Review of Environmental Factors

Mamre Road Recycled Water and Stormwater Infrastructure (July, 2025)

Sydney WATER

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

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

Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the Mamre Road Recycled Water and Stormwater Infrastructure 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) 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]		
Riley Corby Sydney Water Date: 23/06/2025	Prinya Khamphounvong Environment Representative Sydney Water Date: 23/06/2025	Pramit Thapa Project Manager Sydney Water Date: 24/06/2025

Decision Statement

The main potential construction environmental impacts of the proposal include impacts on flora and fauna, and traffic and access. During operation, no impacts are expected. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

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

Determined by:		Date:
Murray Johnson, Senior Manager Environment and Heritage, Sydney Water [redacted]		17/07/2025

1. Introduction

1.1 Context

Sydney Water provides water, wastewater, recycled water (RW) and some stormwater (SW) 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 Mamre Road Recycled Water and Stormwater Infrastructure project and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

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

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

Aspect	Relevance to proposal
Proposal need	The Mamre Road Precinct is one of ten precincts within the Western Sydney Aerotropolis Growth Area. The precinct was rezoned in June 2020 for industrial development. It needs immediate servicing to support planned growth and development in the area expected from 2021. There is limited infrastructure within the Western Sydney Employment Area (WSEA) catchment to facilitate the NSW Government's planned growth and accelerated development. Without additional servicing infrastructure, the following problems exist: • the anticipated growth and development in the WSEA catchments will exceed current wastewater management capacity, impeding economic potential of the regions • inability to meet minimum Upper South Creek Networks Advanced Water Recycle Centre (USC AWRC) inflow volume by 2026 will impact commissioning timeframes and optimal plant operation.
Proposal objectives	The proposal objectives are: • to provide appropriate RW and SW infrastructure to support industrial development and growth in the Mamre Road Precinct • to ensure compliance with Sydney Water's operating licence and meet commitments in the Customer Contract by providing new network wastewater services to support 17,000 new jobs by 2046 • to reduce reliance on the drinking water system and promote sustainable water management and climate resilience through the reuse of water.
Consideration of alternatives/options	A Major Project Strategic Business Case and Final Business Case advocated for integrated water cycle management (IWCM) servicing, with a focus on Mamre Road and the Aerotropolis Initial Precincts. Retaining stormwater and

Aspect	Relevance to proposal
	treated wastewater for beneficial uses provides affordable, cost-effective and sustainable and integrated services. Three options were considered: **Option 1: Base case / do nothing** Waterway targets are achieved through on-lot SW management. 80% of non-potable demand is to be met from on-lot storage and treatment of stormwater. **Option 2: Semi-IWCM approach** A regional approach to SW management, with provision for large-scale storage and reuse for non-potable purposes including cooling and greening. **Option 3: Full IWCM approach** A regional approach to SW management, with provision for large-scale storage and reuse for non-potable purposes including cooling and greening. Top-up during periods where stormwater is not available is from RW. **Decision:** The base case option was not chosen as it would not support planned growth and development in the area, causing the catchment to exceed the current wastewater capacity. Option 2 and Option 3 represent a regional integrated solution managed and governed by Sydney Water. Option 2 uses potable water and in Option 3 the source is recycled wastewater from the USC AWRC. Option 3 was determined to be the preferred as it benefits from supply by both treated SW and RW and the resilience to drought is strengthened. The Delivery Approval Business Case (DABC) for the IWCM within the Mamre Road Precinct was finalised in 2025. This proposal forms a minor component of the much larger DABC scope. No alternative options were considered for the proposal's pipeline alignments. However, the western side of Mamre Road was chosen as there are existing utility services along the eastern side. Additionally, the proposal will tie into existing RW and SW infrastructure on the western side of Mamre Road.

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*	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.

Principle	Proposal alignment
practicable, and an assessment of the risk-weighted consequences of various options.	
Inter-generational equity – *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposal will help to meet the needs of future generations by providing a reliable RW and SW service. The proposal enables the re-use of precinct SW and RW from the USC AWRC to protect drinking water supplies for future generations.
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. Any impacts to native vegetation will be offset. However, the proposal was designed to use previously cleared areas within the road verge to minimise impacts to protected vegetation.
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.

2. Proposal description

2.1 Proposal details

Table 2-1 describes the proposal, Figure 2-1 and Figure 2-2 shows the proposal and key environmental constraints.

Table 2-1 Description of proposal

Aspect	Detailed description
Proposal description	The proposal involves the construction and operation of new RW and SW pipelines to the Mamre Road Precinct in Kemps Creek, NSW. The proposal consists of the following key assets: • about 3.2 km of RW pipeline with an internal diameter of 200 - 250 mm • about 1.3 km of SW pipeline with an internal diameter of 250 mm. Refer to Figure 2-1 and Figure 2-2 for the location. The SW pipeline will transfer harvested stormwater from stormwater basins to the RW reservoir within the precinct. The RW pipeline is a part of the RW scheme plan to service Mamre Road Precinct. These pipelines will be laid in the same trench, mostly within the Mamre Road verge and/or just outside the road corridor. A section of SW pipeline (about 270 m) will connect to an existing SW pipeline at 771 Mamre Rd, St Marys (Lot 23 DP1305900).
Location and land ownership	The proposal is in the Mamre Road Precinct in the Penrith City Council Local Government Area (LGA). The majority of the proposal alignment is along Mamre Road, between Bakers Lane and Abbotts Road in Kemps Creek, NSW. The proposal is on the western side of Mamre Road and is adjacent to private properties. The proposal is in Penrith City Council LGA, however the land is zoned under the Western Parkland City SEPP including: • SP2 – Classified Road – Mamre Road is a State Road managed by Transport for NSW (TfNSW) • IN1 – General Industrial – private property • RE1 – Public Recreation – private property • ENZ – Environment and Recreation – private property.
Site establishment and access tracks	Site establishment includes delineating the construction sites, storage and laydown areas, erosion and sediment controls, traffic management and vegetation removal. The work areas can be accessed via Mamre Road.
Ancillary facilities (compounds)	Construction compound(s) will likely be required to house site sheds, construction amenities and materials laydown. During the concept design phase, the location of compounds and access tracks could not be confirmed. The exact location of these will be chosen by the Delivery Contractor, in consultation with

Aspect	Detailed description
	the landowner(s) and approved by Sydney Water's Project Manager as described in the safeguards in Section 5. Some material laydown, stockpiling and equipment storage will be within the impact area during construction as works continue along the proposal alignment.
Methodology	**Trenching for pipe installation** The pipelines will be laid in an open trench with a minimum standard cover of about 0.6 m and 1.2 m for private properties and roads, respectively. Trenches will be about 3 m wide and 4.5 m deep. There may be maintenance free sections where the depth of cover is greater than 2.5 m, such as for road crossings, under stormwater culverts and/or other utilities. The impact area width will typically be 15 m around the alignment to accommodate excavation, as well as laydown of materials and equipment. This width may be restricted in certain areas to minimise environmental impacts or in road reserves to avoid private property impact. Trenching methodology includes: • install erosion and sediment control measures • implement traffic management measures at the start and end of each shift • provide temporary access to properties where trench routes impact driveways • excavate trenches to required depth and width • stockpile spoil material on the upslope side of trenches, or at temporary site compounds • shore and dewater trenches, depending upon trench depth and groundwater levels • 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 and restore areas disturbed by the construction works • test and commission the pipeline. **Trenchless construction** Small sections of the proposal alignment will be trenchless when open trenching is not feasible (such as culverts, existing utilities and roads). The proposed trenchless methodology is microtunneling and horizontal direction drilling (HDD), which includes the following construction activities: • Microtunnelling ○ set up microtunnelling launch and receival pit areas. Pits would be up to about 28 m^2 (7 m x 4 m) in area

Aspect	Detailed description
	○ excavate launch and retrieval pits to the depth of the pipes (about 7 m depth) ○ backfill the pits once the pipe has been installed. • HDD ○ set up HDD launch and receival pit areas. Pits would be up to about 40 m^2 (4 m x 10 m) in area ○ excavate launch and retrieval pits to the depth of the pipes (about 7 m depth) ○ backfill the pits.
Commissioning	Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing plant operations. The exact commissioning steps depend on the type of the equipment, but typically include inspection and performance testing of equipment, pipes, and fittings.
Restoration	The work site will be restored to the pre-existing condition following construction, in consultation with landowners. The Construction Environmental Management Plan (CEMP) will detail site restoration works to be undertaken once construction works are finished. Native vegetation will be replaced in consultation with Council and offset in accordance with the Sydney Water Biodiversity Offset Guideline. Site restoration activities will include: • backfill trenches as soon as works are finished • dismantle compounds, remove and dispose of waste material and remove construction signage • restore ground cover and native vegetation • restore road pavement surfaces and drainage where pipework is trenched into place • remove erosion and sediment controls, fencing and traffic management measures.
Materials/ equipment	Typical equipment includes but is not limited to: • articulated dump truck • backhoe loader • concrete/boom pump • concrete vibrator • diesel generator • excavator (12 – 18 tonnes) • mobile crane

Aspect	Detailed description
	• vibration plate • pumps • truck and dogs (trailers) • vibration rollers (4 – 6 tonnes and 13 – 18 tonnes) • grader • slurry extractor • horizontal auger • light vehicle • generators • skip bins • welding equipment and power tools (various) • confined spaces safety equipment (e.g. gantry/davit) • site facilities and amenities • storage containers. Typical materials include but is not limited to: • polyethylene pipe for the pipelines • building materials, steel and timber • fuel for minor plant and equipment • topsoil, bitumen and concrete • valves and other fixtures • concrete for encasement • granular materials • reused excavated material and clean fill for pipe trench fill.
Work hours	Work and deliveries will be scheduled to occur during standard daytime hours of: • 7 am to 6 pm, Monday to Friday • 8 am to 1 pm, Saturdays. The proposal is expected to require some minor work outside these hours.
Proposal timing	Construction is expected to start early 2026 and construction completion is targeted for late 2027.
Operational requirements	There are no planned operational activities. Routine and emergency maintenance would occur as required.

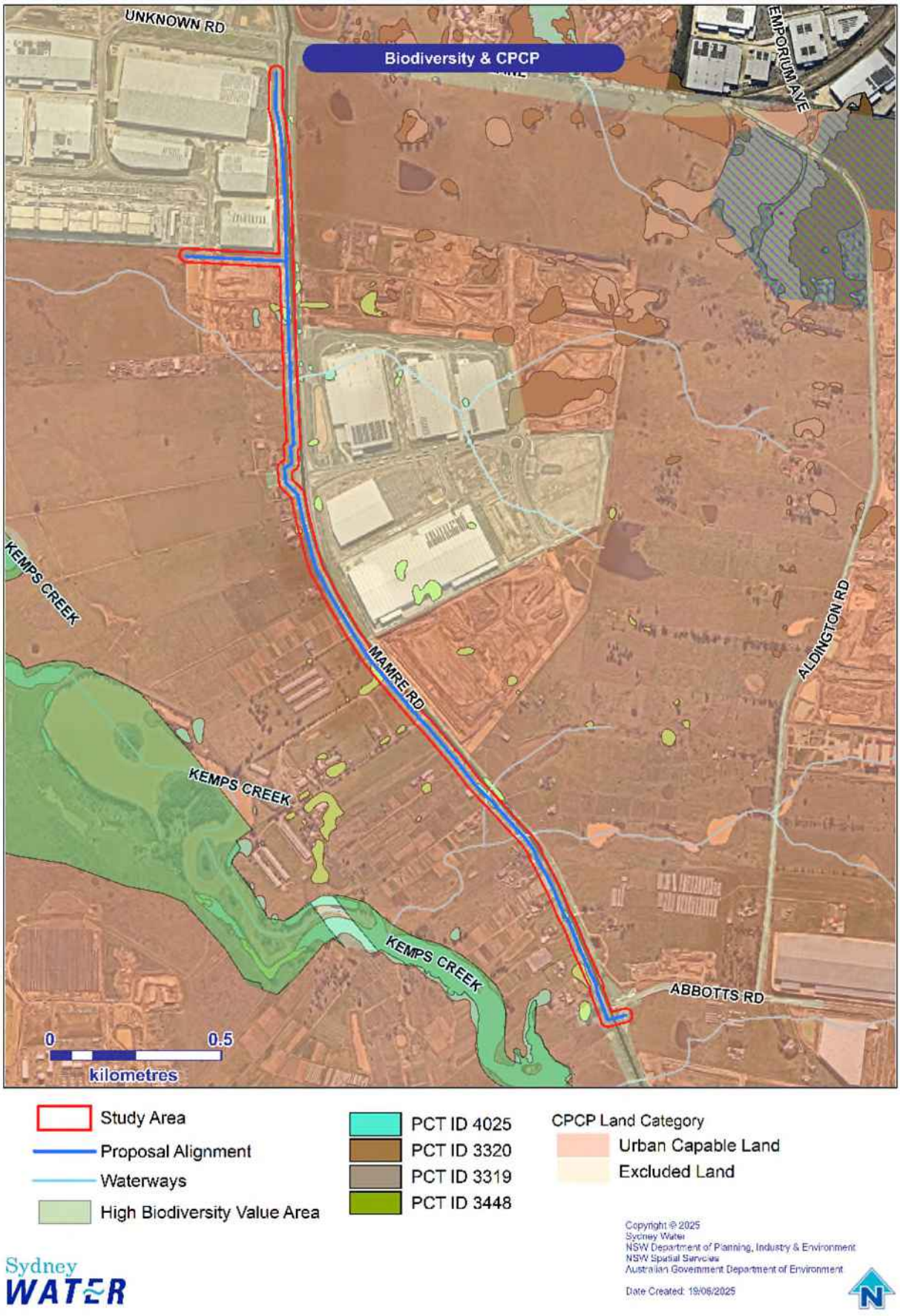

Figure 2-1 Biodiversity & Cumberland Plain Conservation Plan Land Category

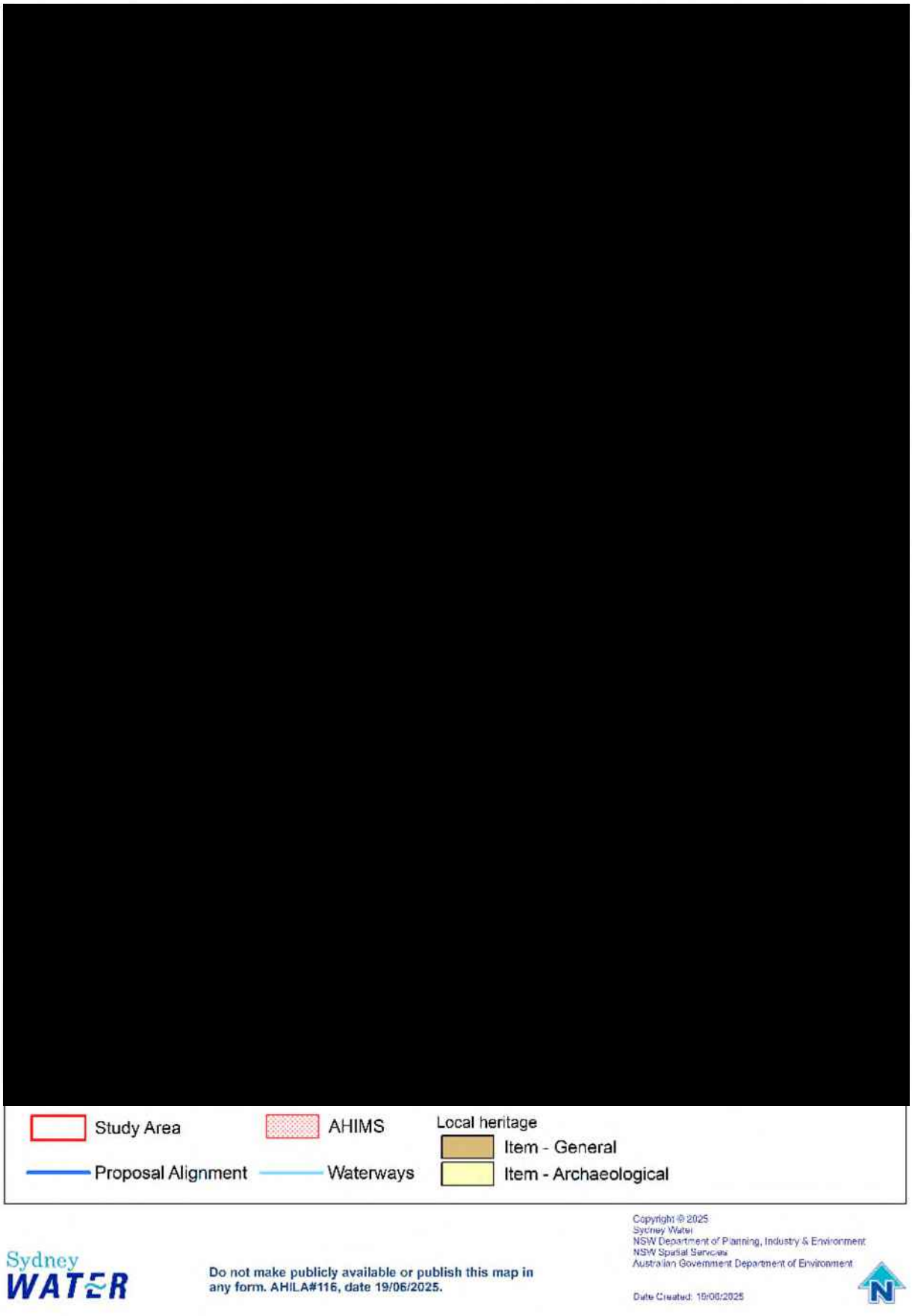

Figure 2-2 Aboriginal & non-Aboriginal Heritage

2.2 Field assessment area and changes to the scope of work

The ‘study area’ is defined as a 20 m buffer either side of the of the proposed RW and SW alignment. A broader area was considered to inform the landscape context. The area that will be disturbed during construction comprises of a trench about 3 m wide, launch and receival pits up to 15 m wide, and lay down areas for material and equipment. The proposal will impact about 15 m either side of the alignment during construction, this is referred to as the ‘impact area’.

The scope of this REF is indicative and based on the latest concept design at the time of REF preparation. The final design may change based on detailed design and/ or construction planning. If the design/scope of work or construction methods described in this document change significantly, supplementary environmental impact assessment must be prepared for the amended components in accordance with SWEMS0019.

An addendum is not required provided the change:

- remains within the study area 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 Delivery Contractor will demonstrate in writing how the changes meet these requirements, for approval by Sydney Water’s Project Manager, in consultation with the environmental and community representatives.

3. Consultation

3.1 Community and stakeholder consultation

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

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

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

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

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

3.2 Consultation required under State Environmental Planning Policies and other legislation

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

Consultation is required under section 2.10 (1f) of the TISEPP as the proposal involves excavation adjacent to a council managed road that is more than minor. Sydney Water emailed Penrith City Council on 4 June 2025. Penrith City Council responded on 24 June 2025 requesting additional consultation regarding vegetation removal and offset requirements. Sydney Water will continue to consult with Penrith City Council throughout detailed design.

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
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126(6) and Section 2.137 of the TISEPP permits development by or on behalf of a public authority for sewage reticulation systems and stormwater management systems, respectively, without consent on any land in the prescribed circumstances. The proposal involves development of a recycled water and stormwater pipeline. The Standard Instrument—Principal Local Environmental Plan (2006 EPI 155a) states that a sewage reticulation system means a building or place used for the collection and transfer of sewage to a sewage treatment plant or water recycling facility for treatment, or transfer of the treated waste for use or disposal, including associated pipelines and tunnels. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Precincts - Western Parkland City) 2021	The proposal is in Penrith City Council LGA, however the land is zoned under the Western Parkland City SEPP. **Western Sydney Aerotropolis (Chapter 4)** The proposal is on land to which Chapter 4 of this SEPP applies. As per section 4.5, the provisions of the TISEPP still apply. Therefore, the proposal can be undertaken without development consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** This SEPP applies as the proposal is in an area listed in s.2.3 (1) (a) (City of Penrith) and on land within the zones listed in s.2.3 (1) (b). However, section 6.1 states: '*This Chapter does not affect the provisions of any other State Environmental Planning Policy…*'. As the works are permissible under the TISEPP a Council permit to clear vegetation under this SEPP is not required.

Environmental Planning Instrument	Relevance to proposal
	Koala habitat protection (2020 and 2021) (Chapter 3 and 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 'potential koala habitat' and 'core koala habitat' for developments within local government areas listed in schedule 2 of the SEPP. The proposal lies within the Penrith LGA, which is in the Koala management area. Development that is being carried out under TISEPP is not subject to the planning provisions of the BCSEPP, however the aims and management actions have been considered as applicable (see Section 5). A Biodiversity Assessment Report (BAR) concluded there is a low likelihood of koalas to appear in the proposal area. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury-Nepean Catchment, a regulated catchment. Section 5 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are negligible or minor and meet the requirements of part 6.2 of the SEPP (refer to Appendix A). **Cumberland Plain Conservation Plan Guidelines for Infrastructure Development 2022 (CPCP)** The proposal is on land classified under the CPCP as: • urban capable • excluded. The proposal has been designed to minimise native vegetation impacts on avoided land and meets the objectives listed in section 2.3 and section 3.3 of the CPCP, so no restrictions apply to these activities.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Environmental Planning and Assessment (EP&A) Act 1979	Sydney Water is the proponent and determining authority under this 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.	REF	Pre-construction, Sydney Water
Protection of the Environment Operations Act 1997 (POEO Act)	Sewage treatment, including reticulation systems, is a scheduled activity under the POEO Act. The proposal involves construction of a new sewage treatment system which provides recycled water from the USC AWRC and will be operated under a future sewage treatment system EPL. The existing scheduled development work licence (EPL 21886 - Upper South Creek Networks) will be varied to include this proposal. Prior to operation the proposal will be covered by a scheduled activity EPL for USC catchment and AWRC.	Scheduled Development Work EPL variation (s47) Scheduled activity EPL (s48)	Pre-construction, Sydney Water Pre-operation, Sydney Water
Biodiversity Conservation Act 2016 (BC Act)	The BC Act lists threatened species, populations and ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, or their habitats. If any of these could be impacted by the proposal, an assessment of significance 'Test of Significance (ToS)' that addresses the requirements of section 7.3 of the BC Act must be completed to determine the significance of the impact. While the proposal would require the removal of native vegetation, the implementation of the safeguards and management measures provided in Section 5.2.3 would minimise the potential for impacts on threatened species, populations or ecological communities listed under the BC Act. Further information is provided in Appendix C.	REF and BAR	Pre-construction, Sydney Water
National Parks and Wildlife Act 1974 (NPW Act)	This Act provides for the establishment, preservation, and management of areas such as national parks, state conservation	N/A	N/A

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	areas, nature reserves, and Aboriginal areas. This Act also provides for the protection of Aboriginal heritage, including Aboriginal objects and places. The proposal in not within National Parks, State Conservation areas or nature reserves. Aboriginal Heritage Due Diligence assessments (Appendix D) confirmed that provided the safeguards are implemented, impacts to Aboriginal Heritage would be avoided and an Aboriginal Heritage Impact Permit (AHIP) would not be required.		
Heritage Act 1977	The Heritage Act provides for the conservation of environmental heritage in NSW. The proposal is not expected to impact the 'Bayley Park – house' or 'Gateposts to Colesbrook' which are locally listed heritage items close to the proposal (see section 5.2.4).	N/A	N/A
Water Act 1912 / Water Management Act 2000	Groundwater will be extracted during excavation and tunnel boring. Approximate groundwater volumes are currently being calculated. Any groundwater dewatering requires a Water Supply Works Approval (WSWA) before dewatering starts.	WSWA	During REF if known during planning (Sydney Water to initiate). Otherwise, pre-construction, contractor.
Roads Act 1993	This Act regulates works in, on, or over a public road. Approval under section 138 of this Act is required for carrying out works in, digging up, or disturbing a public road. A Road Occupancy Licence (ROL) would be required from the relevant roads authority prior to work on public roads and any temporary road closures during construction. The proposal is on Mamre Road, a classified road (State Road) that is managed by TfNSW.	Road Occupancy Licence	Pre-construction, contractor
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act provides the framework for Commonwealth environmental approvals. The proposal does not impact any EPBC listed matters.	N/A	N/A

5. Environmental assessment

Section 5.2 describes the existing environment and assesses direct and indirect impacts of construction and operation. It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) prior to starting work.

5.1 Existing environment

The Mamre Road Precinct is about 40 km west of the Sydney CBD and 12 km southeast of the Penrith CBD. It is entirely within the suburb of Kemps Creek, in the Penrith City Council LGA. It is bordered by the WaterNSW Warragamba Pipeline to the north, Wianamatta South Creek and Kemps Creek to the west, Ropes Creek to the east and Mount Vernon to the south. The precinct has a gross site area of about 1002 ha and includes the USC AWRC to the west of the proposal. Whilst the precinct is currently zoned for industrial use, at the time of preparing this REF, the existing environment within the precinct is mostly pasture, roads, sheds, out buildings and farm dams with pockets of intensive farming and industrial development. Along the proposal alignment there are sensitive receivers, including residential properties and local businesses.

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

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment and potential impacts

The study area is relatively flat along Mamre Road. It is underlain by two geological units and alluvial floodplain deposits, comprising the surface material near creeks and Bringelly Shale bedrock. The soil landscapes within the study area are predominantly comprised of Blacktown soils, with South Creek soils along local creek banks. According to the Map of Salinity Potential in Western Sydney (2002) the site is within an area of moderate salinity potential. Inappropriate management of saline soils has the potential to impact surrounding land and waterways from off-site leaching of saline soils.

During construction there will be ground disturbance, vegetation removal, excavation and stockpiled soil which could result in potential offsite erosion and sedimentation of surrounding land and waterways. The works will not permanently change the surface topography and drainage patterns of the area. The area will be returned to its original topography and drainage pattern following construction.

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. There will not be any operational impacts for topography, geology and soils due to the proposal.

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: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
Delivery Contractor to ensure imported material is certified for intended use.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, strong chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.
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: • (if relevant) treat existing salinity with gypsum • (if relevant) establish salt tolerant species in existing or potential salinity problem areas after construction • stabilise existing areas of erosion • minimise water use on site • avoid rotation and vertical displacement of the original soil profile • backfill excavations deeper than one metre in the same order or treat or use this material as fill at depths more than one metre from the finished level.

5.2.2 Water and drainage

Existing environment and potential impacts

Kemps Creek and Wianamatta-South Creek are about 300 m and 1.3 km to the west of Mamre Road, respectively (see Figure 2-1 showing waterways that intercept the proposal). These waterways are classified as Key Fish Habitat (KFH). From the available flood mapping on the Penrith City Council's website from 2006, the proposal is partially within the 100-year average reoccurrence interval flood hazard.

The proposal crosses multiple unnamed drainage lines that are tributaries of Kemps Creek and Wianamatta-South Creek along Mamre Road. Where the proposal alignment intercepts culverts, the methodology will be

to underbore via HDD or microtunneling. During HDD and microtunneling, there is the risk of frac-outs which could cause unwanted seepage of drilling fluid into the environment.

Excavation, temporary soil stockpiles and the storage of fuels and chemicals will be required for the proposal. Poor site management increases the risk of sediment-laden or contaminated runoff entering stormwater pits and impacting water quality, particularly during high rain events. There is a risk of spills during construction as water and chemicals will need to be stored around moving plant and workers.

Dewatering groundwater from trenches and pits will be required, however the volume is unlikely to exceed 3 ML/year. A Water Supply Work Approval is required for all activities that involve dewatering of groundwater.

Mitigation measures

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

Table 5-2 Environmental mitigation measures — water and drainage

Mitigation measures
Use appropriate controls to avoid potential sedimentation to waterbodies.
Minimise the impacts to creeks where creek crossings are required. Prior to construction the methodology of each creek crossing will be assessed on: • geotechnical and constructability issues (e.g. depth of cover, potential for future scouring) • size of impact area • construction duration • ease of reinstatement • environmental issues (flora and fauna, geomorphology, heritage, water quality and hydrology). The decision and reasons for the decision would be documented by the contractor in consultation with the Sydney Water Environmental Representative.
The contractor is to monitor weather so that during a wet weather event, stockpiles to be located outside of the 1 in 100-year flood extent. The contractor should ensure that stockpiles are kept small enough so that they can be moved and managed prior to potential flooding.
Store potential contaminants on robust waterproof membrane, away from drainage lines.
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Locate portable site amenities away from watercourses or drainage lines.
Formulate groundwater protection measures during detailed design following geotechnical investigations (e.g. protect water quality; minimise aquifer extraction volumes)
Discharge all water in accordance with Sydney Water's Discharge Protocols Standard Operating Procedure (WPIMS5021), including erosion controls. Re-use water where possible.

Mitigation measures
Obtain approval and discharge criteria from the relevant Sydney Water Network Area Manager prior to discharge to the wastewater system. Otherwise, tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.
Sydney Water will obtain a groundwater Water Supply Works Approval. The Delivery Contractor is responsible for: • preparing a Dewatering Management Plan • complying with the approval conditions (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes). Dewater excavations in accordance with the Program Delivery Guidance Standard 9.1 Excavation Dewatering (ENV-GS-001).
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.
Conduct refueling, fuel decanting and vehicle maintenance in compounds where possible. If field refueling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
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.
Prepare management plan to avoid impacts from drilling, including: • contain and monitor drilling fluids at entry/exit points • identify and manage frac-outs • re-use and/or disposal of drilling fluids.

5.2.3 Flora and fauna

A BAR was prepared by Aurecon (2025) to evaluate the potential impacts of the proposal on flora and fauna. Findings and recommendations outlined in the BAR are summarised below and provided in full in Appendix C.

Existing environment

A desktop study of the study area (see Figure 2-1) identified Plant Community Types (PCT) with associated Threatened Ecological Communities (TEC). The field assessment did not identify any TECs listed under the EPBC Act or the BC Act within the study area. Native vegetation in the study area was limited to scattered trees. The study area is highly degraded due to roadside edge impacts, weed invasion, and illegal rubbish dumping. Native vegetation within the study area may offer marginal sheltering, foraging, and breeding habitat for various native species, including amphibians, birds, and small mammals.

The field assessment did not identify any threatened flora within the study area, nor are any threatened flora species considered likely to occur due to the highly degraded nature of the study area. One threatened fauna species, the Cumberland Plain Land Snail, was considered to have a moderate likelihood of

occurrence within the study area. No listed EPBC Act threatened fauna species were identified or are considered likely to occur within the study area.

There are also culverts inundated with water along the alignment. Few of these culverts were surrounded by aquatic vegetation such as *Typha* sp and *Juncus* sp. No Key Fish Habitat (KFH) occurs within the study area.

Environmental weeds were recorded within the study area. Vegetation along the roadside also included Weeds of National Significance (WoNS), consisting of Blackberry (*Rubus fruticosus)*, Fireweed (*Senecio madagascariensis)* and Lantana (*Lantana camara).* Although these weeds are not declared priority weeds, they still pose a risk to the surrounding vegetation and biodiversity.

Cumberland Plain Conservation Plan

The proposal is partially on CPCP urban capable land and does not require further biodiversity assessment if consistent with the CPCP objectives and its approvals. The majority of the proposal on land excluded from the CPCP and the following impacts have been assessed as within this land.

Construction impacts

Vegetation

There are 44 native trees within the study area which are proposed for removal. This includes two-hollow bearing trees. The trees proposed to be removed include:

- 17 Eucalyptus (*Eucalyptus sp.)*
- Two Rough-barked apple (*Angophora floribunda)*
- 21 Broad-leaved apple *(Angophora subvelutina)*
- Three *Angophora sp*
- One Prickly-leaved Paperbark (*Melaleuca stypheloides)*.

Additionally, there are a total of 24 native trees and 12 planted native trees, (including a tree containing a stick nest) within the broader study area, which may have indirect TPZ or root zone impacts. These trees include:

- One Rough-barked apple (*Angophora floribunda)*
- 20 Eucalyptus trees (*Eucalyptus sp.)*
- Three Sheoak (*Allocasuarina sp.)*
- 12 *Spotted Gum (Corymbia maculata)* (planted locally native tree).

No native vegetation comprising a PCT will be impacted by the works. The BAR found that there is high weed incursion and non-native vegetation zones within the study area. The proposal is unlikely to have a significant adverse impact on ecological communities or species such that local occurrence is likely to be placed at risk of extinction. This includes any habitat of a threatened species, ecological community, or on any areas of outstanding biodiversity value.

It is recommended that an arborist is engaged to assess the impacts under the *Australian Standard AS4970-2009 Protection of trees on development sites,* as impacts to some of these trees may be able to be avoided depending on the extent of tree protection zone (TPZ) encroachment and if the structure root zones (SRZ) can be avoided.

Threatened fauna

A Test of Significance was completed for the Cumberland Plain Land Snail, which is listed under the BC Act as ‘Endangered’ (see Appendix C). The assessment concluded that the proposal is unlikely to have significant impact on the Cumberland Plain Land Snail.

Weeds

The use of plant machinery and equipment can spread existing and new weeds in the form of soil-stored seeds or reproductive vegetative materials, including Lantana (*Lantana camara*) seeds. Spread of weeds off-site is possible if green waste is contaminated and not disposed of appropriately. However, the invasion and spread of weeds will be appropriately managed with the implementation of the identified mitigation measures.

CPCP

The proposal on certified urban capable land meets the objectives of the CPCP (see Consistency Assessment in section 4.4 of Appendix C). Impacts to vegetation on certified lands have already been assessed and offsets will be applied by the NSW State Government and vegetation removal within land categorised as ‘excluded’ will be offset in accordance with the SW Biodiversity Offset Guide (Sydney Water, 2024). See Table 5-3.

Table 5-3 Offset requirements

Impact	Offset requirements				
	Biodiversity Value Impacted	Total Impact	Residual loss of biodiversity values resulting from works	Offset Multiplier Required	Required Offset
Moderate	44 mature native trees (40 with no hollows, 2 with one hollow each) will have direct impacts as they are proposed for removal	44 trees	Locally native trees within an exotic vegetation zone	3	132 trees to be planted
Moderate	24 mature native trees with no hollows that may have indirect TPZ impacts and SRZ impacts	24 trees	Locally native trees within an exotic vegetation zone	3	72 trees to be planted
Moderate	12 planted trees that may have indirect TPZ impacts and SRZ impacts	12 trees	Non-locally native trees within an exotic vegetation zone	1	12 trees to be planted
Minor	Two mature native trees with one hollow each	2 trees	Locally native tree within an exotic vegetation	2 per hollow	4 nestboxes or 2 salvaged hollows

Mitigation measures

With the implementation of the mitigation measures below, impacts to flora and fauna can be adequately managed, and residual impacts are expected to be low and there will not be any operational impacts.

Table 5-4 Environmental mitigation measures — flora and fauna

Mitigation measures
CPCP mitigation requirements for activities on 'Certified – Urban Capable Land'
Threatened fauna
• Habitat features and connectivity:
Retain large trees that are greater than or equal to 50 cm diameter at breast height (including dead trees but excluding noxious weeds) where possible and apply tree-protection measures for all vegetation to be retained. This is to provide ongoing roosting and foraging opportunities for fauna.
• Disease:
Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust adjacent to potential habitat for species targeted by the CPCP.

Mitigation measures

Threatened flora

- Weed invasion:

  Implement mitigation measures to manage weeds during construction and operation of the development, taking into account relevant guidance in the CPCP's Weed Control Implementation Strategy.

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

- any minor:
  - vegetation trimming or
  - removal of exotic vegetation or
  - removal of planted native vegetation

    where the vegetation is not a threatened species (including a characteristic species of a threatened community or population) or heritage listed.
- any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the EIA).

Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval.

All direct impacts in excluded land are to be offset as per Sydney Water Biodiversity Offset Guide (Sydney Water, 2024) as outlined in Table 5-3.

If clearing of native vegetation is required outside the impact area, these areas will require additional assessment by an ecologist for potential impacts to TECs, threatened species and their habitats.

Map and report native vegetation clearing greater than 0.01 ha in extent (and any associated rehabilitation) to the Sydney Water Environmental Representative.

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.

Inspect vegetation for potential fauna prior to clearing or trimming. If fauna is present, or ecological assessment has determined high likelihood of native fauna presence, including removal of hollow bearing trees, engage an ecologist to inspect and relocate fauna before works.

If native fauna is encountered on site, stop work and allow the fauna to move away unharassed. Engage an ecologist if assistance is required to move fauna.

If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Environmental Representative. Work will only recommence once the impact on the species has been assessed and appropriate control measures provided.

Mitigation measures

If any damage occurs to vegetation outside of the construction area (as shown in the REF), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.

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

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

Protect trees in accordance with the requirements of *Australian Standard 4970-2009 for the Protection of trees on development sites* e.g. do not damage tree roots unless absolutely necessary, and where roots > 50 mm are impacted within the Tree Protection Zone.

Engage an arborist to assess impacted trees as some may be avoided depending on the extent of tree protection zone encroachment and if the structure root zones can be avoided.

Retain dead tree trunks, bush rock or logs in-situ unless they are in the construction area and moving is unavoidable. Reposition material elsewhere on the site or approved adjacent sites. If native fauna is likely to be present, a qualified ecologist should inspect the removal and undertake fauna relocation.

Undertake weed control in accordance with contemporary bush regeneration practices, and the following guidance:

- NSW Department of Primary Industries' Noxious and Environmental Weed Control Handbook (2014)
- Sydney Water EMS (SWEMS0017) Recording of Pesticides and Herbicides Procedure

SWEMS0115 Weed Management Procedure.

Manage biosecurity in accordance with:

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

Record Pesticides and Herbicides use in accordance with SWEMS0017.

To prevent spread of weeds, clean all equipment including PPE prior to entering or leaving the work sites. Wrap straw bales in geofabric prior to use.

A weed management plan is to be developed and implemented by the contractor and approved by Sydney Water prior to works commencing. The plan will be established and implemented to avoid spread and establishment of weeds during construction. Measures will include:

- all equipment and plant machinery to be appropriately cleaned before the start of works.
- all priority weeds within the impact area are to be cleared and disposed of at a registered waste management facility

Mitigation measures

- if herbicide is to be used, this must be applied by a person trained to do so and that has a certificate of competency, or a statement of attainment issued by a registered training organisation. Herbicide will only be used in accordance with the label/permit.
- conduct toolbox talks to identify high risk priority weeds and weeds of national significance to on-site staff
- weed vegetation requiring clearing and removal should be disposed of at a registered waste management facility.

Introduction of pathogens in native vegetation can cause diseases. A hygiene protocol must be prepared by Sydney Water prior to works starting and implemented by the contractor during works to avoid introduction of pathogens in machinery, tools, PPE or imported soils.

Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.

Prepare site revegetation plan. This should be prepared by/in consultation with a suitably qualified specialist or the Project Environmental Representative as part of the CEMP.

If replanting near Sydney Water pipelines use Sydney Water's Tree Roots Fact Sheet on trees to avoid near pipelines.

In TOBAN period:

For maintenance and construction activities that are not essential/emergency works, the use of fire in the open, including for general purpose hot works must not proceed without an exemption being approved.

Staff and contractors should use the Sydney Water Total Fire Ban Exemption Framework to determine exemption permissibility and approval pathway.

5.2.4 Heritage

Aboriginal Heritage Due Diligence Assessments (AHDDA) have been prepared for the proposal (refer to Appendix D). These reports assess the potential impact of the proposal within the study area on Aboriginal archaeological heritage. A new AHDDA was prepared for this proposal as an addendum to the Mamre Road Precinct Wastewater Network: Aboriginal Heritage Due Diligence Assessment and should be read in conjunction with the existing report (KNC 2021).

Aboriginal heritage

Existing environment

A visual inspection of the study area was conducted by an Aboriginal heritage specialist on 27 March 2025. No Aboriginal objects, areas of archaeological potential or Aboriginal archaeological sites were identified.

Three Aboriginal archaeological sites are close to the study area. These sites were an archaeological site area [redacted], archaeological site location [redacted] and a potential archaeological deposit (PAD) [redacted] site (See Appendix D).

Potential impact

Visual inspection confirmed that the study area has been disturbed by previous construction activities and agricultural land use. Construction of the proposal must remain within the study area and all site personnel must be made aware of these nearby AHIMS sites to avoid potential Aboriginal heritage impacts.

Non-Aboriginal heritage

Existing environment

The proposal is close to two locally listed heritage items:

- partly within the curtilage of 'Bayley Park – house' (Item I2 Industry and Employment SEPP 2021)
- about 10 m west of 'Gateposts to Colesbrook' curtilage (Item I3 Industry and Employment SEPP 2021), see Figure 2-2.

Bayley Park - house

The impact area is partly within the curtilage of the locally listed 'Bayley Park – House' at 919-929 Mamre Road, Kemps Creek (Lot 35 DP 258414). The heritage significance of this item demonstrates 19th century pastoral and agricultural estate planning.

Gateposts to Colesbrook

While this listing captures the entire property boundary, the heritage item comprises two stone gateposts at the Mamre Road entrance. Of the two gateposts, only one remains standing.

Potential impact

A Sydney Water Heritage Specialist has reviewed the site historical imagery of 'Bayley Park – house'. The proposal will be in a location partially disturbed from construction of the road corridor and previous utility connections. It has been determined that the proposal would have no more than a minor or inconsequential impact on heritage significance.

The proposal is on the western side of Mamre Road and will be about 36 m away from 'Gateposts to Colesbrook' heritage item. Potential vibration impacts may be experienced at heritage structure 'Gateposts to Colesbrook' during the use of the vibratory rollers. The TfNSW Construction and Maintenance Noise Estimator was used to determine minimum working distances for ground vibration in relation to sensitive structures. A 13 – 18 tonne vibratory roller has a minimum working distance of 54 m, therefore the vibratory roller size will need to be reduced to 4 – 6 tonnes as the proposal is 33 m from the heritage item. Provided that the mitigation measures are in place, impacts are unlikely.

Mitigation measures

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

Table 5-5 Environmental mitigation measures — Aboriginal and non-Aboriginal heritage

Mitigation measures
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Stop work if access requires vegetation impacts in unassessed areas, traversing rock outcrops, under or working in rock shelter/cave and/or walking over ground containing old shells is required.

Mitigation measures
Install protective hard barriers (eg ATF fencing, concrete barriers or water-filled barriers) and signage around heritage items before construction, to protect them from damage.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Environmental Representative in accordance with SWEMS0009.
All site personnel must be inducted by a site supervisor before starting work on site. The induction should include clear explanation of heritage constraints, the extent of the study area, processes and measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.
Select equipment in accordance with the minimum working distances for heritage structures in compliance with the DIN 4150-3:2016.

5.2.5 Noise and vibration

Existing environment

The proposal is in a predominantly rural residential area, with a church and school about 600 m north east of the proposal. Existing noise levels in the study area are primarily influenced by traffic on Mamre Road, noise from nearby construction and development sites, combined with noise from the mixed rural residential environment. The Mamre Road Precinct was recently rezoned as a warehousing and logistics precinct. It is connected to the proposed Western Sydney Freight Line and will be affected by aircraft noise and as such, is not suitable for noise sensitive land uses.

The *Draft Construction Noise Guideline* (DCNG) (EPA, 2020) refers to sensitive receivers, being people or institutions who are of heightened sensitivity to noise pollution. This can include residences, educational facilities, hospitals, aged care facilities, and/or childcare facilities.

Taking into consideration the type of development surrounding the works site, the representative noise environment has been classified as R2 noise area category based on the TfNSW Construction Noise Estimator Tool (version 13/11/2024). Within this R2 noise area category the rating background level (RBL) for residential receivers is assumed to be:

- 45 dB(A) for standard working hours
- 40 dB(A) for evening
- 35 dB(A) at night.

Based on the R2 noise area category and the DCNG, the noise management levels (NML) for residential receivers in the vicinity of the study area are as follows:

- 55 dB(A) for standard working hours
- 45 dB(A) for evening

- 40 dB(A) at night.

Potential impacts – construction noise

The proposal will generate noise and/or vibration during construction from power tools, excavators and other heavy machinery. Works will predominantly occur during standard daytime hours and occur near to low-density residential housing areas, industrial sites and offices. Some night work may be required for works within/adjacent roadways to minimise impacts to traffic. Standard construction hours outlined within the DCNG and are as follows:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 1 pm
- No work on Sundays of public holidays

The works have potential to exceed the DCNG and impact on sensitive receivers, including residential properties, local businesses and members of the public.

Works will progress along the alignment and different groups of receivers are potentially impacted at different times. The intensity and duration of noise impacts to this group of receivers would change based on multiple factors, including the construction schedule and the plant and equipment used.

The TfNSW Construction Noise Estimator Tool was used to assess the potential construction noise impacts of the proposed work. A Distance Based Assessment (Noisiest Plant) was used to replicate the type of work proposed. The noise estimator tool includes a 'source list' of typical construction equipment that can be selected based on the proposal to generate noise predictions discussed herein.

Attenuation effects of soft ground, vegetation and screening have not been taken into consideration in this assessment. It is also noted that the use of noisy equipment would comprise only a small component of this over the construction timeframe and would be intermittent. Construction noise levels would generally be less than those predicted. Works will progress along the alignment and disturbances will be temporary.

The likelihood of noise impact from the proposal was reviewed against risk factors (based on Table 2 of the DCNG). The review indicated that the construction noise impact would be medium-low risk and therefore the noise estimator tool was used to assess noise impacts.

Inputs to the noise estimator include:

- as a conservative approach:
    - the closest sensitive receivers to the proposal were assessed as having line of sight
    - the alignment with a 20m buffer was used as the study area
- noisiest equipment during day work: bulldozer (CAT D10)
- during shutdowns, which may be performed during the day or night, typical equipment would include cranes, generators pumps, lights, and scaffolding. These works would be over two nights and would be infrequent and short term.

Predicted worst-case noise impacts during day works are shown below in Table 5-6.

Table 5-6 Predicted noise impacts to sensitive receivers with line of sight during day work

Type of receiver	Distance of impact	Level of impact	Recommended mitigation measures (from noise estimator)
Residential receivers	105 m	20-30 dB(A) above NML, moderately intrusive	N – Notification (e.g. letterbox drop)
Residential receivers	35 m	>30 dB(A) above NML, highly intrusive	N – Notification (e.g. letterbox drop) PC – Phone calls RO – Respite offer
Active recreation, passive recreation, offices, retail outlets, and industrial facilities	35 m	>75 dB(A) – highly affected	N – Notification PC – Phone Call RO – Respite Offer (e.g. work 3 hours on, 1 hour break)
Passive recreation	60 m	10-20 dB(A) above NML	N – Notification

Predicted worst-case noise impacts during night works are shown below in Table 5-7

Table 5-7 Predicted noise impacts to sensitive receivers with line of sight during night work

Type of receiver	Distance of impact	Level of impact	Recommended mitigation measures (from noise estimator)
Residential receivers	805 m	5-10 dB(A) above NML, noticeable	N – Notification (e.g. letterbox drop)
Residential receivers	545 m	10-20 dB(A) above NML, clearly audible	N – Notification DR – Duration respite R2 – Respite period 2
Residential receivers	240 m	20-30 dB(A) above NML, moderately intrusive	N – Notification DR – Duration respite R2 – Respite period 2 PC – Phone calls SN – Specific notifications
Residential receivers	105 m	>30 dB(A) above NML, highly intrusive	N – Notification DR – Duration respite R2 – Respite period 2 PC – Phone calls SN – Specific notifications

AA – Alternative accommodation

Industrial premise	35 m	< 5 dB(A) above NML	N – Notification
Places of worship	240 m	< 5 dB(A) above NML	N – Notification

Noisier work such as jackhammering will not be required continuously during each shift, or for every shift. It is likely that the noise impact during most shifts would be less than that predicted in this REF. The predicted noise contours for day works and night works are shown in Figure 5-1 and Figure 5-2 respectively.

The works are of short duration, will progress along the alignment within the working hours outlined above and all reasonable and feasible measures will be implemented to reduce noise impacts during construction. Appropriate mitigation measures, as outlined in Table 5-6, Table 5-7, and Table 5-8, would be implemented to minimise intrusive noise impacts to sensitive receivers

During operation, there will be no changes to background noise.

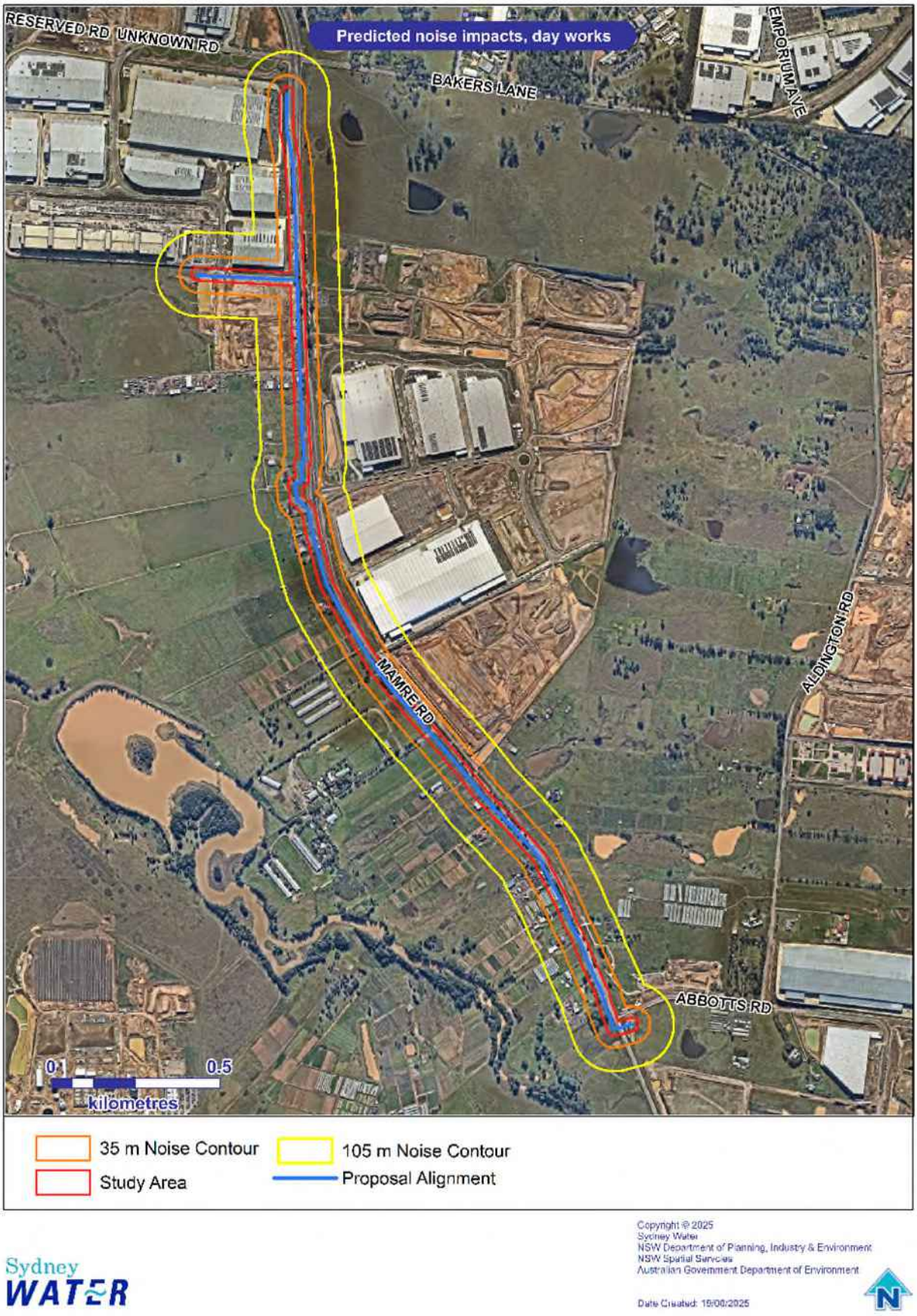

Figure 5-1 Predicted noise impacts, day works

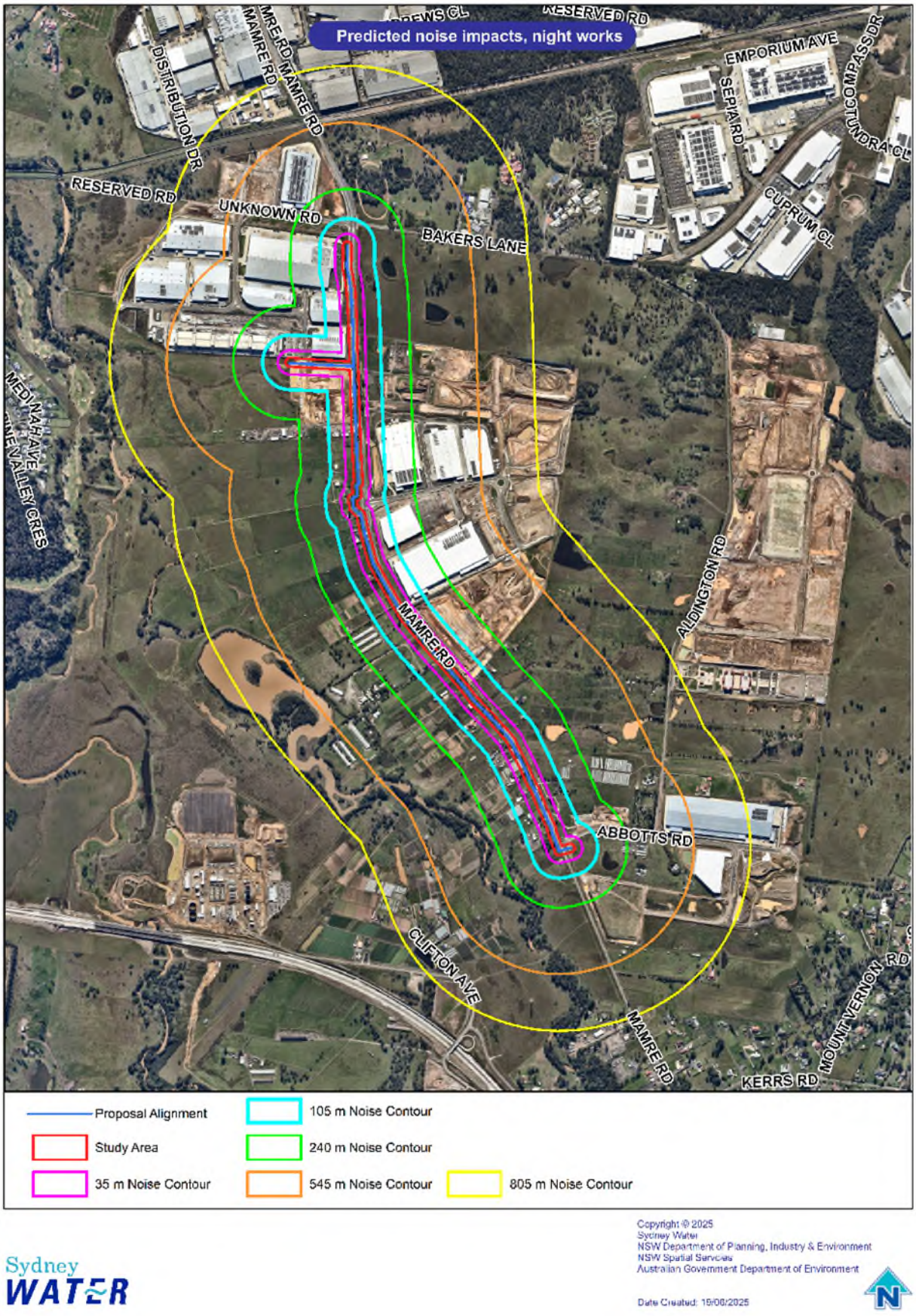

Figure 5-2 Predicted noise impacts, night works

Potential impacts – construction vibration

Construction vibration could have three potential impacts:

- loss of amenity due to human comfort impacts
- cosmetic (building damage)
- impacts to underground services.

Construction vibration levels vary depending on the distance from the equipment in use, the energy level imparted to the ground, and the bedrock type. The highest vibration sources associated with expected construction equipment would be the excavators with hammers, jackhammers and vibratory rollers. These have the following minimum working distances for cosmetic damage and human response:

- excavators with hammers (12 – 18 tonnes)
    - 7 m for light-framed structures
    - 19 m for heritage and other sensitive structures
    - 23 m for human response
- jackhammers
    - 1 m for light-framed structures
    - 2 m for heritage and other sensitive structures
    - 3 m for human response
- vibratory roller (13 – 18 tonnes)
    - 20 m for light-framed structures
    - 54 m for heritage and other sensitive structures
    - 100 m for human response
- vibratory roller (4 – 6 tonnes)
    - 12 m for light-framed structures
    - 33 m for heritage and other sensitive structures
    - 40 m for human response

The minimum working distances for human response relate to continuous vibration. It is anticipated that vibration emissions during construction will be intermittent in nature and occurring over short periods of time. When residential structures are within the human response distance the EPA's Assessing Vibration: a technical guideline (EPA, 2021) should be followed.

Due to the proposed equipment and location of the site, it is unlikely that vibration may impact structures and human comfort levels. Vibration intensive equipment will need to be selected in accordance with the mitigation measures provided in section 5.2.4 to protect heritage items.

The proposal will not generate additional vibration during operation.

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 low.

Table 5-8 Environmental mitigation measures — noise and vibration

Mitigation measures
Schedule work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sundays or public holidays (EPA Draft Construction Noise Guideline, 2020). Works will be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056 • Industrial Noise Policy (EPA, 2000).

Incorporate standard daytime hours noise management safeguards into the CEMP:
• identify and consult with the potentially affected residents prior to the commencement:
  ○ describe the nature of works; the expected noise impacts; approved hours of work; duration, complaints handling and contact details.
  ○ determine need for, and appropriate timing of respite periods (e.g. times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences)
  ○ acceptance by the community of longer construction periods in exchange for restriction to construction times
• implement a complaints handling procedure for dealing with noise complaints
• plant or machinery will not be permitted to warm-up near residential dwellings before the nominated working hours.
• appropriate plant will be selected for each task, to minimise the noise impact (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, minimise use of vehicle reversing alarms)
• schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

As works beyond standard daytime hours are needed, the contractor's environmental representative would: • justify the need for out of standard daytime work • consider potential noise impacts and: implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and other reasonable and feasible management measures • identify community notification requirements • seek approval from the Sydney Water Project Manager.
As night works are needed, the contractor's environmental representative would: • justify the need for night works • consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and other 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.
As works on Sundays or public holidays are required, the contractor's environmental representative would: • 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

Mitigation measures
• seek approval from the Sydney Water Project Manager.
Conduct a dilapidation survey / asset condition assessment prior to works which have potential to damage existing structures.
Monitor compliance with the recommended vibration levels in DIN 4150-3 2016: Structural Vibration – Part 3; Effects of vibration on structures.
Implement the mitigation measures in the Table 5-6 and Table 5-7 for sensitive receivers within the impacted distances.

5.2.6 Air and energy

Existing environment and potential impacts

The proposal is in a rural-residential area that has been rezoned for industrial purposes. The main existing sources of air pollutants within the study area include emissions from motor vehicles and dust from nearby developments.

The nearest sensitive receivers include:

- residents, pedestrians and road users
- schools (Emmaus Catholic College, Mamre Anglican School and Little Smarties Early Learning Centre)
- industrial warehouses and development sites
- primary production properties.

The proposal will potentially result in dust and pollution from:

- excavation, stockpiling and exposed soils
- construction vehicles travelling on disturbed/ unsealed access routes
- emissions from machinery, equipment and vehicles used during construction.

Dust and emissions have the potential to impact on air quality and amenity of nearby sensitive receivers. The construction activities and restoration of disturbed areas would be undertaken progressively. This will minimise potential air quality impacts and reduce the exposure of any one sensitive receiver to air pollution. Potential air quality impacts would be localised, short term in nature, and unlikely to have a significant impact with the application of the safeguards below.

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 minor.

Table 5-9 Environmental mitigation measures — air and energy

Mitigation measures
Use alternatives to fossil fuels where practical and cost-effective.
Track energy use as per SWEMS0015.27.

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

5.2.7 Waste and hazardous materials

Existing environment and potential environmental impacts

Waste

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, re-use, and encouraging our suppliers to minimise waste. The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the Waste Management Plan or CEMP.

Construction waste would be relatively minor volumes and typically generated from:

- domestic refuse (litter) generated on site
- surplus construction and process waste comprising pipes, concrete, gravel, sands, fencing, off-cut materials and barricades
- green waste from vegetation removal
- excavated material which is unsuitable and/or not required for reuse.

Hazardous material

A detailed site investigation (DSI) was conducted in 2021 and found that the concentrations of Contaminants of Potential Concern (CoPCs) in soil samples across the previous study area were below the adopted human health investigation levels. Nickel and zinc concentrations marginally exceeded ecological investigation levels in two soil samples. This was attributed to natural occurrences rather than contamination. The DSI concluded that the hazard and the hazard posed by fill, subsurface and deeper natural materials is considered low.

The following contamination hazards may be present within the study area:

- roads and associated emissions from vehicle exhausts and runoff sediments
- land salinity

- herbicide/pesticide use, incidental renovations and filling within rural living and primary production lots
- historical filling, stockpiling, leaching and earthworks.
- legacy perfluoroalkyl and polyfluoroalkyl substances contamination due to the Kemps Creek NSW Rural Fire Service (8.3 km north east) (considered low risk due to distance)

The following Contaminants of Potential Concern (CoPCs) may also be present within the study area:

- heavy metals
- asbestos containing materials (ACM)
- organochlorine (OCPs) and organophosphorus (OPPs) pesticides
- petroleum hydrocarbons (TPH/TRH, BTEXN)
- nutrients.

It is unlikely that the proposal will have impacts involving waste and hazardous materials during operation.

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 5-10 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Contamination and Hazardous Materials Team) to agree on proposed management approach.
Provide adequate bins for general waste, hazardous waste and recyclable materials. Remove bins when 80% full.
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 Waste Classification Guidelines. Dispose wastes at an appropriately licenced facility.
Securely store all wastes to prevent pollutants from escaping.
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 procedure, WHSMS0064. Contact Contamination and Hazardous Materials Team for advice.

5.2.8 Traffic and access

Existing environment and potential impacts

The proposal is located along Mamre Road, Kemps Creek and can be accessed via existing sealed roads. Mamre Road is a State road managed by TfNSW. The road has a single lane in each direction with no footpaths.

Sydney Water has considered the future widening of Mamre Road by TfNSW in the design and location of the proposed wastewater network.

During construction, partial road closures may be required to facilitate the works along Mamre Road. The delivery contractor will consult with Council and TfNSW as required by the Roads Act to obtain ROLs prior to the commencement of works. Partial road closures will typically involve temporary closure of one lane of traffic adjacent to the proposal alignment to accommodate equipment, spoil removal and bulk material delivery. Generally, these closures will only occur when trenching works are in progress.

Access to private property may be temporarily affected for a short period of time as the proposal will be staged and move along the alignment. Property owners will be informed of any potential loss of access and appropriate measures will be negotiated to either provide an alternative/temporary access or to reinstate access at the end of the day. Any access affected by construction will be reinstated to their original condition. Microtunnelling and HDD, depending on the distance, will be used when possible to reduce impacts to property access.

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 5-11 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) in consultation with the relevant traffic authority. Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The Delivery Contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100m of traffic signals when construction commences.
Minimise traffic impacts near residential properties, schools and businesses by consulting with them (e.g. no major materials deliveries at school drop off or pick up times etc.).
Develop management measure to minimise traffic impacts near residential properties, schools and businesses by consulting with them (e.g. no major materials deliveries at school drop off or pick up times etc).
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.

Mitigation measures
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

5.2.9 Social and visual

Existing environment and potential impacts

The proposal is adjacent to a main road, in an area surrounded by scattered residential buildings, industrial buildings and open fields. Social impacts related to noise and vibration, air and energy and traffic and access are considered above.

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

The proposal will not require new permanent above ground structures and will not alter the visual character of the environment over the long-term. As the proposed infrastructure will be underground, there are no potential visual impacts during operation.

Mitigation measures

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

Table 5-12 Environmental mitigation measures — social and visual

Mitigation measures
Undertake works in accordance with Sydney Water Communications policies and requirements including: • notify impacted residents and businesses • erect signs to inform the public on nature of work • personnel treat community enquiries appropriately.
Minimise visual impacts (e.g. retain existing vegetation where possible).
If night works are required, direct artificial light away from sensitive receivers where possible (i.e. residents, fauna or roadways).
Maintain work areas in a clean and tidy condition.
Restore work sites to pre-existing condition or better.

5.2.10 Cumulative and future trends

Potential environmental impacts

The potential for cumulative impact is high due to the changing nature and extensive infrastructure work planned and currently underway in the Mamre Road Precinct. A search of the NSW Department of Planning, Housing and Infrastructure Major Projects register was undertaken on the 22 May 2025. Key nearby projects within 5 km of Mamre Road include the USC AWRC, Interlink Industrial Facility, Aspect Industrial Estate,

Yiribana Logistics Centre, Kemps Creek Data Centre, Kemps Creek Warehouse, Logistics and Industrial Facilities Hub among other determined state significant projects.

Potential cumulative impacts are likely to relate to noise and traffic. The degree of impact will be dependent on the design and stage of completion of the other projects. Should overlap of schedules occur, Sydney Water will coordinate with the project manager for these projects to minimise potential cumulative impacts, including to surrounding rural residences and businesses.

Future trends such as those related to climate change were considered. During construction, bushfires and flooding have the highest current and future potential to impact the proposal given the location. The proposed mitigation measures outlined in sections 5.2.2 and 5.2.3 above reduce potential impacts. As the infrastructure is below ground, there are no impacts to or from the proposal on bushfire or flooding during operation.

Mitigation measures

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

Table 5-13 Environmental mitigation measures — cumulative and future trends

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

5.2.11 General environmental management

Table 5-14 Environmental mitigation measures — general environmental management

Mitigation measures
Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should identify licence, approval and notification requirements. Prior to the start of work, all proposal staff and contractors will be inducted in the CEMP. The CEMP must be readily available on site and include a site plan which shows: • go/ no go areas and boundaries of the work area • location of environmental controls (including erosion and sediment controls, any fences or other measures to protect vegetation or fauna, spill kits, stockpile areas) • location and full extent of any vegetation disturbance.

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

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

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

Sydney Water's Project Manager (after consultation with the proposal's environment 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 mitigation measures in this REF
- 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.

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 should be inducted into the IMP.

To ensure compliance with legislative requirements for incident notification (e.g. Protection of the Environment Operations Act 1997), Sydney Water's employees and contractors will follow SWEMS0009 Responding to incidents with an environmental impact procedure.

Attach SWEMS0009 to the CEMP.

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

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

6. Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of Mamre Road Recycled Water and Stormwater Infrastructure. The proposal is required to expand current serving to meet Mamre Road Precinct Growth Servicing.

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as impacts on flora and fauna, and traffic and access. During operation, no impacts are expected. 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 enables the use of SW and RW to offset drinking water use throughout the Mamre Precinct. 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

EPA (NSW Environmental Protection Authority) (2017) *NSW Noise Policy for Industry*, EPA website, accessed [accessed 8/05/2025].

EPA (NSW Environment Protection Authority) (2020) *Draft Construction Noise Guideline*, EPA website, accessed [accessed 8/05/2025].

EPA (NSW Environment Protection Authority) *Assessing vibration | EPA*, Assessing vibration, [accessed 5/06/2025].

NSW Government (2025a) *Home | AdaptNSW*, NSW Government website, [accessed 8/05/2025].

NSW Government (2025b) *Western Sydney Aerotropolis | Planning*, NSW Government website, [accessed 2/06/2025].

NSW Government (2025c) *Mamre Road Precinct | Planning*, NSW Government website, [accessed 2/06/2025].

Sydney Water (2021) Mamre Road Wastewater Network Detailed Site Investigation

Appendices

Appendix A – Section 171 checklist and Section 171A checklists

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

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

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

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise and traffic. During operation, no additional impacts are expected. There will be environmental improvements by supplying RW and SW to offset drinking water use for the local community.
Any transformation of a locality	There are temporary and minor locality changes during construction, the proposal will not result in the transformation of a locality during operation as the proposal is below ground.
Any environmental impact on the ecosystems of the locality	The proposal will result in minor environmental impacts to ecosystems of the locality as vegetation clearing is required. These impacts have already been offset as they are in urban capable land. Vegetation removal within land categorised as excluded under the CPCP will be offset in accordance with the SW Biodiversity Offset Guide.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	There are temporary and minor reductions in these matters during construction. However, there are no permanent changes as the pipelines are underground.
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 is within local heritage curtilage of 'Bayley Park – House'. Applying the recommended mitigation measures will ensure potential impacts to the heritage values are avoided.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will result in the removal of some habitat of protected animals, however it will not result in a significant impact to any of the Threatened Ecological Communities within the study area. Mitigation measures, including biodiversity offsets have been identified to avoid or minimise impacts on habitat areas.

Section 171 checklist	REF finding
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. A Test of Significance was conducted for the Cumberland Plain Land Snail and concluded that the proposal is unlikely to significantly impact to the species.
Any long-term effects on the environment	The proposal will not have any long-term impacts on the environment. The proposal supports long-term regional objectives to effectively manage stormwater flow and water quality.
Any degradation of the quality of the environment	The proposal will maintain the quality of the environment.
Any risk to the safety of the environment	The proposal will ensure the safety of the environment.
Any reduction in the range of beneficial uses of the environment	The proposal will maintain the range of beneficial uses of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not affect demand on resources.
Any cumulative environmental effect with other existing or likely future activities	The proposal will have high cumulative impacts related to noise and traffic. The degree of impact will be dependent on the design and stage of completion of the other projects. Should overlap of schedules occur, Sydney Water will coordinate with the project manager for these projects to minimise potential cumulative impacts.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on these factors.
Any applicable local strategic planning statements, regional strategic plans or district strategic	The Final Business Case considered the applicable strategic planning plans including:

Section 171 checklist	REF finding
plans made under the EP&A Act, Division 3.1	• Greater Sydney Region Plan – Metropolis of three cities • Western City District Plan • Western Sydney Water Strategy.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Section 171A of the EP&A Regulation require a determining authority to take into account certain matters under Part 6.2 of the BCSEPP for a proposal within a 'regulated catchment'. As the proposal is within the Hawkesbury-Nepean catchment, the requirements of Section 171A(1) are applicable and are considered in Table A-2 below.

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

Section 171A checklist (Development in regulated catchments)	REF finding
BCSEPP – Section 6.6(1) - Water quality and quantity In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway	The proposal supports long-term regional objectives to effectively manage stormwater flow and water quality. Mitigation measures will be implemented during construction and operation to ensure that the proposal has a neutral impact on water quality in the Hawkesbury-Nepean Catchment.
(b) whether the development will have an adverse impact on water flow in a natural waterbody	The proposal will not modify or adversely affect water flows in the Hawkesbury-Nepean Catchment during construction or operation.
(c) whether the development will increase the amount of stormwater run-off from a site	The proposal will not increase the area of impervious surfaces. The final landform will ensure that the proposal will not increase the volume of stormwater run-off from the site.
(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse	The stormwater and recycled water pipelines will act as a closed system and will not increase the area of impervious surfaces. Provision for on-site stormwater retention, infiltration or reuse is not required.
(e) the impact of the development on the level and quality of the water table	Trenched and underbored sections of the proposal may encounter groundwater during construction, however, impacts to groundwater

Section 171A checklist (Development in regulated catchments)	REF finding
	levels and quality are expected to be negligible.
(f) the cumulative environmental impact of the development on the regulated catchment	The proposal is required to support the Mamre Road Precinct which is one of ten precincts within the Western Sydney Aerotropolis Growth Area. There is an immediate need to expand current serving to meet Sydney Water's commitment to Growth Servicing. With the implementation of the environmental mitigation measures in section 5, the potential for cumulative impacts between the proposal and other projects within the catchment is low.
(g) whether the development makes adequate provision to protect the quality and quantity of ground water.	Impacts to the level and quality of the groundwater are expected to be minor (see 6.6(1)(e) above).
BCSEPP – Section 6.6(2) - Water quality and quantity Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures:	
(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial	The proposal supports long-term regional objectives to effectively manage stormwater flow and water quality. Mitigation measures are included in Table 5-1 and Table 5-2 to ensure that the proposal will have a neutral or beneficial effect on the water quality of Hawkesbury-Nepean Catchment.
(b) the impact on water flow in a natural waterbody will be minimised	The proposal will not modify or adversely affect water flows within the Hawkesbury-Nepean Catchment during construction or operation.
BCSEPP – Section 6.7(1) - Aquatic Ecology In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation	The proposal may require selective pruning or removal of trees adjacent to Mamre Road. The subject trees do not comprise a threatened ecological community. Direct, indirect or cumulative adverse impacts to terrestrial, aquatic or migratory animals or vegetation of the locality will be negligible.

Section 171A checklist (Development in regulated catchments)	REF finding
	Offsets will be required for vegetation within excluded land. Some vegetation has already been offset under urban capable land therefore cumulative impacts are already considered.
(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require: (i) a controlled activity approval under the *Water Management Act 2000*, or (ii) a permit under the *Fisheries Management Act 1994*	Clearing for the proposal is not within riparian zoned land.
(a) whether the development will minimise or avoid: (i) the erosion of land abutting a natural waterbody, or (ii) the sedimentation of a natural waterbody	Mitigation measures to minimise and avoid the potential for erosion and sedimentation impacts to areas adjacent to and within Hawkesbury-Nepean Catchment are included in Table 5-1 and Table 5-2.
(b) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area	There are no wetlands close to the proposal.
(c) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within the Hawkesbury-Nepean Catchment are included in Table 5-1 and Table 5-2.
(d) if the development site adjoins a natural waterbody, whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody	Appropriate mitigation measures are included in Table 5-1 and Table 5-2 to ensure that the proposal will have a neutral or beneficial effect on the water quality within the Hawkesbury-Nepean Catchment.
BCSEPP – Section 6.7(2) - Aquatic Ecology Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:	
(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development	Appropriate mitigation measures are included in Table 5-1, Table 5-2 and Table 5-4 to ensure that the cumulative impacts of the proposal on terrestrial, aquatic or migratory animals or vegetation are limited to the minimum extent necessary.
(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves	There are no aquatic reserves close to the proposal.

Section 171A checklist (Development in regulated catchments)	REF finding
(c) if a controlled activity approval under the *Water Management Act 2000* or a permit under the *Fisheries Management Act 1994* is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained	Sydney Water is exempt from the need to obtain a controlled activity approval under the *Water Management Act 2000*. A permit under the FM Act is not required for the proposal.
(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised	Mitigation measures to minimise the potential for erosion and sedimentation impacts to areas adjacent to and within the Hawkesbury-Nepean Catchment are included in Table 5-1 and Table 5-2.
(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised	There are no wetlands close to the proposal.
BCSEPP – Section 6.8(1) – Flooding	
In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems	The proposal will be below ground and mitigation measures for flooding are included in Table 5-2. The risk of adverse impacts from future flood events during operation of the proposal is negligible.
BCSEPP – Section 6.8(2) – Flooding Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not:	
(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	Mitigation measures to minimise the potential for erosion and sedimentation and potential contamination impacts to areas adjacent to and within the Hawkesbury-Nepean Catchment are included in Table 5-1 and Table 5-2.
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems	The proposal will not alter the existing contours of the land and will not affect the overland flow path(s) of floodwaters.
BCSEPP – Section 6.9(1) - Recreation and public access In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider:	
(a) the likely impact of the development on recreational land uses in the regulated catchment	The proposal will be below ground adjacent to Mamre Road and will not have impacts to use of the land for recreation or other uses.

Section 171A checklist (Development in regulated catchments)	REF finding
(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	During construction, the proposal will occupy a small area along the road corridor of Mamre Road. The proposal will not have impacts to public access to and around foreshores. Any temporary diversions will be undertaken consistent with the environmental mitigation measures to ensure that there are no adverse impacts to natural waterbodies, watercourses, wetlands or riparian vegetation. The operation of the proposal will not affect existing public access arrangements.
BCSEPP – Section 6.9(2) - Recreation and public access Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:	
(a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	During construction, the proposal will occupy a small area along the road corridor of Mamre Road. The operation of the proposal will not affect existing public access arrangements.
(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe	Mitigation measures will be implemented to ensure existing access points affected by the proposal are maintained in a stable condition during construction and operation. The proposal does not include the establishment of any new access points.
(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded	Not applicable

Appendix B – Consideration of TISEPP consultation

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

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).*		X
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? *If so, consult with DPE (NPWS).*		X
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*		X
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? *If so, consult with Subsidence Advisory NSW.*		X
Will the proposal be on land in a Western City operational area specified in *the Western Parkland City Authority Act 2018,* Schedule 2 and have a capital investment value of $30 million or more? *If so, consult the Western Parkland City Authority*.		X
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? *If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).*		X

Appendix C – Biodiversity Assessment Report

Appendix D – Aboriginal Heritage Due Diligence Assessments

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

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