North Richmond Water Filtration Plant - Raw Water Intake

Review of Environmental Factors

(March 2026)

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 the North Richmond Water Filtration Plant (WFP) - Raw Water Intake project. The REF was prepared under Division 5.1 of the ***Environmental Planning and Assessment Act 1979*** (EP&A Act), with Sydney Water both the proponent and determining authority.

The Sydney Water Project Manager is accountable for ensuring the proposal is carried out as described in this REF. Additional environmental impact assessment may be required if the scope of work or work methods described in this REF change significantly following determination.

Certification

I certify that I have reviewed and endorsed this REF, and, to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation). The proposal has been considered against matters listed in section 171 (Appendix A), section 171A and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed and endorsed by:	Endorsed by:
[redacted]		
Nikolas Kenny REF Author Sydney Water Date: 16/03/2026	Jonathan Dowling Environment Representative Sydney Water Date: 26/03/2026	Abbie Thomas Project Manager Sydney Water Date: 26/03/2026

Decision Statement

The main potential environmental impacts of the proposal include construction impacts such as noise and vibration, air quality, vegetation removal and work in the Hawkesbury River. No operational impacts are anticipated as part of the proposal. 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/ is not required.

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

Determined by:	[redacted]	Date: 27 March 2026
	Elissa Howie A/Senior Manager Environment and Heritage, Sydney Water	

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 North Richmond Water Filtration Plant - Raw Water Intake Upgrade and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

Sydney Water operates the North Richmond Water Filtration Plant (WFP) (WT0011) to supply drinking water to customers in Richmond, Windsor, Freemans Reach, Wilberforce and nearby towns. Water is pumped from the Hawkesbury River (raw water), then filtered, treated and tested to ensure it meets the Australian Drinking Water Guidelines before being supplied to customers.

Table 1-1 summarises the proposal need, objectives and consideration of alternatives and Figure 1-1 shows the location of the WFP.

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

Aspect	Relevance to proposal
Proposal need	There are two raw water intake pumping stations at the North Richmond WFP, WP0065 and WP0191. WP0065 has been in operation for 75 years and is in poor condition. The three pumps in WP0191 are at the end of their design life. WP0065 will be decommissioned soon and WP0191 must be upgraded to maintain the supply of raw water to the WFP. Residential growth is occurring in the North Richmond area. The WFP will be required to supply about 55 ML/day to meet the drinking water demand. Currently, the operation of three pumps in WP0191 and one pump in WP0065 can produce 42 ML/d. Sydney Water proposes to construct a new raw water intake, including a new intake structure and pumping station (WP0423), to meet the drinking water demand. WP0423 will replace WP0065 and allow WP0191 to be upgraded in the future. The proposal includes the renewal of high and low voltage assets at the WFP. Some of the WFP electrical supply is almost 50 years old and is showing signs of deterioration. New high and low voltage electrical infrastructure is required to maintain power supply to critical assets in the WFP. The proposal is required to reduce the risk of future failures of raw water pumping assets and provide a more reliable drinking water service for the community. The proposal will assist in maintaining compliance with Sydney Water's existing Environment Protection Licence (EPL) (EPL 5425) under the ***Protection of the Environment Operations Act 1997***.
Proposal objectives	The proposal objectives are to:

Aspect	Relevance to proposal
	• upgrade infrastructure to allow 55 ML/d of raw water to be provided to and treated at the WFP • provide a safe and reliable drinking water network.
Consideration of alternatives/options	Sydney Water assessed several options for the proposal. The configuration of the existing pumping stations was considered as part of the development of options (Figure 1-2): • WP0065 - raw water intake is located at the river bank and the pumps are located in a dry well about 80 m from the river • WP0191 – raw water intake, wet well and pumps are located at the river bank. Options assessed were: • Option 1 – upgrade WP0065. Replace the intake structure, dry well and install new pumps with increased capacity • Option 2 – decommission the WP0065 intake. Construct a new intake, wet well and pumps at the river bank. The new pumps would be connected to and operated in series with new pumps installed in the existing WP0065 dry well • Option 3 – decommission WP0065 intake and pumps. Construct a new pumping station with wet well and pumps to operate with an upgraded WP0191 • Option 4 – similar to Option 3 but with provision to include more pumps in the new pumping station and decommission WP0191 in the future • Option 5 – decommission WP0065 and WP0191. Construct a new pumping station with wet well and pumps to replace both pumping stations. All options contained sub options that involved upgrading the existing pressure pipelines or constructing new pressure pipelines from the pipelines to the existing pipe network. The ‘do nothing’ option risks failure of the existing pumping stations resulting in a loss of water supply to customers. This option was not considered further. A multi-criteria analysis (MCA) was used to assess the options against the following criteria: • financial • technical • environmental • social. Option 1 was ranked first due to its lower cost. However, the reliability issues of the existing pumping stations would not be fixed. Option 3 was the preferred option as it was ranked highest with the financial criterion removed from the MCA. Option 3 does not have reliability issues and meets the proposal objectives. The options assessment included upgrading/replacing pressure pipeline to the WFP and upgrading/decommissioning the existing pumping stations.

Aspect	Relevance to proposal
	The scope of the proposal is to construct and operate: • a new raw water intake structure • a new pumping station (WP0423) • 90 m of pressure pipeline to connect WP0423 to the existing pipe network • electrical upgrades. The scope does not include decommissioning of WP065, upgrading WP0191 or a pressure pipeline connecting WP0423 directly to the WFP. This work will be the subject of future assessments.

Figure 1-1 Location of North Richmond WFP

Figure 1-2 Existing pumping stations

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 environmental impacts of construction and operation of the proposal will be minor, localised and short-term. The proposal is essential for the supply of drinking water to the North Richmond 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 reliable drinking water supply.
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. The proposal will require clearing of native vegetation. However, the proposal was designed to use previously cleared areas as much as possible to minimise impact to threatened species and communities.
Improved valuation, pricing and incentive mechanisms–- ***environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals***	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment. This has been achieved through actions including: • designing the pumps to efficiently supply raw water to the WFP • identifying cost-efficient use of resources during construction, e.g. re-use of waste material.

2. Proposal description

2.1 Proposal details

Table 2-1 describes the proposal and Figure 2-1 and Figure 2-2 shows the location.

Table 2-1 Description of proposal

Aspect	Detailed description
Proposal description	The proposal is to construct a new intake structure and pumping station WP0423 on the river bank to pump water from the Hawkesbury River to the WFP. WP0423 will have two wet wells with a pump in each. Raw water from the river will flow through a screen to the wet wells and be pumped to through a new 90 m long DN600 (600 mm diameter) pressure pipeline to the existing pipe network. Electrical conduits will be installed beside the pressure pipeline to carry power to the pumping station. The wet well will be about 3 m deep with secant piles constructed to stabilise the river bank and secure the wet well. A temporary coffer dam will be installed during construction to establish a dry work area. The coffer dam will be about 10 m long and 8 m wide. The pressure pipeline and electrical conduits will be attached to a rock face immediately north of the proposed pumping station. The remainder of the pipe and conduits will be below ground. WP0065 and WP0191 will continue to operate during construction of WP0423 to maintain drinking water supply. The proposal will also include the renewal of high and low voltage assets at WFP including: • replacing three switch room buildings with prefabricated buildings • replacing six transformers and minor trenching of conduits between the new transformers and the switch room buildings. The new transformers will be energy-efficient and bushfire resistant • replacing electrical equipment and cables. The electrical work will take place on previously cleared ground in the WFP.
Location and land ownership	The North Richmond WFP is located at Grose Vale Rd, North Richmond, 2754. The WFP is on Sydney Water land. The intake structure will be in the Hawkesbury River, a Crown waterway. The proposal is in the Hawkesbury Local Government Area (LGA).
Site establishment and access tracks	The proposal is expected to use the existing access roads in the WFP. However, the roads are narrow and can only accommodate one vehicle at a time and there are limited opportunities for passing. New sections of access track will be constructed to allow a safer, one-way system for vehicle and equipment movement through the WFP. Vegetation clearing/trimming will be required to facilitate the new areas of track.
Ancillary facilities (Laydown Areas)	A construction compound will be required to house site sheds, construction amenities and to stockpile materials. There is currently a compound set up for bank stabilisation work at the site and this compound will be re-purposed for the proposal to minimise further disturbance at the site. The new compound will be within the construction footprint (Figure 2-1).

Aspect	Detailed description
Methodology	**Site establishment works** • mark out the designated construction areas including access routes, areas for temporary material and machinery storage • establish no-go zones/protection areas and environmental controls • clear vegetation approved for clearing • construct new sections of access track • reconfigure the existing construction compound • deliver and store materials and equipment • strip and stockpile topsoil for reuse during restoration • set up scaffolding at rock face for pedestrian access to the pumping station work area. **Construction of WP0423** • install raw water sampling pumps at the intakes of WP0065 and WP0191. The pumps will operate during construction and monitor the quality of the water extracted at the existing intakes and supplied to the WFP during construction • construct a temporary coffer dam to establish a dry work area for work in the river. The coffer dam will require specialist design but will include: o installing a rock platform for the piling rig. This involves placing about 350 m^3 of rock in the river. The rock will be sized to ensure that rocks lock together to form at stable platform with a 1:1 slope. Rock bags may be used to provide a solid foundation for the platform. The platform construction will be monitored by underwater surveyors during installation to ensure the platform is installed as designed. The piling rig will use the platform to install sheet piles to form the coffer dam o removing the rock platform by an excavator with a long arm when the coffer dam is established and before construction of the pumping station starts • the coffer dam will include a sump and pump in the foundation to enable dewatering. The coffer dam may be overtopped during very high tides and large rain events • excavate the river bed and bank to establish ground levels for the pumping station • construct permanent secant piles. This will establish the outer wall of the pumping station • install the concrete structure to accommodate intake screens and two submersible raw water pumps in separate wet well chambers • install pumps, valves, flow meters and other pumping station equipment • install mechanical intake equipment including trash racks, screens and desilting pump • install electrical conduits, instrumentation and control infrastructure

Aspect	Detailed description
	• install a cross-connection to WP0191 • remove the coffer dam • test and commission the pumping station. **Construction of pressure pipeline** The pressure pipeline will be attached to a vertical rock face at the river bank and then trenched to tie in to the existing pipeline network. Key steps include the following: • install erosion and sediment control measures • break rock on rock face • fix the pressure pipe and electrical conduits to the rock face • excavate trenches • construct valve pits and electrical pits • stockpile spoil material on the upslope side of trenches, or at temporary site compounds • spread granular material such as sand or gravel along the bottom of the trench before pipe laying • lift pipe in using crane or similar • backfill the trench with bedding material and excavated soil • compact trench fill material • tie-in to the existing network. This will require shutdown of water supply to the WFP. The shutdown will likely be a maximum of 12 hours, will occur in a period of low water demand and will be coordinated with the WFP operations team • restore areas disturbed by the construction works • test and commission the pipeline. **Electrical upgrade work** The electrical work will be carried out at three existing electrical switch rooms and transformer locations. All work will be in cleared areas at the WFP (Figure 2-2). Electrical upgrades will include: • demolishing three switch room buildings and replace with prefabricated switch room buildings • constructing a new concrete pad for new transformers, if required • replacing six transformers (across the three locations) • upgrading the transformer cable network • upgrading low voltage switchboards and other electrical equipment.
Commissioning	Commissioning involves testing and running the new equipment to ensure the equipment is working correctly and integrated with existing plant and network operations. The exact commissioning steps depend on the type of equipment, but typically include:

Aspect	Detailed description

	• pipelines
	  o test pressure leaks
	  o check all equipment and safety devices
	  o performance testing including sampling where required
	• pumping stations
	  o disinfect pipes
	  o pressure test pipes
	  o perform acceptance testing on pumps
	  o dewater pipes and repair leaks if leaks are found
	  o install signage and labelling of equipment
	  o train operators and prepare maintenance manuals.

Restoration	Areas disturbed during construction will be stabilised in accordance with Managing Urban Stormwater Soils and Construction (The Blue Book) (Landcom 2004) requirements, and restored as soon as possible to their pre-works condition, or better. Disturbed areas will be planted with native species. The river bank around the new pumping station will be stabilised using retaining structures and shotcrete.
Materials/ equipment	An indicative list of plant and equipment used for the proposal include: • mobile crane • excavator (long reach) • lifting equipment • sucker trucks • piling rig • general vehicles / delivery trucks • dump trucks • tipper trucks • track loader • hand tools and electric tools • sump pump/s for coffer dam • concrete trucks • skid mounted generator • storage containers / site office / amenities • compactors • rock hammer Materials likely to be used during the construction of the proposal include: • concrete • diesel fuel • reinforcement steel • sand / aggregate / soil / geofabric • ductile iron cement lined (DICL) pipe • copper wiring • PVC pipe • stainless steel • aluminium.
Work hours	Work and deliveries will be scheduled to occur during standard daytime hours:

Aspect	Detailed description
	• 7am to 6pm, Monday to Friday • 8am to 1pm, Saturdays • no work on public holidays. The proposal may require work outside these hours e.g. delivery of oversize equipment, performing network connections or shutdowns during low flow periods. Sydney Water's Project Manager can approve work outside of standard daytime hours, following the approval process described in the mitigation measures in section 5.
Proposal timing	Construction is expected to start in June 2026 and take about 3 years to complete.

Figure 2-1 Construction Footprint

Figure 2-2 Study area and location of electrical work

2.2 Study area and changes to the scope of work

The proposal shown in this REF is indicative and based on the latest design at the time of REF preparation. The final proposal may change based on detailed design or construction planning. The general mitigation measures outline when changes to the proposal trigger supplementary environmental impact assessment. If required, further assessment must be prepared in accordance with SWEMS0019. An addendum is not required provided the change:

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

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

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

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

3. Consultation

3.1 Community and stakeholder consultation - general

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

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

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

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

3.2 Community and stakeholder consultation – proposal

A Community and Stakeholder Engagement Plan (CSEP) has been developed for the proposal which details the engagement approach for nearby residents and stakeholders. Before and during construction, Sydney Water will ensure the delivery contractor is mindful of the community, that they inform the community about any work that may impact nearby residents, and that they leave a positive legacy when the work is done.

The community and stakeholders will be informed about:

- the proposed start date
- where we will be working and when
- what to expect during each stage of the proposal's progress
- any changes to the proposal's activities, impacts and progress.

The CSEP identifies a notification area. All residents in this area will receive a start of work notification at least seven days before the start of work. The contractor's community engagement representative will door knock residential properties that will be directly impacted by construction work, particularly along the eastern boundary of the WFP. Updated community notifications and direct community engagement will be carried, as required, out during construction.

The CSEP outlines how community enquires and complaints will be handled. Feedback will be used to improve our performance and will be managed in accordance with Sydney Water's Customer Complaint Policy and Procedure.

3.3 Consultation required under State Environmental Planning Policies and other legislation

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

Sydney Water consulted with Transport for NSW (Maritime Greater Sydney) on 19 February 2026 as the proposal will require development comprising a fixed and floating structure in navigable waters. Transport responded on 2 March 2026 and stated that the work will have minimal impact on the safety of navigation.

The proposal is located in the Western Parkland City operations area and has a capital value of more than $30m. Sydney Water consulted with the Bradfield Development Authority (formerly the Western Parkland City Authority) on 19 February 2026. The Bradfield Development Authority responded and has no objections to the proposal.

The Hawkesbury River is classified as Crown land (Figure 4-1), meaning it is owned and managed by the State government. Sydney Water consulted with Crown Land on 12 December 2025. Crown Land responded on 22 December 2025 and requires Sydney Water to obtain a licence for temporary access to the Crown waterway. However, Sydney Water carried out further investigation and found that its property title and ownership extends from the WFP to the centre of the river and includes part of the river bed and bank. This was communicated to Crown Land on 23 March 2026. Crown Land acknowledged Sydney's Water's interest in the land and indicated that a licence or easement is unlikely to be required. Crown Land will provide formal confirmation of its position to Sydney Water.

Sydney Water started consultation with Department of Primary Industries (DPI) Fisheries regarding the work in the Hawkesbury River in November 2016. Sydney Water consulted DPI Fisheries on several occasions due to the changing scope and construction methodology of the proposal. DPI Fisheries was consulted again in 2024 about the current proposed construction method. DPI Fisheries responded on 4 October 2024 and stated they had no further comments on the proposed construction method.

Sydney Water consulted the Environment Protection Authority on 23 March 2026 regarding the need for a variation to the North Richmond EPL for temporary discharges to the river during construction. The EPA confirmed that a variation is not required as discharge to waters is not a scheduled activity under the ***Protection of the Environment Operations Act 1997***.

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
Hawkesbury City Council Local Environment Plan (LEP) 2023 (Hawkesbury LEP)	The proposal will be carried out on land zoned as SP2 Infrastructure and W1 Natural Waterway (Figure 4-1). Section 2.159 of the TISEPP permits development by or on behalf of a public authority for water reticulation systems without consent on any land. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	
State Environmental Planning Policy (Planning Systems) 2021 (PSSEPP)	Section 2.13 of the PSSEPP identifies development declared to be State significant infrastructure, including development specified in Schedule 3. Development of water treatment facilities with a development value greater than $30m is specified as in Schedule 3 of the PSSEPP. However, this requirement does not apply to Sydney Water. In addition, while the proposal is located on the site of a water treatment facility and has a development value of more than $30m, its purpose is the supply of water to the facility and not water treatment. Therefore, the proposal is not State significant infrastructure and consent is not required.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Koala Habitat Protection (Chapter 4)** These chapters aim to encourage the proper conservation and management of areas of natural vegetation that provide koala habitat. This is to ensure that permanent free-living populations are protected in their present range, and to reverse the current trend of population decline. The SEPP contains prescriptions for the consideration of “core koala habitat” for developments within local government areas listed in Schedule 2 of the SEPP. The proposal is in the Hawkesbury City Council LGA, which is in the Central Coast koala management area.

Environmental Planning Instrument	Relevance to proposal
	The SEPP outlines that development consent cannot be granted unless there is a plan of management prepared for the LGA in question. Development being carried out under the TISEPP is not subject to the planning provisions of the BC SEPP. Nevertheless, where possible the aims, objectives and management actions should be considered. At time of preparing this REF, a Koala Plan of Management (KPOM) is being prepared by City of Hawkesbury but has not yet been finalised or adopted. A Biodiversity Assessment Report (BAR) undertaken for the proposal (Appendix C) confirmed that the study area contains koala feed trees however no evidence of potential koala use was observed, and it is not considered to be core koala habitat. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury River Catchment, a regulated catchment area. Section 5 of this REF assessed potential environmental impacts on water quality and quantity, ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are negligible and meet the requirements of Part 6.2 of the SEPP.
State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP)	**Coastal Management (Chapter 2)** The works are on land to which Chapter 2 of this SEPP applies. Part of the study area is mapped as 'Coastal Use' and Coastal Environment'. However, according to sections 2.9 and 2.11 respectively, consent is not required.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Crown Land Management Act 2016	The ***Crown Land Management Act 2016*** forbids various actions, including occupation, unless authorised by the Act. Licences to use or occupy Crown land, including Crown waterways, can be granted under Division 5.6. However, Sydney Water's interest in the waterway extends from the WFP lot to the centre of the river and includes part of the bed and bank of the river. A licence or easement from Crown Land is not expected to be required, pending formal	Licence and easement (if required)	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	confirmation from Crown Land (Section 3.3).		
Protection of the Environment Operations Act 1997 (POEO Act)	The WFP operates under EPL 5425. The EPL regulates 'miscellaneous licensed discharge to waters – at any time'. This is a non-scheduled activity. The proposal will continue to comply with this EPL during operation and variation to the EPL is not required. As discharging to waters isn't a scheduled activity in the Act, construction dewatering (groundwater and water from the coffer dam) does not require a variation to the EPL. However, it is an offence to pollute waters, including through the discharge of sediment-laden or contaminated water. There is a requirement under Part 5.7 of the POEO Act to immediately report any pollution incidents to the relevant authority where material harm to the environment is caused or threatened. The definition of material harm and the relevant authorities are identified in Part 5.7 of the POEO Act. The contractor is responsible for immediately reporting such incidents in accordance with SWEMS0009 Responding to incidents with an environmental impact.	NA	NA
Biodiversity Conservation Act 2016 (BC Act)	Two threatened ecological communities (TECs) will be impacted by the proposal. This vegetation also provides habitat for threatened fauna species. Assessments of significance were performed under section 7.3 of the Act to determine whether the project is likely to significantly impact any threatened entities (Appendix C). The impact of the proposal on threatened species, communities and their habitats is assessed in section 5.2.3. No threatened entities are likely to be significantly impacted by the project. Therefore, a SIS is not required.	REF	Pre-construction, Sydney Water
Fisheries Management Act 1994 (FM Act)	Construction of the coffer dam requires reclamation and dredging in key fish habitat. DPI Fisheries was notified of the	NA	NA

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	proposed work in accordance with section 199 of the Act (section 3.2). Four threatened aquatic species, listed in schedule 4 of the Act, are known to occur in the Hawkesbury River. However, the habitat in the river at the proposal location does not provide suitable habitat for any of the species and a significant impact is not likely.		
National Parks and Wildlife Act 1974 (NPW Act)	Under section 86 of this Act, it is an offence to harm or desecrate an Aboriginal place or object unless authorised by an Aboriginal heritage impact permit (AHIP), or where it is reasonably determined that no Aboriginal object will be harmed. An AHIP is issued under section 90(1) of this Act. Due to the results of the desktop searches and the highly disturbed nature of the river bed and bank the proposal is not likely to impact Aboriginal heritage and an AHIP is not required.	NA	NA
Water Act 1912/ Water Management Act 2000	Groundwater dewatering will be required during pumping station construction. About 1.5 ML of groundwater is estimated to be dewatered during construction. A Water Supply Work Approval (WSWA) will be required before dewatering can start. River water will be dewatered from the coffer dam and returned to the river. This does not constitute taking of water and a WSWA is not required for this activity.	WSWA	Pre-construction, Sydney Water
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Under the EPBC Act, activities that are likely to have a significant impact on matters of national environmental significance, Commonwealth lands or actions undertaken by the Commonwealth are subject to assessment and approval. Matters of National Environmental Significance (MNES) are identified in the Act. A significant impact test was prepared for impact to the EPBC Act listed River-Flat Eucalypt Forest. The test found that a significant impact is unlikely. The proposal will remove habitat of threatened species. The habitat removal will have minimal	NA	NA

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	impact on EPBC listed species and significant impact tests were not required. There are no other MNES near the proposal and therefore no impact to MNES is expected.		

Figure 4-1 Land zoning

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 (CEMP) (or similar) prior to starting work.

5.1 Existing environment

The proposal is located in North Richmond in Sydney's northwest. The proposal is in the Hawkesbury LGA, on the northern bank of the Hawkesbury River. The surrounding area is semi-rural and contains residential, agricultural and commercial properties, parklands and waterways.

The WFP is an operational Sydney Water site that has undergone extensive historic disturbance, resulting in a modified environment. The WFP is bounded by Grose Vale Road to the north, residential properties to the east, agricultural land to the west and the river to the south.

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment

The topography at the WFP has been modified over time to construct drinking water infrastructure. The site generally slopes from north to south and consists of several terraces, with a cliff face beside the river. The river bank has been previously disturbed to construct the existing raw water intakes and for recent bank stabilisation work. Some of the natural landforms within the study area have been replaced with engineered surfaces and consist of hard stand areas, rock walls and geofabric with little natural soil or vegetation in those locations.

The major geological elements of the site are Hawkesbury Sandstone and the Wianamatta group of sedimentary rocks, predominantly Ashfield Shale. The site is identified as unstable land with a slope exceeding >20%. The site lies within the Luddenham and Freemans Reach soil landscapes (eSpade). The Luddenham soil landscape has a generally moderate to very high erosion hazard. The Freemans Reach soil landscape has a generally very high to extreme erosion hazard.

There is no known occurrence of acid sulfate soil (ASS) within the WFP (eSpade). There is a high probability of encountering ASS in the bottom sediment of the Hawkesbury River. The Hawkesbury River is mapped as class 1 ASS (class 1 having the highest risk for ASS and class 5 having the lowest risk for ASS). However, recent bank stabilisation work at the proposed location of WP0423, including excavation of the river bed, did not encounter ASS.

A search of NSW eSpade indicated that the study area is located within an area mapped as localised salinity hazard.

Potential impacts

The proposal will disturb the bed and bank of the river. The contractor will install a rock platform in the river. The platform will be used by the piling rig to install the coffer dam. Construction and removal of the rock platform will cause sedimentation. A silt curtain will be used to minimise the loss of sediment to the river.

The coffer dam will consist of sheet piles and will form, once dewatered, a dry construction area for the pumping station. The coffer dam will prevent sediment or other materials leaving the construction area and polluting the river. The sheet piles will be pulled from the river bed when the outer structure of WP0423 is constructed. The pile removal will mobilise sediment and increase turbidity in the river. A silt curtain will surround the coffer dam and contain sediment until it has settled.

Excavation in the river bed and bank will be required to construct the pumping station and intake structure. The excavated material may be ASS. Sulphuric acid is formed when ASS is exposed to oxygen. Disturbed ASS that remains in the river will not be oxidised and does not pose a risk. However, ASS that is stockpiled on land can be exposed to oxygen. The release of sulphuric acid to the river could impact aquatic life. The contractor will test extracted material to identify ASS and management measures will be implemented to minimise the risk of oxidation of ASS.

Ground disturbance, such as access road construction and trenching, will temporarily expose soils. There is potential for erosion to occur and result in sediment laden runoff entering the river. This is due to the topography of the site and the erosion risk of the soil types. Increased turbidity can result in decreased light levels for submerged aquatic vegetation and smothering of benthic organisms.

The pumping station is not expected to substantially alter the river bank as the area has been highly modified by the construction of the existing pumping station and raw water intakes and recent bank stabilisation work.

Operational impacts are not expected. The new pumping station will be underground and will not change the topography of the river bank. The disturbed areas to the bank will be stabilised to prevent erosion during operation.

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 low.

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

Mitigation measures
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • develop a Soil and Water Management Plan (SWMP) as part of the CEMP • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall

Mitigation measures

- rectify damaged controls immediately
- remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines
- include a Stockpile Management Plan (SMP) as part of the SWMP to adequately manage any proposed temporary and permanent stockpiles. This will include detail on:
  - exact location of stockpiles
  - minimising stockpile size
  - height, slopes and batters
  - preventing mixing and cross contamination
  - consideration of future maintenance
  - capping
  - erosion and sediment control
  - restoration.

The Stockpile Management Plan will be approved by the Sydney Water Project Manager in consultation with the Environmental Representative and the Contamination and Hazardous Materials team.

Manage ASS in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998). Prepare an Acid Sulfate Soils Management Plan (ASSMP).

Install a silt curtain around the work area in the Hawkesbury River. The silt curtain must be secured and anchored in place. The depth of the curtain must allow for tides and excessive erosion of the river bed.

Monitor the silt curtain and coffer dam weekly or after high flows or tides to ensure that they are secure and performing as designed.

Store material that has potential to be ASS separately from other stockpiled material.

Earthen dams and/or aggregate must not be pushed into the river to form embankments or platforms to enable the proposal to be constructed.

All rock placed in the waterway to form the temporary rock platform will be placed to form a secure base. Rock placement must be managed by underwater surveyors to ensure the rock locks in place. All rock must be removed on completion of coffer dam piling.

Material must not be dredged from the river to form embankments or platforms to enable the coffer dam to be constructed

Minimise ground disturbance and stabilise disturbed areas progressively.

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

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

Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water

Mitigation measures
Project Manager and the Environmental Representative (who will contact the Contamination and Hazardous Materials team) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Reduce ponding and erosion by restoring natural landforms to the pre-works condition.
Adopt appropriate soil salinity mitigation measures in accordance with Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). This may include: • treating existing salinity with gypsum • establishing salt tolerant species in existing or potential salinity problem areas after construction • stabilising existing areas of erosion • minimising water use on site • avoiding rotation and vertical displacement of the original soil profile • backfilling excavations deeper than 1 m in the same order or treating or using this material as fill at depths more than 1 m from the finished level.

5.2.2 Water and drainage

Existing environment

The proposal is located beside and within the Hawkesbury River, a major waterway west and north of Sydney. The river is tidal at North Richmond. Land use throughout the catchment is dominated by residential development with significant areas of agriculture.

Discharges to the river from the WFP is regulated by EPL 5425. The EPL conditions set volume and concentration limits for discharges. Consultation with the EPA confirmed that the proposal will not require changes to the EPL and will not impact the WFP's ability to meet EPL requirements.

The Hawkesbury-Nepean Valley, including the North Richmond area, has a high risk of flooding. Flood risk mapping (SES, 2026) categorises floods as:

- small flood – very high chance
- large flood – high chance
- very large flood – medium chance
- huge flood – low chance
- biggest flood possible – extremely low chance.

The risk mapping shows that:

- the river bank at the proposal is inundated during a 20% annual exceedance probability (AEP) flood event (small flood)
- the area above the rock face could be impacted during 1% AEP events (very large flood)
- the WP0065 pumps and switch room building impacted during a 0.1% AEP event. This is the probable maximum flood (PMF) (biggest flood possible).

The existing pumping stations are impacted by debris and sedimentation following floods.

The new pumping station will be located in an area with sandstone bedrock that extends to ground level. Groundwater at the WFP is likely to be perched groundwater. Groundwater flows are expected to flow to the river.

Potential impacts

The construction of a coffer dam to enable excavation of the river bank may result in temporary and localised impacts to the Hawkesbury River. Rock will be placed in the river to form a platform for the piling rig to construct the coffer dam. This will disturb the river bed and result in sedimentation. A silt curtain will be installed around the work area retain sediment and allow it to settle. There is also potential for rock to be lost to the river if not appropriately managed. Underwater surveyors will monitor the rock placement to ensure the platform is installed as designed.

Machinery will be placed on the river bed inside the coffer dam. There is potential for sedimentation and impact to water quality from fuel or chemical spills. While the coffer dam will be sealed as much as practicable, dewatering will be required. Water in the coffer dam will be monitored and tested before dewatering to ensure that the impact to the Hawkesbury River is minimised.

The coffer dam will be about 10 m long by 8 m wide. The river is about 125 m wide at the proposal location. The dam will occupy about 6% of the of the river's cross-section and is expected to have negligible influence on river hydrology. The coffer dam may be overtopped during very high tides and flood events. This can cause rapid, short-term changes in downstream water quality and may mobilise excavated material or any contaminants present inside the coffer dam (e.g. wet concrete, chemicals). Incident management procedures will be implemented to prepare the construction area in advance of high tides or floods. This will include measures such as controlled pumping to remove turbid water through settlement tanks or filtration systems, stabilising disturbed sediments inside the enclosure, and inspecting for scour or bank erosion so that potential sediment sources are stabilised.

Impacts will be temporary and localised, as the coffer dam will be fully removed upon completion of the works, with any components unable to be extracted cut flush at bed level to avoid long-term obstruction or alteration of flow.

Flooding during construction has potential to inundate the river bank during small floods. Flood waters could wash away stockpiles or equipment on the bank, potentially releasing chemicals and fuel/oil to the river. Very large floods have potential to impact the area above the rock face. This could impact the compound area, where most of the excavated material and plant/equipment will be stored, resulting in pollution in the river.

Excavations for the pumping station wet wells are expected to encounter groundwater. This is expected to be relatively minor, with the predicted volume to be extracted is 1.5 ML. The volume is due to the excavation mainly being in rock and the use of sheeting piling during construction. A Water Supply Work Approval will be obtained before groundwater dewatering starts.

The proposal is expected to have a positive impact during operation as the river bank will be stabilised and the erosion risk reduced. WP0423 had been designed to access for machines to removal sediment and debris following floods. This will have a positive impact on maintenance, ensuing uninterrupted raw water supply to the WFP.

WP0423 will be below ground and all above ground infrastructure will generally be at a similar level to the existing bank. The proposal is not expected to change the existing flood patterns in the area during

operation. The pumps operate in wet wells and are designed to operate during flood events and provide a more resilient supply of raw water to the WFP compared to the existing pumping stations.

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
The Incident Management Plan must establish triggers to stop work in the river or on the river bank in advance of high water levels. The plan must contain procedures to: • monitor tides and weather • communicate ‘stop work’ to site workers • respond to predicted floods or high tides, including removing plant and equipment, stabilising disturbed ground, securing the silt curtain, moving stockpiles from the river bank to the compound • remove debris etc from the work area.
Remove all plant, tools, and loose materials from within the coffer dam at the end of each workday. Ensure all equipment is relocated to areas outside the tidal/inundation zone and that the coffer dam is free of materials that could become debris or hazards if overtopping occurs.
Use appropriate controls to avoid potential sedimentation to waterbodies. (e.g. sediment fences). All excavation within the waterway must occur within the silt curtains.
The coffer dam will be removed at the completion of work. Any elements that cannot be removed completely will be cut off at bed level.
Any water from the coffer dam or groundwater discharged into the river should be discharged within the silt curtains. Water discharged must have a pH of 6.5-8.5 and less than 50 mg/L total suspended solids.
Groundwater and coffer dam water will be visually inspected for signs of fuel/oil or other chemicals before dewatering occurs. Contaminated water must be contained and taken off site for disposal.
Water storage tanks will be used to temporarily store water from the coffer dam and groundwater for settlement and testing before discharge.
Sydney Water will obtain a groundwater Water Supply Works Approval (WSWA) from the Department of Climate Change, Energy, the Environment and Water (DCCEW) before dewatering works commence. A Dewatering Management Plan is also required to address: • dewatering management • groundwater quantity: likely volume that will be extracted • groundwater quality and discharge methodology/location • reporting of extraction and dewatering (log) in accordance with the appropriate license (WSWA).
Dewater excavations in accordance with the Program Delivery Guidance Standard 9.1 Excavation Dewatering (ENV-GS-001).
Bund potential contaminants and store on robust waterproof membrane, away from drainage lines.

Mitigation measures
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Bunded areas to have 110% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled.
Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and flood prone areas.
Conduct any equipment wash down within a designated washout area.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.

5.2.3 Flora and fauna

A Biodiversity Assessment Report (BAR) was prepared for the proposal (GHD, 2026). The full report is provided in Appendix C. The BAR included:

- a desktop assessment including database searches for flora and fauna previously recorded
- a flora and fauna field survey
- likelihood of occurrence assessment for threatened flora and fauna based on the habitats identified during the field survey
- assessments of significance for those species that are present or have a moderate to high likelihood to occur were found to be likely to occur in the study area
- discussion of the potential impacts of the proposal
- identification of site-specific mitigation measures to minimise and mitigate potential impacts of the proposal.

Existing environment

Vegetation communities

Native vegetation has been partially cleared/modified due to historic and ongoing WFP development. Historical imagery indicates that the vegetation in the northern part of the WFP has remained largely intact since 1955, while southern part of the WFP was cleared by 1961. Riparian/woodland vegetation has been regenerating since the 1970s (with some recent disturbance associated with bank stabilisation/drainage works).

The condition of the native vegetation in the study area is assessed as being in moderate condition, characterised by an intact native canopy with a midstorey either dominated by exotic species, or with

occasional non-local native species. The understorey is dominated by exotic species. No 'high condition' vegetation was identified in the study area. Remaining vegetated areas are predominantly mown exotic lawn/grassland.

Two plant community types (PCT) were mapped during the field survey (Figure 5-1). The associated threatened ecological communities (TECs) and their conservation status is provided in Table 5-3.

Table 5-3 Plant Community Types found on site

PCT ID and name	TEC	BC Act status	EPBC Act status	Area (ha)
3320 Cumberland Shale Plains Woodland	Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	NA	0.67
4025 Cumberland Red Gum Riverflat Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Critically Endangered	0.33

Flora

No threatened flora were recorded during the field survey and there are no previous records of threatened species in the study area. Due to the historical clearing, weed invasion and changed hydrological regimes the study area has been rendered as unsuitable habitat for many threatened flora species known or predicted to occur in the locality.

Based on the field survey and the likelihood of occurrence assessment, no flora species were found to have a moderate or higher likelihood of occurring in the study area.

Fauna

No threatened fauna species were observed during the field studies. Eight threatened fauna species were previously recorded in the WFP (Table 5-4). Searches in suitable habitat were carried out for the Cumberland Plain Land Snail during the field survey (Figure 5-1).

Of the 91 species predicted or known to occur in the locality based on the results of the desktop assessment, 17 are likely to occur and 26 fauna species could possibly occur. The remaining 50 have either no potential or a low potential to occur based on habitat values. Threatened species with a high likelihood to occur in the study area are provided in Table 5-4.

No migratory species were recorded during field surveys. While there is potential for migratory species to occur the study area does not provide critical habitat for migratory species

Table 5-4 Threatened species with a high likelihood to occur in the study area

Common name	*Scientific name*	BC Act status	EPBC Act status
Birds			

Common name	*Scientific name*	BC Act status	EPBC Act status
Little Lorikeet	***Glossopsitta pusilla***	Vulnerable	
Masked Owl	***Tyto novaehollandiae***	Vulnerable	
Powerful Owl*	***Ninox strenua***	Vulnerable	
South-eastern Glossy Black Cockatoo	***Calyptorhynchus lathami lathami***	Vulnerable	Vulnerable
Square-tail Kite*	***Lophoictinia isura***	Vulnerable	
Swift Parrot	***Lathamus discolor***	Endangered	Critically endangered
White-bellied Sea Eagle	***Haliaeetus leucogaster***	Vulnerable	
Varied Sitella	***Daphoenositta chrysoptera***	Vulnerable	
Mammals			
Eastern Coastal Free-tailed Bat*	***Micronomus norfolkensis***	Vulnerable	
Eastern False Pipistrelle	***Falsistrellus tasmaniensis***	Vulnerable	
Greater Broad-nosed Bat*	***Scoteanax rueppellii***	Vulnerable	Vulnerable
Grey-headed Flying-fox*	***Pteropus poliocephalus***	Vulnerable	Vulnerable
Koala	***Phascolarctos cinereus***	Vulnerable	
Large Bent-winged Bat*	***Miniopterus orianae oceanensis***	Vulnerable	
Little Bent-winged Bat*	***Miniopterus australis***	Vulnerable	
Southern Myotis*	***Myotis macropus***	Vulnerable	
Yellow-bellied Sheathtail-bat	***Saccolaimus flaviventris***	Vulnerable	
Gastropod			
Cumberland Plain Land Snail	***Meridolum corneovirens***	Vulnerable	

* denotes species previously recorded in the WFP

Aquatic

The Hawkesbury River is mapped as key fish habitat. The Hawkesbury River meets the definition of 'Type 1 – Highly Sensitive Key Fish Habitat', being a large permanent watercourse that supports threatened species such as the Macquarie Perch.

The Hawkesbury River is also defined as a 'Class 1 – Major Key Fish Habitat' which refers to large, named permanently flowing rivers and estuaries that are essential for the spawning, nursery, and feeding requirements of fish.

The river supports a diverse range of aquatic plants, common macroinvertebrates and fish species, with some impairment from sedimentation and weeds. The river provides habitat for waterbirds and common fish species such as Australian bass and estuary perch.

Threatened aquatic species with potential to occur in the study area are:

- Macquarie perch (***Macquaria australasica***)
- Sydney hawk dragonfly (***Austrocordulia leonardi***)
- Silver perch (***Bidvanus bidvanus***)
- Australian grayling (***Prototroctes maraena***).

Weeds

Six plant species listed as priority weeds were recorded during the field survey:

- Asparagus Fern
- Bridal Creeper
- Green Cestrum
- Cats Claw Creeper
- Lantana
- Fireweed.

Figure 5-1 Ground-truthed vegetation and habitat mapping (GHD, 2026)

Potential impacts

Vegetation communities

The proposal will clear 0.09 ha of native vegetation (Table 5-5):

- 0.04 ha of Cumberland Shale Plains Woodland
- 0.05 ha of Cumberland Red Gum Riverflat Forest.

The proposal will also clear 0.17 ha of exotic grassland.

Assessments of significance were prepared for the BC Act listed TECs:

- Cumberland Plain Woodland in the Sydney Basin Bioregion
- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

The assessments concluded that the proposal will not have a significant impact and a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not required

A significant impact test was prepared for the EPBC Act listed River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (River-flat Eucalypt Forest). The proposal is unlikely to have a significant impact and a referral to the Federal Department of Climate Change, Energy, the Environment and Water for determination is not required.

Table 5-5 Vegetation clearing

PCT ID	Name	BC Act status	EPBC Act status	Area (ha) to be cleared
3320	Cumberland Shale Plains Woodland	Critically Endangered	Not Listed	0.04
4025	Cumberland Red Gum Riverflat Forest	Endangered	Critically Endangered	0.05
NA	Exotic grassland	NA	NA	0.17
Total area of vegetation				**0.26**
Total area of native vegetation				**0.09**

Flora

Given the lack of previous records of threatened flora species in the study area and the degraded nature of the habitat to be removed, the proposal is considered to have a low likelihood of a significant impact on threatened flora species. As such, assessments of significance have not been completed for flora species.

Fauna

The removal of vegetation within the construction footprint would mainly affect habitat for common fauna species capable of persisting in modified areas, close to areas of residential and industrial development, including common birds, as well as ground-dwelling fauna such as small lizards and frogs.

No trees containing hollows of greater than 5 cm in diameter were identified in the construction footprint. However, small hollows and fissures may not have been observable from ground-level and are considered likely to be present in the construction footprint. These trees provide foraging and roosting habitat for microbat species:

- Eastern Coastal Free-tailed Bat (***Mormopterus norfolkensis)***
- Eastern False Pipistrelle (***Falsistrellus tasmaniensis)***
- Little Bent-winged Bat (***Miniopterus australis***)
- Southern Myotis (***Myotis macropus)***
- Yellow-bellied Sheathtail-bat (***Saccolaimus flaviventris)***

Assessments of significance were prepared for these species. The assessments concluded that significant impact on hollow-roosting microbat species is unlikely (Table 5-6). While the Large Bent-winged Bat and Greater Broad-nosed Bat have been previously recorded in the WFP, these species would not rely upon any habitat within the construction footprint for breeding. The proposal is considered to have a low likelihood of impact. An assessment of significance has not been prepared for these species.

Cumberland Plain Land Snails were not recorded during the field survey This could be due to periods of dry weather prior to surveys, which reduces the chance of detecting the species. Much of the vegetation to be removed does not support suitable refuge habitat for the Cumberland Plain Land Snail. Despite this, a conservative approach has been taken, and it has been assumed that all areas of good quality Cumberland Plain Woodland support potential habitat for this species. An assessment of significance prepared for the Cumberland Plain Land Snail concluded that the proposal is unlikely to have a significant impact on the species (Table 5-6).

The proposal will remove up to 0.09 ha of potential foraging habitat for the koala, which includes up to eight species of koala use trees (as per the Koala SEPP). No koalas were recorded in the study area and no signs of koala use (e.g. scats, scratches on trees) were observed at the time of field work. Koalas have not been previously recorded in the study area. While the koala may use resources in the study area on occasion, it will not rely on vegetation in the construction footprint for its survival. Given that there is no indication that the construction footprint is likely to be used by a koala, the construction footprint is not considered to qualify as core koala habitat, as per the Koala SEPP. As such, any potential impact as a result of the proposal is expected to be minimal and therefore an assessment of significance was considered unnecessary for the koala.

The proposal would also remove small areas of potential foraging habitat for a number of highly mobile species previously recorded in the WFP such as the Grey-headed Flying-fox (***Pteropus poliocephalus),*** large forest owls including the Powerful Owl (***Ninox strenua)*** and the Masked Owl (***Tyto novaehollandiae)***, and woodland birds including the Varied Sittella (***Daphoenositta chrysoptera).*** Assessments of significance are considered unnecessary for these species as any potential impact resulting from the proposal is likely to be

minimal and have little influence on these species. No breeding habitat for these species would be impacted, with only a small area of potential foraging habitat removed by the proposal.

Wide-ranging, highly mobile species that are capable of dispersing to locations outside of the construction footprint during the proposed construction works include the South-eastern Glossy Black-Cockatoo (***Calyptorhynchus lathami lathami)***, Little Lorikeet (***Glossopsitta pusilla***), Square-tail Kite (***Lophoictinia isura***), Little Lorikeet (***Lathamus discolor***) and the White-bellied Sea Eagle (***Haliaeetus leucogaster***). Assessments of significance are considered unnecessary for these species as breeding or nesting habitat would not be impacted:

- no known hollow-bearing trees that could be used by the South-eastern Glossy Black-Cockatoo would be impacted by the proposal.
- no candidate nest sites for Square-tail Kite or White-bellied Sea Eagle were identified during the field survey
- no breeding habitat for the Little Lorikeet or Little Lorikeet would be impacted.

Taking these matters into consideration, the proposal is considered to have a low likelihood of impact on these species and no assessments of significance have been completed for these entities.

Table 5-6 Results of assessments of significance

Threatened species	Potential impact	Result of test of significance
Hollow-roosting microbats		
Eastern Coastal Free-tailed Bat*	Removal of 0.09 ha of foraging and breeding habitat	No significant impact
Eastern False Pipistrelle		
Southern Myotis*		
Yellow-bellied Sheathtail-bat		
Gastropod		
Cumberland Plain Land Snail	Removal of 0.04 ha of habitat	No significant impact

* denotes species previously recorded in the WFP

Aquatic

Construction of the proposal has the potential to result in sedimentation, pollution, contaminated runoff or erosion within the construction footprint, potentially impacting aquatic habitats. However, impact to threatened species is not anticipated. The habitat required by threatened species with potential to occur in the study area is:

- Macquarie perch – occurs in waters with lots of cover such as aquatic vegetation, snags, boulders and overhanging banks

- Sydney hawk dragonfly - specific habitat requirements, and has only ever been collected from deep river pools with cooler water and permanent flow
- Silver perch - generally found in faster-flowing water including rapids and races and more open sections of river
- Australian grayling - larvae migrate out to sea for the first 4 – 6 months of their life before migrating back to freshwater. In their freshwater phase they are found in moderate to fast flowing waters, such as glides or runs, during the day and slow-flowing waters at night.

The river around the proposal area is a wide, tidal channel and does not provide suitable habitat for threatened species.

Construction of the rock platform and coffer dam will result in disturbance of about 120 m^2 of river bed. The proposal will likely remove some aquatic vegetation. Part of the river bed in the construction footprint has recently been disturbed by bank stabilisation work. The proposal is not expected to substantially impact the aquatic environment of the river due to the small scale of the work and the recent disturbance.

Operational impacts

Operational impacts are not expected. The raw water intake structure will have screens that prevent aquatic organisms entering the wet wells. Impact to terrestrial flora and fauna is not expected during operation.

Biodiversity Offsets

Sydney Water's Biodiversity Offset Guide (SWEMS0019.13) identifies offset options for Sydney Water activities that fall outside statutory requirements. Where a project has residual biodiversity impacts, native vegetation removal can be offset by:

- restoring the impacted site through native revegetation, and/or
- restoring adjacent land to the impacted site, and/or at an alternative offset site by undertaking native revegetation, and/or
- purchasing voluntary offset credits under the NSW Government's Biodiversity Offset Scheme (BOS).

Table 5-7 outlines the non-statutory offset calculations relating to the proposal, as per SWEMS0019.13. Sydney Water plans to offset impacted vegetation within the WFP.

Table 5-7 Offset requirements

Biodiversity Value	Impact to native vegetation	Offset multiplier (moderate impact)	Offset requirement
Cumberland Shale Plains Woodland	0.04 ha	3	0.12 ha
Cumberland Red Gum Riverflat Forest	0.05 ha	3	0.15 ha
Total	**0.09 ha**		**0.27 ha**

Mitigation measures

Table 5-8 Environmental mitigation measures — flora and fauna

Mitigation measures
Provided it is essential for delivering the proposal, 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: o vegetation trimming or o removal of exotic vegetation or o removal of planted native vegetation where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value. • Any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the BAR). 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).
If vegetation is highly sensitive, trimming or clearance cannot proceed without written authorisation from the Sydney Water Project Manager (in consultation with Environmental Representative).
Implement weed and pathogen management measures in accordance with relevant state guidelines, including controls for invasive species, Phytophthora, Myrtle Rust and chytrid fungus.
The site induction must include information on the biodiversity values of the WFP, fauna protection and environmental responsibilities.
Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. Where possible, limit clearing to trimming rather than the removal of whole plants.
Delineate the construction footprint and vegetation to be cleared
An ecologist must carry out a pre-clearing survey. Salvage fauna (including surveys for the Cumberland Plain Land Snails) and habitat features. Relocate fauna and habitat features outside the construction footprint.
Protect retained trees in accordance with AS 4970; engage an arborist where significant root disturbance may occur; and undertake pruning in accordance with AS 4373.
Cease works if threatened species are detected; notify Sydney Water's Environmental Representative; and only resume works following assessment and implementation of appropriate mitigation measures.
If any damage occurs to vegetation outside of the construction footprint, notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.
Fisheries NSW (1800 043 536) and the Environment Protection Authority (131 555) is to be notified immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than

Mitigation measures
emergency response procedures are to cease until the issue is rectified and approval is given by Fisheries NSW and/or the Environment Protection Authority for the works to proceed.

Manage biosecurity in accordance with:

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

Record Pesticides and Herbicides use in accordance with SWEMS0017

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

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

5.2.4 Heritage

Existing environment and potential impacts

Aboriginal heritage:

The Aboriginal Heritage Information Management System (AHIMS) was searched on 30 October 2025 and there were no results within 500m of the proposal.

The WFP is heavily disturbed from past construction of drinking water infrastructure. The river bed and bank around the proposal is also highly disturbed by construction of the existing intakes, pumping station and bank stabilisation structures. The potential to encounter Aboriginal heritage during construction or operation is low.

Non-Aboriginal heritage:

The following heritage database searches were completed on 30 October 2025:

- NSW State Heritage Inventory
- World Heritage Properties and National Places
- Australian Heritage Database
- Hawkesbury LEP.

The nearest heritage item is 'St John of God Hospital (former 'Belmont Park', mansion, garden, building, gatehouse and curtilage)' (LEP listing number: I412) located 680 m west of the proposal. The proposal will not impact non-Aboriginal heritage during construction or operation.

Mitigation measures

With the implementation of the mitigation measures below, impacts to heritage can be adequately managed, and residual impacts are not expected.

Table 5-9 Environmental mitigation measures — heritage

Mitigation measures
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.

5.2.5 Noise and vibration

A specialist noise and vibration assessment was carried out for the proposal (Arup, 2026). The report is summarised in this section and full report provided in Appendix D.

Existing environment

Noise sensitive receivers within 800 m of the WFP are mostly residential. The nearest residences are on Keda Circuit, along the eastern boundary of the WFP. Sensitive receivers are shown in Figure 5-2. Farm buildings and shed were identified where possible and excluded from the noise assessment.

Background noise morning was carried out between 31 October and 10 November 2025. The background noise was used to determine noise management levels (NMLs) for residential receivers impacted by the proposal (Table 5-10). Criteria from the Interim Construction Noise Guideline (ICNG) were used to determine NMLs for non-residential receivers. NMLs represent a threshold for noise impacts to sensitive receivers. Where noise impacts are predicted to be above NMLs, additional reasonable and feasible mitigation measures to reduce noise impacts should be considered.

Table 5-10 NMLs for noise sensitive receivers – external noise levels

Type of receiver	Time period	Highly noise affected (dB)	Standard hours (dB $L_{Aeq(15min)}$)
Residential	Day	75	49
Active recreation	When in use	NA	65
Commercial	When in use	NA	65
Community use	When in use	NA	55
Educational	When in use	NA	55
Health	When in use	NA	55
Industrial	When in use	NA	70
Passive recreation	When in use	NA	60
Place of worship	When in use	NA	55

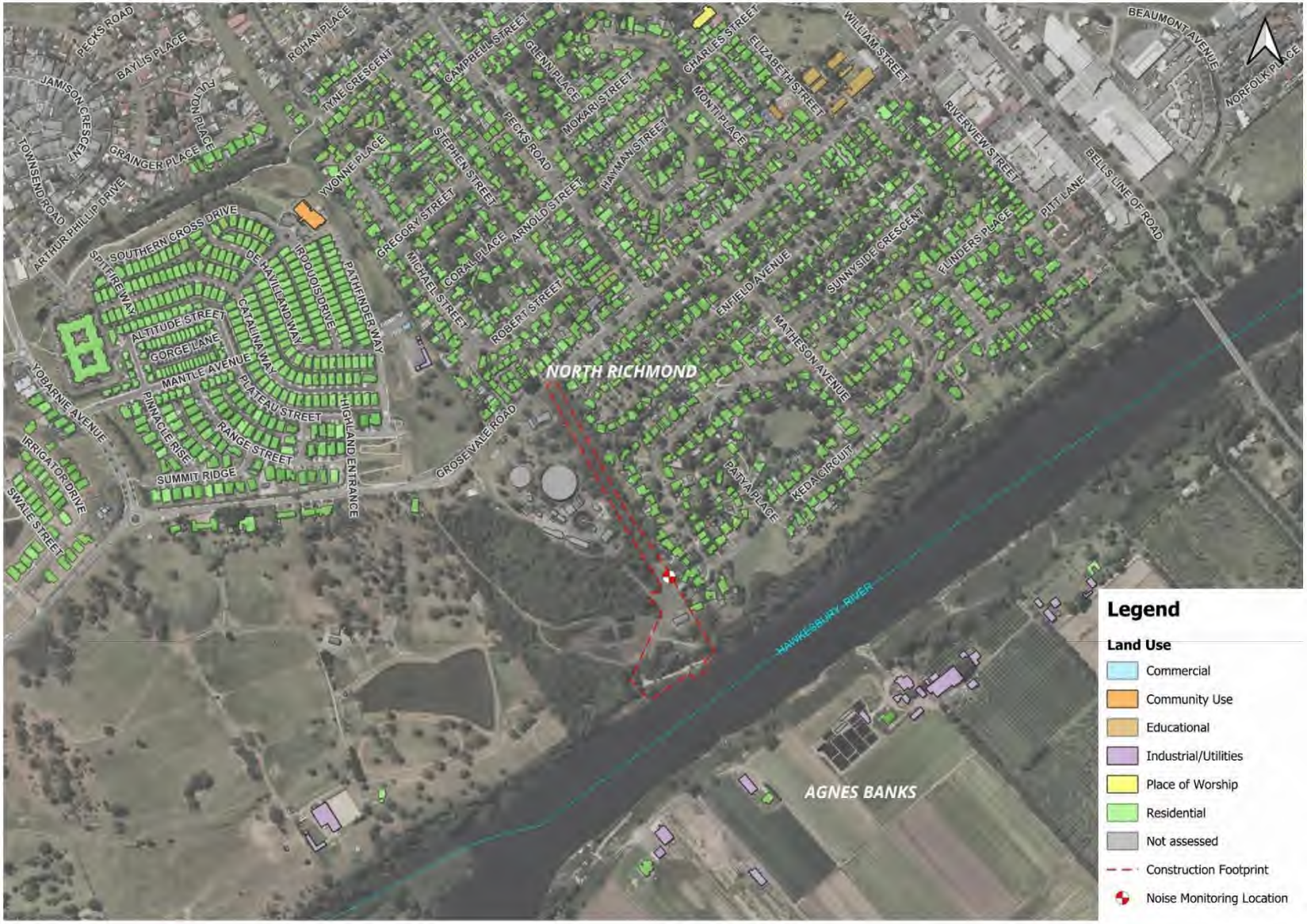

Figure 5-2 Sensitive receivers (Arup, 2026)

Potential impact

Construction noise

An acoustic model was prepared based on the likely construction scenarios, and equipment to be used during each scenario. The model was able to predict expected construction noise levels at each receiver. Table 5-11 summarises the noise assessment results for each construction scenario, including the predicted sound power levels during construction. For the purpose of the assessment, all plant and equipment for each scenario was presumed to be operating concurrently for the whole assessment. This is a worst-case assessment as it is unlikely all plant and equipment would be used at once. As the construction staging program is unknown (i.e. multiple scenarios may be in construction at once), the noise from each scenario was assessed individually. Predicted noise impacts are also presented in Figure 5-3 to Figure 5-8.

Table 5-11 Number of sensitive receivers predicted to exceed NMLs

Standard Hours - dB(A) above NML	Number of receivers where noise levels are predicted to exceed the NML					
	Site Mobilisation	Vegetation clearing	Piling/ coffer dam	Pump chamber construction	Pipe and valve chamber construction	Commission and demobilisation
Sound power level (dB)	118	119	126	122	127	116
0 – 10 dB	59	75	176	125	230	43
10 – 20 dB	8	8	23	13	28	8
>20 dB	2	1	3	3	6	1
Highly Noise Affected >75dB(A)	-	1	1	1	1	-

Construction NMLs are predicted to be exceeded at surrounding receiver locations during all construction scenarios. Pipe and valve chamber construction is predicted to have the highest number of impacted receivers, followed by piling / coffer dam construction.

During pipe and valve chamber construction, rock hammering and rock sawing activities are predicted to cause the highest exceedances. These activities are not expected to be used continuously throughout the construction period with rock breaking to be used along the pipe alignment only where required and saw cutting scheduled for six days on the rock face.

During piling and coffer dam construction works, vibratory and impact piling activities are predicted to cause the highest exceedances. Similarly, these activities are not expected to be used continuously throughout the construction period and would be transient and short in duration.

One resident would be highly noise affect (>75dB) during four of the six work scenarios.

Construction traffic

Construction traffic is expected to generate a minor increase in vehicle movements on the surrounding road network, primarily via Grose Vale Road. Predicted increases in traffic noise are less than 2 dB(A) and are therefore considered negligible.

Construction vibration

Vibration intensive works may include piling and rock hammering. Details of exact construction plant/equipment items and locations are yet to be finalised. However, a preliminary screening assessment has been undertaken for cosmetic damage and human comfort based on impact piling works and rock hammering works (using large hydraulic hammer). The assessment indicated a small number of nearby receivers may be within the minimum working distances for human comfort during those activities. The risk of cosmetic or structural damage to buildings and infrastructure is considered low provided that appropriate vibration management measures are implemented.

Potential impacts – operational noise

Pumping stations will be built to comply with the Noise Policy for Industry (EPA, 2017). Operational noise impacts are not anticipated.

Figure 5-3 Predicted noise impacts – scenario 1 (Arup, 2026)

Figure 5-4 Predicted noise impacts – scenario 2 (Arup, 2026)

Figure 5-5 Predicted noise impacts – scenario 3 (Arup, 2026)

Figure 5-6 Predicted noise impacts – scenario 4 (Arup, 2026)

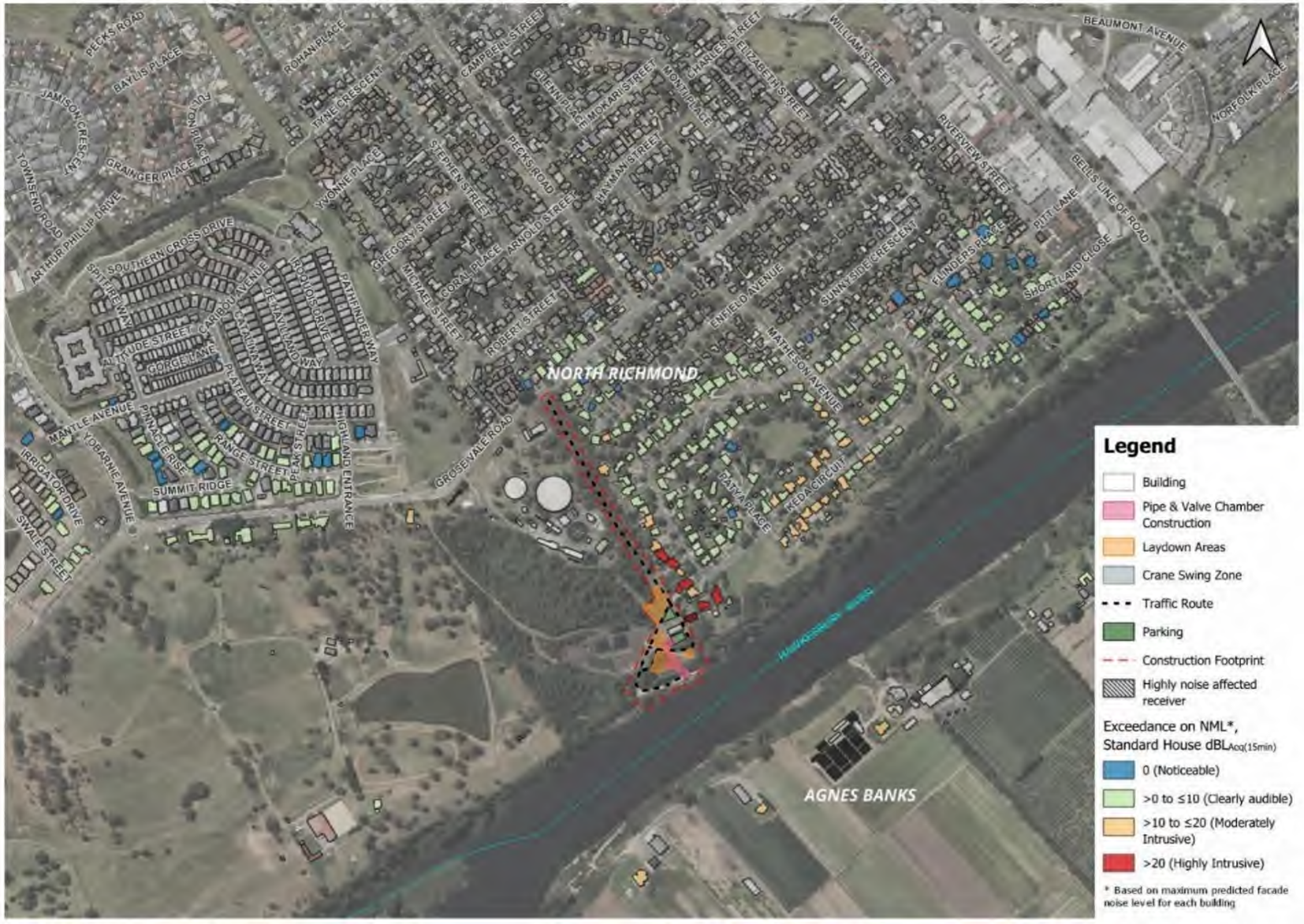

Figure 5-7 Predicted noise impacts – scenario 5 (Arup, 2026)

Figure 5-8 Predicted noise impacts – scenario 6 (Arup, 2026)

Mitigation measures

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

Table 5-12 Environmental mitigation measures — noise and vibration

Mitigation measures
Works must comply with the Construction Noise Guideline (Draft, 2021), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sunday nights or public holidays. Any proposed work outside of these hours must be fully justified. The Proposal will also be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056 • Noise Policy for Industry (EPA, 2017). All reasonable and feasible noise mitigation measures should be clearly justified, documented and implemented on-site to mitigate noise impacts.

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

- identify and consult with the potentially affected residents prior to the commencement:
  - describe the nature of works; the expected noise impacts; approved hours of work; duration, complaints handling and contact details
  - determine need for, and appropriate timing of respite periods (e.g. times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences)
- implement a complaints handling procedure for managing 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 (e.g. 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 (e.g. generators away from sensitive receivers, site set up to minimise use of vehicle reversing alarms, site amenities and/ or entrances away from noise sensitive receivers)
- use natural landforms/ mounds or site sheds as noise barriers
- schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

Mitigation measures

If works may extend beyond standard daytime hours, the Contractor will:

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

If night works are needed, the Contractor will:

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

As works on Sundays are required, the Contractor will:

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

A CNVMP must be prepared to detail plant and equipment, updated noise and vibration predictions, work scheduling, roles and responsibilities, sensitive receivers and structures, impact-causing activities, required mitigation and monitoring, and the community engagement approach.

A qualified site representative must be appointed to manage noise and vibration, with managers conducting periodic on-site checks, all personnel receiving induction and ongoing training on mitigation and work hour limits, and good housekeeping practices adopted to minimise unnecessary noise.

Community consultation should occur before and during construction, with clear notifications to all potentially affected stakeholders (within 500 m) at least seven days in advance outlining the works, timing, impacts, mitigation, respite periods, contacts, and complaints process, while considering any special sensitivities and maintaining a dedicated project contact point throughout.

Noisy equipment should be positioned as far as practicable from sensitive receivers, with temporary mitigation such as hoardings or acoustic screens installed where needed especially for high-impact or extended works, including trenching and any feasible out-of-hours periods.

Mitigation measures

Quieter construction methods should be used where feasible, with plant minimised in size, properly maintained, turned off when idle, and visually checked daily by the Responsible Person to ensure noise emissions remain as low as practicable.

Where high-impact construction activities are proposed, noise and vibration monitoring should be undertaken to verify predicted impacts. Short-term attended monitoring should be conducted in response to complaints and to confirm compliance with predicted noise and vibration levels.

Traffic management should minimise reversing and idling, route heavy vehicles along major roads away from sensitive receivers, and ensure drivers avoid loud behavior and engine breaking near sensitive areas.

Noise emissions from mobile plant should be reduced where practicable through the use of additional noise-attenuating fittings, including residential-grade mufflers and damped hammers such as “City” model rammer hammers.

The noise emissions of plant and equipment should be considered as part of rental and procurement decisions.

Vibration-generating equipment should be chosen to minimise impacts, with dilapidation surveys or work-distance trials completed in advance for any structures within risk distances, and survey outcomes used to adjust criteria or mitigation, including confirming the sensitivity of at-risk buildings before works begin.

Buildings, buried services, utilities and Sydney Water assets must be addressed in the CNVMP, with dilapidation surveys undertaken where assets are within risk distances and outcomes used to refine vibration criteria or protection measures, including additional controls for Sydney Water assets in line with the Specialist Engineering Assessment procedure.

5.2.6 Air and energy

Existing environment

A search on the National Pollutant Inventory identified no source of pollutant within or in close proximity to the study area. The existing air quality around the proposal is primarily influenced by traffic along Grose Vale Road, and other local roads in the area.

Potential impacts

Sensitive receivers are residents located on the eastern boundary of the WFP. There is potential for air quality impacts from:

- dust generated during the excavation and stockpiling of materials
- dust generated by the transport of loose materials and construction vehicles travelling on disturbed/ unsealed access routes
- emissions from construction machinery, equipment and vehicles.

Dust can impact private property, including pools, causing nuisance for residences. These potential air quality impacts will be localised and can be managed by managing dust emissions from excavations and stockpiles.

Operational air quality impacts are not expected. The proposal is expected to improve energy efficiency by replacing old, inefficient pumps in WP0065.

Mitigation measures

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

Table 5-13 Environmental mitigation measures — air and energy

Mitigation measures
Implement measures to prevent offsite dust impacts, for example: • water exposed areas (using non-potable water source where possible such as water from excavation pits) • cover exposed areas with tarpaulins or geotextile fabric • modify or cease work in windy conditions • modify site layout (place stockpiles away from sensitive receivers) • vegetate exposed areas using appropriate seeding • cover all transported waste.
Use alternatives to fossil fuels where practical and cost-effective.
Maintain equipment in good working order, comply with the clean air regulations of the ***Protection of the Environment Operations Act 1997***, have appropriate exhaust pollution controls, and meet Australian Standards for exhaust emissions.
Switch off vehicles/machinery when not in use.
Track energy use as per SWEMS0015.28 Contractor NGER template.

5.2.7 Waste and hazardous materials

Existing environment and potential impacts

Sydney Water maintains a hazardous materials database for its operational facilities. Hazardous materials inspections have been carried out at the WFP, WP0065 and WP0191. Hazardous materials are found in WP0191, the WFP buildings and treatment infrastructure. Lead paint was found in WP0191. Based on previous pre-demolition inspection reports for buildings at the WFP, lead paint and asbestos have potential to be encountered in the switch rooms.

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. The proposal will generate:

- spoil – about 5,500 m^3 from pumping station construction
- rock – about 350 m^3 from the rock platform

- general construction waste such as excess concrete, redundant pieces of pipe/fittings, timber, paper, plastic and metal
- green waste from clearing vegetation including weeds
- general waste from compound site amenities
- transformers and other electrical equipment
- demolition waste from the switch rooms
- lead paint (potential)
- asbestos (potential).

The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP.

Transformer oil can contain Polychlorinated Biphenyls (PCBs). PCB are a hazardous waste and have potential to pollute the environment. Transformer removal will be carried out by suitably qualified contractors to minimise the risk of pollution.

A search of the EPA's contaminated lands register was conducted on 13 January 2026 for the suburbs of North Richmond. There are no records of contaminated land in this suburb.

Sediment and debris is likely to be deposited by flood waters around WP0423 during operation. This material will be removed by Sydney Water's operations teams or contractors and disposed of at an appropriately licensed waste facility.

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 5-14 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Review existing hazardous building materials (HBM) report and implement relevant safeguards. Conduct hazardous materials survey prior to commencement where works could impact hazardous materials not surveyed in previous HBM assessments.
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).
Manage lead paint in accordance with the WHS Regulation (2017) Part 7.2 and the Australian Standard Lead Paint Management Guidelines. Consult with the Contamination and Hazardous Materials team where works involve removal of lead-based paint. Develop a Lead Management Plan if required.
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.

Mitigation measures
Minimise the generation of waste, sort waste streams to maximise reuse/recycling in accordance with the ***Waste Avoidance and Resource Recovery Act 2001***.
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle where appropriate. Recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Prevent pollutants from escaping including covering skip bins.
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.
If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water's Asbestos Management – Minor Works procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with the Contamination and Hazardous Materials team propertyenvironmental@sydneywater.com.au).
Disposal of PCBs must be managed by suitably qualified contractors.

5.2.8 Traffic and access

Existing environment

The existing local road network surrounding the proposal consists of Grose Vale Road, Enfield Avenue, Keda Crescent and other local roads. Access to the WFP is from Grose Vale Road. There is no footpath or cycleway on Grose Vale Road at the access to the WFP.

The 680 Richmond to Bowen Mountain bus service passes along Grose Vale Road, past the entrance to the WFP. The nearest bus stop is about 250 m west of the WFP access gate. The frequency of this service is about 6 times/weekday.

Potential impacts

During construction, an increase in traffic surrounding the proposal will be generated by:

- construction site establishment activities
- movement of work crews
- delivery and removal of materials.

The number of construction vehicles entering and leaving the WFP will depend on the construction activity. Generally, there will be about 5 trucks per day entering and leaving the WFP and the maximum would be up to about 30 trucks. The movements would be distributed over the course of the work shift, with about one truck arriving every 30 minutes. This is not expected to impact traffic flow, including the 680 bus service, on Grose Vale Road. Access to the WFP would be managed to ensure that trucks are not queueing outside the WFP.

The proposal is expected to use the existing access roads throughout the WFP. Access to the works area will be via a road that runs down the eastern side of the WFP (Figure 5-9). New section of access track will be constructed to allow one-way vehicle movement through the construction area. The new section of access track are included in the construction footprint shown in Figure 2-1.

The proposal will not disrupt access to any private properties or street parking as all construction vehicles will be parked on site.

Operation and maintenance vehicles will access the pumping station periodically during operation. However, this is not expected to impact traffic flow on the local road network.

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 low.

Table 5-15 Environmental mitigation measures — traffic and access

Mitigation measures
Include traffic management measures in the CEMP.
Manage access to the North Richmond WFP to minimise construction traffic queueing on public roads.
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.

Figure 5-9 Construction access

5.2.9 Social and visual

Existing environment

The Hawkesbury River is the dominant visual feature in the area. Due to its position to the bank of the river, the study area is considered to have moderate scenic quality. Residences are located adjacent to the study area. Vegetation partially screens views of the WFP from residential properties.

The river is used for boating and other recreational activities.

The suburb of North Richmond has a population of 6,358 and is located about 55km northwest of Sydney's Central Business District (CBD) (ABS Quick Stats, 2021).

Potential impacts

Due to the topography of the land 2-3 residents may have views of construction work. These residents are located on Keda Crescent near the river. Construction of the pumping station will be visible from the river. However, views from the river are likely to be of short duration from passing boat traffic. There are residences on the southern bank of the river. These residents are more than 220 m from the proposed work and views of construction will be partially obscured by sheds and other farm buildings.

The coffer dam and silt curtain will not impact recreational uses of the river.

Work to connect the new pressure pipeline to the existing pipe network at the WFP will require a plant shutdown. The shutdown would be during a period of low drinking water demand to minimise impact to customers. However, there is potential for a temporary loss of service for customers. This would likely be at night. Affected customers would be notified in advance of the shutdown.

WP0423 will be below ground and not be visible during operation. There will be no substantial change to views from the residences on Keda Crescent during operation compared to the existing views. The section of pipe on the rock face will be visible from the river. However, there are existing pipes on the rock face and the new pipe will not substantially change the overall view of the WFP from the river. The proposal will not be visible from properties on the southern side of the river during operation.

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 low.

Table 5-16 Environmental mitigation measures — social and visual

Mitigation measures
Undertake works in accordance with Sydney Water Communications policies and requirements including: • notify impacted residents • treat community enquiries appropriately.
Notify customers of drinking water service interruptions at least 7 days in advance.
Restore work sites to pre-existing condition or better.
Minimise visual impacts (e.g. retain existing vegetation where possible).

Mitigation measures
Direct artificial light away from sensitive receivers where possible (i.e. residents, fauna or roadways).
Maintain work areas in a clean and tidy condition.

5.2.10 Cumulative and future trends

Potential impacts

The proposal is unlikely to result in cumulative impacts due to its location within the WFP.

Future trends that could impact the proposal are bush fire and flooding. WP0423 will be below ground and largely protected against bush fire. The pumps in WP0423 are designed to operate in a wet well. While flooding may affect access to WP0423 it is not expected to impact the operation of the pumping station. WP0423 is not expected to be impact by future extreme events related to climate change.

Mitigation measures

No mitigation measures required.

5.2.11 General environmental management

Table 5-17 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 meet the following principles: • limit proximity to sensitive receivers • no disruption to property access • no impact to known items of non-Aboriginal and Aboriginal heritage • outside high-risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • no impacts to remnant native vegetation or key habitat features • no disturbance to waterways • potential environmental impacts can be managed using the safeguards in the BAR • no disturbance of contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.

Mitigation measures

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

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

- boundaries of the work area including locations of lay-down and storage areas for materials and equipment
- location of environmental controls (such as erosion and sediment controls, fences or other measures to protect vegetation or fauna, spill kits)
- location and full extent of any vegetation disturbance.

The CEMP will identify appropriate delineation with the no go areas (e.g. metal fencing for AHIMS, white flagging for construction corridor, red flagging for no go zones etc).

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

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

All site personnel must be inducted into the IMP.

Immediately notify the Sydney Water Project Manager, Community Relations Representative and Environmental Representative of any complaints.

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

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

6. Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of the North Richmond WFP - Raw Water Intake upgrade. The proposal is required to address damage and safety concerns associated with the existing pumping station and reduce impacts to the community and the environment.

The proposal objectives are to reduce the likelihood of future failures and provide a safe and drinking water and to ensure compliance with EPL 5425.

The main potential construction environmental impacts associated with the proposal include noise and vibration, air quality, vegetation removal and work in the Hawkesbury River. No operational 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 result in positive long-term environmental improvements. The proposal will not result in the degradation of the quality of the environment and will not pose a risk to the safety of the environment.

References

Arup, 2026, ***North Richmond Water Filtration Plant Raw Water Intake Upgrade Construction Noise and Vibration Impact Assessment***, February 2026.

Australian Bureau of Statistics (ABS), 2021, ***North Richmond – 2021 Census All persons QuickStats***. Available at 2021 North Richmond, Census All persons QuickStats | Australian Bureau of Statistics.

Department of Planning Industry & Environment, eSpade - eSPADE v2.2

Environmental Protection Authority (EPA), 2017, ***Noise Policy for Industry***, October 2017.

GHD, 2026, ***North Richmond WFP (WT0011) raw water intake upgrade Biodiversity Assessment Report***, February 2026.

State Emergency Service (SES), 2026, Flood risk mapping, Available at Hawkesbury-Nepean Valley flood map | NSW SES,

Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise, vibration and dust impacts. 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 the proposal is located within the existing WFP.
Any environmental impact on the ecosystems of the locality	The proposal will result in some environmental impacts to ecosystems of the locality, including the removal of threatened vegetation. Assessments of significance found that the impacts would not be significant. Offsets would be used to mitigate the impact.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal may result in a minor, temporary reduction of aesthetic value of the locality during construction. The construction footprint will be restored to pre-existing conditions after the works are complete.
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 not affect the locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations.
Any impact on the habitat of any protected animals (within the meaning of the ***Biodiversity Conservation Act 2016***)	The proposal will have some impact to protected animals, mostly common species. The proposal will remove trees that may provide habitat for hollow-dependent microbats and potential habitat for the Cumberland Plain Land Snail. Assessments of significance for these species found that the proposal is unlikely to have a significant impact on these species. In addition, pre-clearance surveys by an ecologist will be carried out to identify and relocate animals before the start of construction.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not endanger any species of animal, plant or other form of life, whether living on land, in water or in the air. No significant impact to any threatened species is expected.
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 drinking water service for the area.
Any degradation of the quality of the environment	The proposal will require work in the Hawkesbury River. Mitigation measures will be implemented to minimise the impact to the river. Impact to vegetated has been minimised as much as possible and residual impacts will be offset.

Section 171 checklist	REF finding
	Overall, with the implementation of the mitigation measures the proposal will not degrade the environment.
Any risk to the safety of the environment	The proposal will be located in the flood zone. However, the pumping station will be below ground and will not increase the flood risk in the area. The Incident Management Plan will include procedure to manage the construction area in advance of flooding or high tides. 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. The proposal will be located within the existing WFP.
Any pollution of the environment	There is potential for erosion and sedimentation, noise and dust impacts. Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The proposal will not have any cumulative environmental effect with other existing or likely future activities.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The Hawkesbury River is tidal in North Richmond. The Incident Management Plan will include a procedure to manage the construction area in advance of high tides. The new pumping station will be below ground and will not impact coastal processes and coastal hazards.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The Hawkesbury Local Strategic Planning Statement (LSPS) sets out a 20-year vision for the LGA. The population of the LGA is predicted to grow by about 14% by 2036. The LSPS identifies planning priorities to deliver the Hawkesbury Community's future vision, including: • Planning Priority 1 - ensuring infrastructure aligns with current needs and future growth • Planning Priority 10 - adapting to natural hazards including flooding. The proposal will increase the raw water pumping capacity at the WFP to help meet the future drinking water demand in the North Richmond area. The new pumping station and intake are not expected to increase the flood risk in the area and will provide a resilient raw water supply to the WFP.

Section 171 checklist	REF finding
	The proposal is consistent with the planning priorities of the LSPS.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Appendix B – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		✓
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		✓
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		✓
Connect to, and use a substantial volume of water from a council owned water supply system?		✓
Require temporary structures on, or enclose, a public space under council's control that will disrupt pedestrian or vehicular traffic that is not minor or inconsequential?		✓
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?		✓
Section 2.11, local heritage – consultation with council		
Is the work likely to affect the heritage significance of a local heritage item, or of a heritage conservation area (not also a State heritage item) more than a minor or inconsequential amount?		✓
Section 2.12, flood liable land – consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		✓
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div.16 (Research/ monitoring stations), (i) Div.20 (Stormwater systems)?		✓
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		✓
Section 2.15, consultation with public authorities other than councils		

TISEPP section	Yes	No
Will the proposal be on land adjacent to land reserved under the ***National Parks and Wildlife Act 1974*** or land acquired under Part 11 of that Act***? If so, consult with DPE (NPWS).***		✓
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? ***If so, consult with DPE (NPWS).***		✓
Will the proposal include a fixed or floating structure in or over navigable waters? ***If so, consult TfNSW.***	✓	
Will the proposal be on land in a mine subsidence district within the meaning of the ***Coal Mine Subsidence Compensation Act 2017***? ***If so, consult with Subsidence Advisory NSW.***		✓
Will the proposal be on land in a Western City operational area specified in ***the Western Parkland City Authority Act 2018,*** Schedule 2 and have a capital investment value of $30 million or more? ***If so, consult the Western Parkland City Authority***.	✓	
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? ***If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).***		✓