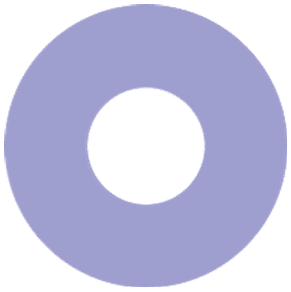
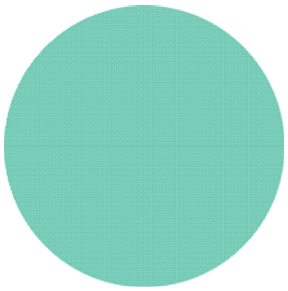
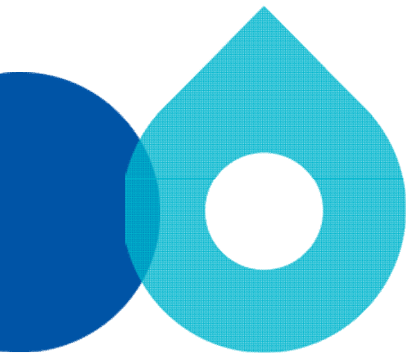
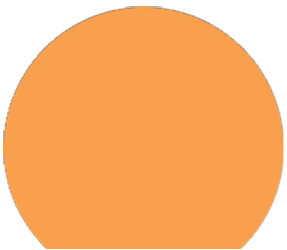
Review of Environmental Factors

Wilton Growth Area – wastewater infrastructure
(May, 2024)

Sydney WATER

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the Wilton growth area – wastewater infrastructure. This 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 to ensure 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.

Decision Statement

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as vegetation clearing, impact to Aboriginal heritage, noise and dust emissions, erosion and sedimentation. During operation, no impacts are expected. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Accordingly, a Species Impact Statement (SIS) 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.

Certification

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

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
[redacted]	[redacted]	[redacted]	[redacted]
Andrea Glass REF author Sydney Water Date: 22/05/2024	Jonathan Dowling Environment Representative Sydney Water Date: 22/05/2024	Tim Day Project Manager Sydney Water Date: 23/05/2024	Murray Johnson Environment and Heritage Manager Sydney Water Date: 23/05/2024

1 Executive summary

Sydney Water proposes to construct and operate wastewater infrastructure to service existing and future residential development in the Wilton Growth Area, in particular development in South East Wilton and North Wilton, and existing residents in Bingara Gorge. The main components of the proposal are:

- two wastewater pumping stations (SP1233 and SP1234)
- gravity pipeline connected to each new pumping station
- pressure pipeline from each pumping station to Bingara Gorge Water Resource Recovery Facility (WRRF).

The pipelines will be constructed using open trenching and trenchless methods to avoid major roads and environmental sensitive areas. Construction is expected to start in late 2024 and take about 2 and a half years to complete.

Sydney Water is engaging with key stakeholders including Wollondilly Shire Council, landowners and residents of adjacent properties.

The main construction impacts are vegetation clearing, impact to Aboriginal heritage, noise and dust emissions, erosion and sedimentation. The proposal has been designed to avoid impacts to native vegetation and to koala habitat. The proposal will result in the clearing of about 0.82 hectares (ha) of native vegetation. One Aboriginal heritage site will be impacted by the proposal. The impact to this site will be undertaken using Landcom's AHIP for residential development in North Wilton. Potential for noise and dust emissions, and erosion and sedimentation impacts will be minimised through the implementation of mitigation measures presented in this document.

A Construction Environmental Management Plan with management plans will be prepared by the contractor to mitigate potential environmental impacts.

A variation to the environment protection licence (EPL) for the Bingara Gorge WRRF is required to include the proposal under the licence. Until the system EPL variation is approved a scheduled development work licence will be required for construction of the proposal.

Given the nature, scale and extent of impacts and implementation of the measures outlined in this document, we consider the proposal is unlikely to have a significant impact on the environment. According to Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) we do not require an environmental impact statement.

2 Introduction

2.1 Context

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

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 Wilton Growth Area – wastewater infrastructure and identifies mitigation measures that avoid or minimise potential impacts.

2.2 Proposal background and need

2.2.1 Proposal background

The Western Parkland City is predicted to increase in population from 740,000 in 2016 to 1.1 million in 2036. Several priority growth corridors were identified in south-west Sydney and Greater Macarthur to support development to cater for this growth. This includes land releases at priority growth centres south of Campbelltown, including Mount Gilead, Menangle Park, and Wilton (Greater Sydney Commission, 2018).

The town of Wilton is located within Wollondilly Shire Council. It is about 80 km south-west of the Sydney Central Business District, and 30 km west of Wollongong. The proposal area includes the following development precincts within the Wilton Growth Area (Figure 2-1):

- Wilton Town Centre
- North Wilton
- South East Wilton
- West Wilton
- Bingara Gorge
- Maldon.

Wilton is expected to grow by 4,700 dwellings by 2026, ultimately reaching 15,000 dwellings in 2047. The current wastewater servicing in the area is via the Bingara Gorge Water Resource Recovery Facility (WRRF).

This proposal involves wastewater servicing for the initial stages of residential development in South East Wilton and North Wilton, and existing residents in Bingara Gorge.

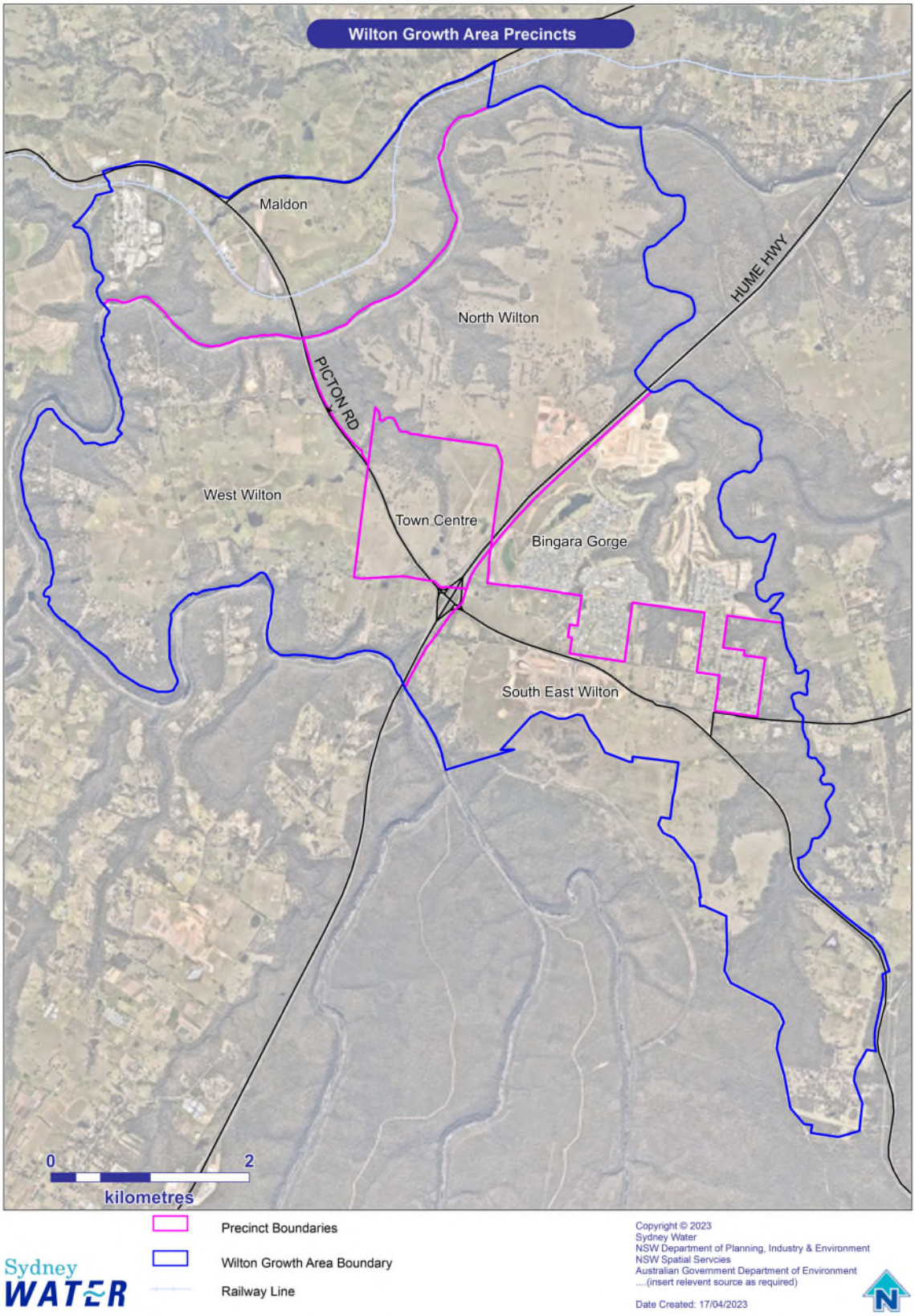


Figure 2-1 Wilton Growth Area Precincts

2.2.2 Proposal need

This proposal is needed to provide wastewater services to support development in the Wilton Growth Area. This includes the growth precincts of South East Wilton, Wilton North, and Bingara Gorge. The proposal would service development in the Wilton Growth Area up to 2031 by installing two wastewater pumping stations and associated gravity and pressure pipelines.

2.2.3 Proposal objectives

The Wilton Growth Area will be developed over the next 20 years. This includes plans for 15,000 homes, new infrastructure, schools, community facilities and open space. The objective of the proposal is for Sydney Water to service the area as it is developed.

2.2.4 Consideration of alternatives/options

The 'do nothing' option was considered during initial planning. However, not installing this new infrastructure would mean that the new development in the Wilton Growth Area would not be connected to the Sydney Water wastewater network. This outcome is inconsistent with the proposal need and objectives, and was not considered further.

Several studies were previously carried out for wastewater servicing of land in Wilton and the surrounding area. Sydney Water reviewed the studies, predicted future development in the Wilton Growth Area and identified the existing infrastructure in the area. Predictions for future growth and development were based on information supplied by the Department of Planning and Environment (DPE) (now the Department of Planning, Housing and Infrastructure) and modelling by Sydney Water. Sydney Water carried out a gap analysis to identify the wastewater and recycled water infrastructure required to service development up to 2047. This included identifying the infrastructure required to service development up to 2025.

Sydney Water developed wastewater options based on the following principles:

- use the existing infrastructure and provide infrastructure to service development to 2025
- minimise environmental impacts, in particular koala habitat and threatened vegetation communities. Most of the construction footprint is positioned within already developed areas, or areas supporting degraded or non-native vegetation
- minimise community impact
- provide value for money for Sydney Water customers.

Concept design was informed by environmental field studies and the design refined to minimise environmental impact (Table 2-1) and identify the preferred option.

Table 2-1 Design refinements

Infrastructure	Environmental constraint/potential impact	Change to reduce environmental impact
Wastewater gravity pipeline on Condell Park Road	• Threatened ecological community (TEC) • Koala habitat • Presence of threatened species – Dusky Wood Swallow. The vegetation along Condell Park Road is located beside the traffic lanes. Constructing a pipeline in the road would likely result in clearing TEC and koala habitat.	A new alignment through properties on Condell Park Road to avoid impacting vegetation was adopted.
Wastewater gravity pipeline on Picton Road	• Aboriginal scarred tree	The alignment was moved to ensure there was no impact to the scar tree. The pipeline would be constructed using trenchless methods.
SP1233	• Land mapped as Strategic Conservation Area under the Cumberland Plain Conservation Plan (DPE, 2022a)	The overflow from SP1233 was aligned to avoid impacting the Strategic Conservation Area.

2.3 Consideration of Ecologically Sustainable Development

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

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

Principle	Consideration in proposal
Precautionary principle – *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 environmental mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. The proposal is essential for the supply of wastewater services to the Wilton Growth Area.
Inter-generational equity - *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposal will help to meet the needs of future generations by providing reliable wastewater services.
Conservation of biological diversity and ecological integrity - *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal will require clearing of native vegetation. However, the proposal was designed to use previously cleared areas such as electricity easements and open paddocks to minimise impact to threatened vegetation communities and koala habitat.
Improved valuation, pricing and incentive mechanism– - *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 project will not result in serious or irreversible environmental damage and environmental mitigation measures have been designed to reduce scientific uncertainty relating to the potential impacts of the project.

3 Proposal description

3.1 Proposal summary and location

Sydney Water needs to provide wastewater services to support development in the Wilton Growth Area. This includes the growth precincts of South East Wilton, Wilton North, and Bingara Gorge.

The proposal is located on private land, Sydney Water land and in Transport for NSW (TfNSW) road corridors. The key private landowners are:

- Risland – South East Wilton
- Landcom – North Wilton
- Metro – Bingara Gorge.

The proposal includes the following scopes of work and new assets described below. The location of the proposal is shown in Figure 3-1 and figures of each scope of work are shown in Figure 3-2 to Figure 3-6.

3.1.1 Wastewater pumping station SP1233 and associated pipelines

Wastewater pumping station SP1233 would be constructed to service development in North Wilton. A new gravity pipeline would collect wastewater from the development and transfer this wastewater to the new pumping station SP1233. The wastewater would then be pumped through a new pressure pipeline to the Bingara WRRF.

The new assets to be installed are:

- Wastewater pumping station SP1233 with 15.7 L/s pumping capacity
- About 1 km of DN225 gravity pipeline to SP1233
- About 2.7 km DN450 pressure pipeline between SP1233 and Bingara Gorge WRRF.

The pumping station would be mostly underground. Above ground infrastructure would include a single storey building, kiosk, and chemical dosing unit. An emergency relief structure would be constructed to an ephemeral drainage line beside the pumping station.

The gravity pipeline would be constructed using microtunnelling. The pressure pipeline would be constructed using open trenching with microtunnelling used for the Hume Highway crossing. Provision for future pipelines would be included in the Hume Highway crossing. The pressure pipeline under the Hume Highway will be installed within a sleeve. Two adjacent pipelines will be drilled, with flanges to be installed at either end for future connections.

3.1.2 Wastewater pumping station SP1234 and associated pipelines

Wastewater pumping station SP1234 would be constructed to service growth within South East Wilton. New gravity pipelines would collect wastewater from the development and transfer this

wastewater to the new pumping station SP1234. The wastewater would then be pumped through a new pressure pipeline to the Bingara WRRF.

The new assets to be installed are:

- Wastewater pumping station SP1234 with 30.4 L/s pumping capacity
- About 1.27 km of DN225 and DN450 gravity pipelines to SP1234
- About 0.45 km DN400 pressure pipeline between SP1234 and Bingara Gorge WRRF.

As with SP1233, the pumping station would be mostly underground. Above ground infrastructure would include an electrical building, vent stack, storage tank, and some pipework. An emergency relief structure would be constructed to an ephemeral drainage line that flows under the Hume Highway.

The gravity pipeline would be constructed using microtunnelling, with a small section south of Picton Road to be open trenching. The pressure pipeline would be constructed using open trenching.

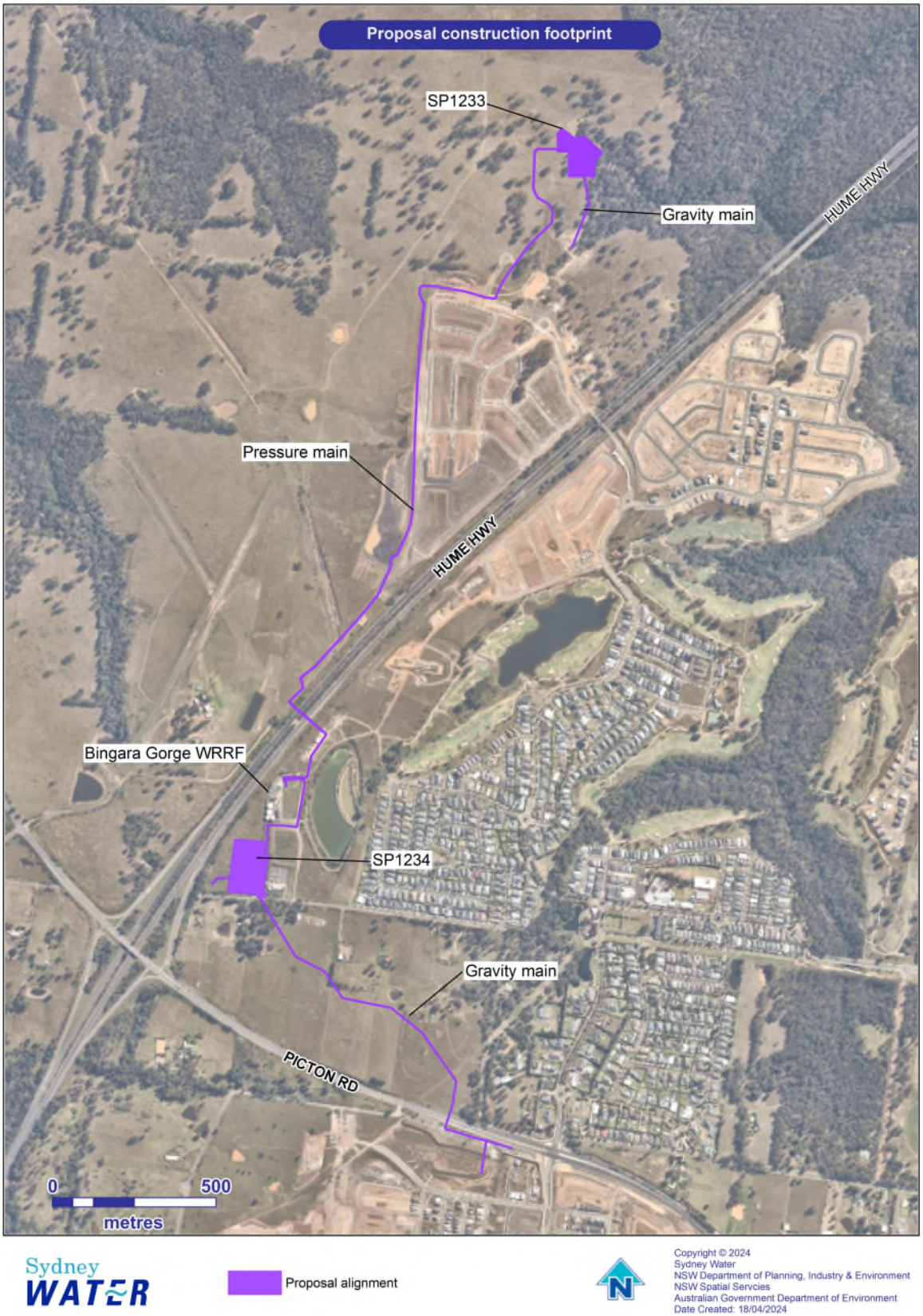


Figure 3-1 Overarching scope of work assessed in this REF

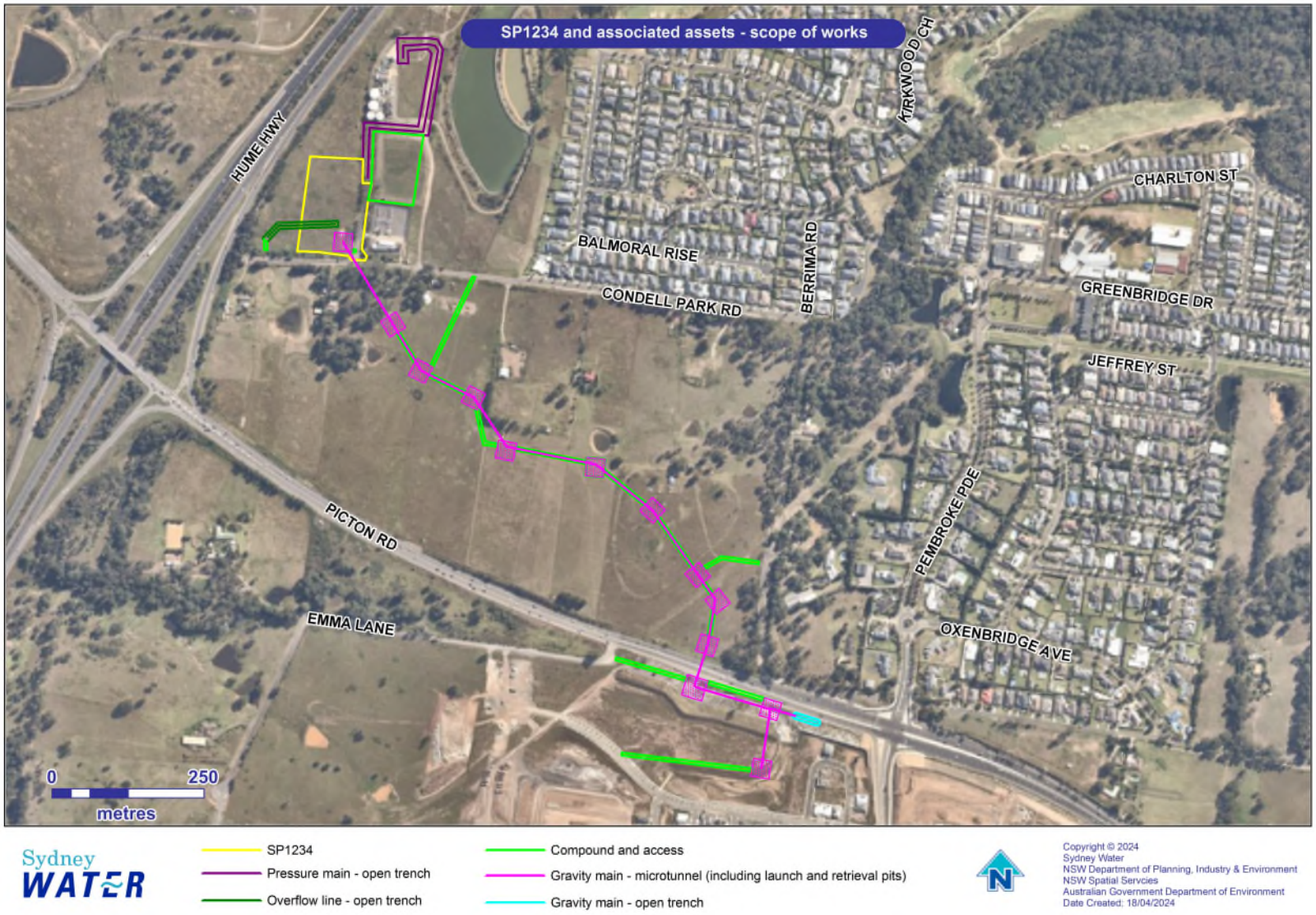


Figure 3-2 Wastewater pumping station SP1234 and associated assets – scope of works (whole footprint)

Figure 3-3 Wastewater pumping station SP1234 and associated assets – scope of works (northern section)

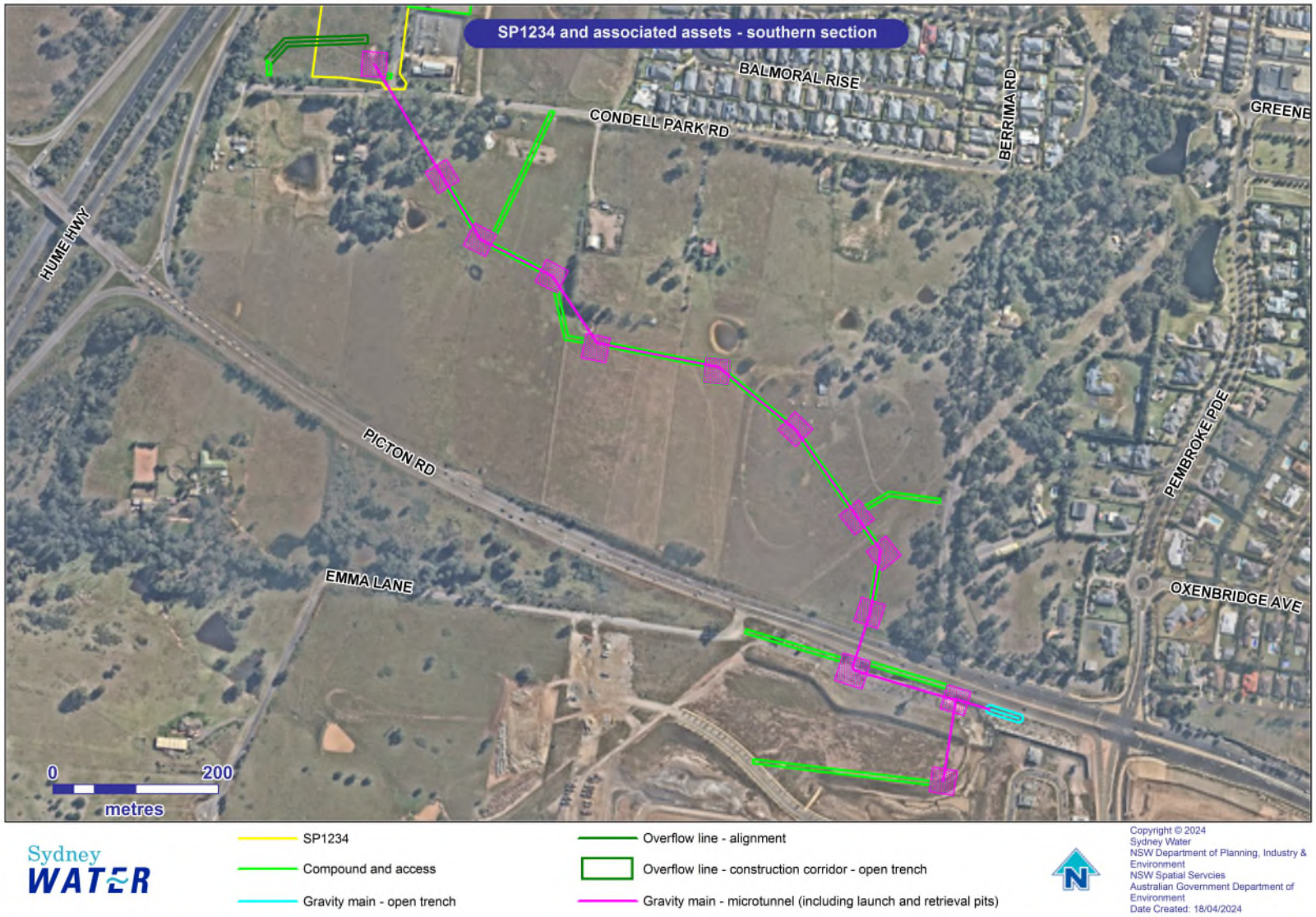


Figure 3-4 Wastewater pumping station SP1234 and associated assets – scope of works (southern section)

Figure 3-5 Wastewater pumping station SP1233 and associated assets – scope of works (whole footprint)

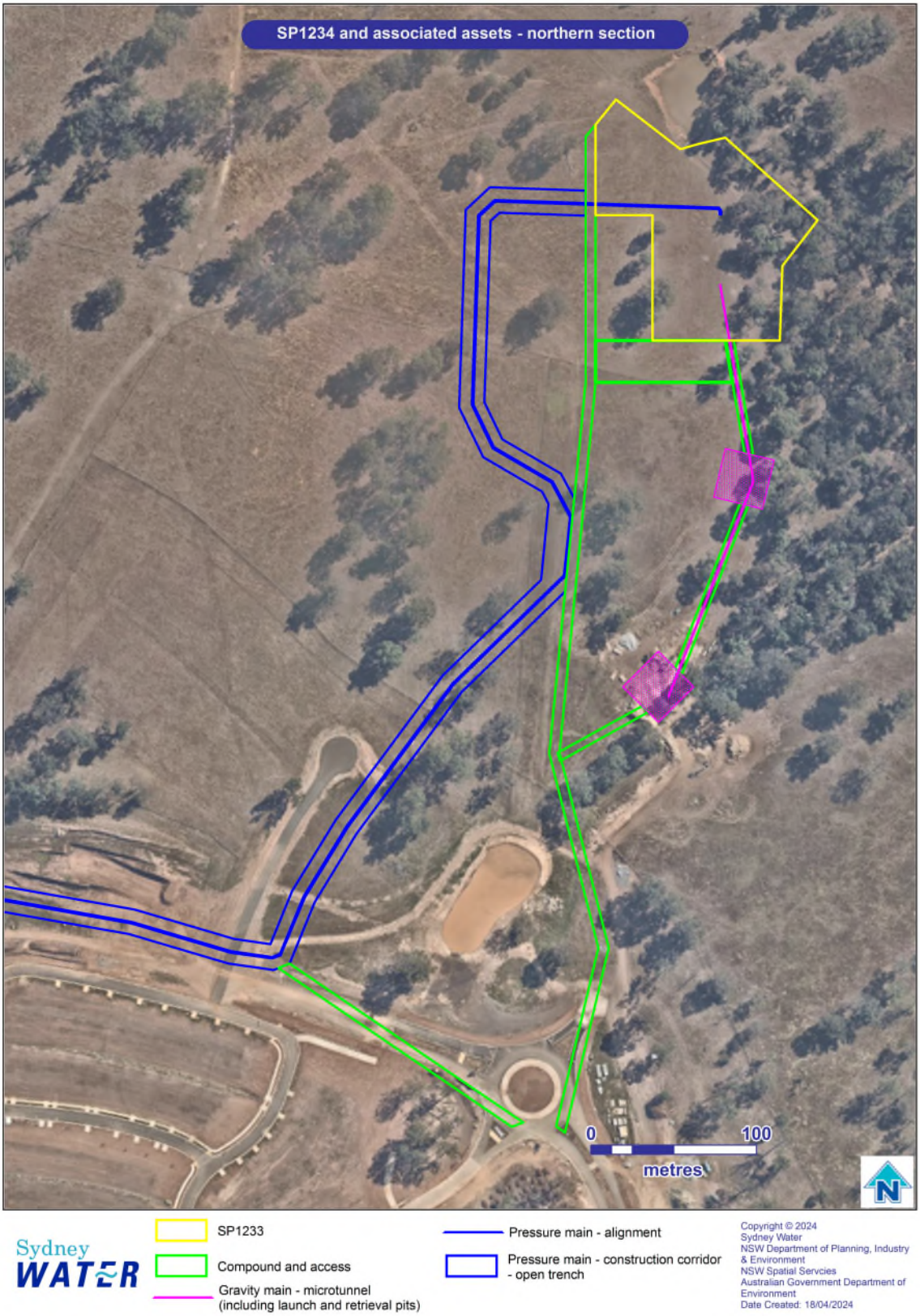


Figure 3-6 Wastewater pumping station SP1233 and associated assets – northern section

3.2 Methodology

3.2.1 Pre-construction work

Pre-construction work includes investigations such as geotechnical, contamination and survey, which may be required during detailed design. Geotechnical and contamination investigations may include boreholes, test pits and monitoring wells.

We will also:

- prepare management plans and procedures including a Construction Environmental Management Plan (CEMP), a Community and Stakeholder Engagement Plan (CSEP), site inductions and safety plans
- liaise with stakeholders, in accordance with Sydney Water's community relations protocols, including:
    - local authorities (Wollondilly Shire Council)
    - utility providers (e.g. Ausgrid, TfNSW)
    - regulators
    - developers
- establish and mobilise site, including:
    - mark out the designated construction areas including access routes, areas for temporary material and machinery storage
    - negotiate temporary access requirements with property owners for the construction period. Preliminary access track alignments are shown in Figure 3-2 to Figure 3-6
    - set up temporary construction compounds including site sheds and amenities including providing these with temporary water and electricity services
    - install erosion and sediment controls and remove approved vegetation
    - deliver and store materials and equipment.

Additional compound sites or access tracks may be required. Should this occur, previously cleared areas will be used where feasible. The exact location of any additional compound sites or access tracks will be chosen by the contractor, in consultation with the landowner(s) and approved by Sydney Water's Project Manager as described in the mitigation measures in Section 6.

3.2.2 Construction

Trenching for pipe installation

Some of the new wastewater pipelines will be constructed by open trenching. The construction corridor during open trenching is typically about 20 m wide. The construction corridor width may be restricted in certain areas such as to minimise environmental impacts or in road reserves to avoid private property impact.

Pipelines will generally be installed in a trench with a standard cover of 0.75 m. Trenches will be up to 2 m wide and between 1.5-3 m deep.

Construction activities associated with trenching will include:

- install erosion and sediment control measures
- implement traffic management measures at the start and end of each shift
- provide temporary access to properties where trench routes impact driveways
- excavate trenches to required depth and width
- stockpile spoil material on the upslope side of trenches, or at temporary site compounds
- shore and dewater trenches, depending upon trench depth and groundwater levels
- spread granular material such as sand or gravel along the bottom of the trench before pipe laying
- lift pipe in using crane or similar
- backfill the trench with bedding material and excavated soil
- compact trench fill material and restore areas disturbed by the construction works
- test and commission the pipeline.

It is estimated that about 24-30 m of pipe would be installed per shift using this method. This distance can vary based on a range of factors including ground conditions.

Trenchless construction

Trenchless crossings will be required at major roads and environmentally sensitive areas including creeks and major culverts. Approximate locations of trenchless crossings are shown in Figure 3-2 to Figure 3-6. An example of how the microtunnelling equipment would be installed is shown in Figure 3-7.

The proposed trenchless methodology is microtunnelling, which includes the following construction activities:

- set up microtunnelling launch and receival pit areas. Pits would be up to about 60 m^2 in area
- excavate launch and retrieval pits to the depth of the pipes (up to 15 m depth)
- place the microtunnelling machine in the launch pit. A cutting head followed by sections of pipe are pushed to the receival pit using hydraulic jacks
- backfill the pits once the pipe has been installed.

Microtunnelling 100 m of pipe would take about 4-6 weeks to complete. This distance can vary based on a range of factors including ground conditions.

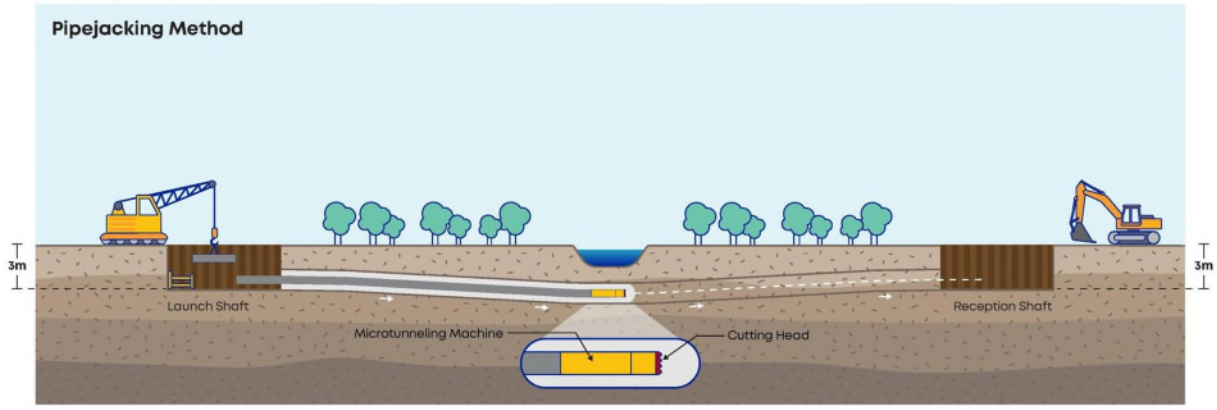


Figure 3-7 Example of microtunnelling methodology

Wastewater pumping station construction

Construction of wastewater pumping stations SP1233 and SP1234 will include:

- earthworks to establish required levels
- construct a concrete pad
- construct pumping station building
- construct wet well
- install pumps
- install switch rooms
- install connecting inflow/outflow pipelines using open trenching
- install overflow pipelines required for discharge of wet weather overflows
- electrical and mechanical fit out
- construct permanent site access
- commissioning
- site demobilisation and restoration.

Chemical dosing facilities construction

Construction of a chemical dosing unit (CDU) is required at SP1233 only. It will include:

- establish concrete pad
- construct building
- install tank
- install connecting pipes and valves to dose wastewater as required

- electrical and mechanical fit out
- commissioning
- site restoration.

3.2.3 Commissioning

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

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

3.2.4 Post-construction

The work sites will be rehabilitated following construction in consultation with landowners. The delivery contractor's CEMP will detail site restoration works to be undertaken once construction works are finished. Site restoration activities will include:

- backfill trenches as soon as works are finished (in addition to at the end of each shift as required, to make the work area safe in between shifts)
- dismantle construction compounds, remove and dispose of waste material and remove construction signage
- remove temporary access tracks
- restore road pavement surfaces and drainage where pipework is trenched into place
- perform non-statutory offset planting, where required.

The delivery contractor/s will maintain an appropriate photographic record of pre-construction site conditions for reference purposes during site restoration works and to verify/document that restoration activities have been completed satisfactorily.

3.2.5 Operation

Bingara Gorge WRRF operates under Environment Protection Licence (EPL) 20335. EPLs contain licencing conditions, such as:

- concentration, volume and limits of discharges
- additional limits and operating conditions on overflows from the reticulation system
- allowable volume and content of any sewage overflow events from the system.

The Bingara Gorge EPL only covers the wastewater treatment by the WRRF, and not a supporting reticulation system. Therefore, a variation to this licence is required to include the wastewater reticulation system and overflows at SP1233 and SP1234.

The preferred option is to obtain a variation to the existing licence before construction.

Until the system EPL is established, a scheduled development work licence will be required for construction of the proposal.

3.3 Materials and equipment

Equipment required will include:

- 20-30 tonne excavators
- front end loaders
- compactors
- vacuum trucks
- concrete trucks
- rock breakers
- skip bins
- piling rigs
- delivery trucks
- microtunnelling machines
- concrete pumps
- generators
- light vehicles.

Materials required for pipeline construction include:

- pipes (indicative pipe materials include polyethylene, steel, or ductile iron)
- valves and other fixtures
- concrete for encasements
- granular materials for pipe embedment.
- reused excavated materials for pipe trench fill.

Materials required for the wastewater pumping station construction include:

- reinforced concrete
- fill
- covers, ladder, step irons, electrical kiosk / cabinet for steel work

- pumps.

3.4 Workforce

An estimate of up to 10 workers at a location per shift is expected. This will fluctuate depending on the construction activities being performed at each site. Multiple work sites are likely to be operating simultaneously.

3.5 Working hours and timeframe

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

- 7am to 6pm, Monday to Friday
- 8am to 1pm, Saturdays.

The proposal may require work outside these hours e.g. for the work in roads, delivery of oversize equipment, performing network connections or shutdowns during low flow periods. Sydney Water's Project Manager can approve work outside of standard daytime hours, following the approval process described in the mitigation measures in Section 6.

Construction is expected to start in late 2024 and be completed by mid 2027.

3.6 Field assessment 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. An addendum is not required provided the change:

- remains within the field assessment area of the REF and has no net additional environmental impact; or
- is outside the field assessment area of the REF but reduces the overall environmental impact of the proposal (subsection 5.4(a) of the Act).

The field assessment area of the REF incorporates the construction footprints shown in Figure 3-1 to Figure 3-6. Each specialist report has defined their own study area or survey area (different to the field assessment area of the REF) based on site constraints and predicted impacts. The study areas and survey areas for individual specialist reports are defined in the relevant sub-sections of Section 6.1 of the REF.

Changes to the proposal outside the field assessment area can only occur:

- to reduce impacts to biodiversity, heritage or human amenity; or
- to avoid engineering (for example, geological, topographical) constraints; and

- after consultation with any potentially affected landowners and relevant agencies.

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

4 Consultation

4.1 Community and stakeholder consultation

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

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

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

The nature, scale and extent of the proposal's potential impact has been evaluated in this REF. If our work impacts the community in some way, we will consult with affected groups through a variety of ways and through different stages of a project. This includes engaging the broader community and stakeholders (e.g. land developers, private property owners, utility owners) during plan or strategy development or before making key decisions.

We will also provide local council (Wollondilly Shire Council) with reasonable notice when we would like to start works, regardless of the need for development consent. Local council will be consulted about matters identified in environmental planning instruments (refer Section 4.3 below), including public safety issues, the placement of any temporary site sheds or laydown areas on council land, or full or partial road closures of council managed roadways.

A Community and Stakeholder Engagement Plan (CSEP) will be prepared for the proposal. The plan helps us provide the community and key stakeholders with clear, accurate and timely information.

Consultation with key stakeholders will continue throughout detailed design, construction and commissioning of the proposal. We will consult with community members where the proposal directly impacts them. During construction, the contractor/s responsible for delivering the proposal will do the consultation and, as representatives of Sydney Water, will adhere to our community relations' policies and procedures. We will continually monitor the contractor's performance during proposal delivery.

The CSEP will identify stakeholders with an interest in the proposal, and ensure they are informed during proposal delivery. The CSEP will also:

- identify the directly and indirectly affected landowners and other stakeholders, including government agencies and interest groups

- identify issues likely to be of high community / stakeholder concern and determine the level of risk to the proposal's development
- identify ways to raise the level of community satisfaction and ensure that Sydney Water's reputation is protected and enhanced
- incorporate stakeholder views into the proposal planning and delivery.

4.2 Consultation before and during construction

We will continue to inform the community and stakeholders about:

- the proposal start date
- where we will be working and when
- what to expect during each stage of the proposal's progress.

During construction, we will ensure all construction staff are mindful of the community, that they inform the community about any work that may impact nearby residents and businesses, and that they leave a positive legacy when their work is done.

Engaging with the community enables Sydney Water and its contractor/s to listen and understand the opinions of the community. Feedback will be used to improve our performance and all complaints during the construction of the proposal, and following its commissioning will be managed according to Sydney Water's Customer Complaint Policy and Procedure.

4.3 Consultation required under State Environmental Planning Policies and other legislation

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

Consultation was required under section 2.15(2)(f) of TISEPP, as well as Part 3 of the *Coal Mine Subsidence Compensation Act 2017*, as the proposal is on land mapped under the Wilton and Appin Mine Subsidence Zones. A response was received from Subsidence Advisory NSW in relation to design parameters and this feedback will be incorporated into the design.

Consultation with Wollondilly Shire Council is not required under TISEPP, refer to Appendix B. However, a meeting was held between Sydney Water and Wollondilly Shire Council representatives on 10 March 2023. This meeting included an overview of the project, as well as identification of some preliminary environmental impacts.

Consultation will be undertaken with landowners regarding easements required for the proposal. Easements will be required for the pressure pipelines. There are no requirements to consult with Crown Land as there is no Crown Land within the construction footprint.

Sydney Water notified the Western Parkland City Authority of the proposal on 3 November 2023 as the proposal has a capital investment value of over $30 million and is in the Western City operational area.

Consultation required under other legislation for groundwater dewatering and road occupancy licences are discussed in Section 5.2.

Sydney Water's Wastewater and Environment (WW&E) Custodians and Veolia, the current holder of the Bingara Gorge WRRF EPL, consulted with the EPA regarding the WRRF and network EPL requirements under the *Protection of the Environment Operations Act 1997* (POEO Act). The EPA confirmed that a scheduled development work licence will be required for construction of any network, where the works are not connecting to an existing licenced system. This REF must be provided to the EPA as part of the scheduled development work licence application. However, a licence variation application to include the network in the licensed premises will be submitted to the EPA. If the application is approved by the EPA a scheduled development licence will not be required. EPL compliance has also been discussed in Sections 6.1.2 and 6.1.6 of this REF.

5 Legislative requirements

5.1 Strategic context

The following strategies have been considered in relation to the proposal.

Greater Sydney Region Plan: A Metropolis of Three Cities (Greater Sydney Commission, 2018)

This plan 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 3 interconnected cities: Western Parkland City, Central River City, and 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 key strategies of:

- infrastructure and collaboration
- 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. This proposal will support sustainability by directing wastewater flows from the residential developments into the Bingara WRRF, which will then be used to supply recycled water locally.

Wilton is in the Western Parkland City as defined by the Greater Sydney Commission's vision for Sydney. The Western Parkland City is projected to grow in population from 740,000 in 2016 to 1.1 million by 2036, and to well over 1.5 million by 2056. There are 4 main growth areas identified for the Western Parkland City being:

- Greater Macarthur Growth Area
- Greater Penrith to Eastern Creek investigation areas
- Western Sydney Aerotropolis
- Wilton Growth Area.

The proposal will service the Wilton Growth Area.

Wilton 2040 – A plan for the Wilton Growth Area (DPE, 2018)

This plan outlines the planned land use changes for the study area and identifies a range of planning principles for precinct planning. Relevant planning principles considered during planning

of the proposal include:

- Create healthy, liveable places, and respond to climate change, for example by promoting cooling effects.
- Incorporate development that protects, maintains or restores waterway health and the community's environmental values and uses of waterways through a risk-based approach to managing the cumulative impacts of development.
- Ensure an integrated approach to drinking water, wastewater and stormwater services is considered to drive more sustainable water management outcomes.
- Incorporate development that fosters the relationship between water, landscapes, and urban living, to enhance human and social wellbeing, and promote community co-design and governance in urban water strategies.

The proposal will service the Wilton Growth Area and is consistent with the plan.

Integrated Water Management Strategy (IWMS) (Wollondilly Shire Council, 2020a)

This strategy outlines Wollondilly Shire Council's strategic direction for managing water into the future so that it can continue to play a prominent role in supporting and improving the quality of life, and the preservation of rural living in Wollondilly. Wollondilly's vision for water is to maintain pristine creeks and rivers to be swimmable, ecologically rich and diverse. Council believes this can be achieved by new development having zero net impact on the waterways, with no extra stormwater runoff entering the waterway, and wastewater being treated and reused.

This strategy examines possible wastewater options which could be implemented to achieve a zero-net impact as aspired to by Council. It concludes that wastewater should be reused locally, reused through a regional reuse scheme to replenish/ augment other supplies, or exported from the catchment altogether. Our proposal is generally consistent with this IWMS as it would direct wastewater flows from the residential developments into the Bingara WRRF, which will then be used to supply recycled water locally.

Wollondilly 2040: Local Strategic Planning Statement (Wollondilly Shire Council, 2020b)

This document outlines the vision for Wollondilly Local Government Area (LGA) for land use planning over the next 20 years. The vision can be summarised as 'an enviable lifestyle of historic villages, modern living, rural lands and bush' and was adopted in March 2020, after public consultation in late 2019. Our proposal is consistent with the below planning priorities:

- Planning priority 1 in this document is 'aligning infrastructure provision with community needs.' This includes partnering with Sydney Water to identify and build major infrastructure. Sydney Water is building major wastewater infrastructure to support long-term servicing of the area.
- Planning priority 3 in this document is 'establishing a framework for sustainable managed growth.' This includes partnering with Sydney Water to find long-term servicing solutions for wastewater disposal. Sydney Water is building major wastewater infrastructure to support long-term servicing of the area.

- Planning priority 4 in this document is ‘creating vibrant, healthy and sustainable communities in our new town in Wilton’. This includes advocating for infrastructure to be in place before further release of land for housing. This proposal will service the initial stages of development in Wilton.
- Planning priority 13 in this document is ‘protecting biodiversity and koala habitat corridors.’ This includes retaining native vegetation and maintaining important habitat corridors for native wildlife. Sydney Water has minimised impacts to biodiversity during design and construction, including identifying specific mitigation measures to minimise impact to koala habitat.

Wollondilly Rural Lands Strategy (Wollondilly Shire Council, 2021a)

The Rural Lands Strategy provides a framework for managing growth, change and development for rural land in Wollondilly LGA over the next 20 years. It will guide future *Wollondilly LEP 2011* amendments and potential re-zonings.

Under Action 3.4.2 of this draft strategy, there is a commitment for Council to continue working with Sydney Water to provide secure, sustainable and long-term water supply solutions, including the expansion of its water recycling plant (now water resource recovery facility) to support food production.

Our proposal is consistent with this study as it is supporting long-term water supply within the LGA.

5.2 Environmental Planning and Assessment Act

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

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

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

Environmental Planning Instrument	Relevance to proposal
SEPP (Precincts – Western Parkland City) 2021	**Sydney region growth centres (Chapter 3)** 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 Wilton Growth Area. The proposal is in the Wilton Growth Area. The proposal is on land zoned: • Urban Development

Environmental Planning Instrument	Relevance to proposal
	• SP2 Infrastructure • RU2 Rural Landscape • E4 General Industrial. The proposal will not impact any lands zoned for biodiversity conservation under the SEPP. The Wilton Growth Area was not subject to biodiversity certification as part of the Sydney Growth Centres SEPP. Therefore, any impacts to biodiversity are subject to environmental and ecological assessment under the EP&A Act, BC Act and EPBC Act (refer Section 6.1.3 of the REF).
SEPP (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126(6) of TISEPP states that development for the purposes of sewage reticulation systems (which includes pumping stations) may be carried out without consent on any land in the prescribed circumstances. Prescribed circumstances include where the development is carried out by or on behalf of a public authority. Section 2.126(8) allows development for the purpose of sewage reticulation systems on land reserved under the *National Parks and Wildlife (NPW) Act 1974*, only if the development is authorised by or under that Act. As Sydney Water is a public authority, and the proposal is not on land reserved under the NPW Act, the proposal is permissible without consent.
SEPP (Biodiversity and Conservation) 2021 (BC SEPP)	**Koala habitat protection (2020 and 2021) (Chapters 3 & 4)** These chapters aim to encourage the proper conservation and management of areas of natural vegetation that provide koala habitat. This is to ensure that permanent free-living populations are protected in their present range, and to reverse the current trend of population decline. The SEPP contains prescriptions for the consideration of “potential koala habitat” and “core koala habitat” for developments within local government areas listed in Schedule 2 of the SEPP. Development being carried out under TISEPP is not subject to the planning provisions of the BC SEPP. Nevertheless, where possible the aims, objectives and management actions should be considered. The proposal lies within the Wollondilly Shire LGA, which is in the Central Coast and Central/Southern Tablelands Koala management areas. The SEPP outlines that development consent cannot be granted unless there is a plan of management prepared for the LGA in question. The determination of the development cannot be inconsistent with this plan of management. Sydney Water, as the determining authority, does not require development consent for the proposal.

Environmental Planning Instrument	Relevance to proposal
	Part of the proposal is within the South East Wilton precinct. A Koala Plan of Management (KMP) for Wilton has previously been prepared for the South East Wilton precinct (EMM, 2020). The Plan outlines management actions and recommendations to minimise impacts on koalas and their habitats. Relevant mitigation measures from this KMP have been incorporated into mitigation measures in section 6.1.3 of this REF. **Strategic conservation planning (Chapter 13)** Chapter 13 of this SEPP contains development controls for areas mapped under the Cumberland Plain Conservation Plan (CPCP) (DPE, 2022a). The proposal is on urban capable and excluded land. Urban capable land is land where future development is likely to occur. Excluded land is land that is not included in the CPCP, typically due to development approvals or other relevant processes already existing on the land. Measures to mitigate impact to urban capable land and excluded land are included in Section 6.1.3 of the REF.

Table 5-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations (POEO) *Act 1997*	Sewage treatment is a scheduled activity under the act. Bingara Gorge WRRF is operated in accordance with Environment Protection Licence (EPL) 20335. However, the Bingara Gorge EPL is for wastewater treatment by the plant, and does not currently include the reticulation system. Therefore, a variation to this licence is required to include the wastewater reticulation system and overflows at SP1233 and SP1234. The preferred option is to obtain a variation to the existing licence before construction (late 2024). Alternatively, a scheduled development EPL would be required. There is a requirement under Part 5.7 of the POEO Act to immediately report any pollution incidents to the relevant authority where material harm to the environment is caused or threatened. The definition of	EPL variation or Scheduled Development Work (s47 licence) System EPL (s48 licence)	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	material harm and the relevant authorities are identified in Part 5.7 of the POEO Act. The contractor is responsible for immediately reporting such incidents in accordance with SWEMS0009 Responding to incidents with an environmental impact.		
Biodiversity Conservation (BC) *Act 2016*	Protection of listed species and ecological communities in NSW falls under the BC Act. Threatened species and communities are listed in the Schedules of the Act. Tests of Significance (ToS) were performed under section 7.3 of this Act to determine whether the project is likely to significantly impact any threatened entities (Appendix D, Arcadis, 2023). The impact of the proposal on threatened species, communities and their habitats is described in Section 6.1.3. No BC Act threatened entities are likely to be significantly impacted by the project.	NA	NA
National Parks and Wildlife (NPW) *Act 1974*	Under Section 86 of this Act, it is an offence to harm or desecrate an Aboriginal place or object unless authorised by an Aboriginal heritage impact permit (AHIP), or where it is reasonably determined that no Aboriginal object will be harmed. An AHIP is issued under section 90(1) of this Act. An Aboriginal Heritage Due Diligence report (Appendix E, KNC, 2023) was completed for the proposal. One Aboriginal archaeological site was found within the study area. This site is subject to a future AHIP application for the proposed North Wilton bulk earthworks project. Any impacts to this site would need to be done: • after the future AHIP is received • with approval from the AHIP owner (Landcom)	Landcom AHIP (in accordance with conditions)	Post REF, pre-construction, Sydney Water During construction, contractor

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	• in accordance with AHIP conditions. Provided all Sydney Water works at this archaeological site occur in accordance with the above conditions, no archaeological constraints exist for the proposal. We will not need to enter any National Parks land for the proposal.		
Fisheries Management (FM) *Act 1994*	No threatened species habitat, threatened species, or critical habitat listed under the FM Act is mapped or described within the proposal area. DPI Fisheries notification is not required.	NA	NA
Water Act 1912/ Water Management Act 2000	Groundwater dewatering will be required during ground disturbance. Estimates of groundwater quantity have been provided based on assumptions and limitations of design and construction details available at REF development. Contractors will be required to refine these calculations closer to construction to determine whether a Water Supply Works Approval (WSWA) or Water Access Licence (WAL) application is required. A WSWA or WAL is required before any groundwater dewatering can start.	WSWA (for less than 3 ML) and WAL (for more than 3 ML)	If uncertain volume, pre-construction, contractor/s
Biosecurity Act 2015	The Act provides the framework to protect our community from the adverse effects from pests, diseases, and weeds. The Act also provides the framework to help protect our environment from invasive pests and diseases. The proposal occurs in the Greater Sydney Local Land Services (LLS) region. Expectations for managing pest animals and weeds are outlined in regional strategic weed and pest animal plans.	Compliance with biosecurity duty	During construction, contractor/s

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Several weed species are present within the proposal area. Management measures are included in Section 6.1.3 of this REF.		
Roads Act 1993	Picton Road and Hume Highway are classified roads. However, pipe installation at these locations is expected to involve underboring (microtunnelling). Therefore, no ROLs at these locations would be required. If lane closures or work within roads are required, ROLs would be obtained as needed.	Road Occupancy Licence if needed	Pre-construction, contractor/s
Environment Protection and Biodiversity Conservation (EPBC) *Act 1999*	Under the EPBC Act, actions that have, or are likely to have, a significant impact on Matters of National Environmental Significance (MNES) require Commonwealth approval. Significant Impact Criteria (SIC) assessments were performed to determine whether the project is likely to significantly impact any threatened entities (Appendix D, Arcadis, 2023). The proposal is not anticipated to have a significant impact on listed threatened species, ecological communities, or migratory species (Section 6.1.3 of the REF).	NA	NA
Coal Mine Subsidence Compensation Act 2017	Part 3 of this Act and section 2.15(2)(f) of TISEPP define the need to consult with the Mine Subsidence Authority before construction within Mine Subsidence Zones. The proposal is within the Wilton Mine Subsidence Zones. Consultation outcomes are summarised in Section 4.3.	Consultation	Pre-construction, Sydney Water

6 Environmental assessment

Section 6 describes the existing environment and assesses direct and indirect impacts of proposal construction and operation. It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) before starting work.

6.1 Environmental aspects, impacts and mitigation measures

6.1.1 Topography, geology and soils

Existing environment

The topography within the proposal is undulating and largely follows natural contours, sloping downhill toward major waterways (e.g. Nepean River, Cataract River).

A desktop study was performed to identify the geology and soil types (Sydney Water, 2022b). Geology within the proposal is a mix of Ashfield Shale and Hawkesbury Sandstone. Soil types include a mix of Blacktown residual and Luddenham erosional. No acid sulfate soils or salinity have been mapped within the construction footprint. Potentially unstable soils (slopes >15% gradient) near the construction footprint are largely associated with nearby watercourses.

Underground mining has occurred to the west of the proposal. These mine sites include Illawarra Coal at Appin, Tower and West Cliff Collieries, and Tahmoor Mine. The mining lease for Illawarra Coal has been relinquished in agreement with property developers (MSEC, 2022). While mining may occur in Wilton in future, a large portion of the proposal is unlikely to experience mine subsidence movements. The construction footprint is within the Wilton Mine Subsidence Zone.

Historical mapping from 1969 indicates that the wider area looks largely undisturbed, apart from some evidence of agricultural lots (Spatial Services, 2023). Typical current land use is open grassland used for agriculture, or low-density residential properties. A preliminary site investigation (PSI) was performed for the Wilton Growth Area (Sydney Water and ENSure JV, 2018). One known contaminated site reported to the EPA is within 1 km of the proposal. Condell Park Homestead is about 500 m east of the SP1233 gravity pipeline. Contamination activity type at this location is unclassified and regulation under the *Contaminated Land Management Act 1997* (NSW) is not required. Land associated with SP1233 was used as a bombing range during World War 2. Unexploded ordnance or explosive ordnance fragments / components have not been recovered from the site.

Potential contamination sources within the construction footprint include:

- fill material from road construction
- agricultural land use
- residential development – demolition of structures and poor waste removal
- general dumping/ fill/ stockpile locations

- former Wilton Airport.

Potential impacts

The main potential impact to topography, geology and soils during construction is erosion and sedimentation. Construction activities involve trenching, excavation and temporary stockpiling of excavated material. The total volume of spoil across the construction footprint is expected to be about 35,000 m^3. This includes cut and fill of about 3,700 m^3 at each pumping station. Depth of excavation is about 10 m for the wet wells at both pumping stations, and about 15 m for microtunnelling at SP1234. Surface earthworks will also be required for ground levelling and installing the access tracks. In the event of rainfall, stockpiled material has the potential to erode and lead to sedimentation on land and within waterways. Excavated material will be stockpiled within the construction footprint, next to the open trenches, launch and receival pits, or within compound and laydown areas.

The environmental risk will be greatest where trenching, excavating and stockpiling occurs close to waterways such as Stringybark Creek. In these cases, excavated material will be stockpiled as far as practicable from waterways including, where feasible, in the construction corridor. The potential impacts of erosion and sedimentation are expected to be readily managed with implementation of the mitigation measures below.

Temporary access tracks will be required during construction. All temporary access tracks will be removed following the completion of construction and the pre-existing ground levels restored. Some access tracks may be used by developers where they tie-in to the new road network for new residential properties (e.g. at SP1233).

While no significant soil or groundwater contamination has been identified, there remains the potential for contamination to be encountered during construction. Mitigation measures are provided below to avoid, mitigate and manage potential contamination impacts should any be encountered.

Construction may permanently change the surface topography and drainage patterns of the wider area. Earthworks by developer/s for other development, before Sydney Water's construction activities start, would change topography. Land would also need to be levelled for construction of the pumping stations. These changes to topography are likely to change overland flow patterns.

Impervious areas (i.e. hardstand) would increase during operation at the new pumping stations. Management of changes to stormwater flows due to increased hardstand and changed topography would be considered during detailed design.

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. No impacts are anticipated during operation.

Table 6-1 Environmental mitigation measures — topography, geology and soils

Mitigation measures
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • develop a Soil and Water Management Plan (SWMP) as part of the CEMP • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts, including sediment fencing around laydown areas • 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.
Include a Stockpile Management Plan (SMP) as part of the SWMP to adequately manage any proposed temporary and permanent stockpiles. This will include detail on: • exact location of stockpiles • minimising stockpile size • height, slopes and batters • preventing mixing and cross contamination • consideration of future maintenance • capping • erosion and sediment control • restoration. The Stockpile Management Plan will be prepared by the delivery contractor/s and approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Property Environmental Services.
Minimise ground disturbance and stabilise disturbed areas progressively.
All temporary access tracks will be removed following completion of construction and pre-existing ground levels restored.
Contractor/s to ensure imported material is Virgin Excavated Natural Materials (VENM) or meets a relevant NSW EPA Resource Recovery Order and Resource Recovery Exemption or is a commercially supplied material that is not waste. If using materials that are subject to a NSW EPA Resource Recovery Order/Exemption the contractor must ensure the conditions in that Order/Exemption are strictly adhered to.

Mitigation measures
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Property Environmental Services) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Contractors should consider pre-mobilisation and post-demobilisation soil sampling on compound sites to confirm no residual impacts.
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.

6.1.2 Water and drainage

Existing environment

The Nepean River flows south-west of the study area. Tributaries of the Nepean River are present in the study area. The proposal crosses many creeks including Allens Creek, Byrnes Creek and Stringybark Creek (Figure 6-1 and Figure 6-2). Several water retention ponds / farm dams are located near the proposal.

Groundwater was identified within the study area during investigations (Sydney Water, 2022b). Groundwater levels ranged from:

- 1.8-6.5 m below ground level (BGL) for SP1234 and associated assets
- 11-23 m BGL near SP1233.

No potential groundwater dependent ecosystems (GDEs) were mapped within the construction footprint (Bureau of Meteorology, 2023).

Most of the construction footprint contains flood-prone areas, particularly around waterways (Wollondilly Shire Council, 2021b). The proposal is within areas impacted by 1-in-100-year flooding:

- Allens Creek and tributaries near SP1233, flooding up to 1.5 m depth
- Byrnes Creek at the SP1234 overflow line, flooding up to 1.5 m depth
- Stringybark Creek at the gravity pipelines south of Picton Road, flooding to greater than 2 m depth.

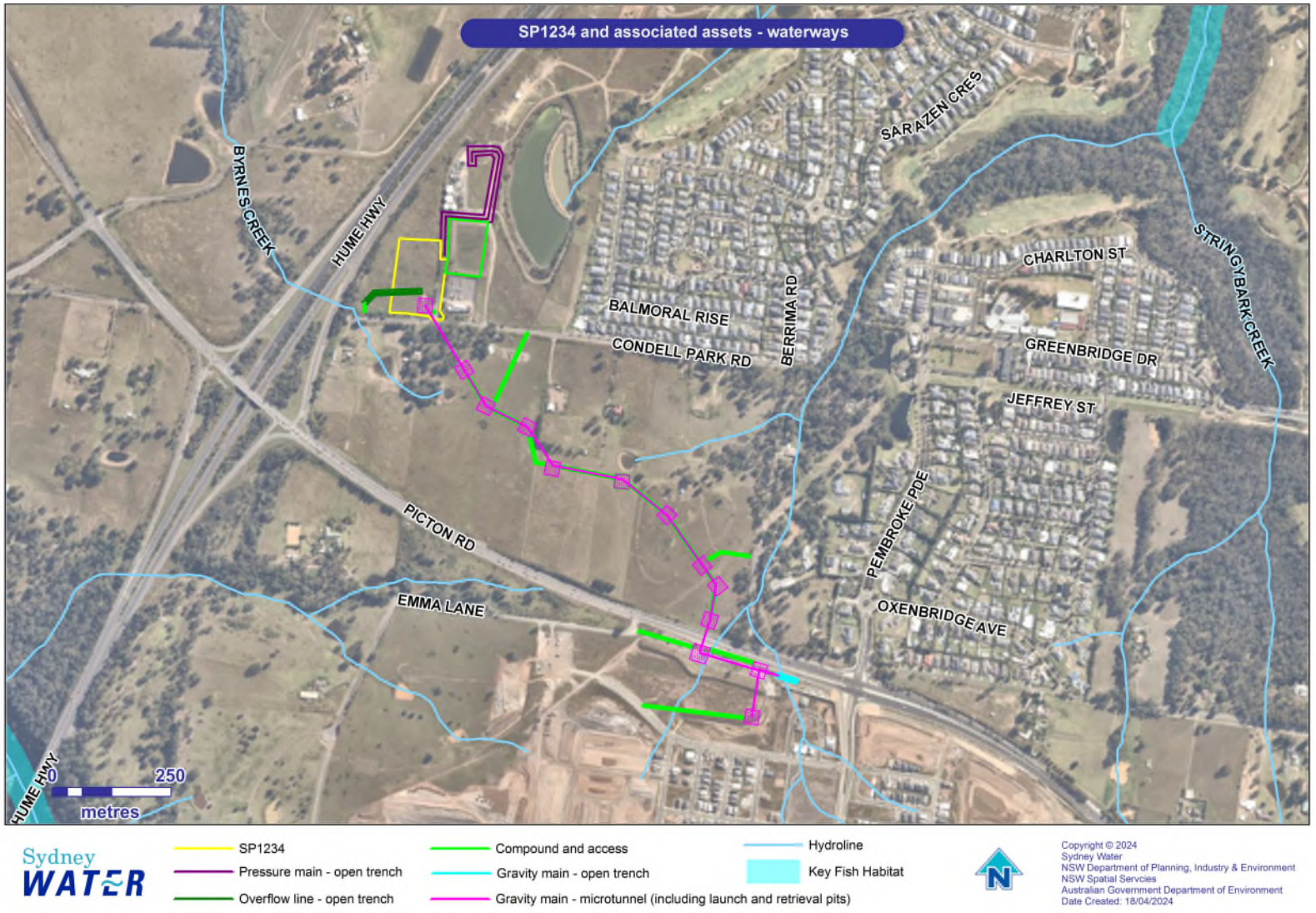


Figure 6-1 Waterways – SP1234 and associated assets

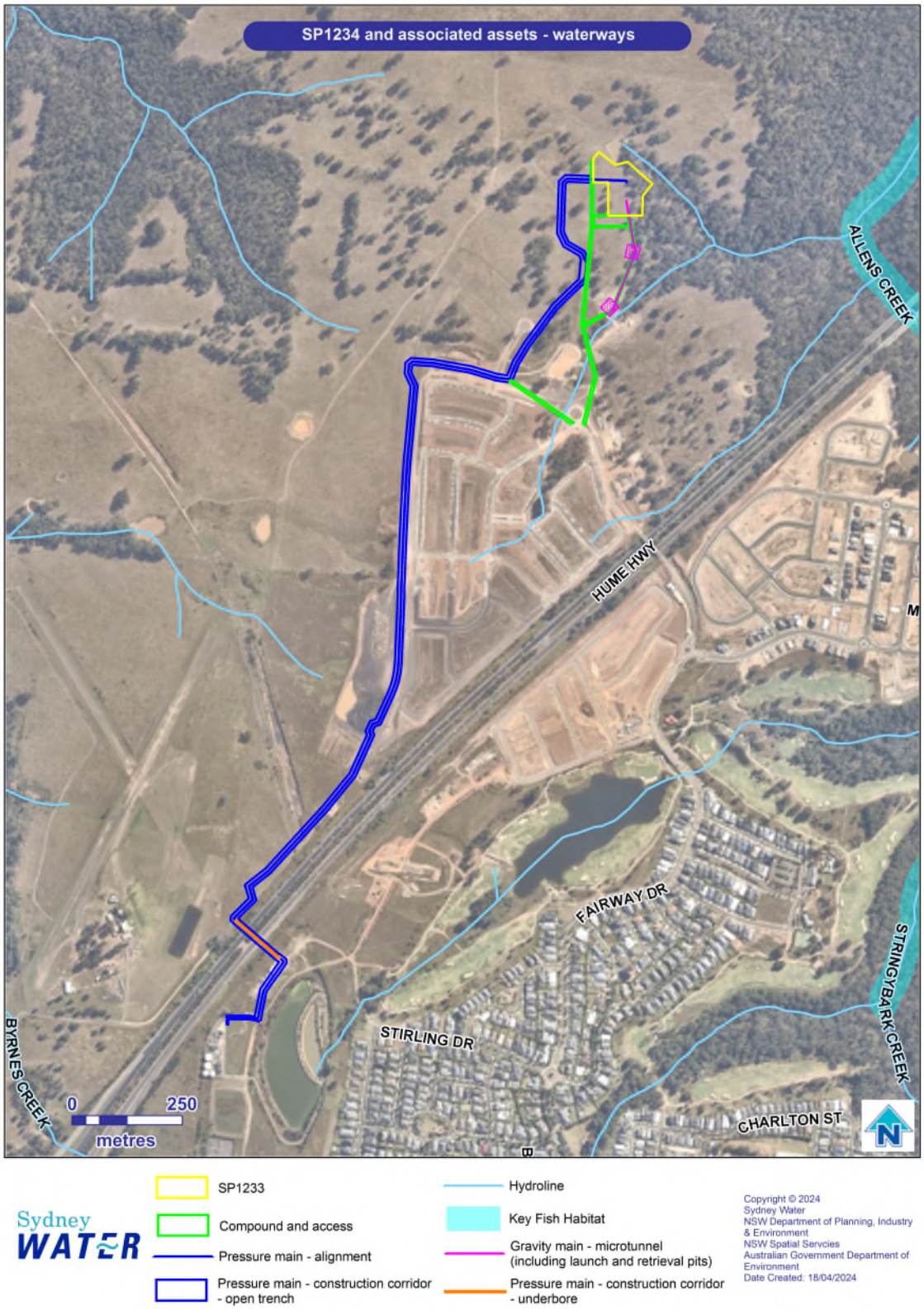


Figure 6-2 Waterways – SP1233 and associated assets

Potential impacts

The main construction impacts on water and drainage include erosion and sedimentation and/or accidental spills and leaks. Material may travel off site into waterways from displacement of soil, waste, and other materials during flooding, strong wind or heavy rain. The potential impacts to waterways from erosion and sedimentation are highest where excavation and temporary stockpiling occurs near waterways, which are also the areas within the construction footprint most likely to flood. No compounds or laydown areas are proposed within flood-prone areas.

In the event of flooding during construction, larger scale erosion and sedimentation could occur as work areas may be inundated. The risk of this occurring will be limited as most of the proposal is outside the 1-in-100-year flood mapping. Additional mitigation measures to avoid and manage potential impacts in the event of a flood are provided below. Erosion and sedimentation impacts under normal (non-flood) conditions are discussed separately in Section 6.1.1.

Construction will involve the use of equipment and machinery that use hydrocarbon-based fuels and other chemicals that, could pollute water if an accidental leak or spill occurs. Small quantities of fuels and other chemicals will be appropriately stored in the compounds and laydown areas, which would minimise the risk of off-site pollution. An assessment of water quality impacts to the Sydney Drinking Water Catchment has identified the potential impact as neutral (Appendix C). Mitigation measures to minimise impact to Sydney Drinking Water Catchment land have been included in this REF.

Works in or near waterways are required, when crossing Stringybark Creek. Installation of overflow lines into waterways are required at Allens Creek and Byrnes Creek. Stringybark Creek crosses under Picton Road and is unlikely to be impacted. Excavation is required at the two other creeks. None of these waterways are Key Fish Habitat. These waterways appear to be ephemeral. To mitigate impacts, any excavation within waterways will occur during dry conditions and the landforms will be restored to their former condition following construction.

Trenchless construction has a potential risk of drilling fluid escaping the bore and entering the environment from a spill or frac-out (drilling intercepting faults and fractures in the rock). If not adequately managed, construction in or near waterways has the potential to cause sedimentation and impact water quality. The drilling contractor will be required to manage the drilling to minimise the risk of frac-out.

As excavation depths are lower than the identified groundwater levels, it is likely that groundwater dewatering would be required. Groundwater dewatering can have adverse impacts on groundwater quality and change groundwater levels. Further assessment is required to determine groundwater dewatering volumes at each location within the construction footprint. A Water Supply Works Approval and Water Access Licence (if required) will be organised before any groundwater dewatering is performed.

During commissioning, cleaning of pipes and discharge of water to a receiving body or into the Sydney Water network is required. Any groundwater, water captured in excavations, or water from commissioning that requires dewatering will be managed in accordance with Sydney Water Discharge Protocols.

Stormwater runoff may increase during operation due to the increased amount of hardstand from the new pump stations. These changes may increase or alter flow patterns and increase scouring. Stormwater management within the pumping stations will be considered during detailed design. No adverse impacts to water flow of any natural waterbodies are expected during construction or operation.

The system will be operated under an EPL. The EPL would contain a limit on wet weather overflows. SP1233 and SP1234 are designed to have 10 wet weather overflows in 10 years. Wet weather overflows occur when the wastewater system is overloaded during wet weather. A wet weather overflow from the pumping station would occur when there is high flow in the creeks and an overflow is expected to have a minimal impact on water quality.

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 low. Impacts to creeks from overflows during operation are expected to be minimal.

Table 6-2 Environmental mitigation measures — water and drainage

Mitigation measures
If the potential for intercepting groundwater is identified after the REF is determined, Sydney Water will obtain a groundwater Water Supply Works Approval and where dewatering is >3 ML per water year (from 1 July) a Water Access Licence from DPE Water will also be obtained. The delivery contractor/s is/are responsible for: • providing expert hydrogeological technical information to obtain the approvals • preparing a Dewatering Management Plan • complying with the approval conditions (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).
Prepare Drilling Fluid Management Plan to avoid impacts, including: • contain and monitor drilling fluids at entry/exit points • identify and manage frac-outs • re-use and/or disposal of drilling fluids (checking waste classification).
Minimise the impacts to creeks where creek crossings are required. Before construction the methodology will be assessed based on: • geotechnical and constructability issues (e.g. depth of cover, potential for future scouring) • construction footprint and duration • ease of reinstatement • environmental issues (flora and fauna, geomorphology, contamination, heritage, water quality and hydrology).

Mitigation measures
The decision and reasons for the decision would be documented by the contractor in consultation with the Environmental Representative.
Consider the DPI Water guideline/s during the design and construction of works within 40m of waterways to protect waterfront land. Guidelines which may be relevant are: • Guidelines for outlet structures on waterfront land • Guidelines for watercourse crossings
Use appropriate controls to avoid potential sedimentation to waterbodies (e.g. floatation boom). Any excavation within waterways for overflow lines will occur during dry conditions and the landforms will be restored to their former condition following construction.
Bund open maintenance holes if risk of wastewater spills.
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.
Bund potential contaminants and store on robust waterproof membrane, away from drainage lines.
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Bunded areas to have 110% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled.
Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Conduct any equipment wash down within a designated washout area.
Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and flood prone areas.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.

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

If discharge to the environment is not possible, seek approval and discharge criteria from the relevant Sydney Water Network Area Manager before discharge to the wastewater system. Otherwise tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.

6.1.3 Flora and fauna

A specialist flora and fauna assessment was carried out by Arcadis and is summarised here. The flora and fauna assessment included:

- a desktop review including database searches for flora and fauna previously recorded
- a flora and fauna field survey
- likelihood of occurrence assessment for the identified and predicted flora and fauna
- assessments of significance for those species that were found to be likely to occur
- considering the relevant biodiversity certification orders in force for the field survey area
- discussion of the potential impacts of the proposal
- identification of site-specific mitigation measures to minimise and mitigate potential impacts of the proposal.

The complete assessment report is provided as Appendix D.

Existing environment

The existing environment within the field survey area includes medium and large residential lots, and exotic pastures bordering old growth vegetation. Areas of native vegetation also occurs to the northwest of the Hume Highway and along Condell Park Road and Picton Road. A flora and fauna field survey was carried out to ground truth and/or identify vegetation communities as well as identify any threatened species or their habitat in the field survey area. The field survey area includes a wider area than the construction footprint, following refinement of the original scope.

Vegetation communities

Two different plant community types (PCTs) were confirmed to be present within the field survey area during site inspection (Table 6-3).

Table 6-3 PCTs within the field survey area and construction footprint

Plant Community Type (PCT)	Listing – BC Act and EPBC Act	Area assessed	
		Within the field survey area (hectares)	Within the construction footprint (hectares)
3320 – Cumberland Shale Plains Woodland	Critically endangered – BC Act and EPBC Act	9.39 ha (BC Act listed) 1.32 ha (EPBC Act listed)	0.32 ha (BC Act listed) 0.02 ha (EPBC Act listed)
3321 – Cumberland Shale-Sandstone Ironbark Forest	Critically endangered – BC Act and EPBC Act	4.71 ha (BC Act listed) 4.71 ha (EPBC Act listed)	0.50 ha (BC Act listed) 0.50 ha (EPBC Act listed)
Sub-total		**14.10 ha**	**0.82 ha**

Note: Sub-totals include all vegetation listed under the BC Act. Some of the vegetation listed under the BC Act is also listed under the EPBC Act.

These PCTs are on land zoned under the CPCP. A description of these land zonings and their applicability to the proposal is shown below (Table 6-4). 'Certified-urban capable land' is land that has been certified for development under Part 8 of the BC Act and Part 9 of the EPBC Act. Development in these areas does not require further biodiversity assessments under these Acts if it remains consistent with the CPCP and its approvals.

The impact of the proposal on these vegetation communities has been detailed in **Table 6-7**.

Table 6-4 Land zonings under the CPCP – PCTs within construction footprint

Land category	Description	Applicability to the proposal
Excluded land	Areas that have been excluded from the CPCP and biodiversity certification does not apply.	Not applicable.
Certified-urban capable land	Areas where future urban development is likely to occur and does not require further biodiversity assessment, if consistent with the CPCP.	0.32 ha of PCT 3320 and 0.50 ha of PCT 3321 are on this land.
Avoided land	Areas with high biodiversity values that are to be protected and are not certified for future urban development.	The construction footprint is adjacent to land mapped as Avoided Land under the CPCP (SP1233 and gravity pipeline) (Figure 6-3).
Strategic conservation area	Areas that have strategic biodiversity value including important landscape connectivity and ecological restoration potential.	The construction footprint is adjacent to land mapped as Strategic Conservation Area under the CPCP (SP1233 and gravity pipeline) (Figure 6-3).

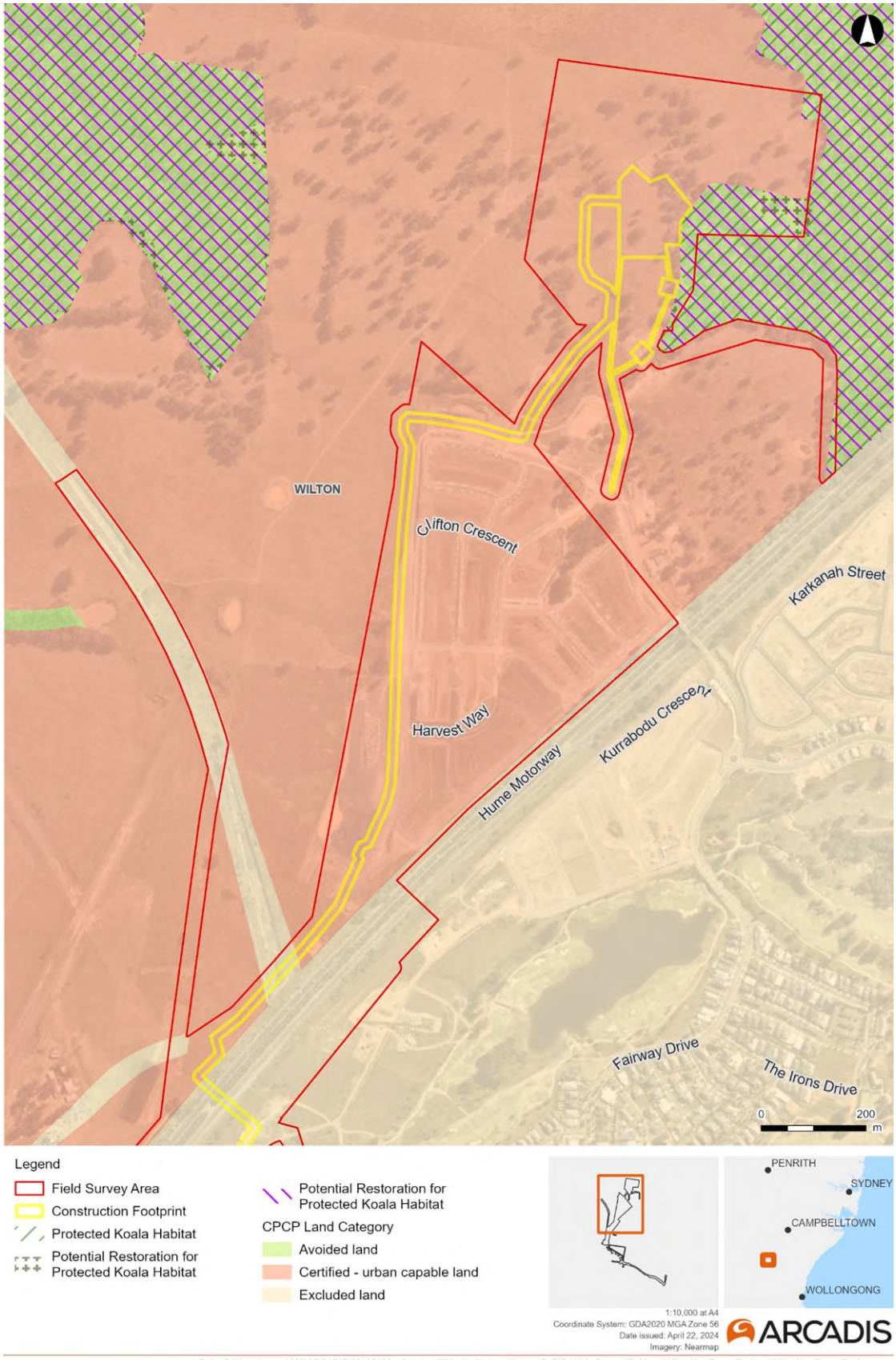


Figure 6-3 Construction footprint adjacent to Avoided Land

Threatened flora and fauna

Desktop searches identified 47 threatened flora species as recorded or predicted to occur within 10 km of the field survey area. Of these, 5 were considered to have a moderate or higher likelihood of occurring within the field survey area. No threatened flora species were identified during field surveys (Table 6-5).

Desktop searches identified 76 threatened fauna species as recorded or predicted to occur within 10 km of the field survey area. Following field survey and threatened fauna habitat assessment, 29 species were considered to have a moderate likelihood of occurrence within the field survey, 5 with a high likelihood, and 3 are known to occur (Table 6-5).

All the threatened flora and fauna species below are listed under the BC Act.

Important fauna habitat features present within the field survey area are also shown in Table 6-5.

Table 6-5 Threatened fauna and fauna including habitat features

Species type	Species names	Habitat features within field survey area
Flora	**Acacia pubescens* (Downy Wattle)	Potential presence within PCT 3320 and PCT 3321.
Arboreal mammals	Eastern Pygmy Possum (*Cercartetus nanus*) Squirrel Glider (*Petaurus norfolcensis*) *Greater Glider (*Petauroides volans*) *Koala (*Phascolarctos cinereus*): Koala (*Phascolarctos cinereus*) scats were found within the field survey area in PCT 3321.	Koala feed trees including 3 eucalyptus species identified for the Southern Sydney koala population. The land is zoned koala habitat under Chapters 3 and 4 of the BC SEPP. Thirteen hollow bearing trees (HBTs) were identified. These provide nesting and breeding habitat.
Hollow-roosting microbats	Greater Broad-nosed Bat (*Scoteanax rueppellii*) Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)	Decorticating bark on eucalypts and HBTs provide potential habitat for microbat species.
Culvert-roosting microbats	Little Bent-winged Bat (*Miniopterus australis*) Large Bent-winged Bat (*Miniopterus orianae oceanensis)* Southern Myotis (*Myotis Macropus*)	A culvert under Picton Road may provide potential roosting habitat. However, no signs of occupation were observed during field surveys.

Species type	Species names	Habitat features within field survey area
Tree-nesting woodland and nectivorous birds	Flame Robin (*Petroica phoenicea*) Speckled Warbler (*Chthonicola sagittata*) Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) Varied Sittella (*Daphoenositta chrysoptera*) *Swift Parrot (*Lathamus discolor*) *Fork-tailed Swift (*Apus pacificus)* Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*) Black-chinned Honeyeater (*Melithreptus gularis*) Scarlet Robin (*Petroica boodang*) Flame Robin (*Petroica phoenicea*) Diamond Firetail (*Stagonopleura guttata*) *Regent Honeyeater (*Xanthomyza phrygia*) Turquoise Parrot (*Neophema pulchella*)	Thirteen HBTs were identified. These provide nesting and breeding habitat for hollow dependent birds and owl species.
Hollow-nesting woodland birds and cockatoos	Dusky Woodswallow (*Artamus cyanopterus cyanopterus*): A small flock were sighted flying over the field survey area during the survey. Little Lorikeet (*Glossopsitta pusilla*) *Glossy Black-cockatoo (*Calyptorhynchus lathami):* Three Glossy Black Cockatoos (*Calyptorhynchus lathami*) listed as Vulnerable (BC Act) were seen flying over the field survey area within PCT 3321 Gang-gang Cockatoo (*Callocephalon fimbriatum*)	Thirteen HBTs were identified. These provide nesting and breeding habitat for hollow dependent birds and owl species.
Raptor and owl species	Powerful Owl (*Ninox strenua*) Masked Owl (*Tyto novaehollandiae*)	Thirteen HBTs were identified. These provide nesting and breeding habitat for hollow dependent birds and owl species.
Other	Rosenberg's Goanna (*Varanus rosenbergi*) Cumberland Plain Land Snail (*Meridolum corneovirens*) *Grey-headed flying-fox (*Pteropus poliocephalus*)	Rocky habitat throughout the site could be suitable nesting and hunting habitat for Rosenberg's Goanna.

* also listed under the EPBC Act

Aquatic habitat

Two mapped watercourses are present within the field survey area, however only one intersects with the construction footprint. Neither of these waterbodies are KFH.

Stringybark Creek passes below Picton Road, within the construction footprint. It is an intermittently flowing stream surrounded by agricultural land. It is a degraded drainage channel with sparse native canopy cover and mostly exotic understorey.

Ground-truthed vegetation mapping within the construction footprint, including fauna habitat, is shown in Figure 6-4, Figure 6-5 and Figure 6-6 below.

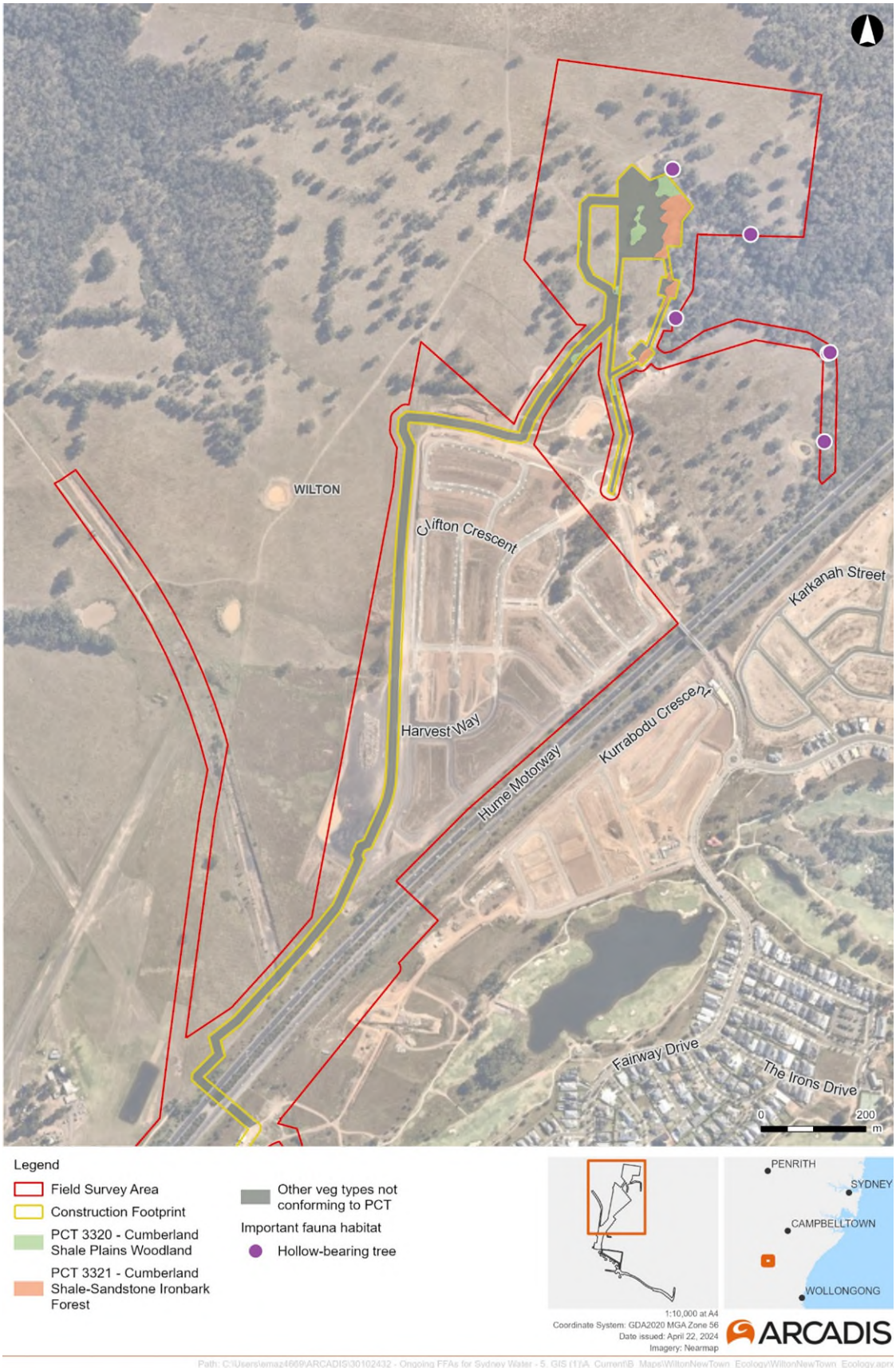


Figure 6-4 Biodiversity features within the construction footprint – map 1 of 3 (Arcadis, 2024)

Figure 6-5 Biodiversity features within the construction footprint – map 2 of 3 (Arcadis, 2024)

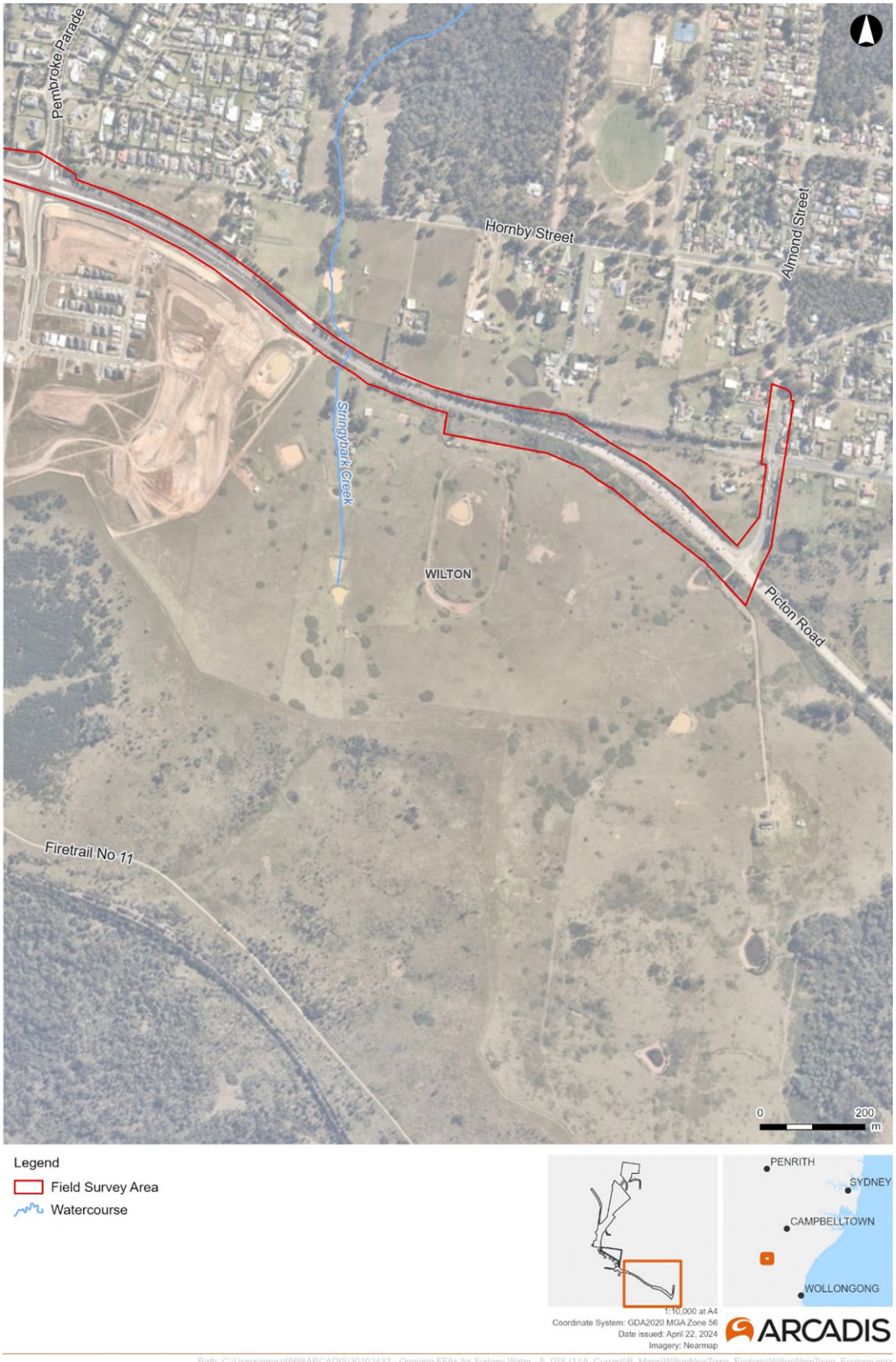


Figure 6-6 Biodiversity features within the construction footprint – map 3 of 3 (Arcadis, 2024)

Priority weeds

42 exotic species were recorded in the field survey area. Of these, 6 are listed as 'priority weeds' under the *Biosecurity Act 2015* for the Greater Sydney Local Land Services region, which includes the Wollondilly Shire Council LGA. Of these, 2 species are also listed as Weeds of National Significance (WoNS). An additional 4 are listed as 'weeds of regional concern'. These weeds are listed in with their associated biosecurity duty in Table 6-6.

Table 6-6 Priority weeds in the field survey area

Scientific name	Common name	WoNS	Priority	Regional Concern	Biosecurity duty*
Araujia sericifera	Moth Vine			✓	General duty
Asparagus asparagoides	Bridal creeper	✓	✓		Prohibition on dealings
Ligustrum lucidum	Large-leaved Privet			✓	General duty
Lycium ferocissimum	African boxthorn	✓	✓		Prohibition on certain dealings
Nasella trichotoma	Serrated tussock	✓	✓		Prohibition on certain dealings
Olea europaea subsp. *cuspidata*	African olive		✓		Regional Recommended Measure
Opuntia stricta	Common pear	✓	✓		Prohibition on certain dealings
Senecio madagascariensis	Fireweed	✓	✓		Prohibition on dealings
Solanum mauritianum	Wild Tobacco Bush			✓	General duty
Solanum nigrum	Blackberry Nightshade			✓	No biosecurity duty

*Prohibition on dealings: Must not be imported into the state or sold

*General duty: Prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

*Prohibition on certain dealings: Must not be imported into the state, sold, bartered, exchanged or offered for sale.

*Regional Recommended Measure: Whole region: The plant or parts of the plant are not traded, carried, grown or released into the environment. Exclusion zone: The plant is eradicated from the land and the land kept free of the plant. Core infestation area: Land managers prevent spread from their land where feasible. Land managers reduce impacts from the plant on priority assets.

Potential impacts

Construction impacts to flora and fauna have been minimised during planning and design (refer Section 2.2.4 of this REF). The residual potential construction impacts are discussed below.

Potential impacts – vegetation

The potential impacts of the proposal on flora and fauna will primarily be due to vegetation clearing with associated impacts on habitat for threatened flora and fauna species.

The proposal would require clearing of 0.82 ha of native vegetation (Table 6-7).

Table 6-7 Proposed impacts to PCTs

Plant Community Type (PCT)	Area to be impacted (hectares)
	Certified-urban capable land
3320 – Cumberland Shale Plains Woodland	0.32
3321 – Cumberland Shale-Sandstone Ironbark Forest	0.50
Total	**0.82**

PCT 3320 and PCT 3321 are listed as critically endangered under both the BC Act and EPBC Act. However, all vegetation clearing would be on land zoned as urban capable under the CPCP. Biodiversity impacts to urban capable land have already been certified for development under Part 8 of the BC Act and Part 9 of the EPBC Act and therefore require no further assessment. Test of Significance (BC Act) and Significant Impact Criteria (EPBC Act) assessments are not required.

Weed species will be disturbed during clearing of exotic pasture. 9.22 ha of exotic pasture requires clearing. This includes 7.14 ha of exotic pasture clearing on certified land. The remaining 2.08 ha of exotic pasture clearing is on non-certified land.

Potential impacts – threatened flora and fauna

Vegetation disturbance will impact potential foraging, shelter, and/or breeding habitat for multiple threatened fauna species with a moderate or higher likelihood of occurring within the construction footprint. Fauna injury or mortality may occur during vegetation clearing activities, collisions with work vehicles or plant, accidental entrapment in plant or equipment, or entrapment in open trenches. Most of the fauna species which could occur in the construction footprint are highly mobile bird and mammal species likely to be able to move away from vegetation clearing activities.

It is anticipated that future urban development in the locations adjacent to koala habitat in the north-western corner of the field survey area will be subject to the CPCP precinct design and development requirements and guidelines. These requirements and guidelines include provisions for koala fencing, perimeter roads and koala awareness signs. Koalas have potential to occur within the field survey area. They are less mobile and more likely to be impacted by vegetation clearing activities and work vehicle strikes than other animals. Koala scats have been found within the field survey area, and multiple records dating to 2021 are within 2 km of the field survey area. Specific pre-clearing surveys for koala and Cumberland Plain Land Snail are required, as both

species are less mobile than other threatened species and require pre-clearing surveys to ensure individuals are not impacted.

Tests of Significance (BC Act) and/or Significant Impact Criteria assessments (EPBC Act) are not required because all areas to be impacted occur on certified-urban capable land and have already been certified under the CPCP for both the BC Act and EPBC Act. Therefore additional assessment is not required. Nonetheless, it was determined that the proposal is unlikely to have a significant impact upon any of these threatened species for the following reasons:

- A small area of potential habitat mostly comprising roadside vegetation and scattered paddock trees will be removed.
- The area of native vegetation to be removed constitutes general habitat (i.e. browsing, hunting, aerial foraging habitat) to most of the threatened species known from the locality. These habitat resources are widespread in the landscape and will remain in areas adjacent to the proposal.
- Impacts to important habitat features are restricted to one hollow-bearing tree, and a small area containing koala and Glossy Black-Cockatoo feed trees. The quantity of these specific habitat features to be impacted is low and is unlikely to adversely affect the occurrence or lifecycle of these species in the locality.
- The proposal is unlikely to cause adjacent areas of potential habitat to become unsuitable to these threatened species into the future.

Potential impacts – aquatic habitat

No significant impacts to waterways within the construction footprint are expected. Of the waterbodies mentioned above, only Stringybark Creek intersects the construction footprint. This creek is not mapped as KFH and is not considered sensitive to key fish species as it is an agricultural drainage channel. No dredging or reclamation work is to be performed in this waterway.

Potential indirect impacts

Potential indirect impacts to native vegetation and habitat include:

- Edge effects when clearing vegetation which is already on the edge of natural bushland, which could cause weeds to establish and spread.
- Increased spread of weeds, pathogens, and diseases
- Erosion, sedimentation, and changes to hydrology.

Direct and indirect impacts to flora and fauna will be managed through the mitigation measures outlined in Table 6-8.

Mitigation measures

With the implementation of the mitigation measures below, impacts to flora and fauna can be adequately managed, and residual impacts are expected to be low. No impacts are anticipated during operation.

Table 6-8 Environmental mitigation measures — flora and fauna

Mitigation measures
General – pre-construction
Provided it is essential for delivering the project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the environmental and community representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact. • Any minor: - vegetation trimming or - removal of exotic vegetation or - removal of planted native vegetation where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value. • Any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the EIA). Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval. Any impacts to native vegetation and trees must be offset in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).
Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage before works start.
Protect trees in accordance with the requirements of Australian Standard 4970-2009 for the Protection of Trees on Development Sites. Do not damage tree roots unless absolutely necessary, and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone (TPZ). • TPZ must be marked out for trees to be retained within the construction footprint. The TPZ must be marked out before works starting and be maintained for the duration of construction. No plant or materials should be parked or stored in the TPZ at any time. No encroachment into the TPZ should occur unless under the guidance of the Project Arborist. • All exclusion and No-Go zones should be established and physically delineated around patches of native vegetation within 10 m of the construction corridor, including access tracks, laydown areas and site compounds. Exclusion zones should be delineated with temporary fencing where plant or vehicles are operating or bunting where there is foot traffic to prevent accidental impacts to TECs, threatened species and their habitats.
Ecological pre-clearance surveys: • A suitably qualified ecologist will accompany the contractor to complete an ecological pre-clearing assessment of the Field Survey Area before starting works. Any unexpected threatened species or

Mitigation measures
ecological communities identified during the pre-clearing survey should be appropriately assessed through a supplementary impact assessment. • Pre-clearance surveys will include targeted surveys for the Cumberland Plain Land Snail. If any individuals are located, they will be moved outside of the construction footprint into suitable habitat within adjacent vegetation. • Perform targeted pre-clearing surveys for koala. If any individuals are identified no works should start until the koala has self-relocated outside of the construction footprint. Additionally, sequential clearing should be considered to allow any koalas, or other fauna, time to move from the area and avoid injury or death. • Pre-clearance surveys would identify and inspect any breeding or nesting habitat (hollow-bearing trees, bird nest) and as far as practical no breeding sites would be disrupted. • Any HBTs not previously identified will be marked by an ecologist so they are retained and avoided by contractors. Where fauna species are identified in vegetation to be cleared, animals would be removed and relocated to adjacent bushland before felling.
General – vegetation clearing and disturbance
Map and report native vegetation clearing greater than 0.01 ha in extent (and any associated rehabilitation) to the Sydney Water Environmental Representative. Track vegetation clearing as per SWEMS0015.26 Contractor Native Vegetation Clearing and Rehabilitation template.
Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. Where possible, limit clearing to trimming rather than the removal of whole plants.
If any damage occurs to vegetation outside of the disturbance corridor (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.
Removal of native vegetation including potential fauna habitat: • If potential fauna habitat is identified in vegetation to be removed the habitat features would be sectionally dismantled or soft felled using an excavator with a rotating bucket or tree climbers. Any habitat removal would only be conducted under the supervision of an ecologist or fauna-spotter catcher trained in animal handling. • Mitigate possible edge effects from native vegetation clearing by removing weed species appropriately, and minimising removal of trees and large shrubs where possible.
Tree removal to be done by a suitably qualified, experienced, and insured arboricultural contractor with minimum AQF level 3 qualification in arboriculture.
General – vegetation protection and replanting
No clearing or disturbance of any vegetation within a mapped Strategic Conservation Area or Avoided Land.

Mitigation measures
Adjust methodology (e.g. avoid area, hand excavate, implement exclusion fencing) to protect sensitive areas where possible (such as mature trees, known threatened species, populations or ecological communities).
If replanting near Sydney Water pipelines refer to '*Which trees can damage wastewater pipes?'* link from Sydney Water website.
General – flora and fauna
Retain dead tree trunks, bush rock or logs in-situ unless they are in the disturbance corridor and moving is unavoidable. Reposition material elsewhere on the site or approved adjacent sites. If native fauna is likely to be present, a licenced ecologist should inspect the removal and undertake fauna relocation.
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 restart once the impact on the species has been assessed and appropriate control measures provided.
General – weeds
Manage biosecurity in accordance with: • *Biosecurity Act 2015* (see NSW Weedwise), including reporting new weed infestations or invasive pests • contemporary bush regeneration practices, including disposal of sealed bagged weeds to a licenced waste disposal facility. Record Pesticides and Herbicides use in accordance with SWEMS0017.
Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.
Vehicles, equipment, materials and footwear are to be clean on entry (free of soil, mud and/or seeds) to minimise the risk of introduction or spread of *Phytophthora cinnamomia.* The 'arrive clean, leave clean' principle should be adopted for all personnel, requirements and tools on site which involves: • Inspecting and disinfecting plant material from clothing, boots, vehicles, machinery and tools • Schedule weeding for dry conditions • Use techniques and tools that minimise soil disturbance • Ensure that transportation of plant material does not introduce weeds to new areas.
General – other
In TOBAN:

Mitigation measures
For maintenance and construction activities that are not essential/emergency works, the use of fire in the open, including for general purpose hot works must not proceed without an exemption being approved. Contact to submit an exemption request: CDResiliencePrograms@sydneywater.com.au or CustomerHub.DutyManager@sydneywater.com.au Staff and contractors must not contact local RFS directly to seek their own exemption.
Koala habitat
Stop work procedures should be in place if a koala is found during construction. All works should cease within 50 m of the koala and should not re-start until the koala has self-relocated. If a koala enters the construction footprint and is at risk of injury a qualified wildlife carer/handler should be called, and the koala safely removed from site.
If koala exclusion fencing is encountered during construction, works must not jeopardise the integrity of this fencing.
As this project is enabling future development in the locality it may not be suitable to install koala fencing which is not considerate of future designs. In the interim, where a koala-exclusion fence is not installed between koala habitat and certified urban-capable the following actions will be undertaken: • Pre-construction surveys and tree-felling protocols before removing vegetation • Temporary fencing around construction sites • Speed limits and traffic calming measures.
Where possible, no night time works at SP1233.

6.1.4 Heritage

Existing environment and potential impacts

Aboriginal heritage (background)

An Aboriginal Heritage Due Diligence assessment (Appendix E) was carried out by Kelleher Nightingale Consulting to identify if Aboriginal objects were located within the study area (equivalent to the construction footprint assessed in this REF) and if so, whether harm was likely to those objects.

Archaeological evidence suggests that while Aboriginal objects are known to occur in and near the study area, the likelihood of subsurface deposit will vary significantly based on the level of disturbance. A landscape assessment suggests that there is potential to encounter Aboriginal objects and archaeological deposits in areas that have not been significantly disturbed. Landscape features often linked with the presence of Aboriginal objects (waterways and ridgelines) are present in or near the study area. Several soil landscapes within the study area are also generally conducive to preserving archaeological deposits where disturbance levels are low. Low to moderate levels of historic land use (mechanical land clearing and agriculture) is likely to have disturbed any subsurface archaeological deposits within the study area.

A desktop review of background searches and previous archaeological investigations within the study area identified one Aboriginal archaeological site within the study area (Figure 6-7):

[redacted]

Other nearby known sites include low density artefact scatters, isolated finds, and scarred trees, mostly on elevated land near creeks and tributaries. [redacted]

Aboriginal heritage (impacts/outcomes)

Construction will impact the ground surface and will therefore have potential to harm any Aboriginal objects which may be present. A visual inspection was performed in December 2022 to assess the level of landscape disturbance, archaeological potential, and presence of previously recorded items within the study area. Visual inspection identified:

- The previously recorded AHIMS site is located within the construction footprint, with the site condition consistent with the original recording.
- The remaining study area was found to have been disturbed by construction of roads, water assets, other utilities, and agricultural land use.
- No new Aboriginal objects, Aboriginal archaeological sites, or areas of archaeological potential were identified within the study area.

The previously recorded AHIMS site [redacted] does not constrain construction of the proposal as the site would be subject to an AHIP [redacted] for the proposed North Wilton bulk earthworks project. Any impacts to this site would be managed through the mitigation measures identified below.

The proposed gravity alignment is located close to [redacted] However, the gravity pipeline would be micro-tunnelled at a depth of about 6 m at this location and would not impact the [redacted].

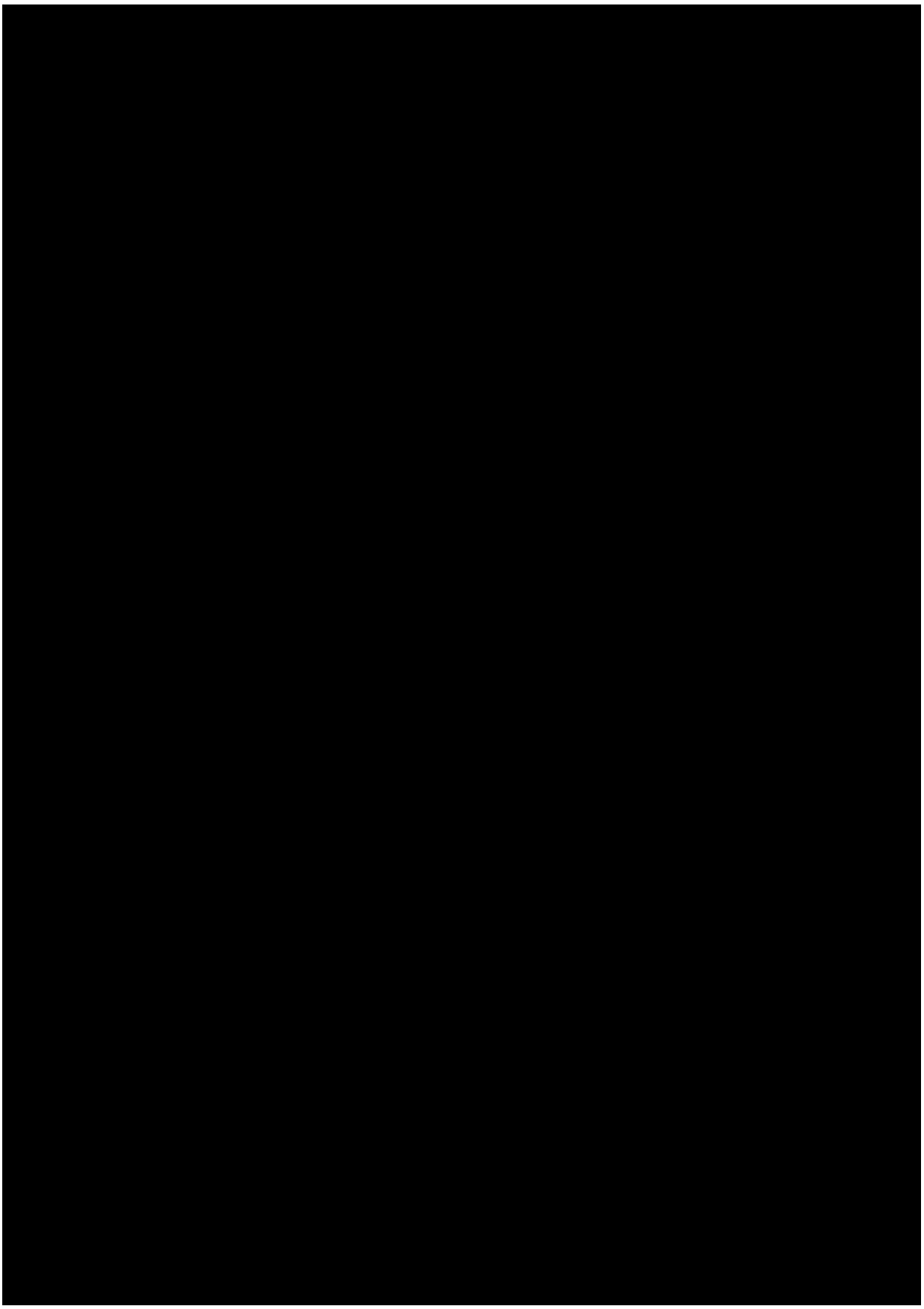
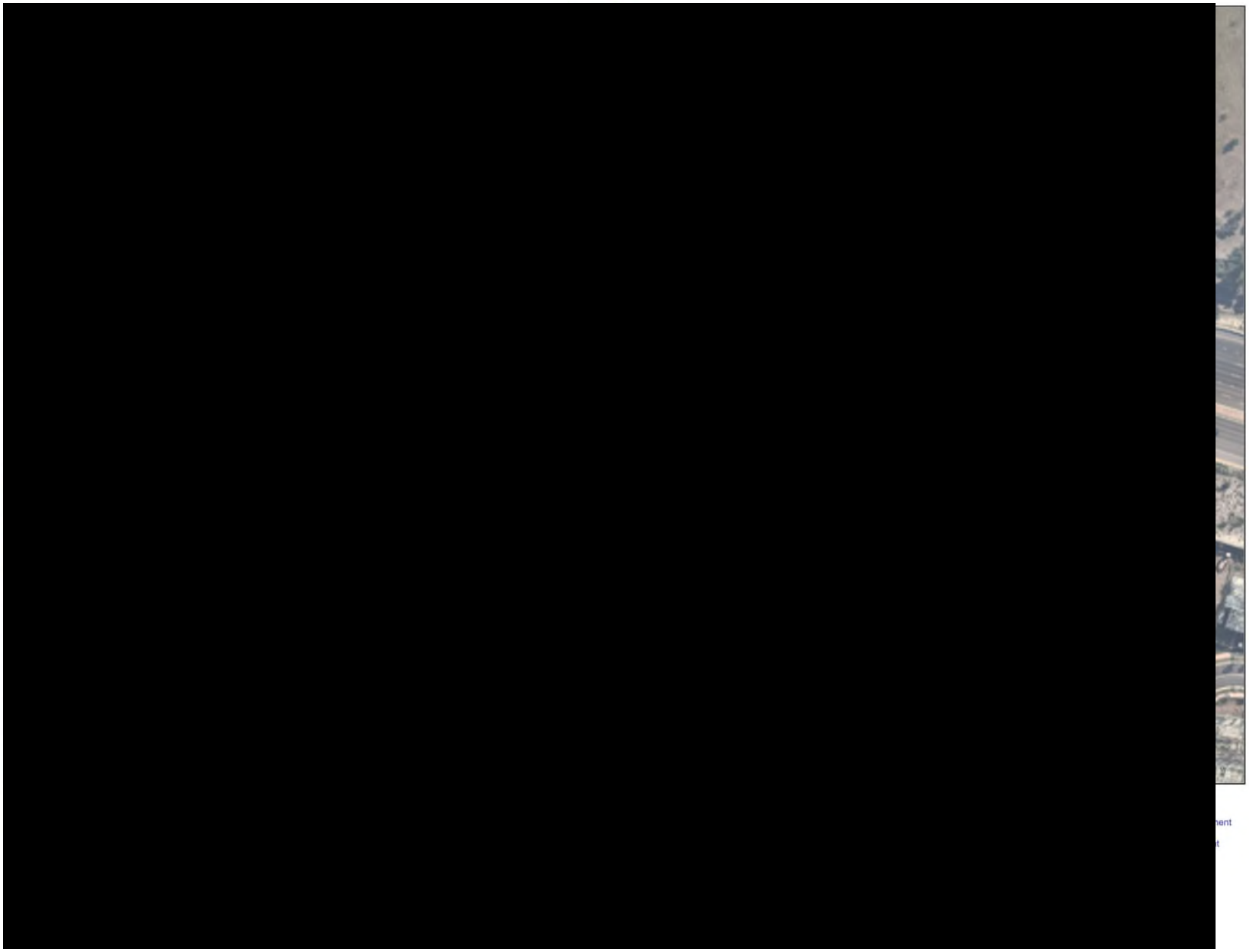


Figure 6-7 Aboriginal heritage – results of due diligence



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Non-Aboriginal heritage

There are no non-Aboriginal heritage-listed items within 200 m of the proposal. Therefore, no impact to known heritage items is expected.

It is unlikely that any unknown non-Aboriginal heritage items will be encountered.

Impacts to Aboriginal and non-Aboriginal heritage during construction (including archaeological or sub-surface finds) would be managed using the mitigation measures below.

Mitigation measures

With the implementation of the mitigation measures below, impacts to Aboriginal and non-Aboriginal heritage can be adequately managed. No impacts are anticipated during operation.

Table 6-9 Environmental mitigation measures — heritage

Mitigation measures
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.
[redacted]
[redacted]
[redacted]
[redacted]

6.1.5 Noise and vibration

A specialist noise and vibration assessment was carried out for the proposal (Arup, 2023). The report is summarised in this chapter and full report provided in Appendix F.

Existing environment – noise and vibration

Noise sensitive receivers within 1 km of the proposal were identified as mostly residential properties. Some commercial and industrial properties, as well as a school and place of worship, are also present within 1 km of the proposal.

The nearby non-residential receivers include:

- Wilton Airport, 745 Picton Road. The Sydney Skydivers business is open on the site between 8am and 3pm daily
- Teas and Greens Café, 31 Pembroke Parade, open 7:30am to 3pm daily
- Bingara Gorge Golf Course, The Irons Drive, open until 5pm daily, opens 9am weekdays, 7am Saturdays, and 8am Sundays.
- Bingara Gorge WRRF, Condell Park Road.

Unattended noise monitoring from nearby projects where background data was available was used to determine the noise management levels (NMLs) for residential receivers impacted by the proposal (Table 6-10). Criteria from the Interim Construction Noise Guideline (ICNG) (DECC NSW, 2009) were used to determine NMLs for non-residential receivers. NMLs represent a threshold for noise impacts to sensitive receivers. Where noise impacts are predicted to be above NMLs, additional reasonable and feasible mitigation measures to reduce noise impacts should be considered.

Table 6-10 NMLs for noise sensitive receivers – external noise levels

Type of receiver	Time period[1]	Highly noise affected	Standard Hours[2] dB $L_{Aeq(15\ min)}$
Residential[4] (NCA1)	Day	75[3]	53
Commercial	When in use	NA	65
Educational	When in use	NA	55
Industrial	When in use	NA	70
Active recreation	When in use	NA	65

Notes:

1_The Noise Policy for Industry (EPA, 2017) defines day, evening and night-time periods as:
- Day: the period from 7am to 6pm Monday to Saturday; or 8am to 6pm on Sundays and Public Holidays.
- Evening: the period from 6pm to 10pm.
- Night: the remaining period.

2_The ICNG defines Standard hours as Monday to Friday 7am to 6pm and Saturday from 8am to 1pm.

3_In accordance with the ICNG the highly noise affected applies to residential properties only.

4_Results of noise logger L1 and L2 were conservatively used to determine the NMLs to all residential receivers within NCA1 region. Noise catchment areas (NCAs) are established based on their likely similar noise environment.

Potential impacts – construction noise

An acoustic model was prepared based on the likely construction scenarios, and equipment to be used during each scenario. The model was able to predict expected construction noise levels at each receiver. Table 6-11 summarises the noise assessment results for each construction scenario, including the predicted sound power levels during construction. For the purpose of the assessment, all plant and equipment for each scenario was presumed to be operating concurrently for the whole assessment. This is a worst-case assessment as it is unlikely all plant and equipment would be used at once. As the construction staging program is unknown (i.e. multiple scenarios may be in construction at once), the noise from each scenario was assessed individually. Noise modelling is also presented in Figure 6-9 to Figure 6-12. Figures displayed in this REF include those receivers predicted to be affected by noise >75 dBA, or otherwise the receivers most noise impacted for each scenario.

Table 6-11 Construction scenarios, sound power levels, and results.

Scenario	Location	Description of works	Hours of operation/ Duration	Sound power levels (dBA)	Number of receivers impacted at different noise levels				
					Below or equal to NML – noticeable	0-10 dB above NML – clearly audible	10-20 dB above NML – moderately intrusive	More than 20 dB above NML – highly intrusive	75 dB or higher – highly noise affected
1 (Figure 6-9)	Between Condell Park Road and Picton Road and under Hume Highway	Microtunnelling and associated access roads	Daytime standard hours/ ~4 to 6 weeks per 100 m	120	3559	201	13	6	8
2a (**Figure 6-10**)	Wilton - new pump stations SP1233 and SP1234	Earthworks and associated access roads	Daytime standard hours/ ~12 to 16 months per pump station	126	3657	113	9	0	1
2b (Figure 6-10)	Wilton - new pump stations SP1233 and SP1234	Building construction and associated access roads	Daytime standard hours/ ~12 to 16 months per pump station	125	Impacts to nearest receivers during building construction are predicted to be comparable to those predicted for Scenario 2a.				

Scenario	Location	Description of works	Hours of operation/ Duration	Sound power levels (dBA)	Number of receivers impacted at different noise levels				
					Below or equal to NML – noticeable	0-10 dB above NML – clearly audible	10-20 dB above NML – moderately intrusive	More than 20 dB above NML – highly intrusive	75 dB or higher – highly noise affected
3a (**Figure 6-11**)	Between the two pump stations (except section under Hume Hwy)	Trenching and associated access roads	Daytime standard hours/ ~30m/day	126	3228	456	87	8	18
3b (Figure 6-11)	Between the two pump stations (except section under Hume Hwy)	Backfilling and restoration and associated access roads	Daytime standard hours/ ~30m/day	125	Impacts to nearest receivers during building construction are predicted to be comparable to those predicted for Scenario 3a.				
4 (**Figure 6-12**)	One location adjacent to the new pump station SP1234	Site compound operation	Daytime standard hours	119	3595	164	20	0	0

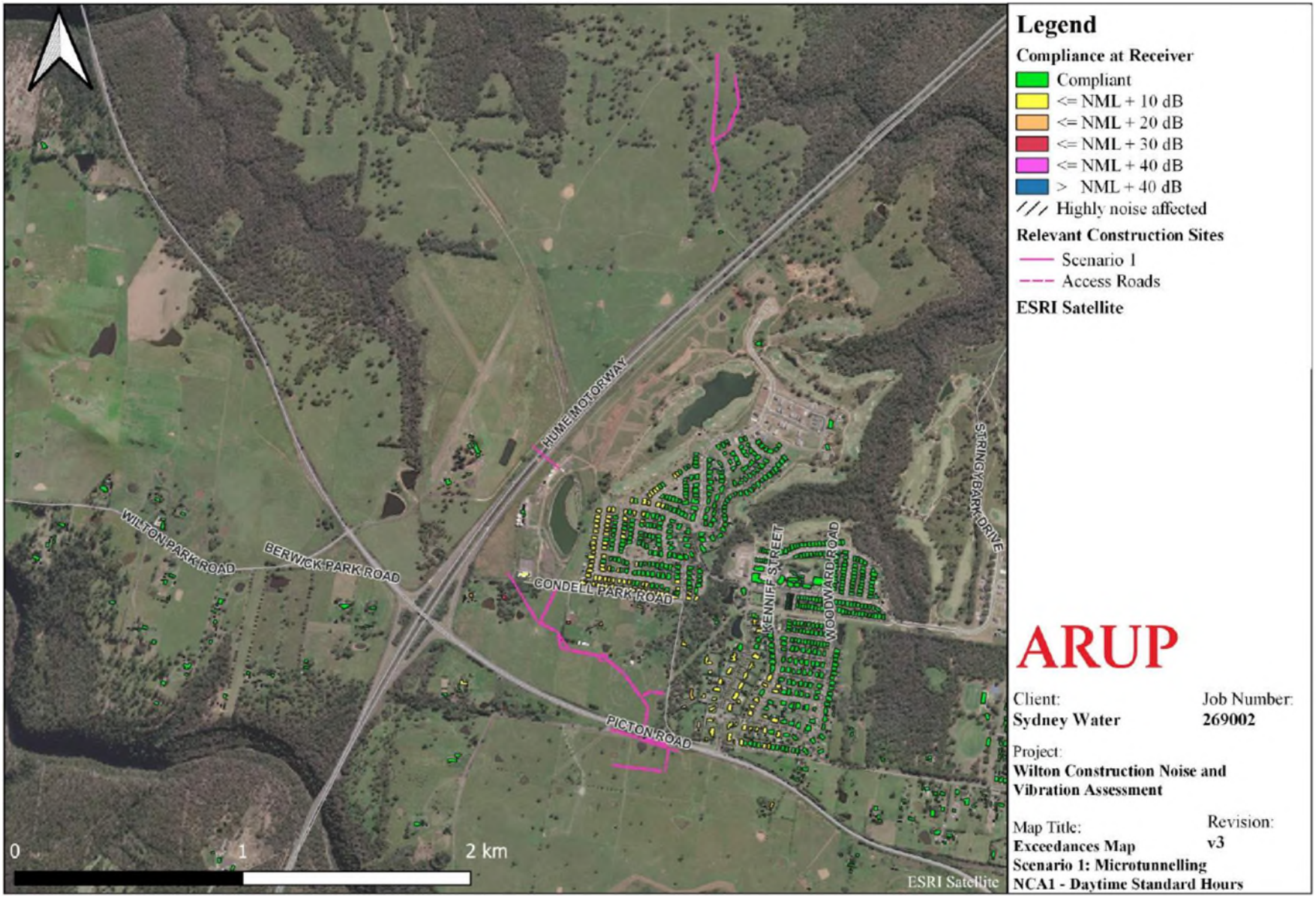

Figure 6-9 Predicted noise impacts - Scenario 1 (Arup, 2024)

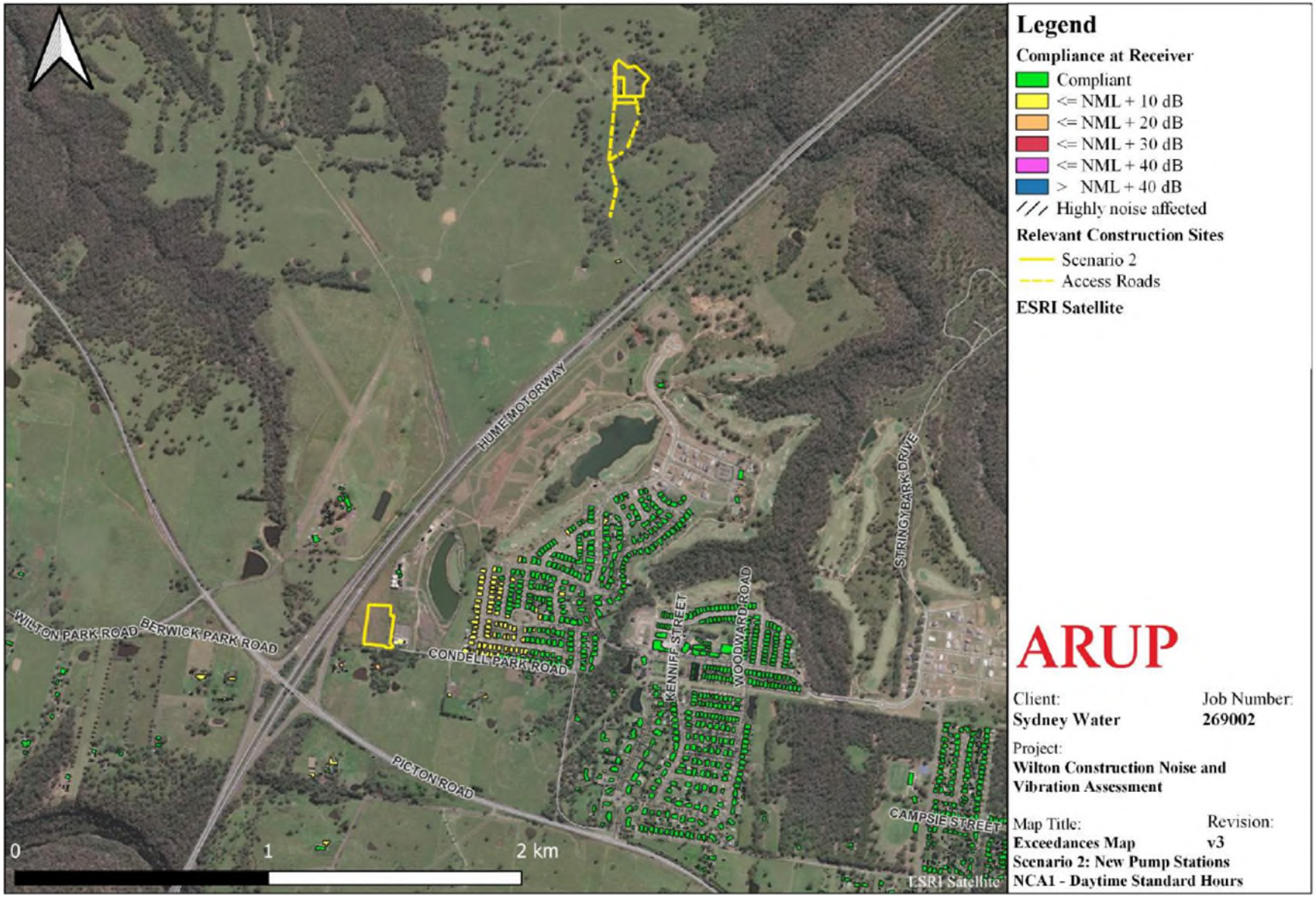

Figure 6-10 Predicted noise impacts - Scenario 2 (Arup, 2024)

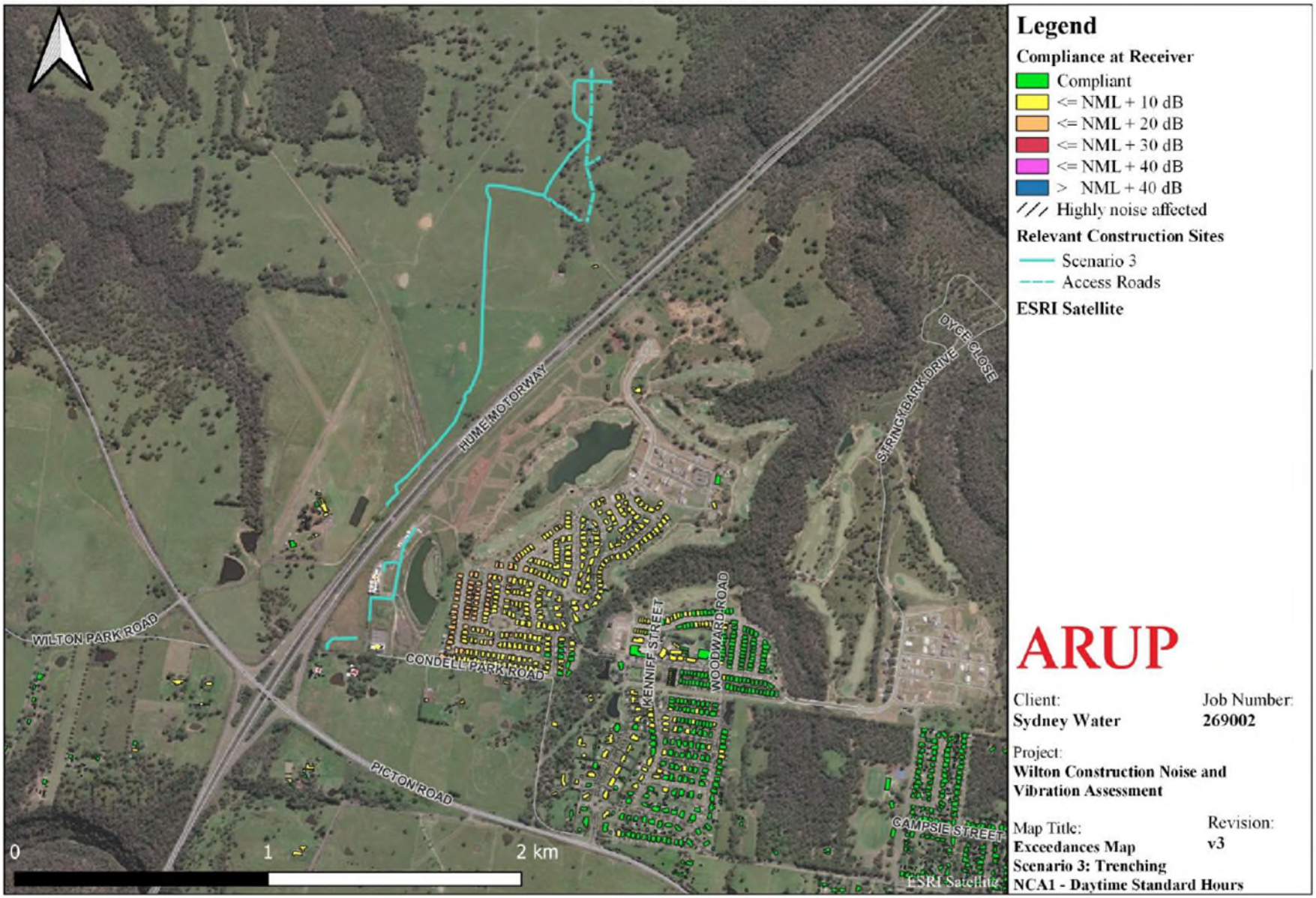

Figure 6-11 Predicted noise impacts - Scenario 3 (Arup, 2024)

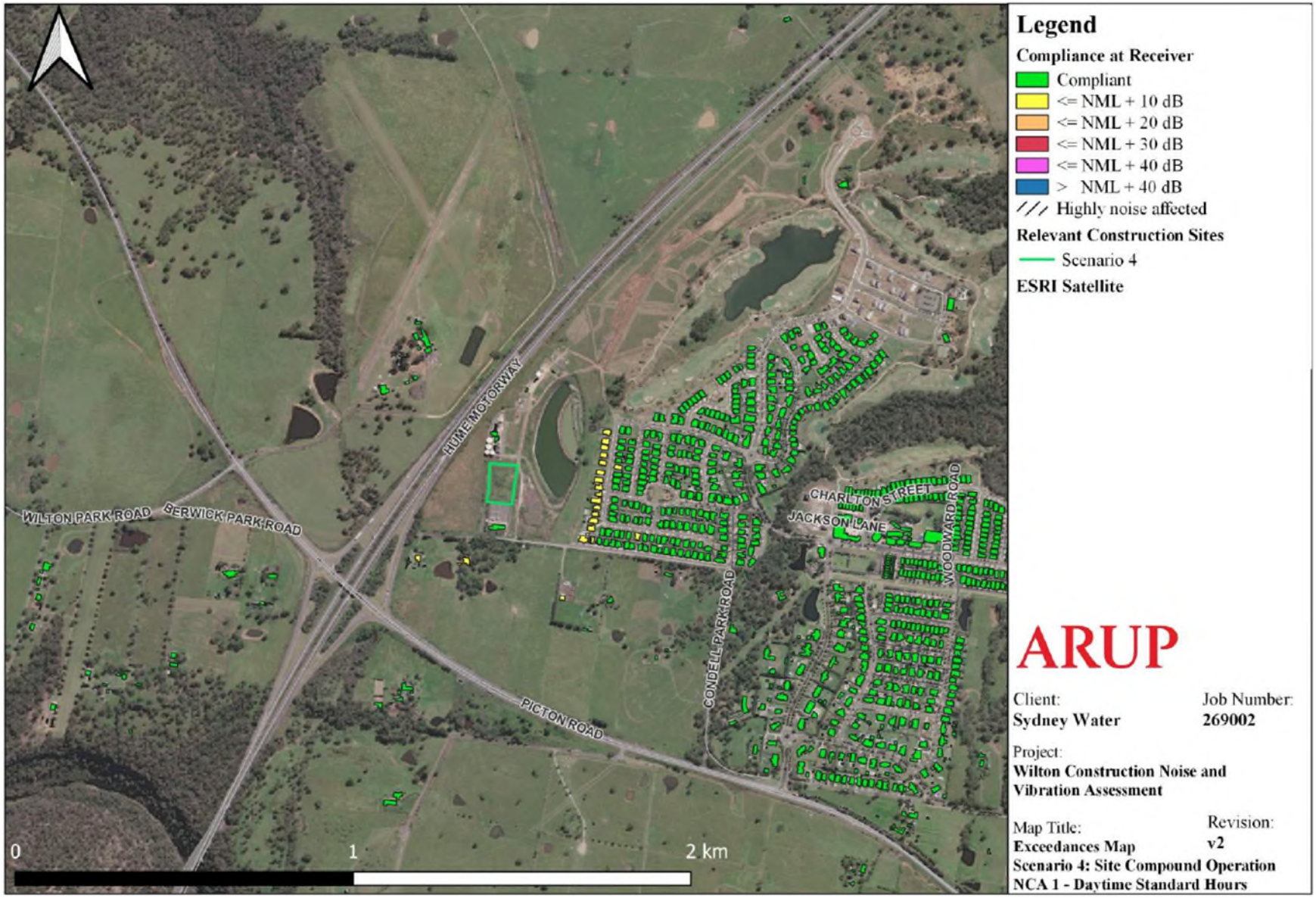

Figure 6-12 Predicted noise impacts - Scenario 4 (Arup, 2024)

Eighteen sensitive receivers within NCA1 are predicted to be highly noise affected (>75 dBA) during construction. Plant and equipment will move as construction progresses, changing noise impacts in relation to the nearby individual sensitive receivers. This movement will mean that the times when the noise is >75 dBA are likely to be relatively short-term, as noise would increase as the equipment moves closer to a property, peak when construction occurs in front of a property, and decrease as the equipment moves further away. The noise levels experienced at any one location will rise and fall relative to:

- the varying offset distance of the works
- the intensity and location of construction activities
- the intervening terrain and structure
- the type of equipment used.

It is unlikely that all construction equipment will be operating at their maximum sound levels simultaneously. In any given period, construction equipment would typically be used with maximum sound levels for only a brief amount of time. At other times, the equipment may emit lower sound levels.

Potential impacts – operational noise

Pumping stations will be built to comply with the Noise Policy for Industry (EPA, 2017).

Potential impacts – construction vibration

The minimum working distances in Table 6-12 show the possibility of vibration from plant and equipment impacting nearby receivers. The minimum working distances are indicative only and will vary depending on the item of plant and local geotechnical conditions. However, mitigation measures should be implemented where receivers are within the recommended minimum distance for cosmetic damage.

Review of the sites, receiver locations and proposed equipment to be operating within the sites indicates that some receivers located close to the sites could fall within the minimum working distance depending on the type of equipment used such as:

- structures at the substation in Wilton when the rock breaker and roller are used for scenario 2a and 2b (within 25 m of the substation when using the roller, within 22 m of the substation when using the rock breaker, depending on equipment size)
- structures at the Bingara Gorge WRRF when the roller is used for scenario 3b (when used up to 25 m from the plant, depending on size of roller).

Table 6-12 Minimum working distances for vibration intensive equipment.

Plant Item	Rating / Description	Minimum working distance			Human response – Disturbance to building occupants[6]
		Cosmetic damage			
		BS 7385 – Line 1[1]	BS 7385 – Line 2[2]	DIN 4150[3]	
Small Hydraulic Hammer	300kg (5-12 t excavator)	1 m	2 m	5 m	7 m
Medium Hydraulic Hammer	900kg (12-18 t excavator)	3 m	7 m	15 m	23 m
Large Hydraulic Hammer	1600kg (18-34 t excavator)	9 m	22 m	44 m	73 m
Vibratory roller	< 50kN (~ 1-2 t)	2 m	5 m	11 m	15 m to 20 m
	< 100kN (~ 2-4 t)	2 m	6 m	13 m	20 m
	< 200kN (~ 4-6 t)	5 m	12 m	26 m	40 m
	< 300kN (~ 7-13 t)	6 m	15 m	31 m	100 m
	> 300kN (~ 13-18 t)	8 m	20 m	40 m	100 m
	> 300kN (>18 t)	10 m	25 m	50 m	100 m
Compactor[4]	Jumping Jack and plate compactor	3 m	5 m	9 m	55 m
Jackhammer	Hand-held	1 m (nominal)	1 m (nominal)	3 m	5 m
Mechanised bored tunnelling works	Tunnel Boring Machine, Horizontal Directional Drilling, Micro-tunnelling[5]	5 m	12 m	21 m	40 m

Note 1_ Minimum working distance-based screening criterion of 25 mm/s. Type of structure: Reinforced or framed structures, Industrial and heavy commercial buildings.

Note 2_ Minimum working distance-based screening criterion of 7.5 mm/s. Type of structure: Un-reinforced of light framed structures, residential or light commercial type buildings.

Note 3_ Minimum working distance based on screening criterion of 3 mm/s. Type of structure: Structures that because of their particular sensitivity to vibration, cannot be classified under:

- buildings used for commercial purposes, industrial buildings and buildings of similar design or
- residential buildings and buildings of similar design and/or occupancy
- and are of great intrinsic value (e.g. listed buildings under a preservation order)

Note 4_Based on data for previous project.

Note 5_Based on TRL document (Crabb, 2000) using Godio et al formula, equation 24

Note 6_ From *Assessing Vibration: A Technical Guideline*, EPA, 2006.

No operational vibration impacts are expected.

Construction noise and vibration impacts will be managed through the below mitigation measures.

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. No impacts are anticipated during operation.

Table 6-13 Environmental mitigation measures — noise and vibration

Mitigation measures
General – training and induction
A Construction Noise and Vibration Management Plan (CNVMP) shall be prepared. This will specify the actual plant to be used and will include updated estimates of the likely levels of noise and the scheduling of activities. The CNVMP should include but not be limited to the following: • Roles and responsibilities • Noise and vibration sensitive receiver locations and structures • Identify works that have the potential to cause impact, accompanied by an appropriate assessment (predictive assessment or risk evaluation) • Mitigation and management strategy • Monitoring methodology (as relevant) • Community engagement strategy.
Appoint a named member of the site staff who will act as the Responsible Person with respect to noise and vibration.
All employees, contractors, and subcontractors to receive an environmental induction which should include: • Standard noise and vibration mitigation measures • Permissible hours of work • Limitations on high noise and vibration generating activities • Location of nearest sensitive receivers.
Regularly train workers and contractors (such as at toolbox talks) to use equipment in ways to minimise noise.
General – working hours
Works must comply with the Interim Construction Noise Guideline (DECC NSW, 2009), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday

Mitigation measures

and 8am to 1pm Saturday. No work to be scheduled on Sunday nights or public holidays. Any work proposed to be performed outside of these hours must be justified.

The proposal will also be carried out in accordance with:

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

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

Incorporate **standard daytime hours noise management mitigation measures** into the CEMP/CNVMP, including but not limited to:

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

If works **beyond standard daytime hours are needed**, the contractor would:

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

Mitigation measures
• seek approval from the Sydney Water Project Manager in consultation with the environment and community engagement representatives.

If **night works are needed,** the contractor would:

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

If works on **Sundays or public holidays are required**, the contractor would:

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

General – community engagement

Community consultation should occur before, and during works as follows:

- Notify affected stakeholders (through methods such as letterbox drops, individual briefings or phone calls) of upcoming works with details of what the works will entail (such as the works purpose, duration, expected impacts and mitigation measures, complaints procedure, who is responsible for undertaking the works).
- Notification should be as specific as practicable regarding nature and timing of works and any scheduled respite periods.
- Discuss with affected receivers about any atypical sensitivities and review how scheduling of activities and other mitigation measures may aid to minimise impacts
    - (affected receivers = receivers mapped as experiencing non-compliant noise impacts)
    - (atypical sensitivities = such as vibration sensitive equipment/processes in medical establishments, exam periods or school holidays for education establishments).
- Establish long-term personnel or processes (e.g. project email, phone number) to centralise project enquiries.

Mitigation measures

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

Project-specific mitigation measures will be determined based on a reasonable and feasible assessment performed by suitably qualified project representatives (e.g. community and stakeholder, project management, environment) and refined through community feedback, before construction starts, and documented in the project CNVMP. This reasonable and feasible assessment can be based off the assessment in this REF and is recommended to be performed during pre-construction.

Mitigation measures may include but not be limited to:

- Alternative accommodation
- Respite periods when scheduling work
- Noisy works cut-off times
- At-source controls e.g. shielding equipment.

The anticipated project-specific community mitigation measures are summarised below:

- Moderately intrusive (20 dBA or more above NML) or higher noise – notification such as letter box drops
- Highly noise affected (75 dBA or more) – specific notifications such as individual briefings or phone calls.

These measures should be reviewed and refined closer to construction and then documented in the project-specific CNVMP.

Short-term attended measurements will be conducted in response of a complaint, to confirm alignment with predicted noise levels in the impact assessment and management measures.

General – plant and equipment selection

Where possible reduce noise from mobile plant through additional fittings including:

- Residential grade mufflers
- Damped hammers such as "City" Model Rammer Hammers.

The noise levels of plant and equipment items are to be considered when sourcing plant and equipment.

Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.

General – site setup and behavioural practises

Consideration should be given to install onsite barriers such as hoardings or temporary screens at any specific locations where necessary to provide attenuation between particularly noisy construction works and nearby sensitive receptors. Type of screens could include noise curtains or hoarding (plywood board, panels of steel sheeting or compressed fibre cement board). This mitigation measure should be

Mitigation measures
considered as a minimum, and wherever practicable, for noisy works in areas where sensitive receivers are predicted to be highly affected for extended periods of time.
Ensure good work practices are adopted to avoid issues such as noise from dropped items, and noise from communication radios is kept as low as is practicable. Avoid the use of radios or stereos outdoors and avoid shouting and minimise talking loudly and slamming vehicle doors.
Plan traffic flow, parking and loading/unloading areas to minimise reversing movements and idling traffic within the site and before entering site.
Route heavy vehicle movements away from noise sensitive areas where possible.
Vibration
Consider less vibration intensive methodologies where practicable and use only the necessary sized and powered equipment.
Select equipment to minimise vibration. Where nearby buildings are located within the safe working distance, pre-construction surveys should be conducted as per below dot point.
Property surveys (or dilapidation surveys) will be conducted before start of construction works where it has been established that the property, structure or utility is at risk of damage (such as a property which is located within the minimum working distance (Refer to Table 6-12 in the REF)) during the construction work.
The findings of the property survey may require amendment to proposed vibration criteria or management measures and therefore should be undertaken in suitable advance of the start date. Attended vibration measurements will be required at the start of vibration generating activities that are proposed within the Cosmetic Damage minimum working distances, identified in Table 6-12 of the REF.
Where works are at risk of exceeding criteria, long-term monitoring would be required. The monitors should provide 'real-time' alerts when vibration criteria are exceeded.
An exceedance of the vibration criterion may necessitate a change in work method. This could include: • Re-evaluation of the vibration criterion based on results of the initial condition investigation and inspections of the structure following the start of works • Maintain vibration monitoring throughout works within 'minimum working distances' • Reduce the size of construction equipment and develop alternative methodologies to minimise vibration • Use less vibration emitting methods if necessary closer to the sensitive building or structure • When using multiple vibrating plant consider the cumulative vibratory effect and balance variable speed vibrating plant and operate at speeds that do not produce resonance.

6.1.6 Air and energy

Existing environment

The proposal is in an area zoned for upcoming residential development. Current surrounding land use includes rural/residential, low density residential, vacant land, and wastewater infrastructure including Bingara Gorge WRRF. Potential sensitive receivers include existing residential properties in Bingara Gorge.

There are no National Pollution Inventory (NPI) sites within 1 km of the proposal.

Potential impacts

The proposal will potentially result in odour/ dust/ pollution from:

- dust generated during construction e.g. excavation and stockpiling
- dust generated by construction vehicles travelling on disturbed/ unsealed access routes
- emissions from machinery, equipment and vehicles used during construction
- odour generated during construction when connecting the new pipes from the new pumping stations into the existing Bingara Gorge WRRF
- odour generated during operation of pumping stations:
    - SP1233 will have chlorine dosing and OCU
    - SP1234 will have a vent stack, and a space for a passive OCU to be installed later if needed.

During operation, background air quality is likely to change due to residential development. There is potential for odour impacts, particularly in the initial years of operation. However, as development increases the flows to the pumping stations increase reducing the risk of stagnation and therefore odours. In the event that odour is an issue at the pumping stations, there would be provision for additional odour control. There will be residential receivers, which may be impacted by odour during operation, near both pumping stations. The system will operate under an EPL that will require odour monitoring/reporting.

The proposal will require energy to operate. The system is designed to use topography and maximise gravitational wastewater flows to pumping stations. The pumping stations are designed to operate efficiently and minimise energy demand as development and wastewater flows increase:

- pumps are sized to pump lower flows associated with development to 2026. Pumps would be augmented to pump increased flow volumes from future stages of residential development
- the pressure pipelines are sized to maximise pump efficiency at lower wastewater volumes
- variable speed drives would be used to allow pumps to operate energy efficiently
- as the pumps are underground (within the wet well), temperature variations are expected to be minimal, and no air conditioning is required.

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. No impacts to air quality are anticipated during operation. Operation of the pumping stations and new pipelines will generate additional energy demand; however, the design of these assets will minimise overall additional emissions.

Table 6-14 Environmental mitigation measures — air and energy

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

6.1.7 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 proposal will require the disturbance and/or disposal of spoil and vegetation as well as other general construction waste. The construction footprint includes removal of up to 9.22 ha of exotic pasture, and 0.82 ha of vegetation associated with a PCT. Weedy and non-weedy vegetation waste is expected to be generated, and would need to be managed as separate waste streams to avoid cross-contamination. Mixing of soil of different waste classes during stockpiling may minimise the opportunity for soil reuse.

Approximate spoil waste volumes are shown below:

- About 1,300 m^3 of soil at each pumping station
- About 7,600 m^3 of soil during microtunnelling
- About 24,900 m^3 soil from open trenching.

These quantities do not consider that material may be reused on site (e.g. as backfill), and actual waste volumes are likely to be lower.

Sydney Water maintains a Material Stockpile and Material Receiver Dashboard and Register. This provides a centralised location for Sydney Water and its contractors to share real-time information regarding excess or wanted bulk civil material. The register aims to increase reuse and reduce the disposal of otherwise suitable material for use by projects. All waste material will be classified in accordance with the EPA Waste Classification Guidelines (NSW EPA, 2014).

The risk of contamination within the Wilton Growth Area has been assessed in a PSI and summarised in Section 6.1.1 of this REF (Sydney Water and ENSure JV, 2018). The proposal is not expected to involve the transportation of asbestos waste (including soil containing asbestos)/sheeting. Unexpected contamination, such as asbestos, may be identified during construction.

Mitigation measures

With the implementation of the mitigation measures below, impacts to waste and hazardous materials can be adequately managed, and residual impacts are expected to be low. No impacts are anticipated during operation.

Table 6-15 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
A Waste and Resource Recovery Plan (WRRP) must be prepared to appropriately manage and classify any materials including soils, construction/demolition wastes and associated stockpiles.

Mitigation measures
The plan will be prepared by the delivery contractor/s (or nominated environmental consultant) and approved by the Sydney Water Project Manager in consultation with the environmental representative and Property Environmental Services.
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise stockpile size and ensure delineation between different stockpiled materials.
Minimise the generation of waste, sort waste streams to maximise reuse/recycling in accordance with the *Waste Avoidance and Resource Recovery Act 2001*.
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Prevent pollutants from escaping including covering skip bins.
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.
If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water's Asbestos Management – Minor Works procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with Property Environmental Services propertyenvironmental@sydneywater.com.au).
The contractor should use the Sydney Water Material Stockpile and Material Receiver Dashboard and Register to identify potential opportunities for spoil reuse between projects. The Material Receiver Dashboard can also be used to identify suitable waste facilities for material that cannot be reused. It can be accessed directly here, or via the SWDelivery Portal.

6.1.8 Traffic and access

Existing environment

The road network providing access to the proposal is dominated by 2 main roads. Hume Highway (a State Road) running in a roughly north-east/south-west direction is intersected by Picton Road (a State Road) which runs in a roughly north-west/south-east direction. The most recent traffic volumes from traffic counters closest to the proposal include (TfNSW, 2023):

- Picton Road 250 m east of Janderra Lane (traffic counter 07406) – about 8,000 vehicles per day, westbound data only (data from 2013)
- Hume Motorway 900 m east of Pheasants Nest Road (traffic counter 07736) – about 40,000 vehicles per day in both directions (data from 2019).

Current traffic volumes are likely higher than those listed here, due to population growth within surrounding suburbs and LGAs since this data was collected.

The proposal is not currently within 1 km of any public transport, including bus routes and railway lines. The closest train station is at Douglas Park, on the Main Southern Railway, about 3.7 km north-east of SP1233 pumping station. Land reserved for the Maldon-Dombarton Freight Rail Corridor overlaps the alignment of SP1233 pressure pipeline and SP1234 gravity pipeline. Currently, no work is proposed for this corridor. The land was partially excavated and developed over 20 years ago before the project was put on hold.

The proposal is likely to be delivered before, during or after other transport infrastructure upgrades, including road upgrades. Access roads required for construction of SP1233 would connect from these developer roads to the construction site. Proposed transport infrastructure at Wilton includes a bus station, road upgrades, intersection upgrades, and new cycleways (DPIE, 2018).

The strategic road and rail network is shown in Figure 6-13 below.

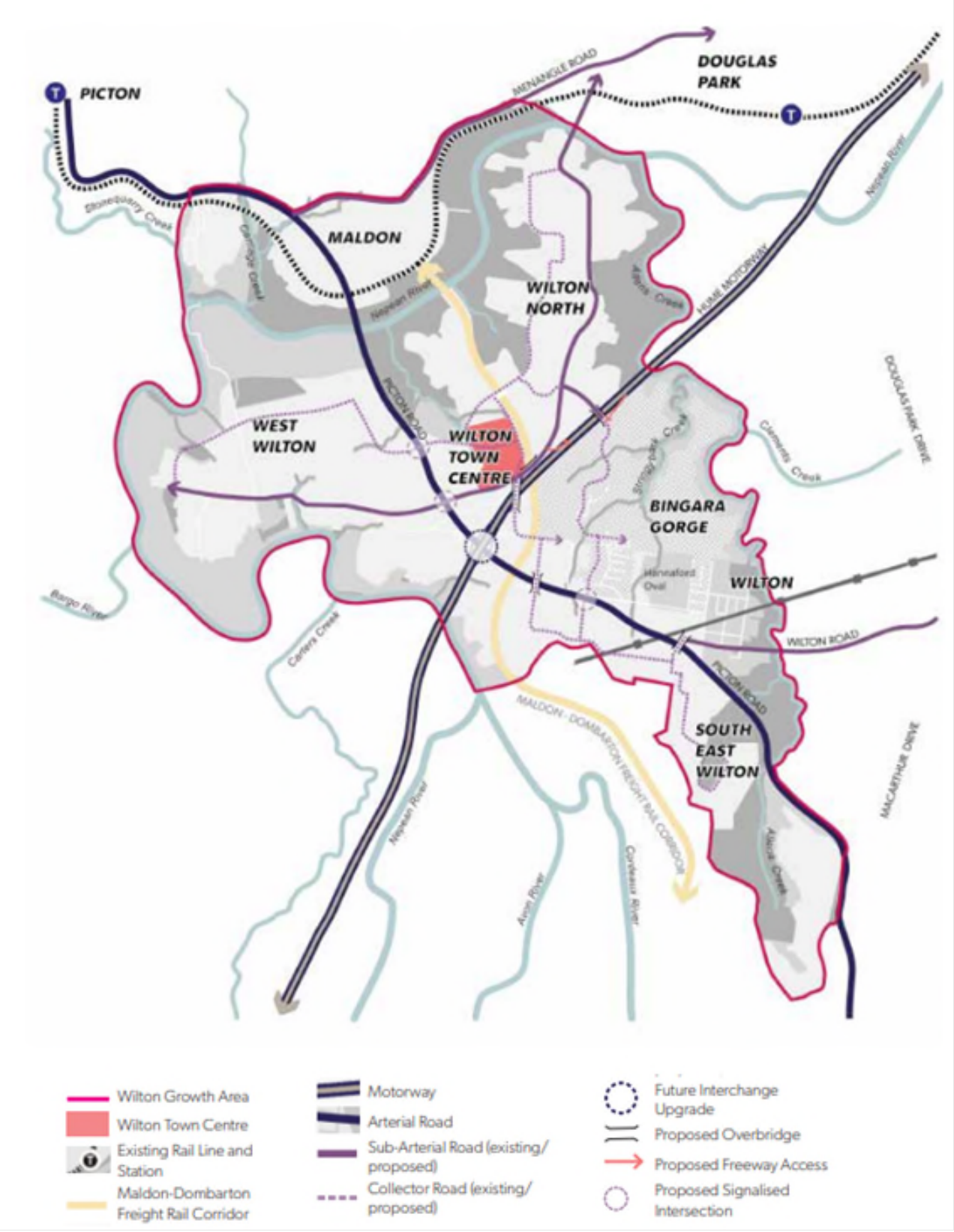

Figure 6-13 Strategic road and rail network – Wilton Growth Area (DPIE, 2018)

Potential impacts

The proposal is expected to require up to 10 heavy vehicle and 10 light vehicle movements during construction per shift per site. Although these vehicles would use the existing road network, they are not expected to contribute to any significant increases in traffic volumes or cause any delays. Tanker movements are not expected to be required during construction or operation.

Construction is not expected to impact access to any private properties. The availability of street parking may be temporarily impacted during the works.

Impacts to road traffic have been minimised in locations where microtunnelling is required (e.g. Condell Park Road, Hume Highway, Picton Road) or works are off-road (e.g. construction of SP1233 and SP1234).

During operation, there will be additional vehicle movements at the pumping stations for routine maintenance or for network impacts and need for emergency access.

Mitigation measures

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

Table 6-16 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) in consultation with the relevant traffic authority. Meet TfNSW Traffic Control at Worksites Manual v6.1 requirements for TfNSW roads. If required, the delivery contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100 m of traffic signals when construction starts.
Minimise traffic impacts near residential properties, schools and businesses by consulting with them (e.g. no major materials deliveries at school drop off or pick up times etc.).
Manage sites to allow people to move safely past the works, including alternative pedestrian, 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 proposal and any temporary road or lane 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.
Construction vehicle access routes must follow Broughton Pass weight and length restrictions.

6.1.9 Social and visual

Existing environment and potential impacts

The existing environment and some amenity impacts have been considered in earlier sections of this REF. Construction noise, traffic, and air quality changes will directly and indirectly impact surrounding receivers. The proposal is within and adjacent to land zoned for current and future residential development. Development within the Wilton Growth Area is ongoing as it transitions from a semi-rural area to a residential community including a town centre and other amenities. The amenity of the general area is changing as the land use changes, and the additional infrastructure associated with this proposal will support these changes.

There will be temporary visual impacts during construction associated with the establishment of site compounds and worksites, earthworks, and stockpiling. Earthworks are currently underway for residential development in North Wilton near where SP1233, and associated gravity and pressure pipelines, are proposed to be installed. Construction activities from the proposal would be visible to road users, and nearby residential properties and businesses (e.g. Sydney Skydivers based at Wilton Airport). The additional earthworks required for this proposal are not significant compared to current and proposed construction in the area.

Site compounds may be installed on private property, where permission and approval is received from the landowner. These temporary visual impacts will be mitigated in consultation with stakeholders, such as council and residents and the mitigation measures listed below.

There will be permanent visual impacts due to construction of new, above ground assets. This includes the 2 new pumping stations. Maintenance holes associated with the new gravity pipelines and pressure pipelines would be visible. The proposed vent shaft at SP1234 is about 14 m high. Other above ground structures including storage tanks would be up to about 6 m high. This would be a similar height to assets within the nearby Bingara Gorge WRRF. Siting SP1234 near the existing WRRF also minimises operational visual impacts. While the proposal would change the visual characteristics of the area, it is anticipated that these above-ground structures would become less prominent as other above-ground structures are installed.

The new pumping stations would likely include landscaping around the boundary to partly conceal the visibility of the new above ground assets. This landscaping acting as a shield, and the presence of other nearby above-ground infrastructure, would minimise the visual impact during operation. There will be a positive social impact during operation by capturing and transferring wastewater generated by the community.

Mitigation measures

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

Table 6-17 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.
Work sites will be restored to pre-existing condition or better.
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.

6.1.10 Cumulative and future trends

Potential environmental impacts

New residential development is planned within the Wilton Growth Area. The wastewater infrastructure proposed in this REF will support parts of this residential development. Sydney Water's assets will be installed and operational before residents move in to these new properties.

Construction by developers e.g. earthworks, access roads, may result in a cumulative impact with this proposal. The delivery contractors will work with local developments, council, and existing residential properties to reduce impacts as required. However, the current and future development in the area, and change in land use from large semi-rural blocks to low density residential development, will put pressure on the environment such as vegetation and waterways. Once these residential developments are in place, earthworks would have changed the topography and visual features of the landscape, with an increase in hardstand, a subsequent likely increase in runoff, a decrease in quantity of remnant vegetation, and increased noise from increased traffic. Constructing wastewater assets in accordance with the mitigation measures in this REF (including avoidance of impacts by designing out vegetation and heritage impacts) will minimise cumulative impacts from this scope of works.

Climate change is predicted to cause the following changes to the area:

- higher temperatures
- decreased annual rainfall (which will decrease stream flows and water storage)
- longer dry periods and more extreme weather events such as high-intensity storms and bushfires.

The changes to weather patterns would impact water supply and water flows. Bushfires will also impact surface water quality (Wollondilly Shire Council, 2020a).

The proposal has considered these future trends and is unlikely to be impacted by, or contribute to, future trends, since:

- it is largely outside of bushfire prone land; a small amount of vegetation removal is required which is unlikely to change bushfire risk
- it is largely outside of flood prone land, and is not expected to cause any changes to existing flood patterns
- any planned wastewater discharges into local waterways would need to meet specific water quality criteria
- it has been sized to meet planned future wastewater management needs based on predicted future population size
- where possible, gravity pipelines have been used, to minimise the need to pump wastewater and reduce operational energy needs
- the wastewater from the new pumping stations connects to Bingara WRRF, which treats wastewater to produce recycled water for re-use.

The proposal is unlikely to be impacted by future trends because it is largely outside of flood prone land and bushfire prone land.

Mitigation measures

With the implementation of the mitigation measures below, cumulative impacts can be adequately managed, and residual impacts are expected to be minor. No impacts are anticipated during operation.

Table 6-18 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Continue engagement with key stakeholders e.g. developers, council, existing residents, during planning and construction to minimise cumulative impacts.
Recommendations for sustainable procurement outcomes in construction, and future design outcomes include: • Consider impacts of climate change e.g. increase in risk from flooding, landslide and erosion, larger range in groundwater levels, and soil moisture conditions exacerbating reactive soil risk • Sustainability measures, for example sustainability assessment including embodied carbon calculation in foundation option assessments, opportunities for using recycled material, and consideration of energy piles at pumping stations.

6.1.11 General Environmental Management

Table 6-19 Environmental mitigation measures — general environmental management

Mitigation measures
Prepare a CEMP addressing the requirements of this environmental assessment. The CEMP should identify licence, approval and notification requirements. Before the start of work, all project staff and contractors will be inducted in the CEMP. The CEMP must be readily available on site and include a site plan which shows: • go/ no go areas and boundaries of the construction footprint • location of environmental controls (including erosion and sediment controls, any fences or other measures to protect vegetation or fauna, spill kits, stockpile areas) • location and full extent of any vegetation disturbance.
Sydney Water's Project Manager (after consultation with the project's environment and community engagement representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities meet the following principles: • limit proximity to sensitive receivers • no disruption to property access • no impact to known items of non-Aboriginal and Aboriginal heritage • outside high-risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • no impacts to remnant native vegetation or key habitat features • no disturbance to waterways • potential environmental impacts can be managed using the mitigation measures in this REF • no disturbance of contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.
Prepare an Incident Management Plan (IMP) outlining actions and responsibilities during: • predicted/ onset of heavy rain during works • spills • unexpected finds (e.g. heritage and contamination) • other potential incidents relevant to the scope of works

Mitigation measures
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. All site personnel should be inducted into the IMP.
Manage complaints in accordance with standard Sydney Water Complaints Procedure and the project-specific Community and Stakeholder 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.
Should the proposal change from the EIA, no further environmental assessment is required provided the change: • remains within the construction footprint for the EIA and has no net additional environmental impact; or • is outside the construction footprint for the EIA 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/s 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 engagement representatives.

7 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of Wilton Growth Area – wastewater infrastructure. The proposal is required to support the initial stages of residential development in South East Wilton and North Wilton.

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as vegetation clearing, impact to Aboriginal heritage, noise and dust emissions, erosion and sedimentation. During operation, no impacts are expected. Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

The REF considers how the proposal aligns with the principles of ESD. The proposal 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.

8 References

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9 Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community during construction from vegetation removal, noise impacts and dust. There will be environmental improvements by providing a reliable wastewater service to the local community.
Any transformation of a locality	The proposal will not result in the transformation of a locality. The wider area is undergoing development to a low-density residential area and the infrastructure assessed in this REF will support this growth.
Any environmental impact on the ecosystems of the locality	The proposal will result in some environmental impacts to ecosystems of the locality. Direct impacts to ecosystems include removal of threatened vegetation communities. It also includes indirect impacts to flora and fauna during construction, such as sedimentation, weed spread, and changes to hydrology. There will be environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not result in a reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality. The wider area is currently undergoing development, and the above-ground structures proposed are consistent with existing/future infrastructure. This proposal has been designed to minimise environmental impacts to the locality, such as reducing vegetation impacts, and avoiding impacts to heritage items.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will not have any effect upon 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. Aboriginal heritage impacts will be minimised though implementation of the mitigation measures in this REF.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will have a minor impact on the habitat of protected animals. Impacts to important habitat features are restricted to a small area containing koala and Glossy Black-Cockatoo feed trees. The quantity of these specific habitat features to be impacted is low and is unlikely to adversely affect the occurrence or lifecycle of these species in the locality.

Section 171 checklist	REF finding
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air. No significant impact to any threatened species is expected.
Any long-term effects on the environment	The proposal will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern wastewater service for the area to support growth. Impacts from wastewater overflows during operation of the pumping stations will be managed and minimised by implementing the EPL.
Any degradation of the quality of the environment	The proposal will not cause the degradation of the quality of the environment. Waterway quality is not expected to be impacted by the proposal during construction or operation. Vegetation removal has been minimised to help retain areas of higher quality vegetation.
Any risk to the safety of the environment	The proposal will not increase risk to the safety of the environment. It is not expected to be impacted by, or impact, future trends such as flooding and bushfire.
Any reduction in the range of beneficial uses of the environment	The proposal will not have any reduction in the range of beneficial uses of the environment. The proposal is being largely installed in disturbed areas, such as near an existing WRRF.
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. During operation, the proposal will operate in accordance with EPL requirements.
Any environmental problems associated with the disposal of waste	The disposal of wastes will be conducted in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The proposal may have cumulative environmental impacts with other existing or likely future activities (e.g. developer construction). Any potential impacts would be managed in accordance with mitigation measures in Section 6.1.10 of the REF.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposed activity.

Section 171 checklist	REF finding
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposal will 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.

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 DPIE (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 DPIE (NPWS)*		X
Will the proposal include a fixed or floating structure in or over navigable waters? If so, consult *TfNSW*		X
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? *If so, consult with Subsidence Advisory NSW.*	X	
Will the proposal involve clearing of native vegetation on land that is not subject land (i.e. non-certified land)? *If so, notify DPIE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021.*		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	

Appendix C – NorBE

NorBE Assessment for proposed activities by public authorities that will be assessed under Part 5 of the EP&A Act, 1979, as specified in Section 171(A) of Environmental Planning and Assessment Amendment (Water Catchments) Regulation 2022.

NorBE assessment – is there likely to be a neutral or beneficial effect on water quality?	
1. Are there any identifiable potential impacts on **water quality**? What **pollutants** are likely? *(Major potential pollutants are sediments (fine and coarse), nitrogen, phosphorus, pathogens, and hazardous chemicals and contaminants such as oil/fuel.* At what stage do the impacts occur?	Major potential pollutants are sediments (fine and coarse), discharge of water, hazardous chemicals, and contaminants such as oil/fuel. These pollutants may impact water bodies through disturbance of soil during works, and storage of fuels and chemicals on site as part of works. Mitigation measures to manage impacts during construction are discussed in Section 6 of this REF.
2. For each pollutant, list the **mitigation measures** needed to prevent or mitigate potential impacts on water quality? *These may be WaterNSW endorsed current recommended practices (CRPs) and/or equally effective other practices*	The mitigation measures used to manage sedimentation into nearby waterways, the storage of fuels and chemicals on site and waste management are found in Section 6 of this REF.
3. Will the mitigation measures be adequate for the time required? How will they need to be maintained?	The mitigation measures would be managed by the delivery contractors through the implementation of a CEMP, and any associated sub-plans and/or work method statements reviewed by Sydney Water.
4. Will all **impacts** on water quality be effectively **contained on the site** by the identified **mitigation measures** (above) and not reach any watercourse, waterbody or drainage depression? Or will **impacts** on water quality be **transferred outside the site** for treatment? How? Why?	The mitigation measures outlined above in this REF are considered to effectively contain any impacts to water quality on site. No transfer of water is required for offsite treatment.
5. Is it likely that a **neutral or beneficial effect** on water quality will occur? Why?	The proposal is likely to have a neutral effect on water quality as the implementation of mitigation measures would minimise any potential impacts.

Appendix D – Flora and fauna assessment

Appendix E – Aboriginal heritage due diligence assessment

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

For those REFs which are being publicly displayed, all Aboriginal heritage information which identifies individual sites must be removed.

Appendix F – Noise and vibration assessment

SWXXX XX/XX Insert a publication number. (*required if publicly displayed/available)*