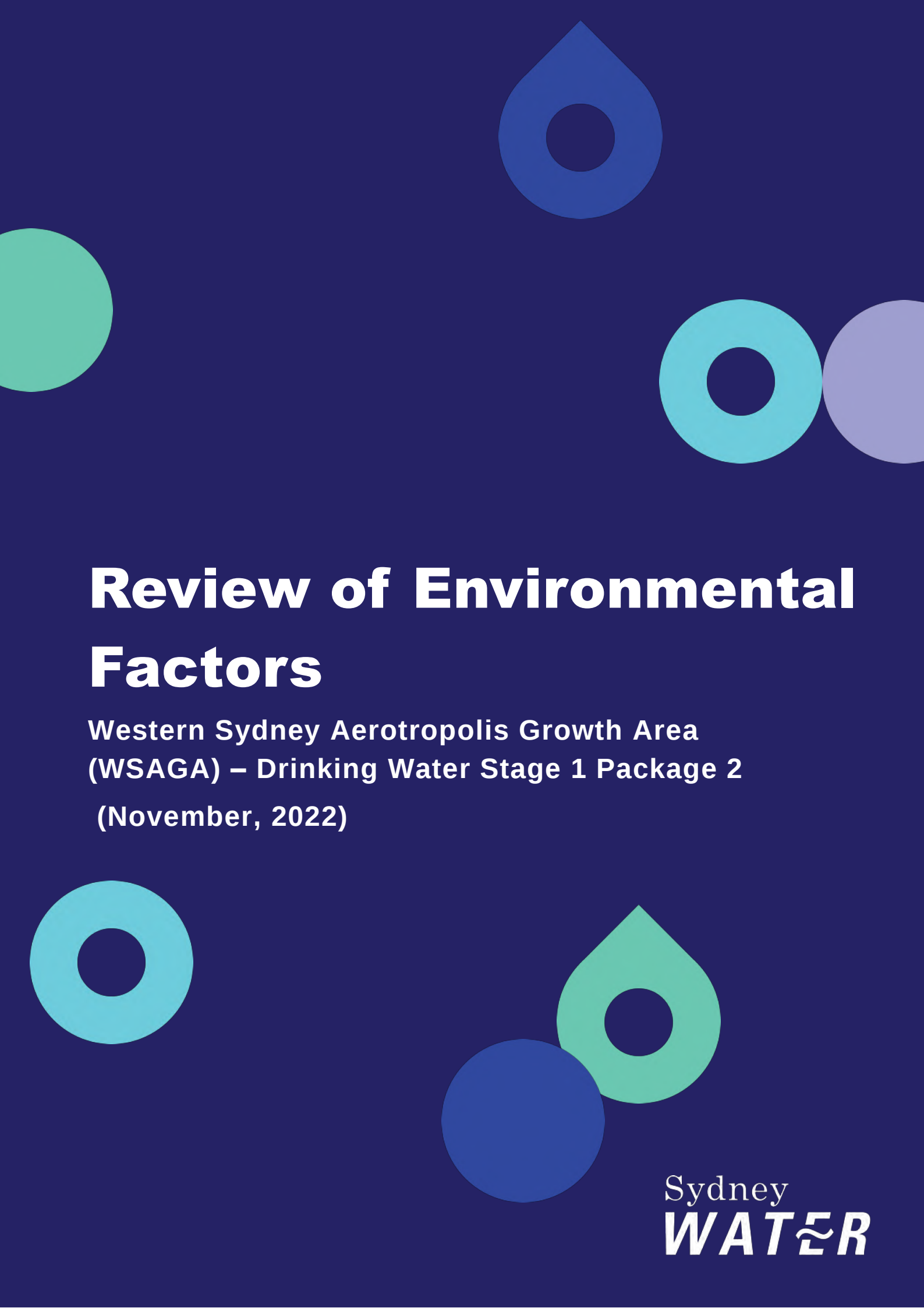
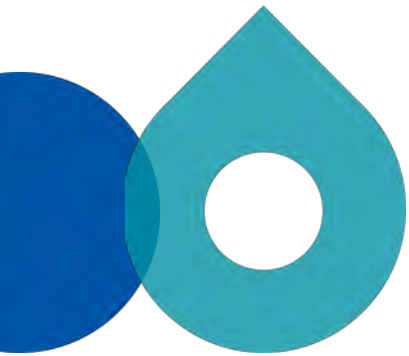




Review of Environmental Factors

**Western Sydney Aerotropolis Growth Area
(WSAGA) – Drinking Water Stage 1 Package 2
(November, 2022)**

Sydney
WATER



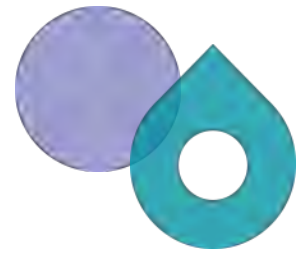


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Determination

This Review of Environmental Factors (REF) assesses the potential environmental impacts of the Western Sydney Aerotropolis Growth Area (WSAGA) Drinking Water Stage 1 Package 2 Project and 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 to ensure the proposal is carried out as described in this REF. If the scope of work or work methods described in this REF change significantly following determination, additional environmental impact assessment may be required.

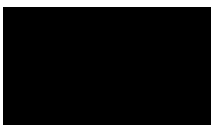
Decision Statement

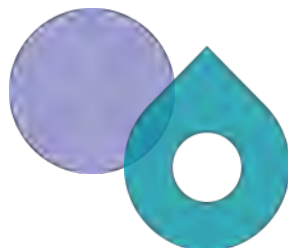
During construction, the main potential environmental impacts of the proposal are typical construction impacts such as vegetation clearing, soil erosion, noise and visual amenity. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Accordingly, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not required.

It is considered that, given the nature, scale and extent of impacts and implementation of the safeguards outlined in this REF, the proposed work is unlikely to have a significant impact on the environment. Accordingly, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

Certification

I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under section 170 of the EP&A Regulation and the information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
 Jason Chan Environmental Scientist Sydney Water Date: 26/10/2022	 Samantha Prior Senior Environmental Scientist Sydney Water Date: 26/10/2022	 Guy Souksay Senior Project Manager Program Deliver Sydney Water Date: 26/10/2022	 Jude Gregory A/Environment and Heritage Manager Sydney Water Date: 04/11/2022



1 Executive summary

Sydney Water plans to build new drinking water pipelines in the City of Penrith Local Government Area (LGA) to meet the growing demand for drinking water in the Western Sydney Aerotropolis Growth Area (WSAGA).

Construction is expected to start mid-2023 and take approximately 14 months. The assets will be constructed in the road corridor. Most of the work area has been previously disturbed by road and utilities construction or cleared for agricultural purposes. The main construction environmental impacts associated with the proposal are typical construction impacts such as vegetation clearing, soil erosion, noise and visual amenity. A Construction Environmental Management Plan will be prepared by the contractor to mitigate potential environmental impacts.

The proposal will result in positive long-term environmental improvements by servicing future growth and enabling the sustainable use of resources, aligned with the principles of ecologically sustainable development.

2 Introduction

2.1 Context

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

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposed work under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with the WSAGA Drinking Water Stage 1 Package 2 and identifies safeguards that avoid or minimise potential impacts.

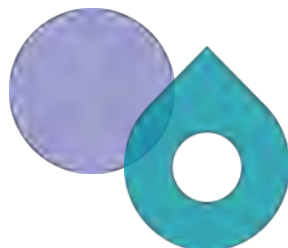
2.2 Proposal background and need

The Proposal is part of the WSAGA Drinking Water Project, delivering trunk infrastructure to service the WSAGA. The area is currently serviced via a rural water supply network within the Cecil Park Water Supply Zone (WSZ) which has limited capacity to service growth.

A summary of the proposal need, objectives and consideration of alternatives are provided in Table 2-1 below.

Table 2-1 Proposal need, objectives and consideration of alternatives

Aspect	Relevance to proposal
Proposal need	There are currently no drinking water services available in the WSAGA. A staged delivery of trunk infrastructure is required to provide a continued water supply in line with the development timeframes in the area and to meet Sydney Water's Operating Licence (Sydney Water, 2021).
Proposal objectives	The proposal objective is to amplify the drinking water network to service growth in the WSAGA.
Consideration of alternatives/options	Alternatives and options for the proposal were considered. The preferred options were presented in an options assessment study and addendum report conducted in 2019 and 2020 as determined through a risk assessment process. Costs and key risks including environmental, community and technical aspects were assessed. The proposal was generally selected as the preferred option as it would achieve the proposal objectives with an acceptable level of risk at the least cost.



2.3 Consideration of Ecologically Sustainable Development

The proposal has been considered against the principles of ecologically sustainable development (ESD) (refer to Table 2-2 below)

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

Principle	Consideration in proposal
Precautionary principle - <i>if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.</i>	The proposal will not result in serious or irreversible environmental damage and mitigation measures have been designed to reduce scientific uncertainty relating to the proposal.
Inter-generational equity - <i>the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.</i>	The proposal will help to meet the needs of future generations by providing a reliable water service.
Conservation of biological diversity and ecological integrity - <i>conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.</i>	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal has been designed to reduce or avoid vegetation removal where possible. Any impacts to native vegetation will be offset.
Improved valuation, pricing and incentive mechanisms - <i>environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals</i>	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

3 Proposal description

3.1 Proposal details

Table 3-1 identifies the scope of work for the proposal. Figures 3-1 to 3-9 show the location. Some sections of the proposed drinking water pipeline between Abbotts Road and Bakers Lane will be delivered in the same trench as the wastewater pipeline assessed under the Mamre Road Precinct – Wastewater Network REF (Nov, 2021). The biodiversity impacts including vegetation removal in those sections have been excluded in this REF to avoid duplication.

Table 3-1 Description of proposal

Scope of work	Detailed description of work/ activity
Proposal description	The key features of the proposed works include construction of trunk drinking water mains to service growth needs in WSAGA. The pipelines to be installed include: Construction stage 2 • WSAGA6-2a – about 3km of DN300 pipeline on the eastern side of Mamre Road from Abbotts Road (south of the intersection) to the south of Bakers Lane • WSAGA-7a – a DN300 crossing of Mamre Road connecting to WSAGA6-2b Construction stage 3 • WSAGA6-2b – about 3km of DN300 pipeline on the eastern side of Mamre Road which extends from Abbotts Road (south of the intersection) to the Elizabeth Drive roundabout at the southern end of Mamre Road • WSAGA6-01 – about 3km of DN300 pipeline on the western side of Mamre Road which extends from Abbotts Road (north of the intersection) to the Elizabeth Drive roundabout at the southern end of Mamre Road • Multiple DN300 road crossings between the eastern and western side of Mamre Road
Location and land ownership	The proposal is in the suburbs of Kemps Creek, Cecil Park and Mount Vernon within the Mamre Road Precinct in the City of Penrith LGA. The proposal is within the existing and future road verge of Mamre Road. Mamre Road is classified as a state road managed by Transport for New South Wales (TfNSW).
Site establishment and access tracks	Site establishment includes delineating the construction sites, storage and laydown areas, erosion and sediment controls, traffic management and

Scope of work

Detailed description of work/ activity

vegetation removal. The work areas can be accessed via existing roads. No new access roads will be required.

Ancillary facilities (compounds)

Construction compound(s) will likely be required to house site sheds, construction amenities and materials laydown. During the design phase, the location of compounds could not be confirmed. The exact location of these will be chosen by the Contractor and remain within the field assessment area, in consultation with the landowner(s) and approved by Sydney Water's Project Manager as described in the safeguards in **Section 6**.

Scope of work

The proposal involves the following activities:

Investigations

- geotechnical, contamination and survey works

Pipeline installation

Construction of new trunk drinking water mains on the eastern (about 6km) and western (about 3km) side of Mamre Road between Bakers Lane and Elizabeth Drive. Open trenching will be the primary construction method for the new trunk mains with trenchless technology (HDD) used for road crossings and environmentally sensitive areas. This includes the avoided land to the south of Kerrs Road, and Aboriginal Heritage item and Key Fish Habitat to the south of Mount Vernon Road.

Typical trench dimension will be up to 1.5m wide and up to 4.5m deep. Final depths are subject to change during detailed design and will depend on the location of existing services. For trenchless construction, the dimension for the entry and exit pits will be approximately 5m by 10m. The maximum trenchless depth for creek crossings is expected to be 10m. Final depths are subject to change during detailed design.

Open trench pipeline construction would include:

- traffic management
- installing environmental and safety measures
- excavating trenches, including stockpiling of spoil material on the upslope side of trenches, or at temporary site compounds
- shoring and dewatering trenches, depending upon trench depth and groundwater levels
- installing pipelines
- pipe welding
- backfilling the trench with bedding material and excavated soil
- compacting trench fill material

Scope of work

Detailed description of work/ activity

- installing ancillary structures including stop valves and pits
- restoring areas disturbed by the construction works.

Trenchless pipeline construction would include:

- civil works to level and stabilise the site
- installing fencing and safety measures
- excavating the entry and exit pits
- installing measures to manage drilling fluids and cuttings
- installing measures to manage groundwater, if required
- drilling the borehole, using bentonite-based (or similar) drilling fluid to lubricate the drilling head and flush the drilled hole
- removing spoil, cuttings and slurry and disposing excess spoil, cuttings and slurry that cannot be used in site restoration at a licensed facility
- installing the pipelines and grouting the annulus if required
- restoring affected areas, including backfilling the bore shafts.

Pipeline decommissioning

- installing end caps and remove surface fittings on the existing DN100 on the eastern side and DN150 water mains on the western side of Mamre Road (south of Abbots Road).

Demobilisation

- clearing and rehabilitating the site
- removing environmental, safety and traffic controls
- removing temporary fencing
- restoring surface for site compound area.

Commissioning

Commissioning involves testing and running the new equipment to ensure the equipment is working correctly and integrated with existing operations.

This involves washing the inside of the pipe (flushing), filling the pipeline, pressure testing (hydrotesting), disinfection and connection to the existing system. This process will take a minimum of 8-10 weeks to complete assuming the pressure test passes first time. If the pressure test does not pass, the leaking joint must be found and rectified. This means digging up the main again and relaying the joint in question. The time required for this process depends largely on the number of leaking joints. Upon successful testing, the watermain will be connected to the Cecil Park WSZ.

Scope of work

Detailed description of work/ activity

Restoration

The work site will be restored to the pre-existing condition following construction in consultation with council and road authorities. 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:

- backfilling of trenches as soon as works are finished
- dismantling compounds, removal and disposal of waste material and removing construction signage
- restoring ground cover and native vegetation
- restoration of road pavement surfaces and drainage where pipework is trenched into place
- removing erosion and sediment controls, fencing and traffic management measures.

Materials/ equipment

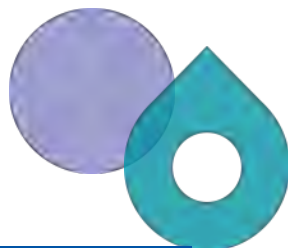
Typical equipment likely to be used includes but is not limited to:

- air compressors
- backhoe
- bogie / truck and dog
- compactors
- concrete saws
- chain saws
- concrete truck and pump
- confined spaces safety equipment
- cranes
- diesel powered flood lights
- drill rig
- excavators
- generators
- light vehicle
- portable pumps and sediment tank
- rock breakers / jackhammers
- site facilities and amenities
- skip bins
- storage containers
- street sweeper
- rigid bed trucks
- tipper trucks
- water truck
- welding equipment and power tools (various)
- confined spaces safety equipment (eg gantry/davit).

Work hours

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

- 7am to 6pm, Monday to Friday



Scope of work

Detailed description of work/ activity

- 8am to 1pm, Saturdays

Sometimes work is required at different times (eg. for work in roads or delivery of oversize equipment). The proposal is expected to require work outside these hours for installing and demobilising concrete barriers in the road verge. Sydney Water's Project Manager can approve work outside of standard daytime hours, following the approval process described in the safeguards in **Section 6**.

Proposal timing

Construction is expected to start mid-2023 and take approximately 14 months.

Operational requirements

Pipeline maintenance will be required approximately every three months and would involve cleaning and/or flushing sediment built up in pipes and associated pipe infrastructure.



Figure 3-1 Location of proposal and environmental constraints (Mamre Road) (Map 1)

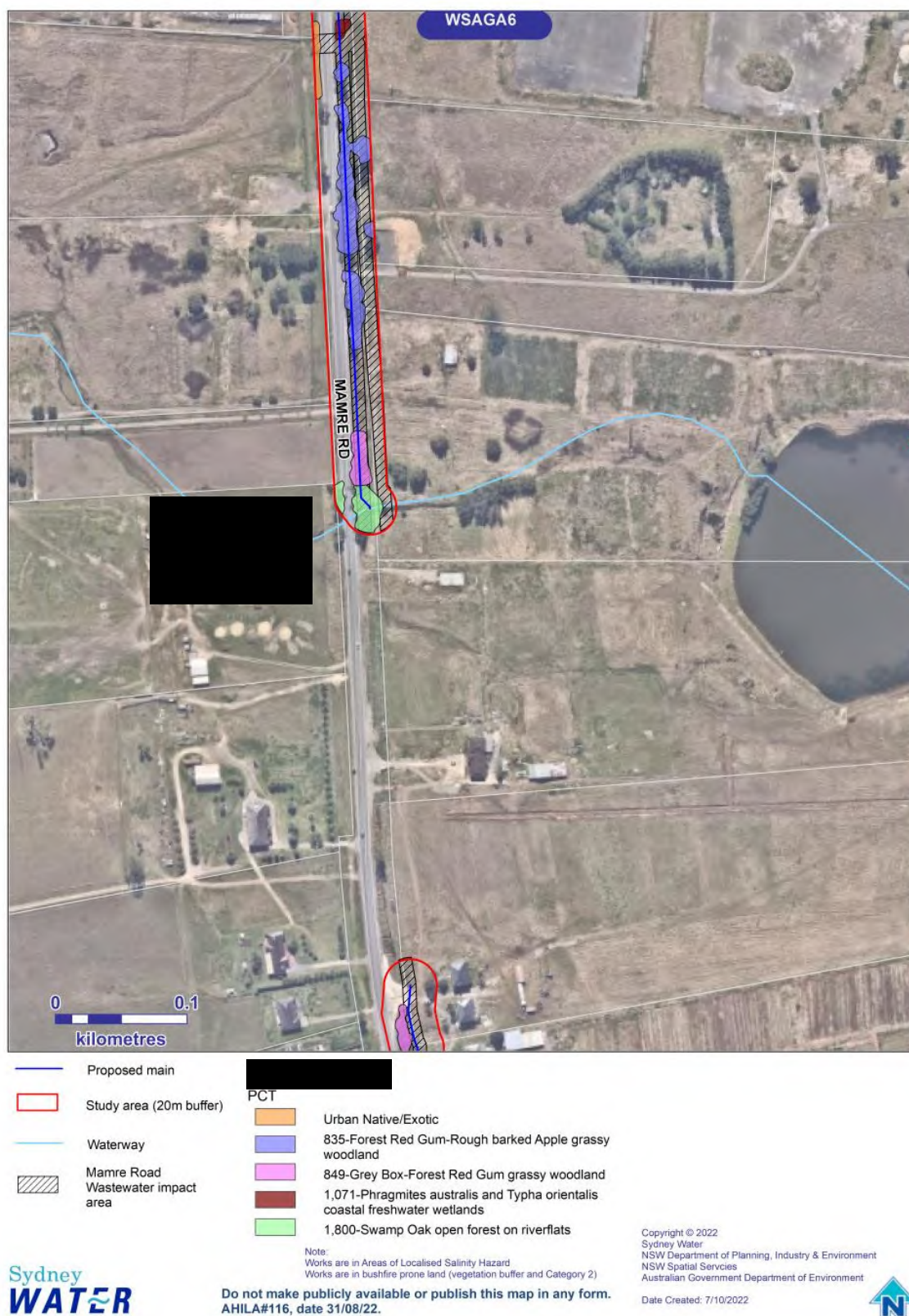


Figure 3-2 Location of proposal and environmental constraints (Mamre Road) (Map 2)



- Proposed main
- Study area (20m buffer)
- Mamre Road Wastewater impact area
- Local heritage item (SEPP Industry and Employment 2021)
- PCT
- 849-Grey Box-Forest Red Gum grassy woodland

Sydney
WATER

Notes:
Works are in Areas of Localised Salinity Hazard
Works are in bushfire prone land (vegetation buffer and Category 2)
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Figure 3-3 Location of proposal and environmental constraints (Mamre Road) (Map 3)



- | | | |
|---|---|---|
| Proposed main | Avoided land | PCT |
| Study area (20m buffer) | Hollow bearing tree | Urban Native/Exotic |
| Waterway | Key Fish Habitat | 835-Forest Red Gum-Rough barked Apple grassy woodland |
| Mamre Road Wastewater impact area | Local heritage item (SEPP Industry and Employment 2021) | 849-Grey Box-Forest Red Gum grassy woodland |
| Terrestrial Groundwater Dependent Ecosystem (GDE) | | |

Note:
Works are in Areas of Localised Salinity Hazard
Works are in bushfire-prone land (vegetation buffer and Category 2)

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Figure 3-4 Location of proposal and environmental constraints (Mamre Road near Kemps Creek) (Map 4)

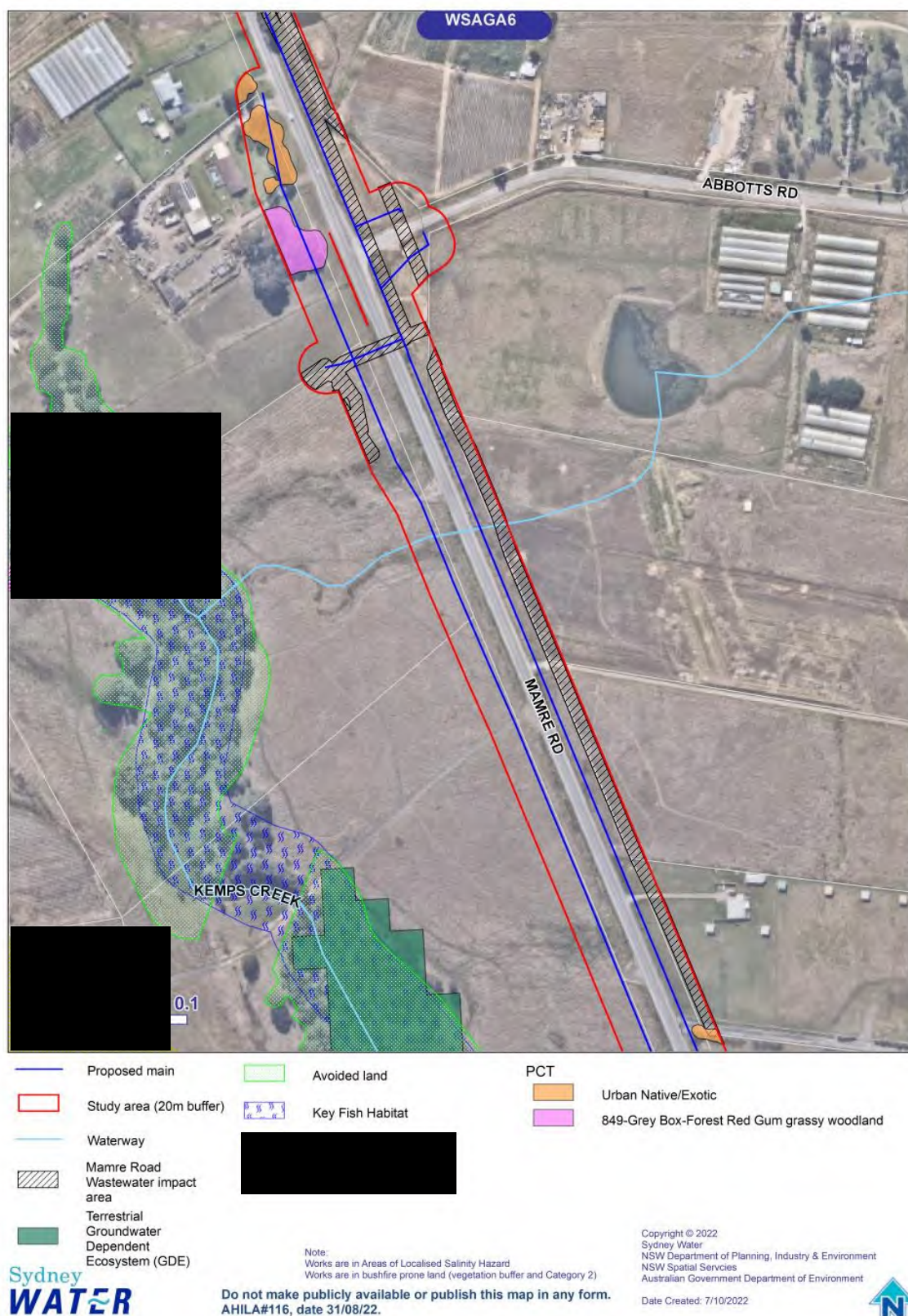


Figure 3-5 Location of proposal and environmental constraints (Mamre Road near Abbots Road) (Map 5)

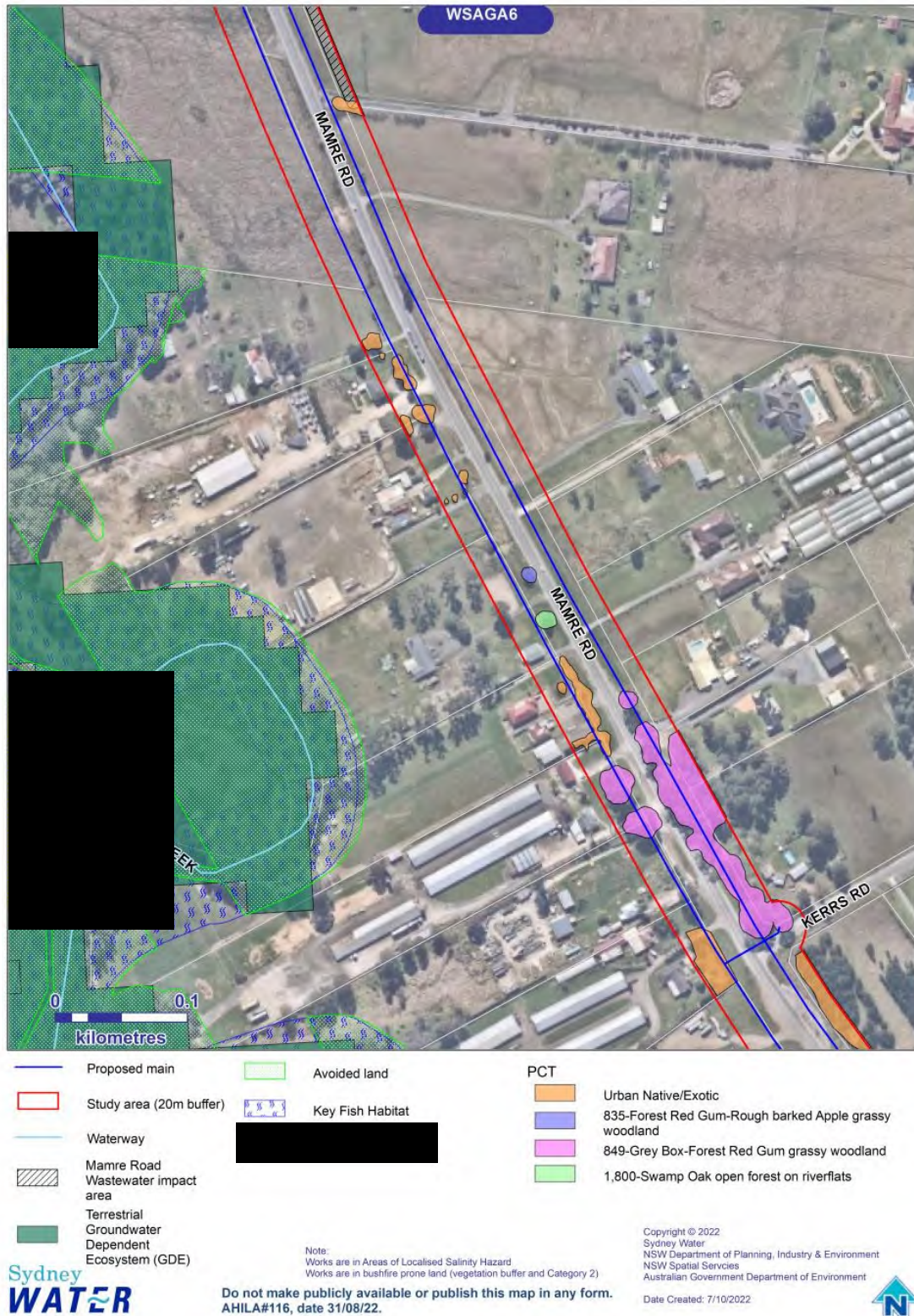


Figure 3-6 Location of proposal and environmental constraints (Mamre Road near Kerrs Road) (Map 6)

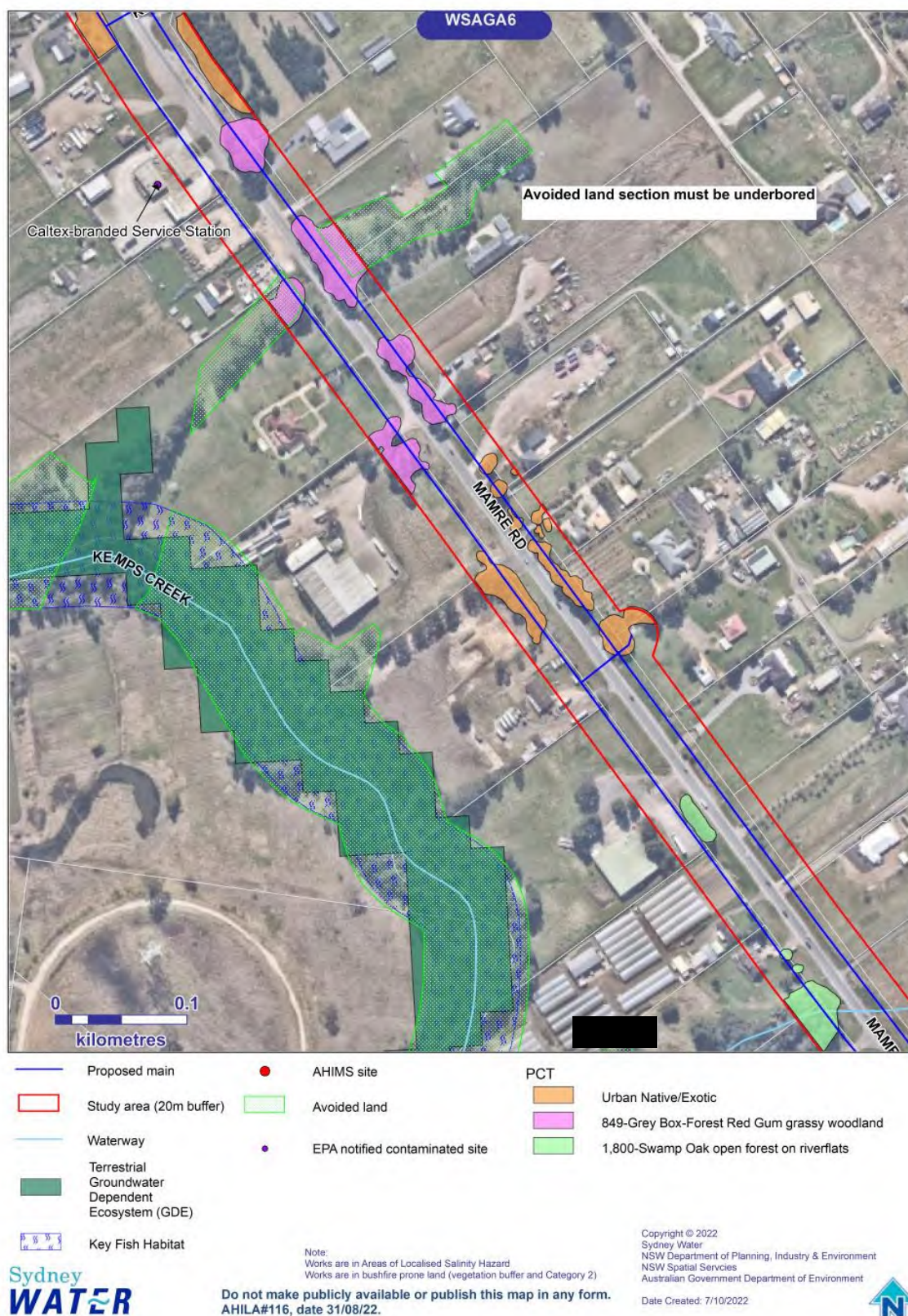


Figure 3-7 Location of proposal and environmental constraints (South of Kerrs Road) (Map 7)



Figure 3-8 Location of proposal and environmental constraints (Mamre Road near Elizabeth Drive) (Map 8)

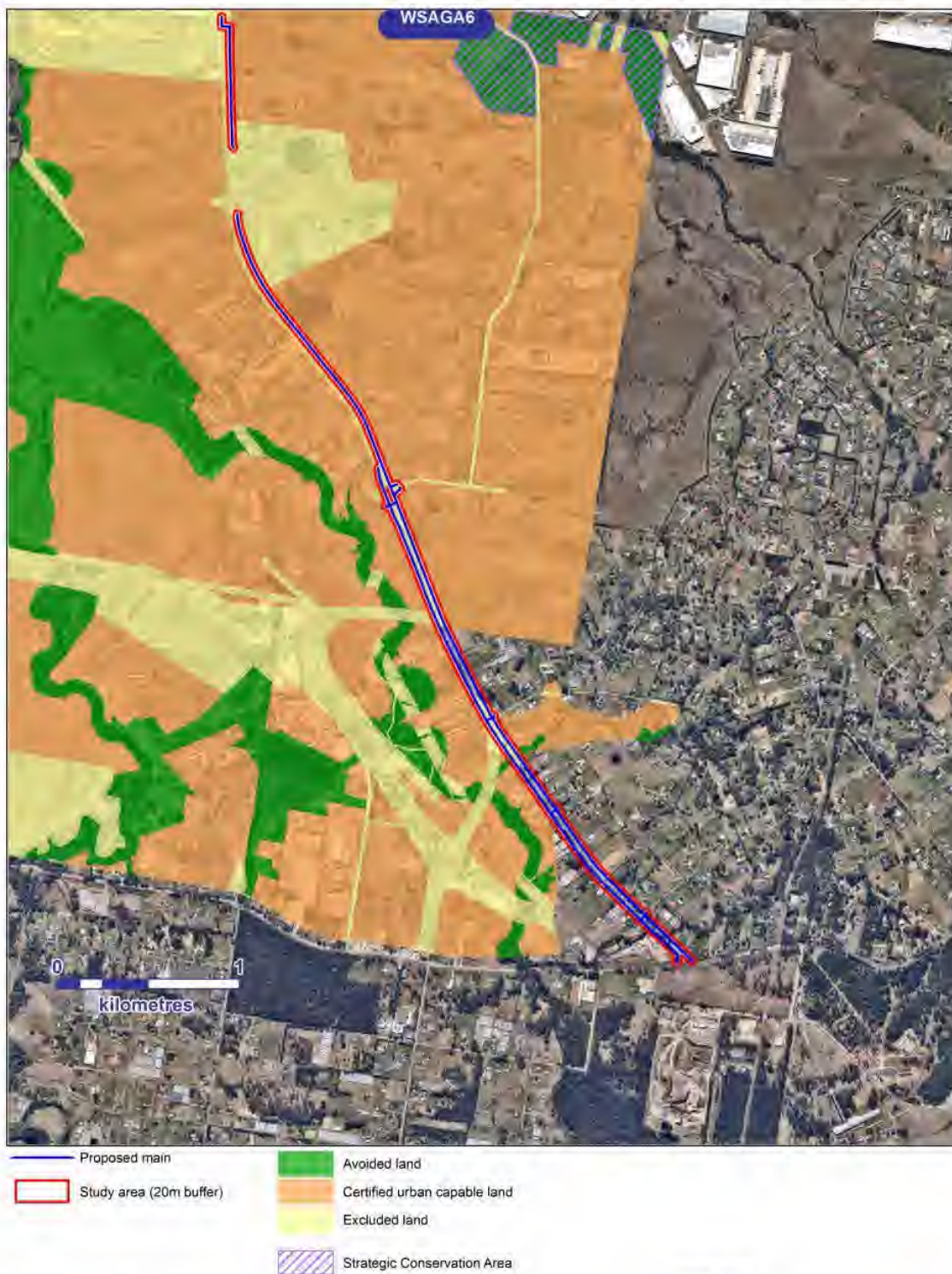
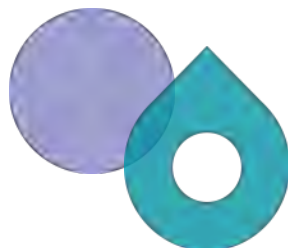


Figure 3-9 Proposed alignment within Cumberland Plain Conservation Plan area



3.2 Field assessment area and changes to the scope of work

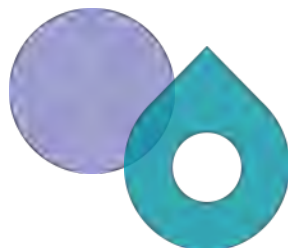
The proposal alignment shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The direct impact area is a 10m buffer which contains the alignment and entry/exit pits. The final alignment may change based on detailed design and/ or construction planning. If the design/scope of work, construction methods or construction timing 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 of the REF (20m buffer) 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 (subsection 5.4(a) of the Act).

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

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

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



4 Consultation

4.1 Community and stakeholder consultation

Our approach to community and stakeholder consultation is guided by the Guidelines for Community and Stakeholder Engagement (Sydney Water, 2021).

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, projects 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 will impact the community in some way, we will consult with affected groups through a variety of ways and through different stages of a project. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions.

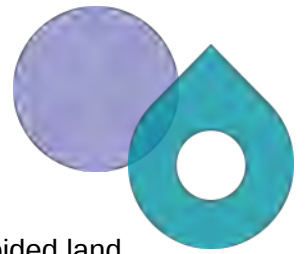
We will also provide local councils with reasonable notice when we would like to commence works, regardless of the need for development consent. Local council(s) will be consulted about matters identified in environmental planning instruments (refer Section 4.2 below), including public safety issues, the placement of any temporary site sheds or laydown areas on council land, or full or partial road closures of council managed roadways.

A Consultation Outcomes Report is being prepared for the WSAGA Drinking Water (Stage 1 and Stage 2) project and provides a summary of the stakeholder engagement activities completed during concept design. Key stakeholder engagement undertaken during the development of the concept design has included discussions with directly impacted landowners, Penrith City Council, TfNSW, Jemena and TransGrid.

4.2 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 (specified in Part 2.2 Division 1 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)).

Consultation is required under section 2.10 of the TISEPP as the proposal involves excavation of a council managed road. The delivery contractor is required to consult with Penrith City Council in accordance with this clause. Further details provided in Appendix B.



Written notification to the Planning Secretary is required under section 201A of the Environmental Planning and Assessment Regulation 2021 as the proposal is on avoided land within the Cumberland Plain Conservation Plan area. This will be completed by the Sydney Water environment representative within 30 days of REF approval.



5 Legislative requirements

5.1 Previous approvals

Some sections of the proposed drinking water pipeline between Abbotts Road and Bakers Lane will be delivered in the same trench as the wastewater pipeline assessed under the Mamre Road Precinct – Wastewater Network REF (Nov, 2021). The biodiversity impacts including vegetation removal in those sections have been excluded in this REF to avoid duplication.

5.2 Environmental Planning and Assessment Act

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 5-1) and legislation (Table 5-2) are relevant to the proposal. Table 5-2 also documents any licences and permits, timing and responsibility for obtaining them.

Table 5-1 Consideration of environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.159 (1) of the TISEPP permits development by or on behalf of a public authority for water reticulation systems without consent on any land. As Sydney Water is a public authority, the proposal is permissible without consent.
Penrith Local Environmental Plan 2010	The proposal is located on land zoned as • RU2 Rural Landscape • SP2 Infrastructure • RU4 Primary Production Small Lots • C4 Environmental Living
Liverpool Local Environmental Plan 2008	The southern end of the proposal is on land zoned as SP2 Infrastructure.
State Environmental Planning Policy (Precincts—Western Parkland City) 2021	Sydney region growth centres (Chapter 3) Chapter 3 of this SEPP aims to co-ordinate the release of land for residential, employment and other urban development in the North West Growth Centre, the South

West Growth Centre, the Wilton Growth Area and the Greater Macarthur Growth Area.

The southern section of the proposed work is located within the South West Growth Centre on 'certified land'. Clause 5 of the biodiversity certification order indicates that no further threatened species assessment would need to be undertaken on the 'certified land'.

Western Sydney Aerotropolis (Chapter 4)

The proposal is in land to which Chapter 4 of this SEPP applies. The proposal is on land zoned as Environment and Recreation (ENZ). As per Subsection 4.5, the provisions of the SEPP (Infrastructure) 2007 (now TISEPP) still apply as the proposal does not meet the modifications noted in that clause. Therefore, the proposal can be undertaken without development consent.

No vegetation removal is required in areas mapped as 'existing native vegetation' on the High Biodiversity Value Areas Map under section 4.25A of the SEPP. Written notice to the Planning Secretary is not required.

State Environmental Planning Policy
(Industry and Employment) 2021

Western Sydney employment area (Chapter 2)

The proposal is located on land to which this policy applies, zoned as C2 Environmental Conservation, IN1 General Industrial, SP2 Infrastructure and RE1 Publication Recreation.

However, subsection 2.32 (1) states: "This Chapter does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out without consent, or that is exempt development, under the *State Environmental Planning Policy (Infrastructure) 2007*". As the proposed works are permissible under the TISEPP (previously ISEPP), development consent is not required.

State Environmental Planning Policy
(Biodiversity and Conservation) 2021

Vegetation in non-rural areas (Chapter 2)

Chapter 2 of this SEPP applies as it is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) states: '*This Policy does not affect the provisions of any other SEPP....*', and as the works are permissible under the TISEPP a Council permit to clear vegetation under this SEPP is not required.

Environmental Planning Instrument

Relevance to proposal

Bushland in urban areas (Chapter 6)

Chapter 6 of this SEPP applies as the proposal is on land listed in Schedule 5 of the SEPP. As a public authority, Sydney Water has had regard to the aims and objectives of the SEPP to protect and preserve bushland within urban areas (Section 6.2.3 of the REF).

Hawkesbury-Nepean River (Chapter 9)

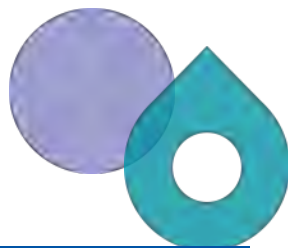
Chapter 9 of this SEPP applies as the proposal is on land mapped under s9.1. Sydney Water has taken into consideration, the requirements of section 9.3 and section 9.4 (see Section 6.2.2 of the REF).

Strategic conservation planning (Chapter 13)

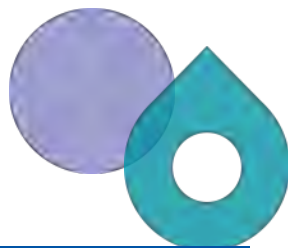
The works are within the Cumberland Plain Conservation Plan area on land mapped as certified – urban capable, excluded and avoided land. As part of the proposal is on avoided land, the notification and reporting requirements in section 201A of the Environmental Planning and Assessment Amendment (Avoided Land) Regulation 2022 will be followed. No vegetation removal is required on avoided land as this section will be underbored.

Table 5-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
<i>Protection of the Environment Operations (POEO) Act 1997</i>	The POEO Act is the main NSW legislation covering pollution and waste management. Construction and operation of the proposal is not a scheduled activity. An EPL is not required. There is a requirement under Part 5.7 of the POEO Act to immediately report any pollution incidents to the relevant authority where material harm to the environment is caused or threatened. The definition of material harm and the relevant authorities are identified in Part 5.7 of the POEO Act. The Contractor is responsible for immediately reporting such incidents in accordance with SWEMS0009.	N/A	During construction, Contractor

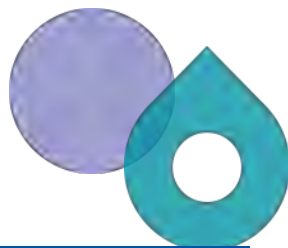



Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
<i>Biodiversity Conservation (BC) Act 2016</i>	The BC Act lists threatened species, populations and ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, 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 6.2.3 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.	ToS	Pre-construction, Sydney Water
<i>National Parks and Wildlife (NPW) Act 1974</i>	This Act provides for the establishment, preservation, and management of areas such as national parks, state conservation areas, nature reserves, and Aboriginal areas. This Act also provides for the protection of Aboriginal heritage, including Aboriginal objects and places. The proposal is not within National Parks, State Conservation areas or nature reserves. An Aboriginal Heritage Due Diligence assessment confirmed that provided the safeguards are implemented, impacts to Aboriginal Heritage would be avoided by underboring Mamre Road Kemps Creek AFT 1 and an Aboriginal Heritage Impact Permit (AHIP) under the Act, would not be required.	N/A	N/A

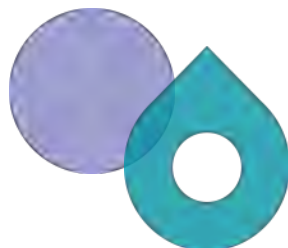



Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
<i>Heritage Act 1977</i>	The Heritage Act provides for the conservation of environmental heritage in NSW. The proposal is located adjacent to “Bayley Park”, house (Local significance) and partly located within the curtilage of Gateposts to Colesbrook (Local significance). These two heritage items are both listed under SEPP (SEPP Industry and Employment 2021) (Chapter 2 Western Sydney employment area). No impact to these items will occur.	N/A	N/A
<i>Fisheries Management (FM) Act 1994</i>	The FM Act protects threatened species, populations and communities of fish and marine vegetation, as well as commercial and recreational fishing areas, in NSW waters. A permit and or notification is required under Part 7 of the FM Act for activities that involve dredging and reclamation work, temporarily or permanently obstructing fish passages and or harming marine vegetation. The proposal has been designed to avoid dredging or reclamation of key fish habitat by underboring the alignment. The underbored section does not involve harm to marine vegetation, dredging, reclamation or obstruction of fish passage. Consultation under the FM Act is therefore not required.	N/A	N/A
<i>Water Act 1912/ Water Management Act 2000</i>	Under section 91B of the WM Act, Sydney Water is required to obtain a Water Supply Work Approval (WSWA) for the temporary dewatering of groundwater. During construction, the interception of groundwater is anticipated for the deeper section of the proposed work and dewatering would likely be required. A WSWA is therefore required. In addition, a Water Access Licence (WAL) (section 60A) would be required if more than 3 megalitres (ML) of groundwater is	WSWA	Pre-construction, Sydney Water



Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	likely to be extracted, in accordance with Schedule 4 of the Water Management (General) Regulation 2018.		
<i>Roads Act 1993</i>	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. The proposal is located on Mamre Road and Elizabeth Drive, both classified roads (State Roads) that are managed by TfNSW. 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 of the proposal.	ROL	Pre-construction, Contractor
<i>Environment Protection and Biodiversity Conservation (EPBC) Act 1999</i>	The EPBC Act provides the framework for Commonwealth environmental approvals. A Significant Impact Criteria (SIC) assessment concluded that significant impacts to an EPBC Act listed entity are unlikely.	SIC	Pre-construction, Sydney Water



6 Environmental assessment

The potential environmental aspects and direct and indirect impacts associated with construction and operation of the proposal are identified in Section 6.2 as well as safeguards to minimise these. These safeguards will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) to be developed by the Contractor prior to commencement of work.

6.1 Existing environment

The proposal is located along the disturbed road reserve of Mamre Road. Outside the road reserve, land use is mostly rural residential/agricultural with evidence of clearing of vegetation and intensive grazing by cattle across the landscape. Sensitive areas surrounding the proposal include Kemps Creek, patches of remnant native vegetation and residences. The environmental features within and adjacent to the study area are detailed in Section 6.2.

6.2 Environmental aspects, impacts and safeguards

6.2.1 Topography, geology and soils

Existing environment

The primary geotechnical constraints within the study area were identified in the Detailed Site Investigation (DSI) WSAGA Stage 1 Package 2 (Aurecon, 2022) and are summarised below.

Topography

Topography along Mamre Road features undulating ridges, with elevation ranging from 41 to 61 m AHD. Elevations generally increase from north to south and from east to west.

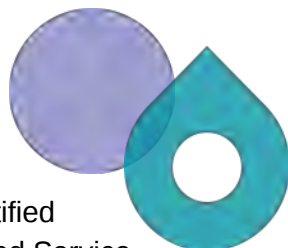
Geology and soil

Geology and soils along Mamre Road typically include:

- Topsoils predominantly comprised of brown, low plasticity silty sand. Fine to medium grained sand, fine grained and sub-angular gravels, wood fragments, bark chips and rootlets are present within some areas.
- Fill predominantly comprised of low to medium plasticity clay material, brown-dark grey with metallic waste.
- Alluvium soils predominately comprised of medium plasticity clay, brown/grey with trace black shale gravels. Residual soils predominantly comprised of medium plasticity clay, dark-brown to grey, with increasing fine shale gravels.

Contamination

The soil analytical results (Aurecon, 2022) found surface Asbestos Containing Materials (ACM) at the corner of Mamre Road and Elizabeth Drive.



A search of the EPA Contaminated Land Record undertaken on 22nd July 2022 identified one known EPA notified contaminated site just outside the study area: Caltex-branded Service Station at Kemps Creek.

Saline soil

The proposal is in areas of localised salinity hazard with some sections towards the southern end (south of Kemps Creek) in areas of extensive salinity hazard.

Potential impacts

Construction phase

Construction activities causing ground disturbance, such as vegetation removal, excavation and stockpiling of soil, if not adequately managed, could result in the following impacts:

- loss of soil from erosion of exposed soil and stockpiled materials, particularly in areas with highly dispersive soil
- dust generation from excavation and vehicle movements over exposed soil
- off-site leaching of saline soils to surrounding land and waterways
- increase in sediment loads entering the stormwater system and downstream waterways
- exposure of contaminated soil.

These impacts would be mitigated by the proposed safeguards, and any residual impacts are likely to be minor, temporary and short-term.

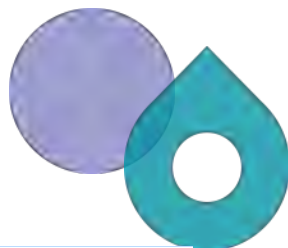
Operation phase

The proposed works are not proposing to permanently change the surface topography and drainage patterns of the area. The area would be returned to its original topography and drainage pattern following construction. Maintenance works will be carried out approximately every three months and are likely to have a negligible impact on soils.

Safeguards

Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to:

- develop a Soil and Water Management Plan (SWMP) as part of the CEMP
- divert surface runoff away from disturbed soil and stockpiles
- install sediment and erosion controls before construction starts
- reuse topsoil where possible and stockpile separately
- inspect controls at least weekly and immediately after rainfall
- rectify damaged controls immediately

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-
- remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.

Minimise ground disturbance and stabilise disturbed areas progressively.

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

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

Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Property Environmental Services) to agree on proposed management approach.

Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.

Sweep up any sediment/soil transferred off site at least daily, or before rainfall.

Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.

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:

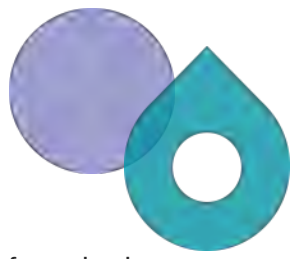
- treat existing salinity with gypsum
- establish salt tolerant species in existing or potential salinity problem areas after construction
- stabilise existing areas of erosion
- minimise water use on site
- avoid rotation and vertical displacement of the original soil profile
- backfill excavations 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.

6.2.2 Water and drainage

Existing environment

Surface water

The proposal crosses multiple drainage lines and waterways including tributaries of Kemps Creek and Wianamatta-South Creek along Mamre Road. The Kemps Creek tributary just to the north of the Elizabeth Drive Mamre Road intersection is also classified as Key Fish Habitat.



Groundwater

The Geotechnical Interpretive Report (Sydney Water, 2022) indicates the presence of perched groundwater between 2.02 m below ground level (bgl) and 3.6 m bgl. In addition, it is expected that the groundwater contours generally resemble topography and flow occurs towards topographic low points.

Flooding

The proposal is not located on any mapped flood prone land on the ePlanning Spatial Viewer.

Potential impacts

Construction phase

Surface water

The proposed trenching work and construction activities have the potential to impact on water quality of nearby waterways. Existing waterways will be underbored, however, sediments in runoff could increase turbidity and result in a decline in water quality. Additionally, fuels, chemicals or wastewater from accidental spills during construction could potentially enter stormwater flows to the above local waterways. Poor site management may lead to potential sedimentation impacts on the local waterway system. During drilling, there is potential for drilling fluids to leak to the surface water or groundwater through fractures. Implementation of safeguards would minimise risk and potential impacts on water quality.

Groundwater

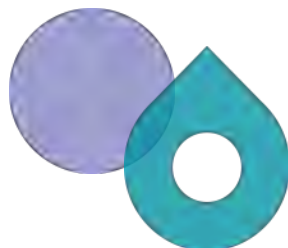
There may be groundwater inflow into excavations where we intercept the groundwater table. More groundwater is expected in low lying areas and especially near creeks and after rainfall. No groundwater dependent ecosystems would be impacted. The works can be classified as a 'minimal impact activity', as per the Aquifer Interference Policy.

A Water Supply Work approval is required for any dewatering, and a Water Access Licence is required if more than 3 ML of groundwater would be extracted.

The amount of groundwater inflow to be managed and dewatered during construction is dependent on the excavation and backfilling methodology and staging. During detailed design, the contractor would confirm the estimate to support the Water Supply Work Approval application, and if it is likely that more than 3 ML of groundwater would be extracted, a Water Access Licence would also be sought prior to dewatering.

Potable water

The proposal will require the discharge of approximately 2.5 ML drinking water from the existing pipes for connections and commissioning. Any discharge will be in line with Sydney Water's D0001667 Water Quality Management During Operational Activities procedure. However, as the discharge location won't be known until detailed design, the Project Manager will seek confirmation from the Environment Representative to confirm if further assessment and mitigation measures are required.



Operation phase

During operation, the water main would be below ground and is not expected to result in changes to drainage.

Water discharged during the flushing or scouring of the main for maintenance, will drain to the neighbouring stormwater infrastructure. Any discharge will be in line with Sydney Water's D0001667 Water Quality Management During Operational Activities procedure.

Safeguards

Use appropriate controls to avoid potential sedimentation to waterbodies (eg floatation boom).

Consider the DPI Water Guidelines for laying pipes and cables in watercourses during the design and construction of works within 40m of Kemps Creek and Wianamatta-South Creek tributaries to protect waterfront land.

Bund potential contaminants and store on robust waterproof membrane, away from drainage lines.

Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills and aquatic spill kit on site for clean-up of accidental chemical/fuel spills in mapped key fish habitat. Keep the spill kits stocked and located for easy access.

Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and flood prone areas.

Sydney Water will obtain a groundwater Water Supply Works Approval and where dewatering is >3ML per water year (from 1 July) a Water Access Licence from NRAR will also be obtained. The Delivery Contractor is responsible for:

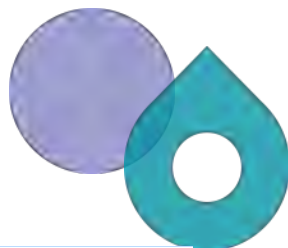
- preparing a Dewatering Management Plan at least four months prior to construction
- complying with the approval conditions (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).

Minimise groundwater ingress during detailed design. Prepare Dewatering Management Plan as part of the CEMP for groundwater dewatering, including: (eg protecting water quality, monitor extraction volumes).

Discharge all water in accordance with Sydney Water's Water Quality Management During Operational Activities Policy (D0001667) including erosion controls, discharge rate, dechlorination, monitoring. Re-use potable / groundwater water where possible.

As the discharge location won't be known until detailed design, the Project Manager will seek confirmation from the Environment Representative to confirm if further assessment and mitigation measures are required.

If discharge to the environment is not possible, seek 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.



Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Bunded areas to have 110% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled.

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

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 Drilling Fluid Management plan to avoid impacts, including:

- contain and monitor drilling fluids at entry/exit points
- identify and manage frac-outs
- re-use and/or disposal of drilling fluids (checking waste classification).

6.2.3 Flora and fauna

This section provides a summary of the Biodiversity Assessment Report prepared by Biosis (2022), which included a desktop assessment, literature review and field survey of the study area. The assessment assumes a 10m direct impact area where vegetation clearing is required.

Impacts to BC Act and EPBC Act listed threatened species and communities present or likely to occur within the study area have been considered by undertaking Test of Significance (ToS) and Significant Impact Criteria (SIC) assessments.

Some sections of the proposed drinking water pipeline between Abbotts Road and Bakers Lane will be delivered in the same trench as the wastewater pipeline assessed under the Mamre Road Precinct – Wastewater Network REF (Nov, 2021). The biodiversity impacts including vegetation removal in those sections have been excluded in this REF to avoid duplication, but have been considered in terms of potential cumulative impact.

The Biodiversity Assessment Report is provided in Appendix C.

Existing environment

Vegetation types

The vegetation within the study area comprises four locally indigenous communities PCT 835, 849, 1071 and 1800. The rest of the study area was made up of Urban Native and Exotic grassland. Vegetation communities identified within the study area are summarised in Table 6-1.

Table 6-1 Vegetation communities of the study area

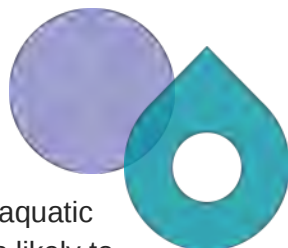
Plant Community Type	Description	BC Act	EPBC Act
PCT 835: River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	The community is generally in low condition due to low species diversity, high levels of fragmentation and weed infestation due to edge effects.	Endangered	Does not meet the minimum condition thresholds
PCT 849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	The community is generally in low condition due to low native species diversity, high levels of fragmentation and weed infestation due to edge effects.	Critically Endangered	Does not meet the minimum condition thresholds
PCT 1071: <i>Phragmites australis</i> and <i>Typha orientalis</i> coastal freshwater wetlands of the Sydney Basin Bioregion	The community is present in low condition along Mamre road. Freshwater Wetland is present as a small manmade drainage line containing a dominance of Broad-leaved Cumbungi <i>Typha orientalis</i> and Slender Knotweed <i>Persicaria decipiens</i> .	Does not meet listing requirement	Not listed
PCT 1800: Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	The community is generally in low condition due to low species diversity, high levels of fragmentation and weed infestation due to edge effects.	Does not meet listing requirement	Does not meet the minimum condition thresholds
Urban Native / Exotic	The community is generally in low condition due to low species diversity, high levels of fragmentation and weed infestation due to edge effects	Not listed	Not listed

Groundwater dependent ecosystems

The Atlas of Groundwater Dependent Ecosystems (GDE) does not identify any areas within the study area as being groundwater dependent. The most prominent areas of mapped GDEs in the surrounding area is along Kemps Creek to the west.

Aquatic habitats

Six unnamed waterways transect the study area comprising of two first order (Strahler) creeks, three second order creeks and one third order creek. Mapped areas of Key Fish Habitat (KFH) were identified within the southern portion of the study area along the unnamed third order creek. The KFH will be underbored.



Field observations of the waterway concluded that it provided no suitable habitat for aquatic fauna due to lack of flow. Review of historical imagery also revealed that this creek is likely to undergo extended periods of no flow. This creek is not known habitat for any threatened species or communities listed under the FM Act.

Impacts associated with historical land clearing, farming and urban development, within the broader locality, has resulted in a high density of weeds, bank destabilisation and high levels of turbidity in each waterway. As such, aquatic habitats within the study area are considered to be in low condition and represent poor quality habitat for any native fauna.

Threatened flora

Background research identified the following threatened flora species considered most likely to have habitat within the study area:

- Downy Wattle *Acacia pubescens* (Vulnerable, EPBC Act and BC Act)
- *Darwinia tenuifolia* (Vulnerable, BC Act).
- Juniper-leaved Grevillea *Grevillea juniperina subsp. juniperina* (Vulnerable, BC Act).
- Nodding Geebung *Persoonia nutans* (Endangered, EPBC Act and BC Act).
- *Pultenaea parviflora* (Vulnerable, EPBC Act, Endangered, BC Act).

As no threatened flora species were recorded or detected within the study area during field investigations, there is a low likelihood of occurrence for the above listed species.

Threatened fauna

Habitat for threatened fauna was identified within the study area. ToS and/or SIC assessments were completed for the following species:

ToS

- Hollow-dependent Microchiropteran Bat Species - Eastern Coastal Free-tailed Bat (Vulnerable BC Act), Southern Myotis (Vulnerable, BC Act) and Greater Broad-nosed Bat (Vulnerable BC Act)
- Cumberland Plain Land Snail (Endangered BC Act)

ToS and SIC

- Gang-gang Cockatoo (Endangered, EPBC Act and Vulnerable, BC Act).

Priority weeds

Six priority weeds for the Greater Sydney Local Land Services (LLS) Region, which includes the Penrith LGA, have been recorded in the study area:

- *Asparagus asparagoides* (Bridal creeper)
- *Cestrum parqui* (Green Cestrum)
- *Lycium ferocissimum* (African Boxthorn)

- *Olea europaea* (African Olive)
- *Opuntia stricta* (Prickly pear)
- *Senecio madagascariensis* (Fireweed)

Bushfire prone land

The proposal is within and adjacent to category 2 bushfire prone land. The contractor will review NSW rural fire service updates and follow Total Fire Ban (TOBAN) mandates.

Potential impacts

Construction phase

Potential construction impacts to biodiversity are summarised in Table 6-2.

Table 6-2 Potential construction impacts to biodiversity

Impacts	Description
Removal of vegetation	Threatened ecological communities The proposed work would require removal of the following threatened ecological communities: • 0.17 hectares of BC Act and EPBC Act listed Critically Endangered Ecological Communities (CEEC), River-flat Eucalypt Forest (PCT 835) • 0.81 hectares of BC Act and EPBC Act listed CEEC Cumberland Plain Woodland (PCT 849). The ToS concluded the proposed works are unlikely to significantly impact the above threatened ecological communities. Application of the NSW Biodiversity Offset Scheme (BOS) or preparation of a SIS is therefore not required. Non-threatened native vegetation The proposed work would also require removal of 0.13 ha of non-threatened native vegetation. This includes 0.12 ha of Swamp Oak Floodplain Forest (PCT 1800) and 0.01 ha of Coastal Freshwater Wetlands (PCT 1071). Riparian vegetation Impacts to riparian vegetation include removal of PCT 835, 849, 1800, 1071. These impacts are included above and are not additional impacts. Urban Native/Exotic The proposed work would require removal and trimming of 0.53 ha of Urban Native/Exotic vegetation.
Removal of threatened flora/fauna habitat	The proposed work would require removal of 1.1 ha of potential habitat for Gang-gang Cockatoo, Cumberland Plain Land Snail and Hollow-dependent Microchiropteran bats. This also includes the removal of up to four hollow-bearing trees. All ToS and SIC assessments concluded that a significant impact to a BC Act or EPBC act listed entity is not considered likely. Accordingly, referral to the Federal

Impacts

Description

Minister for the Department of Climate Change, Energy, the Environment and Water, application of the BOS or preparation of a SIS is not required.

Weed dispersal

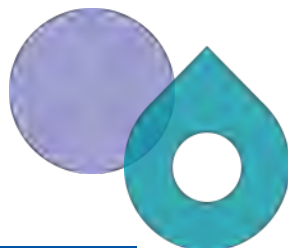
During construction, some proposed works (excavation and vehicle movement) have potential to facilitate weed dispersal and establishment. If not properly managed, the proposed work could potentially spread weeds into the study area from other sites. The safeguards below would be implemented to minimise risk of weeds being imported into the study area from construction activities.

Impacts to native vegetation will be offset in accordance with Sydney Water's Biodiversity Offset Guide (the Guide). Indicative offset requirements calculated in accordance with the Guide are summarised in Table 6-3 and would be confirmed once native vegetation clearance is verified in construction. Suitable locations for offsets will be determined during detailed design.

Part of the proposal will be constructed within existing certified-urban capable land under the CPCP and land certified under South West Growth Centre. Vegetation removal within these areas will not require statutory offsetting. This includes the removal of 0.03 ha of Cumberland Plain Woodland (PCT 849) and 0.02 ha of Urban Native/Exotic vegetation. Although formal offsets are not required under the BC Act or EPBC Act, Sydney Water has an internal position to deliver a 'maintained or enhanced' biodiversity outcome if projects have residual biodiversity impacts. The removal of vegetation on land outside of certified-urban capable land will be offset in accordance with the Guide.

Table 6-3 Non-statutory offset requirement

Vegetation Community	Impact area (Ha)	Offset Multiplier	Offset requirement (Ha)
River-flat Eucalypt Forest (PCT 835)	0.17	3	0.51
Cumberland Plain Woodland (PCT 849).	0.81 (Only 0.78 of the impact area is required to be offset as 0.03 is in certified-urban capable land)	3	2.34
Coastal Freshwater Wetlands (PCT 1071)	0.01	2	0.02
Swamp Oak Floodplain Forest (PCT 1800).	0.12	2	0.24
Total	1.11		3.11

Trees	Number of trees	Offset Multiplier	Offset requirement (number of trees)
Hollow bearing trees	4	2 nest boxes or salvaged hollows (for each removed)	8

Operation phase

During operation, maintenance works could potentially introduce weeds and plant pathogens to the study area. These impacts are likely to be minor with the implementation of the safeguards below.

Safeguards

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

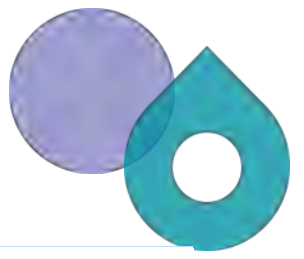
- Any minor:
 - vegetation trimming or
 - removal of exotic vegetation or
 - removal of planted native vegetation

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

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

Residual impacts to native vegetation and trees will be offset in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).

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



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

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

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

Protect trees in accordance with the requirements of Australian Standard 4970-2009 for the Protection of Trees on Development Sites. Do not damage tree roots unless absolutely necessary, and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone.

Potentially affected residents will be notified of any tree removal.

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

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 WIRES or a licenced 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 WIRES or a licenced ecologist if assistance is required to move fauna.

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

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

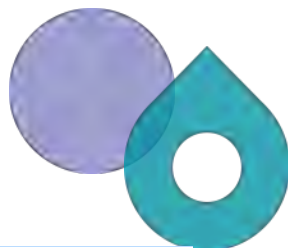
Manage biosecurity in accordance with:

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

Record Pesticides and Herbicides use in accordance with SWEMS0017

To prevent spread of weeds:

- clean all equipment including PPE prior to entering or leaving the work sites
 - wrap straw bales in geofabric to prevent seed spread.
-



In TOBAN period:

1. Check specific TOBAN notice to confirm whether the work can be carried out under standard exemptions (Govt Gazette No18 Feb 2018)
2. If not, apply to RFS for specific exemption

All stockpile and compound areas are to be located within existing cleared areas and existing access tracks, and will be rehabilitated at the end of construction.

All hollow-bearing trees are to be removed in a two stage process:

- Stage 1: All surrounding vegetation to be cleared and grubbed.
- Stage 2: 24 to 48 hours later (or in accordance with approval documentation) the hollow-bearing trees are to be inspected by an ecologist. If resident fauna is observed, the hollow section is to be lowered to the ground and the animal allowed to move on of its own volition. If injured, the fauna to be taken to a WIRES carer or appropriate veterinarian for care.

Before removing PCT 849, 835, 1071 and 1800, pre-clearance inspections for Cumberland Plain Land Snail must be conducted, including relocation to adjacent retained habitats if individuals are observed during works.

All staff on site are to be educated on the ID characteristics of the threatened fauna species (Gang-gang Cockatoo, Cumberland Plain Land Snail, Hollow-dependent Microchiropteran bats) and advised to not handle fauna species under any circumstances during toolbox talks.

CPCP Safeguards

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.

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.

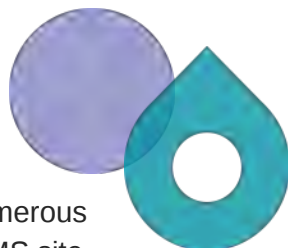
Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as *Phytophthora* and myrtle rust adjacent to potential habitat for TECs.

6.2.4 Aboriginal heritage

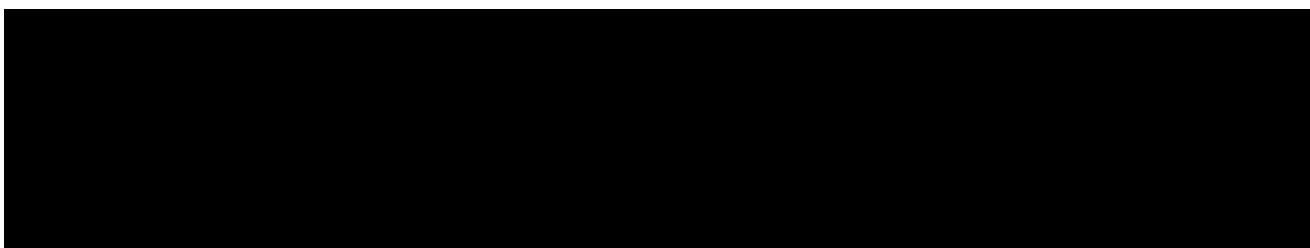
Existing environment

This section provides a summary of the Aboriginal Heritage Due Diligence prepared by Kelleher Nightingale Consulting (2022). The assessment identified if Aboriginal objects were likely to be in the study area and if so, whether the proposal was likely to harm those objects.

The proposal is located within a high risk landscape for Aboriginal heritage (<200m from waters).



A search of the AHIMS database was undertaken on 31 August 2022. There are numerous registered Aboriginal sites close to the study area. There is only one registered AHIMS site (45-5-5478) within the study area.



The remainder of the study area comprised a modified and disturbed environment. Road and road related construction and maintenance activities have contributed to ground surface modification. Underground utilities installation and above ground utilities infrastructure have also contributed to disturbance within the overall study area.

Provided that the identified Aboriginal archaeological sites within the study area are avoided by the proposed works, there are no archaeological constraints to the proposal and according to the *Heritage NSW Due Diligence Code of Practice for the Protection of Aboriginal Objects* in New South Wales the proposed works can proceed with caution.

It is unlikely the proposal would result in any operational impacts to Aboriginal heritage.

Safeguards

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

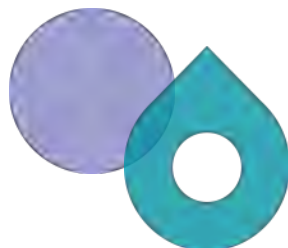
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.

Harm to any Aboriginal objects and declared Aboriginal places is only permitted once an Aboriginal Heritage Impact Permit (AHIP) has been granted. Include Aboriginal Heritage Management Plan (AHMP) in CEMP to address AHIP conditions.

If any Aboriginal object relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.

All site personnel must be inducted by a heritage specialist (or delegate) before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, processes and measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.

Mamre Road Kemps Creek AFT 1 (AHIMS site 45-5-5478) must be underbored.



6.2.5 Non-Aboriginal heritage

Existing environment

There are two heritage items listed on the SEPP Industry and Employment 2021 (Chapter 2 Western Sydney Employment Area) within the study area:

- “Bayley Park”, house (919–929 Mamre Road) (Lot 35, DP 258414) (Significance: Local, item no: I2)
- Gateposts to Colesbrook (269–285 Mamre Road) (Lot 8, DP 253503) (Significance: Local, item no: I3).

There are no sites listed on the National Heritage, s170 heritage register or State Heritage Register located within the study area.

Potential impacts

Construction phase

The proposed alignment is within 10m of the curtilage of the locally listed “Gateposts to Colesbrook” at 919–929 Mamre Road. While this listing captures the entire property boundary, the heritage item comprises two stone gateposts at the Mamre Road entrance only. Of the two gateposts, only one remains standing. The proposal involves trenching of a drinking water pipeline through the front of this property. Provided the environmental safeguards below are implemented, there would be negligible impact to the heritage values of this item.

The proposed work will be trenched on the opposite side of Mamre road to the locally listed “Bayley Park – House” at 919–929 Mamre Road. No impact is anticipated on this heritage item due to the distance of the proposed work.

Operation phase

It is unlikely that the proposal would result in any operational impacts to non-Aboriginal heritage.

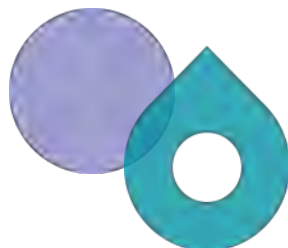
Safeguards

Install protective hard barriers (ie ATF fencing, concrete barriers or water-filled barriers) and signage around heritage items before construction, to protect them from damage

If any non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.

All site personnel must be inducted by a heritage specialist (or delegate) before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, processes and measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.

Install pipeline a minimum of 5m from the gateposts.



6.2.6 Noise and vibration

The likelihood of noise impact from the proposal was reviewed against risk factors (following Table 2 of the EPA's 2020 Draft Construction Noise Guideline). The review indicated that the likelihood of noise impact will be low to medium risk and therefore a qualitative noise impact assessment was completed and detailed below.

Existing environment

The proposal is in a predominantly rural residential area. There are multiple sensitive residential receivers along Mamre Road. The existing noise environment is primarily influenced by traffic on Mamre Road and Elizabeth Drive, noise from nearby construction and development sites, combined with noise from the mixed rural residential environment.

Potential impacts

Construction

The proposed work will generate noise and/or vibration from vegetation removal, concrete barrier installation, ground-breaking activities and operation of plant such as excavators, concrete saws and other heavy machinery. Work and deliveries will be scheduled to occur during standard daytime hours where possible. However, the proposal is expected to require work outside these hours. Up to 16 night shifts (non-consecutive) will be required to install jersey kerbs (concrete barriers) along the road verge. Elizabeth Drive and Mamre Road are classified as state roads and will require ROLs issued by TfNSW where works are on or near to the road. Consultation with TfNSW and council will dictate the management of potential traffic disruptions and corresponding working hours. The barrier installation may require removal of trees using chain saws and will be carried out before midnight to reduce the potential for sleep disturbance.

Vehicle movements associated with the above works will also create a minor and temporary noise level increase that may be audible at adjacent land uses.

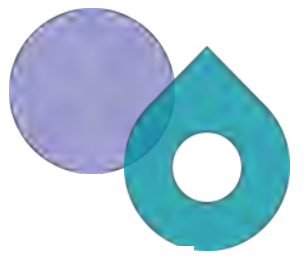
The proposed works have the potential to exceed the Draft Construction Noise Guideline (EPA, 2020), and impact on sensitive receivers, including residential properties, local businesses and members of the public. All reasonable and feasible measures will be implemented to reduce noise impacts during construction. The works will progress along the alignment, limiting the noise exposure of individual receivers, with noise levels increasing as the work approaches a receiver and decreasing as they move past.

Operation

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

Safeguards

Works must comply with the Construction Noise Guideline (Draft, 2021), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm



Saturday. No work to be scheduled on Sunday nights or public holidays. Any proposed work outside of these hours must be justified.

The Proposal will also be carried out in accordance with:

- Sydney Water's Noise Management Procedure SWEMS0056
- Noise Policy for Industry (EPA, 2017) (include if relevant).

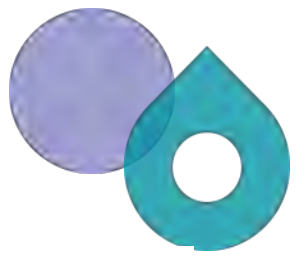
All reasonable and feasible noise mitigation measures should be justified, documented and implemented on-site to mitigate noise impacts.

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

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

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

- justify the need for out of hours work (OOHW) and why it is not possible to carry out the works during standard daytime hours
 - consider potential noise impacts and: implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and document all reasonable and feasible management measures to be implemented
-

- 
- 
- identify additional community notification requirements and outcomes of targeted community consultation
 - seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.
-

For works beyond standard daytime hours, the Contractor would:

- switch off truck radios (commercial) upon arrival at site
 - use truck radios with the truck cabin doors closed
 - take extra care while loading or unloading trucks
 - have no unnecessary loud noise (e.g. using radios, mobile phones or conversing)
-

As night works are needed, the Contractor would:

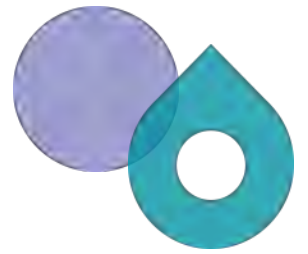
- justify the need for night works
 - consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and document consideration of all reasonable and feasible management measures
 - identify community notification requirements (ie for scheduled night work (not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

If works on Sundays or public holidays are required, the Contractor 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
 - seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.
-

Night-time construction noise shall be limited to 4 consecutive nights. A minimum respite period of 3 nights shall be implemented between periods of consecutive night works.

The use of chain saws for tree removal during concrete barrier installation will only be undertaken prior to midnight.



6.2.7 Air and energy

Existing environment

The proposal is in a rural-residential area. The main source of pollutants within the study area are emissions from motor vehicles from the surrounding road network, in particular along Mamre Road and Elizabeth Drive and dust from nearby developments.

A search of the National Pollutant Inventory undertaken on 25 October 2022 did not identify any pollutant emitting facilities within the study area.

The nearest sensitive receivers include:

- residents, pedestrians and road users
- industrial warehouses and development sites
- primary production properties.

Potential impacts

Construction phase

During construction, the following activities have potential to impact air quality and amenity of nearby sensitive receivers:

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

Potential dust impacts at the nearest residences would be short term and would be effectively managed through timing of works and appropriate site controls. Works and restoration of disturbed areas would be undertaken progressively. This would minimise potential air quality impacts and reduce exposure of any one sensitive receiver to air pollution.

There would be additional energy use through fuel used in vehicles and plant. The additional energy use is anticipated to have only a minimal impact due to the limited extent of the proposed work.

With the implementation of the safeguards, the proposal is unlikely to have a significant impact on air quality and energy.

Operation

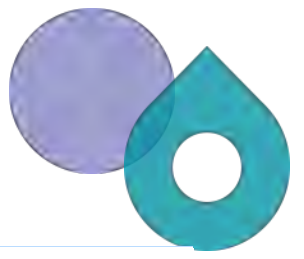
Overall impacts to air quality and energy during operation of the proposal are considered minimal as the study area would be restored and would not result in a significant change in land use.

Safeguards

Use alternatives to fossil fuels where practical and cost-effective.

Track energy use as per SWEMS0015.28 Contractor NGER template.





Maintain equipment in good working order, comply with the clean air regulations of the *Protection of the Environment Operations Act 1997*, have appropriate exhaust pollution controls, and meet Australian Standards for exhaust emissions.

Switch off vehicles/machinery when not in use.

Implement measures to prevent offsite dust impacts, for example:

- water exposed areas (using non-potable water source where possible such as water from excavation pits)
 - 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.

6.2.8 Waste and hazardous materials

Existing environment

The DSI (2022) has identified ACM (Chrysotile asbestos in the form of loose fibrous plaster material) between 0.0m and 0.2m at the corner of Mamre Road and Elizabeth Drive. There are no other contaminants of potential concerns (COPCs) present in the study area.

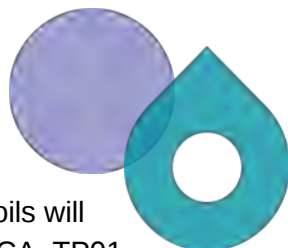
Potential impacts

Construction phase

During construction, the proposal has the potential to generate the following wastes:

- excavated waste material (eg cleared vegetation)
- general construction waste such as excess concrete, paper, plastic and metal
- green waste from vegetation clearing and noxious weeds
- domestic waste including food scraps, plastic and paper containers generated by site construction personnel
- excavated soil
- contaminated material (if encountered)
- wastewater and drilling fluid.

Our corporate objectives include to be a resource recovery business with an increasing portfolio of circular economy products and services. This includes reducing waste through recycling and re-use, and encouraging our suppliers to minimise waste.



The indicative waste classification of the DSI shows that the majority of excavated soils will be classified as General Solid Waste (Non-Putrescible). Sample locations WSAGA_CA_TP01, WSAGA_BH12 and their immediate surroundings will be classified as Special Waste – Asbestos Waste (Refer to DSI for full details). If ACM materials are encountered at the surface or within soils during construction works, soils excavated within the area would be classified as ‘Special Waste – Asbestos Waste’. Further confirmatory waste classification sampling and analysis should occur during construction if ACM are present within soils.

Opportunities to reduce, recycle and reuse on this project would be sought with the Contractor and documented in the Waste Management Plan or CEMP.

Safeguards

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

Provide adequate bins for general waste, hazardous waste and recyclable materials.

Minimise stockpile size and ensure delineation between different stockpiled materials.

Minimise the generation of waste, sort waste streams to maximise reuse/recycling in accordance with the *Waste Avoidance and Resource Recovery Act 2001*.

Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility

Prevent pollutants from escaping including covering skip bins.

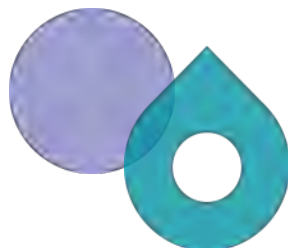
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.

If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water’s Asbestos Management – Minor Works procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with Property Environmental Services propertyenvironmental@sydneywater.com.au).

Prior to construction commencing, additional detailed investigation and in-situ waste classification is required for the study area, including the areas not investigated in the DSI. The sampling procedures and density must meet NEPM 2013 guidelines. Any site specific management measures specified must be adhered to.

6.2.9 Traffic and access

Sydney Water has considered the future widening of Mamre Road by TfNSW in the design and location of the proposed drinking water network. The proposed mains are likely to be located under the future footpath and within the future road corridor.



Existing environment

Surrounding road network

The roads immediately surrounding the proposal are:

- Mamre Road and Elizabeth Drive, both are main Roads (State Roads) owned by TfNSW
- multiple local roads connecting to Mamre Road including Abbotts Road, Kerrs Road and Mount Vernon Road.

Vehicle movement on the above roads are likely to be associated with local residents, Mamre Road users, buses and businesses such as primary production properties in the surrounding area.

Access

The main access points to Mamre Road are either via Elizabeth Drive to the south or Bakers Lane to the north. Other access points include Abbotts Road, Kerrs Road and Mount Vernon Road.

Parking

Informal parking areas (grass and gravel) are available along Mamre Road.

Active transport

Sections of the road shoulder of Mamre Road are mapped as an on-road cycle path.

Potential impacts

Construction phase

Surrounding road network

During construction, the proposal would require partial closures of sections of Mamre Road (one lane closure). All local roads will be underbored and will not require closure of roads.

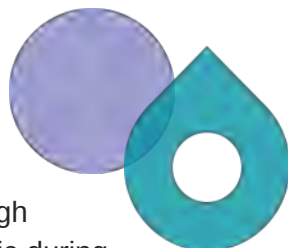
The contractor will need to obtain a ROL and produce a Traffic Management Plan (TMP) in consultation with TfNSW and Council.

Traffic

Construction vehicles used during the works would mostly be light vehicles used by workers. Heavy vehicles will be used for delivery and removal of equipment and plant.

The proposal is expected to require a maximum of 10 light vehicles and 20 heavy vehicles to and from the site per day during construction. Light vehicles will generally be used for a one-hour period, when workers arrive and depart from the site each day (within an hour of starting time). Heavy vehicle journeys would occur periodically throughout the day and between 6pm- 5am during hours approved by the ROL.

During construction, it is also expected some proposed work (eg stockpiling of materials) would require periodic vehicle movement between the proposed site compound and the location of the work.



Mamre Road and Elizabeth Drive are both State Roads that are suited to carrying high volumes of traffic and heavy vehicles. Therefore, the relatively small increase in traffic during construction is not expected to have a significant impact on the road network

Access

Access to private property may be temporarily affected during construction of the pipelines. Properties will only be affected for a relatively short period of time. Property owners will be informed of any potential loss of access and appropriate measures will be negotiated to either provide an alternative access or reinstate access at the end of the day. Any access ways affected by construction will be reinstated to their original condition.

No new access roads will be required.

Parking

Most light vehicles would use the grassed road verge for parking, however, construction workers will be encouraged to park in the construction corridor where possible to minimise impacts upon surrounding properties.

Active transport

As the majority of the proposed work will be carried out along the road verge, there would be detour signs put in place for cyclists. Cyclists are likely to be diverted through a temporary path around the proposed work.

Operation phase

During operation, maintenance activities are not anticipated to result in additional traffic impacts to the surrounding road network, access and parking.

Safeguards

Prepare a Traffic Management Plan (TMP) in consultation with the relevant traffic authority.

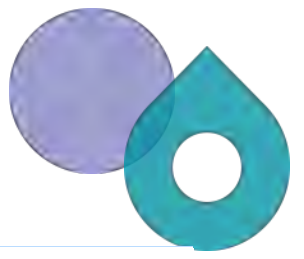
Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The Contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100m of traffic signals when construction commences.

Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The Contractor will obtain a Road Occupancy Licence (ROL) from 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 (eg no major materials deliveries at school drop off or pick up times).

Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycles, pram and wheelchair access.

Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.



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

Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

6.2.10 Social and visual

Existing environment

Most of the proposal is in the existing road reserve along Mamre Road. Outside the proposal alignment, land use is mostly rural-residential/agricultural with evidence of clearing of vegetation and intensive grazing. Sections of the road shoulder of Mamre Road is also mapped as an on-road cycle path.

Potential impacts

Construction phase

During construction, existing visual amenity of the area would be disrupted by the presence of heavy machinery, stockpiling of excavated material, excavations and storage of equipment. This would result in temporary visual impacts to nearby local residents, road users and businesses. The removal of vegetation would also disrupt the existing visual amenity of the area. These impacts are anticipated to be minor given the changing nature of the land use in the Mamre Road Precinct.

There is potential for some localised impacts to nearby sensitive receivers during construction of the proposal due to noise, dust and temporary access closures. Impacts of the partial closure of Mamre Road have been discussed in Section 6.2.9

Any access restrictions during construction would be temporary and would be re-instated after construction.

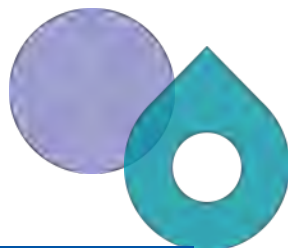
As the installation of concrete barriers will be carried out at night, this will require the use of flood lights. Artificial lighting would be directed away from residential receivers during the works. Any impacts to nearby residential receivers are expected to be temporary as the pipeline is progressively constructed.

All potentially impacted residents and sensitive receivers would be notified prior to construction. The safeguards below would be implemented to minimise any social and visual impacts.

Operation phase

During operation, most of the infrastructure would be underground and would not be visible to the public. The proposed work is therefore expected to have only a negligible visual impact during operation. As any damaged road surfaces and fences would be reinstated upon completion, the proposed work is unlikely to result in any significant social impacts during operation.

The proposed work will also have a positive impact on the community by providing a drinking water network that supports the growth of the Mamre Road Precinct and the creation of 17,000 new jobs in Western Sydney.



Safeguards

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.

Work sites will be restored to pre-existing condition or better.

Minimise visual impacts (eg retain existing vegetation where possible).

Direct artificial light away from sensitive receivers where possible (ie residents, fauna or roadways).

Maintain work areas in a clean and tidy condition.

6.2.11 Cumulative and future trends

Potential environmental impacts

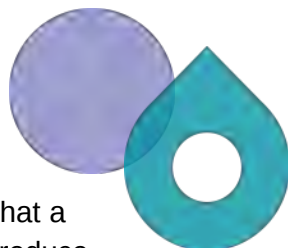
There is the potential for cumulative impacts due to the changing nature and extensive infrastructure work planned and currently underway in the WSAGA. Sydney Water has multiple infrastructure projects within the vicinity of Mamre Road, including a wastewater pipeline project scheduled to be delivered at the same time as this proposal. The potential cumulative impacts of these two projects include increased removal of native vegetation and fauna habitat resources along Mamre Road. Vegetation within the study area has been highly fragmented by previous clearing and the construction of infrastructure and housing.

While these projects may result in further loss of habitat, the biodiversity assessments did not find this impact to be significant. Where possible, Sydney Water will deliver wastewater and drinking water pipelines in a common trench to reduce potential cumulative impacts. The implementation of environmental safeguards across both projects will further reduce the potential for cumulative impacts to biodiversity.

A search of the DPE's Major Projects Register was conducted 31st August 2022 and identified numerous projects along Mamre Road. Major projects nearby include Western Sydney Airport, Sydney Metro – Western Sydney Airport and M12 Motorway.

Other potential cumulative impacts from this project include:

- noise and vibration from construction plant and equipment
- air quality impacts from dust caused by excavation and emissions from construction plant and equipment
- increased traffic volume related to construction activities such as delivery of plant and equipment and construction staff.



There may be other local development occurring in the area but it is not anticipated that a cumulative impact would result. The Contractor will work with local developments to reduce impacts as required.

Future trends such as climate change were considered. Factors such as bushfires, flooding, extreme heat and extreme storm events that could impact the proposal were considered. The proposal is unlikely to further exacerbate future trends as the proposed water main is below ground.

Safeguards

Continue to consult with key stakeholders that are constructing infrastructure in the area with the view to coordinate works where practicable.

Deliver wastewater and drinking water pipelines in a common trench to reduce potential cumulative impacts.

6.2.12 General Environmental Management

Safeguards

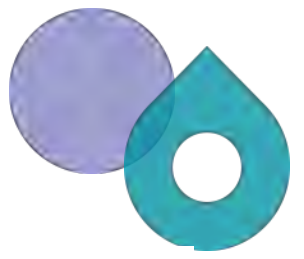
Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should identify licence, approval and notification requirements. Prior to the start of work, all project staff and contractors will be inducted in the CEMP.

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

- go/ no go areas 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.

Sydney Water's Project Manager (after consultation with the Project'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 safeguards in this REF
- no disturbance of contaminated land or acid sulfate soils

- 
- 
- will be rehabilitated at the end of construction.

The Contractor [or Sydney Water] 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.

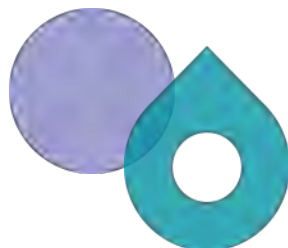
The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.

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

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

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

All site personnel should be inducted into the IMP.

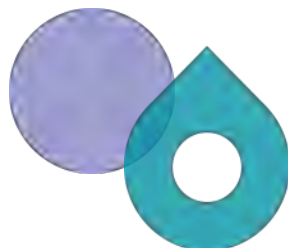


7 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of WSAGA Drinking Water Stage 1 Package 2. The proposal is required to provide drinking water infrastructure to the growing area.

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as vegetation clearing, soil erosion, noise and visual amenity. It is considered that, given the nature, scale and extent of impacts and implementation of the safeguards outlined in this REF, the proposed work is unlikely to have a significant impact on the environment and an environmental impact statement is not required under Division 5.1 of the EP&A Act.

The proposal has been considered in accordance with the principles of ESD. The proposal will result in positive long-term environmental improvements by providing a reliable drinking water supply. 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.



8 References

Sydney Water, 2021, Concept Design Report WSAGA Drinking Water Stage 1

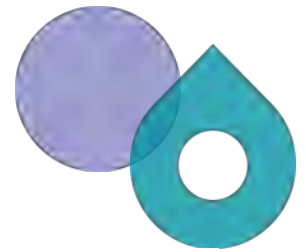
Aurecon, 2022, Detailed Site Investigation WSAGA Stage 1 Package 2

Sydney Water, 2022, Geotechnical Interpretive Report – WSAGA Stage 1 Package 2

9 Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from partial road closures, traffic, noise and dust. However, there will be environmental improvements by providing a reliable water service to the local community that supports growth and new jobs in Western Sydney.
Any transformation of a locality	The proposed work will not result in the transformation of a locality. The majority of the infrastructure will be underground.
Any environmental impact on the ecosystems of the locality	The proposed work has been designed to minimise biodiversity impact as much as possible, however, clearing of native vegetation is required. Appropriate vegetation offsets and an environmentally sensitive design will mitigate this impact.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposed work will not result in a reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposed work will not have 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. Sensitive Aboriginal heritage areas will be underbored.
Any impact on the habitat of any protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)	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 or species within the study area. Safeguards, including biodiversity offsets have been identified to avoid or minimise impacts on habitat areas.
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 proposed work will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.
Any long-term effects on the environment	The proposed work will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern water service for the area.

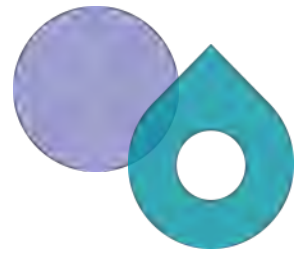


Any degradation of the quality of the environment	The proposed work will not cause the degradation of the quality of the environment.
Any risk to the safety of the environment	The proposed work will not increase risk to the safety of the environment. The majority of the infrastructure will be underground.
Any reduction in the range of beneficial uses of the environment	The proposed work will not have any reduction in the range of beneficial uses of the environment.
Any pollution of the environment	Environmental safeguards will mitigate the potential for the proposed work to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	The disposal of wastes will be conducted in accordance with the environmental safeguards, 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 proposed work will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The proposed work may have a cumulative impact due to the extensive infrastructure work currently underway in the precinct.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposed work will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposed activity.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposed works are to service growth and the South West Growth Area (SWGA) and WSAGA Sub-Regional Plan have been considered in the system planning and options selection process. One of the planning priorities in the Penrith Local Strategic Planning Statement is to support the planning of the Western Sydney Aerotropolis. As such, the proposal is consistent with this planning priority as the proposed work would deliver trunk drinking water infrastructure to service WSAGA.
Any other relevant environmental factors.	The proposed work has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.



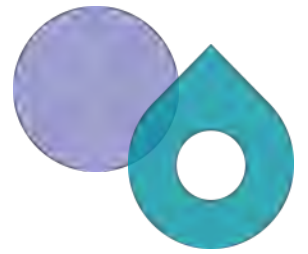
Appendix B – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		x
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		x
Involve connection to, and have a substantial impact on, the capacity of a council owned sewerage system?		x
Involve connection to, and use of a substantial volume of water from a council owned water supply system?		x
Involve installation of a temporary structure on, or enclosing, a public space under council's control that will cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential?		x
Involve excavation of the surface of, 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 located on flood liable land (that is land that is susceptible to flooding by the probable maximum flood event) and will they 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 located on flood liable land (ie. land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div. 16 (Research/ monitoring stations), (i) Div. 20 (Stormwater systems)?		x
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		x
Section 2.15, consultation with public authorities other than councils		
Will the proposal be located on land adjacent to land reserved under the <i>National Parks and Wildlife Act 1974</i> or to land acquired under Part 11 of that Act? <i>If so, consult with DPIE (NPWS).</i>		x
Will the proposal be located on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone? <i>If so, consult with DPIE (NPWS)</i>		x
Will the proposal comprise a fixed or floating structure in or over navigable waters? <i>If so, consult TfNSW</i>		x
Will the proposal be located on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ? <i>If so, consult with Subsidence Advisory NSW.</i>		x
Will the proposal involve clearing of native vegetation on land that is not subject land (ie non-certified land)? <i>If so, notify DPIE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021.</i>		x



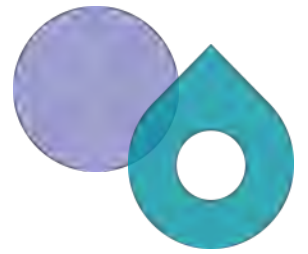
Appendix C – Biodiversity assessment





Appendix D – Aboriginal heritage due diligence assessment





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