

Review of Environmental Factors

SWGA, Drinking Water Infrastructure Augmentation, Leppington-Camden

August 2026

Sydney WATER
Water IS OUR LIFE

SW 225 08/06



Acknowledgement of Country

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

19 August 2028

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the South West Growth Area (SWGA), Drinking Water Infrastructure Augmentation, Leppington-Camden. The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

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

Certification

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

Prepared by:	Reviewed and endorsed by:	Endorsed by:
[redacted]	[redacted]	[redacted]
Aaron Panozzo Environmental Scientist Sydney Water	Stuart Dawson Senior Environment Scientist Sydney Water	Graham Knox Senior Project Manager Sydney Water
Date: 30/07/2026	Date: 03/08/2026	Date: 04/08/2026

Decision Statement

The main potential construction environmental impacts of the proposal include biodiversity, traffic and noise and vibration. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

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

Determined By: [redacted] **Elissa Howie, A/Senior Manager, Environment and Heritage, Sydney Water** Date: 19 August 2026

1 Introduction

1.1 Context

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

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with SWGA Drinking Water Infrastructure Augmentation, Leppington-Camden and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

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

Table 1-1 Proposal need

Aspect	Relevance to proposal
Proposal need	The proposal is part of the SWGA Drinking Water Augmentation program. Delivery of the proposal is critical for Sydney Water to meet short-term local development requirements in the South West Growth Area (SWGA). The primary need of the proposal is to service urban growth forecast in the Leppington growth precinct.
Proposal objectives	The proposal objectives are to: • maintain level of service by providing robust drinking water infrastructure for these new precincts • improve reliability and resilience of the system by augmenting existing infrastructure to cater for the increased demands • ensure assets comply with the Sydney Water and agreed stakeholder requirements • optimise design to minimise the capital cost • ensure safe and efficient integration of the new assets into the existing network whilst minimising supply disruption to customers.
Consideration of alternatives/ options	An options assessment informed the design of the proposal. The process identified several alignment options. Sydney Water assessed these options to determine their feasibility and select the most appropriate option. Options were assessed against their ability to deliver the proposal objectives, technical feasibility, potential environmental impacts and performance, social and community outcomes, and cost. Consultation with Transport for NSW was undertaken during the options assessment to ensure the proposal would not affect future road works.

The presented proposal was selected as the preferred option as it would achieve the proposal objectives with an acceptable level of risk at the least cost.

1.3 Consideration of Ecologically Sustainable Development

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

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

Aspect	Relevance to proposal
Precautionary principle – *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage. Mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. The proposal has been designed to minimise impact to the environment by employing alternative construction methodologies (trenchless installation), minimising vegetation removal, and positioning infrastructure in previously disturbed areas such as road corridors where possible.
Inter-generational equity – *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposal will help to meet the needs of future generations by providing a reliable drinking water service.
Conservation of biological diversity and ecological integrity – *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal has been designed to avoid impacting significant vegetation. Impacts to native vegetation are restricted to land certified under Precincts SEPP (Figure 2-2).
Improved valuation, pricing and incentive mechanisms— *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

2 Proposal description

2.1 Proposal details

The proposal involves the construction of about 6 kilometres (km) of drinking water pipeline between Woolgen Park Road in Leppington and Bringelly Road in Austral. The proposal will be constructed in eight sections:

- Section 1: Woolgen Park Road (DN600 diameter)
- Section 2: Norling Road and Ridge Square (DN600)
- Section 3: Ridge Square to and along Heath Road (DN600)
- Section 4: Dickson Road part 1 (DN600)
- Section 5: Ingleburn Road (DN600)
- Section 6: Dickson Road part 2 (DN300)
- Section 7: Cross connection on Bringelly Road (DN300)
- Section 8: Eastwood Road (DN600)

The proposal includes cross connection into the existing network in five locations along the alignment as well as tie ins at all ends.

The alignment will be predominantly open trenched with some areas set for trenchless installation (refer 'Methodology' below). The proposal is shown in Figure 2-1.

2.2 Location and ownership

The proposal is predominately within the Local Government Area (LGA) of Camden, with a small section north of Bringelly Road within the Liverpool LGA. Most of the alignment will be contained to the road corridors of the above roads which includes the traffic lanes, road shoulders, verges and footpaths. These roads are owned and managed by Camden Council.

The southern end of Section 1 at Leppington Reservoir is located within Sydney Water land (Lot 1 and 2/-/DP560646). Section 2 will cross private property from Woolgen Park Road to Norling Road within a low-density residential area (R2) (Lot 27/-/DP205952). Section 3 will cross the private property of two residential lots from Ridge Square to Heath Road (Lot 101/-/DP1031121 and Lot 28/-/DP28459), which are zoned as SP2 (Infrastructure) to be developed in the future.

Areas identified for site compounds are all located on vacant land and will be used as ancillary compounds or as launch and receival sites for the trenchless sections.

2.3 Site access

The proposal will be located within the road corridor or adjacent properties. Access will be via existing public roads. Within private properties, work machinery and vehicles will traverse along the construction corridor shown in Figures 2.3-2.10. No new access tracks are needed for the proposal.

2.4 Ancillary facilities (compounds)

Construction compounds will be required to house site sheds, construction amenities and materials laydown. Indicative locations for the compounds are shown on Figure 2-1.

2.5 Methodology

2.5.1 Site establishment

Site establishment for the open cut trench sections would occur sequentially along the linear alignment. This would include site preparation and utility relocation.

Site establishment for the trenchless sections would occur within the site compounds at either end. This would include site preparation, utility relocation, and compound amenity set up.

2.5.2 Construction

Open cut trenching

The proposal would be installed via open cut trench excavation at varying depths (1 metre (m) to 5 m) within the road corridor as well as through two constrained residential lots (section 2 and section 3). Trenching will occur progressively along the alignment at a rate of about 12 m per day.

Trenchless

The proposal would be installed via horizontal directional drilling (HDD) in two sections so that the pipeline can pass beneath the rail lines south of Bringelly Road. HDD launch and receival areas would require compounds up to about 1000 m^2.

Micro tunnelling

Micro tunnelling is proposed for a short stretch beneath Bringelly Road. This has been included to avoid impacts to traffic and utilities associated with Bringelly Road. Launch and receival sites would require shafts up to 8 m by 4 m and depths of up to 5 m.

Details regarding the above methods for each section are outlined in Table 2-1.

Table 2-1 Summary of methodology by sections

Section	Method	Route and alignment description	Approximate distance	Excavation depth
1	Trenched	Starts at Leppington Reservoir and traverses north along Woolgen Park Road until 74 Woolgen Park Road.	570 m	1.3 – 4.7 m
2	Trenched	Traverses through 74 Woolgen Park Road, along Norling Road and around Ridge Square.	1060 m	1.7 – 3.9 m
3	Trenched	Traverses through 103 Ridge Square and 113 Heath Road and onto Heath Road.	1240 m	1.5 – 4.5 m
4	Trenched	Traverses along Dickson Road from Heath Road to Ingleburn Road before splitting within 1 Solar Street	880 m	1.8 – 2.8 m
5	Trenched	Splits out of section 4 and traverses along Ingleburn Road until Eastwood Road.	780 m	1.9 – 3.5 m
6	Trenched	Traverses along Dickson Road before transitioning to trenchless methodology to cross the rail lines.	450 m	1.3 – 3.4 m
6	HDD	Drills north-south following Dickson Road.	450 m	Surface launched (up to 22.2 m drill depth)
7	Trenched	Transitions back to open-cut trench at the north end of Dickson Road before and after the Bringelly Road micro tunnelling crossing.	90 m	1.4 – 4.7 m
7	Micro tunnelling	Micro tunnelling under Bringelly Road.	65 m	3 – 4 m
8	HDD	Drills north-south following Eastwood Road.	470 m	Surface launched (up to 20.1 m drill depth)
8	Trenched	Transitions back to open cut trench for about 40 m after the trenchless section along Eastwood Road.	40 m	1.5 – 2.8 m

2.5.3 Commissioning

Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing plant operations. The exact commissioning steps depend on the type of the equipment but typically include:

- cleaning and disinfecting of the pipes
- pressure testing
- inspecting and testing the joints and fittings and any other operating equipment
- performance testing.

2.5.4 Restoration

The work site will be restored to the pre-existing condition following construction, in consultation with landowners. This will generally include:

- site demobilisation
- surface reinstatement (including pavement, drainage, verge and driveways)
- site restoration (including vegetation planting and landscaping).

2.5.5 Materials and equipment

The following plant/equipment are required:

- ancillary equipment
- backhoe loaders
- compaction equipment
- compactors
- concrete and shotcrete pump
- concrete saws
- concrete trucks
- cranes
- delivery vehicles
- excavators (up to 13.5 ton)
- front end loaders
- generators
- grader
- hand tools
- light vehicles
- paver
- pressure testing plugs and gauges
- pumping equipment
- pumps and other dewatering equipment
- semi-trailers
- trenching machines
- vacuum trucks
- water trucks
- welding equipment.

2.5.6 Work hours

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

- 7am to 6pm, Monday to Friday

- 8am to 1pm, Saturdays.

The proposal is not expected to require work outside these hours. However, Sydney Water's Project Manager can approve work outside of standard daytime hours. The approval process is described in the mitigation measures in Section 5.

2.6 Proposal timing

Construction is expected to start mid/late 2027 and take about 20 months.

2.7 Operational requirements

The pipeline will be buried and the surface restored to its original condition after completion. The pipeline would be operated and maintained in accordance with Sydney Water's operational maintenance procedures. Operational maintenance would include periodic inspections, valve access and occasional repairs as required.

2.8 Changes to the scope of work

The proposal shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The final proposal may change based on detailed design or construction planning. For example, in some locations the construction footprint covers a whole lot to provide flexibility in pipeline location. The general mitigation measures outline when changes to the proposal trigger supplementary environmental impact assessment. If required, further assessment must be prepared in accordance with SWEMS0019.

The "**proposal**" is defined as all construction activities including site establishment, construction, commissioning, restoration, vehicle movements and compound operations.

The "**construction footprint**" is defined as the total area required to complete the proposal. For most of the alignment, this is contained to the road corridor with several sections traversing through private properties as shown in Figures 2-3 to Figures 2-10.

The "**study area**" is defined as the total area investigated during this assessment to determine the level of impact to receivers. This is generally considered to be the construction footprint with additional buffer of about 60 m either side.



19 August

Figure 2-1 Overview of the proposal

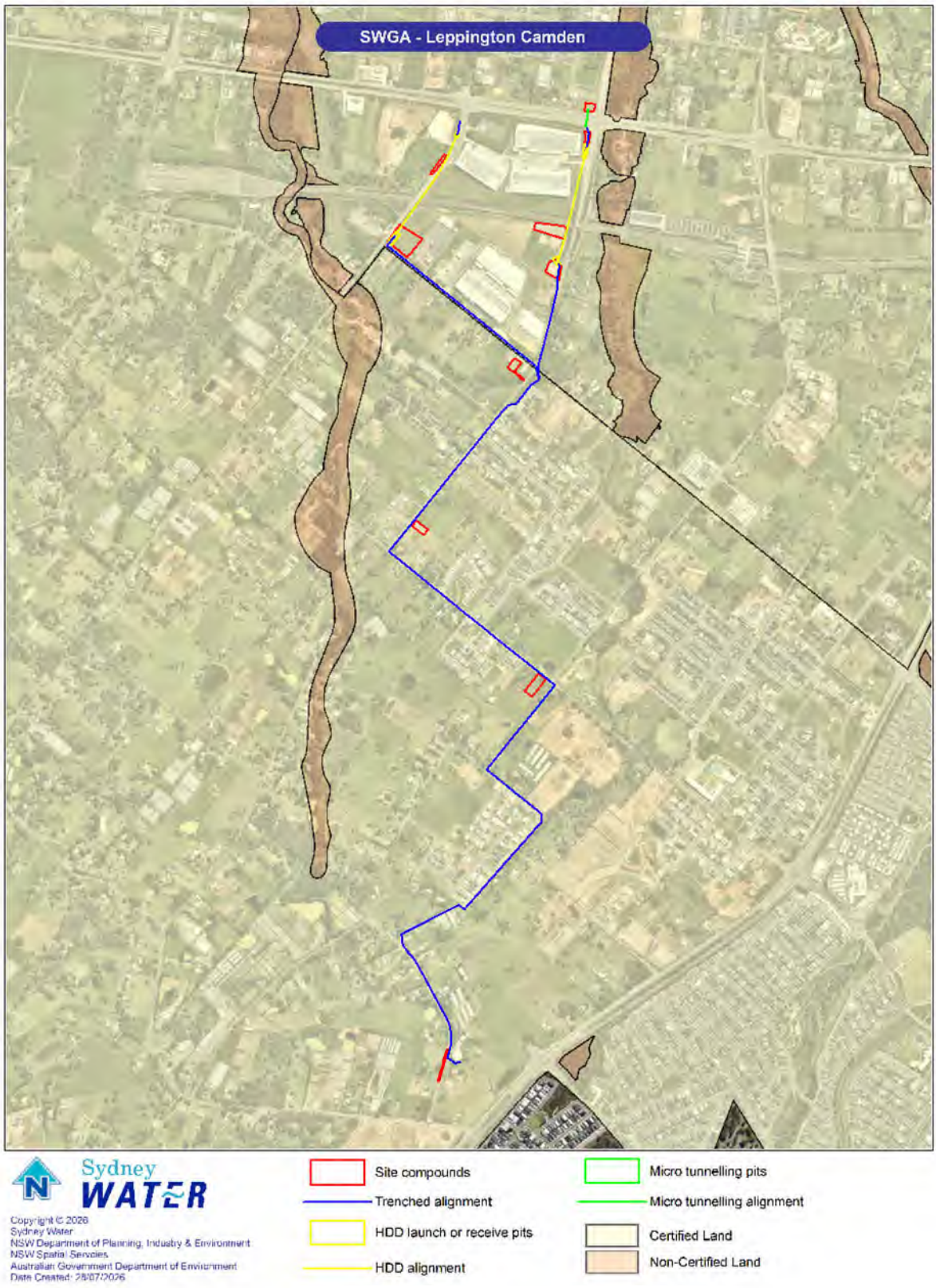


Figure 2-2 Certified land

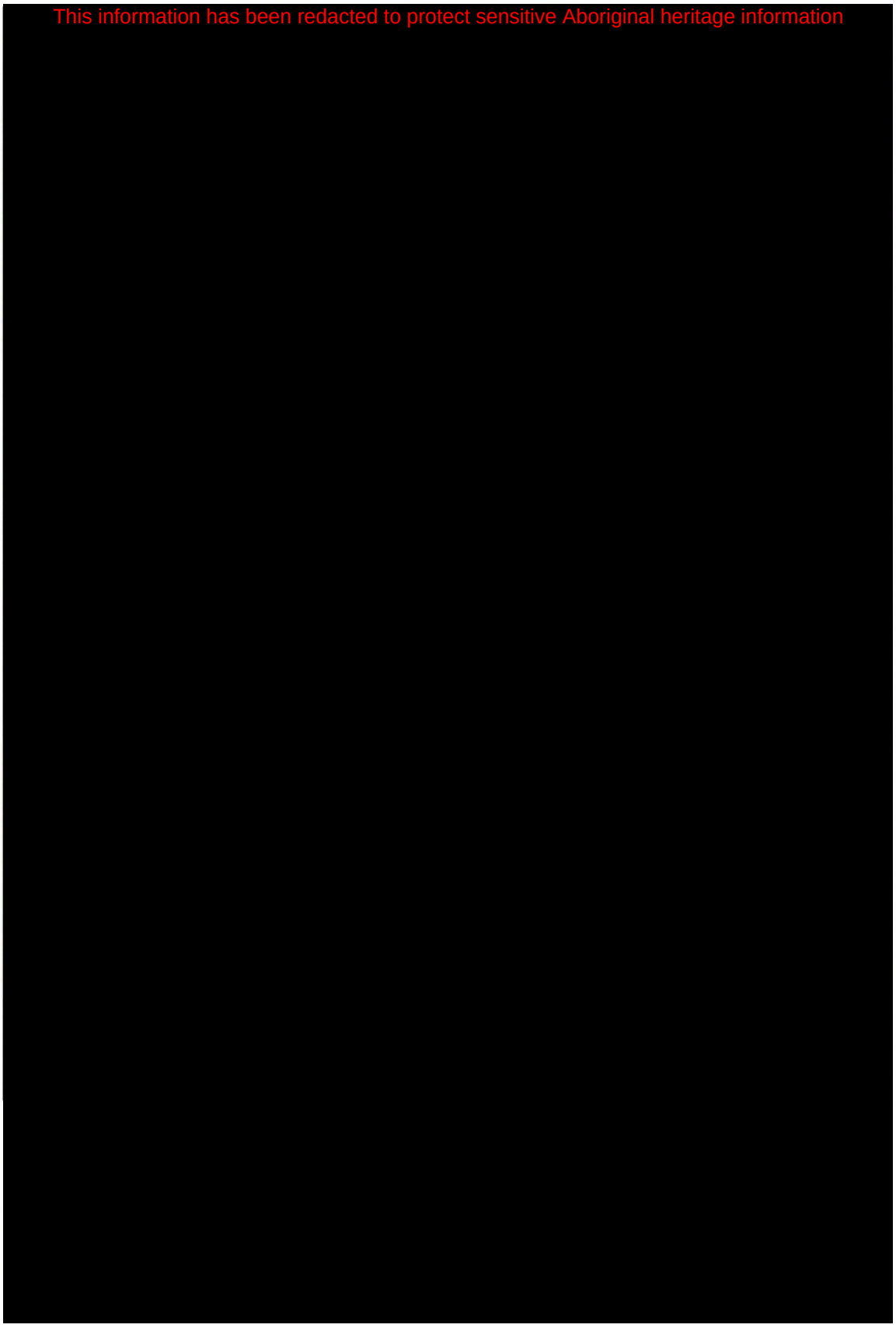


Figure 2-3 Key features of the proposal and environmental constraints (Section 1)

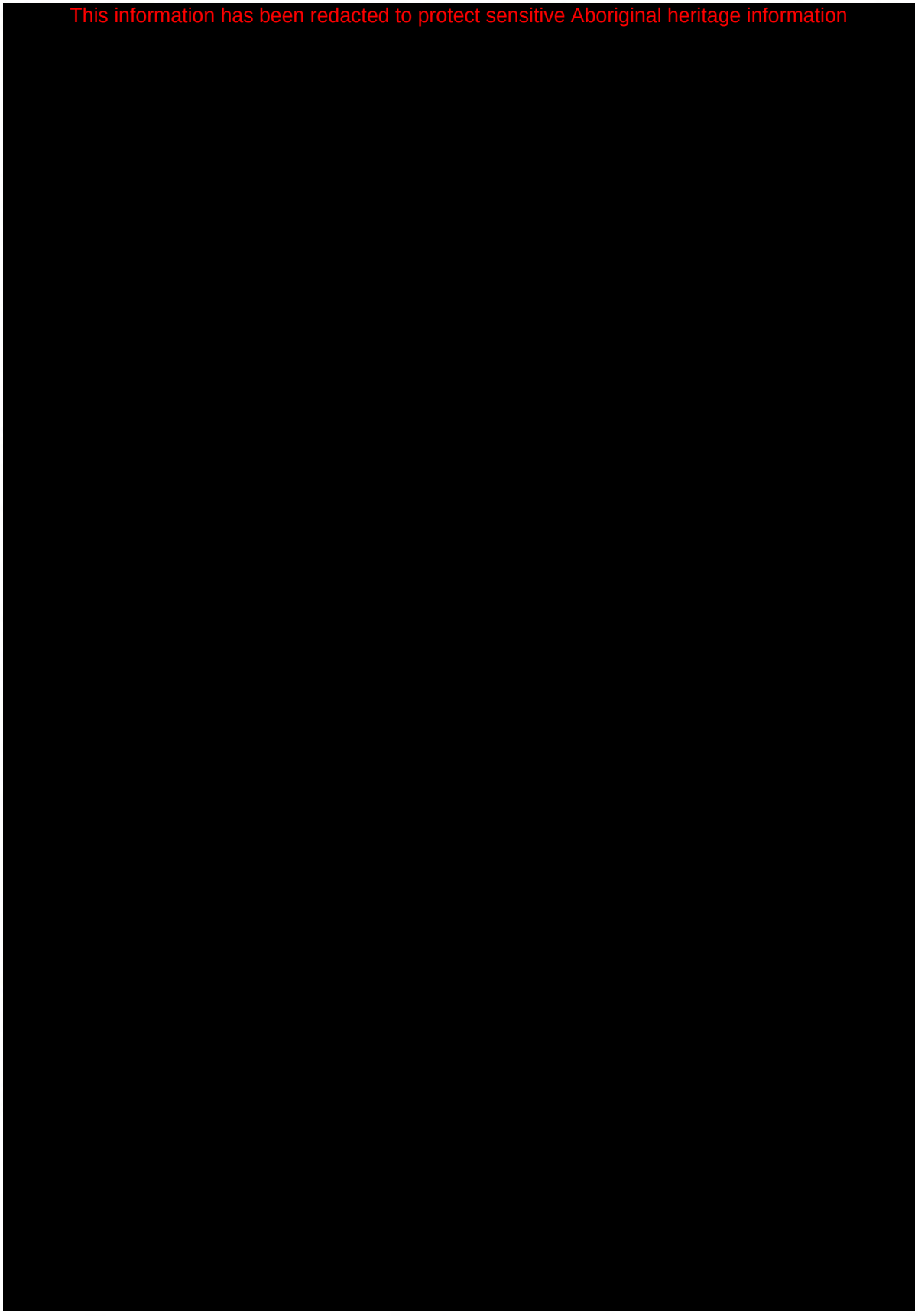


Figure 2-4 Key features of the proposal and environmental constraints (Section 2)

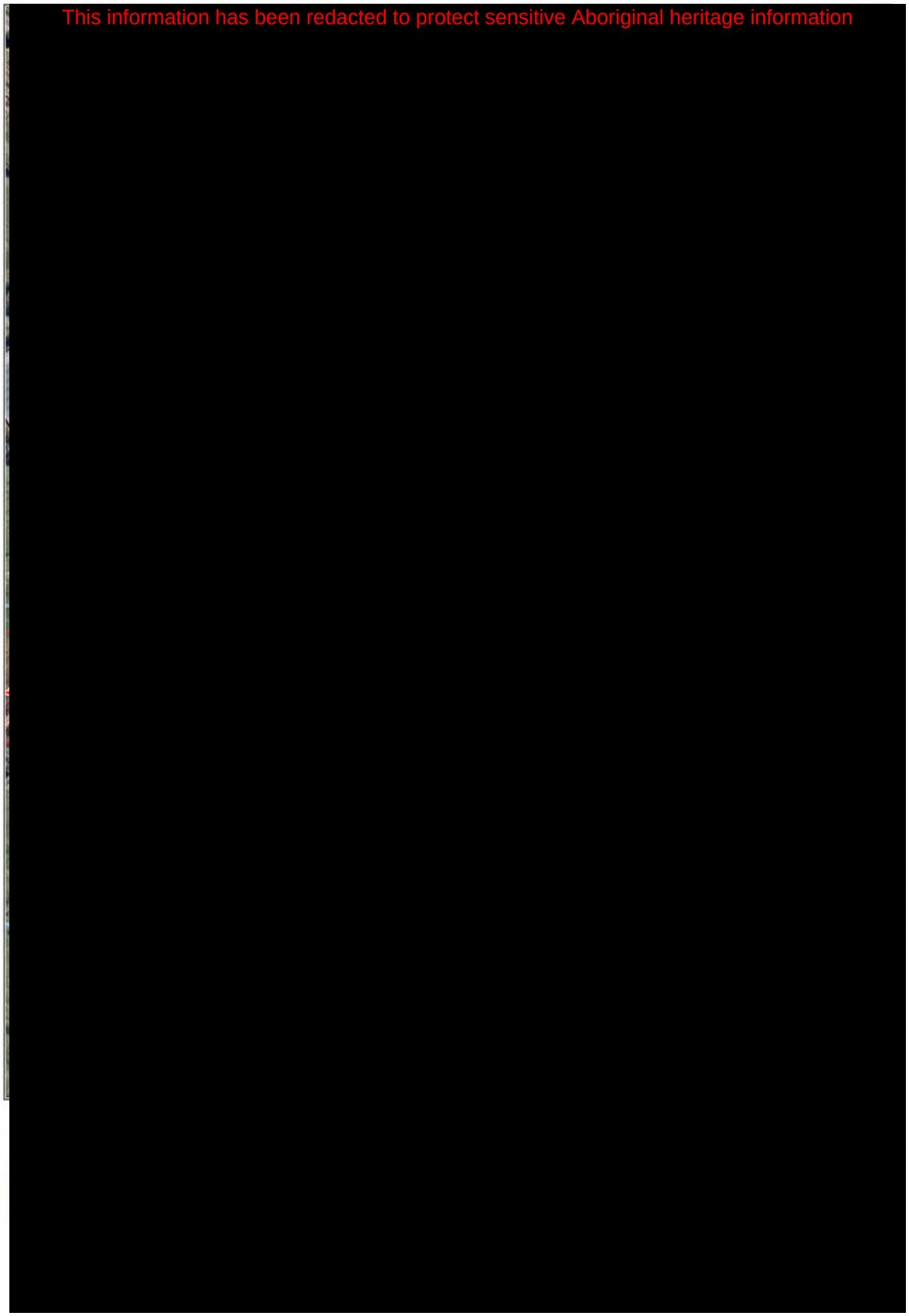


Figure 2-5 Key features of the proposal and environmental constraints (Section 3)

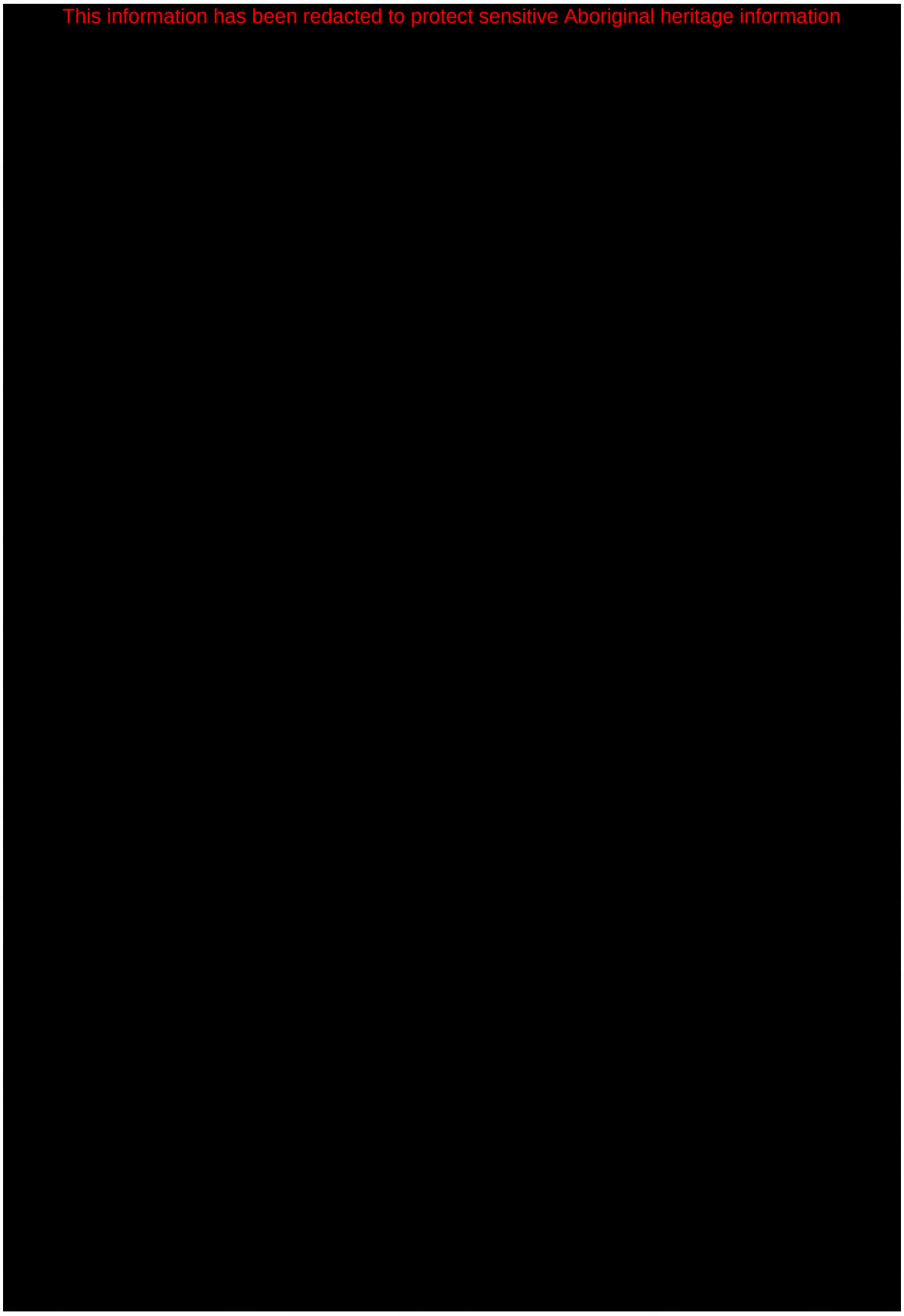


Figure 2-6 Key features of the proposal and environmental constraints (Section 4)

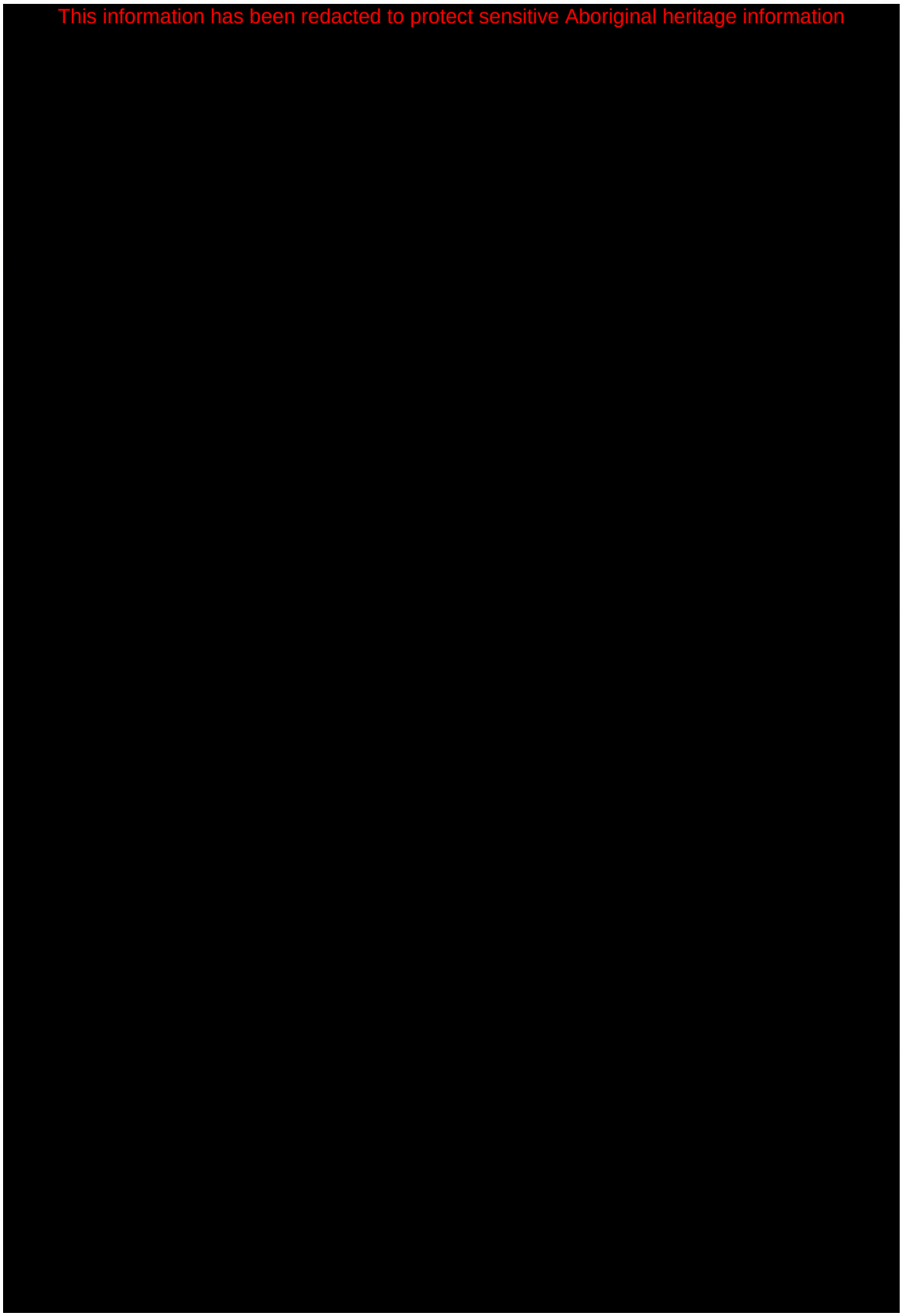


Figure 2-7 Key features of the proposal and environmental constraints (Section 5)

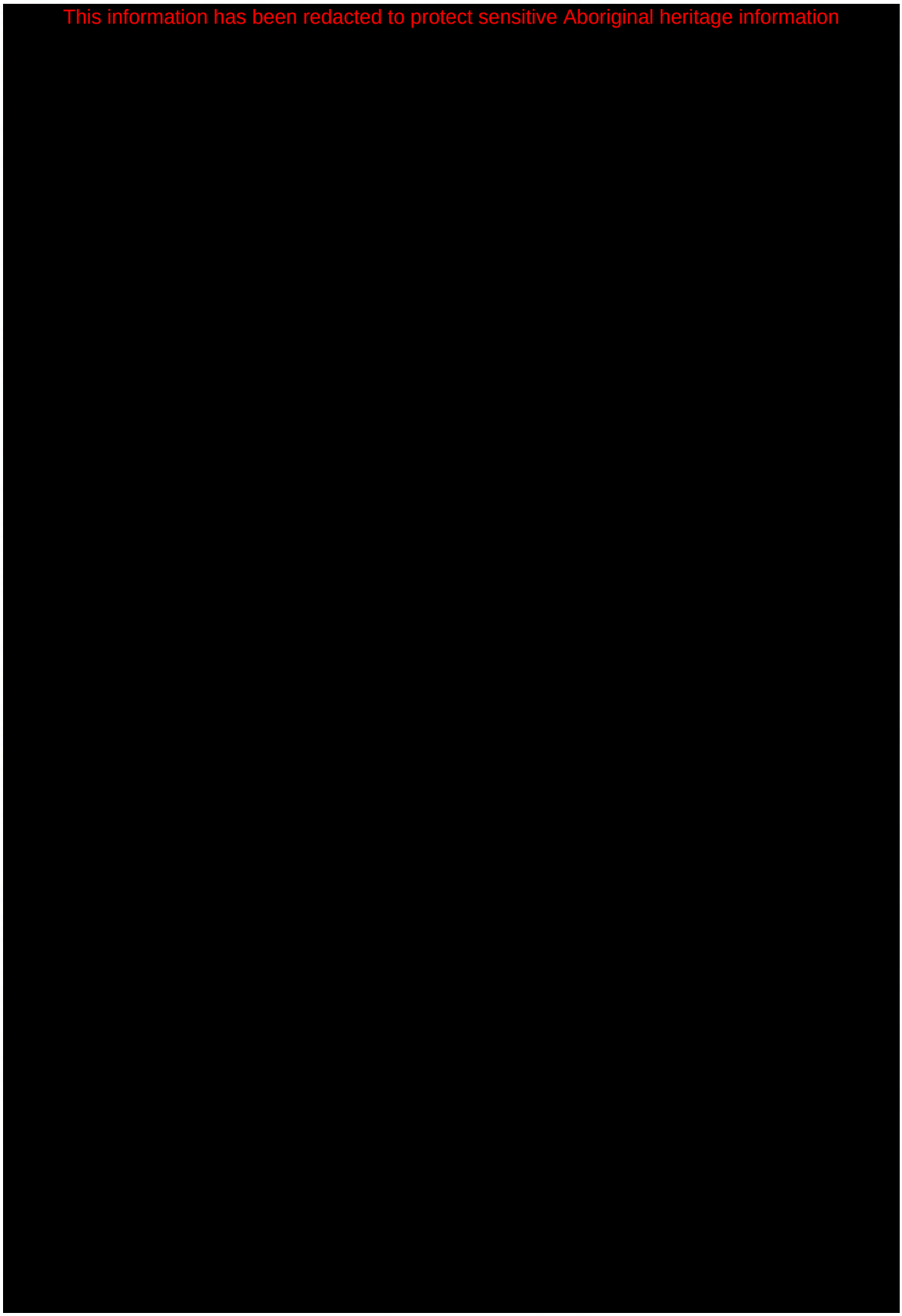


Figure 2-8 Key features of the proposal and environmental constraints (Section 6)

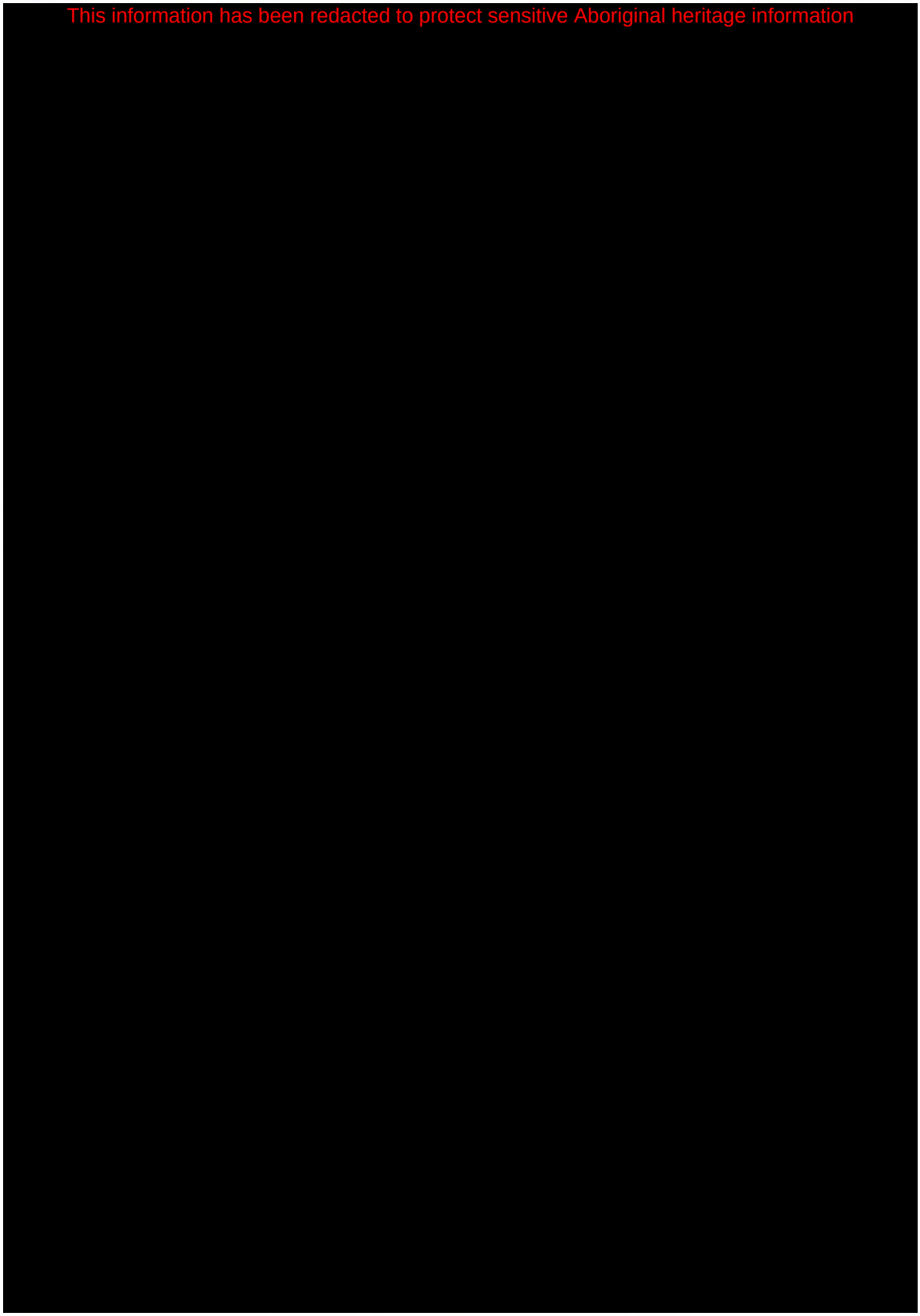


Figure 2-9 Key features of the proposal and environmental constraints (Section 7)

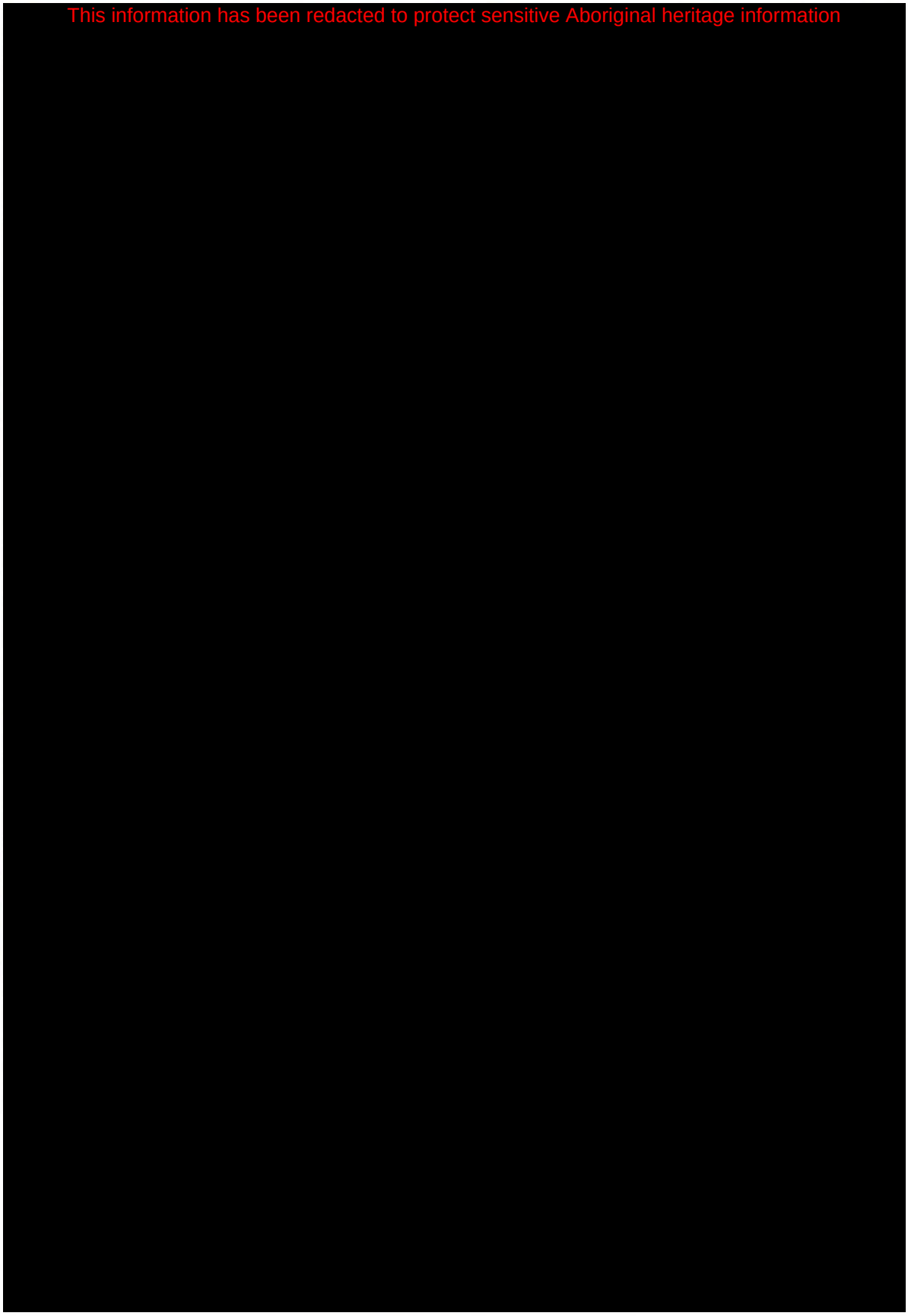


Figure 2-10 Key features of the proposal and environmental constraints (Section 8)

3 Consultation

3.1 Community and stakeholder consultation – general

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

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

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

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

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

3.2 Community and stakeholder consultation – proposal

Sydney Water prepared a Community and Stakeholder Engagement Plan (CSEP) during concept design of the proposal. The identification of community impacts and risks in the CSEP led to the development of a detailed action plan for how Sydney Water and its contractors would engage with project stakeholders and the affected community as the proposal moved from planning and into design.

Some of the key impacts and risks identified in the CSEP related to:

- investigation and construction work having the potential to affect private property
- government agencies, local government and multiple project teams working in the same area
- ongoing property development occurring in Leppington and nearby Austral
- the potential for impacts to people and nearby properties from construction noise, dust and traffic.

The CSEP and related action plan identified key project stakeholders for ongoing consultation into the construction phase, including information about the main non-English languages spoken at home.

The plan, and further analysis since, has identified the study area being made up of residential properties (including many undergoing development), a church and a range of businesses including transport and logistics, construction and engineering services, warehouses, plant nurseries, market gardens and a childcare

centre. Leppington train station and Leppington Village Shopping Centre are a short distance to the east of the study area, and both are well used by the local community.

This information helped tailor the consultation program and will help guide activities during the construction planning and delivery phases.

3.2.1 Community consultation – homes and businesses

Community consultation with nearby properties has been ongoing throughout the proposal's planning and design. Residents and businesses within at least 100 m of the proposal were notified in November 2025 and February 2026 about upcoming field investigations and the expected project benefits. Three directly affected private properties have been informed about potential property impacts and easements.

A project web page has been advertised in communication material along with a community information line (1800 000 229) and email (SWGAdrinkingwater@sydneywater.com.au) where people could ask questions or register to receive future updates.

Consultation and communication with affected homes and businesses is outlined in Table 3-1.

Table 3-1 Summary of community consultation with affected homes and businesses

Date	Activity	Outcome
28 November 2025	Project introduction notification distributed to 1,330 properties that were within 100 m of the proposal.	• Introduced the proposal, need and benefits • Explained upcoming non-invasive site investigations and likely pipeline corridor • Promoted project website, email and phone number for enquiries and feedback
Early December 2025	Phone calls, emails, direct mail and doorknocking of homes to confirm ownership and seek access agreement for non-invasive environmental investigations on three properties.	• Better understanding of individual property owners • Contact made with one property owner (with permission to do a site walk granted). No response from the other two owners.
5 February 2026	Notification distributed to 1,419 properties that were within 100 m of the proposal, about upcoming invasive investigations.	• Informed community of upcoming invasive investigations in the road, nature strip and footpath • Explained the expected timing for project approvals and construction • Promoted project email and phone number for enquiries and feedback

Date	Activity	Outcome
May 2026	Phone calls, emails and letters seeking a meeting with private property owners that may be directly affected by the new pipeline.	• Confirmed ownership and contact details • Arranged meetings with the project team
27 May 2026 - 2 June 2026	Meetings with owners (or their representatives) about proposed location of the drinking water pipeline within three property boundaries.	• Explained the project and reasons why the pipe needs to be installed through property • Initial discussion about Sydney Water's easement process • Discussion about the need for future survey and investigations on each property

There has been no community feedback to date. Discussions are ongoing with directly affected property owners about field investigations and next steps in relation to the design and construction process.

3.2.2 Consultation with local government and government agencies

The proposal is located mostly within the Camden Local Government Area under the jurisdiction of Camden Council, with a small section within the jurisdiction of Liverpool City Council. Consultation with both councils was initiated at the start of the project. The primary matters raised were related to potential construction schedule and design interactions that could adversely impact either party. To mitigate this, concept design has been developed in coordination with councils. The outcome of this has included locating assets to avoid future roads or services. Consultation will continue throughout the duration of the project and councils will be involved during detailed design.

Transport for NSW (TfNSW) were also consulted at the start of the project as they are liaising with Camden Council about the upgrade of several roads within the study area. The key outcome of the consultation was that the proposal is constructed at a depth that will not interfere with or require future relocation during their road upgrades. Sydney Trains have been consulted and have reviewed the concept designs. No additional requirements or constraints have been identified at this stage. The contractor will continue to consult with TfNSW and Sydney Trains throughout detailed design and construction.

3.2.3 Consultation with First Nations stakeholders

Sydney Water will share information and consider feedback from First Nations stakeholders about this and other planned water and wastewater projects in the Aerotropolis and South West Growth Area. This consultation is non-statutory engagement with Traditional Custodians that is guided by Sydney Water's Principal Advisor for First Nations Engagement.

3.2.4 Consultation during construction planning and delivery

No significant issues have been raised by the community so far. Future community consultation will include project newsletters and meetings with directly affected landowners to inform them about how and when construction will occur and what Sydney Water's Delivery Contractor will do to manage potential impacts.

Sydney Water and its contractors will continue to provide ways for people who speak a language other than English to engage with the project team.

Liaison with TfNSW, Sydney Trains, Camden Council and Liverpool City Council will continue throughout the proposal.

3.3 Consultation required under State Environmental Planning Policies and other legislation

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

Consultation was required under section 2.10 (f) as the proposal involves excavations in a council owned road or footpath. Camden Council was consulted on 30 June 2026. A response was received on 8 July 2026 with no further comment. Further detail is provided in Appendix B.

Included in the consultation with Council was a notification of works within Crown Land managed by Camden Council. These works will include no permanent infrastructure or direct impacts on the surface. Council had no further comment.

Sydney Water has consulted with the Western Parkland City Authority (WPCA) under section 2.15 (2)(h) of the TISEPP as the proposal has a capital investment value of over $30 million and is in the Western City operational area. WPCA was notified on 17 July 2026 and any feedback and comments provided by WPCA will be considered by Sydney Water during detailed design.

4 Legislative requirements

4.1 Environmental legislation

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

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

Table 4-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Camden Local Environmental Plan 2010 (Camden LEP)	The proposal is located on land zoned RU4 (primary production small lots).
State Environmental Planning Policy (Precincts – Western Parkland City) 2021	The proposal is located on land zoned SP2 (infrastructure), R2 (low density residential), IN2 (light industrial) and R3 (medium density residential). The Precincts SEPP prevails over the LEPs and the LEP land zoning.
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. The proposal involves development of a water reticulation system and as Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** The proposal is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) states: '*This Policy does not affect the provisions of any other SEPP....*', and as the works are permissible under the TISEPP, a council permit to clear vegetation under this SEPP is not required. **Koala habitat protection (2020 and 2021) (Chapter 3 and 4)** These chapters aim to encourage the proper conservation and management of areas of natural vegetation that provide koala habitat. This is to ensure that permanent free-living populations are protected in their present range, and to reverse the current trend of population decline. The SEPP contains prescriptions for the consideration of 'potential koala habitat' and 'core koala habitat' for developments within local government areas listed in schedule 2 of the SEPP.

Environmental Planning Instrument	Relevance to proposal
	The northern end of the proposal lies within the Liverpool LGA, which is in Central Coast Koala management area. Development that is being carried out under TISEPP is not subject to the planning provisions of the BCSEPP, however the aims and management actions have been considered as applicable (see Section 5). Impacts to Biodiversity are assessed in Section 5.1.3. **Water Catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury-Nepean Catchment, a regulated catchment area. Section 5 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minor and meet the requirements of part 6.2 of the SEPP.
State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (Precincts SEPP)	**Sydney Region Growth Centres (Chapter 3)** The proposal is on land to which Chapter 3 applies. The proposal is within the boundaries of the South West Growth Centre. The alignment is entirely located within biodiversity certified land. Available mapping shows several heritage items previously identified under the former Sydney Region Growth Centres SEPP 2006, with these provisions now incorporated into the relevant Precinct SEPP (refer Section 5.1.4).

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Biodiversity Conservation Act 2016 (BC Act)	Schedules 1 and 2 of the BC Act list threatened species and threatened ecological communities in NSW. Sydney Water is required to assess impacts to listed entities in accordance with section 7.3 of the BC act. The entire proposal is within land that is biodiversity-certified under the former Sydney Region Growth Centres SEPP, now the Precincts SEPP. This means that for works within mapped certified areas, further assessment of threatened-species or threatened ecological communities is not required. A flora and fauna investigation was undertaken for the proposal and a Bio-certification letter has been completed (Appendix C). The assessment found that the	REF	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	proposal is unlikely to significantly affect any threatened species or ecological communities. Potential impacts to threatened species and communities have been assessed and mitigation measures provided in Section 5.1.3.		
National Parks and Wildlife Act 1974 (NPW Act)	Under section 86 of this Act, it is an offence to harm or desecrate an Aboriginal place or object unless authorised by an Aboriginal heritage impact permit (AHIP) or where it is reasonably determined that no Aboriginal object would be harmed. Parts of the proposal are within or nearby Aboriginal Heritage Information Management System (AHIMS) sites. An Aboriginal Heritage Due Diligence (AHDD) has been completed for the works (Appendix D). All works will be within previously disturbed areas. This information has been redacted to protect sensitive A [redacted] Consultation with TfNSW is ongoing and will determine the controls required for these areas. The AHDD determined that the proposal is unlikely to directly or indirectly impact any known Aboriginal archaeological sites, Aboriginal objects, or places (refer section 5.1.4). Potential impacts to Aboriginal heritage have been assessed and mitigation measures provided in Section 5.1.4.	No AHIP required	Post REF, pre-construction, Sydney Water
Water Act 1912/ Water Management Act 2000	Groundwater extraction requires an approval under Section 91B of the Water Management Act 2000, unless an exemption applies. Groundwater extraction is anticipated in various locations including the trenchless sections of the alignment. There are no exemptions that would apply. Therefore, a WSWA is required. Potential impacts to water have been assessed and mitigation measures provided in Section 5.1.2.	WSWA	Pre-construction, Sydney Water.
Roads Act 1993	This Act regulates works in, on or over a public road. Approval under Section 138(1) of this Act is required for carrying out works within, that dig up or disturb a classified road.	Section 138 Approval & Road Occupancy Licence	Pre-construction, contractor

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Construction of the proposal will require excavation and partial road closures along Woolgen Park Road, Ridge Square, Heath Road, Dickson Road, Ingleburn Road and Eastwood Road. A traffic management plan (TMP) and Road Occupancy Licence (ROL) would manage traffic control and potential impacts to traffic. Potential impacts to traffic and access have been assessed and mitigation measures provided in Section 5.1.8.		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the principal environmental law administered by the Commonwealth. It provides for the protection of matters of national environmental significance. Under the EPBC Act, an action that is likely to have a significant impact on a matter of national environmental significance (MNES) must be referred to the Commonwealth Minister for Climate Change, Energy, the Environment and Water. In February 2012, the Commonwealth Minister approved the Sydney Growth Centres Strategic Assessment under Section 146 of the EPBC Act. This landscape-scale approval grants automatic federal clearance for actions within designated zones until 31 December 2041, removing the requirement for separate Commonwealth referrals. As the entire proposal is located within certified land, individual assessment and approval under the EPBC Act are not required. This is supported by the Flora and Fauna Assessment (Appendix C) which concluded that the proposal is unlikely to have a significant impact on MNES. Accordingly, referral is not required. Potential impacts to flora and fauna have been assessed and mitigation measures provided in Section 5.1.3.	Referral not required	Pre-construction, Sydney Water

5 Environmental assessment

Section 5.1 describes the existing environment and assesses direct and indirect impacts of construction and operation. It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) prior to starting work.

5.1 Environmental aspects, impacts and mitigation measures

5.1.1 Topography, geology and soils

5.1.1.1 Existing environment and potential impacts

A geotechnical assessment was completed by Aurecon and Arup on 12 June 2026. The geotechnical report assessed ground conditions, geotechnical characteristics and groundwater (refer Section 5.1.2).

A detailed site investigation (DSI) was completed by Aurecon and Arup on 4 June 2026. The DSI included sampling to determine the presence of potential contamination in soil.

Topography and site history

The terrain is typically flat with gently rolling hills, sloping from south to north (between 130m AHD and 75m AHD). Some areas of the proposal have steeper slopes, including near the Leppington railway corridor and the Reservoir.

Historical imagery indicates a transition from predominantly rural land use to semi-rural development (around 2010) as part of the South West Growth Area (SWGA) plan. Early imagery shows largely undeveloped land with scattered farms, dams and sparse vegetation. Recently, ongoing earthworks for industrial warehouses and the expansion of low-density residential areas reflect the area's shift towards urban growth.

Geology and soils

The proposal is in the western portion of the Sydney Basin (Penrith 1:100,000 sheet 9130). The basin comprises several sedimentary units deposited during the Permian and Triassic periods. Areas adjacent to nearby creeks are made up of Quaternary alluvial floodplain sediments derived from Wianamatta Group shales overlaying the Bringelly Shale formation which also overlays Hawkesbury Sandstone.

Near surface deposits are generally made up of silts, very fine to medium rocks, quartz rich sand and clay.

The proposal is mostly outside the alluvial deposits with the exception of the northeastern section, which is in the vicinity of Scalabrini Creek (a tributary of Kemps Creek).

Ground conditions

Subsurface materials identified during the investigations have been grouped into five units:

- fill/topsoil – about 1 m thick
- alluvium – up to 4 m thick, unlikely to be encountered along the alignment (except potential near northeast section)

- residual soil – about 2 m thick
- extremely weathered material – about 1.5 m thick
- bedrock.

Contamination

Sampling was completed as part of the DSI to determine the presence of any potential contamination. Samples were taken from a total of 14 locations (nine test pits and five boreholes). 42 samples were taken from these sites for analysis.

Reported concentrations for contaminants of potential concern (COPC) were below screening values for the current and proposed land uses. The potential for contamination to be present in the proposal area from historical activities is considered negligible except for friable asbestos identified in surface soils at BH01 adjacent to DP1203674 Lot 9. Asbestos was also visually identified in bonded form within the road verge at DP1289165 Lot 10.

The nearest contaminated site notified to the EPA is about 1 km from the proposal (Coles Express Leppington).

There is no acid sulfate soil (ASS) risk mapping for the proposal. The potential for acid sulfate soils to be found at the proposal is considered low.

Areas of extensive salinity hazard are mapped throughout the proposal area.

Construction impacts

Erosion

Sampled soils were tested for erosion potential. Thirteen percent of samples were considered unsuitable for reuse and most of the soils were considered slightly to moderately dispersive or susceptible to slaking. Some of the tested materials may become more dispersive when exposed to freshwater flow, in the presence of groundwater and rainwater infiltration, for example. The above factors may lead to the exposure of soils and potential mobilisation of soils and sediment offsite during wet weather events. The prescribed mitigation measures include provisions to reduce these impacts.

Contamination

Contamination potential in soil across the proposal was deemed negligible with the exception of the identified friable asbestos identified above.

Interaction with asbestos should be avoided where possible to reduce potential impacts such as the direct spreading of contaminated material, and the exposure of contaminated soils that could lead to off-site migration during rainfall events. For the visually identified asbestos in the road verge, avoidance may be possible depending on the exact location and the necessary footprint required for the proposal.

Where unavoidable, the material should be classified as special waste (asbestos) and would require targeted management, handling and disposal in accordance with the relevant asbestos management protocols. This is the case for the friable asbestos identified within surface material at BH01 (northeast end of the alignment). Known and unknown contamination such as asbestos that is identified on site will be managed under the

recommended mitigation measures such as the 'asbestos management plan', 'unexpected finds protocol' and others outlined below.

Inappropriate management of saline soils can lead to off-site leaching and potential impacts to the surrounding land and waterways, negatively affecting plant growth and soil chemistry as well as the weakening and degradation of construction materials.

Operation impacts

Following construction, all excavations will be backfilled, the pipeline will be sealed and buried, and the road will be reinstated. As such, no operational impacts to topography, geology or soils are anticipated.

5.1.1.2 Mitigation measures

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

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

Mitigation measures
Prevent sediment moving off-site in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including but not limited to: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Contamination and Hazards team) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off-site.
Sweep up any sediment/soil transferred off-site at least daily, or before rainfall.
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition
Adopt appropriate soil salinity mitigation measures in accordance with Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). This may include: • treating existing salinity with gypsum

Mitigation measures

- stabilising existing areas of erosion
- minimising water use on site
- avoiding rotation and vertical displacement of the original soil profile
- backfilling excavations deeper than 1 m in the same order or treating or using this material as fill at depths more than 1 m from the finished level.

A construction Contamination Management Plan must be prepared by a suitably qualified person as part of the CEMP and reviewed by Sydney Water's Environmental Representative in consultation with the Contamination and Hazardous Materials team. The plan must identify the type and location of known/potential contamination, land-owner notification, management requirements (waste minimisation, waste segregation and classification) and reuse, offsite recycling and/or disposal measures.

An asbestos management plan (AMP) should be prepared. The AMP should also cover all known asbestos-impacted areas (including friable asbestos as BH01 and surface asbestos containing material (ACM) fragments along the alignment) and apply across the entire project to ensure appropriate controls are in place should any unexpected ACM be encountered.

A site-specific management approach should be included within both the CEMP and the waste and resource recovery plan (WRRP). This should cover identification, handling, segregation, and off-site disposal by appropriately licenced contractors.

Works in affected areas should be undertaken under controlled conditions, including dust suppression, exclusion zones, appropriate PPE, and air monitoring where disturbance is likely.

An unexpected finds protocol (UFP) must be included in the CEMP. The UFP should address incidental contamination (not only asbestos). Where unexpected asbestos is identified, the UFP should refer back to the AMP to ensure the correct licenced handling, WHS controls, and disposal pathways are triggered.

5.1.2 Water and drainage

5.1.2.1 Existing environment and potential impacts

The proposal is located about 70 m from the nearest waterway, which is an unnamed tributary of Kemps Creek identified as Key Fish Habitat. The proposal also crosses several ephemeral drainage lines within the road corridor and at 74 Woolgen Park Road.

The proposal is outside a flood prone area (NSW Planning Portal, flood prone maps). However, there are a few areas of flood prone land within 100 m. These are located around adjacent waterways, pockets of vegetation and water storage dams.

Excavations to depths of between 1 m and 5 m are required for the trenched sections of the alignment in addition to launch and receival shafts for micro-tunnelling. Groundwater is therefore likely to be encountered during construction and dewatering may be required in some locations.

A review of registered groundwater bores indicates that most nearby bores are monitoring bores. Several irrigation bores (GW058734 and GW058735) appear to have been decommissioned as their registered location has been subject to residential development. The nearest water supply bore identified is about 2.2 km from the proposal (bore ID GW109050) and extracts groundwater under approval 10WA109234 for domestic stock.

No groundwater dependent ecosystems (GDEs), groundwater users or other sensitive groundwater receptors have been identified within 50 m of the proposal.

Groundwater investigations completed during the geotechnical assessment by Aurecon / Arup on 12 June 2026 indicate that groundwater levels across the alignment vary:

- between 2.54 and 3.23 m below surface level around the Dickson Road HDD
- between 5.00 and 5.78 m below surface level around the Eastwood Road HDD
- 4.99 m below surface level at Ridge Square
- Between 0.66 and 2.40 m below surface level at the Bringelly Road crossing of the nearby waterway.

The DSI assessed soil and groundwater quality along the proposed alignment for a broad range of potential contaminants, including petroleum hydrocarbons, BTEX, PAHs, PFAS, metals and pesticides. Contaminants were either not detected or reported below relevant assessment criteria, and no site-related contamination plume was identified. Isolated elevated concentrations of copper and zinc were considered representative of natural geochemical conditions rather than contamination.

The proposal is not in an area administered by Water NSW and a NorBE assessment is not required.

Construction impacts

The proposal requires:

- excavation and stockpiling
- storage of fuels and chemicals on site
- dewatering of groundwater during construction.

Potential impacts to surface water quality could occur through erosion and sedimentation, accidental spills of fuels or chemicals, or the discharge of water generated during excavation and dewatering activities. Disturbance of soil and stockpiling adjacent to work areas creates the potential for sediment movement into nearby drainage lines, particularly during significant rainfall events. Although the proposal is outside flood-prone land, intense rainfall may still mobilise spoil, increase erosion risk and result in off-site sedimentation.

Potential impacts to waterways have been reduced through the selection of trenchless construction methodologies and alignment design. HDD crossings are located away from waterway banks and key fish habitat, minimising the extent of ground disturbance in proximity to drainage lines and waterways.

Dewatering is likely to be required in some locations where groundwater is encountered during excavation. Groundwater extraction has the potential to temporarily lower local groundwater levels and affect nearby environmental receptors or licensed groundwater users. However, dewatering would be localised to active work areas and undertaken for a relatively short duration. Given the absence of GDEs, groundwater users or other

sensitive receptors in proximity to the proposal, any drawdown effects are expected to be minor, localised and temporary, with groundwater levels anticipated to recover following completion of construction.

Groundwater extraction also has the potential to mobilise existing contamination and affect receiving environments if extracted water is not appropriately managed. However, the DSI identified no evidence of significant soil or groundwater contamination that would present a constraint to construction. Accordingly, the potential for dewatering activities to mobilise contamination and affect surrounding waterways or groundwater is considered low.

Overall, potential impacts to surface water and groundwater during construction are expected to be limited to sediment-laden runoff, accidental spills, and the management and disposal of water generated during dewatering activities. These impacts can be effectively managed through the implementation of mitigation measures.

Operation impacts

Following construction, all excavations will be backfilled, the pipeline will be sealed and buried, and the road surface reinstated. No operational discharges, alterations to surface-water drainage, or ongoing groundwater interactions are proposed. As such, no operational impacts to water quality, hydrology or drainage are anticipated. Discharge of drinking water from existing infrastructure and commissioning will be in line with Sydney Water's D0001667 Water Quality Management During Operational Activities procedure.

5.1.2.2 Mitigation measures

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

Table 5-2 Environmental mitigation measures – water and drainage

Mitigation measures
Use appropriate controls to avoid potential sedimentation to waterbodies.
Bund potential contaminants and store them on a robust waterproof membrane, away from drainage lines.
Locate portable site amenities away from watercourses or drainage lines.
Conduct refueling, fuel decanting and vehicle maintenance in compounds where possible. If field refueling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Keep a functioning spill kit on site for the clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Sydney Water will obtain a Water Supply Works Approval. The Delivery Contractor is responsible for: • preparing all application material including a Dewatering Management Plan prior to construction • complying with the conditions of the approvals (such as protecting water quality, minimising aquifer extraction volumes, monitoring extraction with flow metres and recording volumes).

Mitigation measures

Minimise groundwater ingress during detailed design. As part of the CEMP, prepare a Dewatering Management Plan for groundwater dewatering. This should include elements such as how water quality will be protected and how extraction volumes will be monitored.

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.

If discharge of water to the environment is not possible:

- Seek approval and discharge criteria from the relevant Sydney Water Network Area Manager prior to discharge of water to the wastewater system. Otherwise, tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.

5.1.3 Flora and fauna

5.1.3.1 Existing environment and potential impacts

A Flora and Fauna Assessment and Biodiversity Certification Review was completed by Biosis on 30 July 2026 (Appendix C). The assessment confirmed that the entire proposal is located within land identified as Existing Certified Land under Chapter 3 of the State Environmental Planning Policy (Precincts – Western Parkland City) 2021. As the proposal is wholly located within certified land, further biodiversity assessment under the Biodiversity Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is not required.

The study area is situated within a highly modified urbanising landscape comprising road corridors, residential development, industrial development, cleared land and fragmented vegetation remnants. Field investigations completed in July 2026 identified four broad vegetation types within the study area:

- PCT 3320 Cumberland Plain Woodland in the Sydney Basin Bioregion
- PCT 4025 Cumberland Red Gum River-flat Forest
- planted native vegetation
- exotic vegetation.

The native vegetation present is generally in low condition and highly fragmented. Habitat values within the study area are limited and consist primarily of scattered native vegetation, leaf litter, several farm dams, minor drainage lines and a hollow-bearing tree. The hollow-bearing tree was identified immediately adjacent to the proposed compound opposite Leppington Reservoir WS0315. No evidence of microbat roosting was identified during field investigations.

Desktop investigations identified numerous threatened flora and fauna species previously recorded or predicted to occur within 5 km of the proposal. However, no threatened flora or fauna species were recorded during field investigations and the disturbed nature of the study area substantially limits the likelihood of occurrence of most threatened species. Species considered to have the highest potential to use habitat within or adjacent to the proposal include Cumberland Plain Land Snail (*Meridolum corneovirens*), Grey-headed

Flying-fox (*Pteropus poliocephalus*), Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*), Greater Broad-nosed Bat (*Scoteanax rueppellii*), Southern Myotis (*Myotis macropus*) and Swift Parrot (*Lathamus discolor*).

Several farm dams and minor drainage features occur within the study area. These aquatic habitats are generally in a disturbed condition and are considered unlikely to support threatened amphibian species due to their isolated nature, surrounding land uses and the absence of recent locality records. While Key Fish Habitat (KFH) is mapped nearby, no areas of mapped KFH occur within the proposal area.

Four priority weed species listed under the Biosecurity Act 2015 were identified within the study area:

- Asparagus Fern (Asparagus virgatus)
- African Boxthorn (Lycium ferocissimum)
- Common Prickly Pear (Opuntia stricta)
- Fireweed (Senecio madagascariensis).

Construction impacts

The proposal has generally been designed within existing road corridors and previously disturbed areas to minimise impacts to native vegetation and fauna habitat. Biodiversity impacts would be associated with vegetation trimming or removal, ground disturbance, construction vehicle movements, establishment of ancillary facilities and disturbance of habitat features such as leaf litter, drainage lines and farm dams.

Potential impacts include:

- removal or disturbance of native vegetation and habitat features
- disturbance to native fauna during vegetation clearing and construction activities
- accidental disturbance to hollow-bearing trees if not appropriately protected
- temporary impacts to aquatic habitat values through sedimentation or runoff
- spread of priority weeds through movement of soil, equipment or stockpiled materials
- disturbance to potential Cumberland Plain Land Snail habitat where leaf litter is removed or disturbed.

Vegetation impacts are limited to isolated areas where roadside trees and other vegetation within the construction footprint will require clearing and/or trimming. This includes several trees within 74 Woolgen Park Road, and roadside vegetation, comprising several large trees, along Dickson Road. The approximate extent of impact includes:

- 74 Woolgen Park Road: 6-8 trees, PCT 3320 (low condition)
- along Dickson Road: 750 m^2, PCT 3320 (low condition).

In some locations, the alignment traverses between or in proximity to street trees, such as near the corner of Ingleburn Road and Eastwood Road. Therefore, the final extent of vegetation clearing will be determined during detailed design following an arborist assessment which will determine whether the proposal will impact on adjacent trees.

Most of the alignment is located within existing road corridors and other disturbed areas. Native vegetation within the study area is fragmented and generally in low condition, habitat resources are limited, and no

threatened flora species were recorded during field investigations. With the implementation of mitigation measures, construction impacts are expected to be localised, temporary and minor.

Operation impacts

Following construction, the pipeline will be buried and disturbed areas reinstated to their previous condition. The proposal will not result in the permanent fragmentation of habitat, ongoing vegetation clearing or changes to aquatic habitats. Therefore, no significant operational impacts to flora and fauna are anticipated.

5.1.3.2Mitigation measures

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

Table 5-3 Environmental mitigation measures – flora and fauna

Mitigation measures

Provided it is essential for delivering the project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the Environmental and Community Representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact.
• Any minor:
  • vegetation trimming or
  • removal of exotic vegetation or
  • removal of planted native vegetation
where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value.
• Any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the EIA).
Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval. Any impacts to native vegetation and trees must be offset in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).

Minimise vegetation clearing and disturbance, including impacts to mature trees, riparian vegetation and fauna habitat. Where practicable, retain vegetation through trimming rather than complete removal.
Physically delineate approved disturbance boundaries and vegetation protection areas prior to commencement of construction.
Vegetation removal must not occur until: • the area to be removed has been physically delineated • the Delivery Contractor's Environmental Representative has confirmed consistency with approval documentation • pre-clearing surveys have been completed, if relevant and • Sydney Water Project Manager has provided written authorisation to commence clearing.

Mitigation measures

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

During detailed design, where proposed excavations extend into the Notional Root Zone (NRZ) of a tree, an arborist assessment should be undertaken to determine any impacts to the roots and tree. Any recommendations from the report should be considered. Should tree removal be required, consult with the Project Manager and Environmental Representative.

Protect trees in accordance with the requirements of Australian Standard 4970-2025 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 Notional Root Zone (NRZ).

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 licensed ecologist should inspect the removal and undertake fauna relocation.

Inspect vegetation and habitat features for fauna prior to clearing. Where hollow-bearing trees require removal, engage a suitably qualified ecologist to undertake pre-clearing inspections and supervise removal.

Establish a no-go area around the hollow bearing tree where practicable to minimise disturbance to any fauna utilising the habitat feature.

Layout of the compound on Woolgen Road, opposite WS0315 should be refined during detailed design to avoid encroachment into the TPZ/NRZ of the hollow-bearing tree where practicable.

Establish a no-go area around retained vegetation to ensure the surrounding area remains undisturbed.

Where leaf litter within native vegetation communities is to be disturbed, undertake pre-clearing inspections by a suitably qualified ecologist to confirm the absence of Cumberland Plain Land Snail.

Avoid impacts to farm dams and aquatic habitats where practicable. Where dewatering of a dam is required, prepare a Dam Dewatering Plan and undertake works under the supervision of a suitably qualified ecologist.

If native fauna is encountered on site, stop work and allow the fauna to move away un-harassed. Engage a licensed ecologist if assistance is required to move fauna.

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

Manage biosecurity in accordance with:

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

Mitigation measures

To prevent spread of weeds:

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

Restore disturbed areas following construction in consultation with affected landowners.

5.1.4 Heritage

5.1.4.1 Existing environment and potential impacts

Construction impacts

Aboriginal heritage

An Aboriginal Heritage Due Diligence (AHDD) assessment was completed by AECOM Pty Ltd (AECOM) on 27 July 2026. A field inspection of the proposal was completed on 12 December 2025 and 10 July 2026.

Consideration of the landscape context of the proposal area uses factors such as topography, geology, hydrology and local resources as well as an understanding of historical and contemporary land use to determine archaeological potential and assess for impacts.

A search of the Aboriginal Heritage Information Management System (AHIMS) database identified several sites in the search area, This information has been redacted to protect sensitive are within 100 m of the proposal. This information has been redacted to protect sensitive

- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information

The visual inspection confirmed that most land within the proposal areas has been disturbed by various historic land uses, resulting in generally low ground integrity. No new Aboriginal objects, sites or places were identified within the proposal area during the inspections.

A review of State Heritage Inventory identified no Aboriginal sites or places within or nearby the proposal.

Two Aboriginal Heritage Impact Permits (AHIPs) intersect with the proposal:

- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information

Key findings of the due diligence assessment include the following:

- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information
- This information has been redacted to protect sensitive Aboriginal heritage information and the proposal is in areas assessed as disturbed. Accordingly, no impacts to Aboriginal objects are considered likely.
- Visual inspection of the proposed compound locations indicates that they are of low archaeological sensitivity.
- The archaeological sensitivity of the proposal as a whole was assessed as low based on past ground disturbance activities and landform analysis.

The proposal is generally located within the road corridor except for a few private properties. The proposal has been located within the road corridor, where possible, to limit works to pre-disturbed areas and therefore minimise potential impacts. This information has been redacted to protect sensitive Aboriginal heritage information and any impacts to Aboriginal heritage are not anticipated.

Non-Aboriginal heritage

A review of the State Heritage Inventory (SHI) identified no Commonwealth, National, or State heritage items within 1 km of the proposal.

Several local heritage items listed under the Precincts SEPP (Western Parkland City) are located adjacent or within the proposal alignment:

- Cottage and landscaping (ID23) - adjacent
- Cottage and landscaping (ID22) - adjacent
- Bringelly Road Cultural Landscape Area (ID17) – within.

Heritage items ID22 and ID23 are both outside the proposal footprint which will remain within the road corridor of Heath Road. Impacts from vibration intensive equipment are not anticipated (refer Section 5.1.5). While the alignment does cross over ID17 at Bringelly Road, this section will be micro tunnelled under the road at a depth of 3 to 4 m. No direct impact to the heritage significance, heritage fabric or setting of listed heritage items is anticipated. The Bringelly Road Cultural Landscape Area will be crossed using trenchless construction methods, avoiding disturbance of heritage values.

The proposal will not directly or indirectly impact any listed non-Aboriginal heritage items.

Operation impacts

Following construction, the pipeline will be buried, and all disturbed surfaces reinstated to their pre-existing condition. No above-ground infrastructure will be visible or alter the heritage setting. Therefore, no operational impacts to Aboriginal or Non-Aboriginal heritage are expected.

5.1.4.2 Mitigation measures

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

Table 5-4 Environmental mitigation measures – heritage

Mitigation measures
Sydney Water should consult with Transport for NSW regarding works within the boundary of This information to ensure the proposal is consistent with the AHIP conditions and to obtain any necessary written approval before works commence.
All Sydney Water personnel and contractors should be made aware, through a toolbox talk heritage induction, of the nature and location of all known Aboriginal sites in the area and of their responsibilities to avoid harm to these sites.
In the event that Aboriginal objects/sites, including possible human skeletal material (remains), are identified during the proposal all works in the area must cease immediately and the relevant provision of Sydney Water's Environmental Management System (SWEMS0009) should be followed. The stop work procedure should be included within the projects construction management plan.
In the event that non-Aboriginal objects or relics are found, cease all excavation or disturbance in the area and notify the Sydney Water Project Manager in accordance with SWEMS0009.
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.

5.1.5 Noise and vibration

5.1.5.1 Existing environment and potential impacts

The proposal is in a rural residential area with patches of industrial and mixed-use areas. Surrounding receivers include low density and medium density residential properties, small businesses, warehouses, one place of worship and one childcare centre.

The proposal will be contained to the road corridor, with the exception of a few private lots that are vacant or set for redevelopment. The closest residential receivers are within 20 m of the proposal on both sides of the alignment. The closest non-residential receiver is within 20 m. Three non-residential receivers are within 20 m: Heath Road Early Learning centre, Futuro Childcare and Education – Leppington and St Mary's Mother of the Church.

Construction impacts

The proposal will generate noise during construction from site establishment, excavation and pipe laying, connection works, and site demobilisation. Work will generally occur during standard daytime hours.

The likelihood of noise impact was assessed against using a risk matrix based on Table 2 of the Draft Construction Noise Guideline (EPA 2020). The review indicated that the likelihood of noise impact is medium risk and therefore a quantitative noise impact assessment was undertaken.

The assessment determined that the works are likely to have a potential impact on nearby sensitive receivers. This includes construction activities, material and equipment deliveries, and compound operation. The works are of moderate duration (about 20 months) but will progress along the alignment at a rate of about 12 m per day, meaning the period of peak noise impact for any individual receiver would be relatively short. Based on the anticipated rate of construction progress, the highest levels of impact at any individual receiver are expected to occur over a period of days to weeks rather than months, with highly affected noise levels generally occurring for around 1 week and highly intrusive noise levels for around 2 weeks. The active work area would continually move along the alignment, and noise levels would reduce as the work front moves away.

The TfNSW Construction Noise Estimator (June, 2025) was used to determine the extent of noise impacts and appropriate mitigation measures. The following inputs were selected:

- Representative noise environment: R1
- Activity 1 – Distance based, using noisiest plant: concrete saw
- Activity 2 – Distance based, using scenario: compound operation
- Time period: standard day hours
- Propagation type: developed settlements
- Line of sight to all receivers.

The outputs of the noise estimator for residential receivers are described in Table 5-5 and are presented in Figures 5-1 to Figure 5-4.

The outputs of the noise estimator for non-residential receivers are described in Table 5-6. This scenario uses activity 1 noise levels as the worst-case scenario.

Table 5-5 Noise assessment results – residential receivers

	$L_{Aeq\ (15\ minutes)}$ noise level above background (L_{A90})					
	20 to 30 dB(A)		>30 dB(A)		75 dB(A) or greater (Highly affected)	
	Moderately intrusive		Highly intrusive			
	Within distance (m)	Measures	Within distance (m)	Measures	Within distance (m)	Measures
Activity 1	185	N	75	N	45	N, PC, RO
Activity 2	165	N	75	N	45	N, PC, RO

Table 5-6 Noise assessment results – non-residential receivers

	$L_{Aeq\ (15\ minutes)}$ noise level above NML			
	10 to 20 dB(A)		75 dB(A) or greater (Highly affected)	
	Within distance (m)	Measures	Within distance (m)	Measures
Educational facilities	120	N	45	N, PC, RO
Place of worship	120	N	45	N, PC, RO
Active recreation	-	-	45	N, PC, RO
Retail outlets	-	-	45	N, PC, RO
Industrial premises	-	-	45	N, PC, RO



Figure 5-1 Activity 1 (Page 1) noise assessment results



Figure 5-2 Activity 1 (Page 2) noise assessment results



Figure 5-3 Activity 2 (Page 1) noise assessment results



Figure 5-4 Activity 2 (Page 2) noise assessment results

All residences along either side of the alignment are likely to be impacted by the proposal. This includes all construction activities for the proposed alignment and launch and receival sites, as well as operations within the site compounds. The estimator has recommended the additional mitigation measure 'Notification' (N) to all receivers within the above noise contours. 'Phone Calls' (PC) and 'Respite Offer' (RO) has also been recommended for sensitive receivers within the highly affected zones.

High noise activities may cause disruption to nearby non-residential sensitive receivers including Heath Road Early Learning centre, Futuro Childcare and Education and St Mary's Mother of the Church. Construction activities may disrupt retailers and small businesses along the alignment. As the works will be completed progressively, noise impacts nearby to these receivers will be temporary and short-term. Consultation in the form of notification will be undertaken to minimise impact where possible in addition to ongoing consultation as outlined in Section 3.2.1.

While noise impacts may exceed management levels at some nearby receivers, works will generally occur during standard daytime hours and progress progressively along the alignment. Therefore peak impacts at individual receivers will generally be temporary and short-term. For activities at the launch and receival sites, the duration of noise impacts will be longer, likely between 4 – 8 weeks. However, impacts are still expected to be within standard construction hours and temporary.

The proposal will generate vibration during construction from equipment and machinery such as jackhammers and excavators. However, all sensitive receivers, including heritage structures, are outside the minimum working distance for these pieces of machinery. Therefore, vibration impacts are not anticipated.

Operation Impacts

Following construction, the pipeline will be buried, and all disturbed surfaces reinstated to their pre-existing condition. No above-ground infrastructure or ongoing activities beyond routine maintenance are proposed. Therefore, no significant operational impacts to noise and vibration are expected.

5.1.5.2 Mitigation measures

With the implementation of the mitigation measures below, noise and vibration impacts can be adequately managed, and residual impacts are expected to be minor, with short periods of moderate impact possible at properties immediately adjacent to construction works.

Table 5-7 Environmental mitigation measures – noise and vibration

Mitigation measures
Works must comply with the EPA Construction Noise Guideline (Draft, 2021), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sunday nights or public holidays. 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).

Mitigation measures

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 and other sensitive receivers prior to commencement of works. This should:
  - describe the nature of works, the expected noise impacts, approved hours of work, duration, complaints handling and contact details
  - determine need for, and appropriate timing of respite periods (e.g. times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences).
- Implement a noise complaints handling procedure.
- Do not warm-up plant or machinery near residential dwellings before the nominated working hours.
- Select appropriate plant for each task, to minimise the noise impact (eg all stationary and mobile plant will be fitted with residential type silencers).
- Do not use engine brakes when entering or leaving the work site(s) or within work areas.
- Regularly inspect and maintain equipment in good working order.
- Arrange work sites where possible to minimise noise (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).

If works **beyond standard daytime hours are needed (beyond those identified in this REF),** the Delivery Contractor would:

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

Noise blankets and screens will be used where possible to reduce noise impacts to nearby receivers.

Minimise noise and vibration impacts where possible

5.1.6 Air and energy

5.1.6.1Existing environment and potential impacts

The proposal is in a rural-residential area, with potential sensitive receivers including residents and nearby small businesses and childcare centres. Air quality within the study area is typical of a rural landscape with minimal sources of dust and odour. Nearby main roads such as Bringelly Road may cause fluctuation in air quality due to high traffic volumes during peak times.

Construction impacts

The proposal will potentially result in temporary impacts from:

- dust generated during excavations and earthworks
- dust generated by construction vehicles travelling on disturbed or unsealed access routes
- emissions from construction machinery, equipment and vehicles

These impacts are expected to be short-term and localised.

Operation impacts

Following construction, the pipeline will be buried, and all disturbed surfaces reinstated to their pre-existing condition. This is not anticipated to generate any air quality impacts. Therefore, no operational impacts to air quality are anticipated.

5.1.6.2 Mitigation measures

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

Table 5-8 Environmental mitigation measures – air and energy

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

5.1.7 Waste and hazardous materials

5.1.7.1 Existing environment and potential impacts

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

There are no known contaminated sites or contaminated land notified to the EPA within a 1 km radius of the proposal. Unexpected contamination may be identified during excavation given the nature of the area (refer Section 5.1.1).

Construction impacts

The proposal will generate the following waste streams:

- spoil and excavated material
- general construction waste
- green waste from vegetation removal
- domestic waste from construction workers

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

Waste from excavations will be stockpiled onsite at the nominated laydowns (refer to Figure 2-1). Improper management of waste and spoil can result in the off-site movement of material and the potential contamination of the surrounding land and waterways.

The proposal may involve the transportation of asbestos waste (including friable asbestos and soil containing asbestos/ sheeting). Waste will need to be tracked using the EPA's Waste Locate online tracking System.

Operation impacts

Following construction, all excavations will be backfilled, the pipeline will be sealed and buried, and the road surface reinstated. All waste and hazardous materials associated with the proposal will be removed at the completion of the works. Therefore, no operation impacts associated with waste and hazardous materials are expected.

5.1.7.2 Mitigation measures

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

Table 5-9 Environmental mitigation measures – waste and hazardous materials

Mitigation measures
Prepare a Waste and Resource Recovery Plan (WRRP) to appropriately manage and classify any materials including soils, construction/demolition wastes and associated stockpiles. The plan will be prepared by the Delivery Contractor (or nominated environmental consultant) and approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Contamination and Hazardous Materials team. The WRRP should include: • expected waste types and their location • appropriate controls for the handling and disposal of asbestos (refer section 5.1.1) as defined by the AMP's requirements • a clear material use hierarchy, reflecting the preferred use sequence of: – On-site reuse / backfilling – Resource recovery for off-site reuse – Disposal as a last resort (in alignment with Sydney Water's waste minimisation principles) • delineation of waste /resource types including identification of likely vertical and lateral extents (where warranted) • visual monitoring of materials during excavation and measures to be undertaken to prevent co-mingling / cross-contamination of waste / resource types • ex-situ waste and resource recovery classification program, including timing relative to project / excavation phases as well as proposed hold points • waste minimisation and resource recovery methodologies (including consideration of onsite reuse or management if contaminated) • roles and responsibilities in relation to stockpile and material management and monitoring program • proposed onsite reuse locations and reuse methodology (if applicable) • proposed offsite reuse, offsite recycling and / or offsite disposal locations / facilities • legislative compliance requirements • consideration of future maintenance • restoration.
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise stockpile size and ensure delineation between different stockpiled materials.
Minimise the generation of waste and sort waste streams to maximise reuse/recycling in accordance with the legislative requirements.
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle where appropriate. Recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.

5.1.8 Traffic and access

5.1.8.1 Existing environment and potential impacts

The proposal is:

- on Woolgen Park Road, Ridge Square, Heath Road, Dickson Road, Ingleburn Road, and Eastwood Road. These are all local roads owned and managed by Camden Council
- within 100m of a TfNSW road (Bringelly Road)
- within 100m of a traffic signal (intersection of Dickson Road and Bringelly Road)
- accessed via Woolgen Park Road, Ridge Square, Heath Road, Dickson Road, Ingleburn Road, Eastwood Road, Bringelly Road, Rickard Road, Riley Road and George Street
- along existing bus routes.

Construction impacts

The proposal will require heavy vehicle and light vehicle movements during construction. The estimated number of light vehicle movements per day is about 10-20, and about 20 for heavy vehicles. These numbers will be refined during detailed design and will be included in the Traffic Management Plan. This includes material and equipment deliveries, worker movements and equipment operation. Vehicle movements during operation will be limited to maintenance activities and would be infrequent and utilise existing roads and access.

Construction of the proposal will be contained to the road corridor, requiring the occupation of one traffic lane, the road shoulder and road verge. Traffic control would manage traffic flow along the open lane.

Partial road closures are required. A road occupancy licence and notification will be required. The proposal will impact access to private properties adjacent to the works during construction. Street parking will be temporarily impacted during the works due to the presence of construction equipment and activities. Consultation with landowners will be ongoing (refer Section 3.1) to manage access. Access will be restored outside of construction hours.

While the proposal is within 100 m of Bringelly Road (a state road) the alignment will be micro tunnelled beneath the road and impacts to the surface are not anticipated. Consultation with TfNSW has been undertaken as part of the proposal and it will be ongoing throughout the duration.

Construction activities may impact retailers and small businesses as well as a childcare centre (Heath Road) in various locations along the alignment. These impacts would be of a temporary nature and would be managed under the mitigation measures.

Construction activities may cause disruptions to bus stops and bus routes along Ingleburn Road and Eastwood Road. Bus stops may be temporarily moved as construction works progress along the alignment. Impacts to each bus stop location are anticipated to be temporary and short-term as the works will move progressively along the route.

Pedestrian and private property access will be impacted along all roads for the proposal. Impacts are anticipated to be temporary as the works will move progressively along the alignment and individual properties would not be impacted for the entire construction period.

Consultation with councils will be ongoing to manage traffic and access impacts.

Operation impacts

Following construction, all excavations will be backfilled, the pipelines will be sealed and buried, and the road surface reinstated. Therefore, no operational impacts to traffic and access are expected. Vehicle movements during operation are generally not expected, except as required for maintenance activities.

5.1.8.2 Mitigation measures

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

Table 5-10 Environmental mitigation measures – traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) in consultation with the relevant traffic authority. Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. Before construction commences, the Delivery Contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100 m of traffic signals.
Develop management measure to minimise traffic impacts near residential properties, schools and businesses by consulting with them (e.g. no major materials deliveries at school drop off or pick up times etc).
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Consult with the relevant bus operator to minimise impacts to bus services. Ensure upcoming changes to any bus route or the location of bus stops is communicated with the affected community prior to any disruption.
Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, metres, parking, line-marking or if traffic control or pavement restoration is required.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

5.1.9 Social and visual

5.1.9.1 Existing environment and potential impacts

The proposal is in a rural town centre surrounded by low and medium density residences, small businesses, industrial warehouses and a childcare centre. Other construction activities and earthworks for housing developments are currently ongoing within various lots along the alignment (refer Section 5.1.10).

Construction impacts

Temporary visual impacts associated with site compounds and worksites during construction are expected. Compounds and laydowns will be fenced off; however, the presence of construction equipment and materials may impact visual amenity. Noise and traffic impacts would also impact social amenity due to noisy works and restricted access to adjacent properties. The proposal will traverse several private properties along the alignment. Temporary occupation of these properties may result in similar visual amenity impacts and in some instances existing structures within these properties may be affected. Consultation with property owners will continue throughout planning and construction. Access to small business may be impacted temporarily as the works progress along the alignment. Parking availability may also be temporarily reduced. These impacts are expected to be short-term and will be managed with mitigation measures in sections 5.1.5 and 5.1.8.

The temporary visual impacts will be mitigated in consultation with stakeholders such as council and residents, in accordance with the mitigations measures below.

Operation impacts

The proposal will not require new permanent above ground structures and will not alter the visual character of the environment over the long-term. Following construction, all excavations will be backfilled, the pipeline will be buried and sealed, and the road surface reinstated. As such, no operational impacts to social and visual aspects are anticipated.

5.1.9.2 Mitigation measures

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

Table 5-11 Environmental mitigation measures – social and visual

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

Mitigation measures

Maintain work areas in a clean and tidy condition.

5.1.10 Cumulative and future trends

5.1.10.1 Potential environmental impacts

Other works close by include the following:

- Housing developments on Ridge Square (Camden Council) – *currently under construction*
- Housing developments on Dickson Road (Camden Council) – *currently under construction*
- Road upgrades (Heath Road, Ingleburn Road, Rickard Road and Woolgen Park Road) (Transport for NSW and Camden Council) – *Heath Road is set to commence construction late 2027 and the other projects have no confirmed timelines yet.*
- Amity College new school campus, Leppington (Major projects portal) – *currently under construction*
- CFC Warehouse / Retail facility (Major projects portal) – *construction is complete*

Potential cumulative impacts from nearby projects include:

- increased strain on surrounding roads from increased construction vehicles and worker vehicles
- increased noise and amenity impact on surrounding residential and non-residential receivers from cumulative construction activities and vehicles movements
- increased dust and vehicle emissions from cumulative construction activities and vehicle movements
- reduction in visual amenity due to the presence of multiple construction areas for residents and visitors.

These cumulative impacts would be mitigated by continuous and ongoing consultation with both Camden and Liverpool Councils as well as Transport for NSW to manage and reduce impacts where possible.

Future trends that could impact the proposal were considered, such as bushfires, coastal hazards, flooding, extreme heat and extreme storm events related to climate change.

The proposal has considered future trends and is unlikely to further exacerbate them. The proposal has been developed to account for urban growth in the surrounding area. As the proposal would be buried and sealed once complete, climate related impacts are not anticipated.

Following construction, all excavations will be backfilled, the pipeline will be sealed and buried, and the road surface reinstated. Therefore, no operational cumulative impacts are expected.

5.1.10.2 Mitigation measures

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

Table 5-12 Environmental mitigation measures – cumulative and future trends

Mitigation measures
Consultation with Transport for NSW will continue throughout the duration of the project to ensure any potential cumulative impacts are reduced where possible
Consultation with Council (Liverpool City Council and Camden Council) will continue throughout the duration of the project to ensure any potential cumulative impacts are reduced where possible

5.1.11 General environmental management

Table 5-13 Environmental mitigation measures – general environmental management

Mitigation measures
Sydney Water's Project Manager (after consultation with the environmental and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities: • limit proximity to sensitive receivers • do not disrupt property access • have no impact on known items of non-Aboriginal and Aboriginal heritage • are outside high-risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • have no impacts to remnant native vegetation or key habitat features • have no disturbance to waterways • do not require additional mitigation measures beyond those included in the REF • do not disturb contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The Delivery Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.
Should the proposal change from the REF, no further environmental assessment is required provided the change: • remains within the proposal area for the REF and has no net additional environmental impact or • is outside the proposal area for the REF but: • reduces impacts to biodiversity, heritage or human amenity or • avoids engineering (for example, geological, topographical) constraints and • after consultation with any potentially affected landowners and relevant agencies.

Mitigation measures

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

For pipelines on lots:

- 27/-/DP205952 (74 Woolgen Park Road)
- 28/-/DP28459 (103 Ridge Square) and
- 228/-/DP1300792 (1 Solar Street),

this REF provides flexibility to refine pipeline location during detailed design. The Delivery Contractor must consult with the landowners about pipeline location and refine the footprint to the minimum required for safe construction and to avoid existing buildings as far as practicable.

Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this REF. The CEMP should specify license, 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 proposal area including locations of lay-down and storage areas for materials and equipment
- location of environmental controls (such as erosion and sediment controls, fences or other measures to protect vegetation or fauna, spill kits)
- location and full extent of any vegetation disturbance.

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

6 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of SWGA, Drinking Water Infrastructure Augmentation, Leppington-Camden. The proposal is required for Sydney Water to meet short-term local development requirements in the South West Growth Area (SWGA).

The main potential construction environmental impacts of the proposal include biodiversity, traffic and noise and vibration. Given the nature, scale and extent of impacts and with the implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

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

References

EPA (NSW Environment Protection Authority) (2017) *NSW Noise Policy for Industry,* EPA website, accessed 12 May 2026.

EPA (NSW Environment Protection Authority) (2020) *Draft Construction Noise Guideline,* EPA website, accessed 12 May 2026.

Aurecon ARUP (2026) Detailed Site Investigation, South West Growth Area (SWGA) Leppington North-Camden Drinking Water Service

Appendices

Appendix A – Section 171 checklist

Section 171 Checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise, traffic and access due to construction activities. There may be impacts to structures within private properties. Consultation with affected landowners would continue throughout detailed design and construction to minimise and manage potential impacts. There will be environmental improvements by providing a reliable water service to the local community.
Any transformation of a locality	The proposal will not result in the transformation of a locality. The locality will be temporarily impacted during construction, but the pipeline will be buried upon completion, and the area will be restored to its pre-existing condition.
Any environmental impact on the ecosystems of the locality	Minor and localised impacts to vegetation and habitat features will occur but are not significant. The flora and fauna assessment determined that all potential impacts to biodiversity are within certified land, and further assessment was not required. The proposal will lead to environmental improvements by ensuring a reliable water service, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not reduce these factors. Any visual amenity impacts will be temporary.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will not have any effect upon these factors. Several AHIMS sites are within the proposal footprint, however, the AHDD determined that they have been salvaged and destroyed under existing AHIPs. The one valid AHIMS site near the proposal is about 100 m away and potential impacts are not anticipated. The AHDD also determined that archaeological potential for the proposal is low due to previous disturbance. Several historic heritage items are located near the proposal, however, impacts to these items are not expected.
Any impact on the habitat of any protected animals (within the meaning of the Biodiversity Conservation Act 2016)	Minor impacts to habitat features may occur, however impacts are limited, localised and occur entirely within certified land. The works have been located in the road corridor or disturbed lots where possible.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal is unlikely to significantly affect threatened species or ecological communities.
Any long-term effects on the environment	The proposal will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern water service for the area.

Section 171 Checklist	REF finding
Any degradation of the quality of the environment	The proposal will maintain the quality of the environment. After completion the pipeline will be buried, and any disturbance will be restored to pre-existing condition.
Any risk to the safety of the environment	The proposal will ensure the safety of the environment. Construction traffic will temporarily increase traffic movements; however, traffic control measures will be implemented during partial road closures. Asbestos was visually identified during investigations in the vicinity of the alignment; however, mitigation measures identified in 5.1.1 will control and manage any potential impacts to safety.
Any reduction in the range of beneficial uses of the environment	The proposal will maintain the range of beneficial uses of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not affect demand on resources.
Any cumulative environmental effect with other existing or likely future activities	The proposal is located close to several other developments being completed by Transport for NSW, Local council and others. Ongoing consultation with the relevant stakeholders to coordinate activities will ensure any potential cumulative impacts are reduced and managed.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on these factors.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposal is to service growth and the applicable strategic planning statements or plans have been considered. Strategic planning documents relevant to the proposal include: • South West Growth Centre, Updated Structure Plan • Camden Community Strategic Plan (2025-2040) – Connected Communities, Striving Futures. The proposal supports the South West Growth Centre Updated Structure Plan and Camden Community Strategic Plan 2025-2040 by delivering essential drinking water infrastructure that enables planned residential and employment growth, supports community wellbeing, and contributes to the provision of reliable and resilient services for existing and future communities.

Section 171 Checklist	REF finding
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

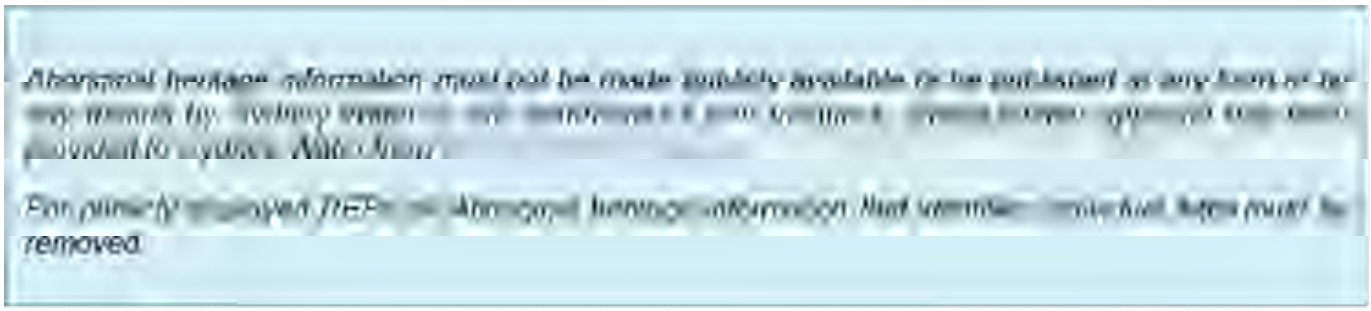
Appendix B – Consideration of TISEPP consultation

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

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

Appendix C – Biodiversity Certification letter

Appendix D – Aboriginal Heritage Due Diligence



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