

Review of Environmental Factors

Badgerys Creek Wastewater Gravity Carriers (Stage 1a Package 2) (March 2026)

SW 173 04/26

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

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

Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Badgerys Creek Wastewater Gravity Carriers proposal. 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 and 171A (**Appendix A**) and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed and endorsed by:	Endorsed by:
[redacted]	[redacted]	[redacted]
Nikolas Kenny REF author Sydney Water Date: 5/3/2026	Gregor Wilson Environment Representative Sydney Water Date: 5/3/2026	Mathew Lewis Project Manager Sydney Water Date: 5/3/2026

Decision Statement

The main potential construction environmental impacts of the proposal include impacts to biodiversity, Aboriginal heritage and from traffic, 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 implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, we do not require an Environmental Impact Statement (EIS), and the proposal may proceed.

Determined by:	[redacted]	Date: 5 March 2026
	Elissa Howie, A/Senior Manager Environment and Heritage, Sydney Water	

1. Introduction

1.1 Context

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

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with Badgerys Creek Wastewater Gravity Carriers proposal and identifies mitigation measures that avoid or minimise potential impacts.

1.2 Proposal background and need

Sydney Water plans to build a new wastewater network in Badgerys Creek, NSW to meet the growing demand for servicing in the Western Sydney Aerotropolis Growth Area (WSAGA). This proposal covers the wastewater gravity carrier that spans along and adjacent to Badgerys Creek Road for approximately 2.9 km.

Construction is expected to start in mid-2026 and take approximately 18 months. Most of the assets will be constructed in private property.

Most of the work area has been previously cleared for agricultural purposes. The main construction environmental impacts associated with the proposal are typical construction impacts such as vegetation clearing, soil erosion, potential impacts to Aboriginal heritage, noise and traffic. During operation, the main impacts are associated with air quality and visual amenity. A Construction Environmental Management Plan (CEMP) will be prepared by the contractor to mitigate potential environmental impacts.

The proposal will provide a reliable wastewater network that facilitates further development of the WSAGA, aligned with the principles of ecologically sustainable development.

The wastewater carrier will connect to existing infrastructure at pump station SP1229 and provide essential services for future development zones. The alignment has been carefully selected to minimise environmental impacts while providing efficient hydraulic performance.

The construction methodology will mostly be micro tunnelling in between maintenance holes (MHs). The MHs will serve as launch and retrieval pits for micro tunnelling. Temporary works for the MHs will include excavation, installation of concrete piles, and will need groundwater management. The MH themselves will be Glass Reinforced Plastics (GRP), prefabricated off site and lowered into position. The proposal will include the construction of temporary access tracks to laydown sites, construction compounds and storage along the alignment. **Table 1** summarises the proposal need, objectives and consideration of alternatives.

Table 1 Proposal need, objectives and consideration of alternatives

Aspect	Relevance to proposal
Proposal need	The Badgerys Creek catchment services parts of Badgerys Creek, Dwyer Road, Agri-business, Northern Gateway and Aerotropolis Core precincts as well as the majority of

Aspect	Relevance to proposal
	the proposed Western Sydney Airport (WSA). The Badgerys Creek catchment currently does not have wastewater services available. Sydney Water is proposing to build trunk wastewater services (gravity carriers) upstream of SP1229 to support development of the Badgerys Creek catchment for the growth expected as part of the WSAGA. The wastewater carrier will connect to existing infrastructure and provide essential services for future development zones. The alignment has been carefully selected to minimise environmental impacts while providing efficient hydraulic performance.
Proposal objectives	The proposal objectives are to: • provide new wastewater services for Badgerys Creek catchment area within WSAGA and the future WSA • provide a servicing management option that is supported by the Environment Protection Authority (EPA) and other external stakeholders • reduce the impact of growth on waterways by managing effluent discharge arising from development • ensure the design meets the relevant limits in the Environment Protection Licence 21886 for Upper South Creek wastewater systems • close any knowledge gaps for internal and external project stakeholders to streamline the approvals and project acceptance.
Consideration of alternatives/options	Alternatives and options for the proposal were considered. The long list of options was subject to a high-level fatal flaw analysis to eliminate options that were not considered viable. The outcome of this was a short-list of options that were subject to further detailed technical/operational, environmental, stakeholder and community related investigations, including the development of lifecycle costing and a non-cost assessment to identify the preferred option. The proposal was generally selected as the preferred option as it would achieve the proposal objectives with an acceptable level of risk at the least cost.

1.3 Consideration of Ecologically Sustainable Development

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

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

Principle	Proposal alignment
Precautionary principle – *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. The overall environmental impact of the proposal was minimised by limiting vegetation clearing to certified land as far as practical and repurposing existing recycled water infrastructure, 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 wastewater service in the WSAGA to support new jobs in Western Sydney.
Conservation of biological diversity and ecological integrity – *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. Any impacts to native vegetation outside of certified land will be offset. Trenchless technology will be used to further reduce vegetation impacts.
Improved valuation, pricing and incentive mechanisms–- *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment. This includes repurposing existing recycled water infrastructure.

2. Proposal description

2.1 Proposal details

Table 3 describes the proposal, **Figure 1** shows the location and **Figure 2** gives an overview of the proposal.

Table 3 Description of proposal

Aspect	Detailed description
Proposal description	The proposal includes the construction of wastewater carriers upstream of SP1229. The wastewater carriers would be approximately 2.9 km of DN525 GRP wastewater pipeline, installed via microtunnelling methods. The proposal includes the installation of 25 GRP MHs (DN1800) along the alignment. These MH will be fabricated off-site and installed in excavated shafts, which will also serve as launch and retrieval locations for the microtunnelling operations. Ten MH locations will also have 18 m vent shafts installed.
Location and land ownership	The proposal is located within the Liverpool Local Government Area (LGA). The alignment runs through the Western Sydney region, traversing predominantly large rural lots and developing areas (see **Figure 1**).
Site establishment and access tracks	1. **Site establishment works:** Site establishment would include: o development of construction access routes o installing temporary environmental controls o installing temporary traffic controls o set up of fencing and construction compounds. 2. **Primary Access Roads**: Three existing public roads will serve as main entry points: o Lawson Road - For access to northern section (MH1-MH5) – 235 Lawson Road required to be sealed due to health of owner of the property o Martin Road - For access to central section (MH6-MH13) o Badgerys Creek Road - For access to southern section (MH14-MH25). 3. **Secondary Access Tracks**: Purpose-built access tracks will connect primary roads to MH locations (see **Figure 2**): o standard width: 5 m for main access tracks o reduced width: 4 m in environmentally sensitive areas (near creeks) o reduced width: 3.5 m in Aboriginal heritage areas o construction: 300 mm thick compacted road base over geotextile fabric o drainage: culverts at all low points and waterway crossings. 4. **Special Access Solutions**: o creek proximity areas: enhanced environmental controls at MHs near creeks o Aboriginal heritage areas: narrowed corridors with heritage protection measures

Aspect	Detailed description
	○ tree removal areas: selective clearing with appropriate approvals and controls ○ culvert/pipe crossings: engineered waterway crossings where required.
Ancillary facilities (site compounds)	Three site compounds are proposed: • Main Compound (Compound No.1) - Using the existing SP1229 project compound (no additional storage/laydown area) • Northern Local Compound (Compound No.2) - 13,600 m² located adjacent to the excavated pond near MH10-MH12 • Southern Local Compound (Compound No.3) - 14,900 m² located east of MH16. The main project compound will use the existing SP1229 project compound with direct access from Lawson Road. All materials and equipment will be stored at Northern Local Compound (No.2) and Southern Local Compound (No.3). An alternate site compound has also been assessed to the south of MH25. This will only be used should any of the others not become available for construction. Construction zones with specific dimensions will be established at each MH location to accommodate the full sequence of construction activities, including shaft excavation, support system installation (secant piling or shotcrete), microtunnelling operations, MH installation, and backfilling. **Figure 2** displays the location of the site compounds, including the alternate site compound.
Methodology	Key construction activities are outlined below. 1. **Site establishment and access development**: Development of construction access routes, temporary facilities, and environmental controls. 2. **Shaft excavation and support**: Excavation and implementation of support systems for 25 shafts along the alignment, with depths ranging from 7 to 10 metres. These shafts will serve dual purposes: • housing permanent GRP MHs • providing launch and retrieval points for microtunnelling operations. 3. **Microtunnelling**: Installation of DN525 GRP pipes using slurry Tunnel Boring Machine (TBM) technology with pipe jacking methods. 4. **MH installation and connections**: Placement and connection of prefabricated DN1800 GRP MHs at each shaft location. 5. **Dewatering and water treatment**: Management of groundwater and construction water throughout the project. 6. **Testing and commissioning**: Verification of system performance through hydrostatic testing, CCTV inspections, and related quality controls. 7. **Waste management and disposal**: Management of excavated materials, handling and disposal of slurry waste materials. 8. **Site restoration**: Reinstatement of all disturbed areas to pre-construction conditions (as far as practical) or as agreed to with the landowner.
Commissioning	Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing plant operations. Verification of system

Aspect	Detailed description
	performance through hydrostatic testing, CCTV inspections, and related quality controls would be undertaken.
Restoration	The work sites and all disturbed areas will be restored to the pre-existing condition following construction, in consultation with landowners. Refer to **Section 5.2.3** for further details on native vegetation clearing and offsets.
Materials/ equipment	Construction materials and equipment are proposed to include: • excavator (e.g., 14 T – 30 T) with standard bucket, potentially rock breaker attachment if harder rock is encountered unexpectedly • bulldozer • shotcrete pump (wet or dry mix process as appropriate), hoses, nozzles, trained nozzlemen • SL81 Welded Wire Fabric (WWF) sheets or rolls, fixing pins, tie wire • solid or hollow bar rock bolts (e.g. 25 mm diameter), grout, drill rig, tensioning equipment (if required) • sump pumps, hoses, settlement tanks/water treatment system • ladders, EWP/man cage for personnel access during WWF installation and inspection • survey equipment • tunnel boring machine • pipe jacking system • GRP piping • guidance and control systems.
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 6**.
Proposal timing	Construction is expected to start in mid-2026 and take about 18 months through to Operational Completion with the following key construction milestones: **Months 1-4**: Site establishment, access track construction, environmental controls implementation, and initial shaft excavations. This phase includes obtaining necessary permits, establishing compounds, conducting Aboriginal heritage assessments, and implementing environmental controls, particularly for sensitive creek interface areas. **Months 5-15**: Progressive shaft construction, microtunnelling operations, and MH installations. This phase includes excavation of all 25 shafts, secant pile wall construction for launch shafts, shotcrete installation for reception shafts, microtunnelling of 2.9km of DN525 GRP pipe, and installation of GRP MHs. Multiple crews will work concurrently on different sections, with microtunnelling operations following shaft completion in a staged approach.

Aspect	Detailed description
	Months 16-18: Final connections, testing, commissioning, and site restoration. This phase includes pressure testing of pipeline sections, CCTV inspections, MH internal fit outs, backfilling and surface completion, environmental rehabilitation, and final handover documentation. The timeline includes allowances for seasonal weather variations, potential ground condition challenges, and the proposals environmental and heritage constraints based on similar project experience.
Operational requirements	There are no planned operational activities. Routine maintenance would occur as required.

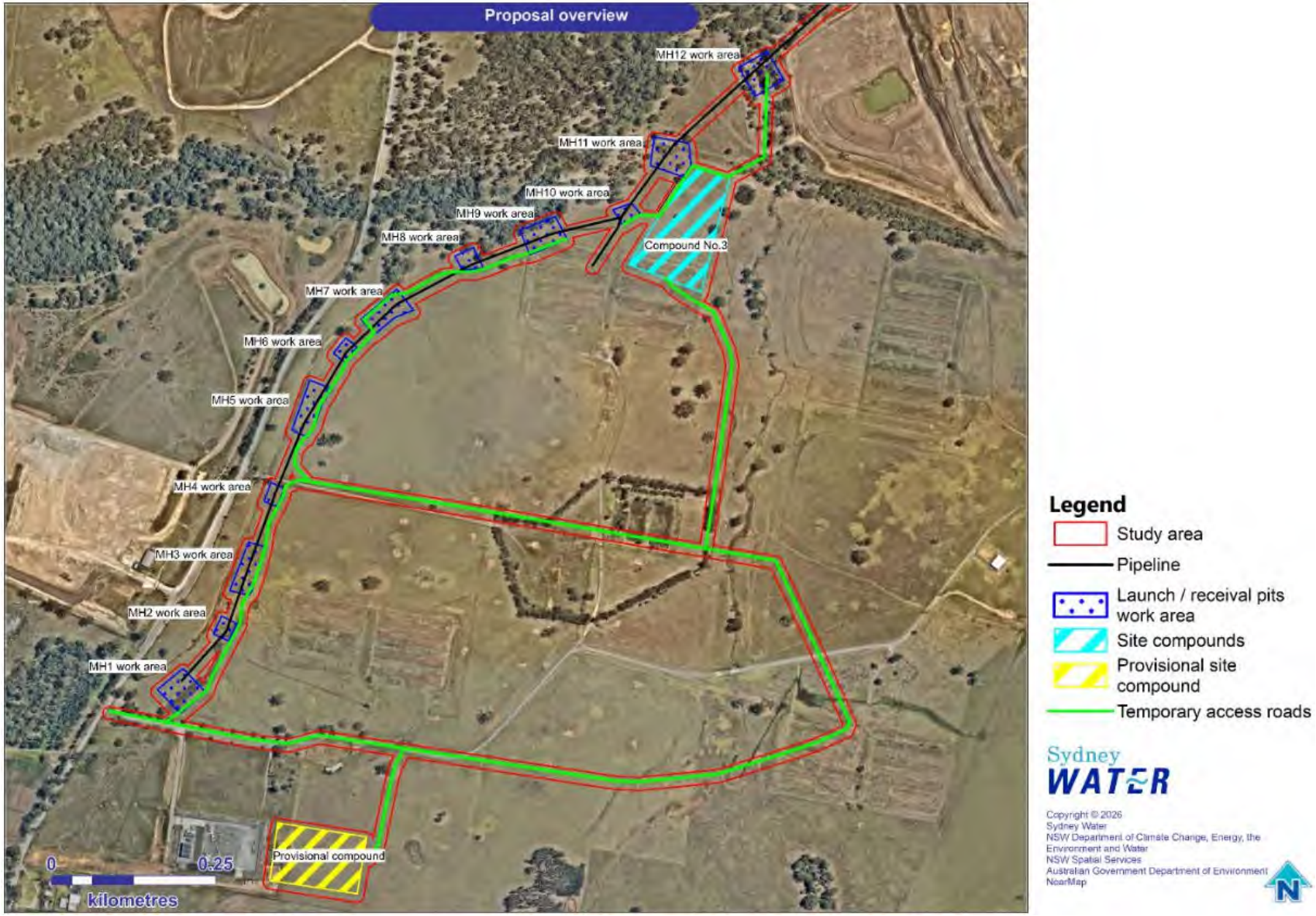
Figure 1 Location of the proposal



Figure 2 Proposal overview




Proposal overview
MH21 work area
MH20 work area
MH19 work area
MH18 work area
MH17 work area
MH16 work area
MH15 work area
MH14 work area
MH13 work area
Compound No.2
0
0.25
kilometres
Legend
Study area
Pipeline
Launch / receival pits work area
Site compounds
Provisional site compound
Temporary access roads
Sydney WATER
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NSW Department of Climate Change, Energy, the Environment and Water
NSW Spatial Services
Australian Government Department of Environment
NearMap


Proposal overview
MH12 work area
MH11 work area
MH10 work area
MH9 work area
MH8 work area
Compound No.3
MH7 work area
MH6 work area
MH5 work area
MH4 work area
MH3 work area
MH2 work area
MH1 work area
Provisional compound
0
0.25
kilometres
Legend
Study area
Pipeline
Launch / receival pits work area
Site compounds
Provisional site compound
Temporary access roads
Sydney WATER
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NSW Department of Climate Change, Energy, the Environment and Water
NSW Spatial Services
Australian Government Department of Environment
NearMap
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2.2 Study Area and changes to the scope of work

The proposal shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The final proposal may change based on detailed design and construction planning. The general mitigation measures outline when changes to the proposal trigger supplementary environmental impact assessment. If required, further assessment must be prepared in accordance with SWEMS0019.

The Study Area has been defined as an area with a 10 m buffer around all the impact areas to allow for design flexibility.

3. Consultation

3.1 Community and stakeholder consultation – general

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

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

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

The nature, scale and extent of the proposal's potential 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. To date, consultation with landowners has included that to facilitate access for site investigations, informing particular properties of the results of the site investigations and on easements required to enable the proposal.

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).

Sydney Water has consulted with a range of stakeholders to date about the proposal, including:

- local Council
- regular discussions with developers and landowners directly impacted by the proposal
- working with landowners to facilitate access for site investigations
- ongoing phone and emails between Sydney Water and landowners.

Further consultation will be undertaken with Council and property owners regarding construction activities, access and easements required for the proposal. The broader community will also be informed of the proposed infrastructure and construction activities.

An Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposal has been prepared (refer to Section 5.2.4). The draft ACHAR was sent to 27 Registered Aboriginal parties (RAPs) for review and comment. All RAPs were provided a minimum 28 day review period. Responses were received from three RAPs. Gandangara Local Aboriginal Land Council stated that they agreed with the outcomes and recommendations of the ACHAR (letter dated 17/12/2025). They agreed "that survey and test excavation work undertaken is sufficient to conclude that further archaeological work is unlikely to provide outcome of further significant scientific or cultural value" (letter dated 17/12/2025). They advised that they would prefer that the artefacts recovered during the project be stored in a keeping place that they are developing (letter dated 17/12/2025).

Guntawang Aboriginal Resources Inc stated that in “relation to the long term care and control of the artefacts and objects find on site, we would like to see the objects reburied on site in a secure area that will not be distributed in the future” (email received 15/12/2025). They requested that they be invited to the reburial of these objects (email received 15/12/2025).

Kamilaroi Yankuntjatjara Working Group advised that they agreed and supported the recommendations of the draft ACHAR (email received 3/12/2025).

3.2 Consultation required under State Environmental Planning Policies and other legislation

Sydney Water must consult with councils and other authorities for work in sensitive locations or where the work may impact other agencies infrastructure or land (specified in Part 2.2 Division 1 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)).

Consultation is required under s 2.10 (1f) of the TISEPP as the proposal involves excavation of a council managed road. The delivery contractor is required to consult with Liverpool Council in accordance with this clause. Further detail is provided in **Appendix B.**

Sydney Water are required to consult with the Western Parkland City Authority under s 2.15 (2h) of the TISEPP as the proposal has a capital investment value of over $30 million and is in the Western City operational area. The Western Parkland City Authority were consulted on the entirety of Stage 1 of the overarching Badgerys Creek Wastewater Network Project in March 2024 (including this project). No comments have been received.

Consultation with the Department of Planning, Housing and Infrastructure (DPHI) is required under SEPP *(*Precincts – Western Parkland City) (2021) for clearing of native vegetation in non-certified land in the Sydney region growth centres. As the proposal involves clearing 0.11 hectares of Existing Native Vegetation (ENV), the Department was notified on 23 December 2025 via a letter in accordance with s4.25A of this SEPP.

A response was received on 27 January 2026. DPHI noted the objectives of clause 4.25(4) of the *Western Parkland City Precincts SEPP*, particularly the need to minimise vegetation disturbance and reinstate compensatory planting following construction. Sydney Water responded on 29 January 2026, noting that the project is permissible without consent under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, and that clause 4.25(4) does not formally apply.

Notwithstanding this, Sydney Water committed to adopting the intent of the clause by minimising impacts to native vegetation mapped as High Biodiversity Value (HBV) and reinstating vegetation where clearing is required. Additional safeguards have been incorporated into the REF to minimise impacts to HBV native vegetation.

Further information is provided in Section 5.2.3.

The proposal involves dredging and reclamation activities within Key Fish Habitat (KFH) adjacent to Badgerys Creek. Sydney Water is a public authority and as such, notification to the Department of Primary Industries (DPI) Fisheries is also required under s 199 of the *Fisheries Management Act 1994* (FM Act) and

was sent in February 2026. To date no response has been received. However, any comments received will be considered and incorporated into the detailed design of the proposal, where practical.

4. Legislative requirements

4.1 Strategic context

4.1.1 Greater Sydney Region Plan

The Greater Sydney Region Plan – A Metropolis of Three Cities (Greater Sydney Commission, 2018) is a long-term strategic plan for the Greater Sydney area. The plan focuses on developing a more liveable, productive, and sustainable city by dividing the metropolitan area into three interconnected cities: the Western Parkland City, the Central River City, and the Eastern Harbour City.

The Plan sets a 40-year vision (to 2056) and establishes a 20-year plan to manage population growth and change for Greater Sydney in the context of social, economic and environmental matters. It aims to create new jobs, provide more housing choices, improve transport connectivity, and enhance the natural and built environment. The Plan is structured around the following key strategies:

- infrastructure and collaboration – including investing in water and wastewater infrastructure
- liveability
- productivity
- sustainability.

The proposal directly supports the first key strategy area by State government investment through Sydney Water's delivery of critical wastewater infrastructure in future growth areas. It also supports the other key strategies by improving and expanding wastewater servicing to enhance liveability for current and future populations, enables development and greater productivity opportunities, and improves sustainability of the region by connecting existing wastewater infrastructure to an integrated water cycle.

Specifically, the proposal is located within the Western Parkland City which is discussed further below.

4.1.2 Enabling development, home and job growth in the Western Parkland City

In the Western Parkland City, the WSAGA and South West Growth Area (SWGA) are expected to be home to up to 650,000 people by 2056. Some areas of the WSAGA and SWGA are not serviced by Sydney Water and use on-site systems such as septic tanks. The proposed new urban communities require water and wastewater services to be established to ensure the anticipated population growth and economic productivity is realised, and to provide equitable servicing across Sydney's metropolitan areas.

New water and wastewater services also bring considerable opportunity to maintain treated water in the local context, enhance the quality of public spaces, the health of the community and environment, and be a focal point for a new circular economy.

In developing a new wastewater service for the region, the proposal is focused on achieving the best outcome for Western Sydney, and therefore for Greater Sydney more broadly. The proposal will enable growth and development of the region and offer wastewater services that our customers expect.

4.1.3 Local Strategic Planning Statements

The proposal is located within the LGA of Liverpool City Council which has prepared a Local Strategic Planning Statement (LSPS) in accordance with section 3.9 of the EP&A Act. The LSPS guides land use planning in the LGA, taking into consideration economic, social, and environmental factors.

The LSPS outlines a vision for the future of land use for their LGA, focusing on sustainability, liveability, and growth. The statement identifies key directions, such as promoting sustainable development, enhancing community infrastructure, supporting economic development, and preserving the natural environment. It aims to provide a framework for future development and guide decision-making to ensure continued growth and prosperity while preserving the area's unique character and natural assets.

Liverpool LSPS contains a number of planning priorities that relate to infrastructure and aligning with growth while being sustainable and protecting the natural environment. In particular, planning priority 15 aims for Liverpool to be a green, resilient and water-sensitive city. The proposal will support this priority, by providing reliable wastewater infrastructure.

Additionally, given the majority of the proposal will be located below ground, it is unlikely to affect council's ability to implement any potential future land use plans.

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

Table 4 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126(6) of the TISEPP permits development by or on behalf of a public authority for sewage reticulation systems without consent on any land in the *prescribed circumstances*. As Sydney Water is a public authority, the proposal is permissible without consent.
State Environmental Planning Policy (Precincts—Western Parkland City) 2021 (Western Parkland City SEPP)	The Western Parkland City SEPP coordinates the release of land for residential, employment and other urban development, in the Western Parkland City area. Chapter 3 applies to growth centres, including the SWGA. **Sydney region growth centres (Chapter 3)** Chapter 3 of this SEPP aims to co-ordinate the release of land for residential, employment and other urban development in the South West Growth Centre, the Wilton Growth Area and the Greater Macarthur Growth Area.

Environmental Planning Instrument	Relevance to proposal
	The proposal is subject to the conditions of the Biodiversity Certification Order (BCO) of the former *State Environmental Planning Policy (Sydney Region Growth Centres) 2006.* The BCO establishes certified areas in which proponents of developments do not need to undertake assessment of impacts on threatened ecological communities, species and populations, or their habitats that would normally be required by the *Environmental Planning and Assessment Act 1979.* The BCO also identifies non-certified areas where impacts to existing native vegetation (ENV) (as defined in the BCO) must be assessed and offset in accordance with the BCO. Most of the proposal falls within the South West Growth Centre on 'certified land' (see **Figure 4**). The remainder falls within areas not subject to the BCO. Section 3.24 of the SEPP requires that native vegetation on non-certified land must not be cleared for the purpose of public utility undertakings unless notice has been given to DPE and consideration given to any response received within 21 days of the notice. DPHI was notified for the proposed clearing of native vegetation on non-certified land see Section 3). **Western Sydney Aerotropolis (Chapter 4)** The proposal is located within land to which Chapter 4 of this SEPP applies. The proposal is located on land zoned as Environment and Recreation (ENZ) and Enterprise (ENT). However, provisions of the TISEPP still apply. Therefore, the proposal can be undertaken without development consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** 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 2021 (Chapter 4)** Chapter 4 of this SEPP applies to the local government area of Liverpool, however subsection 4.4(3) provides that the Chapter does not apply to land on which biodiversity certification is in force. 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). Further, the majority of the proposal is within the Liverpool local government area on land on which a biodiversity certification is in force, so this Chapter does not apply to those areas. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Hawkesbury-Nepean Catchment, a regulated catchment area. Section 5 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minimal and meet the requirements of part 6.2 of the SEPP.

Environmental Planning Instrument	Relevance to proposal
	Strategic conservation planning (Chapter 13) The proposal is in the Cumberland Plain Conservation Plan (CPCP) area, within the South West Growth Area. The CPCP establishes several land categories, and planning controls apply to land identified as: • avoided land • certified-urban capable land, or • land in a strategic conservation area. As the proposal is not within a CPCP land category, there is no further consideration of the CPCP required.
Cumberland Plain Conservation Plan Guidelines for Infrastructure Development 2022 (CPCP)	As above, the proposal is located on land mapped within the CPCP. However, the proposal area is subject to a BCO and is not subject to a land classification under the CPCP.

Table 5 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations Act 1997 (POEO Act)	The proposals wastewater flow would be transferred to Upper South Creek Advanced Water Recycling Centre (AWRC) and is consistent with an existing activity under EPL 21886 for Upper South Creek Networks. Temporary relaxation of the EPL 21886 is not required during construction/ commissioning. A variation to EPL 21886 is not required for operation.	EPL 21886	N/A
Biodiversity Conservation Act 2016 (BC Act)	The BC Act lists threatened species, populations and ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened species, or their habitats. If any of these could be impacted by the proposal, an assessment of significance 'Test of Significance' (ToS) that addresses the requirements of section 7.3 of the BC Act must be completed to determine the significance of the impact. The ToS concluded that the proposal is unlikely to result in a significant impact to any threatened species, threatened ecological communities or their habitats.	REF, ToS	Pre-construction, Sydney Water
National Parks and Wildlife Act 1974 (NPW Act)	This Act provides for the establishment, preservation, and management of areas such as national parks, state conservation areas, nature reserves, and Aboriginal areas. This Act also	Aboriginal Heritage Impact Permit (AHIP)	Post REF, pre-construction, Sydney Water (for AHIP)

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	provides for the protection of Aboriginal heritage, including Aboriginal objects and places. The proposal in not within National Parks, State Conservation areas or nature reserves. An Aboriginal Heritage Impact Permit is required for the works as they will disturb known areas of Aboriginal heritage or directly impact Aboriginal items.		
Heritage Act 1977	The Heritage Act provides for the conservation of environmental heritage in NSW. The proposal is not located within the curtilage or in the vicinity of any heritage items.	N/A	N/A
Fisheries Management (FM) Act 1994	The proposal would involve works within areas of mapped key fish habitat adjacent to Badgerys Creek. Under s.199 of the FM Act a public authority can carry out dredging or reclamation work without a permit provided that: • the Minister is given written notice of the proposed work • consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority). In accordance with Section 199 of the FM Act, the proposal has been referred to DPI Fisheries for comment (refer to Section 3.2).	s.199 consultation with DPI Fisheries Part 7 Permit	Pre-construction, Sydney Water
Water Act 1912/ Water Management Act 2000 (WM Act)	Under section 91B of the WM Act, Sydney Water is required to obtain a Water Supply Work Approval (WSWA) for the temporary dewatering of groundwater. During construction, the interception of groundwater is anticipated for the deeper section of the proposed work and dewatering would likely be required. A WSWA is therefore required.	WSWA (for >3ML)	Post REF, Sydney Water
Roads Act 1993	This Act regulates works in, on, or over a public road. Approval under Section 138 of this Act is required for carrying out works in, digging up, or disturbing a public road. Access tracks will be connected to public roads. A Road Occupancy Licence (ROL) would be required from the relevant road authority prior to work on public roads and any temporary lane closures during construction of the proposal. These would likely be required where access tracks connect to	Road Occupancy Licence	Pre-construction, Contractor

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Martin Road, Lawson Road and Badgerys Creek Road.		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act provides the framework for Commonwealth environmental approvals. As the majority of the proposal is located within a BCO, it has been assessed under the Sydney Growth Centres Strategic Assessment (NSW Department of Planning (now DPHI), November 2010). This REF finds that the proposal is unlikely to have a significant impact on any matter of national environmental significance, including areas outside the BCO. The Assessment of Significance concluded that the proposal is unlikely to result in a significant impact to any threatened species, threatened ecological communities or their habitats.	N/A	N/A

5. Environmental assessment

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

5.1 Existing environment

The Study Area is within the suburbs of Badgerys Creek and Bradfield, approximately 26 km south-west of the Parramatta CBD. The new pipeline runs in proximity to Badgerys Creek Road, mostly through rural properties, vegetated areas adjacent to Badgerys Creek and agricultural lots. Existing land use is mostly rural/agricultural and extensive past clearing of native vegetation and intensive grazing by cattle is evident across the landscape. The Western Sydney Airport is under construction to the west of the Study Area. The environmental features within and adjacent to the Study Area are detailed in **Section 5.2**.

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment

The topography of the Study Area is relatively flat adjacent to Badgerys Creek, with elevation generally increasing from north to south. The Study Area is mostly underlain by Bringelly Shale of the Wianamatta Group, with alluvial floodplain deposits along the banks of Badgerys Creek. The soil landscapes within the Study Area are predominantly comprised of South Creek soils, with Blacktown soils present along the recycled water main. These soil landscapes have moderate to high erodibility.

The Map of Salinity Potential in Western Sydney (2002) indicates the majority of the site is within an area of high salinity potential with some areas of known salinity at the southern end of the alignment. A search of the Australian Soil Resource Information System (ASRIS) identified that the proposal is not located in an area where Acid Sulfate Soils (ASS) occur. No known contaminated sites were identified from a search of the EPA Contaminated Land Record undertaken on 12 August 2025.

Construction impacts

The proposal will require ground disturbance, removal of vegetation and stockpiling of soil which could result in potential offsite erosion and sedimentation of surrounding land and waterways. The proposal area will be returned as far as practical to its pre-construction topography and drainage pattern following construction.

Construction activities would be staged to minimise the extent of soil disturbance at any given time and disturbed areas would be stabilised and reinstated progressively and as soon as practical. Erosion and sediment controls would be implemented to prevent the migration of sedimentation downstream of the work site, especially where excavating in proximity to creek lines and their tributaries.

Excavation works associated with the proposal would occur in areas with moderate to high potential for salinity. The disturbance of saline soils has the potential to impact the local environment if not managed

appropriately. The erosion and transfer of saline sediments offsite has the potential to alter the water quality of receiving environments which in turn has the potential to impact upon flora and fauna that are sensitive to elevated levels of salinity.

Implementation of the safeguards and mitigation measures outlined in the following section would ensure that impacts associated with improper management or re-use of excavated soils are avoided during construction and impacts from salinity are considered unlikely.

Operational impacts

The works are not proposing to permanently change the surface topography and drainage patterns of the area. The area will be returned to its pre-construction topography and drainage pattern following construction. No topography, geology or soil impacts are anticipated during operation.

Mitigation measures

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

Table 6 Environmental mitigation measures — topography, geology and soils

Mitigation measures
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
The following controls will be implemented at all compounds and shaft locations: • perimeter silt fencing installed before ground disturbance • stabilised site access with rock pad or rumble grid • diversion drains to direct clean water around work areas • stockpile protection with geofabric covers • weekly inspections and maintenance of all controls • additional controls before forecast rain events.
Minimise ground disturbance and stabilise disturbed areas progressively.
Delivery Contractor to ensure imported material is certified for intended use.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, strong chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative.

Mitigation measures
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.
Manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998).
Adopt appropriate soil salinity mitigation measures in accordance with Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). This may include: • (if relevant) treat existing salinity with gypsum • (if relevant) establish salt tolerant species in existing or potential salinity problem areas after construction • stabilise existing areas of erosion • minimise water use on site • avoid rotation and vertical displacement of the original soil profile • backfill excavations deeper than one metre in the same order or treat or use this material as fill at depths more than one metre from the finished level.

5.2.2 Water and drainage

Existing environment

Surface water

Several creeks and farm dams are present within 100 m of the proposal. Badgerys Creek is to the west of the pipeline. Several MH work areas are adjacent to Badgerys Creek, including MH2-MH8, MH13-15 and MH24. However, work areas are located above top of bank and not within the waterway.

Badgerys Creek is a tributary of South Creek, which in turn is a part of the Hawkesbury-Nepean catchment. Several smaller tributaries of the creek appear to have been slightly altered to serve as farm dams for the private rural properties. Many drainage lines are present throughout the Study Area. Existing water quality would be influenced by runoff from nearby roads and nearby agricultural land (i.e., pesticides and herbicides) via drainage lines and stormwater.

The proposal MH work areas are partially located in the 1 in 100 Annual Exceedance Probability (AEP) Flood Extent (Precincts – Western Parkland City SEPP Flood Planning Map – Aerotropolis) adjacent to Badgerys Creek. However, the site compounds are located outside of the 1 in 100 AEP Flood Extent.

Groundwater

The proximity to local surface water bodies and areas of higher permeability alluvium is likely to control the direction of groundwater. The topography is expected to be consistent with the regional groundwater flow direction, which flows west toward Badgerys Creek (Sydney Water 2022a). Groundwater flow is unconfined along structures (bedding, joints, faults) in the fractured bedrock and lateral flow occurs through alluvial sediments on slopes and plains. Groundwater systems are local with short flow lengths and are loosely

defined by topographic catchments (eSpade 2023). Badgerys Creek is a designated high potential terrestrial groundwater dependent ecosystem (GDE). Terrestrial GDEs (patches of remnant vegetation) are present within the Study Area.

Arup-Aurecon (2022) and Douglas Partners (2023) provided groundwater depths for wells completed in the bedrock aquifer located along the proposed alignment. Groundwater depth varied along the alignment from one metre Below Ground Level (BGL) to 3 mBGL between MH1 – MH22 and from 1 mBGL to 7 mBGL between MH23 – MH25.

Salinity (µS/cm) recorded in groundwater wells along the proposed alignment ranged from 26,391 to 34,307 µS/cm and averaged 29,912 µS/cm, indicating saline groundwater. A dewatering management plan has been developed for the proposal which describes the contractors plan to manage dewatering of surface water and infiltrated groundwater during construction of the proposal.

Construction impacts

Surface water

Poor site management may lead to potential sedimentation impacts to local waterways including Badgerys Creek. The use of trenchless techniques would mitigate impacts to surface water drainage patterns. All waterways in the Study Area will be under bored to minimise any adverse impacts to water quality.

Construction work would include vegetation removal, disturbance of groundcover, trenching and excavation of soils, the establishment of temporary soil stockpiles and storage of fuels and chemicals. These activities would increase the risk of sediment-laden runoff from erosion of stockpiles and ground disturbance which has the potential to enter waterways and cause turbidity and enhanced sedimentation. This could result in decreased light levels for submerged aquatic vegetation and smothering of benthic organisms.

During periods of high rainfall, there is the risk that higher water levels in the creeks and surrounding flooding may impact on construction. Flooding has the potential to increase soil erosion and siltation from the construction site. Pollutants such as sediment, soil nutrients, construction waste, chemicals and gross pollutants have the potential to enter drainage lines and creek systems, particularly during high rain events, which potentially could result in a decline of water quality. Whilst the MH work areas partially overlap into the 1 in 100 year AEP Flood Level, the MH work areas would be in place for shorter durations as works progress along the alignment. Their temporary nature would allow plant and equipment to be removed should heavy rainfall be forecast, thereby limiting potential for impact to movement of flood waters. The site compounds are located outside the 1 in 100 year AEP Flood Level and it is unlikely that they would impact on the movement of flood waters.

Spillage of fuel during refuelling and leakage of hydraulic or lubricating oil from plant and equipment, rinse water from plant washing and concrete slurries would have the potential to enter drainage lines. This would result in a decline of water quality. Control of construction water run-off is necessary to avoid these potential impacts to surrounding waterways.

Groundwater

Construction impacts associated with dewatering excavations such as aquifer supply loss or issues associated with the management of silt-laden construction water, would be temporary and manageable with standard safeguards. Groundwater is expected to be encountered during construction at 1 mBGL.

Dewatered groundwater is likely to be sediment laden and will be managed to avoid downstream impacts. Based on the WRDT Badgerys Creek Sewer Groundwater Inflow Assessment (Stantec, 2025), it is anticipated that the volume of dewatered groundwater will be 8.22 ML. A Water Supply Work Approval is required for all activities that involve dewatering of groundwater. A Water Supply Work Approval (10WA125384) was granted in February 2026.

The proposed work is in an area that contains terrestrial Groundwater Dependent Ecosystems. The proposed work involves minor vegetation clearing and dewatering of groundwater. Dewatering is being minimised by using trenchless techniques. Further, the impact of dewatering would be temporary as construction moves along the alignment. As such, the viability of these ecosystems is not considered to be at risk such that the water-table of groundwater on which they depend will be altered.

Operational impacts

Surface water

Potential impacts to the hydrology of the Study Area during operation of the proposal may arise from:

- accidental discharge of wastewater during commissioning and maintenance activities
- repairs to wastewater pipelines which may involve open trenching to access the pipeline.

Repairs to wastewater infrastructure are anticipated to occur infrequently.

Regarding impacts to water quality during regular operations, the network and pumping station (SP1229) is designed to store a quantity of wastewater during wet weather events, preventing wastewater discharges most of the time. During extreme weather events however, the wastewater storage capacity of the network and pumping station may be exceeded and untreated wastewater has the potential to flow to overflow points. Wastewater system design requires overflow points as a contingency, so wastewater does not back up into houses and businesses if pipeline capacity is exceeded. The new infrastructure has been designed for a maximum of 10 spill events in 10 years with overflow infrastructure only provided at the pumping station (outside the scope of this REF) and not along the pipeline network. The network has been designed to be leak tight which will minimise infiltration of flood waters into the wastewater system.

The proposal would not adversely affect flood behavior given the works would not permanently change surface topography and drainage patterns.

Groundwater

It is not anticipated that there would be any impacts to groundwater during operation.

Mitigation measures

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

Table 7 Environmental mitigation measures — water and drainage

Mitigation measures
Use appropriate controls to avoid potential sedimentation to waterbodies.

Mitigation measures

Minimise the impacts to creeks where creek crossings are required. Prior to construction the methodology of each creek crossing will be assessed on:

- geotechnical and constructability issues (e.g. depth of cover, potential for future scouring)
- size of construction footprint
- construction duration
- ease of reinstatement
- environmental issues (flora and fauna, geomorphology, heritage, water quality and hydrology).

The decision and reasons for the decision would be documented by the contractor in consultation with the Sydney Water Environmental Representative.

Bund open maintenance holes if risk of wastewater spills.

Store potential contaminants on robust waterproof membrane, away from drainage lines.

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

Locate portable site amenities away from watercourses or drainage lines.

Formulate groundwater protection measures during detailed design following geotechnical investigations (e.g. protect water quality; minimise aquifer extraction volumes, determine if license required under *Water Management Act 2000*).

Discharge all water in accordance with Sydney Water's Discharge Protocols Standard Operating Procedure (D0001667), including erosion controls, discharge rate, dechlorination, monitoring. Re-use potable water where possible.

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

Record volume of dewatering to determine if an aquifer interference permit is required.

Dewater excavations in accordance with the Delivery Management Guidance Standard 9.1 Excavation Dewatering.

If wastewater bypass is required:

- pressure test hoses before, and monitor during bypass
- monitor wastewater flows to ensure critical flows are not reached
- stop bypass if leaks occur
- bund access chambers
- contain wastewater spills and pump back to wastewater system or disposal tanker.

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

Mitigation measures
Conduct refueling, fuel decanting and vehicle maintenance in compounds where possible. If field refueling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Conduct any equipment wash down within a designated washout area.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.
Prepare management plan to avoid impacts from drilling, including: • contain and monitor drilling fluids at entry/exit points • identify and manage frac-outs • re-use and/or disposal of drilling fluids.

5.2.3 Flora and fauna

Sydney Water engaged RPS AAP Consulting Pty Ltd (RPS) to prepare a Biodiversity Assessment Report (BAR) for the proposal. The BAR included a desktop review of relevant information and field survey to ground-truth vegetation mapping and identify key ecological values within the impact area which was undertaken on the 28 and 29 July, and 27 October, 2025. See **Appendix C** for full report.

Existing environment

Vegetation

The Study Area comprises of mostly exotic vegetation associated on agricultural and residential properties, as well as remnant native vegetation surrounding Badgerys Creek. The majority of land within the proposal is situated within areas covered by the former Sydney Region Growth Centres State Environmental Planning Policy (2006) (SRGC SEPP) (provisions now contained within the Precincts - Western Parkland City State Environmental Planning Policy (2021) (WPC SEPP)) and certified under a Biodiversity Certification Order (BCO). In these areas, the proposal does not require assessment for biodiversity impacts, so the assessment of potential biodiversity impacts has been restricted to land outside the SRGC SEPP.

The NSW State Vegetation Type Map (SVTM) (NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2025) mapped two Plant Community Types (PCT) in the Study Area. Data obtained during the field survey was used to confirm the presence, absence and condition of native PCTs and map their extent within the Study Area.

Two PCTs were confirmed present during the field survey (see **Table 8** and **Figure 3**). As the Study Area is situated mostly within land mapped as existing certified under the BCO, only a portion of the vegetation within the Study Area was required to be assessed as part of the BAR as it is outside of the area subject to the BCO. A total of 0.11 ha of land outside the SRGC SEPP consists of PCT 4025 and 0.01 ha of non-classified vegetation. The remainder of the vegetation conforms to cleared or planted exotic/native vegetation, as it is characterised by a highly grazed pasture with a high proportion of exotic species or landscaped/planted native and or exotic vegetation. These areas generally lacked composition, structure and flora variability.

As per **Table 8**, the two PCTs occurring within the Study Area are associated with Threatened Ecological Communities (TECs). Assessments of these PCTs to determine whether they conform to TECs are provided in **Appendix C.** It concluded that three BC Act listed TECs occur and one EPBC Act TEC occurs within the Study Area.

Table 8 TECs withing the Study Area (certified and non-certified land combined)

PCT	Listing	Associated TEC	Status	Conforms to listing
PCT 4025 – Cumberland Red Gum Riverland Flatforest	BC Act	Elderslie Banksia Scrub Forest	Critically Endangered	No
		River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Yes
	EPBC Act	Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion	Critically Endangered	No
		River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Yes
PCT 3320 – Cumberland Shale Plains Woodland	BC Act	Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	Yes
		Shale Gravel Transition Forest in the Sydney Basin Bioregion	Endangered	Yes
	EPBC Act	Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	No

Flora

A total of 49 flora species were recorded within the Study Area, 26 of which are exotic. No threatened flora species were identified within the Study Area. However, suitable habitat for eight potentially occurring threatened flora species was identified. Full species lists can be found in **Appendix C**.

Fauna

A habitat assessment was completed to assess the likelihood of occurrence of aquatic and terrestrial threatened or migratory species identified as potentially occurring within the locality. Based on the likelihood of occurrence assessment (**Appendix C**) and field surveys, 12 listed species (of which 11 are listed under the BC Act and two under the EPBC Act) were considered to have a moderate or higher likelihood of occurrence within the Study Area. As the Study Area supports suitable habitat and potential breeding habitat (see **Table 9**), it was considered necessary to apply the precautionary approach for the 12 threatened fauna species with a known or moderate likelihood of potentially occurring within the Study Area based on suitable habitat and tests of significance with undertaken for each (**Appendix C**).

One threatened fauna species was identified within the Study Area during field surveys (opportunistic surveys and random meanders). At least three individuals of Cumberland Plain Land Snail (*Meridolum corneovirens*) were recorded. This species is listed as Endangered (BC Act).

Potential habitat for threatened species identified during the field survey is presented in **Table 9**.

Table 9 Summary of fauna habitat within the Study Area

Habitat Feature	Extent and condition within the Study Area
Hollow-bearing trees	Three trees bearing potential hollows (25 cm in diameter) were identified within the Study Area. Note these were distributed within certified land.
Dead wood including stags and logs	One stag was identified.
Leaf litter	Present throughout the riparian corridor. Leaf litter amongst native/non-native vegetation (e.g., weed thickets), provides sheltering habitat and food resources for reptiles and insects.
Weed thickets	Present. Weed thickets in general, can provide nesting and sheltering habitat for small passerine birds, reptiles and small ground dwelling mammals.
Waterbodies	Badgerys Creek runs through the Study Area which may provide habitat for aquatic species and intermittent habitat for birds. Intact riparian vegetation and dams may provide opportunistic frog habitat and waterbird habitat
Nests and roosts	One stick nest was identified.
Allocasuarina spp	Numerous *Allocasuarina torulosa* (Forest Oak) and *Allocasuarina littoralis* (Black She-Oak) are present within the Study Area which may provide foraging habitat for the Glossy Black Cockatoo.
Microbat roosts	Hollows, fissures and decorticating bark may provide suitable habitat for bat species. There were no caves, tunnels, or disused mine shafts that were observed throughout the Study Area.
Winter-flowering Eucalypts	*Eucalyptus longifolia* (Wollybutt), *Eucalyptus microcorys* (Tallowood), *Eucalyptus tereticornis* (Forest Red Gum).
Snail shells and egg shells	Live Cumberland Plain Land Snails and empty snail shells, indicative of the Cumberland Land Snail, were location within the Study Area. Evidence of breeding pairs (broken egg shells) of unidentified bird species were identified.
Scats and tracks	Various scats were identified within the Study Area including fox or echidna scat, macropod scats and wombat scat.

Figure 3 PCTs and KFH mapping

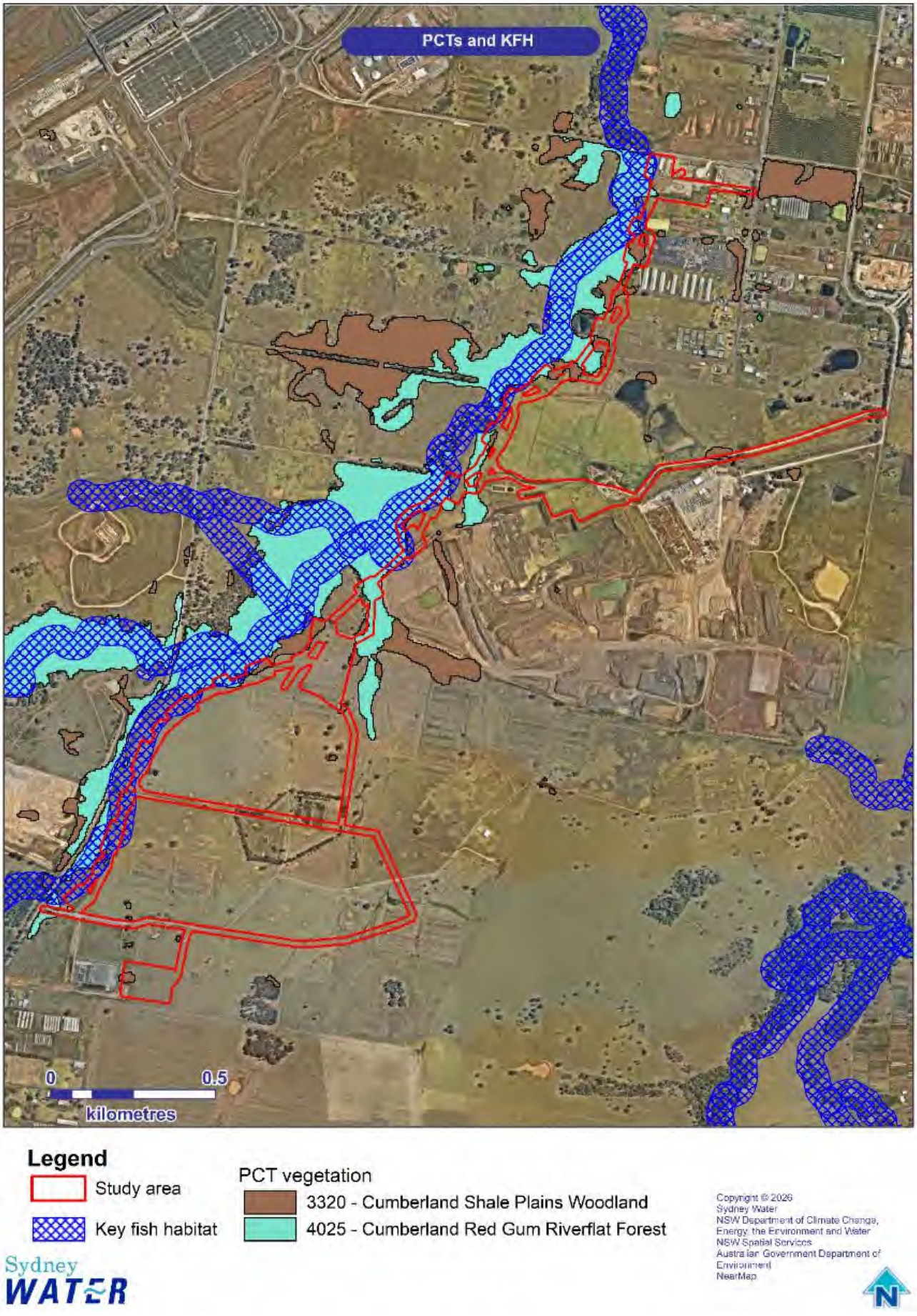
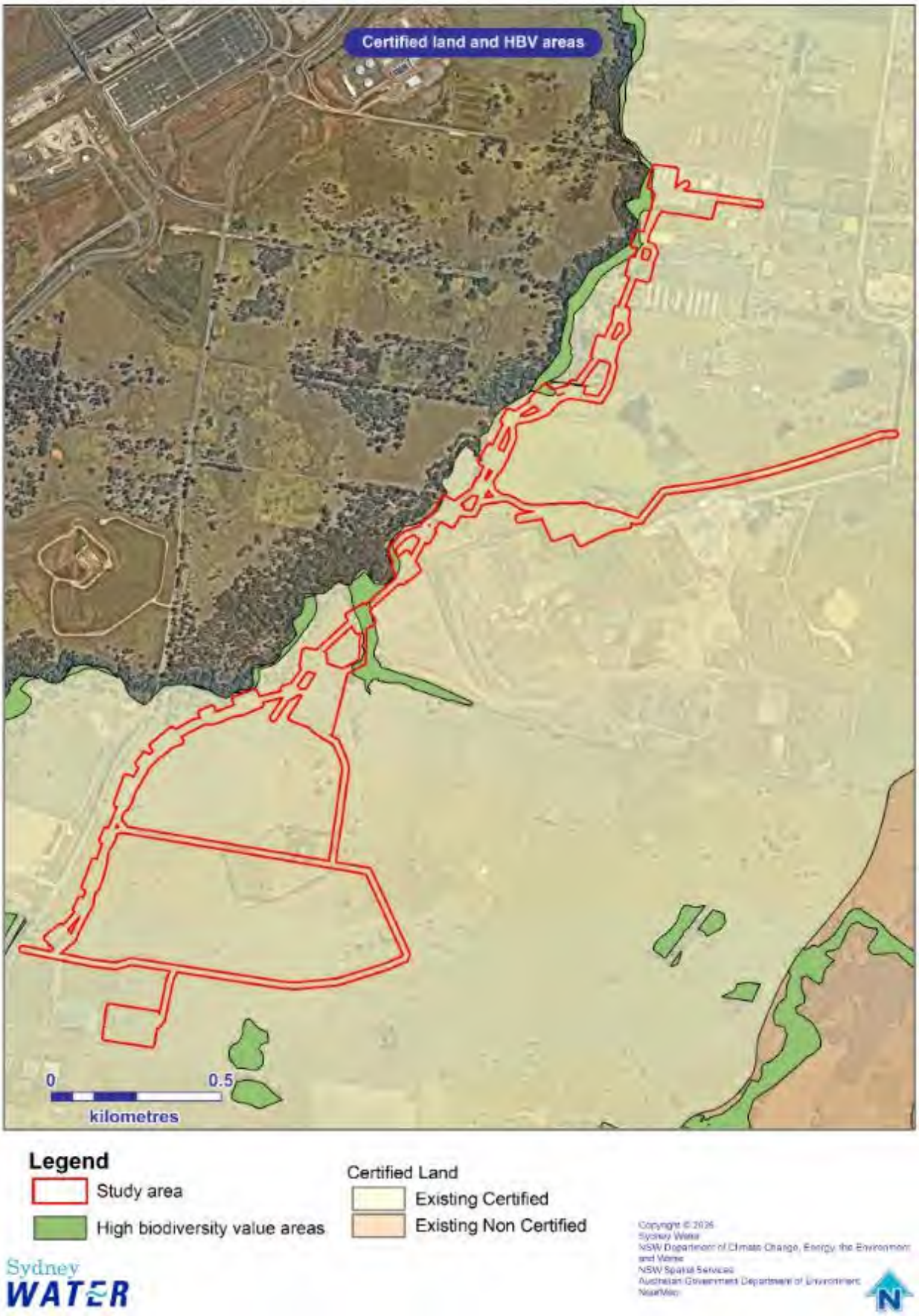


Figure 4 Western Parkland City SEPP mapping



Construction impacts

Vegetation

The proposal would result in the removal of approximately 33.96 ha of native and exotic vegetation, including 1.79 ha of PCT 3320: Cumberland Shale Plains Woodland and 3.67 ha of PCT 4025: Cumberland Red Gum Riverflat Forest (refer to **Table 10**). The majority of this vegetation is certified vegetation. Key native species to potentially be impacted include immature eucalypts such as *Eucalyptus amplifolia* (Cabbage Gum), *Eucalyptus moluccana* (Grey Box), and *Eucalyptus tereticornis* (Forest Red Gum). Other canopy species to be impacted by the proposal include *Allocasuarina torulosa* (Forest Oak), *Allocasuarina littoralis* (Black She-Oak) and *Melaleuca styphelioides* (Prickly-leaved Tea Tree). Native shrub species to be impacted include *Bursaria spinosa* (Native Blackthorn).

Table 10 SVTM and PCTs potential area of impact

PCT	Not within BCO land (ha)	Certified (ha)	Total (ha)
3320: Cumberland Shale Plains Woodland	N/A	1.79	1.79
4025: Cumberland Red Gum Riverflat Forest	0.11	3.56	3.67
0: Not Classified / Exotic	0.01	28.48	28.50
Total	0.11	33.85	33.96

The proposal would result in an upper limit removal of approximately 0.94 ha of Certified ENV on the High Biodiversity Value (HBV) areas map, including 0.01 ha of HBV in areas not subject to BCO certification and 0.92 ha of Certified HBV (difference due to rounding). As per Section 4.25A of Chapter 4 of the WPC SEPP, impacts to ENV on the HBV map requires 21 days notice to DPHI.

Flora and fauna

The Study Area contains habitat that may provide intermittent foraging value for native fauna. Approximately 33.96 ha of such habitat within the Study Area is proposed for removal, including 5.46 ha of native vegetation (comprised of PCT 3320 and 4025) and the remaining of non-classified vegetation. Of this, 5.35 ha is certified land. Four hollow-bearing trees, including one dead stag, one stick nest, eggshells, macropod scats and snail shells (indicative of the Cumberland Plain Land Snail) were identified within the Study Area, indicating presence of breeding and foraging habitat for native species.

The proposal would result in the removal of habitat for Cumberland Plain Land Snail (*Meridolum corneovirens*), comprising of leaf litter and logs within impact area. Habitat features directly impacted by the proposal would be relocated and retained elsewhere in the locality to avoid the complete loss of habitat resources.

Assessments of Significance were conducted for all eight flora and 12 fauna species listed under the BC and EPBC Acts. The Assessments of Significance concluded that the Proposal is unlikely to result in a significant impact to any threatened species or their habitats.

Biodiversity offsets

Sydney Water's Biodiversity Offset Guide (the Guide) provides a framework for implementing biodiversity offsets for projects where statutory offset requirements do not apply. The Guide in terms of vegetation offsets will only be applied to areas of non-certified land. However, offsets will be required for hollow bearing trees.

Vegetation offsets

Offsets for native vegetation removal are calculated based on the impacted area (m²) and the ecological significance of the vegetation community. Multipliers are applied to ensure that an equivalent or improved biodiversity outcome is achieved through revegetation or restoration efforts. The required offset area will be calculated using the relevant multiplier for the specific native vegetation community (PCT).

An offset multiplier of one is applied as the vegetation being removed is under 100 m^2 or is of poor condition, largely due to the high cover of invasive exotic species, which diminishes its ecological integrity and biodiversity value, thereby warranting a lower multiplier than for high-quality PCT or TEC associated vegetation.

The proposed works are expected to result in the removal of approximately 1,066 m^2 of vegetation associated with a native PCT within the Study Area that is non-certified. A summary of vegetation offsets required is in **Table 11**.

Consultation with DPHI identified their preference for offsets to within the HBV mapped area on certified land. Sydney Water will investigate this, noting it would be subject to landowner agreement.

Table 11 Biodiversity offset requirements for vegetation types

Vegetation Type (PCT)	Area Impacted (m²) (non-certified)	Offset multiplier	Required Offset Area (m²)
PCT 4025 - Cumberland Red Gum Riverland Flat forest	1,066	3	3,198
Total offset			**3,198**

Tree offsets

In accordance with the Guide, offsets are required based on the number and type of trees removed with an offset multiplier determined by the type of tree, where those trees do not comprise part of the vegetation offsets listed in Table 11.

Table 12 Offset multipliers required for individual tree and hollow removal

Tree	Offset multiplier
Locally Native	3
Non-locally native	1
Exotic	1

Tree	Offset multiplier
Tree hollow	2 nest boxes or salvaged hollows (for each removed)

The proposed works will result in the removal of native trees associated with the riparian corridor of Badgerys Creek. As these trees are largely located within the buffer zone of construction, the total amount of native species to be removed would be confirmed by an experienced ecologist during delineation of no-go areas.

Hollow Bearing tree (stag) offsets

The proposed works involve the removal of three hollow-bearing trees. As per the Biodiversity Offset Guide, each hollow-bearing tree removed requires an offset multiplier of 2 for replacement habitat structures. This involves the installation of two nest boxes or the salvage and relocation of hollows to provide suitable habitat alternatives for hollow-dependent species.

Table 13 Offset calculations for hollow-bearing trees

Tree description	Number removed	Hollow offset multiplier	Nest boxes / Salvaged hollows required
Hollow-bearing tree	4	2	8

Operational impacts

No operational impacts are anticipated to flora and fauna.

Mitigation measures

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

Table 14 Environmental mitigation measures — flora and fauna

Mitigation measures
Pre-clearing surveys should be conducted by a suitably qualified ecologist within two weeks of clearing commencing to identify any new fauna habitats (e.g., nests). Clearing of such habitat features should be undertaken with the direct supervision of an ecologist to rescue and relocate any resident fauna. Any fauna injured during clearance activities should be transported to a veterinary clinic or taken by a Wires volunteer.
Within the riparian corridors, the total amount of native tree species to be removed would be confirmed by an experienced ecologist during delineation of no-go areas. If vegetation is removed from these areas, Vegetation offsets will apply.
A procedure for unexpected threatened species finds is to be documented in the CEMP prior to commencement. Any fauna injured during clearance activities should be transported to a veterinary clinic or taken by a WIRES Australian Wildlife Rescue volunteer.
Erosion and sediment controls should be installed along riparian corridors external to the area of disturbance to prevent excess sediment and potential contaminants from entering waterways. The controls must be in place, inspected and managed until the works are complete and all exposed erodible materials are stable relevant to each construction stage.

Mitigation measures

All fuels, chemicals and other hazardous materials will be stored in a roofed, fire-protected, and impervious bunded area at least 50 metres from waterways, drainage lines, basins, flood-affected areas or slopes above 10%. Bunding design will comply with relevant Australian Standards and should generally be in accordance with guidelines provided in the EPA Authorised Officers Manual.

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

- Any minor:
- 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).

The Contractor is to minimise native vegetation clearing within mapped HBV to the greatest extent possible including:

- physically delineate mapped HBV onsite
- locate any temporary construction impacts outside HBV as far as practicably possible
- Environment Manager (or similar) documenting actual HBV clearing needed, efforts to minimise clearing, proposed revegetation and submit to Sydney Water prior to any clearing within the HBV area.

Revegetation of any HBV impacts must be undertaken by a suitably qualified bush regeneration contractor and maintained for 18 months (including submission of maintenance reports).

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

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

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

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

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

Mitigation measures

Manage biosecurity in accordance with:

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

Record Pesticides and Herbicides use in accordance with SWEMS00017.

In TOBAN:

Activities involving general purpose hot works (that are not essential/emergency works) require an exemption. Exemption requests are to be submitted to CDResiliencePrograms@sydneywater.com.au or CustomerHub.DutyManager@sydneywater.com.au

If replanting near Sydney Water pipelines refer to 'Which trees can damage wastewater pipes?' link from Sydney Water website.

5.2.4 Heritage

Aboriginal heritage

Existing environment

Sydney Water engaged Keller Nightingale Consulting Pty Ltd (KNC) to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposal in accordance with *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (NSW Code of Practice) (DECCW 2010), and *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010).

The ACHAR included a desktop review and field surveys on multiple dates between October 2022 and August 2025. See **Appendix D** for full report. Refer to Section 3.1 for a summary of consultation undertaken relating to the draft ACHAR.

Desktop Searches

Background research included a review to confirm previously recorded Aboriginal sites and identify areas with potential for new sites within the Study Area. This involved searching the Aboriginal Heritage Information Management System (AHIMS), managed by Heritage NSW under Section 90Q of the NPW Act, for Aboriginal sites and declared Aboriginal places within 500 m of the Study Area.

The AHIMS search found 75 previously recorded Aboriginal archaeological sites within 500 m of the Study Area, mostly open context sites such as artefact scatters and isolated artefacts. Additional features included one grinding groove site, two modified trees, and three areas of potential archaeological deposit. The grinding grooves occur on a sandstone outcrop about 630 m northwest of the Study Area. Within the Study Area itself, 6 Aboriginal sites were identified, with 11 more located within 15 m of its boundary. No declared Aboriginal places were identified within 500 m of the Study Area.

Field Survey

The field survey, conducted in October 2022, August 2025 and October 2025, aimed to identify Aboriginal objects and assess subsurface archaeological potential within the Study Area. While no surface artefacts or

sites were found, the survey identified 10 areas of potential archaeological deposit (PADs), mainly on elevated flats and gentle slopes near Badgerys Creek and its tributaries. These areas were selected based on landform characteristics and proximity to water, despite visible disturbance from dams, quarrying, and drainage works. Previously recorded sites were inspected, but no artefacts were relocated, and high disturbance was noted. Overall, the survey confirmed low surface visibility due to vegetation and infrastructure, but highlighted areas with potential subsurface deposits for further investigation.

The Study Area outside identified sites and PADs has low archaeological potential due to extensive disturbance from past land use and natural processes. Ridge crests and slopes have been heavily modified by bulk earthworks for poultry sheds, quarrying, and drainage works, which disrupted subsurface deposits. The survey results align with regional patterns: areas near reliable water sources, such as elevated flats and gentle slopes, were historically focal points for Aboriginal activity, but modern land use has largely obscured or destroyed evidence. While artefacts have been found on ridges elsewhere, similar landforms in this area are too disturbed to retain intact deposits. Overall, remaining archaeological evidence is limited to less disturbed riparian zones.

Test excavations

Archaeological test excavations were conducted in August and October 2025 at 10 areas identified during the field survey as having potential subsurface deposits. The purpose was to confirm the presence, nature, and extent of archaeological material and assess significance. Excavations followed the NSW Code of Practice and involved systematic test squares along transects.

Test excavations confirmed the presence of dispersed, low-density subsurface deposits dominated by common raw materials and artefact types, consistent with regional patterns of Aboriginal land use near water sources.

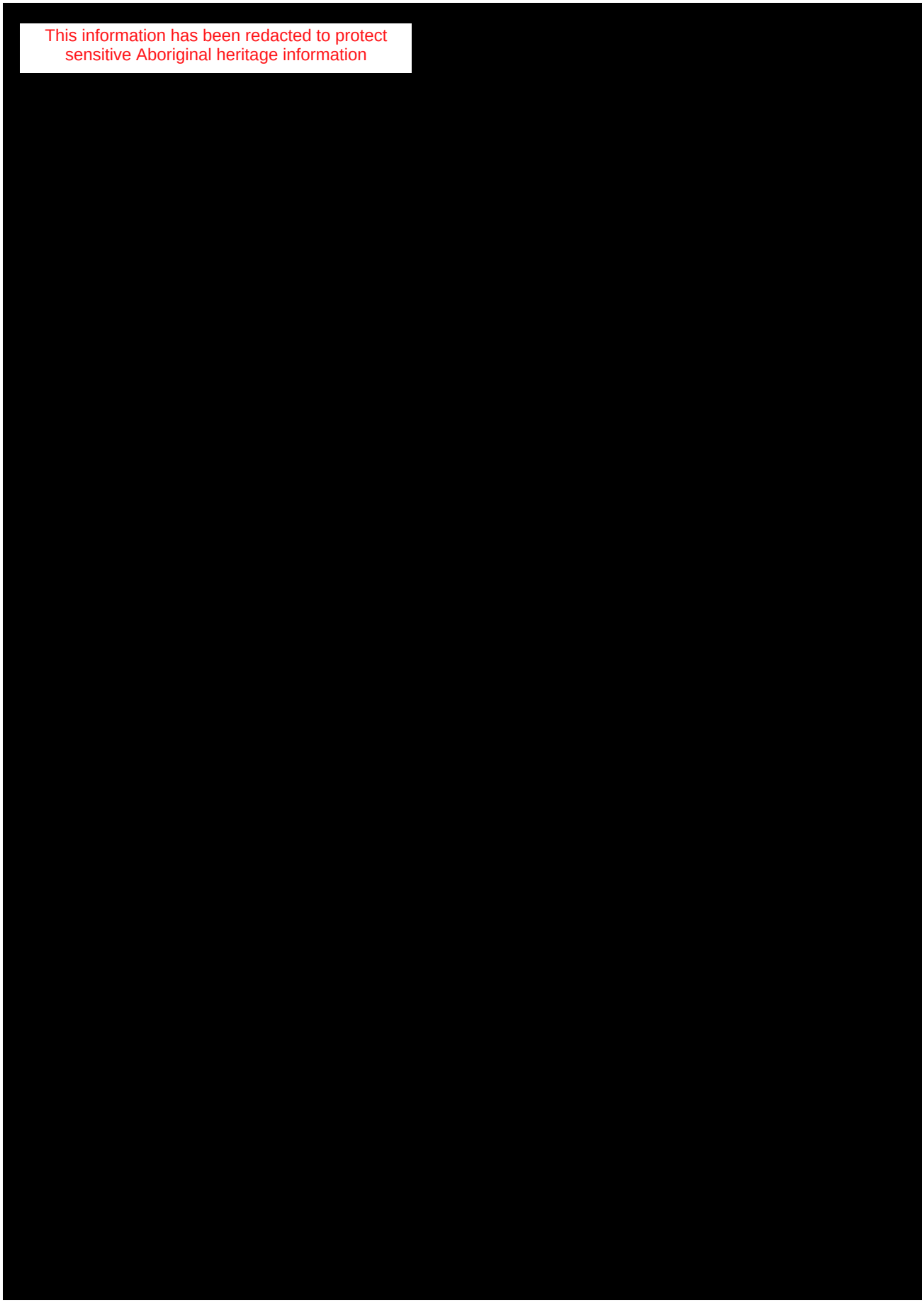
All tested areas indicated limited archaeological significance but confirming association with water-adjacent landforms. Artefacts were found in all but one PAD.

Potential impacts

[redacted]. An AHIP is being sought for Aboriginal objects within the boundaries of the proposed impact area, incorporating the Aboriginal archaeological sites listed in **Appendix D.**

The proposal is unlikely to impact Aboriginal site during operation.

Figure 5 Aboriginal Heritage



Non-Aboriginal heritage

Existing environment

The following heritage database searches were completed on the 08 August 2025 to determine the extent of potential impacts of the proposal on non-Aboriginal heritage:

- NSW State Heritage Inventory
- World Heritage Properties and National Places
- Australian Heritage Database
- Liverpool LEP 2008
- Sydney Water's MapInfo database.

No listed items occur within one kilometre of the proposal.

Potential impacts

The proposal is unlikely to impact non-Aboriginal heritage during either construction or operation.

Mitigation measures

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

Table 15 Environmental mitigation measures — heritage

Mitigation measures
Site protection The boundary of the AHIP area adjacent to the non-impacted parts of the sites will be demarcated with protective fencing and listed in the CEMP. These areas will be identified as "no-go zones" on the CEMP maps and workers inducted as to appropriate protection measures and requirements to comply with conditions in the AHIP.
Surface collection The AHIP should include provision for impact mitigation through surface collection at the impacted Aboriginal archaeological sites within the AHIP area. The surface collections must be completed prior to any activities (including pre-construction activities) which may harm Aboriginal objects at the sites. Surface collection would be undertaken in accordance with the methodology outlined below: • surface artefact collection within the sites would be restricted to the approved AHIP area • the collection of surface artefacts would be undertaken with Aboriginal site officers • photographs and the details of each artefact collected, including attributes and location/context would be recorded during the surface collection • the AHIMS site records would be updated to include the details of the collected surface artefacts.
Collected Aboriginal objects The short term management of collected Aboriginal objects would be as follows: • any Aboriginal objects that are removed from the land by actions authorised by an AHIP, must be moved as soon as practicable to the temporary storage location pending any agreement reached about the long term management of the Aboriginal objects

Mitigation measures
• the temporary storage location: Kelleher Nightingale Consulting Pty Ltd, Suite 505-507, 155 King Street, Sydney NSW 2000 • any Aboriginal objects stored at the temporary storage location must not be further harmed, except in accordance with the conditions of the AHIP. The long term management of collected Aboriginal objects would be determined in consultation with the proposal's registered Aboriginal stakeholders and in accordance with the conditions of the AHIP. • if objects are to be transferred under a Care and Control Agreement to an Aboriginal person or organisation representing Aboriginal people in accordance with Section 85A(1)(c) of the National Parks and Wildlife Act 1974, an application for a Care Agreement must be completed • if reburial is to be undertaken of objects, Requirement 26 "Stone artefact deposition and storage" in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* must be complied with, unless the registered Aboriginal stakeholders agree to an alternative deposition method - if reburial is to take place, registered Aboriginal stakeholders would be notified and given the opportunity to attend, and the reburial recorded on AHIMS.
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Harm to any Aboriginal objects and declared Aboriginal places is only permitted once an AHIP has been granted.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Environmental Representative in accordance with SWEMS0009
All site personnel must be inducted by a heritage specialist before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, processes and measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.

5.2.5 Noise and vibration

Existing environment

The proposal is in a predominantly rural residential area, mixed with industrial/enterprise areas. Existing noise levels in the Study Area are primarily influenced by traffic, noise from nearby construction and development sites, combined with noise from the mixed rural residential environment.

The *Draft Construction Noise Guideline* (DCNG) (EPA, 2020) refers to sensitive receivers, being people or institutions who are of heightened sensitivity to noise pollution. This can include residences, educational facilities, hospitals, aged care facilities, and/or childcare facilities. The nearest type of receivers are residential receivers, the closest being located about 25 m from the proposal. There are about three residential receivers located within 100 m of the proposal. The remaining nearby receivers include industrial properties, which are typically less sensitive to noise and vibration impacts.

Taking into consideration the type of development surrounding the works site, the representative noise environment has been classified as R2 noise area category based on the TfNSW Construction Noise

Estimator Tool (version 13/11/2024). Within this R2 noise area category the rating background level (RBL) for residential receivers is assumed to be:

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

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

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

Potential impacts – construction noise

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

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

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

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

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

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

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

Inputs to the noise estimator include:

- as a conservative approach:

- the closest sensitive receivers to the proposal were assessed as having line of sight, to predict worst-case noise impacts
- the alignment with a 20m buffer was used as the Study Area

- noisiest equipment during day work: bulldozer (CAT D10).

Predicted worst-case noise impacts during day works are shown below in **Table 16** and **Figure 6**.

Table 16 Predicted noise impacts to sensitive receivers with line of sight during day work

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

Predicted worst-case noise impacts during night works are shown below in **Table 17** and **Figure 7**.

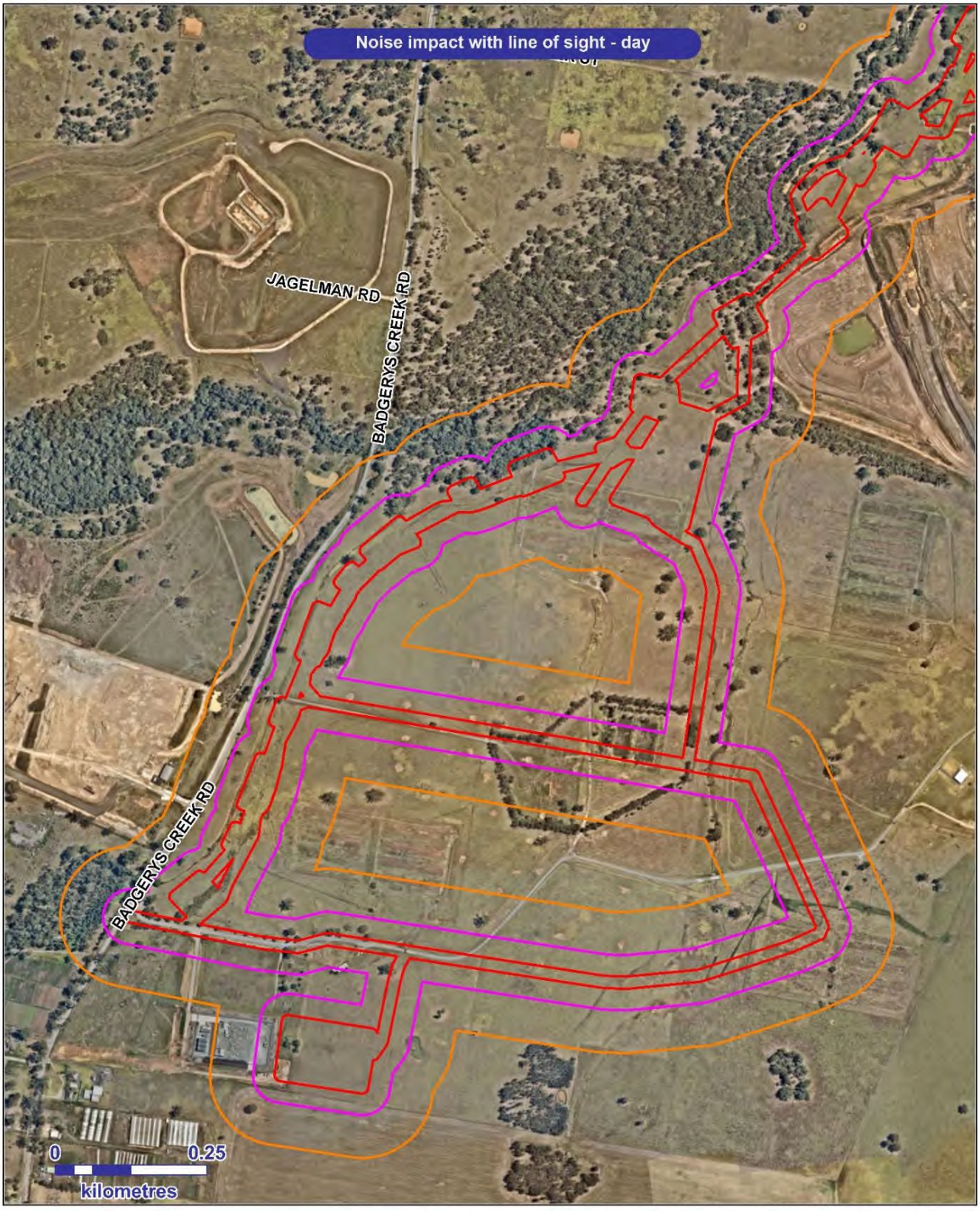
Table 17 Predicted noise impacts to sensitive receivers with line of sight during night work

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

Type of receiver	Distance of impact	Level of impact	Recommended mitigation measures (from noise estimator)
			PC – Phone calls SN – Specific notifications AA – Alternative accommodation
Industrial facilities	35 m	< 5 dB(A) above NML	N – Notification
Places of worship	240 m	< 5 dB(A) above NML	N – Notification

Figure 6 Predicted noise impacts to sensitive receivers with line of sight during day work





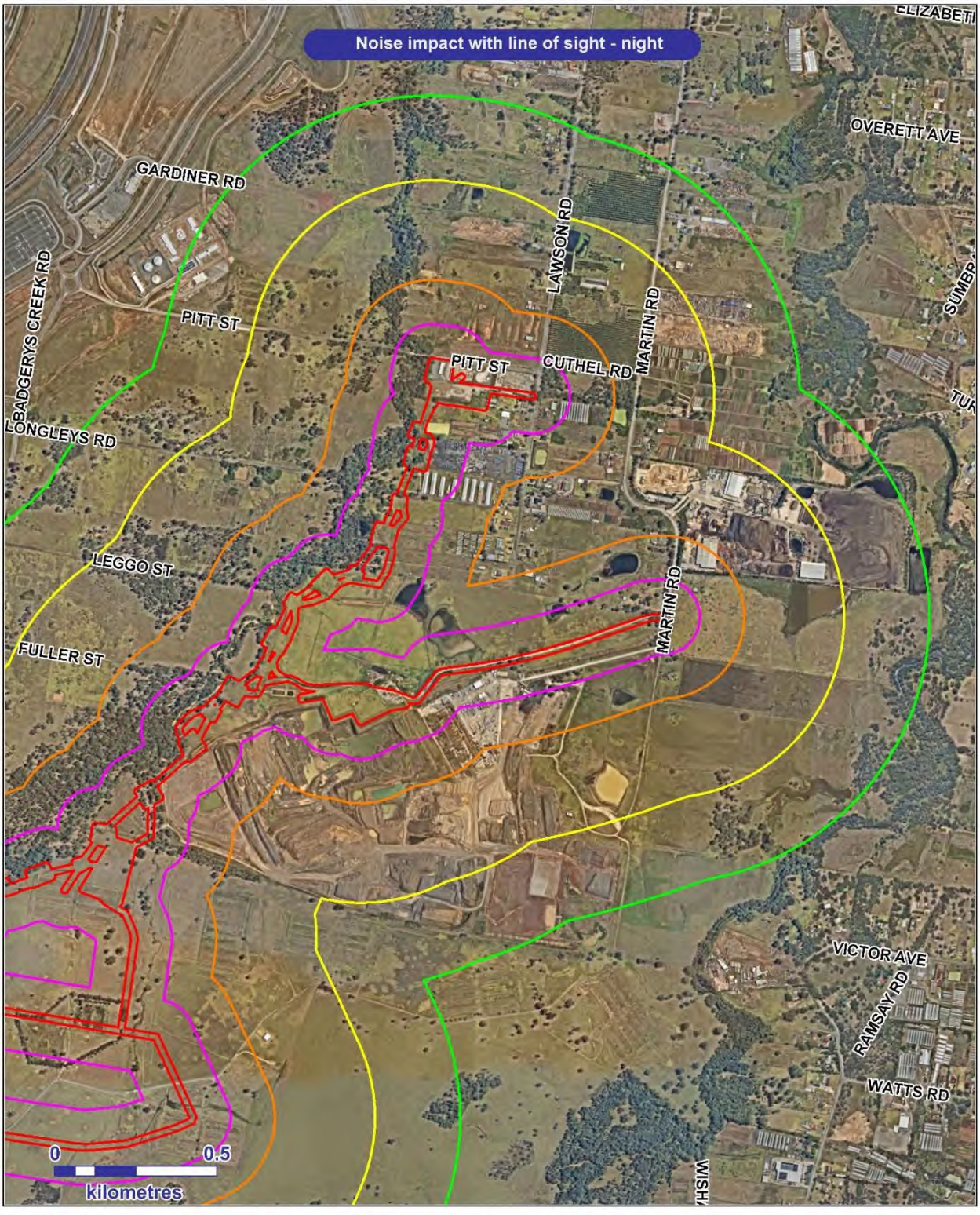
Legend

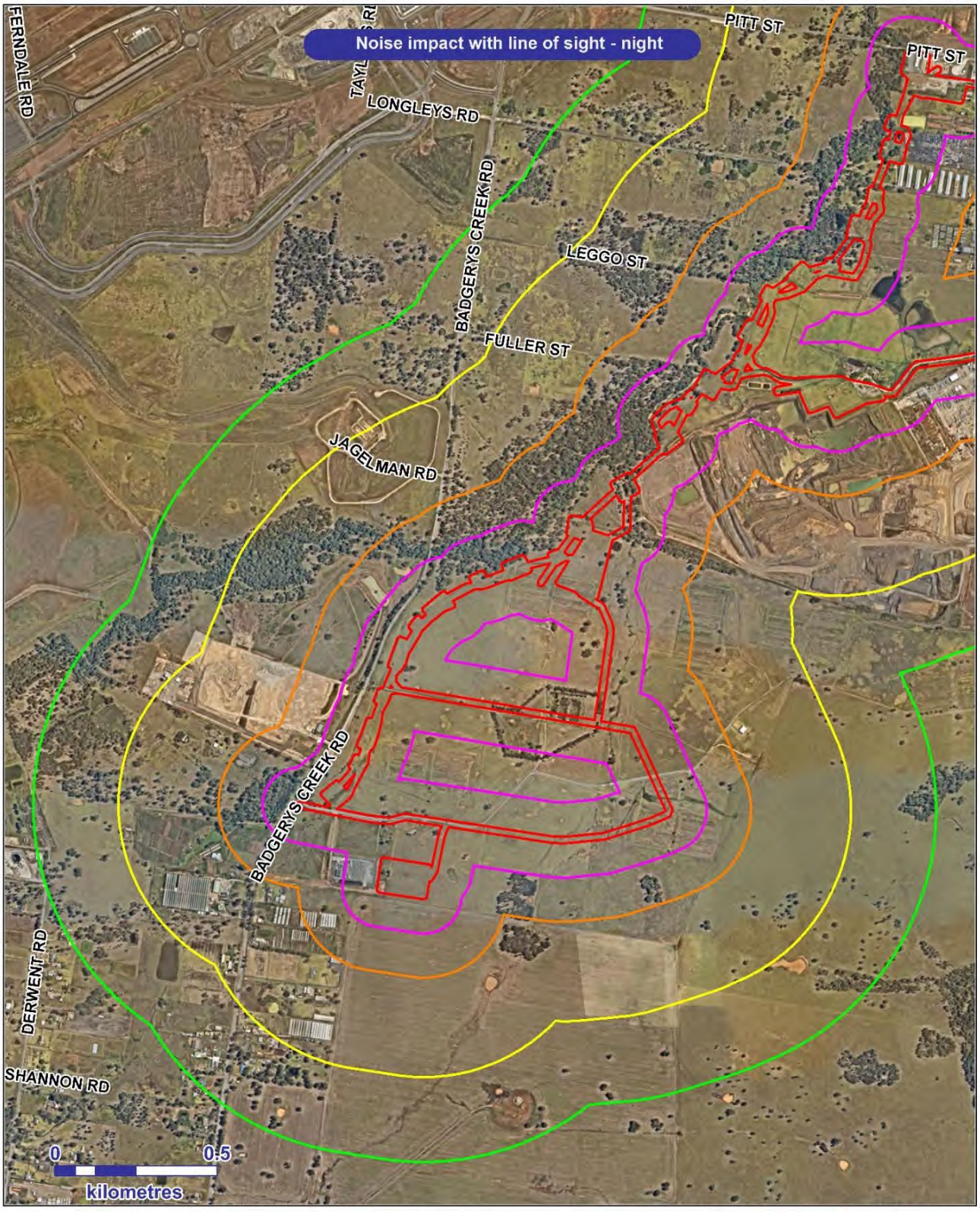
- Study area
- Residential receivers - moderately intrusive 20-30 dB (A) above RBL
- Residential receivers - highly intrusive >30 dB(A) above RBL, and;
- Active recreation, passive recreation, offices, retail outlets, and industrial facilities - highly affected >75 dB(A)

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Australian Government Department of Environment
NearMap

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Figure 7 Predicted noise impacts to sensitive receivers with line of sight during night work





Legend

- Study area
- Residential receivers - noticeable 5-10 dB(A) above RBL
- Residential receivers - clearly audible 10-20 dB(A) above RBL
- Residential receivers - moderately intrusive 20-30 dB(A) above RBL
- Residential receivers - highly intrusive >30 dB(A) above RBL

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NSW Spatial Services
Australian Government Department of Environment
NearMap

Noisier work such as jackhammering will not be required continuously during each shift, or for every shift. It is likely that the noise impact during most shifts would be less than that predicted in this REF.

The works are of short duration in any one location (approximately about 2-3 weeks per location), will progress along the alignment within the working hours outlined above and all reasonable and feasible measures will be implemented to reduce noise impacts during construction. As described above, there are a limited number of residential receivers located in the vicinity of the proposal. The majority of receivers are industrial receivers and less sensitive to noise impacts. Appropriate mitigation measures, as outlined in **Table 18**, would be implemented to minimise intrusive noise impacts to sensitive receivers.

To minimise noise impacts on surrounding areas:

- acoustic barriers (minimum 2.4m high) where required
- equipment fitted with noise suppression devices
- compliance with approved work hours
- noise monitoring at boundary of compounds
- vibration monitoring during tunnelling operations
- regular maintenance of equipment to reduce noise.

Potential impacts – construction vibration

Construction vibration could have three potential impacts:

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

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

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

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

Due to the proposed equipment and location of the site, it is unlikely that vibration may impact structures and human comfort levels. Additionally, the closest residences are outside the minimum working distances for cosmetic damage and human response.

Operational impacts

The proposal will not generate additional vibration during operation. During operation, there will be no changes to background noise.

Mitigation measures

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

Table 18 Environmental mitigation measures — noise and vibration

Mitigation measures
Schedule work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sundays or public holidays (DECC Interim Construction Noise Guideline, 2009). Works will be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056 • Industrial Noise Policy (EPA, 2000).

Incorporate **standard daytime hours noise management safeguards** into the CEMP:

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

Mitigation measures
If works **beyond standard daytime hours are needed**, the contractor's environmental representative would: • justify the need for out of standard daytime work • consider potential noise impacts and: implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and other reasonable and feasible management measures • identify community notification requirements • seek approval from the Sydney Water Project Manager.
If night works are needed, the contractor's environmental representative would: • justify the need for night works • consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and other reasonable and feasible management measures • identify community notification requirements (i.e. for scheduled night work (not emergency works)), • notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work. • seek approval from the Sydney Water Project Manager.
If works on Sundays or public holidays are required, the contractor's environmental representative would: • justify why all other times are not feasible • consider potential noise impacts and implement relevant standard daytime, out of hours and night-time safeguards and other reasonable and feasible management measures • identify community notification requirements • seek approval from the Sydney Water Project Manager.
Conduct a dilapidation survey / asset condition assessment prior to works which have potential to damage existing structures.
Monitor compliance with the recommended vibration levels in DIN 4150-3 1999: Structural Vibration – Part 3; Effects of vibration on structures.

5.2.6 Air and energy

Existing environment

The proposal is in a rural-residential area that will be transformed from lower density and less intensive land uses, buildings and structures to higher order employment-focused technology, advanced manufacturing and industry uses. The main existing sources of air pollutants within the Study Area include emissions from motor vehicles and dust from nearby development.

A search of the National Pollutant Inventory, maintained by DCCEEW, was conducted for the Study Area on 13 August 2025. The search did not identify any pollutant emitting facilities within one kilometre of the Study Area.

Potential sensitive receivers include:

- residents, pedestrians and road users

- industrial warehouse and development sites
- primary production properties.

Construction impacts

There is potential for air quality impacts as a result of the proposal due to:

- dust generated during the excavation and stockpiling of materials
- dust generated by the transport of loose materials and construction vehicles travelling on disturbed/ unsealed access routes
- emissions from construction machinery, equipment and vehicles
- odour from the operation of construction activities including linking to existing wastewater network.

Dust, odour and exhaust gases (air emissions) have the potential to impact on air quality and amenity of nearby sensitive receivers. These potential air quality impacts will be localised and short-term in nature, and unlikely to have a significant impact with the application of the environmental mitigation measures in Table 19.

Operational impacts

The proposal has been designed with appropriate ventilation and odour management systems to avoid any operational odour impacts being experienced by sensitive receivers. The locations of vents will be determined during detailed design.

During operation, wastewater maintenance holes may be opened when maintenance or repair works are required. This may result in odour impacts to nearby receivers which would largely be dependent on wind direction and strength. These impacts would be temporary in nature and appropriate safeguards would be implemented to minimise the potential for adverse impacts wherever possible.

The proposal would require increased energy to operate SP1229. This would marginally increase Sydney Water's total energy use. The proposal would be operated in accordance with energy use procedures that apply to Sydney Water's existing network.

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 low.

Table 19 Environmental mitigation measures — air and energy

Mitigation measures
Use alternatives to fossil fuels where practical and cost-effective.
Track energy use as per SWEMS0015.27.
Minimise potential odours (e.g., minimise the number of open access chambers, close maintenance holes overnight.)
Ensure odour control measures are available and ready to use during the works.

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

5.2.7 Waste and hazardous materials

Existing environment and potential environmental impacts

Our corporate objectives include to be a resource recovery business with an increasing portfolio of circular economy products and services. This includes reducing waste through recycling and re-use and encouraging our suppliers to minimise waste. The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP.

The proposal has the potential to generate the following wastes:

- surplus materials used during site establishment such as safety fencing and barriers which may include plastics and metal. This is expected to be minimal as it is likely that prefabricated structures would be used
- general construction waste such as excess concrete, redundant pieces of pipe/fittings, broken bricks, timber, paper, plastic and metal
- green waste from clearing vegetation including weeds
- domestic waste including food scraps, aluminium cans, glass bottles, plastic and paper containers, and putrescible waste generated by site construction personnel
- wastewater and grey water from temporary amenities
- spoil from trenching and other excavations that is not suitable for backfilling
- contaminated material such as asbestos, if it is encountered
- groundwater that needs to be dewatered from excavations
- wastewater and drilling fluid generated from trenchless construction and the compound sites.

The largest volume of waste generated by construction would be excess spoil from excavation launch and receival pits. Wherever possible, suitable excavated spoil would be re-used on site for backfilling, landscaping and other uses. If spoil is unable to be re-used on-site, opportunities for off-site re-use would be

investigated. If re-use opportunities are unable to be identified, or the spoil is unsuitable for re-use due to its geotechnical or contamination characteristics, spoil would be tested and classified according to the Waste Classification Guidelines (EPA, 2014) and disposed of at an appropriately licensed facility.

Significant volumes of liquid wastes, including oils or fuels are unlikely to be generated during construction. Cutting heads and drilling equipment used for boring would be lubricated using slurry formed from an environmentally benign substance such as bentonite. The drilling fluids will be circulated through the trenchless section and then screened to remove drill cuttings. Any waste from drill cuttings and drilling fluid will be tested, classified, treated and disposed of appropriately.

It is possible that the proposal would intercept groundwater, and it is likely that deeper excavations would need to be dewatered (refer to **Section 5.2.2**). Water that is extracted would be pumped, treated and disposed of in accordance with the POEO Act. This would involve implementing the measures below. As detailed in **Section 5.2.1**, measures would be implemented to manage acid leachate and salinity if the proposal would intercept actual or potential ASS.

It is not expected that the proposal will involve managing hazardous waste or HBM. Should the works uncover asbestos or any other hazardous or contaminated material, it will be managed through an unexpected finds procedure.

Opportunities to reduce, recycle and reuse on this project during construction would be sought with the delivery contractor and documented in the CEMP.

Operational impacts

Operation of the proposal may generate minor volumes of waste during maintenance activities. Any wastewater discharged would be in accordance with Sydney Water's Discharge Protocols Standard Operating Procedure. Any operational wastes generated during maintenance would be managed and disposed of in accordance with Sydney Water's standard operating procedures and disposed of at an appropriately licensed waste disposal or recycling facility.

It is unlikely that the proposal will involve create risks involving waste and hazardous materials during operation.

Mitigation measures

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

Table 20 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise the generation of waste, sort waste streams to maximise reuse/recycling in accordance with the *Waste Avoidance and Resource Recovery Act 2001*.

Mitigation measures
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Securely store all wastes to prevent pollutants from escaping.
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.
If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water's Asbestos Management procedure, WHSMS0064. Contact Contaminated Land and Hazardous Building Materials team for advice.

5.2.8 Traffic and access

Existing environment

The majority of the proposal is on private property and will be accessed via Martin Road, Lawson Road, Badgerys Creek Road and temporary access tracks that will be constructed for the proposal and surrounding development (see **Figure 2**). The local roads required for access are all two-lane bidirectional roads with no footpaths or active transport infrastructure. They do not contain any bus stops or support bus routes.

Construction impacts

The proposal will require light and heavy vehicle movements per day during construction, with up to about 50 vehicles being required on site per day. Traffic movements are likely to be greatest before and after shift start and finish times. The proposal is accessed via existing local roads and informal access tracks through paddocks as described above. Given the existing local roads are likely subject to relatively low traffic volumes it is expected that they will have sufficient capacity to support construction without generating traffic impacts.

The availability of street parking on Lawson Road or Pitt Street will not be impacted during the works although traffic is likely to increase along these roads. Construction personnel would park in designated parking spaces within the proposed site compounds.

Access within private property may be temporarily affected during construction of the pipelines. Properties will only be affected for a relatively short period of time. Some fence lines may need to be temporarily removed for access. Property owners will be informed of any potential loss of access and appropriate measures will be negotiated to either provide an alternative access or reinstate access at the end of the day. Any access ways or fences affected by construction will be reinstated to their original condition. Access tracks will also be required to connect to Martin Road, Lawson Road and Badgerys Creek Road, which will require ROLs. These connections may temporarily require lane closures, however traffic flow would be maintained under traffic control.

There would be no impact to pedestrian facilities, active transport or public transport.

Operational impacts

There will be minimal vehicle movements during operation and there are not any operational impacts anticipated.

Mitigation measures

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

Table 21 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Control Plan (TCP) in consultation with the relevant traffic authority to meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual V4 requirements.
Minimise traffic impacts near residential properties, schools and businesses by consulting with them (eg no major materials deliveries at school drop off or pick up times etc.).
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycles, pram and wheelchair access.
Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.
All construction personnel are to park in designated parking spaces within the construction compounds.
Ensure access maintained around all affected private properties for the duration of the works to ensure residents can continue to move freely within and around their land.

5.2.9 Social and visual

Existing environment

The existing visual environment is representative of a rural-residential area interspersed with areas of development including the WSA. Residential properties are predominantly single or double story detached dwellings on acreage lots. The proposal is currently within a rural-residential area, however future industrial developments are anticipated for the area.

The new gravity carrier main is located within 200 m of several light industrial or agricultural businesses including BorgCivil Australia (plant and machinery hire), JD Concrete (concrete contractor), an Elford Group site, Joe Ducks & Chickens farm, Tony’s farm, Inghams Enterprises breeder farm and a PGH Bricks & Pavers site.

The proposal could potentially impact on social amenity in a variety of ways, some of which have been assessed in other sections of this REF:

- noise and vibration (**Section 5.2.5**)
- air quality (**Section 5.2.6**)
- traffic and access (**Section 5.2.8**).

Construction impacts

Construction activities would be visible from residences located adjacent to the proposal and may temporarily restrict access within private properties. The community may experience temporary visual impacts associated with the establishment of site compounds and worksites during construction. These temporary visual impacts would be mitigated in consultation with stakeholders, such as Council and residents and as per the safeguards listed below.

Following the completion of the works, all items associated with construction would be removed and the site would be restored. Disturbed areas would be rehabilitated to pre-existing condition or better, as far as practicable. However, restoration, such as revegetation, may take a longer period to become established. Restoration of work areas would ensure that the potential for long term adverse visual impacts are minimised. Overall, potential impacts on social and visual amenity are considered minor as the works would be temporary and short-term.

Operational impacts

The works will involve the construction of 10 new, permanent above ground vent stacks. Initially, the vent stacks may result in moderate visual impacts to nearby residents. However, considering the future industrial use of the Badgerys Creek Precinct, these new above ground structures are not expected to significantly impact the visual character of the environment. The pipelines will be entirely underground and will not be visible with the exception of the maintenance holes which would be at ground level.

Additionally, the proposal will have a positive impact on the community by providing a wastewater network that supports the growth of the area and the provision of future housing supply and jobs in Western Sydney.

Mitigation measures

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

Table 22 Environmental mitigation measures — social and visual

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

5.2.10 Cumulative and future trends

Potential environmental impacts

The potential for cumulative impact is high due to the changing nature and extensive infrastructure work planned and currently underway in the area. A search of the DPHI Major Projects register was undertaken on 13 August 2025 and identified several major projects and urban release projects planned for the area as well as the WSA located about 1.5 km to the west of the proposal. Some of these include:

- Aerotropolis urban release precincts including Badgerys Creek Precinct
- IPG Badgerys Creek Road Master Plan – major 184-ha employment precinct
- Badgerys Creek Industry Park – 3-building warehouse/distribution facility
- Badgerys Creek Quarry & Brickworks – ongoing extractive industry/brickworks project.

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

Future trends such as climate change were considered. Factors such as bushfires, coastal hazards, flooding, extreme heat and extreme storm events that could impact the proposal were considered. Across NSW and Australia, the following changes have been predicted (NSW Government, 2025):

- more heatwave events and hot weather for longer time periods
- droughts in NSW will be more severe and last longer
- winter and spring rainfall is likely to decrease across the area, possibly about 15% by 2030
- severe fire weather will increase, mainly in summer and spring
- the number of days of extreme heat (days with temperatures above 40°C) each year is projected to significantly increase
- heatwaves are projected to last longer – by 2030 there will be 3.5 more days on average per year in most regions
- sea levels are projected to rise between 0.21 m to 1.06 m by 2100
- the likelihood of extreme weather events such as heavy rainfall is increasing
- when combined with sea level rise, increases in heavy rainfall are likely to cause more frequent and severe flooding.

Bushfires and flooding have the highest current and future potential to impact the proposal based on the location of the proposal. Storms and floods cause damage to property and infrastructure such as roads and services. Extreme heat and storm events may reduce the functionality of existing assets (e.g. loss of power) and cause them to be damaged more frequently. The proposal has considered these future trends and is unlikely to further exacerbate future trends as the proposed assets are mostly underground, and in existing disturbed areas.

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 23 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Coordination of works with other ongoing or proposed developments would be required to minimise negative impacts or conflicts with construction scheduling.

5.2.11 General environmental management

Table 24 Environmental mitigation measures — general environmental management

Mitigation measures
Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should identify licence, approval and notification requirements. Prior to the start of work, all proposal staff and contractors will be inducted in the CEMP. The CEMP must be readily available on site and include a site plan which shows: • go/ no go areas and boundaries of the work area • location of environmental controls (including erosion and sediment controls, any fences or other measures to protect vegetation or fauna, spill kits, stockpile areas) • location and full extent of any vegetation disturbance.
Should the proposal change from the REF, no further environmental assessment is required provided the change: • remains within the assessment area for the REF and has no net additional environmental impact; or • is outside the assessment area for the REF but: - reduces impacts to biodiversity, heritage or human amenity; or - avoids engineering (for example, geological, topographical) constraints; and - after consultation with any potentially affected landowners and relevant agencies. The contractor must demonstrate in writing how the changes meet these requirements, for approval by Sydney Water's Project Manager in consultation with the environmental and community representatives.
Sydney Water's Project Manager (after consultation with the proposal's environment and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities meet the following principles: • limit proximity to sensitive receivers • no disruption to property access • no impact to known items of non-Aboriginal and Aboriginal heritage • outside high-risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • no impacts to remnant native vegetation or key habitat features • no disturbance to waterways • potential environmental impacts can be managed using the mitigation measures in this REF • no disturbance of contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.
Prepare an Incident Management Plan (IMP) outlining actions and responsibilities during: • predicted/ onset of heavy rain during works • spills

Mitigation measures
• unexpected finds (e.g. heritage and contamination) • other potential incidents relevant to the scope of works. All site personnel should be inducted into the IMP.
To ensure compliance with legislative requirements for incident notification (e.g. Protection of the Environment Operations Act 1997), Sydney Water's employees and contractors will follow SWEMS0009 Responding to incidents with an environmental impact procedure. Attach SWEMS0009 to the CEMP.
Complaints to be managed in accordance with Sydney Water's Complaints Procedure and Community Engagement Plan.
Assign single person with accountability for coordinating communication and information flow across contractors and consultants and provide the contact details of this person in the CEMP.

6. Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of the Badgerys Creek Wastewater Network (Stage 1a Package 2) project. The proposal is required to provide a reliable wastewater network that facilitates further development of the WSAGA, SWGA and WSA.

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

The proposal has been considered in accordance with the principles of ESD. The proposal will result in positive long-term environmental improvements. The proposal will not result in the degradation of the quality of the environment and will not pose a risk to the safety of the environment.

Appendices

Appendix A – Section 171 and 171A checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community from noise and traffic. During operation, the main impacts are associated with air quality and visual amenity . There will be environmental improvements by providing a reliable wastewater service to the local community.
Any transformation of a locality	The proposal would include the construction of 10 permanent vent stacks along the alignment which would have a minor visual impact but not result in the transformation of a locality during operation.
Any environmental impact on the ecosystems of the locality	The proposal will result in minor environmental impacts to ecosystems of the locality as vegetation clearing would be required to facilitate the launch and receival pits, maintenance holes and site compounds. The proposal will lead to environmental improvements by providing a reliable wastewater service to the area, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Most of the new infrastructure will be below the ground. However, the proposal will include 10 permanent above ground vent stacks. The proposal may have a minor impact on the aesthetic value of the locality but considering the future industrial use of the Badgerys Creek Precinct, these new above ground structures are not expected to reduce the, recreational, scientific or other environmental quality or value of the locality.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal may affect the archaeological significance within the study area. An AHIP is being sought for Aboriginal objects within the boundaries of the proposed impact area, incorporating the Aboriginal archaeological sites listed in **Appendix D** .
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will result in the removal of some habitat of protected animals, however it will not result in a significant impact to any of the Threatened Ecological Communities within the Study Area. Safeguards, including biodiversity offsets have been identified to avoid or minimise impacts on habitat areas.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not endanger any species.
Any long-term effects on the environment	The proposal will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern wastewater service for the area.
Any degradation of the quality of the environment	The proposal will maintain the quality of the environment.

Section 171 checklist	REF finding
Any risk to the safety of the environment	The proposal will ensure the safety of the environment.
Any reduction in the range of beneficial uses of the environment	The proposal will maintain the range of beneficial uses of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment. 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	There is potential for cumulative impacts due to the changing nature and extensive infrastructure work planned and currently underway in the area. Cumulative impacts are likely to relate to vegetation clearing, noise and traffic. The degree of impact will be dependent on the design and stage of completion of the other projects. Should overlap of schedules occur, Sydney Water will coordinate with the project manager for these projects, as relevant, to minimise potential cumulative impacts, including to surrounding rural residences and businesses.
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 in the system planning and options selection process.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

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

Section 171A checklist (Development in regulated catchments)	REF finding
BCSEPP – Section 6.6(1) - Water quality and quantity In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway	Mitigation measures will be implemented during construction to ensure that the proposal has a neutral impact on water quality in the Hawkesbury-Nepean Catchment. The proposal will have a neutral ongoing effect on water quality during operation.
(b) whether the development will have an adverse impact on water flow in a natural waterbody	The proposal will not affect water flows in the Hawkesbury-Nepean Catchment during construction or operation.
(c) whether the development will increase the amount of stormwater run-off from a site	The proposal will not affect the amount of stormwater run-off from the site.
(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse	The proposal does not incorporate on-site stormwater retention, infiltration or reuse.
(e) the impact of the development on the level and quality of the water table	The proposal is expected to require some groundwater extraction but the impacts are expected to be temporary and localised. A WSWA has been obtained for the proposal.
(f) the cumulative environmental impact of the development on the regulated catchment	The proposal is required to provide reliable and safe access to a wastewater service. With the implementation of the environmental mitigation measures in Section 5, the potential for cumulative impacts between the proposal and other projects within the catchment is low.
(g) whether the development makes adequate provision to protect the quality and quantity of ground water.	The proposal is expected to require some groundwater extraction but the impacts are expected to be temporary and localised. A WSWA has been obtained for the proposal.
BCSEPP – Section 6.6(2) - Water quality and quantity Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures:	
(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial	Mitigation measures are included in Section 5 to ensure that the proposal will have a neutral or beneficial effect on the water quality of the Hawkesbury-Nepean Catchment during construction. The proposal will have a neutral ongoing effect on water quality during operation.

Section 171A checklist (Development in regulated catchments)	REF finding
(b) the impact on water flow in a natural waterbody will be minimised	The proposal will not modify or adversely affect water flows within the Hawkesbury-Nepean Catchment during construction or operation.
BCSEPP – Section 6.7(1) - Aquatic Ecology In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following:	
(a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation	The proposal requires removal of up to approximately 33.96 ha of native and exotic vegetation, including 1.79 ha of PCT 3320 and 3.67 ha of PCT 4025. Most of this is on certified land. Direct, indirect or cumulative adverse impacts to terrestrial, aquatic or migratory animals or vegetation of the locality have been considered in Section 5.2.3.
(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require: (i) a controlled activity approval under the *Water Management Act 2000*, or (ii) a permit under the *Fisheries Management Act 1994*	The proposal involves the removal of vegetation within the riparian zone. This is assessed in Section 5.2.3. Sydney Water is exempt from the need to obtain a controlled activity approval under the *Water Management Act 2000*. A permit under the FM Act is not required for the proposal.
(a) whether the development will minimise or avoid: (i) the erosion of land abutting a natural waterbody, or (ii) the sedimentation of a natural waterbody	Mitigation measures to minimise and avoid the potential for erosion and sedimentation impacts are included in Section 5.
(b) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area	There are no wetlands close to the proposal.
(c) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology	Mitigation measures to minimise and avoid the potential for erosion and sedimentation impacts are included in Section 5.
(d) if the development site adjoins a natural waterbody, whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody	The proposal is adjacent to Badgerys Creek. The mitigation measures proposed in this REF are considered adequate to ensure a neutral or beneficial effect on water quality.
BCSEPP – Section 6.7(2) - Aquatic Ecology Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:	
(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will	Mitigation measures are included in Section 5 to ensure that the cumulative impacts of the proposal on terrestrial, aquatic or migratory animals or

Section 171A checklist (Development in regulated catchments)	REF finding
be kept to the minimum necessary for the carrying out of the development	vegetation are limited to the minimum extent necessary.
(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves	There are no aquatic reserves close to the proposal.
(c) if a controlled activity approval under the *Water Management Act 2000* or a permit under the *Fisheries Management Act 1994* is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained	Sydney Water is exempt from the need to obtain a controlled activity approval under the *Water Management Act 2000*. A permit under the FM Act is not required for the proposal.
(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised	Mitigation measures to minimise the potential for erosion and sedimentation impacts are included in Section 5.
(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised	There are no wetlands close to the proposal.
BCSEPP – Section 6.8(1) – Flooding	
In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems	The proposal does not involve any change to the existing landform and would not affect flood behaviour.
BCSEPP – Section 6.8(2) – Flooding Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not:	
(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	Mitigation measures to minimise the potential for erosion and sedimentation and potential contamination impacts are included in Section 5.
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems	The proposal does not involve any change to the existing landform and would not affect flood behaviour, including the recession of floodwaters.
BCSEPP – Section 6.9(1) - Recreation and public access In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider:	
(a) the likely impact of the development on recreational land uses in the regulated catchment	Mitigation measures have been included in Section 5 to minimise potential access impacts during construction and access impacts to recreational land are not expected. There would be no impacts during operation.

Section 171A checklist (Development in regulated catchments)	REF finding
(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	The proposal will not have impacts to public access to and around foreshores during construction or operation.
BCSEPP – Section 6.9(2) - Recreation and public access Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following:	
(a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation	The operation of the proposal will not affect existing public access.
(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe	The proposal does not include the establishment of any new or use of existing access points to natural waterbodies.
(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded	Not applicable

Appendix B –Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		x
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		x
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		x
Connect to, and use a substantial volume of water from a council owned water supply system?		x
Require temporary structures on, or enclose, a public space under council's control that will disrupt pedestrian or vehicular traffic that is not minor or inconsequential?		x
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?	x	
Section 2.11, local heritage – consultation with council		
Is the work likely to affect the heritage significance of a local heritage item, or of a heritage conservation area (not also a State heritage item) more than a minor or inconsequential amount?		x
Section 2.12, flood liable land – consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		x
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div.16 (Research/ monitoring stations), (i) Div.20 (Stormwater systems)?		x
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		x
Section 2.15, consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act*? If so, consult with DPE (NPWS).*		x
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? *If so, consult with DPE (NPWS).*		x

TISEPP section	Yes	No
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 – Ecology Assessment

Appendix D – Aboriginal Heritage Assessment