

Review of Environmental Factors

Emu Plains SP0894 rising main repair

July 2026

Sydney WATER
Water IS OUR LIFE



Acknowledgement of Country

Sydney Water respectfully acknowledges the Traditional Custodians of the land and waters on which we work, live and learn. We pay respect to Elders past and present.

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the SP0394 Emu Plains rising main repair project. 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.

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), section 171 A (Appendix B) and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed and endorsed by:	Endorsed by:
[redacted]	[redacted]	[redacted]
Michelle Zhong Author Sydney Water Date: 9/07/26	Cara Renshaw Environment Representative Sydney Water Date: 28/07/26	Tam Huynh Project Manager Sydney Water Date: 13/8/2026

Decision Statement

The main potential construction environmental impacts of the proposal include impacts to Aboriginal heritage and impacts from noise and vibration. During operation, environmental impacts are not 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.

Determined By: [redacted]
Elissa Howie,
A/ Senior Manager – Environment & Heritage, Sydney Water

Date: 2 September 2026

1 Introduction

1.1 Context

Sydney Water provides water, wastewater, recycled water and some stormwater services to over five million people. We operate under the *Sydney Water Act 1994* and have three equal objectives to protect public health, protect the environment and be a successful business.

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with SP0894 Emu Plains wastewater pipeline rehabilitation and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

The objective of this proposal is to permanently repair a DN500 cast iron, internally cement lined (CICL) section of the SP0894 wastewater rising main, adjacent to the Nepean River. During a flood event in 2021, the embankment that encased the section of the rising main was compromised and resulted in the rising main collapsing, resulting in an overflow to the Nepean River. A temporary above ground HDPE pipe about 60m in length was installed, and the eroded embankment reinstated with loosely filled material. Permanent repairs to the SP0894 sewer rising main are required, together with a support system that is independent of the embankment, to ensure long term operational integrity.

Table 1-1 summarises the proposal need, objectives and consideration of alternatives.

Table 1-1 Proposal need

Aspect	Relevance to proposal
Proposal need	The SP0894 Pump Station at Emu Plains is a critical component of the local wastewater infrastructure. The temporary solution for the SP0894 wastewater rising main has maintained service but is not constructed to meet durability and resilience needed for long-term operation. This proposal is required to ensure future resilience of the infrastructure for long-term operation.
Proposal objectives	The proposal objectives are to provide a permanent solution for the repair of the SP0894 wastewater rising main
Consideration of alternatives/ options	Two options were considered: • Option 1: 'do nothing', and • Option 2: the proposal. Option 1: 'do nothing' approach was not considered as the current arrangement is only a temporary solution. To ensure that Sydney Water can continue providing wastewater service operation, a permanent pipeline is required to prevent future failures and resilience for long-term operation. As such, Option 2 was recommended and is the subject of this REF.

1.3 Consideration of Ecologically Sustainable Development

Table 1-2 considers how the proposal aligns with the principles of ecologically sustainable development (ESD).

Table 1-2 Consideration of principles of ecologically sustainable development (ESD)

Aspect	Relevance to proposal
Precautionary principle – *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. This proposal is consistent with the precautionary principle, as: • specialist assessments including fieldwork were undertaken to identify environmental constraints • the proposal has been designed to avoid and minimise impact to the environment by positioning infrastructure in previously disturbed areas where possible • mitigation measures outlined in this REF will be implemented to minimise impacts.
Inter-generational equity – *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposal will help to meet the needs of future generations by providing a reliable wastewater service. The proposal would not result in any impacts that are likely to significantly impact on the health, diversity or productivity of the environment for future generations. The proposal involves activities that have the potential for environmental and social disturbance, however these would be temporary and managed by implementing the mitigation measures provided in this REF.
Conservation of biological diversity and ecological integrity – *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. Planning and design elements have been developed to conserve ecological integrity. Significant impact to native vegetation and TEC is not anticipated. The proposal is designed to maximise the usage of previously cleared areas to minimise impact to threatened ecological communities.
Improved valuation, pricing and incentive mechanisms–- *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment. This has been achieved through actions including: • sizing the mains based on growth predictions to reduce the risk of needing future duplication or upgrade • identifying cost-effective use of resources during construction, e.g. re-use of waste material • providing suitable wastewater infrastructure for future population demands.

2 Proposal description

2.1 Proposal overview

The proposal is the permanent repair of a section of SP0894 wastewater rising main pipeline and includes:

- site establishment and vegetation removal
- tanker bypass
- bored piling
- installation of a new rising main pipeline alignment
- replacement of existing Non Return Valve (NRV)
- dismantling of the temporary bypass
- commissioning
- demobilisation.

2.2 Location and ownership

The proposal is located at Lot 2 Mackellar Street (Lot 2 DP1164472) within the suburban areas of Emu Plains and in the City of Penrith local government area (LGA). The proposal is located on council land and partially located within the Sydney Trains rail corridor, close to the western side of the Emu Plains rail bridge over the Nepean River. Access to the site is via Grevillia Circuit which is on land owned by Ingenia caravan park.

The proposal also crosses directly underneath 11kV overhead wires, and in between the locations of a power pole and anchor. This electrical infrastructure also belongs to Sydney Trains.

The two-tanker bypass pickup points are located at the following pump stations on land owned by Sydney Water:

- SP0894 at 13 Mackellar St, Emu Plains
- SP0886 at 21 Park St, Emu Plains.

The two discharge locations are located at the following pump stations on land also owned by Sydney Water:

- SP0883 at 2181A Castlereagh Rd Penrith
- SP0885 at 171-175 Andrews Rd, Cranebrook.

2.3 Site access

Access to the alignment will be from the north of the proposal through the existing road network and via Grevillia Circuit and through Punt Road on the south side of the Great Western Highway. Vegetation clearing for access is not required. Access for the tanker bypass location will be through Mackellar Street and Park Street.

The route of the tankers to the discharge location is shown in Figure 2-1. Access to SP0885 and SP0883 is via Andrew Road and Castlereagh Road respectively.

2.4 Ancillary facilities (compounds)

Construction compound areas will be required to house site sheds, construction amenities and materials laydown. The location for the compound areas is shown on Figure 2-1.

The compound within WP0205 will house an ablution block and site office. Water, wastewater and power connections will be above ground connecting to existing services.

2.5 Archaeological test excavations

As discussed in Section 5.2.4 an archaeological excavation program is required to be completed prior to construction, and an Aboriginal heritage impact permit (AHIP) will be obtained.

This program will comprise an initial test excavation phase (Stage 1), with provision for a subsequent salvage excavation phase (Stage 2) if required.

2.6 Methodology

2.6.1 Site establishment

Site establishment will include:

- delineating construction sites
- establishing storage, stockpile and laydown areas
- installing site fencing and sediment and erosion controls
- traffic management
- vegetation removal, including removal of informal community gardens
- installation of scaffolding to access aqueduct
- potholing and service identification
- installation of controls (such as pole holders and flagging) to protect Sydney Trains overhead wires and their associated infrastructure
- installation of survey markers on rail bridge to constantly monitor the bridge structure during piling works.

2.6.2 Tanker bypass

To safely carry out the permanent works, SP0894 and SP0886 will be isolated (shutdown) and the incoming flows will be redirected by tanker bypass to SP0883 and SP0885 during construction. The shutdown is required to allow the removal of the temporary pipework and connection of permanent pipework.

Tanker bypass of flows from the two pump stations will keep the wet well levels below 75% during shutdown, to address potential risk of engulfment, system overflows and potential damage during shutdown. A Flow Isolation and Flow Management (FIFM) plan has been developed and will be implemented.

Semi-trailers will be used to bypass SP0894 and discharge at SP0885. Rigid trucks will be used to bypass SP0886 and discharge at SP0883. A backup discharge point is located at maintenance hole (MH) 8508908 if trucks are queueing to discharge at either SP0886 or SP0883. Tanker bypass pickup and discharge locations are shown in Figure 2-1.

The tanker bypass works will be completed in three stages.

1. A 24-hour trial from midnight to midnight to ensure the FIFM plan is successful.
2. Shutdown 1 involves the installation of the upstream puddle flange to allow the anchor block to be constructed. The works will start at midnight and are planned to be completed within 8 to 10 hours. In the event the works require more than 10 hours, the construction workers will leave site and continue after 10-12 hours. During this period the tankers will be required to run continuously until the works are complete.
3. Shutdown 2 involves the installation of the bend downstream of the anchor block and completion of commissioning. Shut down 2 will operate the same as Shutdown 1.

2.6.3 Construction

The new section of SP0894 wastewater rising main will be largely underground. There will be an above ground section near the rail bridge for connection to the aqueduct. The construction of wastewater rising main involves the following:

- excavation of two piling areas to construct piling pads as shown in Figure 2-2
  - excavation will be about 1.5 m deep
  - stabilisation of the lower piling pad may also be required, and include rock walls or gabion baskets, removal of existing material and replacement with compacted fill
- bored piling works to provide support and reinforcement including:
  - 4 piles for anchor blocks up to 15 m deep
  - about 60 micropiles on the embankment 300 millimetres (mm) diameter and up to 12 m deep
- excavation works, pipe installation and concrete works
  - excavation works are to be completed along the pipeline alignment using a 24 T Excavator
  - trenching will be about 2 m deep for all sections, except in areas with an anchor block, where it will be about 3 m deep
  - shoring will be used where the pipeline is adjacent to the Sydney Trains Power pole and anchor
  - pipelaying and concrete works, including pipe encasement of the above-ground section near rail bridge
- cutover to the new pipework
  - welding and grinding works are required on the existing pipework on the aqueduct prior to cutover, and a section of aqueduct that was removed during the connection of the temporary rising main will be reinstated
- the cut over will connect the pipework on the aqueduct and the newly laid section in the trench

- all pipework on the aqueduct will be raised and lowered using winches and chain blocks, hung from the top structural member of the aqueduct

- dismantle and remove temporary bypass
  - remnant pipework from the redundant temporary bypass will be cut up and removed from the area under the rail bridge
- scaffolding and any remaining pipework underneath the aqueduct and rail bridge will be removed by hand and loaded onto utes positioned underneath the road bridge for removal from site via the south side of the Great Western Highway
- disused buried section of original pipe alignment will also be filled with grout or similar material
- replacement of an existing non-return valve (NRV) located in a small concrete pit about 100 m upstream of the new pipeline. The new NRV will be installed in a new below ground pit to be positioned next to an existing scour pit
- reinstatement of a section of aqueduct that was removed during the connection of the temporary rising main.
- temporary potable water connection (50 mm pipe) installed off existing water meter and buried about 600mm deep.

2.6.4 Commissioning

Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing operations. Once completed, the pipeline will undergo hydrostatic testing, which involves filling the main with water to a certain pressure. Once the testing is complete, the water will be pumped out and discharged into a stormwater channel. This will be completed during standard construction hours.

2.6.5 Restoration

The work site will be restored following construction, in consultation with landowners. All excavations will be backfilled using excavator, dumpers and rigid tipper trucks. The ground and ramp at the lower piling pad will be refilled to match original surface levels. The community gardens will not be reinstated.

2.6.6 Materials and equipment

- excavators
- site vehicles
- tipper trucks for supply of materials and disposal of unsuitable spoil
- trucks for delivery of materials and material disposal
- tilt tray trucks
- self-propelled compaction equipment
- water tanker for dust suppression and soil conditioning
- generators
- dewatering pumps
- concrete line pumps

- mobile Crane for unloading pipe and/or handling of materials
- 20kL semi-trailers and 10kL rigid trucks for tanker bypass
- articulated dumpers
- concrete trucks
- pad foot, vibrating and smooth drum rollers
- skid steer or posi-track.

2.6.7 Work hours

Work and deliveries will be scheduled to occur during standard daytime hours of:

- 7am to 6pm, Monday to Friday
- 8am to 1pm, Saturdays.

The proposal is expected to require work outside these hours, including:

- installation of survey markers in the rail corridor for one night between 1am and 3am
- some pipelaying works, as the wastewater rising main will need to be isolated during low-flow periods
- replacement of the NRV
- bypassing at SP0894 and SP0886 to align with low-flow periods and reduce tanker demand and operational risk. Tanker bypasses may need to operate over a 24 hour or longer period, on three or more separate occasions. Works at the main construction area would be required during these tanker bypass operations.

This has been assessed and mitigation measures are provided in Section 6.

2.7 Proposal timing

Construction is expected to start early 2027 to mid 2028 and the duration is expected to be a minimum of 12 months.

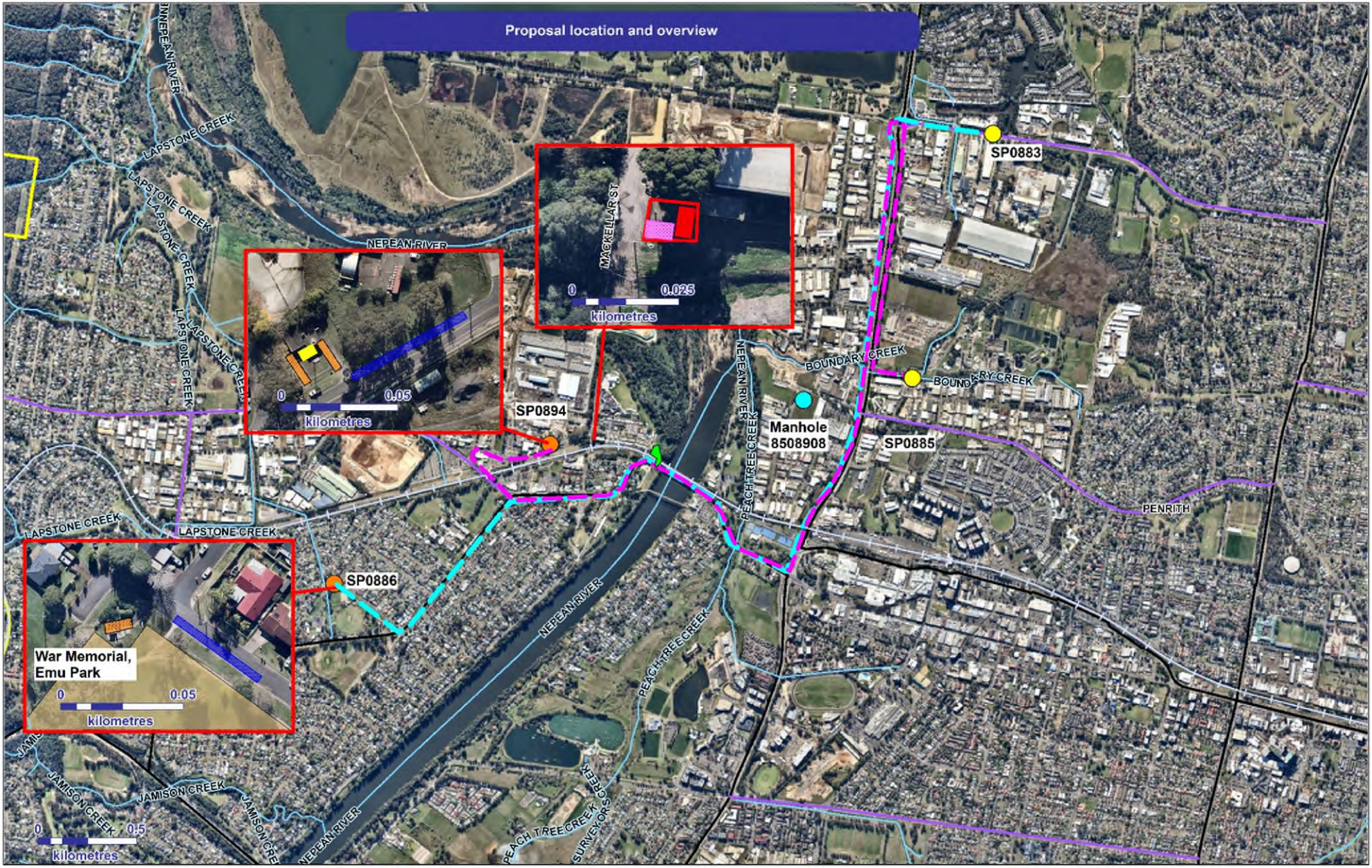


Figure 2-1 Proposal location overview



Figure 2-2 The proposal

2.8 Changes to the scope of work

The proposal shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The final proposal may change based on detailed design or construction planning. The general mitigation measures outline when changes to the proposal trigger supplementary environmental impact assessment. If required, further assessment must be prepared in accordance with SWEMS0019.

An addendum is not required provided the change:

- remains within the proposal site and has no net additional environmental impact; or
- is outside the proposal site of the REF but reduces the overall environmental impact of the proposal (s.5.4(a) of the Act).

Changes to the proposal outside the study area can only occur:

- to reduce impacts to biodiversity, heritage or human amenity; or
- to avoid engineering (for example, geological, topographical) constraints; and
- after consultation with any potentially affected landowners and relevant agencies.

The Delivery Contractor will 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.

3 Consultation

3.1 Community and stakeholder consultation – general

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

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

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

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

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

3.2 Community and stakeholder consultation – proposal

Key stakeholders consulted about the proposal are identified in Table 3-1.

Table 3-1 Key stakeholders

Key stakeholder	Consultation
Penrith City Council	Consultation with Penrith Council and a site walk was undertaken in November 2025. Council raised no objections to the proposal.
TfNSW	TfNSW was notified of the work in May 2025 and had no objections.
Sydney Trains	Consultation with Sydney Trains has been ongoing since January 2025. A Stakeholder Consultation Assurance Committee meeting on 6 November 2025 included the following condition "*Consult with signals NMD/AMD about installation method and associated construction works on bridge as signalling cable assets are in close proximity to the works.*" This will be undertaken by the contractor. Sydney Trains (TfNSW) heritage team was consulted on 30 March 2026 as the works traverse under Emu Plains Underbridge which is listed under Sydney Trains

Key stakeholder	Consultation
	section 170 heritage list and state heritage register. Sydney Trains confirmed no objections to the proposal on 18 June 2026.
Ingenia caravan park	Ongoing consultation has been undertaken with the manager of Ingenia caravan park, and they have been informed that the informal community garden will not be reinstated. They have had no objections. Ingenia caravan park will be notified before the proposal starts.
Heritage NSW	Consultation with Heritage NSW began on 16 December 2025 and is ongoing. Sydney Water has prepared an ACHAR to obtain an AHIP for the works.

We will continue to consult with impacted community members, and inform stakeholders about the project start date, where we will be working and when, as well as what to expect during each stage of the project.

3.3 Consultation required under State Environmental Planning Policies and other legislation

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

Consultation is required under section 2.10(e) of the TISEPP as the proposal involves partial closure of local roads for the tanker bypass locations. Penrith City Council were consulted on 24 June 2026. This consultation also included a copy of the proposal methodology, as requested by Council at the meeting in November 2025.

A response was received 17 July 2026 querying the need to retain the piling pad post construction. Sydney Water replied to Council 21 July 2026 noting that the piling pad will be removed at the completion of the works. It was noted that about 300mm will be trimmed from the top of the micropiles so these can be buried and will not protrude or cause any issues at ground level after the site has been restored to its current state.

4 Legislative requirements

4.1 Environmental legislation

Sydney Water is the proponent and determining authority under the EP&A Act. The proposal does not require development consent and is not classified as State significant infrastructure. We have assessed this proposal under Division 5.1 of the EP&A Act. This REF has concluded that the proposal is unlikely to have a significant impact on the environment.

The following environmental planning instruments (Table 4-1) and legislation (Table 4-2) are relevant to the proposal. Table 4-2 also documents any licences and permits required, and timing and responsibility for obtaining them.

Table 4-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Penrith Local Environmental Plan 2010 (Penrith LEP)	The proposal is located on land zoned RE1 Public Recreation and SP2 Special Infrastructure.
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 the purpose of sewage reticulation systems to be carried out without consent on any land in the prescribed circumstances. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** The proposal is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) establishes that as the works are permissible under the TISEPP, a council permit to clear vegetation under this SEPP is not required. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is on land mapped within the Hawkesbury-Nepean Catchment under section 6.1. Sydney Water has taken into consideration the requirements of Part 6.2 (see Section 6.2.2 of the REF) Section 6 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minimal and meet the requirements of part 6.2 of the SEPP

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations Act 1997 (POEO Act)	Part 5.7 of the POEO Act requires that pollution incidents are immediately reported to the relevant authority where material harm to the environment is caused or threatened. The definition of material harm and the relevant authorities are in Part 5.7 of the POEO Act. The contractor is responsible for reporting actual or potential environmental harm, in accordance with SWEMS0009.	Notification	Contractor
Biodiversity Conservation Act 2016 (BC Act)	The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. In determining whether the proposal is likely to significantly affect threatened species or ecological communities, or their habitats, the matters set out in s7.3 of the BC Act have been taken into account. The proposal, including the mitigation measures described in this report, is not considered likely to have a significant impact.	REF Flora and fauna assessment	Pre-construction, Sydney Water
National Parks and Wildlife Act 1974 (NPW Act)	This Act provides for the establishment, preservation, and management of areas such as national parks, state conservation areas, nature reserves, and Aboriginal areas. The NPW Act provides for the protection of Aboriginal objects and places. Section 86 of the NPW Act states a person must not harm an Aboriginal object, however an application for an Aboriginal heritage impact permit (AHIP) may be made under Section 90A. An AHIP is required for the proposal.	Due Diligence ACHAR AHIP	Post REF, pre-construction, Sydney Water (for AHIP)
Heritage Act 1977	The Heritage Act aims to promote conservation of heritage items in NSW. Part 3A establishes a State Heritage Register for the listing of heritage items including places, buildings, works, relics, moveable objects, precincts or land.	REF	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	The proposal involves works under the Emu Plains (Nepean River) Underbridge which is a state heritage item managed by Sydney Trains. Provided the works are below the bridge, the works would not impact the heritage significance. Consultation with Sydney Trains (TfNSW) heritage team was undertaken and confirmed on 18 June 2026 they had no objection and no exemption is required.		
Water Management Act 2000	Section 60A of the *Water Management Act 2000* requires a licence to take water. As a public authority, Sydney Water is exempt from needing a Water Access Licence (WAL) under section 21 of the Water Management (General) Regulation 2018. Groundwater is expected to be extracted during construction of the proposal. As such, a water supply work approval (WSWA) is required under section 90(2) of the *Water Management Act 2000*.	WSWA	Pre-construction, Sydney Water
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Commonwealth EPBC Act aims to protect Matters of National Environmental Significance (MNES) and outlines the requirements for development application and approval of projects that impact MNES. The proposal has the potential to impact threatened species, ecological communities and/or migratory species protected under the EPBC Act. The proposal, including the mitigation measures described in this report, is not considered likely to have a significant impact.	REF Flora and fauna assessment	Pre-construction, Sydney Water
Roads Act 1993	This Act regulates works in, on, or over a public road. Approval under section 138 of this Act requires partial closure of a road during construction. Approval from Penrith City Council would be obtained by the contractor.	Consultation	Pre-construction, Sydney Water, contractor

5 Environmental assessment

Section 6.2 describes the existing environment and assesses direct and indirect impacts of construction and operation. It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) prior to starting work.

5.1 Existing environment

The proposal is within the suburbs of Emu Plains and Penrith which are both within the Penrith City Council LGA. The proposal site is bordered by the Nepean River to the east, the Great Western Highway and railway to the south and the Ingenia caravan park to the west. The proposal site is predominantly zoned RE1 Public Recreation, at the time of the REF, the land consisted of grassed areas and a community garden. The two tanker bypass pickup locations (SP0886 and SP0894) are located in the existing wastewater pumping stations within Emu Plains at 13 Mackellar Street and 21 Park Street and both are zoned SP2 Special infrastructure.

The two discharge locations are at wastewater pumping station (SP0883 and SP0885). SP0885 is within Penrith Waste Water Recovery Facility at 2181A Castlereagh Rd Penrith. SP0885 is located at 171-175 Andrews Rd, Cranebrook. SP0885 is surrounded with commercial and industrial areas to the south and residential areas to the north. Both are within the Penrtih City Council and are zoned SP2.

A backup discharge location is at maintenance hole (MH) 8508908 at Lot 2, Mullins Rd, Penrith. This area is zoned E4 General Industrial. The surrounding area consists of commercial areas, Bunning, industrial area, a bus depot and open green space.

Environmentally sensitive locations include threatened ecological communities and undisturbed areas in the vicinity of the waterways that are high risk landscapes with the potential for additional Aboriginal heritage sites to be present.

The tanker bypass located at 21 Park Street is adjacent to Duke's Oval and surrounded by residential areas. The tanker bypass located at 13 Mackellar Street is bordered by industrial areas to the north and the railway to the south. Beyond the railway are residential and commercial areas.

The environmental features within and adjacent to the study area are detailed in Section 5.2.

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

5.2.1.1 Existing environment

The topography within the proposal site follows the natural contours, sloping downhill towards the Nepean River. Surface elevation within the proposal area ranges from approximately 24 – 26 metres AHD providing a total local relief of two metres AHD.

The proposal site is within the Richmond soil landscape which consists of orange to red clay loams, clays and sands. A geotechnical interpretative report undertaken in 2024 identified the proposal site consists of silty sand

or sandy silt with low plasticity clay and traces of fine to medium-grained sandstone gravel. Further below a layer of alluvial silty sand soil was encountered overlying gravel/cobbles. The proposal site contains areas of localised salinity hazards. The geotechnical report identified very low salinity levels. No contamination was identified.

No acid sulfate soil is present at the proposal site.

A search of the EPA contaminated land record on 5 February 2026 did not identify any contaminated site report to the EPA within 1 km of the proposal site.

The current land use of the proposal site is council property. The current land use of the tanker bypass is Sydney Water property. The typical current land uses in the surrounding area are residential, commercial and industrial properties.

The proposal site is not in an area impacted by a mining or exploration licence.

5.2.1.2 Potential impacts

The main potential impact to topography, geology and soils during construction of the pipeline is erosion and sedimentation. Construction activities involve excavation, trenching and temporary stockpiling of excavated materials. The total volume of spoil to be stockpiled and reused for backfilling where possible will be about 100 tonne. The remainder and any unsuitable backfill material will be taken off site for disposal.

The environmental risk will be greatest where trenching, excavating and stockpiling occurs close to the Nepean River. In these cases, excavated material will be stockpiled as far as practicable from waterways. The potential impact to erosion and sedimentation are expected to be managed with the implementation of the mitigation measures below.

There is potential for soil contamination during construction due to accidental leaks, or spills, oils or other chemical from plant, equipment and vehicles used for the pipeline construction and tanker bypass. There is also the potential for unknown contamination to be present in the soil from historical use of the site for the community garden, and construction of other utilities. Inappropriate management of saline soils and contaminated soils has the potential to impact surrounding land and waterways from off-site leaching of contaminants and saline soils.

The proposal is not proposing to permanently change the surface topography and drainage patterns of the area. The area will be returned to its original topography and drainage pattern following construction.

No impacts are anticipated for the tanker bypass activities.

Given majority of the work will be underground, operational impacts would be associated with maintenance of the aqueduct and impacts are expected to be minimal. Mitigation measures are provided below to avoid, mitigate and manage potential contamination and erosion impacts.

5.2.1.3 Mitigation measures

With the implementation of the mitigation measures below, impacts to soil, geology and topography can be adequately managed, and residual impacts are expected to be minor.

Table 5-1 Environmental mitigation measures – topography, geology and soils

Mitigation measures
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: • develop a Soil and Water Management Plan (SWMP) as part of the CEMP • 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.
Include a Stockpile Management Plan (SMP) as part of the SWMP to adequately manage any proposed temporary and permanent stockpiles. This will include detail on: • exact location of stockpiles • minimising stockpile size • height, slopes and batters • preventing mixing and cross contamination • consideration of future maintenance • capping • erosion and sediment control • restoration. • The Stockpile Management Plan will be approved by the Sydney Water Project Manager in consultation with the Environmental Representative and the Contamination and Hazardous Materials team.
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 the Contamination and Hazardous Materials 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.
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.

5.2.2 Water and drainage

5.2.2.1 Existing environment

The proposal site is about 45 m west of the Nepean River which is a key fish habitat and part of the Hawkesbury Nepean floodplain. Poor site management may lead to potential sedimentation impacts on this local waterway system. The proposal is within a flood prone area. Flooding has the potential to impact construction and increase movement of spoil offsite.

The proposal site (at a height of between 24 – 26 metres AHD) sits mostly outside of the mapped extent of the 1% annual exceedance probability (AEP), but wholly within the 0.2% AEP.

The geotechnical investigation identified groundwater at 9.1 m below ground level (bgl). Excavation to a depth of about 15 m is required for the deepest piles. As such, is it likely the works will encounter groundwater.

No potential groundwater dependent ecosystems (GDEs) were mapped within the proposal site.

The tanker location for SP0886 is adjacent to a tributary of Lapstone Creek and another tributary of Lapstone Creek is about 500m west of the SP0894.

The discharge location at SP0885 is adjacent to Boundary Creek and discharge location at SP0883 is about 180 m east of a stormwater channel.

5.2.2.2 Potential impacts

During construction, the proposal will involve vegetation removal, excavation, the establishment of temporary soil stockpiles and storage areas for fuel and chemicals. The main construction impacts on water and drainage include erosion and sedimentation and/or accidental spills and leaks. Material may travel off site into the Nepean River from displacement of soil, waste, and other materials during flooding, strong wind or heavy rain. The only aboveground structure will be the new pipe connection to the existing aqueduct. The potential impacts to the Nepean River from erosion and sedimentation are highest where excavation and temporary stockpiling occurs near waterways, which are also the areas within the construction footprint most likely to flood. During periods of high rainfall, flooding has the potential to increase soil erosion and siltation from the construction site. No compounds or laydown areas are proposed within the 1% AEP areas.

Potential impacts of the tanker bypass and discharge also include accidental spill, leaks and contaminated runoff into Boundary Creek and Lapstone Creek.

As excavation depths for the piles are lower than the identified groundwater levels, it is likely that groundwater dewatering will be required. Groundwater dewatering can have adverse impacts on groundwater quality and change groundwater levels. Further assessment is required to determine groundwater dewatering volumes at each location within the construction footprint. A Water Supply Works Approval will be obtained before any groundwater is dewatered.

Operational impacts are not anticipated.

5.2.2.3 Mitigation measures

With the implementation of the mitigation measures below, impacts to water and drainage can be adequately managed, and residual impacts are expected to be minor.

Table 5-2 Environmental mitigation measures – water and drainage

Mitigation measures
Use appropriate controls to avoid potential sedimentation to waterbodies.
Bund open maintenance holes if there is a risk of wastewater spills.
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.
Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and outside 1% AEP flood extent.
Sydney Water will obtain a groundwater Water Supply Works Approval. Where dewatering is >3ML per water year (from 1 July). The Delivery Contractor is responsible for: • preparing a Dewatering Management Plan prior to construction • 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.
Dewater excavations in accordance with the Program Delivery Guidance Standard 9.1 Excavation Dewatering (ENV-GS-001).
Seek approval and discharge criteria from the relevant Sydney Water Network Area Manager prior to discharge of water to the wastewater system. Otherwise tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.
If wastewater bypass is required: • pressure test hoses before, and monitor during bypass • monitor wastewater flows to ensure critical flows are not reached • stop bypass if leaks occur • bund access chambers • contain wastewater spills and pump back to wastewater system or disposal tanker.
Undertake all work with reference to the FIFM plan. Implement key control measures including, but not limited to: • Confirming the rising main is fully drained before starting works. Rigid tanker to be on-site during cut-in of the rising main repair location to extract any stagnant sewer water in the low point of the rising main. • Check BOM weather forecast the day before works. If there is a forecast of a 25% chance of 5mm (or more) of rainfall for the proceeding 48 hours, then work should not proceed. No works to commence if 5mm or more of rain has affected the catchment in the previous 24 hours.

Mitigation measures

- Bypass of both SP0886 and SP0894 to start as soon as water levels in the wet wells are high enough to enable suction of the bypass pumps, this will keep wet well levels low on approach to the morning peak flow period and thus minimise the risk of overflow.
- Ensure all materials and resources for connection are on-site prior to shutdown.
- Establish a routine inspection and maintenance schedule for discharge points to prevent accumulation of debris and sediment that may impede flow.
- Real-time monitoring at SP0883 and SP0885 using level sensors and flow meters to detect abnormal conditions

Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Ensure bunded areas have 110% capacity of the largest chemical container, or an additional 25% capacity of the total volume stored within (whichever is greater). Tightly secure chemicals and fuels in vehicles. Clearly label all chemicals.

Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.

Conduct any equipment wash down within a designated washout area

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

5.2.3 Flora and fauna

A flora and fauna assessment was undertaken and is summarised below. The complete assessment report is provided in Appendix G. The assessment involved the following:

- a desktop review including database searches for flora and fauna previously recorded
- a flora and fauna field survey
- likelihood of occurrence assessment for the identified and predicted flora and fauna
- assessments of significance for those species that were found to be likely to occur
- consideration of the relevant biodiversity certification orders in force for the field survey area
- discussion of the potential impacts of the proposal
- identification of site-specific mitigation measures to minimise and mitigate potential impacts of the proposal.

5.2.3.1 Existing environment

Field surveys were undertaken on 9 February 2026 to ground truth biodiversity values identified during desktop assessment and identify any other threatened biota. Surveys were conducted with reference to current biodiversity assessment guidelines including the Biodiversity Assessment Methodology and NSW guideline for surveying threatened plants and their habitats (DPHI, 2020).

A desktop study identified PCT 3145 Cumberland Bangalay x Blue Gum Riverflat Forest and PCT 3025 Central Coast Gallery Rainforest were predicted to occur in the study area. PCT 3145 is associated with the following TECs:

- Elderslie Banksia Scrub Forest (Part) - critically endangered under the BC Act
- Shale Gravel Transition Forest in the Sydney Basin Bioregion – endangered under the BC Act
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest – critically endangered under the EPBC Act
- River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria – endangered under the BC Act and EPBC Act.

Field surveys confirmed these PCTs were not present, and no TEC were identified within the study area.

About 0.12 ha of the vegetation in the study area is planted native and exotic vegetation and another 0.25 ha was only exotic vegetation. High threat weeds are also present in the study area.

One (1) planted Macadamia nut (*Macadamia integrifolia)* species was recorded within the community garden and is listed as Vulnerable under the EPBC Act. Macadamia nut is widely cultivated and is not known to occur naturally in the wild in NSW. Its presence within the study area reflects horticultural planting rather than a naturally occurring specimen.

No other threatened flora species were recorded during field surveys or considered likely to occur.

No threatened fauna species were observed during diurnal opportunistic field surveys within the study area, however, threatened fauna species may transiently fly over the area or forage opportunistically on their way to higher quality habitat or the Nepean River Corridor.

The field survey also included a search for micro habitat in the study areas including a search of Victoria bridge for microbat activities. While no threatened microbat species or signs of microbat use were recorded, the Victoria Bridge contains potential roosting habitat and could be opportunistically utilised by microbats in the future.

5.2.3.2 Potential impact

The proposal would result in minor impacts to 0.22 ha of exotic vegetation associated with a community garden and managed turf areas. These areas also contain a high cover of high-threat weed species.

Pruning of vegetation will also be required within the road and rail reserve, where mature native *Melia azedarach* specimens and other planted native and exotic vegetation occur. These trees are positioned above the impact area, within the rail reserve embankment, and no removal is proposed. Only select trimming and pruning would be undertaken to provide adequate clearance for construction activities.

The proposal would remove one (1) planted Macadamia nut (*Macadamia integrifolia)* listed as vulnerable under the EPBC Act. This planted specimen does not occur naturally within NSW or the study area and therefore, it is not considered to represent the EPBC Act-listed Vulnerable species.

Field surveys did not record any threatened flora or fauna species within the impact area. However, it was assumed four (4) threatened bat species and nine (9) threatened woodland bird species may use the area transiently due to the presence of surrounding suitable habitat and connectivity to the Nepean River. The proposal site does not provide important foraging, roosting or breeding habitats for any transient threatened fauna species, as such the proposal would not impact any suitable habitat for these species.

Given the restricted scale of habitat modification, the absence of species-specific ecological constraints, and the low probability that the area supports important populations or essential habitat functions, the potential impacts on all threatened species considered were assessed as very minor.

No significant impacts are anticipated as the proposal does not affect native vegetation communities, and the exotic community does not offer critical foraging, breeding or roosting habitat. Importantly, the microhabitat features associated with Victoria Bridge would remain undisturbed.

Given the small scale and temporary nature of the impacts, the potential for indirect impacts is minimal. Over time, the significance of indirect impacts is expected to diminish as the site stabilises and rehabilitation measures take effect.

No impacts to flora and fauna are anticipated for the tanker bypass activities.

Operation impacts are not anticipated.

5.2.3.3 Mitigation measures

With the implementation of the mitigation measures below, impacts to flora and fauna can be adequately managed, and residual impacts are expected to be minor.

Table 5-3 Environmental mitigation measures – flora and fauna

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

Mitigation measures

Adjust methodology (e.g. avoid area, hand excavate, implement exclusion fencing) to protect sensitive areas where possible (such as mature trees, known threatened species, populations or ecological communities).

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.

Protect trees in accordance with the Program Delivery Guidance Standard 9.3 Biodiversity Management (ENV-GS-003).

Engage a suitably qualified Ecologist including Licensed Fauna Spotter Catcher to inspect work areas under bridges where microbat habitat is present. This would ensure that microbats are not present in those structures before starting the activity.

Where injured microbats are found during the activity, contact should be made with a suitably accredited wildlife care organisation such as WIRES. The contact details of the relevant organisation should be known by the site supervisor and ecologist. Injured animals should not be handled by construction staff.

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.

Engage a AQF Level 5 qualified Project Arborist to undertake select pruning and trimming of trees intersecting the impact area.

If any damage occurs to vegetation outside of the impact area (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.

If replanting near Sydney Water pipelines refer to 'Which trees can damage wastewater pipes?' link from Sydney Water website to help identify suitable species.

In TOBAN period:

- check specific TOBAN notice to confirm whether the work can be carried out under standard exemptions (Govt Gazette No18 Feb 2018)
- if the work is not covered by a standard exemption, apply to RFS for specific exemption

5.2.4 Aboriginal heritage

The proposal is within 200 m of the Nepean River and is considered a high-risk area, and an Aboriginal Heritage Due Diligence (AHDD) was completed for the proposal (Appendix D).

The AHDD concluded the proposal site encompasses a landform element of high archaeological sensitivity and potential archaeological deposit. As such an Aboriginal Cultural Heritage Assessment Report (ACHAR) was undertaken (Appendix E). The proposal site (identified as proposal area) assessed for the ACHAR is shown in Figure 5-1. The findings of the AHDD and ACHAR are summarised in this section.

A separate AHDD was also completed for the compound location within WP0205 (Appendix D). This AHDD concluded that the [redacted] If works are confined to previously disturbed areas and unexpected finds procedures are followed, no further Aboriginal heritage assessment is required for this location.

5.2.4.1 Existing environment

Archaeological context

Aboriginal people have occupied the Sydney region, including the Cumberland Plain, for at least 36,000 years, with occupation initially focused on major river corridors and associated fluvio-aeolian landforms. Archaeological findings from fluvio-aeolian sand bodies located in the Hawkesbury–Nepean and Parramatta River corridors have played a critical role in informing current interpretations of Aboriginal peoples' 'deep time' occupation of the Sydney region. Available evidence suggesting a long period of ephemeral occupation of source-bordering sand dunes and sand sheets located along the Hawkesbury–Nepean River and possibly other major river systems.

Existing archaeological survey data for the Cumberland Plain indicates a strong trend for the presence of open artefact sites along watercourses, specifically, on creek banks and 'flats' (i.e., flood/drainage plains), terraces and bordering lower slopes.

[redacted]

Desktop assessment

A search of the AHIMS database indicates that no previously recorded Aboriginal sites are located within 200 m of the proposal site, or compound location, [redacted]

Due diligence assessment

AECOM was commissioned by Sydney Water to undertake an AHDD assessment for the proposal and compound location in accordance Heritage NSW's Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010). The AHDD identified no known AHIMS sites and no previously recorded Aboriginal sites within or immediately surrounding the proposal site. Additionally, no Aboriginal objects were identified during the visual inspections. [redacted]

Due to the moderate risk of impacting Aboriginal heritage objects at depth, further assessment including an AHIP application, Aboriginal consultation and archaeological excavation was recommended.

5.2.4.2 [redacted]

[redacted] The boundaries of the PAD, shown on Figure 5-1, correspond with the main preserved terrace tread within the proposal area. [redacted]

Geotechnical testing confirms the presence of deep intact alluvial deposits within [redacted]

Land within the bounds of the PAD has been subject to a range of historical land uses and disturbance events; however, available evidence indicates that disturbance within the PAD is variable, with some areas affected more substantially than others. Field observations suggest that the most substantial disturbance to near-surface deposits is associated with market gardening activities across the southern portion of the terrace tread and the construction and use of two vehicle access tracks through the PAD. Additional disturbance is associated with installation of the existing rising main and other utility infrastructure, together with stockpiling and localised erosion.

5.2.4.3 Aboriginal community consultation

Aboriginal community consultation for the proposal was undertaken in accordance with Heritage NSW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents*. A total of 29 individuals and organisations registered an interest in being consulted for the current assessment (refer Appendix E).

Archaeological survey

An archaeological survey was undertaken on Friday 5 June 2026, attended by 5 RAPs. No surface Aboriginal objects or sites were identified during the survey. Similarly, no new areas of heightened subsurface Aboriginal archaeological sensitivity or PAD were identified. Land within the bounds of previously recorded [redacted] was inspected and observations confirmed that the landform characteristics upon which the PAD was originally registered remain present. Further is detail is provided in Appendix E.

5.2.4.4 Significance assessment

The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (OEH, 2010a) requires an assessment of significance assessment according to criteria established in the Australia ICOMOS Burra Charter (Australia ICOMOS, 2013). The Burra Charter and its accompanying guidelines are considered best practice standard for cultural heritage management, specifically conservation, in Australia. The Burra Charter sets out 4 criteria for the assessment of cultural significance:

- aesthetic value – the sense of the beauty of a place, object, site or item
- historic value – the association of a place, object, site or item with historical events, people, activities or periods

- scientific value – the importance of the data available for a place, object, site or item, based on its rarity, quality or representativeness, as well as the degree to which the place (object, site or item) may contribute further substantial information
- social value – the aspects of a place, object, site or item has become a focus of spiritual, political, national or other cultural sentiment to a group of people.

The proposal area is assessed as possessing moderate Aboriginal cultural heritage significance, derived primarily from the potential scientific significance of the PAD and its cultural associations with the broader Nepean River landscape. However, the precise nature, extent, integrity and significance of any Aboriginal archaeological resource that may survive within the PAD cannot be reliably determined without subsurface investigation. Historic values are present principally at a landscape scale but the proposal area possesses low aesthetic significance given the visual character of the area has been substantially altered by historical and contemporary land use.

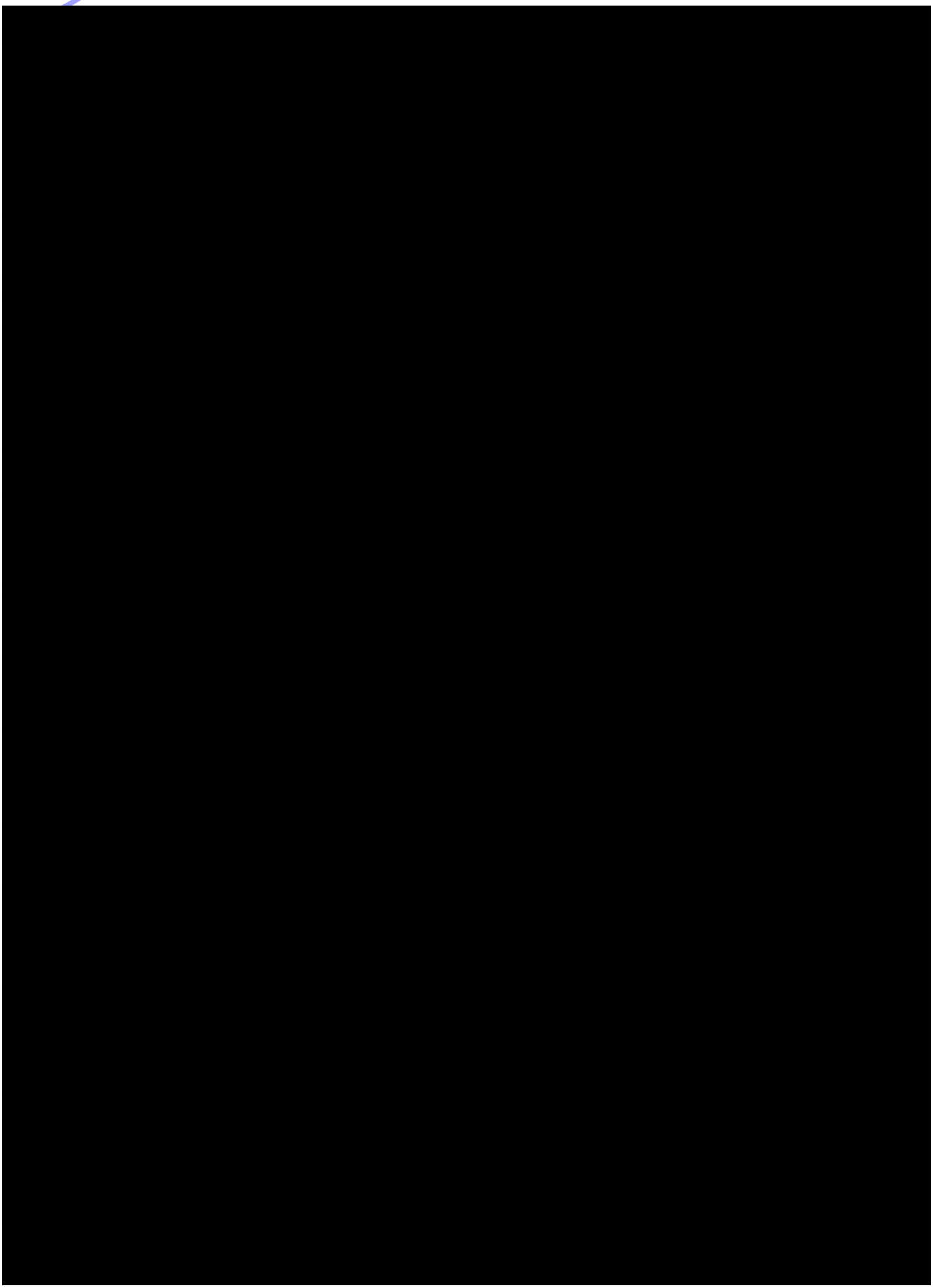


Figure 5-1 ACHAR impact assessment

5.2.4.5 Potential impact

The potential for impact to Aboriginal cultural heritage within the proposal area arises primarily from the intrusive construction activities, including excavation for piling pads, trenching, bored piling and micropiling works, stabilisation works, installation of the replacement pipeline and associated below-ground infrastructure. These activities have the potential to harm subsurface Aboriginal objects within registered [redacted].

Site establishment activities such as delineation of work areas, installation of site fencing, sediment and erosion controls, traffic management measures, scaffolding installation, service location works, and survey monitoring are not expected to result in substantive ground disturbance and therefore present a low risk of impact to Aboriginal objects or archaeological deposits.

Vegetation management works associated with removal of informal community gardens and selective pruning of vegetation within the road and rail corridors may involve localised surface disturbance. However, any such disturbance would be minor in comparison to the proposed excavation, piling and trenching works and is not considered a primary source of archaeological impact.

Table 5-4 PAD Disturbance

Site name	AHIMS ID	Site type	Site extent (m^2)	Impact area (m^2)	Impact area (%)	Type of harm	Degree of harm	Consequence of harm
[redacted]	[redacted]	PAD	[redacted]					

No impacts to Aboriginal Heritage are anticipated for the tanker bypass activities, or site compound within WP0205.

For the activities that have the potential to harm any subsurface Aboriginal objects that may be present within the [redacted] mitigation in the form of an archaeological excavation program is warranted prior to construction and an Aboriginal heritage impact permit (AHIP) will be obtained. The proposed AHIP area is shown in Figure 5-2.

The AHIP will cover a staged program of archaeological excavation and will be comprised of an initial test excavation phase (Stage 1), with provision for a subsequent salvage excavation phase (Stage 2).

Operational impacts are not anticipated.

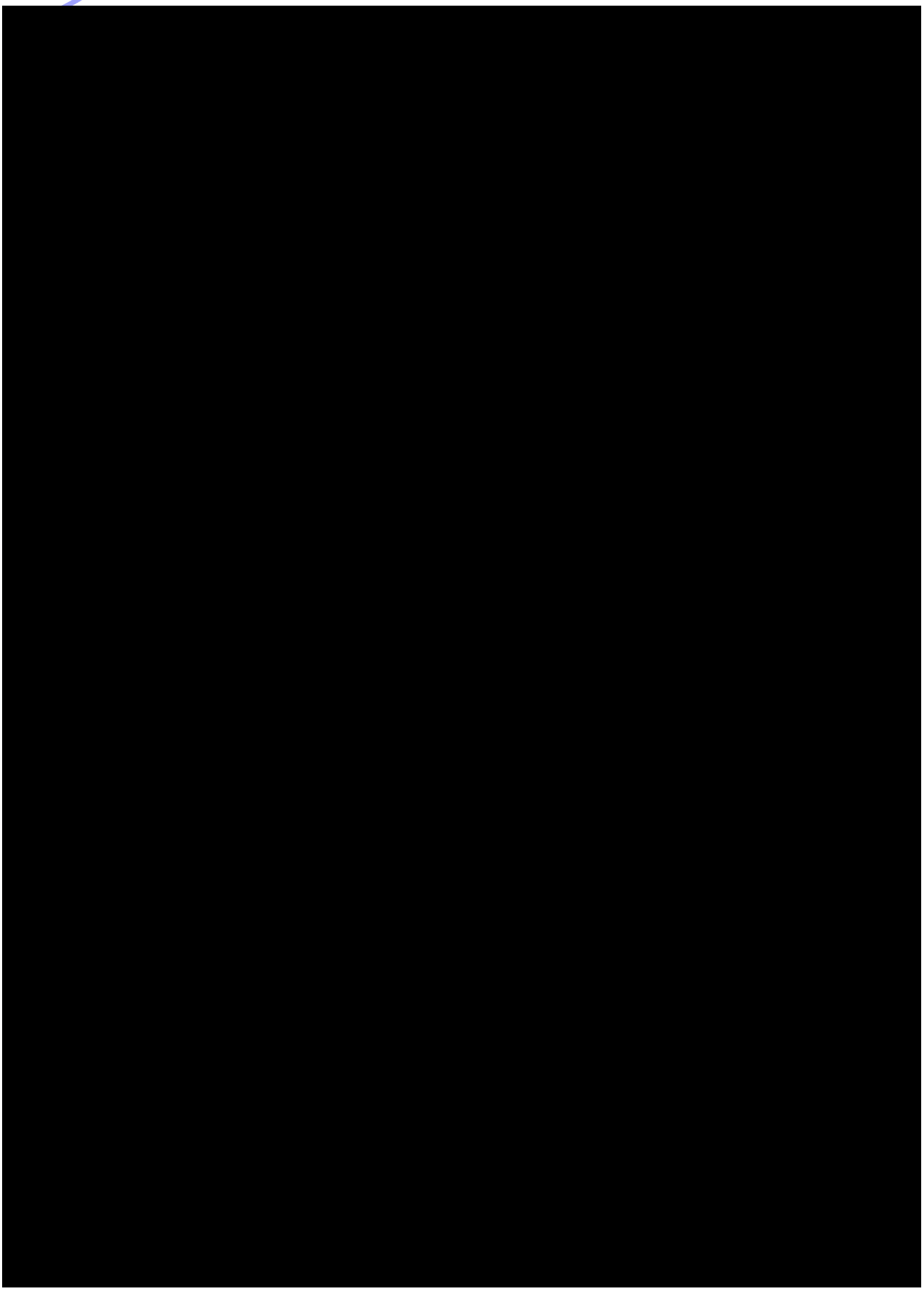


Figure 5-2 Proposed AHIP area

5.2.4.6 Mitigation measures

Table 5-5 identifies the mitigation measure for the identified Aboriginal heritage values.

Table 5-5 Environmental mitigation measures – Aboriginal heritage

Mitigation measures
Harm to any Aboriginal objects is only permitted once an Aboriginal Heritage Impact Permit (AHIP) has been granted. Include Aboriginal Heritage Management Plan (AHMP) in CEMP to address AHIP conditions. No ground disturbance work for the proposal can commence until the archaeological test excavation and salvage (if required) is complete.
Sydney Water to apply to Heritage NSW for an "all of area" AHIP for the AHIP area shown in Figure 5-2. Subject to Sydney Water's adherence to any associated conditions, issue of this AHIP would authorise harm to [redacted]).
Proposed impacts to [redacted]ould be mitigated through a program of archaeological test excavation and, where warranted by the results of test excavation, archaeological salvage excavation. These investigations may only be undertaken following the issue of an AHIP and must be completed in accordance with the Archaeological Research Design and Methodology (ARDM) provided in the ACHAR.
All site personnel must be inducted by a heritage specialist (or delegate) before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
All intrusive ground disturbance works associated with the proposal should be confined to the AHIP Area. Should construction requirements change and disturbance outside the approved AHIP Area become necessary, works in those areas must not proceed until further Aboriginal cultural heritage assessment has been undertaken and any additional approvals required under the NPW Act have been obtained.
In accordance with Requirement 16B of the Code of Practice, any Aboriginal objects recovered from the proposal area as part of the excavation program detailed in the ACHAR, should be stored temporarily at AECOM's head office (Level 5, 420 George Street, Sydney). Following completion of analysis and finalisation of the archaeological excavation report, Sydney Water should consult with Registered Aboriginal Parties (RAPs) regarding the long-term management of any Aboriginal objects recovered during the investigation. Options for long-term management may include reburial within the proposal area (or another suitable location), with the reburial location and methodology to be determined in consultation with RAPs, or placement within an appropriate Aboriginal keeping place under a Care Agreement established pursuant to the NPW Act.
Should the proposed archaeological investigations identify Aboriginal objects, archaeological deposits or other information that materially contributes to an understanding of the Aboriginal cultural heritage values of the proposal area, Sydney Water should consult with RAPs and Penrith City Council regarding opportunities for interpretation of those values. Any interpretive outcomes should be developed collaboratively with RAPs and be proportionate to the nature and significance of the archaeological findings.
Consistent with feedback provided by RAP representatives, Sydney Water, in consultation with Penrith City Council, should consider the use of locally appropriate native vegetation species in the rehabilitation of disturbed areas following completion of construction works. Rehabilitation measures should be developed in consultation with RAPs and may include the use of Weeping Grass (*Microlaena stipoides*) and other locally appropriate native species.

Mitigation measures

In the event that possible human skeletal material (remains), are identified at any point during construction, the 'Procedure for the management of potential human skeletal remains' provided in the ACHAR is to be followed.

Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.

Any subsurface excavation required to connect the proposed site office and ablution block to water or electricity should be confined to previously disturbed ground at existing service connection points. Use geofabric and DBG20 to protect subsurface deposits from disturbance during installation and ongoing site use.

5.2.5 Non-Aboriginal Heritage

5.2.5.1 Existing environment and potential impacts

The removal of the temporary bypass, set up of scaffolding, installation of survey markers and reconnection with the aqueduct is within the curtilage of the Emu Plains (Nepean River) Underbridge as shown on Figure 2-2. The Emu Plains (Nepean River) Underbridge is a state significant item listed on the Sydney Trains section 170 Heritage Register and State Heritage Register (SHR #01830). The proposal will require access and involve works to be undertaken beneath the bridge structure. There will be no works to Emu Plains (Nepean River) Underbridge. The proposal site is also adjacent to the following heritage items (Refer to Figure 2-2):

- Victoria Bridge - State Heritage Item (#01950) and local heritage item
- Emu Hall, dwelling, outbuildings and trees - Local heritage item Penrith LEP (#051).

The tanker pick up location at SP0886 is adjacent to the curtilage of:

- War Memorial, Emu Park - Local heritage item Penrith LEP (#075).

Consultation with Sydney Train's (TfNSW) Heritage Advisor confirmed no heritage concerns and is detailed in section 3.2.

As requested by Sydney Trains, constant survey monitoring of the Emu Plains underbridge structure is required during piling works. To achieve this, two adhesive survey markers will be required to be installed on the north face of two of the structural members of the bridge. No other works will be undertaken on the bridge, as such impact to the heritage significance is unlikely.

Works within the proposal site will be under Victoria Bridge, as such impacts to Victoria Bridge are unlikely. Works will also be limited to the proposal site with fencing shown in Figure 2-2. As such impact to Emu Hall is unlikely.

No impacts to Non-Aboriginal heritage are anticipated for the tanker bypass activities.

Operational impacts are not anticipated.

5.2.5.2 Mitigation measures

With the implementation of the mitigation measures below, impacts to non-Aboriginal heritage can be adequately managed, and residual impacts are expected to be low.

Table 5-6 Environmental mitigation measures – non-Aboriginal heritage

Mitigation measures
Install two adhesive survey markers on the north face of two of the structural members of the bridge.
Where feasible, use protective barriers or padding where works occur in close proximity to the Emu Plains underbridge and Victoria bridge.
All site personnel must be inducted by a heritage specialist (or delegate) before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
If any non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.

5.2.6 Noise and vibration

A noise and vibration assessment was undertaken and is summarised below. The complete assessment report is provided in Appendix F.

5.2.6.1 Existing environment

The proposal is within suburban environments in Emu Plains and Penrith. The likelihood of noise impact was assessed using Table 2 of the Draft Construction Noise Guideline (EPA 2020). The review indicated that the likelihood of noise impact is high risk and therefore a quantitative noise impact assessment was undertaken. A noise and vibration assessment (2025) has been undertaken by AECOM for the proposal.

Three noise catchment areas (NCAs) were used to group residential receivers within a similar noise environment and define appropriate construction noise management levels (NML). The NCAs are shown in Figure 5-3.

The closest permanent residential receiver is about 25 m away from the proposal site. Ingenia caravan park contain both permanent and temporary accommodation and is located adjacent to the proposal site which has been conservatively assessed as comprising residential receivers.

Long term unattended and short term attended measurements were undertaken to establish the existing ambient and background noise environment at potentially affected receivers.

Table 5-7 Existing ambient and background noise environment

Noise Catchment Area	LA90 background rating noise level, dB(A)			Log average noise (ambient) LAeq levels dB(A)		
	Day[1]	Evening[1]	Night[1]	Day[1]	Evening[1]	Night[1]

NCA 1 (NL1)	39	38	33	55	49	46
NCA 2 (NL2)	34	34 (35)[2]	30 (29)[3]	53	43	44
NCA 3 (NL3)	37	37	31	51	48	47

Notes:

1. Day is defined as 7:00 am to 6:00 pm, Monday to Saturday and 8:00 am to 6:00 pm Sundays & Public Holidays. Evening is defined as 6:00 pm to 10:00 pm, Monday to Sunday & Public Holidays. Night is defined as 10:00 pm to 7:00 am, Monday to Saturday and 10:00 pm to 8:00 am Sundays & Public Holidays.

2. Set to the daytime background noise level in accordance with community expectations (as per the Noise Policy for Industry); actual measured level in brackets.

3. Set to the minimum night-time RBL in accordance with the Noise Policy for Industry; actual measured level in brackets



Figure 5-3 Noise catchment areas

5.2.6.2 Potential impacts

During construction, the proposal will generate noise from:

- site establishment
- excavation
- bored piling
- bypass operation
- pipe laying and concrete works
- backfilling.

Work will occur during standard daytime hours and will be required outside of standard daytime hours as outlined in section 3.6.

Construction noise impact modelling was conducted for four worst case scenarios.

- Scenario A: Site establishment and enabling works
- Scenario B: Bored piling works
- Scenario C: Excavation, pipe installation and concrete works
- Scenario D: Tanker bypass.

Noise compliance criteria were developed in accordance with the Interim Construction Noise and Vibration Guideline. The noise management levels are summarised in Table 5-8 and Table 5-9.

Table 5-8 Construction noise management level – Residential recievers

	Construction NML LAeq,15min, dB(A)			
Noise Catchment area	Standard hours (RBL + 10)	Outside standard hours (RBL + 5)		Highly affected noise level
	Day	Evening	Night	
NCA 1	49	43	38	
NCA 2	44	39	35	75
NCA 3	47	42	36	

Table 5-9 Construction noise management level – Non-residential recievers

Other receivers	Noise management levels, LAeq,15min (applies when properties are in use)
Education (classrooms at schools and other educational institutions and childcare centres)	External noise level 55 dB(A)[1]
Places of worship	External noise level 55 dB(A)[1]
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dB(A)[1]
Community centres	External noise level 55 dB(A)[2]
Commercial premises (including offices, retail outlets)	External noise level 70 dB(A)[2]
Industrial premises	External noise level 75 dB(A)[2]

Construction noise levels at the identified residential and non-residential receivers have been assessed against the NMLs for each scenario in Table 5-10 and Table 5-11. The construction noise levels are predicted to exceed residential NML during standard daytime and night time for all NCAs. Typically, the noise levels will be clearly audible for receivers in during standard construction hours. NCA 3 has the highest number of exceedances, likely due to the proximity of residential receivers to the construction works areas. It is noted the exceedances predicted are representative of when equipment is closest to each receiver, and noise levels will likely be lower than predicted for a significant duration of the proposal.

Table 5-10 NML exceedances for standard construction hours

Scenario	Number of residential buildings where construction noise levels exceed the NMLs – standard construction hours			
	≤ 10 dB (Clearly audible)	11-20 dB (Moderately intrusive)	>20 dB (Highly intrusive)	> 75 dB(A) (Highly Affected)
NCA 1				
A	14	-	-	-
B	15	-	-	-
C	7	-	-	-
D	-	-	-	-
NCA 2				
A	-	-	-	-
B	-	-	-	-
C	-	-	-	-
D	80	21	4	-
NCA 3				
A	71	22	10	4
B	45	18	4	2
C	42	18	4	2
D	9	-	-	-

Table 5-11 Table NML exceedances for night-time construction hours

Scenario	Number of residential buildings where construction noise levels exceed the NMLs – night-time construction hours				
	1-5 dB (Noticeable	6-15 dB (Clearly audible)	16-25 dB (Moderately intrusive)	>25 dB (Highly intrusive)	> 75 dB(A) (Highly Affected)
NCA 1					
A	-	-	-	-	-
B	83	68	-	-	-
C	74	53	-	-	-
D	62	-	-	-	-
NCA 2					
A	-	-	-	-	-
B	-	-	-	-	-
C	-	-	-	-	-
D	236	185	36	9	-
NCA 3					
A	-	-	-	-	-
B	37	106	21	16	2
C	29	110	24	13	2
D	55	84	3	-	-

Scenario A Site establishment and enabling works

The highest predicted construction noise level for scenario A activities range between 97dB(A) and 110 dB(A). Noisy works such as articulated dumping are predicted to exceed the NML for 14 residential buildings in NCA 1, and 107 residential buildings in NCA 3 with 4 of them highly affected. Site establishment is expected to take approximately two weeks, with an additional two days required for potholing and service identification. No night works are anticipated under this scenario.

Scenario B Bored piling works

The highest predicted construction noise level for a sensitive receiver for scenario B activities range between 97 dB(A) and 111 dB(A). Noisy works such as the augur machine are predicted to exceed the NML for 15 residential buildings in NCA 1 and 65 in NCA 2 with two (2) highly affected during standard construction hours. Excavation for the piling pad is expected to take approximately seven weeks, with the bored piling works taking an additional two weeks over a six-week period.

Scenario C Excavation, pipeline installation and concrete works

The highest predicted construction noise level for a sensitive receiver from Scenario C activities range from 97dB(A) to 110 dB(A). Noisy works such as the use of the rigid tipper trucks is predicted to exceed the NML for 7 residential building in NCA 1 and 66 residential buildings in NCA 3 with two (2) highly affected during standard construction hours. The night works are expected to exceed NML for 127 residential buildings for NCA 1 and 178 residential buildings for NCA 3 with two (2) highly affected. Only 2 nights of out of hours works is expected for the pipe connections. Excavation, pipeline installation and concrete works are expected to take about 6 months.

Scenario D Tanker bypass and discharging

The highest predicted construction noise level for a sensitive receiver from Scenario D activities range from 103dB(A) to 107 dB(A). Noisy works such as the use of vacuum pump is predicted to exceed the NML for 108 residential buildings in NCA 2 and 9 in NCA 3. Night works are expected to exceed NML for 62 residential buildings in NCA 1, 789 in NCA 2 and 188 residential building in NCA 3. No residential buildings would be highly affected. The tanker bypass and discharge activities are expected to be undertaken over three separate night shifts. The setup and demobilisation activities required for each night shift will be undertaken during the day, and take approximately one week.

During operation, there will be no changes to background noise. Noise generated during operation will not exceed the noise criteria in the Noise Policy for Industry (EPA 2017).

Construction traffic

For works associated with the proposal, there is expected to be about 15 heavy vehicle and 30 light vehicle movements per day. Heavy vehicles will be more frequent throughout the bypassing/discharging works and during spoil import/export activities. Heavy vehicles will access the proposal area via Great Western Highway, Old Bathurst Road, Mackellar Street, Grevillia Circuit, and Park Street. There will be minimal light vehicle access via Punt Road. There are no residential receivers located on the portions of Old Bathurst Road, Mackellar Street and Punt Road used as haulage routes.

Park Road and Grevillia Circuit are local roads with residential receivers. Traffic noise levels are likely to increase at receivers by 2 dB(A) or more from the additional construction traffic, however noise levels would likely still be under the criteria of 55 dB(A) for daytime and 50 dB(A) for night-time for the worst-case one-hour period, due to the low traffic volumes and posted speeds (50 km/h or less) on these roads.

Great Western Highway is considered a major road with high volumes of traffic, as such, additional construction traffic volumes are considered to have little to no impact (less than 2 dB(A) increase) on existing traffic noise levels at residential receivers along Great Western Highway.

Vibration

Vibration intensive works may include the use of vibratory rollers. The minimum working distance is based on recommendation from Transport for NSW Construction Noise and Vibration Guideline – Public Transport Infrastructure and shown in Table 5-12.

Table 5-12 Minimum working distance of vobration intensive equipment to be using during construction

Plant	Rating and description	Residential/ commercial (cosmetic damage)	Heritage and other sensitive structures (cosmetic damage)	Human response
Vibratory Roller	< 50 kN (typically 1-2t)	5 m	14 m	15 m
	< 100 kN (typically 2-4t)	6 m	16 m	20 m
	< 200 kN (typically 4-6t)	12 m	33 m	40 m
	< 300 kN (typically 7-13t)	15 m	41 m	100 m
	> 300 kN (typically 13-18t)	20 m	54 m	100 m
	> 300 kN (> 18t)	25 m	68 m	100 m

Three of the heritage items – Emu Hall, Punt Road and Orange Grove – are outside the area of vibration impact for vibratory rollers. The Victoria Bridge and Emu Plains (Nepean River) Underbridge are located above the proposal area, however vibratory rollers are not proposed for use in the vicinity of the rail corridor. Any works conducted underneath the rail bridge would be completed by hand where possible.

Construction works will be undertaken near the curtilage of the heritage listed Emu Park, however the item of significance (Emu Plains War Memorial) is located over 200 m from the proposal area and vibration works are unlikely to impact the heritage structure.

Operational impacts are not anticipated.

5.2.6.3 Mitigation measures

With the implementation of the mitigation measures below, impacts to noise and vibration can be adequately managed.

Table 5-13 Environmental mitigation measures – noise and vibration

Mitigation measures
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. The proposal will also be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056 • 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).

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

Mitigation measures

All site inductions shall brief workers, contractors, and visitors on the neighbouring sensitive receivers (if applicable) and general noise safeguards and compliance obligations relating to the site.
No swearing or unnecessary shouting or loud stereos/radios on site.
No dropping of materials from height, throwing of metal items and slamming of doors.
All staff and contractors should take reasonable steps to ensure that noise from reactive work is minimised.
Comply with the *Noise Management Code of Behaviour* for works outside of standard daytime hours.
Noise with special audible characteristics and vibration generating activities (including jack and rock hammering) may only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any of the work.
No more than four consecutive nights of noise with special audible characteristics and/or vibration generating work may be undertaken in the same NCA over any seven-day period, unless otherwise approved by the relevant authority. A minimum respite period of three nights shall be implemented between periods of consecutive night works.
The noise levels of plant and equipment will have operating sound power or sound pressure levels consistent with or lower than the level in Table 15 of the noise and vibration assessment.
Traffic flow, parking and loading/unloading areas will be planned to minimise reversing movements within the site.
Truck drivers will be advised of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices (i.e. minimising the use of engine brakes, and no extended periods of engine idling).
Loading and unloading of materials/deliveries will occur as far as possible from sensitive receivers.
Delivery vehicles will be fitted with straps rather than chains for unloading, wherever possible.
Use temporary noise barriers or curtains (where practicable) to shield residential receivers from noise. These barriers are typically hung from temporary site fencing. This measure may be appropriate close to low rise highly affected receivers.
Complaints are to be reported and managed in accordance with the Sydney Water *Noise Management Procedure (SWEMS0056)*
If vibration intensive equipment is to be used within the minimum working distances for cosmetic damage, as presented in Table 5-12, then a vibration monitoring system should be installed.
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.

5.2.7 Air and energy

5.2.7.1 Existing environment

The proposal is in an area zoned for public recreation and special infrastructure. The current surrounding land uses include general industrial, low-density residential areas, commercial areas, major roads and pump

stations. Potential sensitive receivers include existing residential receivers, users of the great Western Highway and users of the Ingenia caravan park.

A search of the National Pollution Inventory (NPI) identified 3 sites within 1 km of the proposal which are listed in Table 5-14.

Table 5-14 NPI Sites

NPI Site	Facility ID	Approximate distance from the proposal
Fort Dodge Australia Pty Ltd Penrith	484300	965 m east
Bega Dairy & Drink Penrith	489838	910 m east
Boral Emu Plains Quarry	489226	850 m west

5.2.7.2 Potential impacts

The proposal will potentially result in air quality impacts from:

- dust generated during construction e.g. excavation and stockpiling
- dust generated by construction vehicles travelling on disturbed/ unsealed access routes
- emissions from machinery, equipment and vehicles used during construction
- odours released during tanker bypass and pipe cut over.

These air quality impacts could potentially affect surrounding sensitive receivers. Impacts will largely be dependent on wind direction and strength, and distance of sensitive receivers from the source. Bored piling works and related activities will be stationary, and construction of the pipeline limited to one location. This has potential to result in dust impacts at some receivers over a longer period. An accumulation of dust has the potential to settle on vegetation, waterways and nearby structures. With the implementation of the mitigation measures, a material or noticeable effect on air quality from dust emissions will not be likely to occur.

Construction activities will be temporary and would not significantly increase Sydney Water's greenhouse gas (GHG) emissions. GHG emissions would be estimated during detailed design and work methodologies and materials would be refined to reduce the proposal's GHG emissions.

Construction excavation activities are not expected to generate odour. There is potential risk for odour during the bypass activities when hoses are connected and disconnected, and when the new pipe is connected to the existing wastewater rising main. Due to the small-scale and generally short-term nature of the works, any minor impacts on air quality from the proposal will be localised and short-term and will not persist after works are complete.

Operational impacts are not anticipated.

5.2.7.3 Mitigation measures

With the implementation of the mitigation measures below, impacts to air quality can be adequately managed, and residual impacts are expected to be minor.

Table 5-15 Environmental mitigation measures – air and energy

Mitigation measures
Use alternatives to fossil fuels where practical and cost-effective.
Track energy use as per SWEMS0015.28 Contractor NGER template.
Minimise the potential for odours (e.g. minimise the number of open access chambers, close maintenance holes overnight.)
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.
Ensure odour control measures are available and ready to use during the works.
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). • Cover exposed areas with tarpaulins or geotextile fabric. • Modify or cease work in windy conditions. • Modify site layout (place stockpiles away from sensitive receivers). • Vegetate exposed areas using appropriate seeding.
Cover all transported waste.

5.2.8 Waste and hazardous materials

5.2.8.1 Existing environment and potential environmental impacts

Our corporate objectives include to be a resource recovery business with an increasing portfolio of circular economy products and services. This includes reducing waste through recycling and re-use and encouraging our suppliers to minimise waste. Waste streams will be classified in accordance with the Waste Classification Guidelines (NSW EPA, 2014) prior to construction.

The proposal has the potential to generate the following waste streams:

- general construction waste such as excess concrete, redundant pieces of pipe
- broken bricks, timber, paper, plastics and metals
- green waste from clearing vegetation including weeds
- domestic waste including food scraps, aluminium cans, glass bottles, plastic and paper containers, and putrescible waste generated by site construction personnel

- wastewater and grey water from temporary amenities
- spoil that is not suitable for backfilling, from trenching and other excavations
- groundwater dewatered from excavations.

The proposal is estimated to excavate 300 tonnes (t) of spoil to be removed from the proposal site. An additional 100 t of material is expected to be exhumed during the piling works. At most 100 t will be stockpiled on site. Wherever possible, suitable excavated spoil would be re-used on site for backfilling, landscaping and other uses. Should any material be found to be unsuitable, it would be disposed of as detailed in the mitigation measures below. If spoil is unable to be re-used on-site, opportunities for off-site re-use would be investigated.

General workforce waste including food packaging will be generated in minor quantities and will be classified as putrescible or non-putrescible general solid waste. Opportunities to reduce, recycle and reuse on this project would be sought with the Contractor and documented in the Waste Management Plan or CEMP.

A search of EPA contaminated land register did not identify any contaminated sites within Emu Plains.

Operation of the proposal may generate minor volumes of waste during maintenance activities. Any water discharged would be in accordance with Sydney Water's Discharge Protocols Standard Operating Procedure. Any operational wastes generated during maintenance would be managed and disposed of in accordance with Sydney Water's standard operating procedures and disposed of at an appropriately licensed waste disposal or recycling facility.

Operational impacts are not anticipated.

5.2.8.2 Mitigation measures

With the implementation of the mitigation measures below, impacts to waste and hazardous materials can be adequately managed, and residual impacts are expected to be minor.

Table 5-16 Environmental mitigation measures – waste and hazardous materials

Mitigation measures
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 the Contamination and Hazardous Materials team propertyenvironmental@sydneywater.com.au).

5.2.9 Traffic and access

5.2.9.1 Existing environment and potential impacts

The road network around the proposal site is dominated by the Great Western Highway (A44). The Great Western Highway runs in an east-west direction. The most recent traffic volumes from traffic counters closest to the proposal (immediately south) showed about 26,400 vehicles (TfNSW, 2024) travelling east and westbound per day. The railway corridor (T1 Western Line) is within the proposal site and runs parallel with the Great Western Highway as it crosses over the Nepean River. Access under the railway corridor would be required to reconnect the aqueduct.

Wasterwater rising main

The proposal would use the existing road network and access to the proposal site would be via Mackellar Street, through Grevillia Circuit and an unsealed access track which are both within Ingenia caravan park. Access to remove the pipework from the temporary bypass would be achieved from the south through Punt Road via the Great Western Highway.

New access tracks are not proposed.

The proposal will require about 15 heavy vehicle and 30 light vehicle movements per day during construction. Although these vehicles will use the existing road network, they are not expected to contribute to any significant increases in traffic volumes or cause any delays. Sydney Water will construct the pipes to ensure that the existing and future rail network would not be affected.

Tanker bypass

Access to the two tanker bypass pickup locations would be via Mackellar Street and Park Street. The routes to the discharge location from the tanker bypass pick up location is shown on Figure 2-1. Access to SP0883 is via Andrew Road and access to SP0855 would be through a sealed access track within Penrith Water Recycling Plant via Castlereagh Road.

Partial road closure is required for the full duration of the tanker bypass, simultaneously at SP0894, SP0885, and if required at MH 8508908. (Refer to Figure 2-1). Traffic controllers will manage the vehicles movement along Park Street and Mackellar Street. Tanker bypass activities will only involve 3 separate nights of out of hours work.

Number of tankers required for each tanker pick up location is shown in Table 5-17 and Table 5-18.

Table 5-17: Estimated tankers required for SP094

SP0894	12AM – 8AM	8AM – 4PM	4PM – 12AM
Per Hour	4	7 - 10	6 -9
Per 8 hour shift	32	70	66

Table 5-18 Estimated tankers required for SP094

SP0886	12AM – 8AM	8AM – 4PM	4PM – 12AM
Per Hour	2	4-5	4-5
Per 8 hour shift	16	38	38

In the event that the tanker bypass operations are required over a 24-hour period (worst case scenario) the total number of tankers required for pickup from:

- SP0894 and discharge at SP0885 is 168/day
- SP0886 and discharge at SP0883 is 92/day

Access to the proposal site would be through Ingenia caravan park and under the railway corridor. Access to private, public and Sydney Water owned lands will be maintained wherever possible but may be temporarily reduced. Road closures and work vehicles may reduce local street parking availability. However, work vehicles will be parked to avoid significantly impacting surrounding land uses wherever possible. As such traffic impacts are expected to be minor. There would be no impact to public or active transport.

During operation, there will be additional vehicle movements for any routine maintenance and for emergency access.

5.2.9.2 Mitigation measures

With the implementation of the mitigation measures below, impacts to traffic and access can be adequately managed, and residual impacts are expected to be minor.

Table 5-19 Environmental mitigation measures – traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) or similar in consultation with the relevant traffic authority. Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The Delivery Contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100m of traffic signals when construction commences.
Develop management measure to minimise traffic impacts near residential properties, schools and businesses by consulting with them (e.g. no major materials deliveries at school drop off or pick up times etc).

Mitigation measures
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

5.2.10 Social and visual

5.2.10.1 Existing environment and potential impacts

The land use surrounding the proposal site includes residential, commercial, recreational, industrial, road and rail. Social impacts related to noise, vibration, air quality, traffic and access are considered above.

Temporary visual impacts associated with the tanker bypass, compound and construction area are expected. This temporary visual impact will be mitigated in consultation with stakeholders such as residents, the Ingenia Caravan Park in accordance with the mitigation measures below.

The proposal would involve the permanent removal of the informal community garden that was managed by residents of the Ingenia caravan park. The garden has been fenced off since the temporary works were completed by Sydney Water and is no longer in use. Consultation with Ingenia Park has been undertaken and it has been agreed the community garden would not be reinstated.

The proposal will not require new permanent above ground structures and will not alter the visual character of the environment over the long term. Operational impacts are not anticipated.

5.2.10.2 Mitigation measures

With the implementation of the mitigation measures below, impacts to social and visual can be adequately managed, and residual impacts are expected to be minor.

Table 5-20 Environmental mitigation measures – social and visual

Mitigation measures
Undertake works in accordance with Sydney Water Communications policies and requirements including: • Notify impacted residents and businesses. • Erect signs to inform the public on nature of work. Treat community enquiries appropriately.
Restore work sites to pre-existing condition or better.
Minimise visual impacts (e.g. retain existing vegetation where possible).
Direct artificial light away from sensitive receivers where possible (ie residents, fauna or roadways).

Mitigation measures
Maintain work areas in a clean and tidy condition.

5.2.11 Cumulative and future trends

5.2.11.1 Potential environmental impacts

The main potential cumulative impacts of the proposal include air quality, noise and traffic impacts during construction. These potential cumulative impacts would be localised and temporary during construction of the proposal.

There is the potential for local development to be occurring in the area. A search of the Major Projects Planning Portal on 24 February 2026 did not identify any state significant development within 1 km of the proposal site. The Contractor would work with Sydney Water, council and local developments to minimise cumulative impacts as required.

Future trends such as climate change were considered. Factors such as bushfires, flooding, extreme heat, and increasing frequency and intensity storm events that could impact the proposal, were considered. The proposal is unlikely to further exacerbate future trends and would maintain a reliable wastewater system for customers by improving wastewater assets and addressing ongoing issues (leaks) within the system.

The proposal is unlikely to be impacted by future trends. Once operational, the proposal would be predominantly below ground. The purpose of the proposal is to ensure the pipeline would be unlikely to be affected by increasing frequency and intensity of storm events and flooding.

5.2.11.2 Mitigation measures

With the implementation of the mitigation measures below, impacts from cumulative and future trends can be adequately managed, and residual impacts are expected to be low.

Table 5-21 Environmental mitigation measures – cumulative and future trends

Mitigation measures
Consult with key stakeholders that are constructing infrastructure in the area with a view to coordinate works where practicable.

5.2.12 General environmental management

Table 5-22 Environmental mitigation measures – general environmental management

Mitigation measures
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:

Mitigation measures

- go/no go areas (e.g. heritage/AHIP zones professionally surveyed. Mark the boundary with highly visible non-ground-disturbing and 'environmental protection zone' signs) and boundaries of the work area/disturbance corridor (or use EIA terminology) 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.

The CEMP will identify appropriate delineation with (e.g. metal fencing for AHIMS, white flagging for construction corridor, red flagging for no go zones etc). Delineate approved disturbance boundary (or use EIA terminology) before construction.

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 or methodology change from the EIA, no further environmental assessment is required provided the change:

- remains within the assessment/study area for the REF has no net additional environmental impact or
- is outside the assessment/study area for the REF 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 an Incident Management Plan (IMP) outlining actions and responsibilities for:

- predicted/onset of heavy rain during works
- spills
- 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.

Mitigation measures

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.

6 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of the Emu Plains SP0894 Rising main repair proposal. The proposal is required to ensure an ongoing and reliable wastewater system, while addressing maintenance difficulties and preventing potential failures.

The main potential construction environmental impacts of the proposal include impacts to Aboriginal heritage, and impacts from noise and vibration. Operational impacts are not anticipated. 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, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

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

Appendices

Appendix A – Section 171 checklist

Section 171 Checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise, traffic, access and odour. However, there will be environmental improvements by providing a reliable wastewater 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 will not result in environmental impacts to ecosystems of the locality. The proposal will lead to environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not reduce these factors.
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	[redacted] is identified within the site. An AHIP would be obtained for the works. The works involve connection with an existing aqueduct on Emu Plains underbridge identified to be of section 170 and state heritage significance. No works will be required to the heritage item, as such impacts will be unlikely.
Any impact on the habitat of any protected animals (within the meaning of the Biodiversity Conservation Act 2016)	The proposal will have a negligible impact on the habitat of protected animals.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not endanger any species.
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 wastewater service for the area.
Any degradation of the quality of the environment	The proposal will maintain the quality of the environment.
Any risk to the safety of the environment	The proposal will ensure the safety of the environment by providing infrastructure with the durability and resilience needed for long-term operation.
Any reduction in the range of beneficial uses of the environment	The proposal will maintain 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 affect demand on resources.
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 these factors.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	There are no applicable strategic planning statements or plans, as the proposal involves the repair of an existing asset.
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 – Section 171A checklist

Section 171A of the EP&A Regulation imposes additional requirements on a determining authority to take into account certain matters under Part 6.2 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP) for a proposal in a 'regulated catchment'. The regulated catchments are defined under the BCSEPP, and include the:

- Sydney Drinking Water Catchment
- Sydney Harbour Catchment
- Georges River Catchment
- Hawkesbury-Nepean Catchment.

As the proposal is within the Hawkesbury-Nepean catchment, the requirements of Section 171A(1) are applicable or the proposal, and are considered below.

Section 171A Checklist	REF finding
BCSEPP – Section 6.6(1) - Water quality and quantity In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway	Mitigation measures will be implemented during construction and operation to ensure that the proposal has a neutral impact on water quality in the Nepean River.
(b) whether the development will have an adverse impact on water flow in a natural waterbody	The proposal will not modify or adversely affect water flows within Nepean River during construction or operation.
(c) whether the development will increase the amount of stormwater run-off from a site	The proposal will not increase the area of impervious surfaces and therefore will not increase the volume of stormwater run-off from the site.
(d) whether the development will incorporate on site stormwater retention, infiltration or reuse	The wastewater main operates as a closed system and will not increase the area of impervious surfaces. Provision for on-site stormwater retention, infiltration or reuse is not required.
(e) the impact of the development on the level and quality of the water table	Given the proposal site is near the Nepean River and bore piling may require excavation up to 15 m deep, the works may encounter groundwater. A WSWA would be obtained. Impacts to the level and quality of the groundwater are expected to be minor.
(f) the cumulative environmental impact of the development on the regulated catchment	The proposal is required to permanently repair the wastewater main and to prevent future failure.

Section 171A Checklist	REF finding
	Potential impacts from the proposal are expected to be limited and localised. With the implementation of the environmental mitigation measures in Section 5, the potential for cumulative impacts between the proposal and other projects within the catchment is low.
(g) whether the development makes adequate provision to protect the quality and quantity of ground water.	As detailed in item 6.6(1)(e) above, impacts to the level and quality of the groundwater are expected to be minor.
BCSEPP – Section 6.6(2) - Water quality and quantity Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures:	
(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial	Appropriate mitigation measures are included in Table 5-1 and Table 5-2 to ensure that the proposal will have a neutral or beneficial effect on the water quality of Nepean River.
(b) the impact on water flow in a natural waterbody will be minimised	The proposal will not modify or adversely affect water flows within Nepean River during construction or operation.
BCSEPP – Section 6.7(1) - Aquatic Ecology In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development	The proposal will involve removal of one tree (planted Macadamia nut) and about 0.22 ha of exotic vegetation from the community garden or managed turf. The Macadamia nut is listed as Vulnerable under the EPBC Act, but in the study area it was identified to be a horticultural planting. No TEC were identified during field surveys. Direct, indirect or cumulative adverse impacts to terrestrial, aquatic or migratory animals or vegetation of the locality will be minimal.
(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require: i. a controlled activity approval under the Water Management Act 2000, or (Development in regulated catchments) REF finding	Clearing of riparian vegetation is not required. Sydney Water is exempt from the need to obtain a controlled activity approval under the Water Management Act 2000. A permit under the FM Act is not required for the proposal.

Section 171A Checklist	REF finding
ii. a permit under the Fisheries Management Act 1994	
(c) whether the development will minimise or avoid: i. the erosion of land abutting a natural waterbody, or ii. the sedimentation of a natural waterbody	Mitigation measures to minimise the potential for erosion and sedimentation impacts are included in Table 5-1 and Table 5-2.
(d) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area	There are no wetlands in proximity to the proposal.
(e) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised	Mitigation measures to minimise the potential for erosion and sedimentation impacts are included in Table 5-1 and Table 5-2.
(f) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised	There are no wetlands in proximity to the proposal.

BCSEPP – Section 6.7(2) - Aquatic Ecology

Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:

(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development	Appropriate mitigation measures are included in Table 5-3 to ensure that the cumulative impact on terrestrial, aquatic or migratory animals or vegetation are limited to the minimum extent necessary.
(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves	There are no aquatic reserves within or in proximity to the proposal site.
(c) if a controlled activity approval under the Water Management Act 2000 or a permit under the Fisheries Management Act 1994 is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained	Sydney Water is exempt from the need to obtain a controlled activity approval under the Water Management Act 2000. A permit under the FM Act is not required for the proposal.
(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised	The proposal site is adjacent to the Nepean River. . Mitigation measures to minimise the potential for erosion and sedimentation impacts are included in Table 5-1 and Table 5-2.

Section 171A Checklist	REF finding
(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised	There are no wetlands in proximity to the proposal.
BCSEPP – Section 6.8(1) – Flooding	
(a) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems	The proposal site is within a flood prone area. Flooding has the potential to impact construction and increase movement of spoil offsite. Potential impact from flooding can be managed by the mitigation measures for erosion and sedimentation impacts included in Table 5-1 and Table 5-2. The wastewater main would be below ground, as such the risk of adverse impacts from future flood events that benefits riverine ecosystems during operation of the proposal is negligible.
BCSEPP – Section 6.8(2) – Flooding Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not	
(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	The proposal site is within a flood prone area. Flooding has the potential to impact construction and increase movement of spoil offsite. Potential impact from flooding can be managed by the mitigation measures for erosion and sedimentation impacts included in Table 5-1 and Table 5-2.
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems	The proposal will not alter the existing contours of the land within the floodplain and will therefore not affect the overland flow paths of floodwaters.
BCSEPP – Section 6.9(1) - Recreation and public access In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider:	
(a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	The proposal site is adjacent to the Nepean River. The works are temporary and limited to the proposal site. Impact to public access to and from natural waterbodies for recreational activities is not anticipated. Mitigation measures will be implemented to ensure that there are no adverse impact to natural waterbodies, water courses, wetlands or riparian vegetation.

Section 171A Checklist	REF finding
(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe	The proposal does not include the establishment of any new access point and will not impact the public access between natural waterbodies and the proposal site.
(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded	Not applicable

Appendix C – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10 Council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		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
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?		X
Section 2.12 Flood liable land - consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		X
Section 2.13 Flood liable land - consultation with State Emergency services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div.16 (Research/ monitoring stations), (i) Div.20 (Stormwater systems)?		X
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?		X

TISEPP section	Yes	No
Section 2.15 Consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act? If so, consult with DPE (NPWS).		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? *If so, consult with DPE (NPWS).*		X
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*		X
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? If so, consult with *Subsidence Advisory NSW.*		X
Will the proposal be on land in a Western City operational area specified in the *Western Parkland City Authority Act 2018*, Schedule 2 and have a capital investment value of $30 million or more? If so, consult the Western Parkland City Authority.		X
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? *If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).*		X

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