Review of Environmental Factors

Menangle Park Drinking Water Main (May, 2025)

sydneywater.com.au
05/2025

Sydney WATER

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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.

Sydney Water recognises the physical and cultural connection of local Aboriginal communities to waters and the land.

Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Menangle Park Drinking Water Main 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 sections 171 and 171A (Appendix A) and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:
[redacted]		

Decision Statement

The main potential construction environmental impacts of the proposal include impacts associated with Aboriginal heritage, built heritage, noise, biodiversity, visual and social amenity. During operation no environmental impacts are anticipated. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

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

Determined by:		Date: 30/05/2025

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 the Menangle Park Drinking Water Main project (the proposal) and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

The proposal includes the construction and operation of a new drinking water main approximately 1.9 km in length between Menangle and Menangle Park to support growth in these suburbs. The proposal is approximately 1.9km in length and is located within the road reserve of Menangle Road for the majority of the alignment. The northern limit of the proposal is adjacent to the intersection of Menangle Road and Racecourse Road in Menangle Park. The proposal alignment then extends south within the road reserve of Menangle Road before terminating near the intersection of Menangle Road and Rotolactor Parade in Menangle. A detailed description of the proposal is provided in Section 2.

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

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

Aspect	Relevance to proposal
Proposal need	The proposal is part of the Sydney Water Menangle Park Water and Wastewater Infrastructure Program. This program is required to meet Sydney Water's need to service 3,000 additional dwellings in the Menangle and Menangle Park areas by 2046.
Proposal objectives	The objective of the proposal is to provide drinking water services to a variety of properties within Menangle and Menangle Park.
Consideration of alternatives/options	Drinking water servicing options for Menangle and Menangle Park were shortlisted during the design stage of the proposal. Five options for servicing the broader area were initially shortlisted, which were then reduced to the following three options after additional evaluation: • Option DW-1: Supply from Campbelltown South Water Supply Zone (WSZ) • Option DW-3: Supply from Narellan WSZ

Aspect	Relevance to proposal
	• Option DW-5: Supply from Campbelltown South and Narellan WSZs. Option DW-3 was selected as the preferred option due to cost, risk, operational flexibility and flexibility to avoid or minimise environmental constraints.

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)

Principle	Proposal alignment
Precautionary principle - *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. The proposed new infrastructure will contribute to providing a water service for existing and future dwellings in the Greater Macarthur Priority Growth Area.
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 water service.
Conservation of biological diversity and ecological integrity - *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. Selective branch trimming of up to 9 trees within the road reserve may be required. Tree removal may be required.
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*	Multiple options were considered based on cost, risk, operational flexibility and flexibility to avoid environmental constraints. The proposal has been designed to provide cost efficient use of resources and provide optimum outcomes for the community and environment.

2 Proposal description

2.1 Proposal details

A description of the proposal is detailed in Table 2-1 below. Similarly, Figure 2-1 provides an overview of the location and scope of the proposal.

Table 2-1 Description of proposal

Aspect	Detailed description
Proposal description	The proposal includes a 1.9 km drinking water main and associated construction compounds.
Location and land ownership	The proposal extends between the suburbs of Menangle and Menangle Park. The northern limit of the proposal is near the intersection of Menangle Road and Racecourse Road in Menangle Park, with the southern limit near the intersection of Menangle Road and Rotolactor Parade in Menangle. The proposal is located within the road reserve of Menangle Road for the majority of the alignment. Menangle Road is owned by TfNSW and managed by Wollondilly Shire Council and Campbelltown City Council. The underbored section of the alignment crossing beneath the Nepean River traverses several land parcels owned by Campbelltown City Council, the NSW Department of Primary Industries and a private landholder.
Site establishment and access tracks	Site establishment includes delineating the construction site, storage and laydown areas, erosion and sediment controls and traffic management. The proposal is in a predominantly rural residential area, with access via public roads. No lead in access tracks are required. Construction traffic would access work sites and compounds via the local road network. As the proposal is located mostly within the road reserve and other cleared areas, vegetation impacts are expected to be limited to trimming or removal of up to 9 trees within the road reserve.
Ancillary facilities (compounds)	Construction compounds will likely be required to house site sheds, construction amenities and materials laydown. The exact location of these will be chosen by the Contractor and endorsed by Sydney Water's Project Manager as described in the mitigation measures in Section 5.
Methodology	The construction phase of the proposal will include: • site establishment including fencing and compound set up • trenching and installing drinking water main along Menangle Road

Aspect	Detailed description
	• horizontal directional drilling (HDD) beneath Menangle Road and below the Nepean River as shown on Figure 2-1 between approximately 17 m and 45 m below ground level • installation/ commissioning of mechanical components • site disestablishment, restoration and landscaping.
Commissioning	Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing plant operations. The exact commissioning steps depend on the type of the equipment, but typically include: • hydrostatic tests for water retaining structures and components, such as valves • testing and commissioning for all modes of operation.
Restoration	The work site will be restored to the pre-existing condition following construction, in consultation with landowners. Restoration activities include: • backfilling of trench as installation progresses (in addition to at the end of each work day as required) • dismantling compounds, removing and disposing of waste material • removing erosion and sediment controls, fencing and traffic management measures.
Materials/ equipment	Plant: • excavators ranging up to 23 tonne • tip trucks • concrete agitator trucks • street sweepers • compactor • cranes • vacuum trucks • HDD rig Materials: • stabilised sand • asphalt • select fill (granular backfill material) Equipment: • confined spaces safety equipment (e.g. gantry/davit) • concrete saws • pumps (various sizes) • pipe welding equipment • air compressors • generators • jackhammers • temporary fencing • hand tools • skip bins

Aspect	Detailed description
	• formwork timber • concrete • pipework and appurtenance • portable lighting • site facilities and amenities
Work hours	Where possible, work and deliveries will be scheduled to occur during standard daytime hours of: • 7 am to 6 pm, Monday to Friday • 8 am to 1 pm, Saturdays. The proposal is expected to require construction work outside these hours for a cumulative 14 weeks of night-time activities due to road occupancy restrictions while working within Menangle Road. However, it is noted that the total cumulative duration of night-time activities may vary in response to factors potentially affecting the construction program (eg. weather conditions, access requirements). An assessment of impacts associated with noise and vibration from construction activities is provided in Section 5.2.5.
Proposal timing	Construction is expected to start in mid 2025 and take about 12 months.
Operational requirements	All infrastructure will be inspected, maintained and repaired as necessary in accordance with Sydney Water's standard operating procedures. Additional maintenance activities will be subject to supplementary environmental impact assessments if required by Sydney Water's procedures.

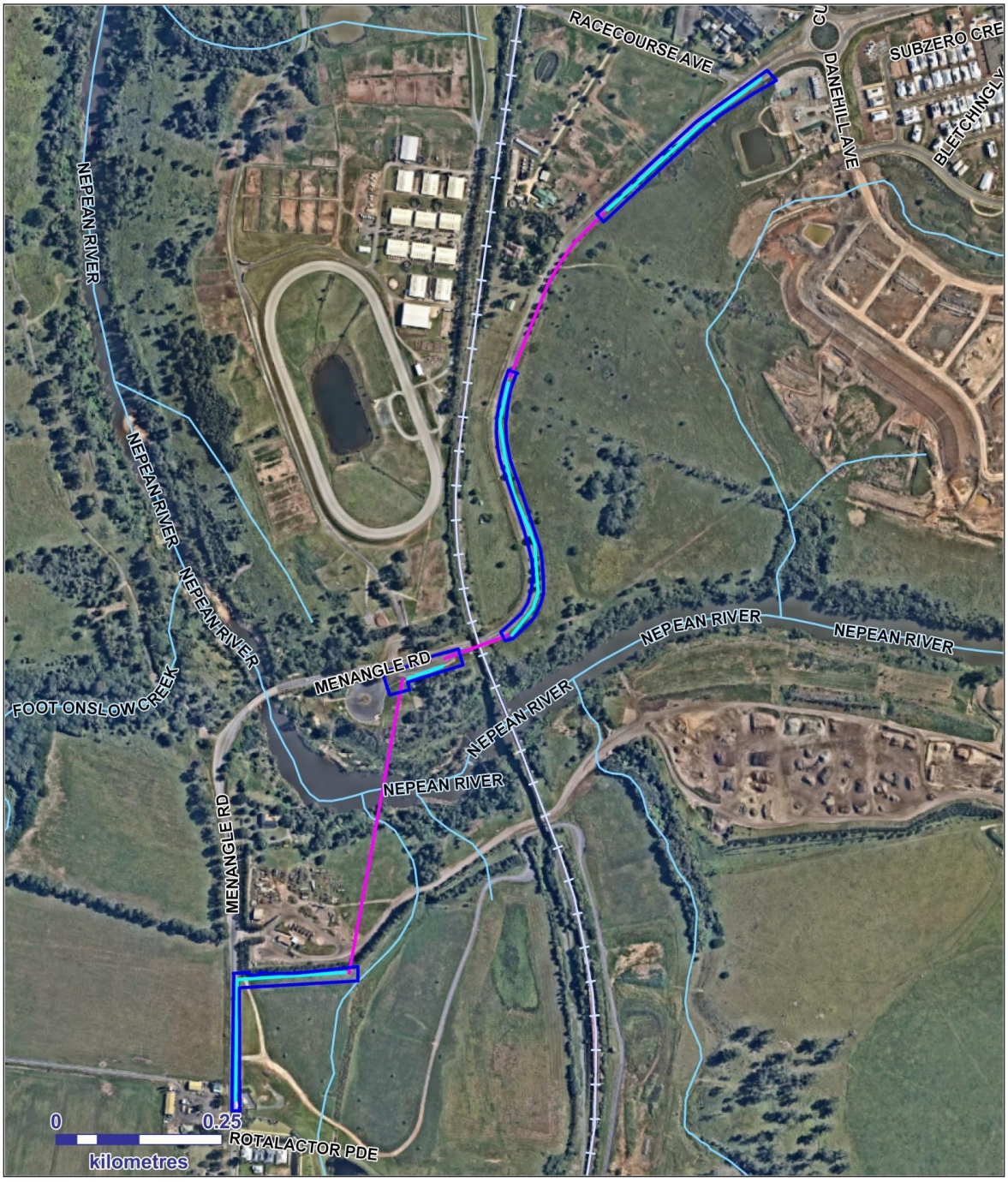


Figure 2-1 Proposal overview and location

2.2 Field assessment area and 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 may be prepared in accordance with SWEMS0019.

3 Consultation

3.1 Community and stakeholder consultation

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

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

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

The nature, scale and extent of the proposal's potential impact has been evaluated in this REF. Construction will have noise and amenity impacts to surrounding residential receivers. Sydney Water will continue to consult with Council, local residents and other affected groups throughout the project. This includes targeted engagement to minimise impacts.

We will also provide local councils with reasonable notice when we would like to commence works. Local councils will be consulted about matters identified in environmental planning instruments (refer to Section 3.2 below). This includes public safety issues, temporary works on council land, and full or partial road closures of council managed roads.

3.2 Consultation required under State Environmental Planning Policies and other legislation

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

Construction activities for the proposal within the Menangle Road road reserve trigger the consultation requirements under Section 2.10(1)(e) and Section 2.10(1)(f) of the TISEPP. Sydney Water has been undertaking ongoing liaison and consultation with Campbelltown City Council and Wollondilly Shire Council on throughout the development of the proposal. This consultation will continue for the delivery phase of the proposal. Further detail is provided in Appendix B.

Consultation was required with Subsidence Advisory NSW under section 3.12 of the TISEPP as the proposal involves works in areas mapped as a mine subsidence area. Subsidence Advisory NSW was notified of the proposal on 27 March 2024. A response was received from Subsidence Advisory NSW on 19 April 2024 advised the following:

- *CH 1350.00 to CH 2198.00 (*[located toward the southern] *end of works) is within an existing exploration authority and future coal mining is possible beyond 25 years into the future. Infrastructure within this chainage should be designed for potential subsidence parameters – 2mm/m strain (tensile or compressive), 4mm/m tilt and 10 km radius of curvature (hogging and sagging).*

Sydney Water engaged Mine Subsidence Engineering Consultants Pty Ltd (MSEC) during the design phase and the proposal has been designed to comply with relevant standards and Subsidence Advisory NSW recommendations. Further detail is provided in Appendix C.

The Nepean River is classified by the Department of Primary Industries and Regional Development (DPIRD Fisheries) as 'Key Fish Habitat'. As the underboring of the Key Fish Habitat constitutes 'dredging' under the *Fisheries Management Act 1994* (FM Act), DPIRD Fisheries was notified of the proposal in accordance with the requirements of section 199 of the FM Act. The response from DPIRD Fisheries advised there were no objections to the proposal, provided the nominated mitigation measures included in their response are implemented. These have been adopted as part of the environmental mitigation measures in Table 5-2. Further detail is provided in Appendix D.

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
Campbelltown Local Environmental Plan 2015	Sections of the proposal to the north of the Nepean River are within the Campbelltown Local Government Area (LGA) and are located on land zoned Infrastructure (SP2), Public Recreation (RE1), and Environmental Conservation (C2).
Wollondilly Local Environmental Plan 2011	Sections of the proposal to the south of the Nepean River are within the Wollondilly LGA and are located on land zoned Infrastructure (SP2) and Primary Production (RU1).
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.159(1) of the TISEPP permits development by or on behalf of a public authority for water supply without consent on any land. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** The proposal is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) states: '*This Policy does not affect the provisions of any other SEPP….*', and as the works are permissible under the TISEPP, a council permit to clear vegetation under this SEPP is not required. The proposal is anticipated to require branch trimming or tree removal of up to 9 trees within the Menangle Road road reserve. **Koala habitat protection 2021 (Chapter 4)** Chapter 4 of the BCSEPP is applicable to land within Campbelltown and Wollondilly LGAs. Under Chapter 4 of the BCSEPP, a Council's determination of a development

Environmental Planning Instrument	Relevance to proposal
	application must be consistent with an approved koala plan of management. Where no koala plan of management is in place, a Council must assess whether the development is likely to have any impact on koalas or koala habitat. However, as the proposal is permissible without development consent under the TISEPP, a development application is not required. Accordingly, the requirements of Chapter 4 of the BCSEPP are not applicable. Notwithstanding, a small section of the proposal within Nepean River Reserve is mapped as 'potential koala habitat' under the Campbelltown Comprehensive Koala Plan of Management (Campbelltown City Council, 2018). However, this section will be underbored and will not impact the potential koala habitat. The proposal is anticipated to require branch trimming or tree removal of up to 9 trees within the Menangle Road road reserve within the Campbelltown LGA. However, all of these trees are outside areas of potential or core koala habitat. There is no koala plan of management in place within the Wollondilly LGA. Construction for the proposal will not require trimming or removal of native vegetation. Therefore, no impacts to koala habitat will occur. Impacts to native vegetation will be offset in accordance with the Sydney Water Biodiversity Offset Guideline (SWEMS0019.13 **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury-Nepean Catchment, a regulated catchment area. Section 5 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. In addition, the requirements of Section 171A of the Environmental Planning and Assessment Regulation 2021 are applicable to proposals within a regulated catchment. These requirements are addressed in Appendix A.

Environmental Planning Instrument	Relevance to proposal
	Strategic conservation planning (Chapter 13) Chapter 13 of the BCSEPP specifies the requirements for proposals undertaken within areas that have been subject to strategic conservation planning under the *Biodiversity Conservation Act 2016* (BC Act). The section of the proposal to the north of the Nepean River is located within the Greater Macarthur Growth Area, one of the four 'nominated areas' under the Cumberland Plain Conservation Plan (CPCP). All areas of the proposal within the Greater Macarthur Growth Area are mapped as 'Excluded Land" under the CPCP. The section of the proposal to the south of the Nepean River is outside of the four nominated areas. However, a small portion of the alignment (approximately 180 m) is located within land mapped as Strategic Conservation Area (SCA) under the CPCP. As there is no biodiversity certification applying to this section of the proposal, consideration of biodiversity impacts is subject to a conventional assessment pathway under the EP&A Act, BC Act and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The design of the proposal has been developed with consideration of existing ecological constraints to minimise impacts to biodiversity and ecological values consistent with the CPCP Guidelines for Infrastructure Development (DPE, 2023) (CPCP Guidelines). Refer to Section 5.2.3 for further detail.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
National Parks and Wildlife Act 1974 (NPW Act)	[redacted] Further information is provided in Section 5.2.4	AHIP	Pre-construction, Campbelltown City Council / Sydney Water
Heritage Act 1977 (Heritage Act)	There will be no impacts to state or commonwealth listed non-Aboriginal heritage items, however works are located within the heritage curtilages of multiple locally listed items and one State listed item.	s60 approval	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	A portion of the proposal is located within the curtilage of the "Menangle rail bridge over Nepean River", which is listed on the State Heritage Register (SHR) (Listing No. 01047). An application under s60 of the Heritage Act for the proposal within the SHR curtilage was approved by Heritage NSW on 28 November 2024. Further discussion regarding non-Aboriginal heritage impacts is provided in Section 5.2.4.		
Fisheries Management Act 1994 (FM Act)	Section 199 of the FM Act states that a public authority must give the Minister written notice of work that involves dredging or reclamation work. Potential impacts of the project on water and drainage are assessed in Section 5.2.2. Construction of the proposal involves underboring beneath a waterway classified as 'Key Fish Habitat'. Written notice to the Minister is necessary and was provided to DPIRD Fisheries on 28 March 2024. Further details are provided in Section 3.2	Notification	Pre-construction, Sydney Water
Roads Act 1993	A Road Occupancy Licence is required as works are proposed within a classified road, Menangle Road (a State and regionally classified road).	Road Occupancy Licence	Pre-construction, Contractor

5 Environmental assessment

Section 5 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 the commencement of construction.

5.1 Existing environment

The proposal is located within the suburbs of Menangle and Menangle Park in the Campbelltown and Wollondilly LGAs, respectively. The surrounding area mostly includes agricultural properties and low density residential properties. The proposal is located within the road reserve, on rural land (currently vacant of buildings and vegetation) and a public recreation area.

The study area, as the focus of this REF, comprises the impact areas for the proposed drinking water main.

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment and potential impacts

The proposal:

- is underlain by alluvial soils of the Theresa Park soil landscape. Limitations of the soils include localised flooding, seasonal waterlogging and very high soil erosion hazard for concentrated flows
- is not in an area impacted by soil contamination as indicated on the EPA list of notified contaminated sites
- is not in an area impacted by acid sulfate soils (ASS) as indicated on the ASS Risk Maps (OEH, 1998)
- is not in an area impacted by soil salinity as indicated on Department of Land and Water Conservation's Salinity Hazard mapping
- is within the South Campbelltown Mine Subsidence District and Wilton Mine Subsidence District. Sydney Water has notified Subsidence Advisory NSW in accordance with Part 3.12 of the TISEPP.

Construction activities will include ground disturbance, excavation, and stockpiling of soil which could result in potential offsite erosion and sedimentation of surrounding land and waterways.

The proposal will not permanently change the surface topography and drainage patterns of the area. Areas impacted by the proposal will be reinstated to their original condition and drainage pattern following construction.

The recommendation received from Subsidence Advisory NSW in their response to the TISEPP consultation has been adopted as part of the mitigation measures below in Table 5-1.

No impacts are anticipated during operation as the proposed drinking water main will be underground with no permanent changes to topography and drainage.

Mitigation measures

With the implementation of the mitigation measures below, impacts to topography, geology and soils 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: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
Backfill excavations in the same order excavated and minimise the potential for settlement and sediment run-off.
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.
Comply with the following Subsidence Advisory NSW recommendation: • CH 1350.00 to CH 2198.00 (end of works) is within an existing exploration authority and future coal mining is possible beyond 25 years into the future. Infrastructure within this chainage should be designed for potential subsidence parameters – 2mm/m strain (tensile or compressive), 4mm/m tilt and 10 km radius of curvature (hogging and sagging).
Contractor to ensure imported material is certified as being compliant with the applicable National Environment Protection Measure requirements for the respective landuses.
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.

5.2.2 Water and drainage

Existing environment and potential impacts

The proposal requires HDD beneath the Nepean River which is a key fish habitat. Trenching is also proposed 100 m north and 250 m south of the Nepean River. Inadequate site management can lead to potential sedimentation impacts on this waterway system.

Wollondilly Shire Council and Campbelltown Council flood mapping identifies that the proposal is within the 1% Average Exceedance Probability (AEP) flood zone within and adjacent to the Nepean River. Flood events therefore have the potential to increase movement of soil from disturbed areas offsite during construction of the proposal.

Open trenching and HDD to depths of up to 3 m and 45 m respectively are required to construction and install the new drinking water main. Groundwater is 10-15 m below ground level based on WaterNSW groundwater bore level data. Therefore, it is not anticipated that groundwater will be encountered during open trench activities. There are also no high priority groundwater dependent ecosystems (GDEs) located within 1 km of the proposal. The works can be classified as 'minimal impact activity', as per the Aquifer Interference Policy.

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.
On completion of the works, any disturbed soil in the riparian zone (the area on each side of the river between the water's edge to a point 40 m landward from the top of the riverbank) is to be levelled, smoothed and sown with a mixture of sterile/native grass seeds to encourage rapid revegetation and planted out with native endemic riparian vegetation.
If use of drilling fluids is required, the Contractor must develop a Drilling Fluid Management Plan as part of the Construction Environmental Management Plan (CEMP).
DPIRD Fisheries (1800 043 536) and the Environment Protection Authority (131 555) are to be notified immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPIRD Fisheries and/or the Environmental Protection Authority for the works to proceed.
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 flood prone areas.

Mitigation measures
Conduct refueling, fuel decanting and vehicle maintenance in compounds where possible. If field refueling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
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.
If the potential for interception of groundwater is identified after the REF is determined, Sydney Water will obtain a groundwater Water Supply Work Approval. Where dewatering is >3ML per water year (from 1 July), Sydney Water will also obtain a Water Access Licence from the NSW Natural Resources Access Regulator. The Contractor is responsible for: • providing expert hydrogeological technical information to obtain the approvals • preparing a Dewatering Management Plan • complying with the conditions of the approvals (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).
Discharge all water in accordance with Sydney Water's Water Quality Management During Operational Activities Policy (D0001667) including erosion controls, discharge rate, dechlorination, monitoring. Re-use potable / groundwater water where possible.
Prepare an environmental work method statement to avoid impacts from drilling, including: • contain and monitor drilling fluids at entry/exit points • identify and manage frac-outs. • Re-use and/or disposal of drilling fluids.

5.2.3 Flora and fauna

Existing environment and potential impacts

The proposal is located within a predominantly rural residential area currently undergoing residential development and construction activities adjacent to the proposal area. Although much of the land along the proposal alignment has been previously cleared, there are several threatened species and ecological communities that are mapped as occurring nearby (see Figure 5-1). Threatened Ecological Communities (TECs) within 1 km of the proposal area include:

- Cumberland Plain Woodland in the Sydney Basin Bioregion (30 m north and 10 m west of the proposal)
- Cumberland Moist Shale Woodland in the Sydney Basin Bioregion (800 m east and 990 m west of the proposal)

- Elderslie Banksia Scrub Forest (directly beneath an underbore and 30 m west of the proposal)
- Shale Sandstone Transition Forest in the Sydney Basin Bioregion (50 m south of the proposal).

Threatened flora within 1 km of the proposal area includes:

- Brown Pomaderris (300 m west of the proposal).

Threatened fauna recorded on the BioNet Atlas mapping within 1 km of the proposal area includes:

- Greater Broad-nosed Bat (430 m west of the proposal)
- Great Broad-nosed Bat (150 m north of the proposal)
- Diamond Firetail (100 m east of the proposal)
- Sharp-tailed Sandpiper (800 m east of the proposal)
- Dusky Woodswallow (800 m east of the proposal)
- Cumberland Plain Land Snail (300 m southeast of the proposal)
- Eastern Coastal Free-tailed Bat (800 m southeast of the proposal)
- Grey-headed Flying-fox (800 m southeast of the proposal)
- Powerful Owl (800 m east and 800 m northwest of the proposal)
- White-bellied Sea-Eagle (450 m west of the proposal).

The proposal is located within the road reserve and other areas that have been previously cleared. The underboring of Nepean River will pass beneath vegetated areas including the Elderslie Banksia Scrub Forest TEC at a depth of at least 10 m below ground level.

Platypus have been spotted in the Nepean River approximately 250 m from the proposal. As the proposal will underbore the Nepean River, no direct or indirect impacts to platypus or their habitat are anticipated.

Construction works for the proposal are mostly within the roadside verge and roadway of Menangle Road. During construction, up to 9 trees within the Menangle Road road reserve may require trimming or removal. The location of these trees is shown in Figure 5-2.

The potential for constructing the proposal within the existing paved traffic lanes was investigated during the design phase to avoid vegetation impacts, however this would require a full road closure of Menangle Road. As Menangle Road is a state and regionally classified road, it is unlikely a full road closure would be permitted for the works. Construction of the proposal within the roadway would also limit access for maintenance. Therefore, it was not feasible to eliminate the potential for vegetation impacts.

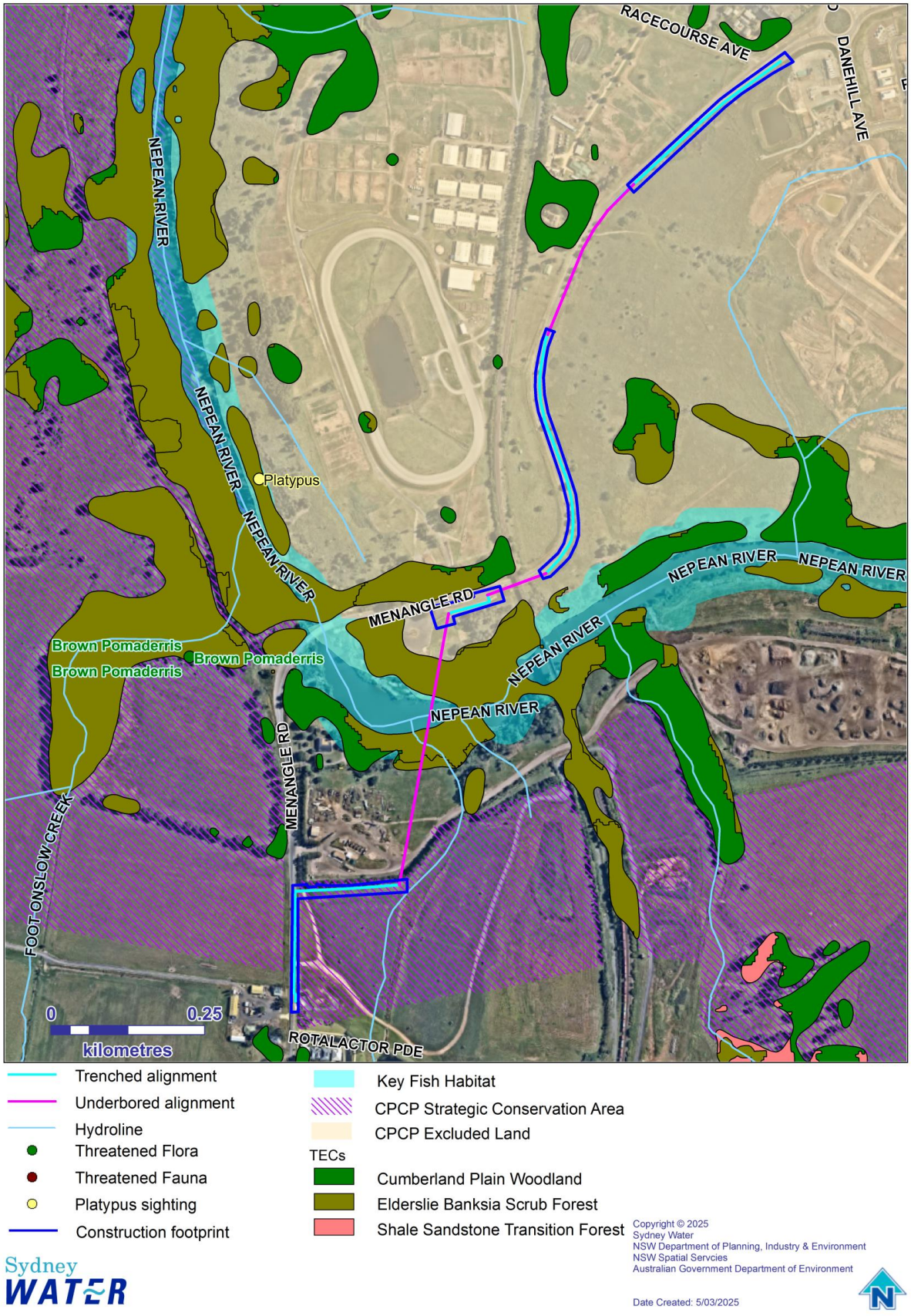


Figure 5-1 Key ecological constraints

Figure 5-2 Trees requiring trimming or removal

Cumberland Plan Conservation Plan

The proposal is located within the boundaries of the Cumberland Plan Conservation Plan (NSW DPE, 2022) (CPCP). The section of the proposal north of the Nepean River is located within the Greater Macarthur Growth Area, one of the four 'nominated areas' under the CPCP. As shown in Figure 5-1, all areas of the proposal within the Greater Macarthur Growth Area are mapped as 'Excluded Land', where the CPCP planning controls do not apply.

The section of the proposal area south of the Nepean River is outside of the four nominated areas. However, a small portion of the alignment (a ~180 m section of trenched alignment between Menangle Road and southern limit of the underbored alignment) is located within the CPCP Strategic Conservation Area (SCA). Biodiversity certification under the BC Act and strategic assessment approval under Part 10 of the EPBC Act do not apply to the SCA. However, the CPCP Guidelines require the assessment of activities within the SCA to address the objectives and biodiversity matters in sections 3.2.1 and 3.2.2 of the guidelines.

These objectives and matters predominantly focus upon avoiding or minimising impacts to threatened biodiversity and their habitats, connectivity, fauna movement, surface/groundwater, water quality/flow within riparian corridors, and cumulative impacts within the SCA. The section of the alignment within the SCA is within an existing cleared farm paddock which is devoid of remnant native vegetation and is not within or adjacent to a riparian area. Accordingly, there will be no impact to biodiversity values within SCA.

Impact Summary

The proposal will not be carried out in a declared area of outstanding biodiversity value. Similarly, the vegetation to be impacted does not include any listed threatened species or ecological communities protected under the BC Act or EPBC Act. The proposal does not trigger the need for offsets under the BC Act Biodiversity Offset Scheme.

Overall, biodiversity impacts associated with the construction of the proposal are expected to be minor. No biodiversity impacts are anticipated during operation.

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

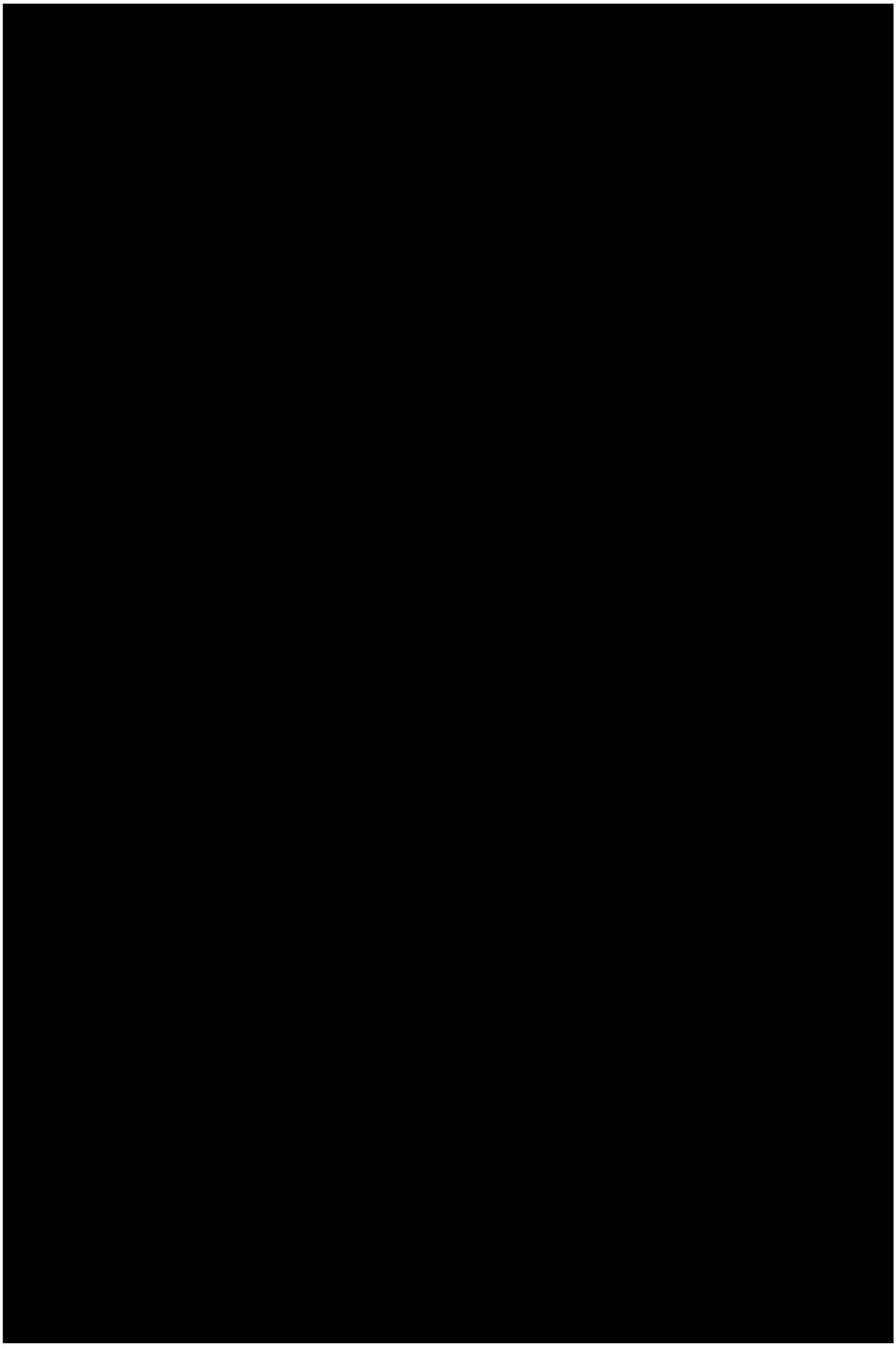
Mitigation measures
- removal of planted native vegetation where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value. • Any removal of remnant vegetation where there is no net change to environmental impact (eg 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).
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 >50 mm are impacted within the Tree Protection Zone.
If native fauna is encountered on site, stop work and allow the fauna to move away unharassed. Engage WIRES or a licenced ecologist if assistance is required to move fauna.
If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Project Manager. Work will only recommence once the impact on the species has been assessed and appropriate control measures implemented.
If any damage occurs to vegetation outside of the project corridor (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed

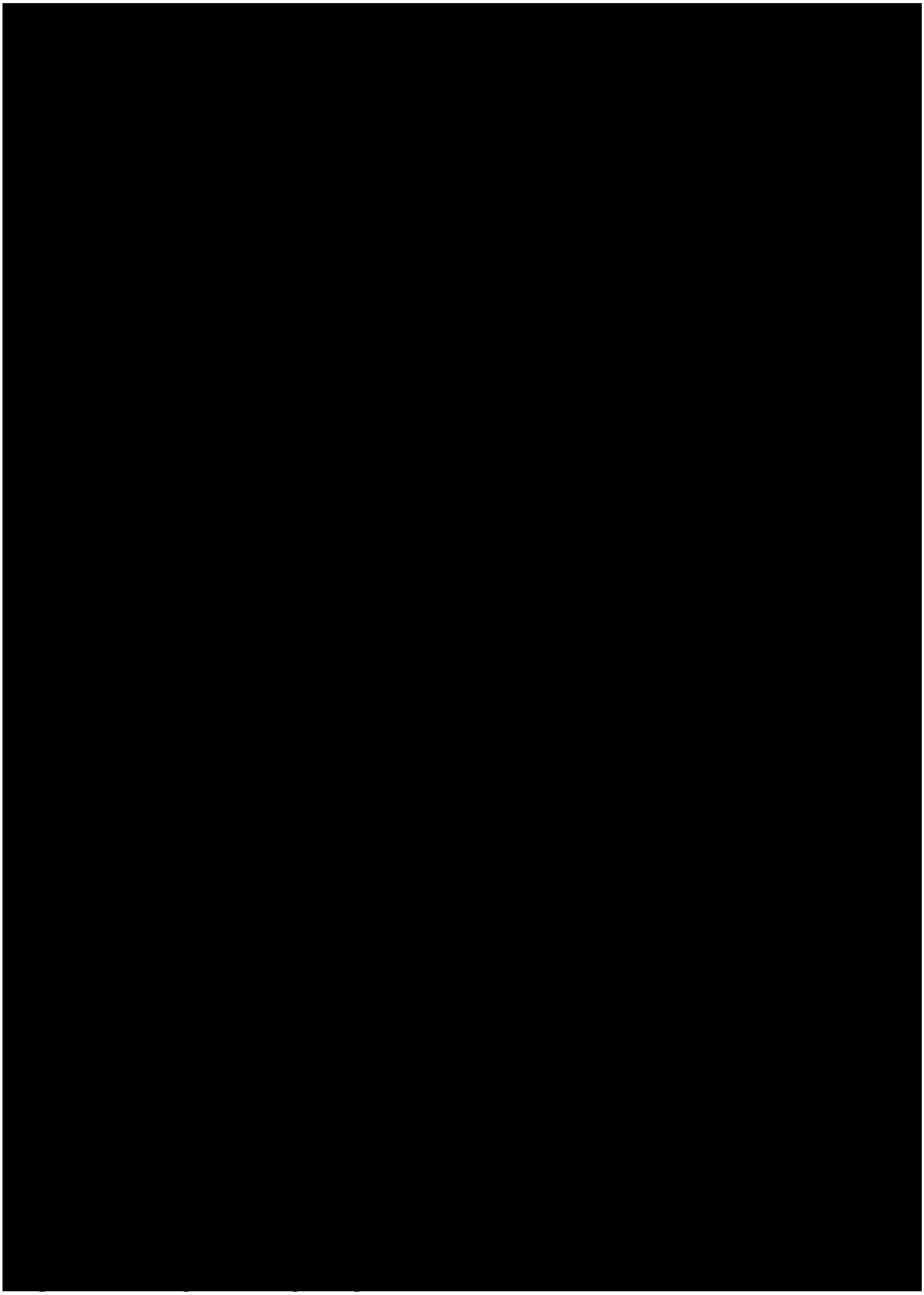
5.2.4 Heritage

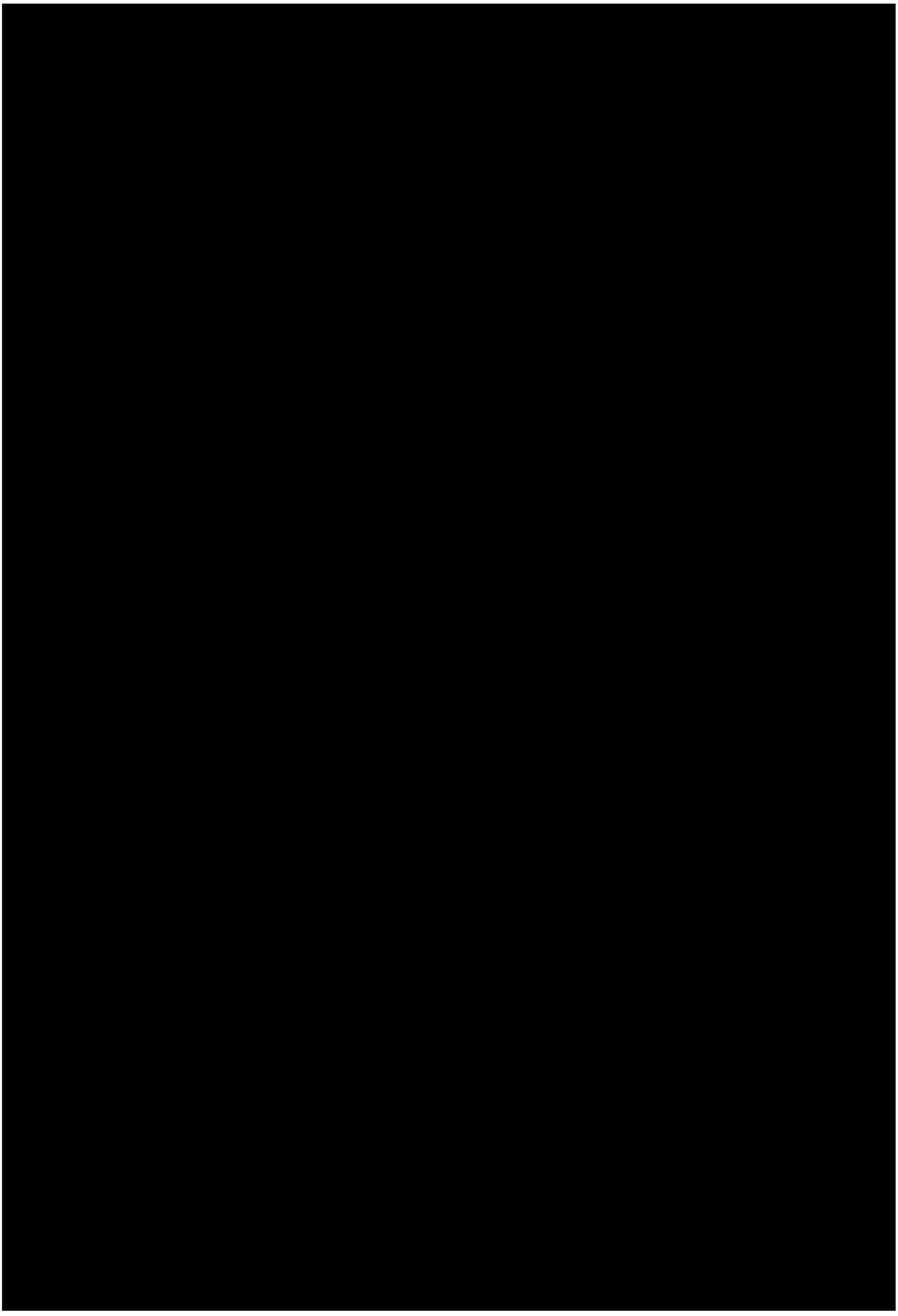
Existing environment and potential impacts

Aboriginal heritage

[redacted]







Non-Aboriginal heritage

The proposal within the curtilage of the 'Menangle rail bridge over Nepean River', which is listed on the Campbelltown LEP and State Heritage Register (SHR - ID 01047). The proposal is also located within the curtilage of Menangle Landscape Conservation Area, which is listed on the Campbelltown LEP (see

Figure **5-3**). The Aboriginal and Historical Heritage Due Diligence Assessment for the proposal prepared for the proposal (Appendix E) concluded:

- The proposed works within the Menangle rail bridge over Nepean River curtilage include open trenching passing below the material fabric of the bridge, requiring ground disturbance.
- Further assessment is required to determine if the proposed works would constitute an impact to the heritage item, in the form of a Statement of Heritage Impact (SOHI).
- The proposal is not considered likely to impact on the heritage values associated with the Menangle Landscape Conservation Area.

AECOM were subsequently engaged to undertake a Heritage Impact Assessment (HIA), including a Statement of Heritage Impact (SoHI) to assess potential impacts to state heritage listed Menangle rail bridge over Nepean River (Appendix G). The SoHI identified the following with regard to the Menangle Landscape Conservation Area and Menangle rail bridge over Nepean River:

> *The proposed works will not impact either of the listed heritage items that they pass through the curtilage of. As the pipeline will be trenched within the previously disturbed road corridor, there is little potential for significant archaeological deposits to be disturbed. However, a s60 permit will be required for these works.*

The HIA concluded:

- The pipeline route will pass through the curtilage of two heritage items, being the State heritage listed Menangle Rail Bridge under the Nepean River and the LEP heritage listed Menangle Landscape Conservation Area.
- As the pipeline will be trenched within the road corridor, there is little potential for any significant archaeological deposits to be disturbed.
- No sites or areas of archaeological potential at risk of being impacted by the proposed works were identified during the site inspection.

The proposal will have a temporary impact to the ground surface during trenching within the curtilage of Menangle Rail Bridge under the Nepean River. However, these impacts will not impact the heritage significance of the item and the ground surface will be returned to its former condition post construction.

Although there will be no impacts to state or commonwealth listed non-Aboriginal heritage items, the works are located within the curtilage of one state listed item. An application under section 60 of the Heritage Act was submitted to Heritage NSW on 9 October 2024, seeking approval to

undertake works within the curtilage of the Menangle Rail Bridge. Approval was subsequently received on 28 November 2024. A copy of the approval is provided in Appendix H.

Mitigation measures

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

Table 5-4 Environmental mitigation measures — heritage

Mitigation measures
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Ensure AHIP boundaries are professionally surveyed & physically delineated for the duration of Sydney Water's project to ensure Sydney Water's activities are restricted to within the approved AHIP boundary. Do not remove the delineation until Sydney Water formally completes all activities within AHIP areas. The reason for the physical delineation and the need for it to stay in the surveyed position (i.e. ensuring compliance) must be explained in an AHIP toolbox talk before activities commence.
All Sydney Water on-site crew, including contractors, must be made aware of: [redacted] The requirements of these conditions must be complied with throughout the duration of the Project. New staff must be inducted to ensure they are aware of and implement the appropriate heritage protection measures.
[redacted]
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009. Include the stop work procedure in the Construction Environmental Management Plan.
In the unexpected event that Aboriginal heritage objects, including possible human skeletal material (remains), are identified, all works in the area must cease immediately and the relevant provision of Sydney Water Corporation's Environmental Management System (SWEMS009) should be followed. The stop work procedure should be included within the project's CEMP.
Works to be undertaken in accordance with the requirements listed in the Section 60 approval (Appendix H):

Mitigation measures

In the event that an unexpected find of potential historical heritage is encountered the following procedure should apply:

1. Stop all work in the immediate area of the find
2. Notify the site supervisor and Project Manager
3. Establish a 'no-go zone' to protect the find and the immediate area. The use of temporary fencing, flagging or other barrier against accidental access or impact should be considered.
4. Contact the Sydney Water heritage advisor for identification and further advice.

[redacted]

5.2.5 Noise and vibration

Existing environment and potential impacts

The proposal is located in a rural residential setting and is adjacent to areas currently subject to residential development. The proposal generally follows the alignment of Menangle Road and is located at varying distances from sensitive receivers along the route. The closest receivers to the proposal include the Menangle Country Club and three mixed use agricultural properties (each 30 m away). All other sensitive receivers are at least 100m away. Approximately 80% of the 1.9 km proposal length is located more than 200 m from sensitive receivers.

Construction is expected to start in mid 2025 and take approximately 12 months. Some work along Menangle Road may be carried out outside of standard hours if required by a Road Occupancy Licence(s) (ROL(s)) to minimise traffic impacts and potential safety risks. If required, it is likely that night works will occur for a cumulative 14 weeks total during the construction phase with individual nearby sensitive receivers being impacted for between 8 and 50 nights. However, the total cumulative duration of night-time activities may vary in response to factors potentially affecting the construction program (eg. weather conditions, access requirements).

The potential noise impacts of the proposal on nearby sensitive receivers was considered using Table 2 of the Draft Construction Noise Guideline (EPA 2020). Although night works will be short term with trenching works moving progressively along the alignment, the review indicated that the likelihood of noise impact presented a medium risk and therefore a quantitative noise impact assessment was undertaken.

The quantitative noise assessment was completed based on the worst case (noisiest) activity to be carried out during construction. This activity comprises night-time jackhammering of Menangle Road as part of trenching works with a direct line of sight to nearby sensitive receivers. However, this activity will only occur for short durations when night works are being undertaken. Accordingly, the resultant noise impacts will be over a lower magnitude for the majority of the broader construction phase.

The results of the noise assessment are summarised in Table 5-5, and shown in Figure 5-6 and the Noise Assessment Memo (Appendix F).

Table 5-5 Affected distance for residential receivers during Activity 1

Activities	$L_{Aeq(15minute)}$ noise level above background (L_{A90})		
	20 to 30 dB(A)	> 30 dB(A)	$L_{Aeq(15minute)}$ 75dB or greater
	Moderately intrusive	Highly intrusive	Highly affected
Activity 1 – Jackhammering at night with line of sight	120 m	45 m	20 m

Activity 1 is anticipated to be moderately intrusive for sensitive receivers within 120 m (up to 10 sensitive receivers), highly intrusive for sensitive receivers within 45 m (up to 2 sensitive receivers) and sensitive receivers within 20 m would be highly affected. There are no sensitive receivers within 20 m of the Activity 1 (see Figure 5-6). Noise levels from the assessed activity will vary and be intermittent during the construction program. The noise assessment represents a worst case construction scenario which will occur over short periods (a few days or nights) within the context of the construction program. All reasonable and feasible measures will be implemented to reduce noise impacts during construction.

During operation, there will be no changes to the existing noise environment as a result of the proposal.

As no rock breaking or high vibration inducing earthworks are required, vibration generated during the works will be negligible.

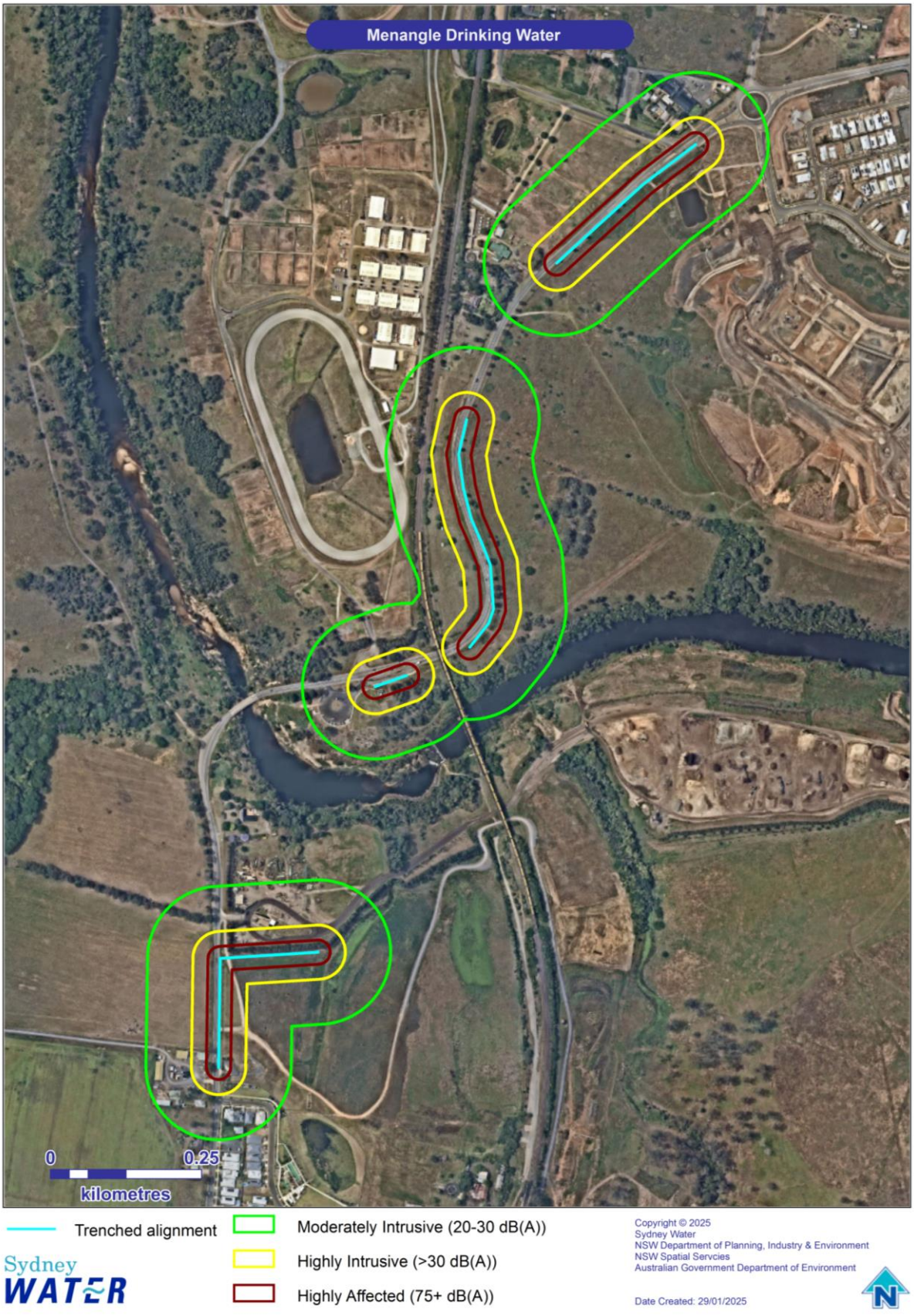


Figure 5-6 Residential receivers within affected distance of Activity 1

Mitigation measures

With the implementation of the mitigation measures below, impacts associated with noise and vibration can be adequately managed, and residual impacts are expected to be minor.

Table 5-6 Environmental mitigation measures — noise and vibration

Mitigation measures
Works must comply with the Draft Construction Noise Guideline (EPA 2020), including schedule 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 Sundays 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). Reasonable and feasible noise mitigation measures should be implemented to mitigate noise impacts.
Additional consultation with residential receivers will be undertaken prior to construction and a Community Engagement Advisor will be assigned to the project.

Incorporate **standard daytime hours noise management mitigation measures** into the CEMP:
• identify and consult with the potentially affected residents prior to the commencement:
  ○ describe the nature of works; the expected noise impacts; approved hours of work; duration, complaints handling and contact details.
  ○ determine need for, and appropriate timing of respite periods (eg times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences)
• implement a complaints handling procedure for dealing with noise complaints
• plant or machinery will not be permitted to warm-up near residential dwellings before the nominated working hours.
• appropriate plant will be selected for each task, to minimise the noise impact (eg all stationary and mobile plant will be fitted with residential type silencers)
• engine brakes will not be used when entering or leaving the work site(s) or within work areas.
• regularly inspect and maintain equipment in good working order
• arrange work sites where possible to minimise noise (eg generators away from sensitive receivers, minimise use of vehicle reversing alarms)
• schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

If works beyond standard daytime hours are needed (in addition to those already described in this REF), the Contractor would: • justify the need for out of standard daytime work

Mitigation measures

- consider potential noise impacts and: implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and other reasonable and feasible management measures
- notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work.
- identify community notification requirements
- seek approval from the Sydney Water Project Manager in consultation with Sydney Water's Environment and communications representatives.

Excavators for rock breaking must be 18 tonnes or less to avoid triggering additional mitigation measures for human comfort listed in the Construction Noise and Vibration Guideline (TfNSW 2023). If use of larger excavators is required for rock breaking, measures including verification, notification and respite periods are required as listed in Appendix C of the Draft Construction Noise Guideline (EPA 2020). These mitigation measures are to be followed to mitigate the potential impacts at sensitive receivers.

Notification must be undertaken in accordance with Table 4 of Appendix F. Notification may consist of using a variable message sign, letterbox drop (or equivalent), web site / social media or a combination to distribute information detailing work activities, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of five working days prior to the start of works.

Specific notifications, letterbox drops (or equivalent) to receivers within 360 m of proposed excavation at night no later than five working days ahead of the proposed excavation at night. These works must be undertaken in accordance with Table 4 of Appendix F. The specific notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops.

Phone calls detailing relevant information will be made to identified/affected stakeholders, who have provided their contact details, within seven calendar days of construction start. Phone calls must be undertaken in accordance with Table 4 of Appendix F. Where the resident cannot be telephoned then an alternative form of engagement should be used.

Respite offers should be considered where there are high noise and vibration generating activities near receivers in accordance with Table 4 of Appendix F. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers.

Respite periods should be considered in accordance with Table 4 of Appendix F. Night time construction noise shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.

Duration respite should be considered in accordance with Table 4 of Appendix F. Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer

Mitigation measures
duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through duration respite so that the project can be completed more quickly. The Contractor should engage with receivers within 360 m of proposed excavation at night prior to these works to determine if duration respite is required.

5.2.6 Air and energy

Existing environment and potential impacts

The proposal is in a rural-residential area currently subject to ongoing residential development. Potential sensitive receivers include low density residential and commercial premises. The proposal is located 30 m from Menangle Country Club and three mixed use agricultural properties. All other sensitive receivers are at least 100m away from the proposal.

The proposal will potentially result in minor amounts of dust, and emissions from:

- dust generated during excavation activities
- dust generated by construction vehicles travelling on disturbed/ unsealed access routes
- emissions from construction machinery, equipment and vehicles.

Potential air quality impacts from the proposal are expected to be limited and localised, particularly with the implementation of the environmental mitigation measures proposed below. Accordingly, the potential for cumulative air quality impacts to occur with other projects is low.

Construction of the proposal will generate greenhouse gas emissions from the combustion of fuels from the following sources:

- generators used on site
- vehicles transporting materials to and from site.

During operation, there will not be changes to background odour at nearby receivers.

Operation of the proposal would require energy to run the pumps.

Mitigation measures

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

Table 5-7 Environmental mitigation measures — air and energy

Mitigation measures
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.
Implement measures to prevent offsite dust impacts, for example: • modify or cease work in windy conditions • modify site layout (place stockpiles away from sensitive receivers) • vegetate exposed areas using appropriate seeding.
Switch off vehicles/machinery when not in use.

5.2.7 Waste and hazardous materials

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 that will be generated by the proposal includes general construction waste, excavated material, concrete, formwork and steel. Excavation volumes are expected to be about 3,900 m^3 of material. The Contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the Waste Management Plan or CEMP.

The underbore of Nepean River extends beneath Benedict Sands Menangle, a sand, soil and gravel supplier. Geotechnical investigations undertaken by Sydney Water in early 2024 did not identify contamination as part of the investigations. Soil sampling for asbestos was completed during geotechnical investigations and the laboratory testing did not identify any asbestos.

Waste is not expected to need to be tracked using the EPA's Waste Locate online tracking System.

During operation, no impacts relating to waste or hazardous materials are anticipated.

Mitigation measures

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

Table 5-8 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Manage waste in accordance with relevant legislation and maintain records to show compliance. eg waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.

Mitigation measures
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).
The Contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP.
Switch off vehicles/machinery when not in use.
Cover all transported waste.
Prevent pollutants from escaping including covering skip bins.

5.2.8 Traffic and access

Existing environment and potential impacts

The proposal:

- is adjacent to and beneath a local road (Cummins Road) and the state and regionally classified road (Menangle Road)
- is accessed via Cummins Road and Menangle Road.

Construction of the proposal will require up to 6 heavy vehicles and 8 light vehicles concurrently on site, with an average of 4 heavy vehicles and 6 light vehicles per day. It is expected the proposal would require a construction workforce of between 15 to 30 people at a given time across all construction areas. This would generate a proportionate volume of light vehicle movements for workforce transport.

The new water main will be mostly constructed within the roadside verge and roadway of Menangle Road. To manage potential safety risks to construction personnel and road users, some of the work will require partial road closures and use of traffic controls along Menangle Road under an ROL(s).

The proposal may cause temporary access impacts to one entrance of Menangle Country Club and some agricultural properties east of Menangle Road when trenching works are being undertaken at these locations. Consultation will be undertaken with the owners of these properties to minimise access disruptions as far as practicable. The proposal will not impact access to private properties.

There are no nearby bus stops, cycle paths or footpaths that would be impacted by the proposal. Street parking will not be impacted during the works. As some sections of the proposal are located within the road reserve, there is potential for temporary impacts to cyclists, buses and other road users. Existing pedestrian access is limited and there are no footpaths along the proposal. Impacts to pedestrians are therefore not anticipated.

Traffic would be managed in line with the proposed mitigation measures and is not expected to significantly affect road function or availability of parking.

During operation, the proposed infrastructure will only require infrequent vehicle access to carry out routine inspections and maintenance. Operational impacts on traffic are considered negligible.

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 5-9 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) 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 Contractor will obtain a Road Occupancy Licence (ROL) from the relevant roads authority/authorities, including if works are within 100m of traffic signals.
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.
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Erect signs to inform road users of the proposed works and any temporary road closures.
Minimise traffic impacts near residential properties and businesses by consulting with them.

5.2.9 Social and visual

Existing environment and potential impacts

Social

The local area surrounding the proposal includes a mix of land uses including low density residential and primary production. The main potential impacts to the community are associated with construction activities such as the movement of vehicles and machinery, installation of equipment, earthworks and changed traffic conditions. These activities have potential to cause impacts to the community associated with air quality, visual amenity, noise and traffic.

Construction impacts will be managed by the implementation of the mitigation measures identified in this REF to reduce impacts to the environment, community and local values as reasonably practical.

Visual

The proposal is in a rural residential setting with the surrounding areas currently subject to ongoing residential development.

Temporary visual impacts associated with site compounds and worksites during construction are expected for nearby residential and commercial receivers. These temporary visual impacts will be mitigated in consultation with stakeholders such as council and residents, in accordance with the mitigation measures below.

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

During operation, no impacts are anticipated.

Mitigation measures

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

Table 5-10 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.
Direct artificial light away from sensitive receivers where possible (ie residents, fauna or roadways).
Maintain work areas in a clean and tidy condition.

5.2.10 Cumulative and future trends

Potential environmental impacts

It is expected that ongoing construction activities will occur in the proposal area, associated with housing development for the Greater Macarthur Growth Area. Other works close by include the continued operation of Menangle Quarry, the Sydney Water Menangle Park Water and Wastewater Infrastructure Program and residential property development at Menangle and Menangle Park. These activities have potential to result in cumulative air quality, noise and traffic impacts during construction. However, these are expected to be limited and localised. With the implementation of the environmental mitigation measure proposed below, potential cumulative impacts are expected to be low.

Future trends that could impact the proposal were considered, such as flooding and extreme storm events related to climate change. However, the proposal is unlikely to further exacerbate these aspects due to the limited scale of construction and minimal energy requirements during operation.

The proposed underbore and some trenched sections of the new drinking water main immediately south of the Nepean River are within the 1% AEP flood zone. However, as the drinking water main would be below ground, the risk of adverse impacts from future flood events during operation of the proposal is negligible.

Potential exists for additional impacts arising from erosion and sedimentation during construction as a result or larger and/or more frequent flood events. However, this would be appropriately managed through the implementation of the mitigation measures contained in Table 5-1 and Table 5-2.

Mitigation measures

With the implementation of the mitigation measure below, and in in Table 5-1 and Table 5-2, cumulative impacts and future trends can be adequately managed, and residual impacts are expected to be minor.

Table 5-11 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Continued monitoring and consultation with proponents of developments in proximity to the proposal.

5.2.11 General environmental management

Table 5-12 Environmental mitigation measures — general environmental management

Mitigation measures
Sydney Water's Project Manager (after consultation with the environmental and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities: • limit proximity to sensitive receivers • do not disrupt property access • have no impact to known items of non-Aboriginal and Aboriginal heritage • are outside high risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • have no impacts to remnant native vegetation or key habitat features • have no disturbance to waterways • do not require additional safeguards beyond those included in the EIA • do not disturb contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The 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.

Mitigation measures

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

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

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

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

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

- go/no go areas (eg Heritage/AHIP zones professionally surveyed. Mark applicable boundary/boundaries 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 to be provided for respective project areas (eg metal fencing for AHIMS sites, white flagging for construction corridor, red flagging for no go zones etc). Delineate approved disturbance boundary (or use EIA terminology) before construction.

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

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

All site personnel must be inducted into the IMP.

To ensure compliance with legislative requirements for incident management (eg *Protection of the Environment Operations Act 1997)*, Follow SWEMS0009 and attach SWEMS0009 to the CEMP.

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

Mitigation measures
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.

In TOBAN period:

- A Total Fire Ban Exemption is required for all non-essential work in TOBAN periods
- Staff and contractors should use the Sydney Water Total Fire Ban Exemption Framework to determine exemption permissibility and approval pathway.

6 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of the proposed Menangle Drinking Water Main. The proposal is required to provide a drinking water service to additional dwellings in the Menangle and Menangle Park area.

The main potential construction environmental impacts of the proposal include impacts to heritage, noise and traffic. During operation, no impacts are 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 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 and Section 171A checklists

Section 171 of the EP&A Regulation requires a determining authority to take into account the environmental factors specified in the environmental factors guidelines that apply to an activity (a proposal). The *Guidelines for Division 5.1 Assessments* (DPIE, 2022) are applicable guidelines for the proposal. Section 3 of the guidelines identifies the environmental factors to be considered, which refers to and lists the factors in included in section 171(2) of the EP&A Regulation.

These environmental factors are listed below in Table A-1 below, along with the corresponding findings of the REF assessment.

Table A-1 Consideration of environmental factors under Section 171 of the EP&A Regulation

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from construction impacts associated with noise, dust and traffic. There will be environmental improvements by providing a reliable water service to the local community.
Any transformation of a locality	The proposal will not result in the transformation of a locality as it is for construction of an underground watermain.
Any environmental impact on the ecosystems of the locality	The proposal may require selective pruning or removal of up to 9 trees adjacent to Menangle Road. The environmental impact to ecosystems of the locality will be negligible.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will pass under the State heritage listed Menangle Rail Bridge. However, construction activities are limited to trenching within the underlying soil material and will not impact the heritage fabric of the bridge. An approval under section 60 of the *Heritage Act 1997* has been obtained for trenching works within the state heritage curtilage of this item.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal may require selective pruning or removal of up to 9 trees adjacent to Menangle Road. This 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 be endangering 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 and modern water service for the area.

Section 171 checklist	REF finding
Any degradation of the quality of the environment	The proposal will not degrade the quality of the environment.
Any risk to the safety of the environment	The proposal will not increase risk to the safety of the environment.
Any reduction in the range of beneficial uses of the environment	The proposal will not reduce the range of beneficial uses of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	Any cumulative impacts from the proposal are expected to be limited and localised. With the implementation of the environmental mitigation measures, potential cumulative impacts are expected to be low.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposal.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposed works are to service growth in the Menangle and Menangle Park area. The proposal aligns with Campbelltown Council's Local Strategic Planning Statement Planning Priority 14 – Ensuring infrastructure aligns with growth. The proposal also aligns with Wollondilly Council's Local Strategic Planning Statement Planning Priority 1 – Aligning infrastructure provision with community needs.
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.

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 the BCSEPP for a proposal within 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 guidelines for the proposal, and are considered below in Table A-2 below.

Table A-2 Consideration of environmental factors under Section 171A(1) of the EP&A Regulation

Section 171A checklist (Development in regulated catchments)	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 drinking water 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	Trenched sections of the drinking water main alignment are not expected to encounter groundwater. The underbored section which crosses the Nepean River may intercept groundwater during construction. However, impacts to the level and quality of the groundwater are expected to be minor.

Section 171A checklist (Development in regulated catchments)	REF finding
(f) the cumulative environmental impact of the development on the regulated catchment	The proposal is required to support urban growth within the Menangle and Menangle Park areas. 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	The proposal may require selective pruning or removal of up to 9 trees adjacent to Menangle Road. The subject trees do not comprise a threatened ecological community. Direct, indirect or cumulative adverse impacts to terrestrial, aquatic or migratory animals or vegetation of the locality will be negligible
(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	Clearing for the proposal within the riparian zone is limited to the disturbance of existing mown grassed areas within Nepean River Reserve and will not impact native vegetation. Sydney Water is exempt from the need to obtain a controlled activity approval under the *Water Management Act 2000*.

Section 171A checklist (Development in regulated catchments)	REF finding
(ii) a permit under the *Fisheries Management Act 1994*	A permit under the FM Act is not required for the proposal. However, DPIRD Fisheries were notified of the proposal in accordance with Section 199 of the FM Act. DPIRD Fisheries subsequently advised they have no objections to the proposal, provided the environmental mitigation measures outlined in the notification and recommended measures in their response are implemented on site.
(a) 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 to areas adjacent to and within Nepean River are included in Table 5-1 and Table 5-2.
(b) 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.
(c) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within Nepean River are included in Table 5-1 and Table 5-2
(d) if the development site adjoins a natural waterbody, whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody	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.
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 5-1, Table 5-2 and Table 5-3 to ensure that the cumulative impacts of the proposal 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 in proximity to the proposal.

Section 171A checklist (Development in regulated catchments)	REF finding
(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. However, DPIRD Fisheries were notified of the proposal in accordance with Section 199 of the FM Act. DPIRD Fisheries subsequently advised they have no objections to the proposal, provided the environmental mitigation measures outlined in the notification and recommended measures in their response are implemented on site.
(d) 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 to areas adjacent to and within Nepean River are included in Table 5-1 and Table 5-2.
(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	
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 proposed underbore and some trenched sections of the new drinking water main immediately south of the Nepean River are within the 1% AEP flood zone. However, as the drinking water main would be below ground, 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	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within Nepean River are 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 path(s) of floodwaters.

Section 171A checklist (Development in regulated catchments)	REF finding
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 likely impact of the development on recreational land uses in the regulated catchment	The proposal will occupy a small area in the upper portion of Nepean River Reserve for the trenched section of the drinking water main and underbore retrieval pit. The majority of this area is immediately alongside Menangle Road and is infrequently used by the public, with recreational use of Nepean River Reserve concentrated to the east and south of the proposal in areas closer to the shoreline of Nepean River. The proposal will be managed to ensure that vehicular access in and out of the reserve, and pedestrian access between the adjacent car park, riverbank and public amenities is maintained at all times. This may include short term temporary diversions if required.
(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	During construction, the proposal will occupy a small area in the upper portion of Nepean River Reserve for the trenched section of the drinking water main and underbore retrieval pit. However as described above, the proposal will be managed to ensure that vehicular access in and out of the reserve, and pedestrian access between the adjacent car park, riverbank and public amenities is maintained at all times. Any temporary diversions will be undertaken consistent with the environmental mitigation measures to ensure that there are no adverse impacts to natural waterbodies, watercourses, wetlands or riparian vegetation. The operation of the proposal will not affect existing public access arrangements.
BCSEPP – Section 6.9(2) - Recreation and public access 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 development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse	During construction, the proposal will occupy a small area in the upper portion of Nepean River Reserve for the trenched section of the drinking water main and underbore retrieval pit. However as described above,

Section 171A checklist (Development in regulated catchments)		REF finding
	impact on natural waterbodies, watercourses, wetlands or riparian vegetation	the proposal will be managed to ensure that pedestrian and vehicular access for recreational uses within Nepean River Reserve is maintained at all times. This may include short term temporary diversions if required. The operation of the proposal will not affect existing public access arrangements.
(b)	new or existing points of public access between natural waterbodies and the site of the development will be stable and safe	The identified environmental mitigation measures for the proposal will be implemented to ensure existing access points affected by the proposal are maintained in a stable condition. The proposal does not include the establishment of any new access points.
(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 B – 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
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

Appendix C – Subsidence Advisory NSW consultation

Appendix D – DPIRD Fisheries consultation

Appendix E – Aboriginal and historical heritage due diligence assessment

Aboriginal heritage information must not be made publicly available or be published in any form or by any means by Sydney Water or our contractors / joint ventures, unless written approval has been provided to Sydney Water from DPE's AHIMS Registrar .

For publicly displayed REFs, all Aboriginal heritage information that identifies individual sites must be removed.

This information has been redacted to protect sensitive Aboriginal Heritage information (externally published version).

Appendix F – Construction noise and vibration assessment memo

Appendix G – Heritage Impact Assessment / Statement of Heritage Impact

Appendix H – Section 60 heritage approval