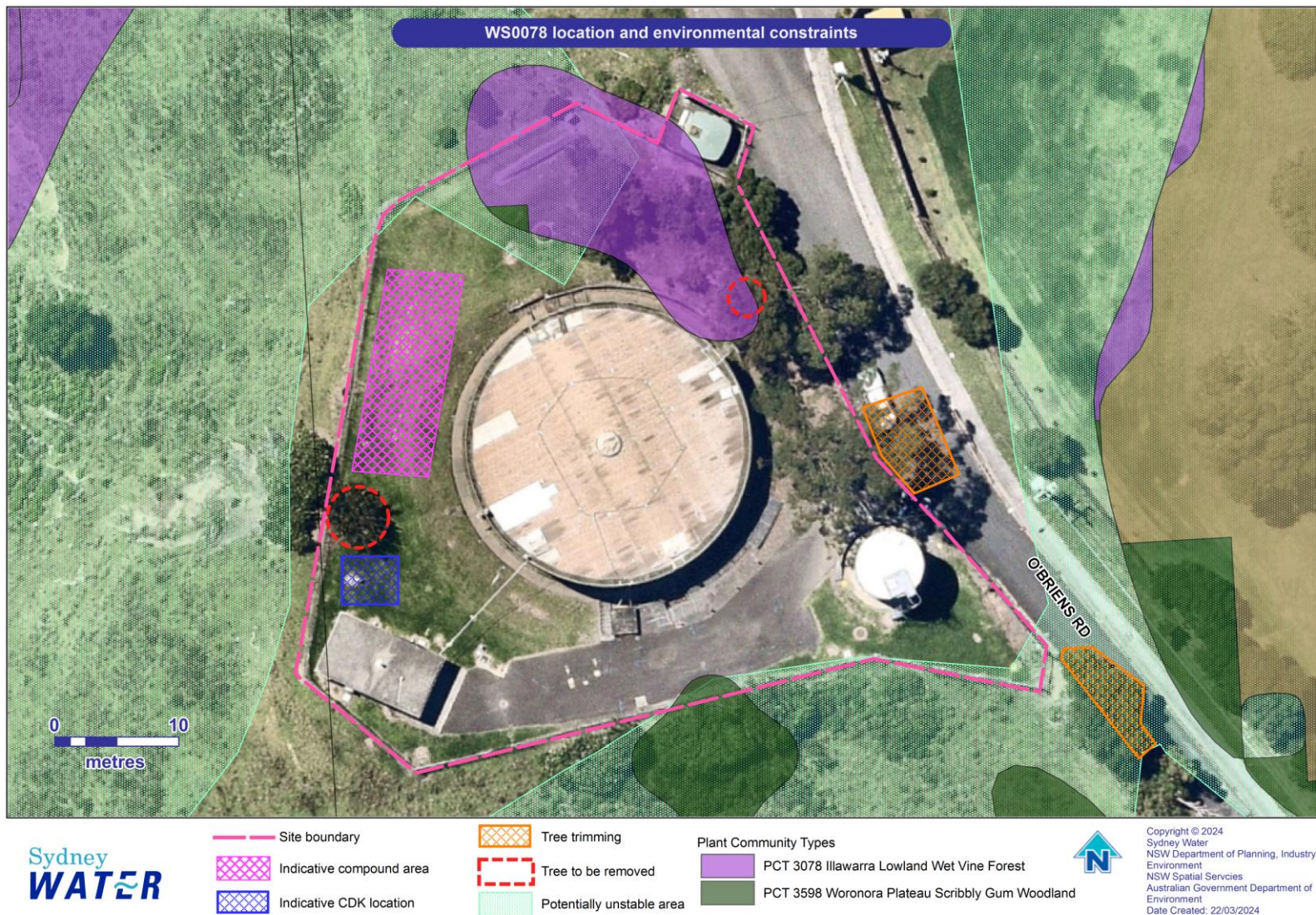
**Table 1** Description of proposal

Aspect	Detailed description
Proposal need and objectives	<p>The roof of the Mt Nebo Upper Reservoir (WS0078) is in poor condition and needs to be replaced (the proposal). The proposal is part of the reservoir renewals program. This program is required to meet Sydney Water's commitment to ensure ongoing safety and security of water supply.</p> <p>WS0078 was constructed in 1954 and is located within the Illawarra Central Distribution System, in Mt Nebo Upper Water Supply Zone.</p> <p>Condition reports conducted in 2011 and 2022 concluded that:</p> <ul style="list-style-type: none"><li>• the serviceability and structure of the reservoir is at the end of its service life</li><li>• the external roof sheeting is in very poor condition with multiple wear holes and corrosion</li><li>• hazardous bitumen lining is in poor condition</li><li>• the roof needs to be replaced including relining.</li></ul>
Consideration of alternatives/options	<p>Repair options were considered in a Level 2 Condition assessment report (March 2023) which concluded that a full roof replacement and relining was required due to the severity of the deterioration of the reservoir roof.</p> <p>Roof design options were identified in an Options Assessment Report (September 2023):</p> <ul style="list-style-type: none"><li>• Option 1: Grid Roof Replacement</li><li>• Option 2: Radial Roof Replacement.</li></ul> <p>The preferred option for roof renewal from a combined financial and qualitative perspective is Option 1: Grid Roof Replacement. This option is preferred over the radial roof replacement as it is a more efficient design requiring less material for construction.</p>
Proposal description and methodology	<p>The proposal would involve the following scope of work (refer to Figure 1 for the site layout):</p> <ul style="list-style-type: none"><li>• Establish site including temporary site amenities, permanent hardstand and vegetation trimming and removal</li><li>• Reservoir dewatering</li><li>• Demolish existing roof infrastructure including columns</li><li>• Remove internal bitumen coating</li><li>• Install new roof infrastructure</li><li>• Internal relining works</li><li>• Demolish timber access bridge and install new steel access bridge</li></ul>

Aspect	Detailed description
	<ul style="list-style-type: none"> <li>• Install retaining wall, a Chemical Dosing Kiosk (CDK), access track to the CDK and powerlines</li> <li>• Demobilise site.</li> </ul> <p>Indicative plant and equipment to be used for the proposal includes:</p> <ul style="list-style-type: none"> <li>• abrasive blaster</li> <li>• air compressors</li> <li>• generators</li> <li>• hand tools</li> <li>• light vehicles</li> <li>• mobile crane (60 to 90 tonne)</li> <li>• site facilities and amenities</li> <li>• skip bins</li> <li>• storage containers</li> <li>• tip trucks.</li> </ul>
Location and land ownership	<p>WS0078 is located west of the Princes Highway, at the end of O'Briens Rd, Figtree (Lot 1 DP109989). The land is owned by Sydney Water.</p> <p>Also located on the site is water pumping station WP0312 and a temporary tank.</p>
Site establishment and access tracks	<p>Vehicle access to the site is via an access gate located off O'Briens Road. A sealed driveway provides access from the street to the base of the reservoir.</p>
Ancillary facilities (compound)	<p>A construction compound will be required to house site sheds, construction amenities and materials laydown. An indicative location for the compound is shown on Figure 1.</p>
Work hours	<p>Work and deliveries will be scheduled during standard daytime hours:</p> <ul style="list-style-type: none"> <li>• 7am to 6pm, Monday to Friday</li> <li>• 8am to 1pm, Saturdays.</li> </ul> <p>The proposal is not expected to require work outside these hours. However, Sydney Water's Project Manager can approve work outside of standard daytime hours. The approval process is described in the mitigation measures in Section 6.</p>
Proposal timing	<p>Construction is expected to start mid 2025 and take about 12 months.</p>





**Figure 1** Location of proposal and environmental constraints

### 3 Consultation

#### Community and stakeholder consultation

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. Wollongong City Council will be consulted about potential public safety issues, temporary works on council land, and full or partial road closures of council managed roads.

No formal consultation was required under the TISEPP. Further detail is provided in Appendix C.

### 4 Legislative requirements

**Table 2** Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Wollongong Local Environmental Plan 2009 (Wollongong LEP)	The proposal is located on land zoned as C3 Environmental Management.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	<p>Section 2.159 of the TISEPP permits development by or on behalf of a public authority for water reticulation systems without consent on any land.</p> <p>Section 2.158 of the TISEPP defines that water reticulation systems also include water supply reservoirs.</p> <p>As Sydney Water is a public authority, the proposal is permissible without consent.</p>
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP)	<p><b>Vegetation in non-rural areas (Chapter 2)</b></p> <p>The proposal is in an area and/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 the BC SEPP is not required.</p>



Environmental Planning Instrument	Relevance to proposal
	<p><b>Koala habitat protection (2020 and 2021) (Chapters 3 and 4)</b></p> <p>The proposal site is on land zoned Koala Habitat Protection, under section 4.4 of the BC SEPP.</p> <p>The BC SEPP outlines that development consent cannot be granted unless there is a plan of management prepared for the relevant local government area. Sydney Water is the determining authority and does not require development consent for vegetation removal in koala habitat.</p> <p>Minor vegetation disturbance required for the proposal is assessed in Section 5 of this REF.</p>

**Table 3** Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
<i>Protection of the Environment Operations Act 1997 (POEO Act)</i>	<p>An EPL does not apply to the proposal.</p> <p>Chapter 5 of the POEO Act defines different types of pollution incidents. Part 5.7 of the POEO Act specifies the duty to notify harm to the environment where there is actual or potential environmental harm. Should one of these incidents occur during construction, the response and investigation to the incident would follow SWEMS0009 - Responding to incidents with an environmental impact.</p>	N/A	N/A
<i>Biodiversity Conservation Act 2016 (BC Act)</i>	<p>An Ecological Assessment Memo was undertaken by Jacobs to assess the potential impacts of the proposal to flora and fauna. Refer to Appendix D for further details. No threatened species, ecological communities or their habitats are anticipated to be impacted by the proposal.</p> <p>Minor vegetation and tree removal will be required for the proposed work and would be managed in accordance with the safeguards in Section 6.</p>	N/A	N/A
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>			

## 5 Environmental assessment

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

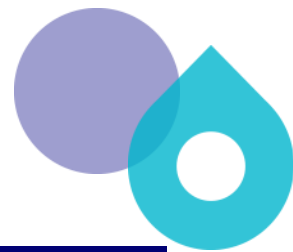
Aspect	Potential impacts
<b>Topography, geology and soils</b>	<p>The site is on land which slopes to the south west, from about 205 metres to 196 metres Australian Height Datum. There are potentially unstable areas in the northern and southern areas of the site. No areas of salinity or acid sulfate soils were identified within the site. There is a low risk of encountering contaminated soils.</p> <p>Minor excavations up to 0.7 metres deep would be required for the installation of the permanent hardstand for the retaining wall, CDK and associated access track. The impact from the excavations would be minor and localised with implementation of mitigation measures. The construction and operation of these new assets would not significantly change the existing topography of the site.</p> <p>Some stockpiling of material may occur within the proposal site, resulting in a minor temporary change in the topography. This impact will be minor and will be re-established to pre-construction conditions on completion of the proposal.</p> <p>There is the potential for soil to become contaminated through accidental chemical or fuel spills and leaks from plant and equipment during construction. There may also be fuel spills from maintenance activities during operation.</p> <p>Potential topography, geology and soil impacts will be managed by implementing the mitigation measures listed in Section 6.</p>
<b>Water and drainage</b>	<p>The nearest waterway is an unnamed tributary of Brandy and Water Creek, about 36 metres south of the site. Groundwater is not anticipated to found during construction works.</p> <p>Before replacing the reservoir roof, the water in the reservoir would be reduced to a low level through customer use of water. The remaining water would then be dewatered into the environment via an existing scour into the unnamed tributary of Brandy and Water Creek. Water will be discharged in accordance with Sydney Water's discharge protocol to prevent any water quality impacts.</p> <p>The proposal will require temporary storage of fuels and/or chemicals for equipment and machinery operation during construction. Potential impacts include accidental leaks, spills and seepage into the soils, groundwater, nearby waterway or local stormwater system. Minimal wastewater is expected to be generated during construction. Any fuels and chemicals required to be stored on site will be securely banded.</p> <p>Potential impacts to water and drainage will be managed by implementing the mitigation measures listed in Section 6.</p>
<b>Flora and fauna</b>	<p>An Ecological Assessment Memo was undertaken by Jacobs to assess the potential impacts of the proposal to flora and fauna. Refer to Appendix D for further details.</p>

Aspect	Potential impacts
	<p>There have been two Plant Community Types (PCTs) recorded within the site: PCT 3078 Illawarra Lowland Wet Vine Forest and PCT 3598 Woronora Plateau Scribbly Gum Woodland. The field survey confirmed that neither PCT are present within the site, however PCT 3153 Illawarra Escarpment Bangalay x Blue Gum Wet Forest and exotic managed grassland are present.</p> <p>There are 7 threatened species that have a moderate likelihood of occurring within the site. No threatened flora or fauna species were recorded during the field survey.</p> <p>The proposal would require removing 2 trees to allow for construction activities on site. The removal of one tree, located within PCT 3153, would equal the removal of approximately 9 m<sup>2</sup> of this vegetation community. The second tree requiring removal is an individual <i>Banksia serrata</i>, located within the exotic managed grassland portion of the site. The proposal would also require trimming of 2 trees along O'Briens Road to allow access for heavy vehicles to access the site (Figure 1).</p> <p>Due to the localised nature of vegetation impacts, lack of specific habitat features observed at the site (i.e., hollow bearing trees, stick nests, etc.) and the extensive presence of higher quality habitat in the adjacent Mount Nebo and Illawarra Escarpment State Conservation Area, impacts to threatened species and their habitats are considered minor.</p> <p>With the implementation of mitigation measures in Section 6 and the minor nature of the proposed works, it is unlikely that the proposal would result in a significant impact to flora and fauna.</p>
<b>Heritage</b>	<p>There are no known non-Aboriginal or Aboriginal heritage items within 200 metres of the site, therefore no impacts to known heritage is expected.</p> <p>The proposal is within 200 metres of a high-risk area for finding unexpected archaeological items (waterways), however the site has been highly disturbed by the construction of WS0078 and the potential to impact unidentified Aboriginal heritage items is very low.</p> <p>Potential impacts to heritage will be managed by implementing the mitigation measures listed in Section 6.</p>
<b>Noise and vibration</b>	<p><b>Noise</b></p> <p>The proposal is within a semi-rural setting. The existing noise environment is influenced by infrequent road traffic. The closest sensitive receiver is 70 metres south-east of the site. The works would generate noise during construction from the operation of machinery and equipment. Works are proposed to be carried out over 5 shifts per week (i.e. Monday through Friday 7am to 6pm). Construction would occur during standard daytime hours and is expected to take about 9 months to complete.</p> <p>Based on the risk profile of the works from Table 2 of the Draft Construction Noise Guideline (EPA, 2020), a quantitative noise assessment was performed for the proposal. The purpose of the noise assessment was to assess the predicted</p>



Aspect	Potential impacts
	<p>worst-case noise impacts and recommended additional mitigation measures for impacted receivers at different distances from the works. The noise assessment was performed using the Transport for NSW Construction and Maintenance Noise Estimator. The modelled scenarios comprised of the following inputs:</p> <ul style="list-style-type: none"> <li>• Representative noise environment – R2</li> <li>• Distance based noisiest plant – abrasive blasting</li> <li>• Line of sight to the receiver – Yes.</li> </ul> <p>The worst-case noise impacts would be up to 60 metres. There are no residents located within 60 metres of the site. Therefore, construction noise impacts are not anticipated.</p> <p>No operational noise impacts are anticipated.</p> <p><b>Vibration</b></p> <p>Due to the distance to nearby receivers, no vibration impacts are anticipated during construction and operation of the proposal.</p>
<p><b>Air and energy</b></p>	<p>The residents located 70 metres to the south-east and 120 metres to the east may be impacted by changes to air quality.</p> <p>Dust and pollution impacts may result from:</p> <ul style="list-style-type: none"> <li>• dust generated during excavation</li> <li>• dust generated by construction vehicles travelling on disturbed/ unsealed access routes or on unsealed laydown areas or road verges</li> <li>• emissions from machinery, equipment and vehicles used during construction.</li> </ul> <p>No odour issues are expected during construction due to the low risk of encountering acid sulfate soils or any other contamination. Odour is typically not generated during construction of drinking water assets.</p> <p>The proposal would require minor excavation works and has limited nearby sensitive receivers. Air quality impacts are considered to be negligible.</p> <p>The proposal would require increased energy for the construction and operation of the proposal and this would marginally increase Sydney Water’s total energy use. The proposal would be operated in accordance with energy use procedures that apply to Sydney Water’s existing network.</p> <p>Potential construction air quality impacts would be managed by implementing the mitigation measures listed in Section 6.</p>
<p><b>Waste and hazardous materials</b></p>	<p>The HazCentral database identifies the reservoir as containing the following hazardous building materials (HBM):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Lead paint.</li> </ul>

Aspect	Potential impacts
	<p>Construction activities are likely to disturb the asbestos and lead paint.</p> <p>Construction waste streams are anticipated to include:</p> <ul style="list-style-type: none"> <li>• Redundant assets</li> <li>• Domestic waste</li> <li>• Hazardous building materials</li> <li>• Excavated soil</li> <li>• Green waste.</li> </ul> <p>Waste will be stored in separate skip bins or delineated areas within the compound or taken directly off-site to a facility licenced to accept the waste. Recycling or re-use of waste streams such as green waste and concrete is encouraged where possible.</p> <p>Waste and hazardous materials would be managed by implementing the mitigation measures listed in Section 6.</p>
<b>Traffic and access</b>	<p>The site is accessed via O'Briens Road, a local road managed by Wollongong City Council. There are no bus routes, bus stops, or formalised footpaths along O'Briens Road. O'Briens Road is a dead-end road which terminates slightly north to the entrance to the site. Traffic volumes along this road are anticipated to be very low.</p> <p>At peak construction, up to 10 light vehicles per shift and some infrequent heavy vehicles would access the site. Most of the vehicles would be parked within the site however, if required, parking along O'Briens Road would occur. Parking of construction related vehicles is not anticipated to impact nearby properties as access to nearby residential properties, fire trails, and existing Sydney Water assets would be maintained. It is not expected that any traffic controls would be required.</p>
<b>Social and visual</b>	<p>The proposal has the potential to cause social impacts associated with air quality and noise, which have been assessed above. Visual impacts associated with construction activities are expected to be low, as all the works are partially screened by vegetation, is consistent with the existing use of the site and impacts a limited number of receivers.</p> <p>The impacts to visual amenity during operation would be limited as the reservoir is screened by vegetation and would not be visible by any nearby residents. The new reservoir roof would be like for like and the additional infrastructure would suit the existing site.</p>
<b>Cumulative and future trends</b>	<p>Sydney Water will coordinate the works with the operations at the site to ensure cumulative impacts within the site and to the community are low. Sydney Water is not aware of any planned or future work that will overlap with these works being performed. Development applications currently (September 2024) active or determined in the last 6 months for the suburb of Figtree relate to localised</p>



Aspect	Potential impacts
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residential developments and changes to existing buildings. Any cumulative amenity impacts (e.g. noise, dust, traffic) would be minimal.



## 6 Environmental mitigation measures

**Table 5 Mitigation measures**

### Mitigation measures

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:

- limit proximity to sensitive receivers
- do not disrupt property access
- have no impact to known items of non-Aboriginal and Aboriginal heritage
- are outside high risk areas for Aboriginal heritage
- use existing cleared areas and existing access tracks
- have no impacts to remnant native vegetation or key habitat features
- have no disturbance to waterways
- do not require additional safeguards beyond those included in the EIA
- do not disturb contaminated land or acid sulfate soils
- will be rehabilitated at the end of construction.

The Delivery Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment.

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 site for the EIA and has no net additional environmental impact or
- is outside the site 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 Delivery 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:

- no go areas (e.g. PCTs and boundaries of the site including locations of lay-down and storage areas for materials and equipment
- location of environmental controls (such as erosion and sediment controls, fences or other measures to protect vegetation or fauna, spill kits)
- location and full extent of any vegetation disturbance.

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

- predicted/onset of heavy rain during works
- spills



## Mitigation measures

- unexpected finds (e.g. 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 (e.g. *Protection of the Environment Operations Act 1997*), Follow [SWEMS0009](#) and attach [SWEMS0009](#) to the CEMP.

Complaints to be managed in accordance with Sydney Water's Complaints Procedure and relevant Community Engagement Plan.

Assign single person with accountability for coordinating communication and information flow across contractors and consultants and provide the contact details of this person in the EWMS and/or CEMP.

## 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.

Delivery Contractor to ensure imported material is Virgin Excavated Natural Materials (VENM) or meets a relevant NSW EPA Resource Recovery Order and Resource Recovery Exemption, or is a commercially supplied material that is not waste.

If using materials that are subject to a NSW EPA Resource Recovery Order/Exemption the Delivery Contractor must ensure the conditions in that Order/Exemption are strictly adhered to.

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.

Keep stockpiles to a minimum and ensure adequate contingency measures are in place to prevent sedimentation of waterways in the event of a large flood event.

## Water and drainage

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. Keep the spill kits stocked and located for easy access.

## Mitigation measures

If the potential for intercepting groundwater is identified after the REF is determined, Sydney Water will obtain a groundwater Water Supply Works Approval. Where dewatering is >3ML per water year (from 1 July), Sydney Water will also obtain a Water Access Licence from NRAR. The Delivery Contractor is responsible for:

- providing expert hydrogeological technical information to obtain the approvals
- preparing a Dewatering Management Plan
- complying with the conditions of the approvals (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).

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.

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

## Flora and fauna

Provided it is essential for delivering the project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the Environmental and Community Representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact.

- Any minor:
  - vegetation trimming or
  - removal of exotic vegetation or
  - removal of planted native vegetationwhere the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value.
- Any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the EIA).

Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval. Any impacts to native vegetation and trees must be offset in accordance with the Biodiversity Offset Guideline ([SWEMS0019.13](#)).

Offset residual impacts to native vegetation and trees in accordance with the Biodiversity Offset Guideline ([SWEMS0019.13](#)).

The following offsets are required:

- 9m<sup>2</sup> of PCT 3153 Illawarra Escarpment Bangalay x Blue Gum Wet Forest
- 3 trees.

The location of the offsetting would follow the Biodiversity Offset Guideline with the priorities as follows:

1. Offsetting to occur on the site.
2. Offsetting to occur on a nearby site that may be owned by Sydney Water or a local Council

## Mitigation measures

3. Offsetting on a site further away can be considered, or the purchase and retirement of biodiversity credits from a registered Biodiversity Stewardship site may be considered.

It is recommended that portions of the offsetting be performed within the Mt Nebo Reservoir site. Options for offsetting can include restoration or revegetation.

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.

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 assessed areas for the proposal (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.

Manage biosecurity in accordance with:

- *Biosecurity Act 2015* (see NSW Weedwise), including reporting new weed infestations or invasive pests
- contemporary bush regeneration practices, including disposal of sealed bagged weeds to a licenced waste disposal facility.

Record Pesticides and Herbicides use in accordance with [SWEMS0017](#).

In TOBAN, activities involving general purpose hot works (that are not essential/emergency works) require an exemption. Exemption requests are to be submitted to [CDResiliencePrograms@sydneywater.com.au](mailto:CDResiliencePrograms@sydneywater.com.au) or [CustomerHub.DutyManager@sydneywater.com.au](mailto:CustomerHub.DutyManager@sydneywater.com.au). Staff and contractors must not contact local RFS directly to seek their own exemption.

To prevent spread of weeds:

- Ensure all equipment including personal protective equipment (PPE) is visibly clean of plant and soil material prior to entering and leaving site.
- When clearing and trimming, separate all plant parts that may be infested with weeds and weed propagules and dispose at a licensed waste disposal facility.

Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.

Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. Where possible, limit clearing to trimming rather than the removal of whole plants.

Prior to clearing or trimming vegetation, visually examine the vegetation for fauna, nests or dreys (i.e., a small round nest made from a thicket of sticks). If mobile fauna is present, allow it to move away unharassed. If any nests or dreys are present, stop work and contact the Project Ecologist or WIRES for advice.

Site laydown is permitted on any open grassed mapped as 'Exotic managed grassland' or areas with hardstand surfaces in accordance with the following criteria:

- Located at least 20 metres from waterways/hydro-lines.
- No protected trees within 15 metres in accordance with the requirements of Australian Standard 4970-2009 for the Protection of Trees on Development Sites.
- No additional vegetation clearing is permitted.

## Mitigation measures

- If fuels or contaminants are being stored, or washdown is occurring, bund them on robust waterproof membrane.

Map and report native vegetation clearing greater than 0.01 hectares (100 metres squared) in extent (and any associated rehabilitation) to the Sydney Water Environmental Representative. Track vegetation clearing as per SWEMS0015.26 Contractor Native Vegetation Clearing and Rehabilitation template.

## 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](#).

## 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 and Noise Policy for Industry (EPA, 2017).

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 (e.g. 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 (e.g. 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.
- 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).

If works beyond standard daytime hours are needed, the Delivery Contractor would:

- 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





## Mitigation measures

- 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.

## 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:

- Water exposed areas (using non-potable water source where possible such as water from excavation pits).
- Modify or cease work in windy conditions.

Cover all transported waste.

## Waste and hazardous materials

Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. 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 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.

Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.

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 Contamination and Hazardous Materials team [propertyenvironmental@sydneywater.com.au](mailto:propertyenvironmental@sydneywater.com.au)).

Manage lead paint in accordance with the WHS Regulation (2017) Part 7.2 and the Australian Standard Lead Paint Management Guidelines. Consult with Property Portfolio Environmental team where works involve removal of lead-based paint. Develop a Lead Management Plan if required.



## Mitigation measures

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.

## Traffic and access

Erect signs to inform road users of the proposed works and any temporary road closures if required.

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.

## 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.


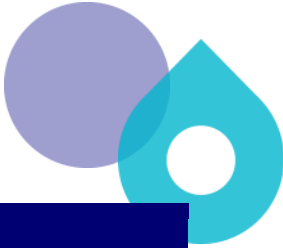
Restore work sites to pre-existing condition or better.

Minimise visual impacts (e.g. retain existing vegetation where possible).

Maintain work areas in a clean and tidy condition.

## 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 impacts to biodiversity. There will be environmental improvements by providing a reliable water service to the local community.
Any transformation of a locality	The proposal will not result in the transformation of a locality.
Any environmental impact on the ecosystems of the locality	The proposal would remove and trim trees within and in proximity to the site. The loss of the vegetation will not result in significant environmental impacts to ecosystems of the locality.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not significantly 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	There are no known heritage items within or near the site. The proposal will not have a significant impact 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> )	Vegetation within the study area does not meet the listing criteria for any TECs. The proposed works are not expected to directly impact on threatened entities listed under the BC Act and/or EPBC Act.
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 water service for the area.
Any degradation of the quality of the environment	The proposal will not cause significant 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.
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.

Section 171 checklist	REF finding
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 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 proposal will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposal.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposal is part of the reservoir renewals program. This program is required to meet Sydney Water's commitment to ensure ongoing safety and security of water supply.
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
<b>Precautionary principle</b> - <i>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.</i>	The proposal will not result in serious or irreversible environmental damage and mitigation measures have been designed to reduce scientific uncertainty relating to the proposal.
<b>Inter-generational equity</b> - <i>the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.</i>	The proposal will help to meet the needs of future generations by providing a reliable water service.
<b>Conservation of biological diversity and ecological integrity</b> - <i>conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.</i>	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal would require removing 2 trees and trimming 2 others, this would have a minor impact and be offset.
<b>Improved valuation, pricing and incentive mechanisms</b> - <i>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</i>	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
<b>Section 2.10, council related infrastructure or services – consultation with council</b>		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		X
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		X
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		X
Connect to, and use a substantial volume of water from a council owned water supply system?		X
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?		X
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?		X
<b>Section 2.11, local heritage – consultation with council</b>		
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?		X
<b>Section 2.12, flood liable land – consultation with council</b>		
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?		X
<b>Section 2.13, flood liable land – consultation with State Emergency Services</b>		
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)?		X
<b>Section 2.14, development with impacts on certain land within the coastal zone– council consultation</b>		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		X
<b>Section 2.15, consultation with public authorities other than councils</b>		
Will the proposal be on land adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> or land acquired under Part 11 of that Act? <i>If so, consult with DPE (NPWS).</i>		X
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? <i>If so, consult with DPE (NPWS).</i>		X
Will the proposal include a fixed or floating structure in or over navigable waters? <i>If so, consult TfNSW.</i>		X
Will the proposal be on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ? <i>If so, consult with Subsidence Advisory NSW.</i>		X
Will the proposal be on land in a Western City operational area specified in the <i>Western Parkland City Authority Act 2018</i> , Schedule 2 and have a capital investment value of \$30 million or more? <i>If so, consult the Western Parkland City Authority.</i>		X
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? <i>If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).</i>		X



## Appendix D – Ecological Assessment Memo

SW 106 10/24

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