Review of Environmental Factors

Wilton Growth Area - drinking and recycled water infrastructure (July, 2025)

Sydney WATER

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July 2025

Table of contents

Figures

Tables

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

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

Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Wilton Growth Area – drinking and recycled water infrastructure. The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

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

Certification

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

Prepared by:	Reviewed and endorsed by:	Endorsed by:
[redacted]		
Sam Brandley Environmental Scientist Sydney Water Date: 23/06/2025	Jonathan Dowling Senior Environmental Scientist Sydney Water Date: 3/07/2025	Leila Ekraminaghsh Senior Project Manager Sydney Water Date: 4/07/2025

Decision Statement

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

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

Determined by:	Murray Johnson Senior Manager Environment and Heritage, Water and Environment Services, Sydney Water	[redacted]

1. Executive summary

Wilton is expected to grow to around 4,700 dwellings by 2026, ultimately reaching about 15,000 dwellings by 2047. This proposal involves supply of drinking water and recycled water for the initial stages of residential development in South East Wilton and North Wilton, and existing residents in Bingara Gorge. Drinking water in Wilton is supplied from the Macarthur Water Filtration Plant. Recycled water will be supplied from the Wilton Water Resource Recovery Facility (WRRF). The main elements of the proposal are:

- two 8 ML drinking water surface reservoirs
- 1.7 ML recycled water surface reservoir
- future 1 ML elevated drinking water reservoir
- recycled water pumping station at Wilton WRRF
- about 7.5 km of drinking water and recycled water pipeline corridor. The corridor will contain multiple pipes.

Construction of the two drinking water reservoirs and the recycled water surface reservoir is expected to start in late 2025 and take about 15 months to complete. The elevated recycled water reservoir will be constructed in the future, depending on the progress of residential development in Wilton. Pipeline and pumping station construction will also start in late 2025 and take about 12 months to complete. The proposal is planned to be operational 2027. Open trenching will be used to construct most of the pipelines and horizontal directional drilling used for road crossings.

The reservoir site covers an area of about 2.2 ha. It is located on private land zoned as urban capable under the Cumberland Plain Conservation Plan (CPCP). The reservoir site is located beside the Upper Nepean State Conservation Area and partially in the WaterNSW Special Area and Sydney Drinking Water Catchment. WaterNSW was consulted during the preparation of this REF.

As part of this REF, a number of options were considered and subsequent refinements to the design and construction methodology were made to minimise the environmental and community impact of the proposal to the extent practicable.

The main construction impacts are erosion and sedimentation, vegetation clearing, noise and traffic. The reservoirs may have a long-term moderate visual impact. The proposal will involve clearing of up to about 0.61 ha of native vegetation (PCT 3320) on land zoned as excluded land under the CPCP and up 0.19 ha of native vegetation on certified land. One Aboriginal site, an isolated artefact in a disturbed context, was identified in the construction footprint. Impact to the Aboriginal site will be avoided during construction and an Aboriginal Heritage Impact Permit (AHIP) is not required. The proposed pipelines will cross the Upper Canal System, a State heritage item, at two locations. The canal is in a 90 m deep tunnel at both locations and there will be no impact to the heritage item. However, due to the work being within the curtilage a Section 60 heritage approval must be obtained from Heritage NSW.

A Construction Environmental Management Plan, including subplans such as a Soil and Water Management Plan, Dewatering Management Plan and Traffic Management Plan will be prepared by the delivery contractor to mitigate potential environmental impacts.

The proposal will result in positive long-term benefits by servicing future growth and is aligned with the principles of ecologically sustainable development.

2. Introduction

2.1 Context

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

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with constructing and operating drinking water and recycled water infrastructure to service the Wilton Growth Area and identifies mitigation measures that avoid or minimise potential impacts.

2.2 Proposal background and need

The Western Parkland City is predicted to increase in population from 740,000 in 2016 to 1.1 million by 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. There are six 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 to around 4,700 dwellings by 2026, ultimately reaching about 15,000 dwellings by 2047. Drinking water in Wilton is supplied from the Macarthur Water Filtration Plant. Recycled water from the Wilton Water Resource Recovery Facility (WRRF) is supplied to recent development in Bingara Gorge and recreational areas.

2.2.1 Proposal need

This proposal is needed to provide drinking water and recycled water services to support development in the Wilton Growth Area. This includes the growth precincts of South East Wilton, North Wilton, and Bingara Gorge. The proposal will service development in the Wilton Growth Area by constructing drinking and recycled water reservoirs, a recycled water pumping station and pipelines. The proposal is planned to be operational by 2027.

2.2.2 Proposal objectives

The proposal objectives are to:

- service growth in the Wilton Growth Area
- provide a resilient and efficient system to meet the needs of the future population.

2.2.3 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 serviced by Sydney Water. This outcome is inconsistent with the proposal need and objectives and was not considered further.

A number of options were considered, and refinements made over time. Several studies were previously carried out for 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 water and recycled water infrastructure required to service development up to 2047. Sydney Water will stage the delivery of this infrastructure to service growth as it happens. Existing infrastructure can service growth to 2027 and the proposal will service growth from 2027 to 2032.

Sydney Water developed drinking water and recycled water options based on the following principles:

- 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.

Reservoir site location

The Wilton Southeast Structure Plan (DPE, 2017) identified a site about 40 m wide by 100 m long site in South East Wilton as the site for reservoirs. During concept design the site was found to be too small for the reservoirs needed to service the area. Six alternative reservoirs sites that had sufficient space and the required elevation were identified along the ridge line in South East Wilton:

- two sites in the residential area in South East Wilton
- two sites in cleared areas of the Upper Nepean State Conservation Area
- two sites that were partially in both the residential area and the conservation area.

Sydney Water consulted the Department of Planning and Environment, the developers in South East Wilton and National Parks and Wildlife Service (NPWS). A multi-criteria analysis (MCA) was prepared for the six sites with the following criteria:

- community and stakeholder
- flora and fauna
- land acquisition requirements

- heritage
- operational and maintenance considerations
- site configuration
- operational completion date
- constructability.

The two sites in the residential area were found to have the least environmental and community impacts. The reservoirs at these locations are constructable and can be operational by the 2027. The results of the MCA were presented to the key stakeholders. Sydney Water developed site layouts and worked with the developer in South East Wilton to minimise the impact to developable land. The reservoir location shown in Figure 3-1 was chosen as the preferred location for the reservoir site.

Pipelines

Sydney Water developed pipeline options to follow existing roads and minimise environmental impacts where possible. We also consulted developers to align the pipelines with planned future roads to minimise the impact to residential development and to facilitate operations and maintenance.

A preferred pipeline alignment was developed during the options phase of the project. This option was refined during concept and detailed design. The key design changes were:

- Condell Park Road area – the pipelines were realigned to follow Picton Road and a rail corridor due to services in the road and the presence of a threatened ecological community and koala habitat. This avoided impact to the sensitive vegetation, avoided services and minimised impact to private property by following lot boundaries
- South East Wilton – the concept design alignment followed Picton Road between the reservoirs and the Condell Park Road area. However, the alignment was relocated to Hornby Street to avoid future stormwater basins near Picton Road and to avoid construction on potentially unstable embankments.

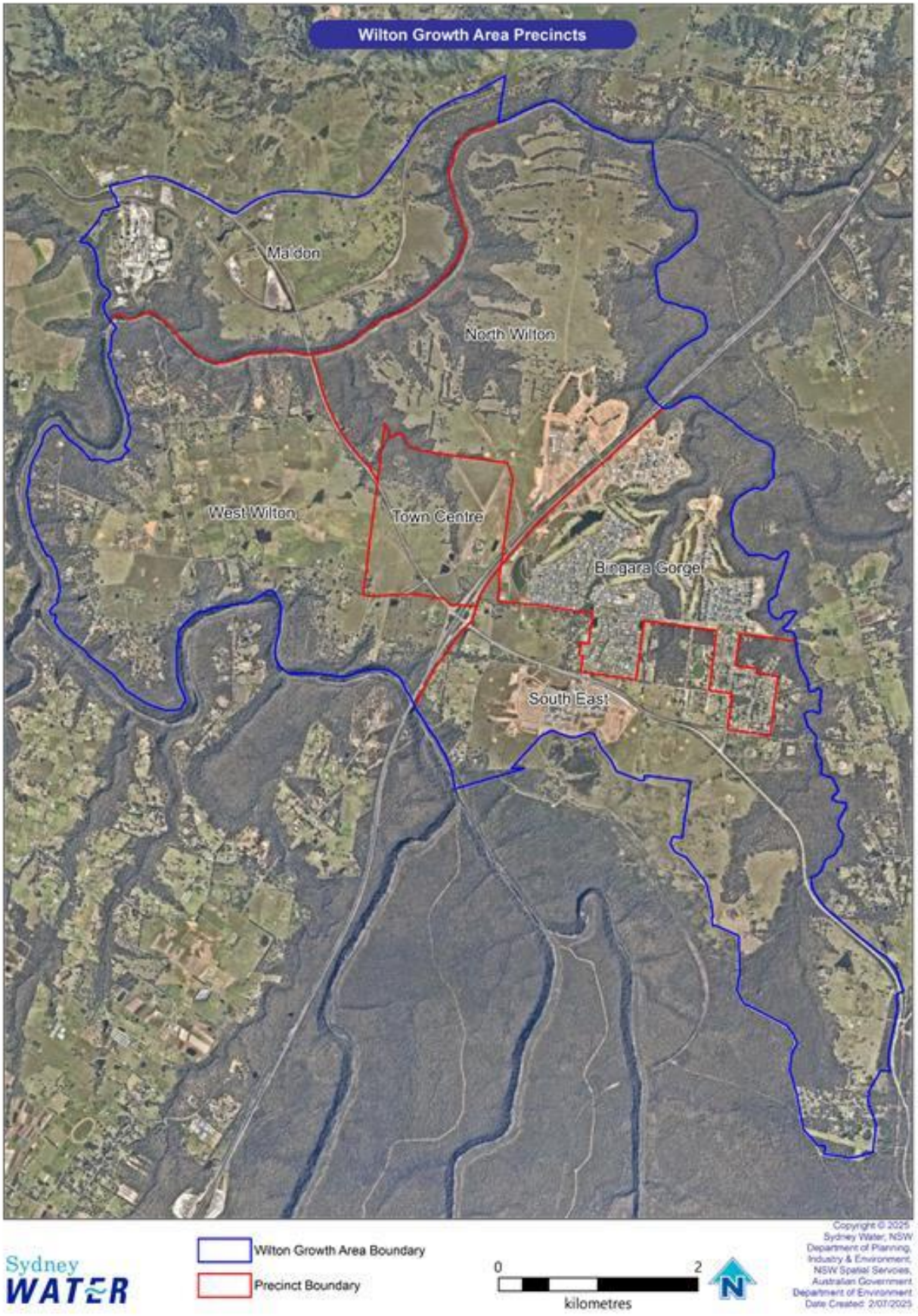


Figure 2-1 Wilton Growth Area Precincts

2.3 Consideration of Ecologically Sustainable Development

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

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

Principle	Proposal alignment
Precautionary principle – *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and environmental mitigation measures have been designed to reduce scientific uncertainty relating to the proposal. The proposal is essential for the supply of drinking water and recycled water 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 a reliable water service.
Conservation of biological diversity and ecological integrity – *conservation of the biological diversity and ecological integrity should be a fundamental consideration in environmental planning and decision-making processes.*	The proposal will not significantly impact on biological diversity or impact ecological integrity. The proposal will require clearing of native vegetation. However, the proposal was designed to use previously cleared areas such as road corridors and open paddocks to minimise impact to threatened vegetation communities and koala habitat.
Improved valuation, pricing and incentive mechanisms–- *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

3. Proposal description

3.1 Proposal details

Wilton reservoirs

The scope of works for the Wilton reservoirs includes:

- two 8 ML drinking water surface reservoirs
- 1.7 ML recycle water surface reservoir
- future 1 ML elevated drinking water reservoir
- two re-chlorination plants
- electrical switch room building
- drinking water and recycled water pipeline connections, scours and overflows for both reservoirs
- internal access roads and hardstands.

The reservoir site covers an area of about 2.2 ha on private property (Lot 2 DP 1288665) (Figure 3-1 to Figure 3-2). The general layout of the reservoir is shown in Figure 3-4.

Access to the proposed reservoir site is currently from Picton Road via a farm track. Ultimately, the site will be accessed via the planned future roads constructed during residential development. A temporary, all-weather access road will be constructed and used for construction and operational access until the future roads are constructed.

Pipelines and pumping station

Pipelines will be installed predominantly using open trenching, with boring techniques such as horizontal directional drilling (HDD) used at road crossings, to avoid services or to impact to the future residential development. (Figure 3-1 to Figure 3-3).

Drinking water will be supplied to the reservoirs from Macarthur Water Filtration Plant and recycled water supplied from Wilton WRRF. Drinking and recycled water will be pumped to the reservoirs via inlet pipelines and then gravitate to residential areas via outlet pipelines. A new recycled water pumping station will be constructed at the Wilton WRRF to pump recycled water to the reservoir site. Drinking water and recycled water pipes will be constructed in parallel where they share the same alignment, with up to four pipes in parallel.

The proposed pipe alignments have been designed to avoid significant areas of vegetation wherever possible. In most areas there is sufficient space for pipe construction to proceed via trenching without the need to clear trees. Where road reserves are too narrow, trenching will be undertaken within the road verge or parts of the road where possible to minimise the need for vegetation clearing.

Pipe sizes will range from DN100 to OD800 and the pipeline alignment length (includes multiple pipes) is about 7.5 km. The pipelines require valves and fittings that include:

- air valves at high points on ascending and descending sections to release air during operation, expel air during filling and allow air to enter a pipe when it is drained
- scour valves are provided for maintenance and designed to drain water from pipes by gravity or by pumping from a scour chamber. The valves are usually located at low topographical points and comprise energy dissipaters to enable slow release of water and dechlorination when required.

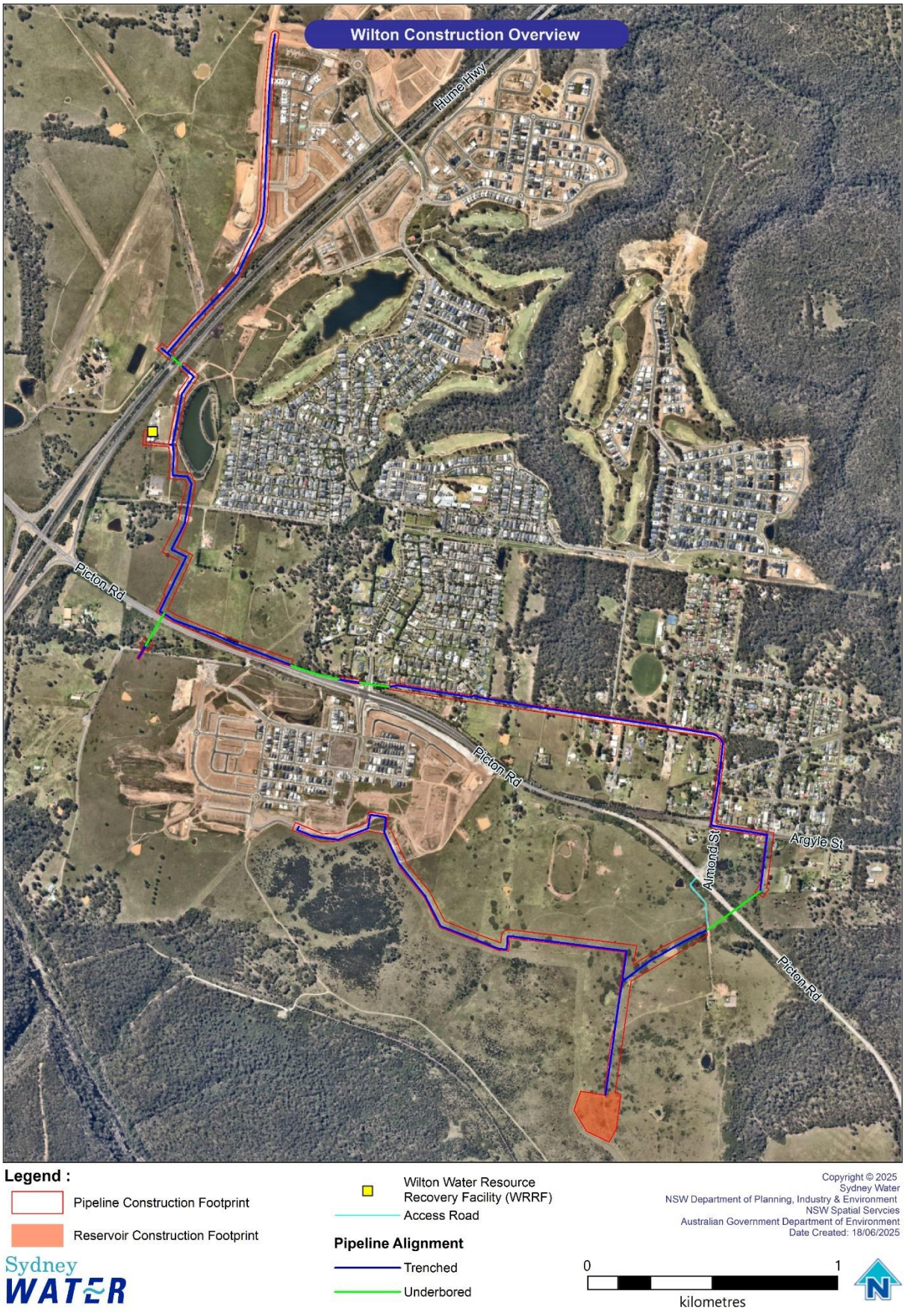


Figure 3-1 Proposal overview

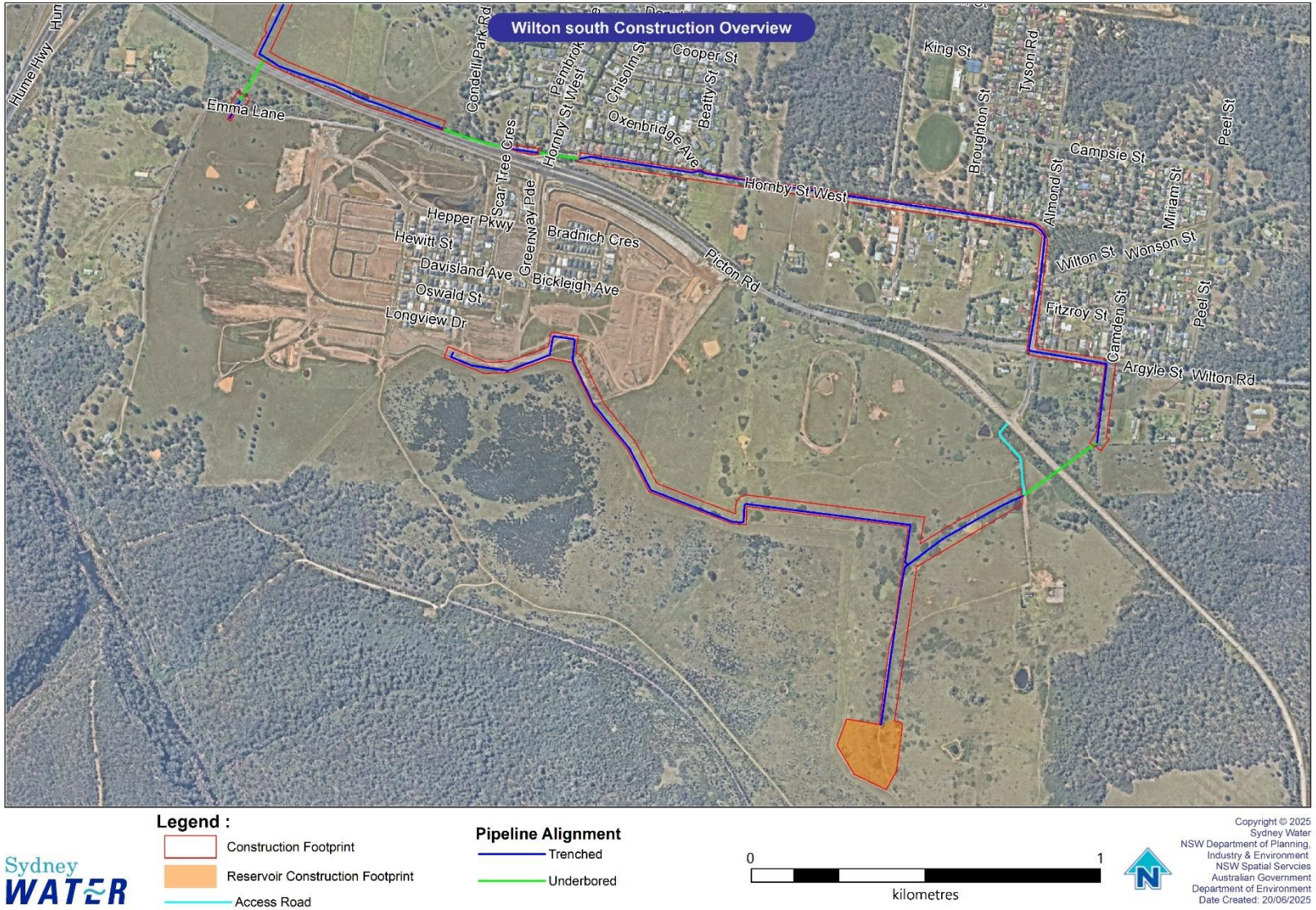


Figure 3-2 Proposal - South East Wilton

Figure 3-3 Proposal – North Wilton and Bingara

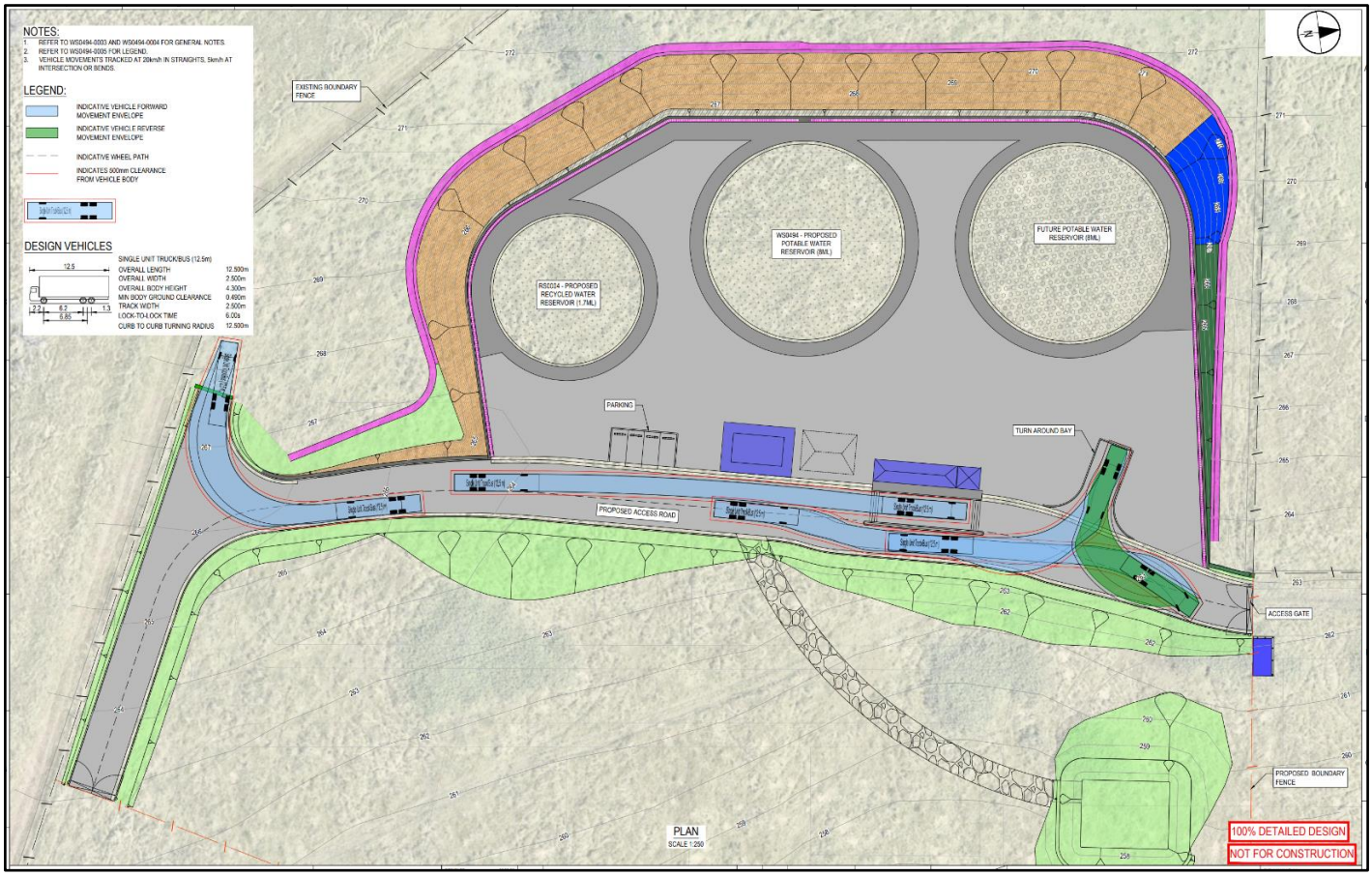


Figure 3-4 Reservoir site layout

3.2 Construction methodology

3.2.1 Pre-construction work

Pre-construction work includes investigations such as geotechnical, contamination and survey. 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 (eg Ausgrid, TfNSW)
    - WaterNSW and National Parks and Wildlife Service (NPWS)
    - regulators as required
    - 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. Currently the proposed access roads are mostly within the construction corridor
- 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 roads may be required. Should this occur, previously cleared areas will be used where feasible. The exact location of any additional compound sites or access roads will be chosen by the delivery 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

Pipelines

Open trenching

Open trenching will be used to construct most of the pipelines. Progressive excavation will be undertaken for the trenching proposed along the pipeline alignment. Trench width will be up to about 6 m for four pipes, about 4 m for three pipes and less than 3 m for two pipes. Trench depth will range from about 2 m to about 3.5 m.

The construction corridor will provide sufficient space to construct the trench, stockpile excavated spoil material, temporary pipe storage and vehicle movements. A 40 m wide construction corridor between Picton Road and the reservoir site will provide space for pipeline construction as well as a designated construction access road to the reservoir site. The width of construction corridor will be narrowed to avoid specific obstacles such as large trees, native vegetation, significant landscape or built infrastructure.

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 as required
- 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 will be installed per shift using this method. This distance can vary based on a range of factors including ground conditions. Following construction, easements over pipelines will be established in accordance with Sydney Water guidelines.

Trenchless construction

Trenchless crossing will be required at major roads and environmentally sensitive areas. The general locations of trenchless crossings are shown in Figure 3-1 to Figure 3-3.

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

- minor excavation to establish the launch pit
- stringing pipe at the receival pit
- positioning directional drilling plant at the launch pit
- drilling pilot hole from the surface at the launch pit to the receival pit
- pulling pipe back from the receival pit to the launch pit
- grouting around the pipe.

Drilling 100 m of pipe will take about 4-6 weeks to complete. This distance can vary based on a range of factors including ground condition. An example of how the HDD equipment will be installed is shown in Figure 3-5.

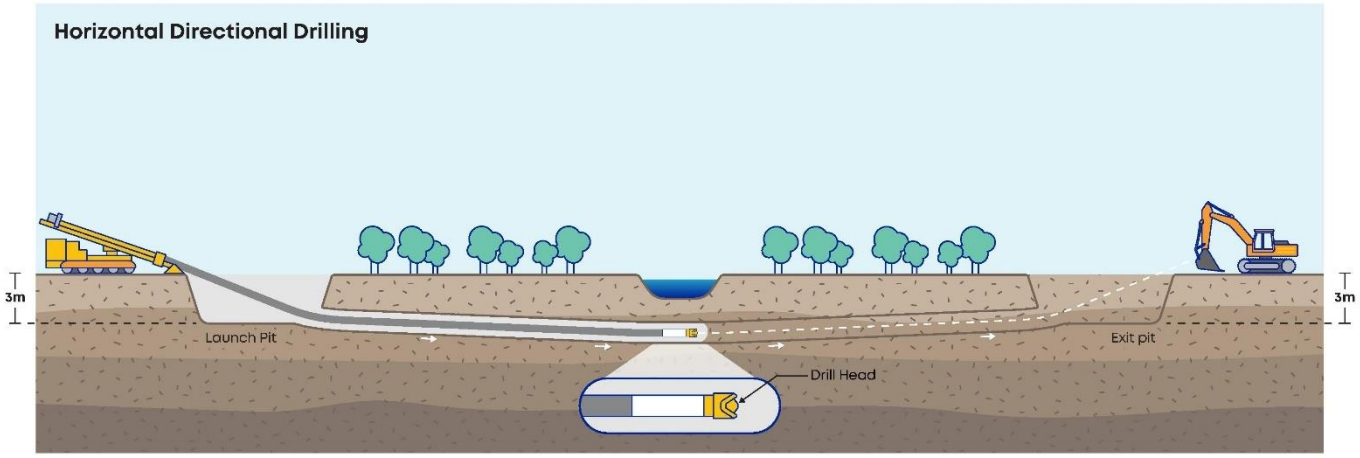


Figure 3-5 Illustration of HDD

Reservoirs

Three surface reservoirs and a future elevated reservoir will be constructed at the reservoir site. The general construction methodology of the reservoir will involve:

- install environmental controls
- site set up including establishing fencing, site sheds, laydown, stockpile areas etc
- cut and fill to establish ground levels

- construct concrete slab, apron walkway, equipment plinths, a perimeter drain and sumps for the new reservoirs
- erect scaffolding and construct steel reservoirs including galvanised steel and aluminium roof framing and aluminium roof sheeting
- construct metalwork for reservoir fixtures
- install fibre reinforced plastic (FRP) internal ladder and platform grating
- install high density polyethylene (HDPE) inlet pipes and an outlet screen (HDPE) on outlet pipe
- install fixtures and fittings such as in-tank flow meters, level indicators and gauges
- install chlorine analyser and cathodic protection
- install security system to external stairway
- paint the reservoirs
- construct switch room
- construct chlorine dosing facilities
- construct stormwater system, including onsite detention basin
- landscape the site.

Each reservoir will include a scour to facilitate draining of the reservoir for commissioning and maintenance. The scours will drain to the east and ultimately connect to the stormwater system of the future residential development. Stormwater from the reservoir site will also drain to the east and connect to the future stormwater system.

The construction access road to the reservoirs will be used for operational access until the planned future road network is constructed.

Recycled water pumping station

Construction of the recycled water pumping station at the Wilton WRRF will include:

- construct a concrete pad
- construct pumping station building
- install pumps
- install switch rooms
- install connecting inflow/outflow pipelines using open trenching
- electrical and mechanical fit out
- commission the pumping station.

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:

- pressure and vacuum testing pipelines
- leak testing on the reservoirs
- testing utilities, telemetry and switchboards

- inspection and performance testing of equipment, joints and fittings
- testing of any emergency systems.

3.2.3 Post-construction

Disturbed areas will be restored to a condition similar to their pre-existing condition in consultation with landowners. This may include:

- backfilling
- dismantling, cleaning and restoring site compound areas
- removing environmental controls
- reinstating topsoil and groundcover
- reusing cleared vegetation as mulch
- reinstating removed habitat such as hollow logs and tree hollows
- revegetating to offset cleared vegetation.

Revegetation will be carried out in accordance with Sydney Water's *SWEMS0025.11 Guideline for native revegetation* following construction. Refer to section 6.2.3 for further details on native vegetation clearing and offsets.

3.3 Materials and equipment

The materials required for the construction of the project will include general construction materials such as concrete, prefabricated sections of the pipes, associated conduit and bedding materials, various components of the reservoirs and pumping stations such as reservoir panels, pumps, and other materials as required.

The construction of the proposal will involve the use of a range of vehicles, equipment and machinery, which will indicatively include:

- light and heavy vehicles
- bobcats
- compactors
- cranes (20T to 400T)
- dump trucks
- Moxy truck
- excavators (ranging from 1.5T to 48T)
- front end loaders
- telehandlers
- truck & dog
- sandblaster
- welding equipment
- generators
- horizontal directional drilling machines
- portable pumps
- rock breakers & Rock saws.
- rollers (padfoot & smooth)
- semi-trailers
- water carts.
- elevated work platform (EWP)
- cherry picker
- handheld compactor
- concrete boom pump
- concrete vibrator

- Hiab trucks
- float trucks
- road sweeper
- jetting truck
- vac truck
- clearing equipment (mulchers, chainsaws & woo chipper)
- compressor
- posi-track
- concrete truck
- blasting equipment (sand & abrasive blasting).

3.4 Workforce

It is estimated that about 100 full time equivalent construction workers will be required for pipeline and reservoir construction. It is estimated though that only 10 workers will be at a single trenching location per shift with multiple work sites likely operating simultaneously. About 30 workers will be at the reservoir site during construction. This will fluctuate depending on the construction activities being performed at each site.

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 eg 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 of the two drinking water reservoirs and recycled water surface reservoir is expected to start in late 2025 and take about 15 months to complete. The elevated recycled water reservoir will be constructed at a depend on the progress of residential development in Wilton. Pipeline and pumping station construction will also start in late 2025 and take about 12 months to complete. The proposal will be operational by 2027.

3.6 Ancillary facilities

Construction compound(s) will likely be required to house site sheds, construction amenities and materials laydown. The reservoirs compound site will be located within the construction footprint (Figure 3-2). Additional compound/laydown sites are likely to be required to store materials and spoil. The exact location of these will be chosen by the delivery contractor and remain within the field assessment area, in consultation with the landowner(s) and approved by Sydney Water's Project Manager as described in the mitigation measures in Section 6.

3.7 Field assessment area and changes to the scope of work

The proposal shown in this REF is indicative and based on the latest 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.

Changes to the proposal outside the construction footprint may 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.

An addendum REF is not required provided the changes:

- remain within the construction footprint of this REF and has no net additional environmental impact, or
- is outside the construction footprint of the REF but reduces the overall environmental impact of the project (s.5.4(a) of the EP&A Act)
- the delivery contractor would demonstrate in writing how the changes meet these requirements and Sydney Water's Project Manager would review the request, in consultation with the environmental and community engagement representatives.

4. Consultation

4.1 Community and stakeholder consultation – general

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

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

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

The nature, scale and extent of the proposal's potential impact has been evaluated in this REF. If our work impacts the community in some way, we will consult with affected groups directly impacted landowners and the wider community through a variety of ways and through different stages of the project. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions. We will also have one on one discussions with impacted landowners about the design of the pipeline and assets, and construction impacts.

Sydney Water's community engagement representative team or the Sydney Water Project Manager will provide Wollondilly Shire Council with reasonable notice to discuss potential impacts and start of work, regardless of the need for development consent. The council will be consulted about matters identified in environmental planning instruments (refer to section 4.2 below). This includes public safety issues, any temporary work on council land, and full or partial road closures of council managed roads.

4.2 Community and stakeholder consultation – proposal

A Community and Stakeholder Engagement Plan (CSEP) has been developed for the proposal which outlines the approved method for consultation with nearby residents and stakeholders. The community and stakeholders will be informed about:

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

Before and during construction, Sydney Water will ensure the delivery contractor is mindful of the community, that they inform the community about any work that may impact nearby residents, and that they leave a positive legacy when the work is done.

Engaging with the community enables Sydney Water and its contractors to listen and understand community values. Feedback will be used to improve our performance and all complaints during the construction of the

proposal. Following its commissioning, feedback 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. This is specified in the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP).

Wollondilly Council were consulted during the design process and on an ongoing basis. The delivery contractor is required to consult with council for work in council-controlled roads. TfNSW will be consulted about the Hume Motorway and Picton Road crossings.

Sydney Water has consulted with the Bradfield Development Authority (formerly the Western Parkland City Authority) as the proposal has a capital investment value of over $30 million and is in the Western City operational area. The Bradfield Development Authority did not have any objections to the proposal.

Section 2.15(2)(a) of the TISEPP specifies that consultation with NSW National Parks and Wildlife Services (NPWS) is required for development adjacent to National Parks and Wildlife land. The proposal site is located adjacent to Upper Nepean State Conservation Area, and as such, the Department of Planning and Environment (National Parks & Wildlife Service–- NPWS) were notified about the proposal on 10 April 2025. No response was received. Sydney Water's delivery contractor will notify the NPWS Area Manager before the start of work adjacent to NPWS land.

Part of the reservoir site is in the Sydney Drinking Water Catchment and WaterNSW Special Area. The proposed pipelines also cross WaterNSW 'Affect land' (Upper Canal System) as defined in section 2.163 of the TISEPP. We notified WaterNSW on 29 April 2025. WaterNSW reviewed this REF and provided comment. Additional mitigation measures requested by WaterNSW are included section 6.2.2. Sydney Water's delivery contractor will notify the WaterNSW before the start of work in 'Affect Land' or the WaterNSW Special Area. The delivery contractor will engage with WaterNSW throughout the construction work.

5. Legislative requirements

5.1 Strategic context

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 three 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 water infrastructure in future growth areas. It also supports the other key strategies by improving and expanding drinking water and recycled water servicing to enhance liveability for current and future populations, enables development and greater productivity opportunities. This proposal will support sustainability by supplying recycled water to local residential development.

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 four 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 2024 – A plan for the Wilton Growth Area (DPE, 2018)

This plan outlines the planned land use changes for the Wilton Growth 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 will supply recycled water from the Wilton WRRF to residential developments in the area.

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 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 will recycle wastewater and supply recycled water to residences in 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 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 provide recycled water.

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

5.2 Environmental legislation

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

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

Table 5-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
State Environmental Planning Policy (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: • UD Urban Development • SP2 Infrastructure • R2 Low Density Residential. 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).

Environmental Planning Instrument	Relevance to proposal
	The proposal will not impact any lands zoned for biodiversity conservation under the SEPP.
Wollondilly Local Environmental Plan 2011 (LEP 2011)	The proposal is located on land zoned: • RU4 Primary Production Small Lots • RU2 Rural Landscape • E4 General Industrial. In accordance with Clause 1.9 of the LEP 2011, the proposal is permitted without consent under the TISEPP. Hence, the consent provisions of the LEP 2011 do not apply.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Sections 2.126 and 2.159 of the TISEPP permits development by or on behalf of a public authority for sewage reticulation systems (recycled water) and water supply systems without consent on any land. 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.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Koala habitat protection (2020 and 2021) (Chapter 3 and 4)** These chapters aim to encourage the proper conservation and management of areas of natural vegetation that provide koala habitat. This is to ensure that permanent free-living populations are protected in their present range, and to reverse the current trend of population decline. The SEPP contains prescriptions for the consideration of “potential koala habitat” and “core koala habitat” for developments within local government areas listed in Schedule 2 of the SEPP. The proposal lies within the 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. 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. 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 KPM outlines management actions and recommendations to minimise impacts on

Environmental Planning Instrument	Relevance to proposal
	koalas and their habitats. Relevant mitigation measures from this KMP have been incorporated into mitigation measures in section 6.1.3 of this REF. **Water catchments (Chapter 6)** Chapter 6 of this SEPP applies as the proposal is within the Sydney Drinking Water Catchment, a regulated catchment. Section 6 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minimal and meet the requirements of part 6.2 of the SEPP. In accordance with section 171A of the EP&A Regulation, an assessment of neutral or beneficial effect on water quality was undertaken (following *the Neutral or Beneficial Effect on Water Quality Assessment Guideline* (Water NSW, 2022)). The assessment confirmed that potential impacts are neutral.

Table 5-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Biodiversity Conservation Act 2016 (BC Act)	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, 2025). 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.	REF	Pre-construction, Sydney Water
National Parks and Wildlife Act 1974 (NPW Act)	Under Section 86 of this Act, it is an offence to harm or desecrate an Aboriginal place or object unless authorised by an Aboriginal heritage act 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 Assessment (KNC, 2025) was completed for	Due diligence AHIP (held by others)	Post REF, pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	the proposal. One Aboriginal heritage site is located within the construction footprint. Impact to this item will be avoided during construction. No other Aboriginal sites were identified in the construction footprint. Three AHIPs, held by others, are currently in place over part of the proposal in South East Wilton, North Wilton and the Upper Canal System. Work in these areas must be in accordance with the relevant AHIPs. The proposal is located beside the Upper Nepean State Conservation Area. However, we will not enter National Parks land for the construction or operation of the proposal.		
Heritage Act 1977	The Heritage Act provides protection for items of state heritage significance included on the State Heritage Register (SHR), and archaeological relics. The proposal is located within the curtilage of the SHR listed Upper Canal System. Approval under section 60 of the Act must be sought from Heritage NSW.	S60 approval	Pre-construction, Sydney Water
Fisheries Management Act 1994 (FM Act)	No threatened species habitat, threatened species, or critical habitat listed under the FM Act is mapped or described within the construction footprint. The proposal does not intersect any key fish habitat. The potential impacts to watercourses are discussed in section 6.2.3.	NA	NA
Water Act 1912/ Water Management Act 2000	Groundwater dewatering will be required during ground disturbance. The delivery contractors will prepare estimates of the volume of groundwater to be dewatered during construction. A Water Supply Works Approval (WSWA) will likely be required. A WSWA is required before any groundwater dewatering can start.	WSWA	Pre-construction, Sydney Water.
Roads Act 1993	Picton Road and Hume Motorway are classified roads. However, pipe installation at these locations is expected to involve under boring (HDD). Therefore, no ROLs at these locations will be required. If lane	Road Occupancy Licence	Pre-construction, delivery contractor

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	closures or work within roads are required, ROLs will be obtained as needed.		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	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, 2025). 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 6.2 describes the existing environment and assesses direct and indirect impacts of construction and operation**.** It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) prior to starting work.

6.1 Existing environment

The proposal is in Wilton, in the Wollondilly Shire LGA. The area is currently predominantly rural with residential development in the Wilton Township, South East Wilton and Bingara Gorge. The Wilton WRRF is located in Bingara Gorge. The Upper Nepean State Conservation Area and the WaterNSW Special Area are located to the south and west of the proposal. Extensive, historical clearing of native vegetation is evident across the landscape. Environmentally sensitive areas include threatened ecological communities and koala habitat, generally found along waterways. Aboriginal heritage sites are found throughout the Wilton area. Undisturbed areas in the vicinity of the creeks are a high-risk landscape with the potential for additional Aboriginal heritage sites to be present. The Upper Canal System is listed on the State Heritage Register. The canal is about 90 m below ground in the area. However, there are above ground structures associated with the canal in the vicinity of the proposal.

6.2 Environmental aspects, impacts and mitigation measures

6.2.1 Topography, geology and soils

Existing environment

The topography within the proposal is undulating and largely follows natural contours, sloping downhill toward major waterways (eg Nepean River, Cataract River). A desktop study was performed to identify the geology and soil types (Sydney Water, 2022).

Geology within the proposal is mostly Ashfield Shale with some areas of Hawkesbury Sandstone. Soil types include a mix of Blacktown residual and Luddenham erosional (Figure 6-1). No acid sulfate soils, or salinity are 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 search of the EPA Contaminated Land Record on the 16 January 2025 identified one known contaminated site report to the EPA within 1 km of the proposal. Condell Park Homesteads is about 600 m

east of the proposed alignment. Contamination activity type at this location is unclassified and regulation under the *Contaminated Land Management Act 1997 (NSW)* is not required. In addition, 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
- illegal dumping
- 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 to be stockpiled will be about 102,000 m^3 and about 70,000 m^3 will be taken off site for disposal.

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 managed with implementation of the mitigation measures below.

Temporary access roads will be required during construction. Most temporary access roads will be removed following the completion of construction and the pre-existing ground levels restored. The access road to the reservoir site will be retained to provide operational access until the planned future road network is constructed.

While no significant soil or groundwater contamination has been identified, there remains the potential for contamination to be encountered during construction. There is the potential of soil contamination during construction due to accidental leaks or spills, oils or other chemicals from plant, equipment and vehicles used during construction. Spill kits will be available to reduce the potential impacts of accidental spills and leakages. 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 area. Earthworks by developer/s for other development, before Sydney Water's construction activities start, will change topography. Land will also need to be levelled for construction of the reservoir site. These changes to topography are likely to change overland flow patterns. Changes to overland flows would be considered during the design of the stormwater system for the residential development.

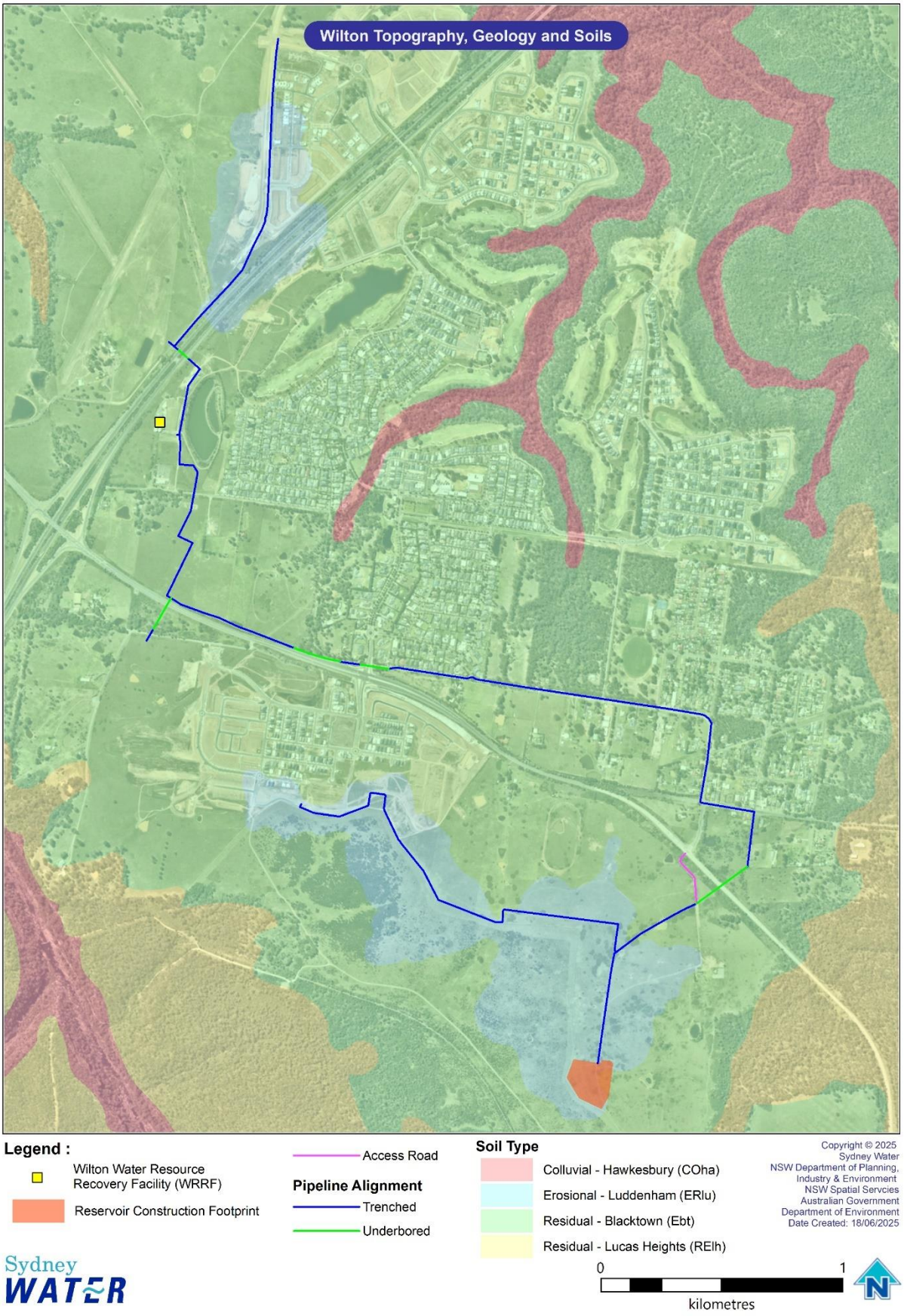


Figure 6-1 Soil landscapes

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 off site in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • 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 Contamination & Hazardous Materials team.
Minimise ground disturbance and stabilise disturbed areas progressively.
All temporary access roads (with the exception of the reservoirs access road) will be removed following completion of construction and pre-existing ground levels restored.

Mitigation measures
The delivery contractor to ensure imported material is Virgin Excavated Natural Materials (VENM) or meets a relevant NSW EPA Resource Recovery Order and Resource Recovery Exemption or is a commercially supplied material that is not waste. If using materials that are subject to an NSW EPA Resource Recovery Order/Exemption the contractor must ensure the conditions in that Order/Exemption are strictly adhered to.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Contamination & Hazardous Materials team) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Delivery 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.
Confine vehicle and machinery movement to designated tracks, pathways and work areas and keep to sealed areas where possible.

6.2.2 Water and drainage

Existing environment

The Nepean River is a major river and flows south-west of the study area. The proposal crosses multiple ephemeral tributaries of Stringybark Creek (Figure 6-2). Several water farm dams are located near the proposal.

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

Parts of the construction footprint contain flood-prone areas, particularly surrounding Byrnes Creek and Stringybark Creek (Wollondilly Shire Council, 2021b).

A section of the reservoir site is located in the WaterNSW Special Area and Sydney Drinking Water Catchment (Figure 6-3).

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% annual return exceedance (AEP) flood zone. 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.

Drilling fluid from the trenchless construction has potential to escape the bore and enter the environment from a spill or frac-out (drilling intercepting faults and fractures in the rock). This has potential to impact water quality. The drilling contractor will be required to manage the drilling to minimise the risk of frac-out.

Reservoir commissioning will require the reservoirs to be filled with drinking water and emptied. Potentially up to about 10 ML of water will be released through the reservoirs scours. Discharge will be in accordance with Sydney Water's water quality management policy. The rate of discharge will be controlled to avoid scouring the drainage lines in the paddock beside the reservoir site.

Cut and fill will be required to achieve the desired levels for the reservoirs. This will result in a steep cut slope on the northern, western and southern sides of the reservoir site. All stormwater and dewatered water from the reservoirs will drain to the east and away from the WaterNSW Special Area and drinking water catchment. Stormwater from the site will flow to a detention basin and ultimately connect to the future stormwater system in the residential development. No access is permitted to the WaterNSW Special Area within the Upper Nepean State Conservation Area. A Neutral of Beneficial Effect (NorBE) was prepared for the proposal and is found in Appendix C. The NorBE found that there will be a neutral effect on the Sydney Drinking Water Catchment.

As excavation depths are lower than the identified groundwater levels, it is likely that groundwater dewatering will 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 will be obtained before any groundwater is dewatered.

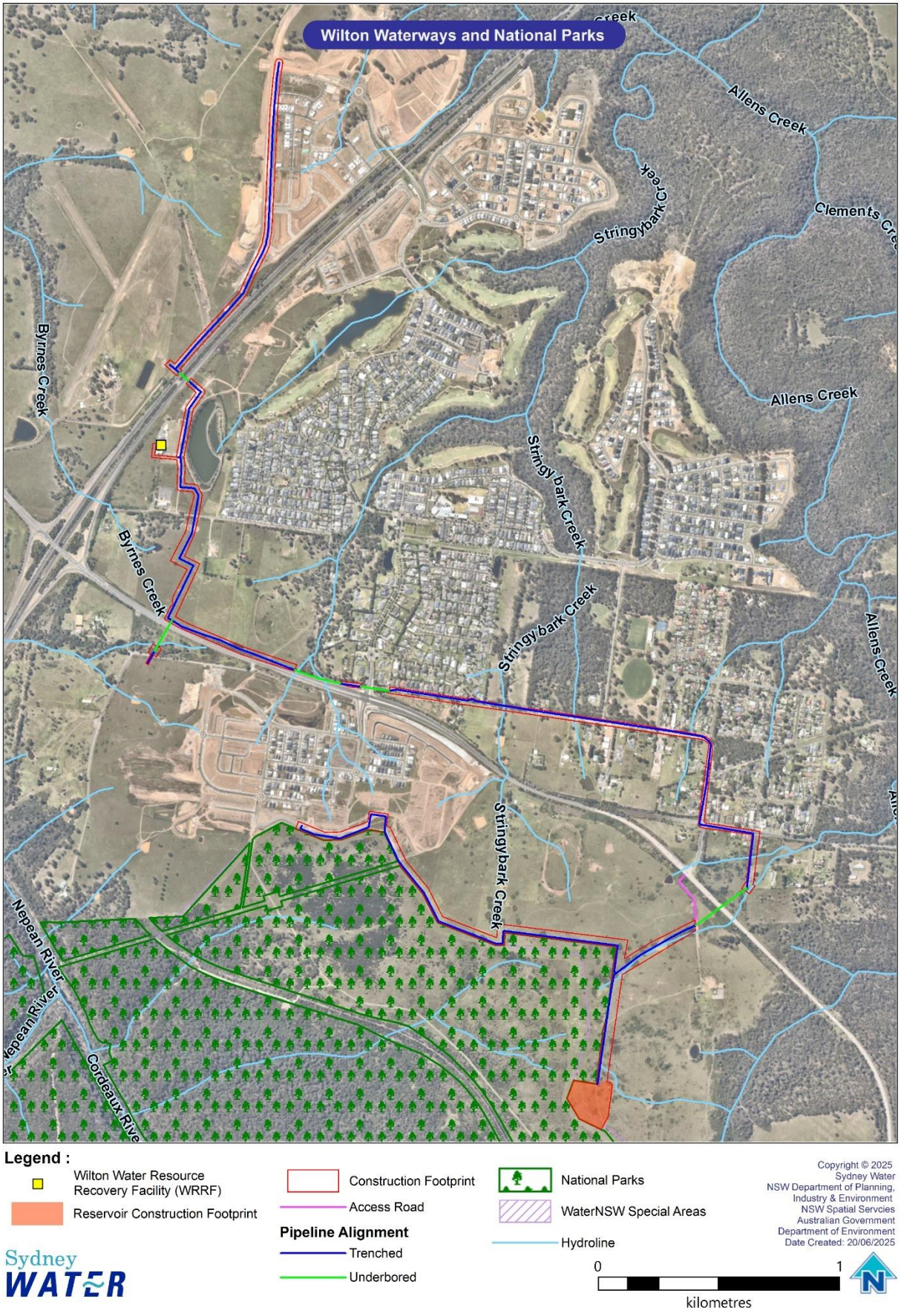


Figure 6-2 Waterways and WaterNSW Special Area

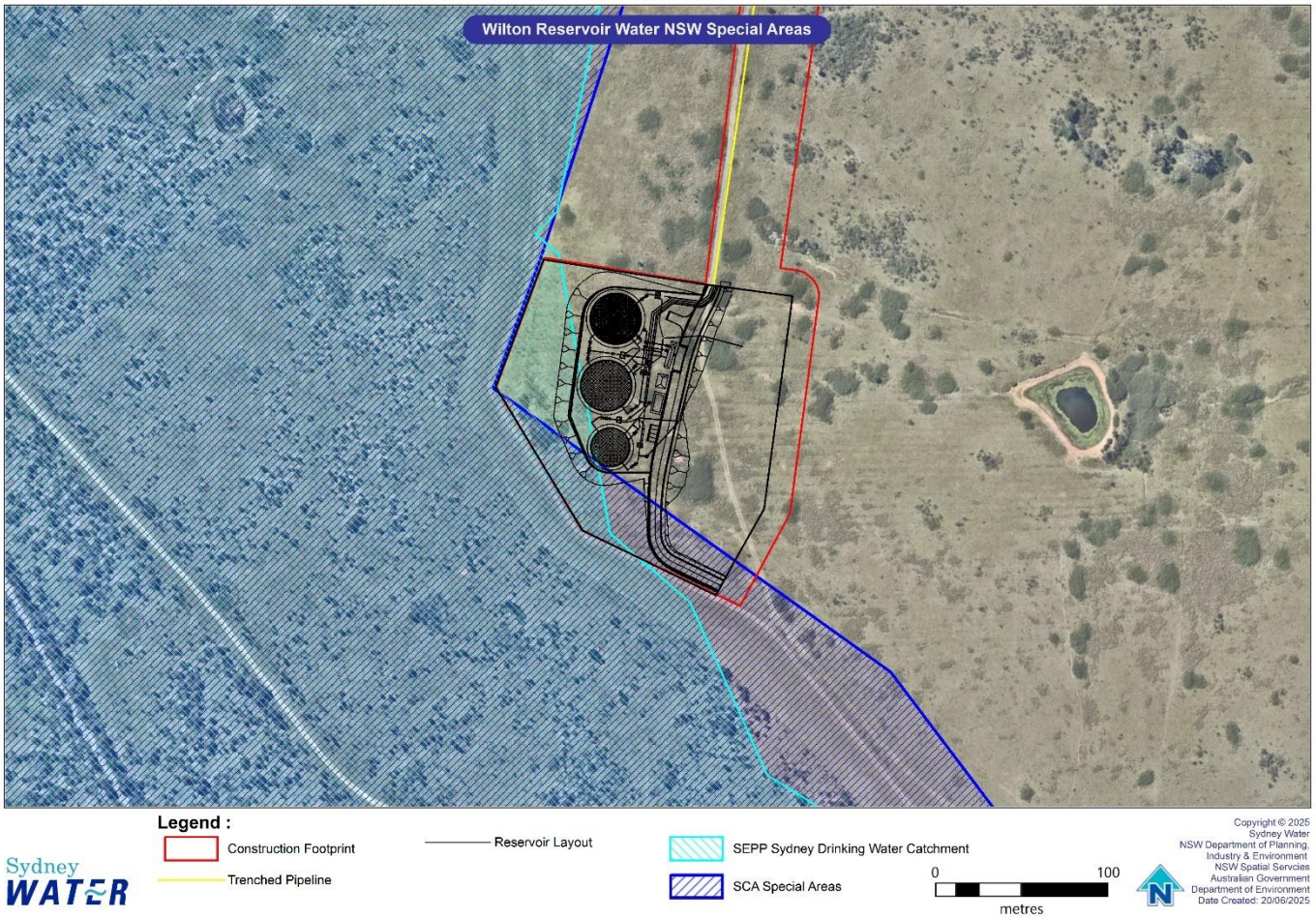


Figure 6-3 Reservoir site and the WaterNSW Special Area and Drinking Water Catchment

Mitigation measures

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

Table 6-2 Environmental mitigation measures — water and drainage

Mitigation measures
Sydney Water will obtain a groundwater Water Supply Works Approval. The delivery contractor is 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

Mitigation measures

- identify and manage frac-outs
- re-use and/or disposal of drilling fluids (checking waste classification).

The delivery contractor must notify WaterNSW before starting work above or adjacent to the Upper Canal, in the WaterNSW Special Area or in the Drinking Water Catchment. WaterNSW must be engaged throughout construction and notified on completion of work.

Comply with the Sydney Water and WaterNSW Access Protocol including when working above the Upper Canal. Access must be in accordance with the 'Conditions of Access into Special and Controlled Areas' of the protocol.

Minimise the impacts to creeks where creek crossings are required. Before construction the methodology will be assessed based on:

- geotechnical and constructability issues (eg 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).

Use appropriate controls to avoid potential sedimentation to waterbodies (eg 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 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.

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

Keep stockpiles to a minimum and ensure adequate contingency measures are in place to prevent sedimentation of waterways in the event of a large flood event.

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.

Mitigation measures
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.
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 drinking 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 licensed waste contractor and dispose off site to an appropriately licensed facility.

6.2.3 Flora and fauna

A specialist flora and fauna assessment (Arcadis, 2025) was carried out by Arcadis and is summarised below. The complete assessment report is provided as Appendix D.

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
- consideration of 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.

6.2.3.1 Existing environment

Field surveys were carried out on 10 October 2024, 15 November 2024, 25 February 2025 and 28 May 2025 to ground truth biodiversity values identified during desktop assessment and identify any other threatened biota. Surveys were conducted with reference to current biodiversity assessment guidelines including the Biodiversity Assessment Methodology. Targeted flora surveys and nocturnal species surveys were not undertaken. The seasonality of the survey did not coincide with the recommended seasonal survey window for some threatened species.

Vegetation across the construction footprint predominantly did not conform to a plant community type (PCT) listed on the BioNet Vegetation Classification Database and mainly consisted of exotic grassland and mixed native and exotic vegetation with smaller areas of planted exotic lawn. All vegetation across the construction footprint was subject to edge effects with some areas completely cleared for development.

The proposal contains areas categorised as 'Certified urban-capable', and 'Excluded land' within the Wilton Growth Area, under the Cumberland Plain Conservation Plan (CPCP). Certified urban-capable land is 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. Excluded land is land that has not been included in the CPCP and requires assessment under the Acts.

Vegetation communities

Desktop review of the NSW State Vegetation Type Mapping (SVTM) data set found that native vegetation within the construction footprint is mapped as the following PCTs (refer to Figure 6-4 to Figure 6-7):

- 3319 – Cumberland Shale Hills Woodland
- 3320 – Cumberland Shale Plains Woodland
- 3321 – Cumberland Shale-Sandstone Ironbark Forest
- 3616 – Sydney Hinterland Grey Gum Transition Forest.

The field surveys confirmed the occurrence of one of the four mapped PCTs - PCT 3320. The listing and areas within the construction footprint are detailed in Table 6-3.

Table 6-3: PCTs associated with the proposal

PCT	Listing – BC Act and EPBC Act	Area within the construction footprint
3320 - Cumberland Shale Plains Woodland	Cumberland Plain Woodland in the Sydney Basin Bioregion – BC Act (Critically Endangered)	0.77 ha
	Shale Gravel Transition Forest in the Sydney Basin Bioregion – BC Act (Endangered)	Not present
	Cumberland Plain Shale Woodlands and Shale - Gravel Transition Forest - EPBC Act (Critically Endangered)	0.01

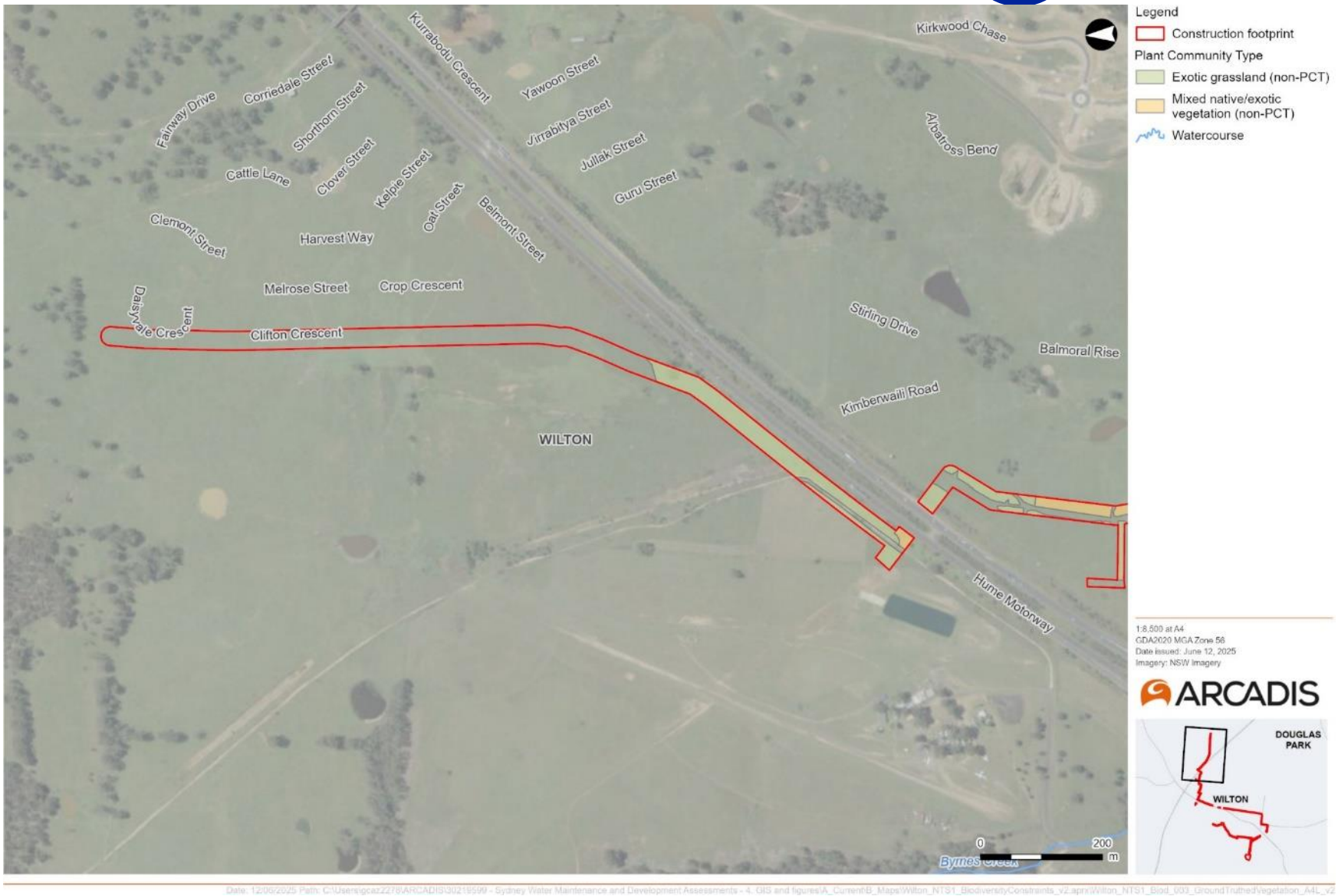


Figure 6-4 PCTs and biodiversity values North Wilton

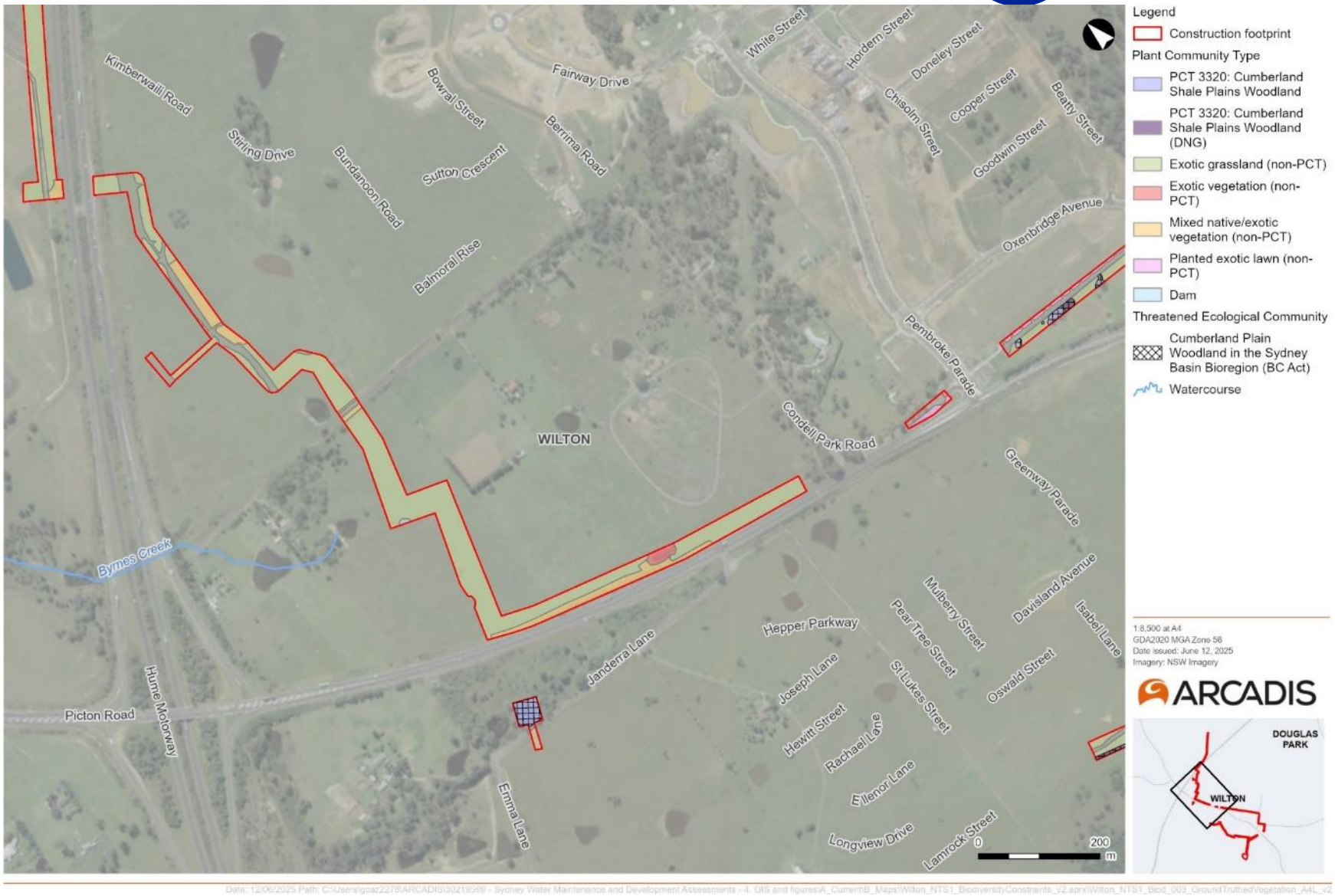


Figure 6-5 PCTs and biodiversity values - Condell Park Road area

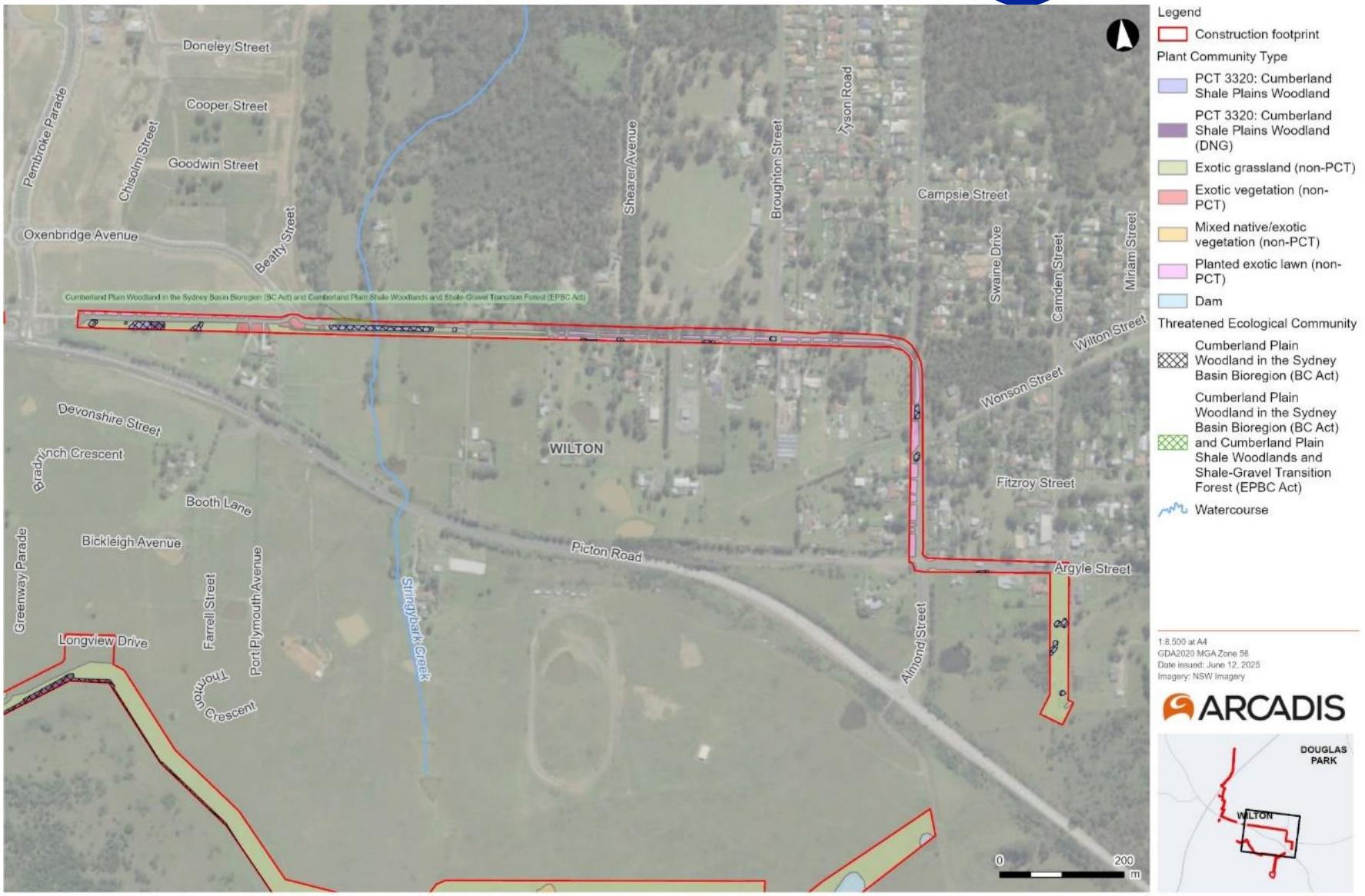


Figure 6-6 PCTs and biodiversity values – Hornby Street

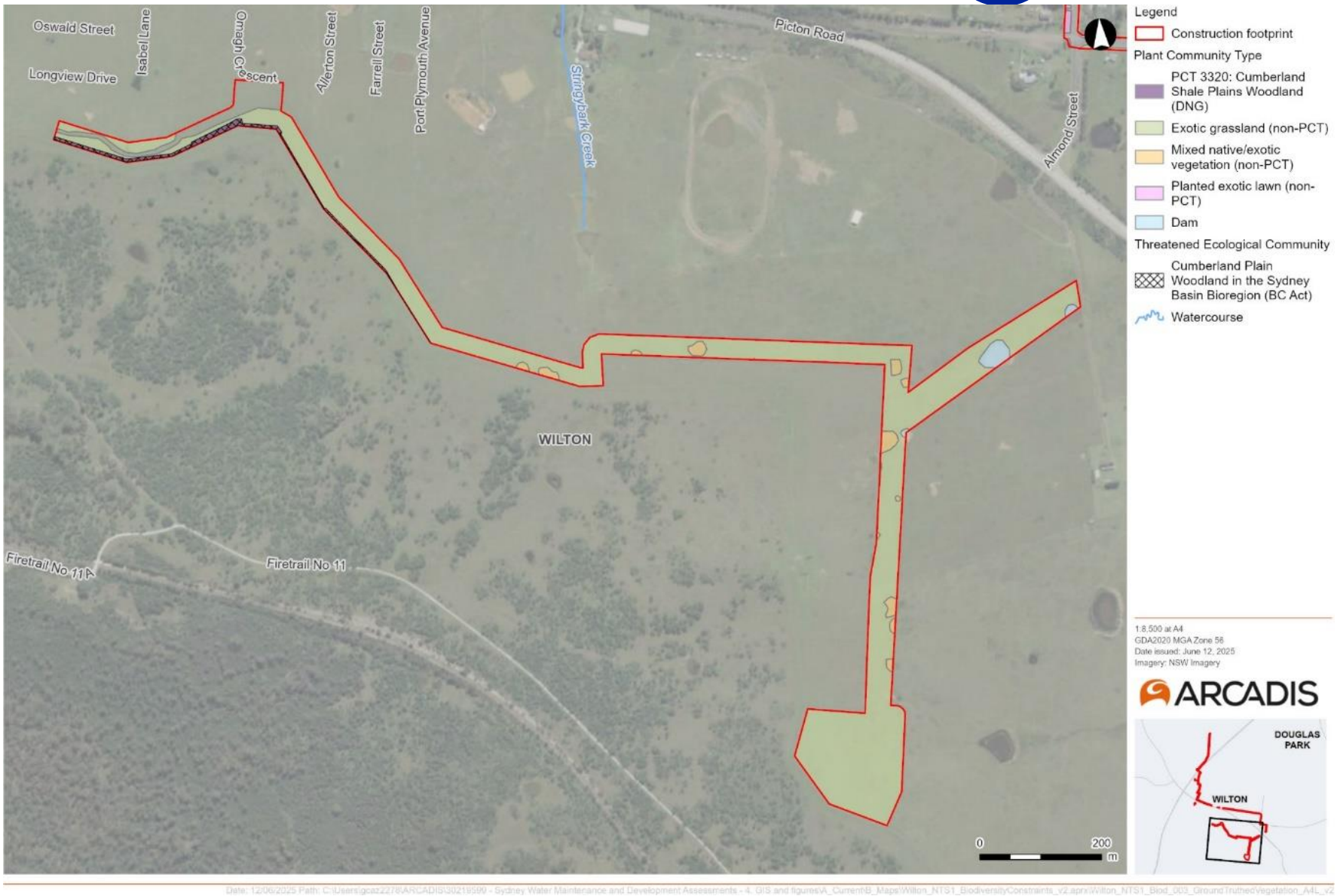


Figure 6-7 PCTs and biodiversity values – South East Wilton

Threatened flora and fauna

Database searches identified 39 threatened flora species as being recorded or predicted to occur in the locality (a 10-km radius of the construction footprint); of which 37 are listed under the BC Act and 33 are listed under the EPBC Act.

No threatened flora species were identified within the construction footprint during surveys. Table 6-4 provides the threatened flora species with a moderate likelihood to occur with the construction footprint following site investigations.

Table 6-4: Threatened flora with a moderate likelihood to occur within the construction footprint

Species	BC Act	EPBC Act	Habitat associated with PCT	Likelihood following site investigation
Pimelea spicata	E	E	3320	Moderate

Database searches identified 70 threatened fauna species as being recorded or predicted to occur in the locality; of which 63 are listed under the BC Act and 44 are listed under the EPBC Act.

Following site investigation and threatened fauna habitat assessment, Arcadis determined that 12 threatened fauna species have a moderate likelihood of occurrence in the construction footprint and three have a high likelihood of occurrence within the construction footprint (Table 6-5).

Table 6-5: Threatened fauna with a moderate or higher likelihood to occur within the construction footprint

Species	Common Name	BC Act	EPBC Act	Habitat associated with PCT	Likelihood of Occurrence
Artamus cyanopterus	Dusky Woodswallow	V	-	3320	High
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	3320	Moderate
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	V	3320	Moderate
Chthonicola sagittata	Speckled Warbler	V	-	3320	Moderate
Daphoenositta chrysoptera	Varied Sittella	V	-	3320	Moderate
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	3320	Moderate
Meridolum corneovirens	Cumberland Plain Land Snail	E	-	3320	Moderate
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	3320	Moderate

Species	Common Name	BC Act	EPBC Act	Habitat associated with PCT	Likelihood of Occurrence
Miniopterus australis	Little Bent-winged Bat	V	-	3320	Moderate
Myotis macropus	Southern Myotis	V	-	3320	Moderate
Phascolarctos cinereus	Koala	E	E	3320	High
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	3320	High
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	3320	Moderate
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	3320	Moderate
Stagonopleura guttata	Diamond Firetail	V	V	3320	Moderate

Features across the construction footprint offer habitat which can be exploited by a suite of species for browsing, foraging, sheltering and moving across the landscape. These habitat features are often general in nature and widespread across the locality. Mobile fauna species are likely not be reliant on a single patch, rather using resources on a local landscape scale. Specific habitat features like hollow-bearing trees and rocky habitat offer more valuable sheltering and breeding habitat and are not always common on a landscape scale. These features require additional consideration where present. Important fauna habitat features present within the construction footprint include:

- Koala feed trees including *Eucalyptus tereticornis* (Forest Red Gum), *E. moluccana* (Grey Box) and *E. crebra* (Narrow-leaved Ironbark), which are all a 'Primary Food Tree Species' as identified for the Sydney Metropolitan and Southern Rivers koala population (DPE 2022b).

Priority weeds

Of the 34 exotic species recorded in the construction footprint, two 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. These weeds are listed in Table 6-6 with their associated biosecurity duty in accordance with the *Greater Sydney Regional Strategic Weed Management Plan 2023-2027.*

Table 6-6: Priority weeds present in the construction footprint

Scientific name	Common name	Weed of National Significance / Priority	Biosecurity duty
Olea europaea subsp. *cuspidata*	African olive	✓	***Regional recommended measure*** *Land managers should mitigate spread of the plant from their land. A*

Scientific name	Common name	Weed of National Significance / Priority	Biosecurity duty
			person should not buy, sell, move, carry or release the plant into the environment.
Senecio madagascariensis	Fireweed	✓	***Prohibition on dealings*** *Must not be imported into the State or sold.*

Aquatic habitats

One named water course intersects the construction footprint. Stringybark Creek crosses the proposal at Hornby Street, Wilton. Stringybark Creek is a non-perennial second Strahler order watercourse and is not mapped as Key Fish Habitat under the *Fisheries Management Act 1994*. A number of unnamed non-perennial watercourses with a stream order of one and two dams are present across the construction footprint.

6.2.3.2 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 will result in the removal of about 0.8 ha PCT 3320, 0.61 ha on excluded land and 0.19 ha on certified-urban capable land. An additional 20.25 ha of non-PCT vegetation will be impacted. The maximum area of each vegetation type that requires removal is listed Table 6-7.

Table 6-7: Direct impacts to PCTs and non-PCT vegetation from the Proposal

Plant Community Type	Within the construction footprint (ha)	
	Excluded land	Certified-urban capable land
3320 – Cumberland Shale Plains Woodland	0.33	0.14
3320 – Cumberland Shale Plains Woodland (DNG)	0.28	0.05
Native vegetation sub-total	**0.61**	**0.19**
Planted exotic lawn	0.89	0.01
Exotic grassland (non-PCT)	4.82	13.10
Exotic vegetation (non-PCT)	0.12	0.09
Mixed native/exotic vegetation (non-PCT)	0.76	0.44
Non-PCT sub-total	**6.60**	**13.65**
Total	**7.21**	**13.84**

Impacts to threatened ecological communities resulting from the proposal is detailed in Table 6-8.

Table 6-8: Impacts to threatened ecological communities

Plant Community Type	Threatened ecological communities	Within the construction footprint (ha)	
		Excluded land	Certified-urban capable land
3320	Cumberland Plain Woodland in the Sydney Basin Bioregion (BC Act)	0.61	0.19
	Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (EPBC Act)	0.01	0.00
	Total	**0.61**	**0.19**

A test of significance (BC Act) and a significant impact criteria assessment (EPBC Act) were prepared for vegetation clearing on excluded land for:

- Cumberland Plain Woodland in the Sydney Basin Bioregion (BC Act)
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (EPBC Act).

It was determined that the proposal is unlikely to have a significant impact on the threatened ecological communities (TECs) for the following reasons:

- the proposal will not result in or increase the likelihood of extinction of the local occurrence of these communities
- the proposal will remove a minor fraction of the total extent of these communities
- the proposal will not fragment an existing patch of these communities.

The proposal is unlikely to impact adjoining patches of these communities or suitable habitat such that they substantial reduce in quality or integrity.

Threatened species habitat

The proposal will result in the loss of habitat for threatened species known or considered to have a moderate or higher likelihood to occur. 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 (0.61 ha) will be removed
- the area of native vegetation to be removed constitutes general habitat (ie browsing, hunting, aerial foraging habitat) to majority 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 a small area containing koala habitat and general habitat for woodland birds and other arboreal mammals. 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.

Aquatic habitats

Aquatic habitats are not expected to be impacted by the proposal.

Biodiversity offsets

Residual impacts to biodiversity from the proposal that could not be avoided during design will be offset in accordance with Sydney Water's Biodiversity Offset Guide.

Offset multipliers are required for TECs, non-threatened native vegetation, and habitat area of threatened flora and/or fauna (Table 6-9). Vegetation and habitat impacts of the proposal will be offset in accordance with this framework.

Table 6-9: Offset multipliers for biota as described in the guide

Residual loss of biodiversity values resulting from works	Offset multiplier (Moderate Impacts)
Threatened Ecological Communities	3
Non-threatened native vegetation (eg native remnant vegetation, riparian vegetation, planted native vegetation)	2
Habitat Area of threatened flora and/or fauna	3
Tree removal (locally native species)	3
Tree hollows	2 nest boxes or salvaged hollows (for each removed)
Tree Removal (Non-locally native or exotic tree or street tree)	1

Table 6-10 outlines the restoration requirements for the TEC in the construction footprint. Only vegetation impacted in excluded land is required to be offset.

Trees in vegetation mapped as non-PCT that are locally native, non-locally native, exotic or street are required to be offset. These trees and their offsetting obligations will be determined by the project arborist.

Table 6-10: Summary of offsets obligation for proposal impacts

Loss of Biodiversity Values	Impact (ha)	Required restoration (ha)
PCT		
3320	0.61	1.83
Other		
Tree removal (non-locally native or exotic/street tree	To be determined by project arborist	To be determined by project arborist

Table 6-11 outlines the offsetting options available to Sydney Water, ranked by offsetting priority. Where possible, it is the first preference for offsetting to occur on the site of impact. If this is not achievable, a nearby site either owned by Sydney Water or the local council (Wollondilly Shire Council) should be chosen. If this is not achievable, the purchase or retirement of biodiversity credits from a Biodiversity Stewardship Site should be considered.

Table 6-11: Offsetting options available to Sydney Water

Residual loss of biodiversity values resulting from works	Offset Options Moderate Impacts
Threatened vegetation: Threatened flora and/or fauna habitat) Non-threatened native vegetation	• On site: native revegetation or bushland restoration, AND/ OR • Nearby site: native revegetation or bushland restoration, OR • Sydney Water offset site bushland restoration, OR • Purchase and retire biodiversity credits generated by Sydney Water Offset sites or from the open market.
Tree removal	• On site: tree replacement, AND/ OR • Nearby site: tree replacement.

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.

Table 6-12 Environmental mitigation measures — flora and fauna

Mitigation measures

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

Mitigation measures

Vegetation removal must not occur until:

- the area to be removed has been physically delineated
- the delivery contractor's Environmental Representative has confirmed consistency with approval documentation
- pre-clearing surveys have been completed, if relevant and
- Sydney Water Project Manager has provided written authorisation to commence clearing.

A suitably qualified ecologist or fauna spotter-catcher will complete an ecological pre-clearing survey of the construction footprint prior to the start of works. Any unexpected threatened flora species or ecological communities identified during the pre-clearing survey should be appropriately assessed through a supplementary impact assessment. Where fauna species are identified in vegetation to be cleared, animals will be removed by an ecologist and relocated to adjacent bushland prior to felling.

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.

Pre-clearance surveys will include targeted surveys for the koalas. If any individuals are identified no works will start until the koala has self-relocated outside of the construction footprint.

Any hollow-bearing trees (HBTs) not previously identified will be marked by an ecologist so they are retained and avoided by contractors where practicable.

If potential fauna habitat is identified in vegetation to be removed the habitat features will be sectionally dismantled or soft felled using an excavator with a rotating bucket or tree climbers. Any habitat removal will 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.

If dewatering farm dams, engage a licensed ecologist to undertake fauna relocation (eg turtles, frogs, etc) into an appropriate nearby habitat.

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.

Physical control of weeds can occur at any time in the form of targeted slashing and hand removal of seed heads. Weed control with the use of herbicide, where required, should be prioritised for the active growing periods of the target species. Advice on best times to treat different weed species with herbicide can be found on WeedWise and on the label of herbicide products. The equipment used for removing them will be cleaned to minimise the likelihood of transferring noxious plant materials.

Mitigation measures

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 cinnamomi*. The 'arrive clean, leave clean' principal 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.

Construction should occur during standard daylight hours to avoid potential indirect impacts on nocturnal fauna such as owls, amphibians, and mammals. If construction is to occur at night, then light mitigation measures outlined in the National Light Pollution Guidelines for Wildlife should be applied to mitigate impacts to native fauna where required.

Any permanent lighting proposed as part of the development should adopt directional fittings and lighting posts to minimise light spill into adjacent areas of native vegetation.

Stop work procedures will be in place if a koala is found during construction. All works will stop within 50 m of the koala and should not restart until the koala has self-relocated. If a koala enters the construction area and is at risk of injury a qualified wildlife carer/handler will be called, and the koala safely removed from site.

If existing koala exclusion fencing within the CPCP area is encountered during construction, the integrity of the fencing must be retained.

In TOBAN period:

- check specific TOBAN notice to confirm whether the work can be carried out under standard exemptions (Govt Gazette No18 Feb 2018)
- if the work is not covered by a standard exemption, apply to RFS for specific exemption.

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.

6.2.4 Aboriginal heritage

Potential Aboriginal heritage impacts were identified through desktop assessments and on-site investigations. An Aboriginal Heritage Due Diligence assessment (KNC, 2025) was prepared by Kelleher Nightingale Consulting to support this REF and is attached as Appendix E.

Existing environment

A search of the Aboriginal heritage information management system (AHIMS) database and a review of prior Aboriginal heritage studies identified several Aboriginal heritage sites in the region (Figure 6-8). The identified sites are artefacts, potential archaeological deposits (PADs), art, grinding groves, modified tree and a PAD (stone arrangement). The region has the potential to retain Aboriginal objects and archaeological deposit in contexts where the ground has not been subject to significant disturbance.

One AHIMS sites is located within the construction footprint:

[redacted] isolated artefact recorded in a disturbed context (Figure 6-9). This artefact was not relocated during the on-site investigation.

Three AHIMS sites are located close to the construction footprint:

[redacted] listed as destroyed (Figure 6-9).

[redacted] listed as destroyed (Figure 6-9)

[redacted] listed as destroyed (Figure 6-10). The registered location of this site is incorrect on the AHIMS database.

The site cards of [redacted] state that an AHIP would be required prior to any impact, suggesting that more artefacts may be present at the three locations.

The construction footprint also overlaps with three Aboriginal Heritage Impact Permits (AHIP):

- AHIP 4642, South East Wilton Stage 1 and Stage 2 subdivision
- AHIP 5228, North Wilton subdivision and development works
- AHIP C0003872, Upper Canal.

Potential impacts

Work will largely be occurring in areas with evidence of historic widespread clearing, agricultural use, and ground disturbance. Vegetation removal and ground disturbance in previously undisturbed areas will be avoided where possible.

[redacted] are outside the construction footprint and will not be impacted. The construction footprint was designed to avoid impacting [redacted]

[redacted] recorded in a disturbed context. This site is within the construction footprint but will be avoided during construction. Provided that impact to the site avoided, there are no further archaeological constraints to the proposal and according to the Heritage NSW Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales the proposed works can proceed with caution.

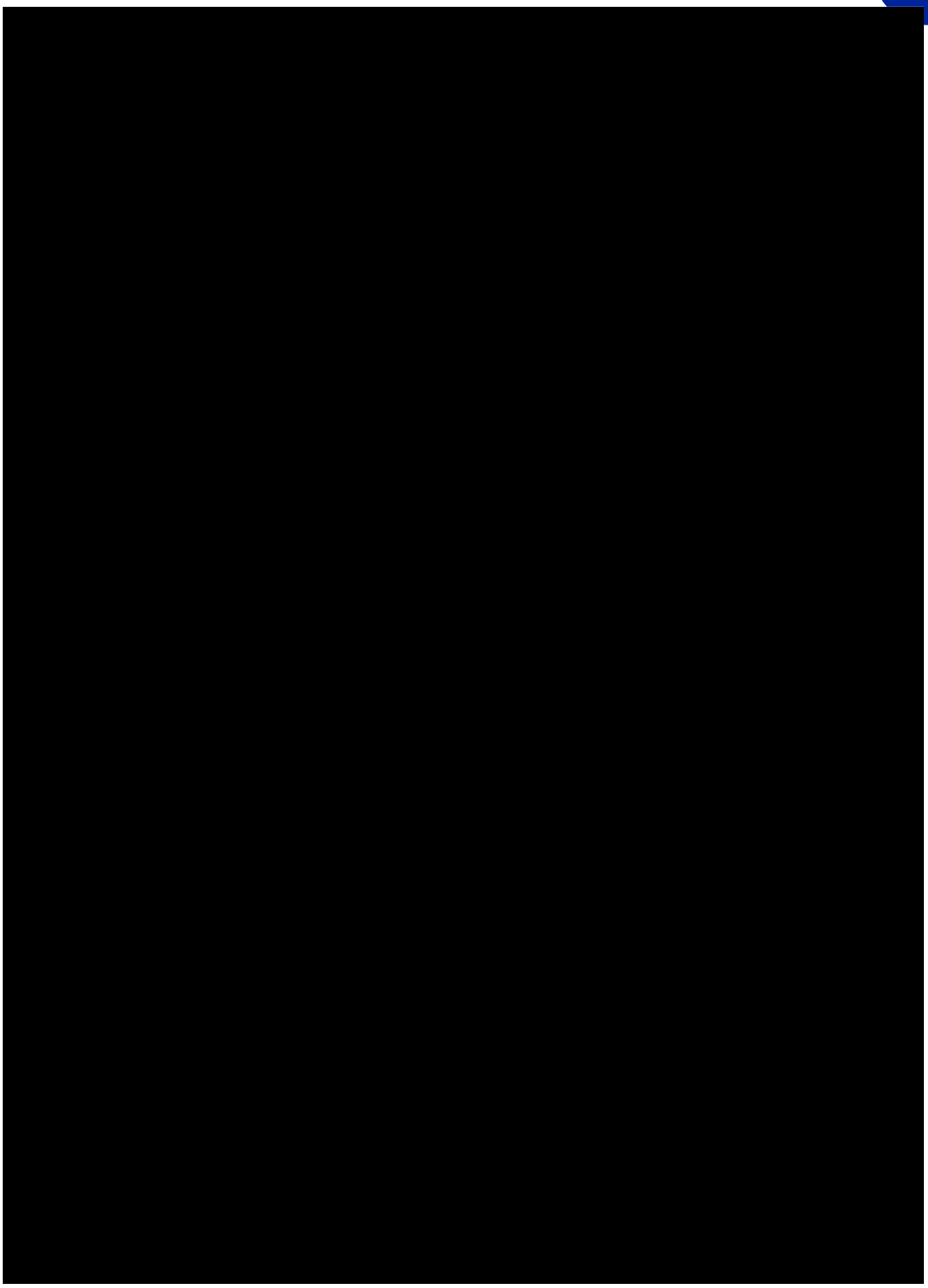
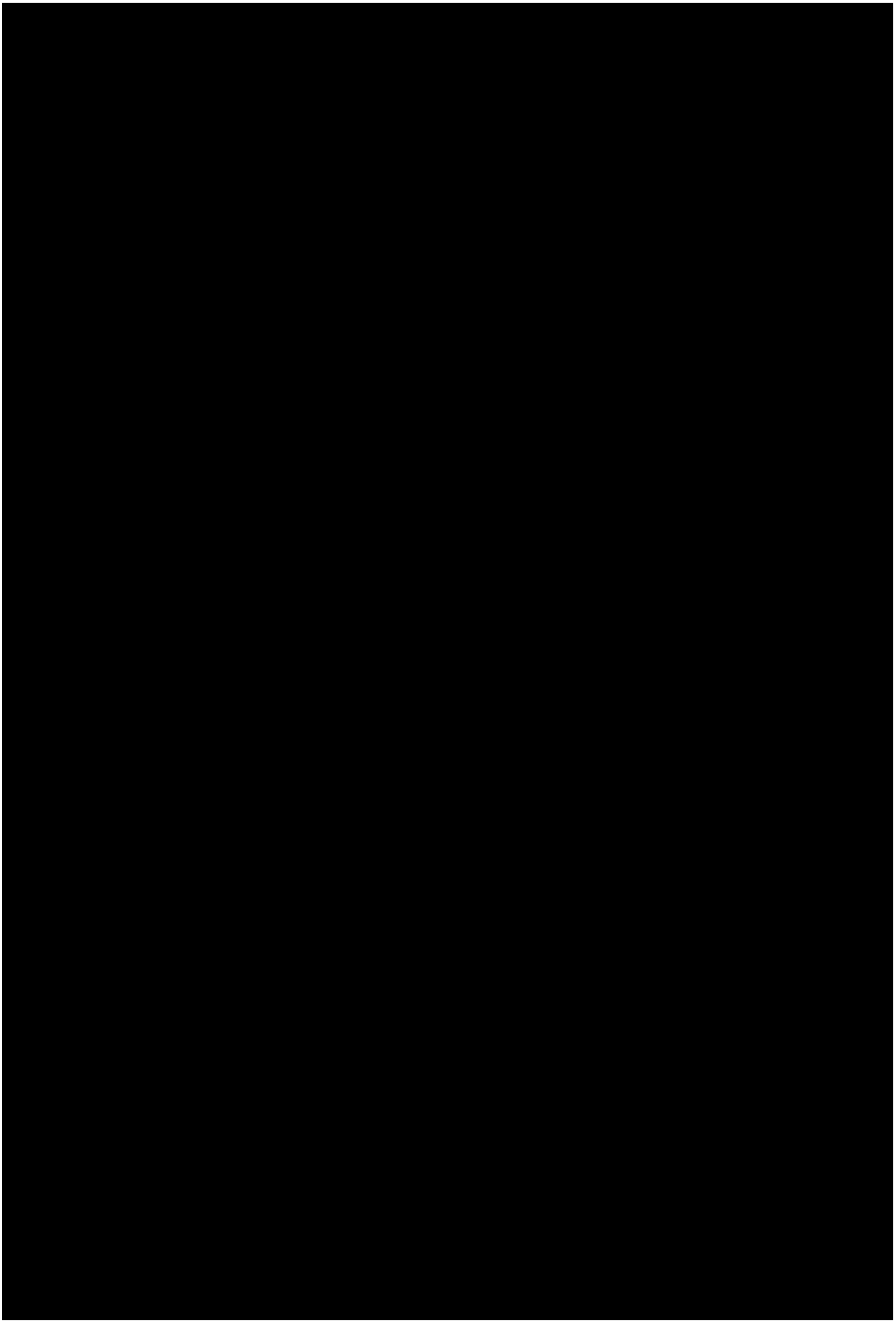
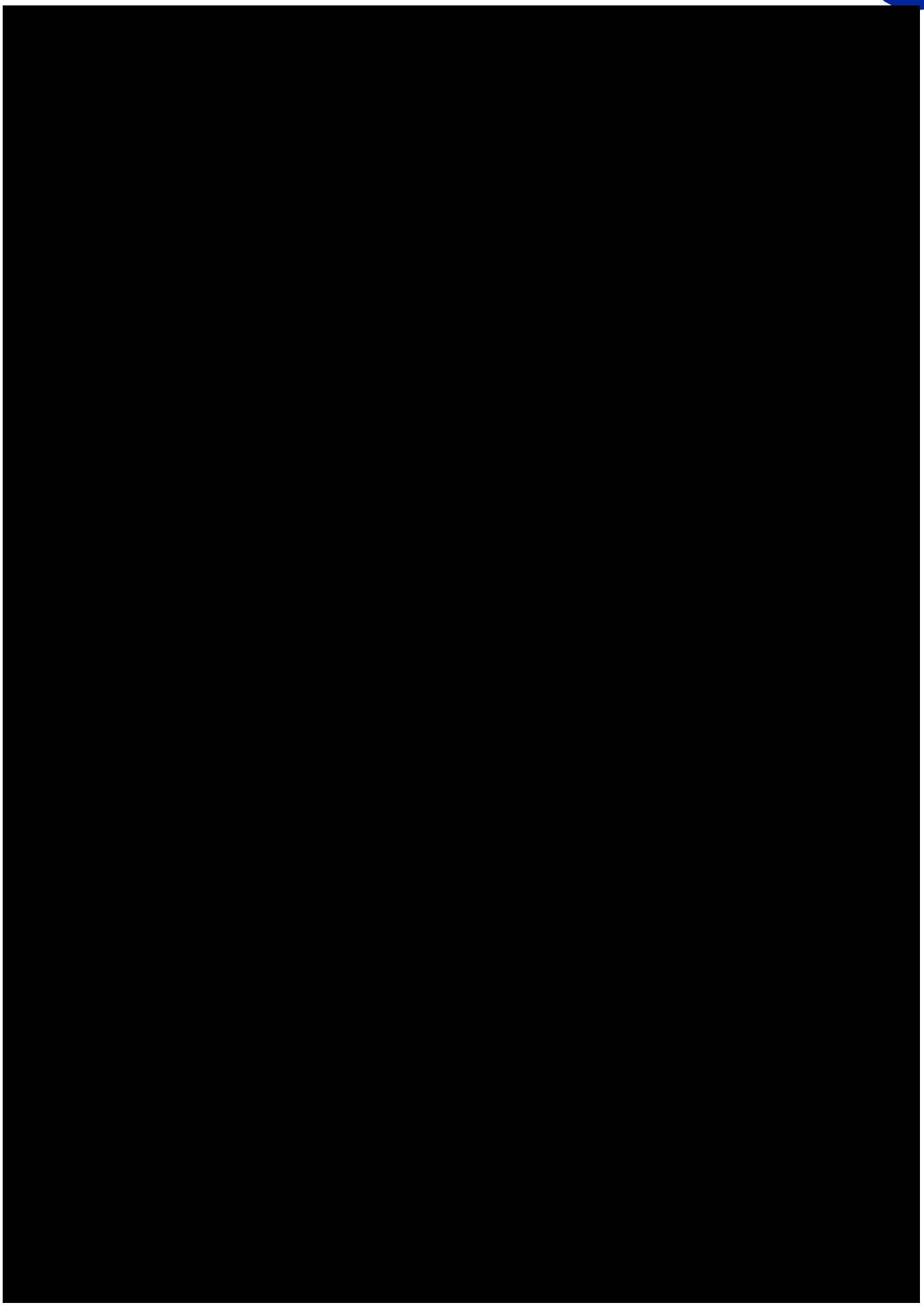


Figure 6-8 Aboriginal heritage – AHIMS search





Mitigation measures

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

Table 6-13 Environmental mitigation measures — Aboriginal heritage

Mitigation measures
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites, 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 work.
Harm to any Aboriginal objects and declared Aboriginal places is only permitted once an AHIP has been granted.
The location of [redacted] will be a no-go zone.
If any Aboriginal object, cease all excavation or disturbance in the area and notify SW Project Manager in accordance with SWEMS0009.
All site personnel must be inducted by a heritage specialist (or delegate) before starting work on site. The induction should include clear explanation of heritage constraints, go and no-go areas, measures to avoid impacts, stop work procedures, and contact details to obtain further heritage guidance if needed.
If suspected human remains are discovered: • cease all excavation or disturbance in the area (a buffer for at least 20 m) • notify the Sydney Water Project Manager in accordance with SWEMS0009 • notify the local Police and NSW Environmental line on 131 555, as soon as practicable • work is not to recommence in that location unless authorised in writing by Heritage NSW.
Any work undertaken within active AHIP, and approval areas must be undertaken in accordance with relevant AHIP conditions.

6.2.5 Non-Aboriginal heritage

A Statement of Heritage Impact (SoHI) (Extent, 2025) was prepared by Extent Heritage and is attached as Appendix F.

Existing environment

The Upper Canal System is listed on the State Heritage Register. The Upper Canal System comprises a 64km-long series of tunnels, canals and aqueducts, fed by gravity from Pheasant's Nest Weir to Prospect Reservoir.

The SoHI specifically addresses two locations where the construction footprint crosses the curtilage of the Upper Canal System The Upper Canal System at these two locations comprises the Nepean Tunnel (Figure 6-11). The Nepean Tunnel (constructed c.1888) is an unlined tunnel which passes through solid rock at a depth of about 90 m below ground level. The tunnel begins at Pheasants Nest Weir on the Cordeaux River and ends at Broughton Pass on the Cataract River.

At ground level a line of telegraph poles marks the alignment of the Nepean Tunnel, as well as a line of concrete air shafts and sandstone observation/survey pillars. The locations where the construction footprint crosses the curtilage of the Upper Canal System (Nepean Tunnel) are:

- Location 1 – the proposed pipelines cross the curtilage near a sandstone observation/survey pillar (Figure 6-12). The pillar is classed as having exceptional heritage significance and is shown in Figure 6-13
- Location 2 – the proposed pipelines cross the curtilage near a concrete air vent (Figure 6-12). The air shaft has high heritage significance and is shown in Figure 6-14.

Two local heritage items are located on Argyle Street (Figure 6-11):

- St Luke's Anglican Church – item I276 on the Wollondilly LEP
- Cottage – item I275 on the Wollondilly LEP.

Potential impacts

The proposed works include trenching and the installation of pipelines above the Upper Canal System in two separate locations. Both locations are located above a section of the canal which comprises the Nepean Tunnel at a depth of approximately 90 metres below ground level. There are also a number of elements associated with the Upper Canal System located at ground level including sandstone observation pillars, concrete ventilation shafts and timber telegraph poles are located at ground level. The proposed pipeline alignment was adjusted to provide more clearance between the trenching work and the sandstone pillar at Location 1. No items at ground level associated with the canal will be impacted by the proposed works. The SoHI concluded that proposed works will have no impact on the fabric and spatial arrangements of the Upper Canal System. However, a section 60 approval must be obtained prior to any work occurring in the curtilage of the Upper Canal System.

No significant archaeological material associated with the construction of the tunnel is anticipated at Location 1 or Location 2. The SoHI found that there is nil-low potential for archaeological remains associated with the construction of the Nepean Tunnel.

Pipeline trenching on Argyle Street will be located near the two local heritage items. No work will occur in the curtilage of either item. Vibration impact to heritage structures is not expected given the distances between the trenching and the structures:

- St Luke's Anglican Church – about 400 m from the church to the trench
- Cottage – about 150 m from the cottage to the trench.

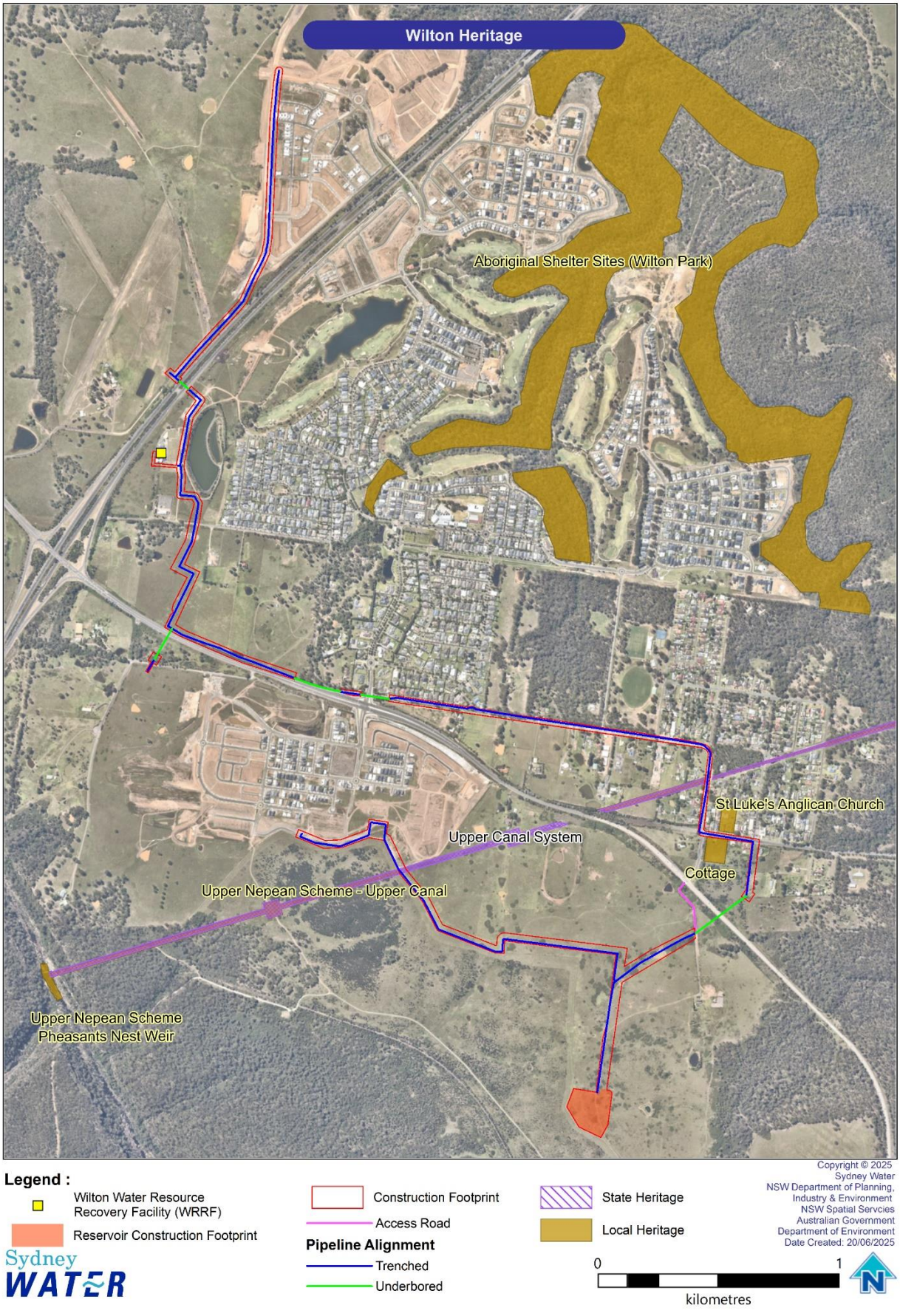


Figure 6-11 State and local heritage items

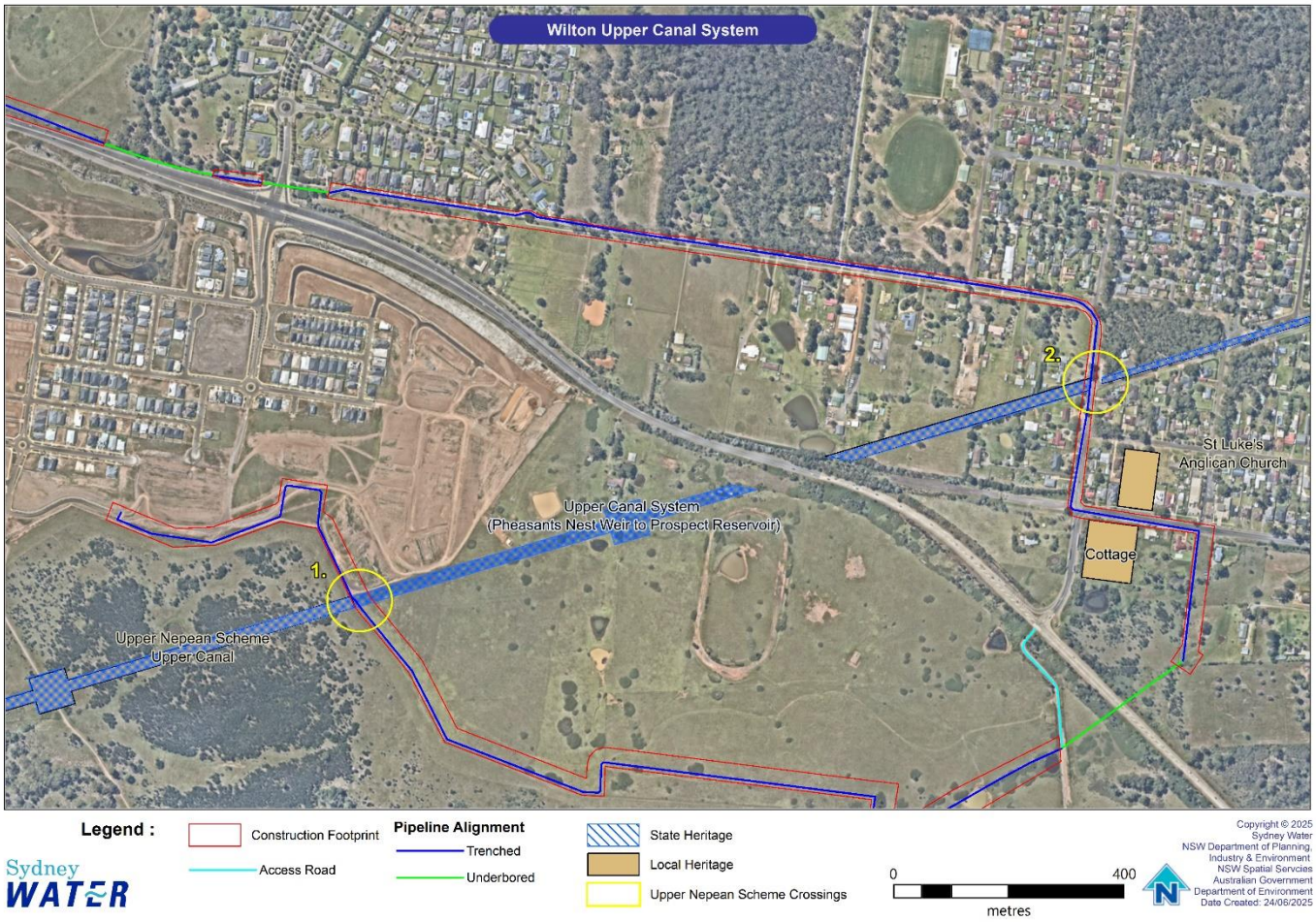


Figure 6-12 Location of the Nepean Tunnel and associated above ground structures

Figure 6-13 Sandstone observation/survey pillar in South East Wilton, facing south

Figure 6-14 Concrete air shaft near Almond Street and Wonson Street

Mitigation measures

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

Table 6-14 Environmental mitigation measures — non-Aboriginal heritage

Mitigation measures
A s60 approval must be obtained prior to any work occurring within the curtilage of the Upper Canal. Work must be carried out in accordance with the conditions of the approval.
Work around the Upper Canal must be in accordance with the *Guideline for Development Adjacent to the Upper Canal and Warragamba Pipelines,* 2021.
A heritage unexpected finds procedure must be in place for the duration of the works in the event of unanticipated archaeological remains being present within the works area.
Work must not impact the fabric of the Upper Canal System, including ground level elements. The sandstone observation pillar and ventilation shaft must be designated as no-go areas.
The site induction must include information on the significance of the Upper Canal System and the measures to be implemented to protect it.
If any non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify SW Project Manager in accordance with SWEMS0009. WaterNSW must be notified if any relic is found within the curtilage of the Upper Canal System.
No construction materials should be stockpiled against or adjacent heritage structures. Laydown areas and high-traffic areas should have a clear separation from items of heritage significance including the sandstone survey pillar.

Mitigation measures

Any accidental damage to heritage items is to be treated as an incident, with appropriate recording and notification.

6.2.6 Noise and vibration

A specialist assessment report (GHD, 2025) was prepared by GHD to support this REF and is provided as Appendix G.

Existing environment

The nearest sensitive receivers potentially impacted by the construction of the proposal are rural residential receivers in Wilton. Other sensitive receivers in the study area include commercial and industrial land uses, active recreational areas and one place of worship. A total of 1,041 noise sensitive receivers along the construction route were identified.

Six noise catchment areas (NCAs) were defined across the study area to group areas based on the types of sensitive receivers present and the ambient acoustic environments. The NCAs are shown in Figure 6-15.

The existing noise environment comprises rural land uses affected by road traffic noise, where residential dwellings are in close proximity to a road. Noise monitoring undertaken as part of this assessment was supplemented with noise monitoring data gathered as part of the *Picton Road upgrade Nepean River to Almond Street Noise and Vibration Impact Assessment* (Picton REF NVIA). The Picton REF NVIA monitoring was undertaken between 12 October 2022 and 26 October 2022. Adopted background noise levels are shown in Table 6-15.

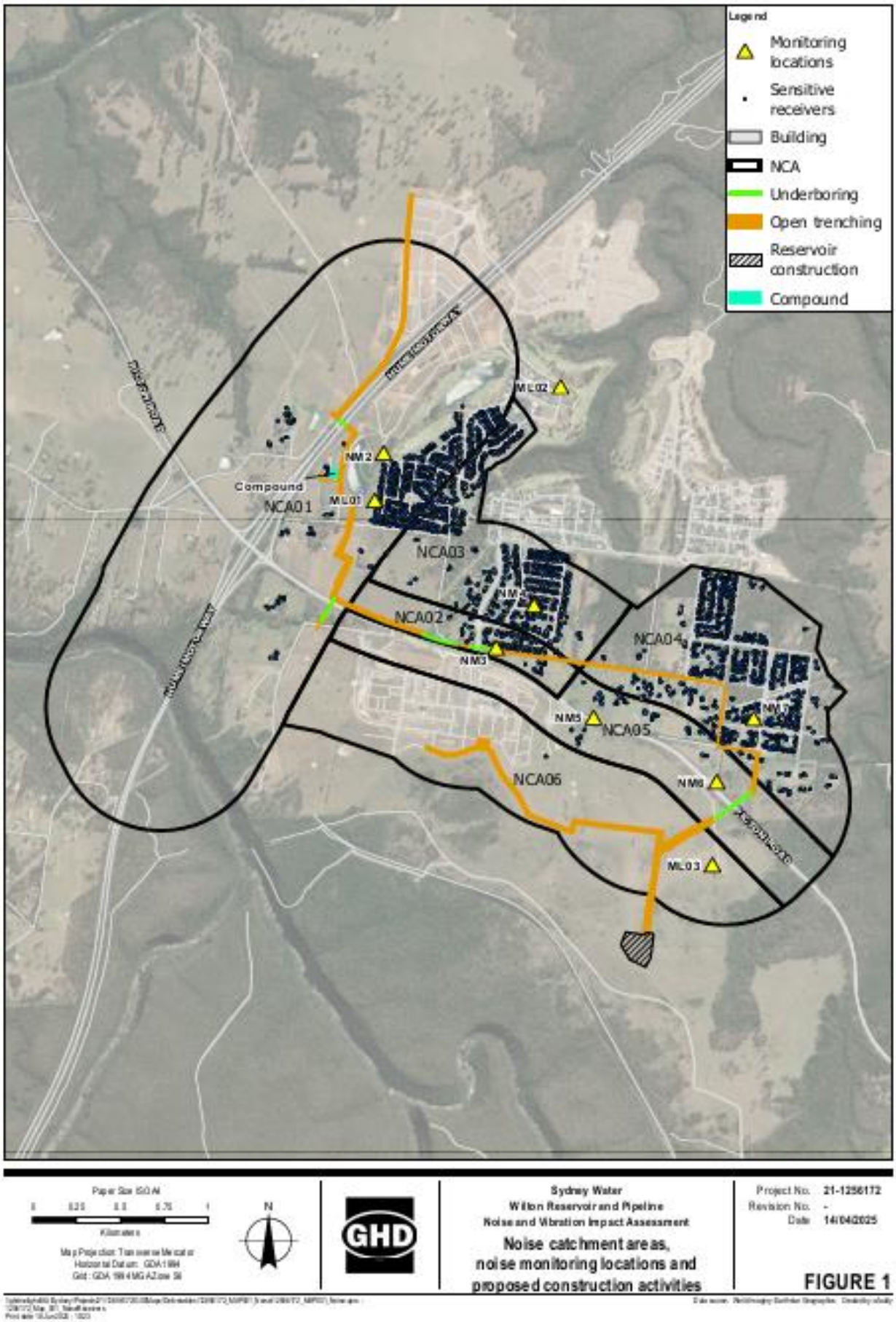


Figure 6-15 Noise catchment areas (NCAs)

Table 6-15 Background noise levels

Noise catchment area	Adopted background level $L_{A90(Period)}$, dBA		
	Day	Evening	Night
NCA01	40	40	40
NCA02	48	41	34
NCA03	35	32	30
NCA04	37	32	30
NCA05	51	42	34
NCA06	45	45	42

Potential impacts

Noise

During construction at the reservoir site, the proposal will generate noise from:

- site establishment
- bulk earthworks (cut to fill), foundation works
- ground stabilisation works
- reservoir foundations
- pipeline installation
- reservoir tank wall construction
- reservoir roof construction
- reservoir tank wall painting
- reservoir accessories & fittings install
- foundation works
- pavement works
- stair tower works & Installation
- commissioning.

Open trenching will involve pipe delivery and installation and trench excavation and backfill. At major road crossings, trenchless construction methods:

- Picton Road
- Pembroke Road

- Hume Motorway.

The majority of work will occur during standard daytime hours. However, at times there may be work and activities that may be outside of standard daytime hours as outlined in Section 3.5.

Construction noise impact modelling was conducted for several construction scenarios. The predicted construction noise contours are provided in Appendix G.

Construction scenarios:

Open trenching

- CS01 – clearing, use of concrete saw
- CS02 – pipe delivery, excavation and backfilling
- CS03 – vehicle movements.

Reservoir construction

- CS04 – site establishment and clearing
- CS05 – bulk earthworks and ground stabilisation
- CS06 – vehicle movements.

HDD

- CS07 – activities at launch and receival pit
- CS08 – dewatering.

Construction compound

- CS09 – operation of laydown areas.

Noise compliance criteria were developed in accordance with the Interim Construction Noise and Vibration Guideline. The noise management levels are summarised in Table 6-16.

Table 6-16 Noise management levels

Receiver type	Construction noise management levels dBA				
	Standard recommended hours		Outside recommended hours		
	Noise affected	Highly noise affected	Day	Evening	Night
Residential - NCA01	50	75	45	45	45
Residential - NCA02	58	75	53	46	39
Residential - NCA03	45	75	40	37	35
Residential - NCA04	47	75	42	37	35
Residential - NCA05	61	75	56	47	39
Residential - NCA06	55	75	50	50	47
Educational Facilities	55 (external) – when in use[1]				
Active recreation areas	65 (external) – when in use				
Passive recreation areas	60 (external) – when in use				
Places of worship	55 (external) – when in use[1]				
Commercial	70 (external) – when in use				
Industrial	75 (external) – when in use				

[1]Based on a 10 dB attenuation through an open window to achieve an internal level of 45 dBA

Open trenching

The highest predicted construction noise levels at a sensitive receiver from open trenching activities range between 92 and 99 dBA, with noisier construction activities such as concrete sawing (CS01) predicted to lead to noise levels up to 7 dB higher than lower intensity construction activities (such as truck movements along the pipeline alignment corridor, CS03).

Noisy activities such as concrete sawing (CS01) are predicted exceed the NML at up to 546 sensitive receivers, with 58 receivers exceeding the highly noise affected level. Of the 546 sensitive receivers, 156 receivers are predicted to experience noise levels considered to be moderately intrusive, while 102 receivers are predicted to experience noise levels considered to be highly intrusive. During lower noise generating activities (CS02 and CS03), the impacts are predicted to be lower.

The maximum number of NML exceedances occur in NCA04, followed by NCA03 and NCA01. These NCAs have lower NMLs, reflecting their setback from road traffic noise sources and a quieter rural, background noise environment. Noise from trenching will depend on the intensity and proximity of works to nearby sensitive receivers, as well as the duration of the open trenching segment.

The worst-case impacts are likely to be limited to a few weeks at a given sensitive receiver when construction works are occurring directly adjacent to the sensitive receiver.

Reservoir construction

The highest predicted construction noise levels at a sensitive receiver from reservoir construction activities range between 29 and 35 dBA. Due to the distances between the reservoirs and the nearest sensitive receivers no exceedances of the NML are predicted from these activities.

Trenchless construction

The highest predicted construction noise levels at a sensitive receiver from activities at the HDD locations range between 74 and 78 dBA.

During launch operations, exceedances of the NML are predicted at up to 170 sensitive receivers, with three receivers predicted to exceed the highly noise affected level. Of the 170 sensitive receivers, 33 receivers are predicted to experience noise levels considered to be moderately intrusive. No receivers are predicted to experience noise levels considered to be highly intrusive. During lower noise generating activities such as dewatering and general pit operations, impacts are predicted to be lower.

The maximum number of NML exceedances occurs in NCA03 followed by NCA04. These NCAs have lower NMLs, reflecting their setback from road traffic noise sources and a quieter rural, background noise environment. No exceedances of the NMLs are predicted at non-residential receivers.

HDD is only required at major road-crossings. Noise impacts from these activities will be short-term in duration (with worst-case impacts during launch operations) and limited to sensitive receivers around the specific launch or receival pit. It is recommended that temporary noise barriers be constructed around the launch and retrieval pits to reduce the potential for noise impacts.

Construction compound

Noise levels have been predicted from the proposed construction compound at 150 Condell Park Road. The compound will serve as a laydown area for construction plant and equipment. Due to the distances between the compound and the nearest sensitive receivers, no exceedances of the NML are predicted from compound operations.

Vibration

Safe working distances for vibration intensive equipment are outlined in Table 6-17.

Vibration impacts from the HDD machine are not anticipated as the process involves drilling rather than hammering.

Excavation and operations of the roller have the potential to exceed the human comfort vibration criteria for short periods of time when these activities are being undertaken within 15 m of a residential receiver. All

potentially impacted receivers will be informed of the nature of the works, expected vibration levels, duration of works and a method of contacting Sydney Water to raise vibration complaints.

The structural damage criteria are not expected to be exceeded for residential receivers. Twenty-six sensitive receivers have been identified within the 15 m human comfort buffer distance. One sensitive receiver (Industrial receiver at 150B Condell Park Rd, Wilton) has been identified within the 4 m standard dwelling structural damage buffer distance. A list of the sensitive receivers within a 15 m buffer is provided in Appendix G. The buffer distances are calculated from the edge of the construction footprint as a worst-case scenario.

Table 6-17 Vibration impacts during each construction phase

Construction activity	Human comfort		Damage to standard structures	
	Buffer distance (m)	Number of potentially affected receivers	Buffer distance (m)	Number of potentially affected receivers
Excavator/small trench roller	15	22	4	0
Micro-tunnelling machine	6	0	2	0

Mitigation measures

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

Table 6-18 Environmental mitigation measures — noise and vibration

Mitigation measures
Work will comply with the Interim Construction Noise Guideline (EPA 2009), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday where reasonable. No work to be scheduled on Sunday nights or public holidays. Any proposed work outside of these hours and beyond daytime out of hours work as assessed in this assessment must be justified. The proposal will also be carried out in accordance with Sydney Water's *Noise Management Procedure* SWEMS0056 and the Noise Policy for Industry (EPA 2017).
Justify, document and implement all reasonable and feasible noise mitigation measures on-site to mitigate noise impacts.
Incorporate standard daytime hours noise management mitigation measures into the CEMP, including but not limited to: • identify and consult with the potentially affected residents prior to the commencement of work: ○ describe the nature of work, the expected noise impacts, approved hours of work, duration, complaints handling and contact details

Mitigation measures

  - determine need for, and appropriate timing of respite periods (eg times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for work near residences).

- ongoing engagement with the community on the construction times
- implement a noise complaint handling procedure
- plant or machinery will not be permitted to warm-up near residential dwellings before the nominated working hours
- select appropriate plant for each task; to minimise the noise impact (eg all stationary and mobile plant would be fitted with residential type silencers)
- engine brakes will not be used when entering or leaving the work site(s) or within work areas
- regularly inspect and maintain equipment in good working order
- arrange work sites where possible to minimise noise (eg generators away from sensitive receivers, site set up to minimise use of vehicle reversing alarms, site amenities and/or entrances away from noise sensitive receivers)
- use natural landforms or mounds or site sheds as noise barriers where possible
- schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

For work beyond standard daytime hours as assessed in this assessment, the delivery contractor would:

- justify the need for out of hours work and why it is not possible to carry out the work 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, including any respite periods. seek approval from the Sydney Water Project Manager in consultation with the Sydney Water Environment and Community Engagement Representatives.

If night work is needed, the delivery contractor would:

- justify the need for night work
- 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 (ie for scheduled night work (not emergency work))
- Any work conducted over two or more consecutive nights would require the Community Engagement Team to consult with impacted residents prior to starting.

Mitigation measures
• notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work • seek approval from the Sydney Water Project Manager in consultation with the Sydney Water Environment and Community Engagement Representatives • complete a Sydney Water out of hours work request form.
If work on Sundays or public holidays are required, the delivery contractor would: • justify why all other times are not feasible • consider potential noise impacts and implement relevant standard daytime, out of hours and nighttime 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 Sydney Water Environment and Community Engagement Representatives.
Conduct a dilapidation survey / asset condition assessment prior to work and after the completion of work on/near structures which have potential to be damaged by vibration.
Consider less vibration intensive methodologies where practicable and use only the necessary sized and powered equipment.
Minimise the use of plant and equipment with annoying characteristics such as concrete saws.
A minimum of 3 m high temporary noise barriers (15 kg/m^2, with no gaps) should be considered around the launch and receival pits to minimise the potential for impacts.
The delivery contractor must communicate with the impacted residents clearly explaining the duration and noise level of the works and inform the residents of any respite periods.
Compliance noise monitoring must be undertaken at sensitive receivers directly adjacent to the open trenching alignment during construction works.
Noisy plant to be positioned and orientated to minimise noise impacts on noise sensitive receivers.
Communicate clearly to “highly noise affected” receivers, explaining the duration and noise levels of the work. Inform receivers of any respite periods.
Schedule work bearing in mind the activities and sensitivity of adjacent land uses.

6.2.7 Air and energy

Existing environment

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

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

Potential impacts

The proposal will potentially result in air quality impacts from:

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

These air quality impacts could potentially affect surrounding sensitive receivers. Impacts will largely be dependent on wind direction and strength, and distance of sensitive receivers from the source. The progressive nature of construction will mean potential dust impacts at a single location will generally be limited and temporary. However, micro-tunnelling and related activities will be stationary. This has potential to result in dust impacts at some receivers over a longer period. An accumulation of dust has the potential to settle on vegetation, waterways and nearby structures. With the implementation of the mitigation measures, a material or noticeable effect on air quality from dust emissions will not be likely to occur.

Construction activities will be temporary and would not significantly increase Sydney Water's greenhouse gas (GHG) emissions. GHG emissions would be estimated during detailed design and work methodologies and materials would be refined to reduce the proposal's GHG emissions.

Operational impacts are not anticipated.

Mitigation measures

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

Table 6-19 Environmental mitigation measures — air and energy

Mitigation measures
Include dust management measures in the CEMP. This will include: • modify or cease work in windy conditions • cover exposed areas with tarpaulins or geotextile fabric • modify site layout (place stockpiles away from sensitive receivers) • vegetate exposed areas using appropriate seeding • monitor activities with the potential to generate dust • use dust suppression (water spraying or install dust barriers) where appropriate • cover all transported waste.

Mitigation measures
Maintain equipment in good working order, comply with the clean air regulations of the *Protection of the Environment Operations Act 1997*, have appropriate exhaust pollution controls, and meet Australian Standards for exhaust emissions.
Use alternative to fossil fuels where practical and cost-effective.
Apply Sydney Water's Best Practice Energy Efficiency Design Guidelines.
Track energy use as per SWEMS0015.28 Contractor NGER template.
Switch off vehicles/machinery when not in use.

6.2.8 Waste and hazardous materials

Our corporate objectives include being 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. 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).

Existing environment and potential environmental impacts

Waste streams will be classified in accordance with the Waste Classification Guidelines (NSW EPA, 2014) prior to construction.

During construction, the largest volume of waste generated by construction will be excess spoil from excavations. About 102,000 m^3 of soil will be excavated for open trenching and excavation of launch and retrieval shafts and a about 70,000 m^3 of soil will be disposed of. Soil will temporarily be stockpiled within the proposal area boundary. Opportunities to reduce, recycle and reuse on this project will be sought with the Delivery Contractor and documented in the Waste Management Plan in the CEMP. Wherever possible, suitable excavated spoil will be re-used on site for backfilling, landscaping and other uses. If the spoil is unsuitable for re-use due to its geotechnical or contamination characteristics (including asbestos), spoil will be tested and classified according to the Waste Classification Guidelines (NSW EPA, 2014) and disposed of at an appropriately licensed facility.

The proposal will require the vegetation as well as other general construction waste. The construction footprint includes removal of up to 1.41 ha of native/exotic vegetation (excludes grassland), and 0.8 ha of vegetation associated with a PCT. Weedy and non-weedy vegetation waste is expected to be generated and will need to be managed as separate waste streams to avoid cross-contamination.

The risk of contamination within the Wilton Growth Area has been assessed in a Detailed Site Investigation (DSI) (Sydney Water, 2022). The DSI did not find contaminants of potential concern in the soil samples across the proposed alignment. However, unexpected finds may occur and will be managed using Sydney Water's standard processes.

Mitigation measures

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

Table 6-20 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
The delivery contractor will prepare a Waste and Resource Recovery Plan (WRRP) to appropriately manage and classify any materials including soils, construction/demolition wastes and associated stockpiles. The plan will be approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Contamination and Hazardous Materials team. The WRRP should include: • expected waste types and their location • delineation of waste/resource types including identification of likely vertical and lateral extents (where warranted) • visual monitoring of materials during excavation and measures to be undertaken to prevent co-mingling, and cross-contamination of waste or resource types • ex-situ waste and resource recovery classification program, including timing relative to the proposal / excavation phases as well as proposed hold points • waste minimisation and resource recovery methodologies (including consideration of onsite reuse or management if contaminated) • roles and responsibilities in relation to stockpile and material management and monitoring program • proposed onsite reuse locations and reuse methodology (if applicable) • proposed off site reuse, off site recycling and/or off site disposal locations and facilities • legislative compliance requirements • consideration of future maintenance • site restoration.
The delivery contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP.
Minimise the generation of waste and sort waste streams to maximise reuse/recycling in accordance with the legislative requirements. Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise stockpile size and ensure delineation between different stockpiled materials.
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 off site, recycle where appropriate. Recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Prevent pollutants from escaping including covering skip bins and all transported waste.

Mitigation measures
Dispose excess vegetation (non-weed) that cannot be used for site establishment 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 Work procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with the Contamination and Hazardous Materials team propertyenvironmental@sydneywater.com.au).
Manage waste in accordance with relevant legislation and maintain records to show compliance eg waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.

6.2.9 Traffic and access

Existing environment

The road network around the proposal is dominated by two main roads (Figure 6-16). The Hume Motorway (a State Road) runs 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 above, due to population growth in surrounding suburbs and LGAs since this data was collected.

Bus route 901 (Wilton to Picton via Douglas Park) runs along Hornby Street. There is one bus stop on Hornby Street near Broughton Street. The proposal crosses land reserved for the Maldon-Dombarton Freight Rail Corridor (Figure 6-16). The land was partially excavated and developed over 20 years ago before the project was put on hold.

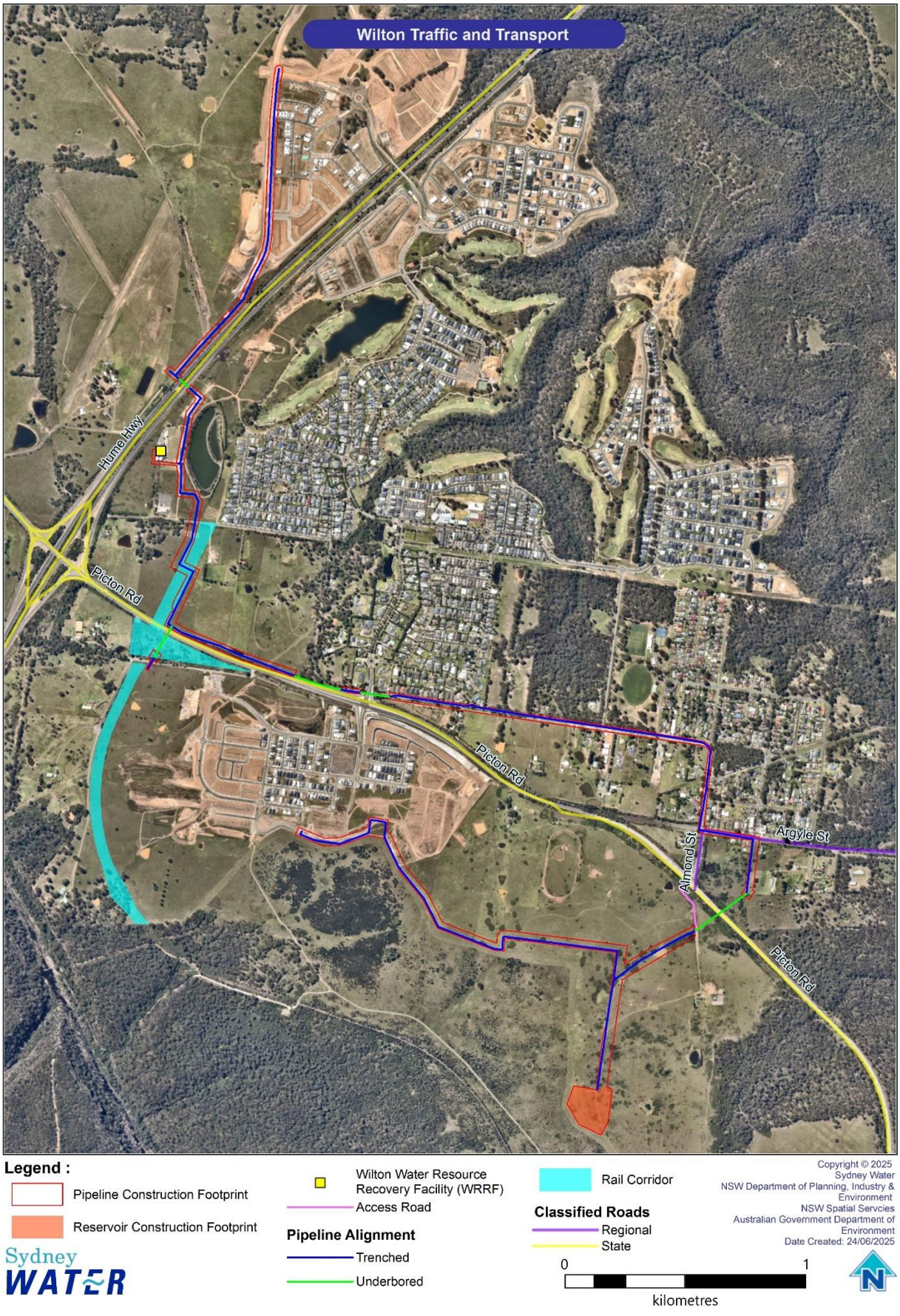


Figure 6-16 Main roads

Potential impacts

The proposal is expected to require about 15 heavy vehicle and five light vehicle movements during construction per shift per site. Although these vehicles will use the existing road network, they are not expected to contribute to any significant increases in traffic volumes or cause any delays.

Construction on Hornby Street has potential to impact access to private properties. Access to a property will not be blocked without consultation with occupants of that property. The availability of street parking may be temporarily impacted during the works. The bus stop on Hornby Street may be impacted during construction as the pipeline trenching progresses. Consultation with the bus route operator is required to minimise the impact to bus services.

Impacts to road traffic have been minimised in locations where micro-tunnelling is required (eg Hume Motorway, Picton Road). While there is no rail infrastructure in the rail corridor near Condell Park Road, Sydney Water will construct the pipes to ensure that a future rail network would not be affected.

During operation, there will be additional vehicle movements at the reservoirs for routine maintenance and for emergency access.

Mitigation measures

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

Table 6-21 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP) as part of the CEMP in consultation with the relevant traffic authority. This will include: • confirmation of haulage routes • access arrangements to the construction footprint, including entry and exit locations • management of vehicle movement including measures to encourage rideshare, management of oversized vehicles, materials transport • traffic control and safety measures • consultation and notification requirements • a response plan for any construction-related traffic incident • monitoring, review and amendment plans for traffic management measures • coordination with nearby developments if construction periods and routes overlap • an oversize and/or over mass (OSOM) transport management plan.
Meet Transport for NSW Traffic control at work sites Technical Manual issue 6.1 requirements for Transport for NSW roads. The delivery contractor will obtain necessary road licences and permits eg a Road Occupancy Licence (ROL) from Transport for NSW, including if work is within 100 m of traffic signals when construction commences. The delivery contractor will implement any permit conditions.
Repair any damage on local roads (eg potholes) progressively as the construction moves along the proposal alignment.
Erect signs to inform road users of the proposed work, trucks turning and any temporary road closures.

Mitigation measures
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 vehicles, plant and machinery are to be parked within the construction footprint or on nearby available roads where possible.
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.
Minimise traffic impacts near residential properties, schools and businesses by consulting with them (eg no major materials deliveries at school drop off or pick up times).
Manage sites to allow people to move safely past the work, including alternative pedestrian, bicycle, pram and wheelchair access.
Comply with Transport for NSW conditions for under boring the rail line.
Consult with the operator of bus route 901 about the potential need to temporarily relocate the Hornby Street bus stop.

6.2.10 Social and visual

A visual impact assessment (VIA) report (Aurecon, 2025) was prepared by Aurecon and is provided as Appendix H.

Existing environment

A study area of 1,600m radius from the site has been adopted for the VIA, as shown in Figure 6-17. The study area is determined by the distance at which it is considered the reservoirs become either indiscernible to the human eye or will occupy a small proportion of the visual field of view. This distance is directly related to the scale and height of the reservoirs, and the viewing properties of the typical human eye.

The reservoir site is located 10 km southeast of Picton and 63 km southwest of Sydney's Central Business District (CBD). It is near transport networks including adjacent Picton Road (B88), Wilton Road and to the east of Hume Motorway/Remembrance Driveway (M31).

The Wilton Growth Area lies in its proximity to natural features including the Cordeaux and Avon Rivers, hillsides and bushland conservation parks. The Upper Nepean State Conservation Area and Sydney Drinking Water Catchment are located to the south and to the east, comprising dense hilly bushland and water catchment areas.

The site features a generally undulating terrain with a combination of flat areas and gentle slopes, resulting in varying elevations across the South East Wilton, from about 220 m AHD at Picton Road to 280 m AHD at Thorntons Hill (south of proposal). The proposed reservoirs are located on the western edge of the South East Wilton precinct, positioned on a hill that gently slopes towards the east. As the site sits at a high point relative to the surrounding study area, it has potential to be more visually prominent.

The Nepean River is about 2.3 km west of the site. This river is a significant waterway in the region, flowing through the Macarthur area and providing essential water resources for both agricultural and residential use. Additionally, there are smaller tributaries and creeks including the Cordeaux and Avon Rivers (850 m and 1,500 m west of the site respectively), contributing to the local hydrology and incised deeply into the terrain.

The proposal is located in a rural/residential area and subject to urban development. The visual character of the surrounding area is a mix of farmland, bushland and low-density residential areas.

The reservoir site is situated at a high point relative to the surrounding area. However, the rise is not a prominent focus due to the undulating terrain.

The closest existing residential properties are located on Argyle Street (1,200 m north), and Stage 1 of the South East Wilton residential development (1,400 m northwest) under construction at the time of the field survey (September 2024). The dwellings in both areas consist of single detached dwellings that are one or two stories high.

The extent of potential visibility from a given viewing location was identified using topographical data in a visual envelope map (VEM). Viewpoints were selected within the VEM, and views validated during a field visit to account for potential screening and filtering effect on these views from topography, existing vegetation and built form.

Potential impacts

A total of five viewpoints (VPs) were identified within the study area (Figure 6-18). The viewpoints were selected using a preliminary desktop study and a site visit.

An illustrative photomontage was produced for four of the VPs, demonstrating the most noticeable impacts (refer to Appendix H). A photomontage was not produced for VP4, as the site is mostly obscured from view by intervening topography, existing and proposed dwellings.

Viewpoints were selected based on topography, vegetation and existing infrastructure around the proposal site where the key assets will be visible.

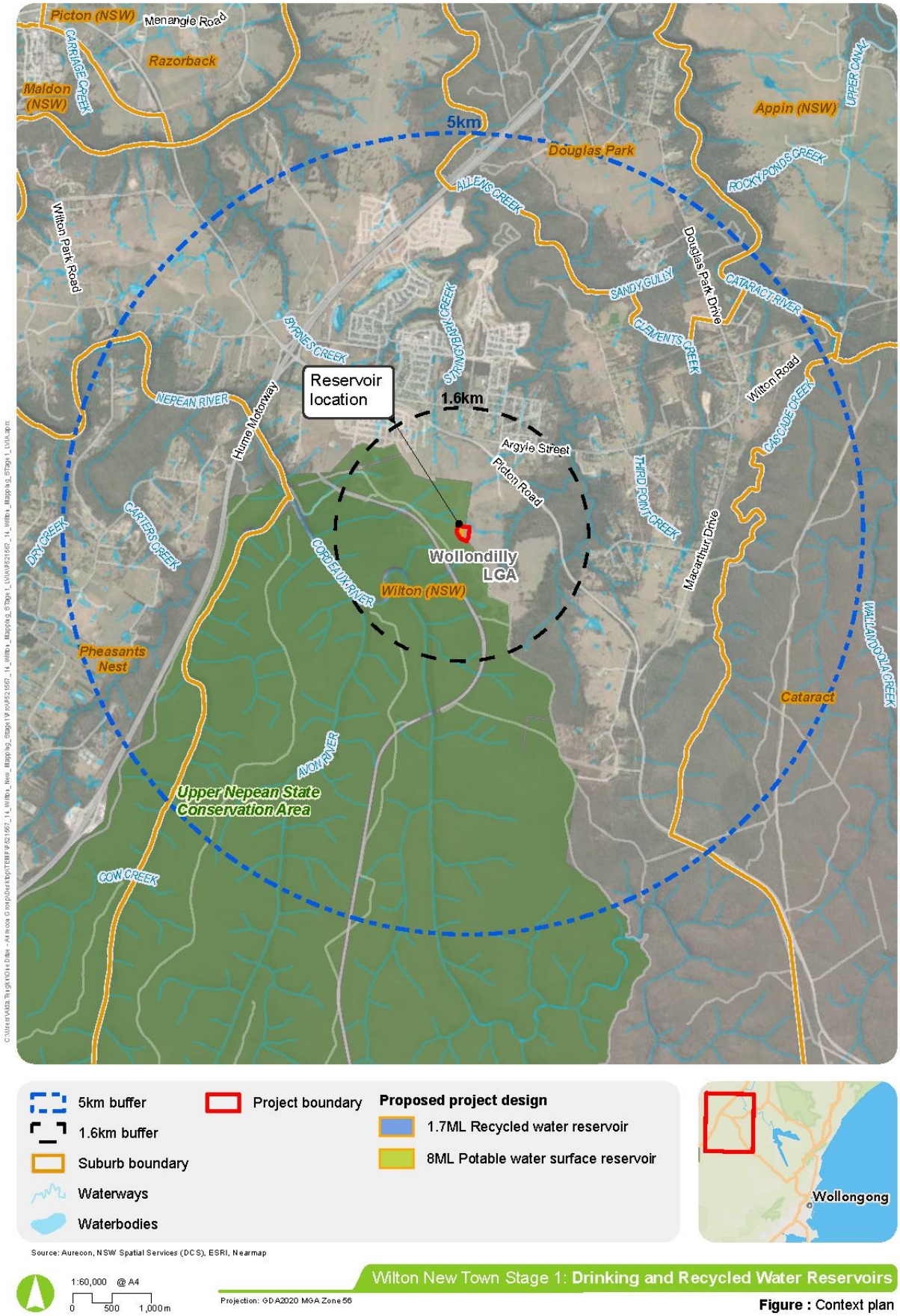


Figure 6-17 VIA study area

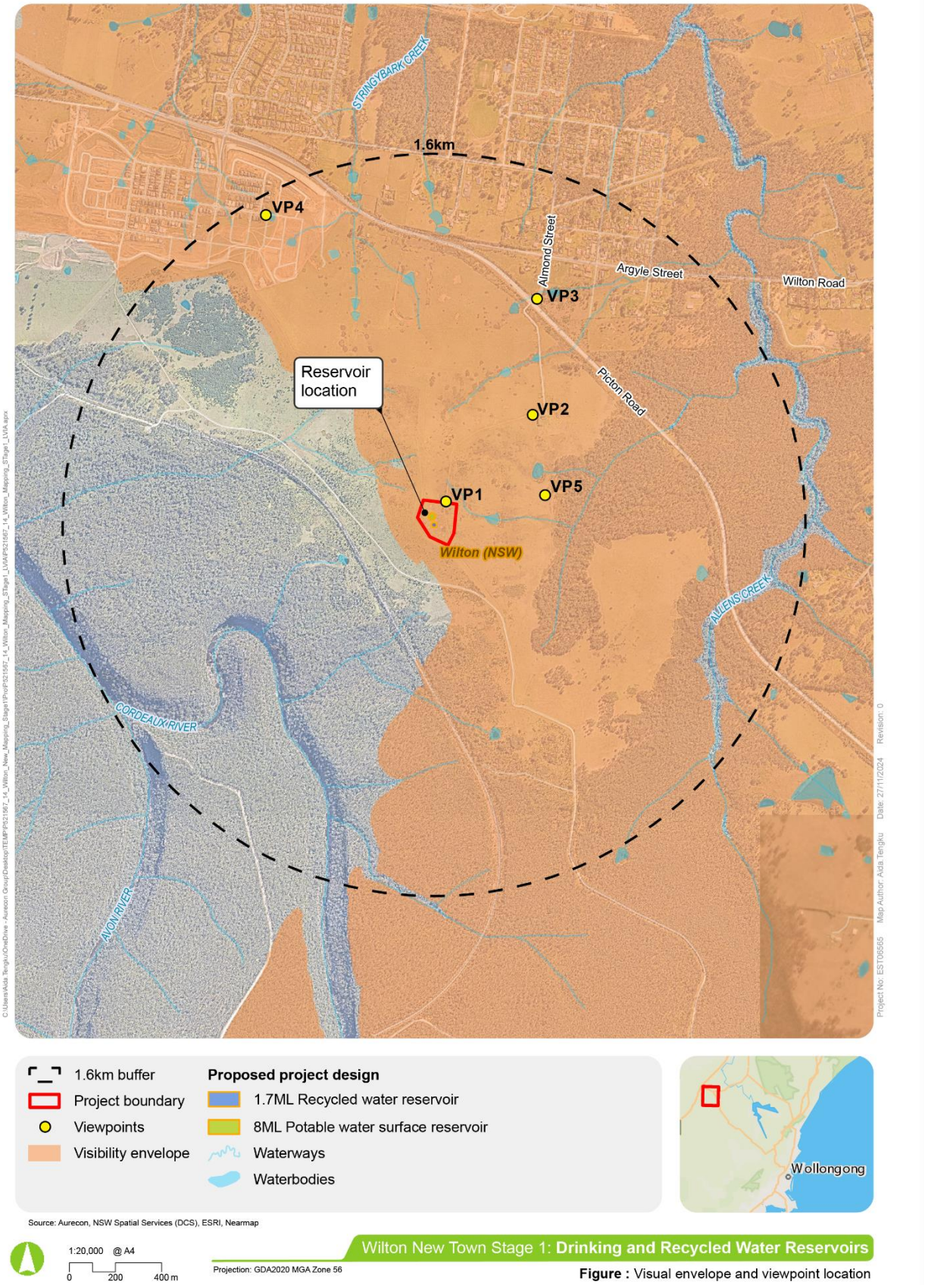


Figure 6-18 Viewpoints

Viewpoint 1

Viewpoint 1 is positioned 50 m north of the proposal site, within the future residential development. Photomontages of the reservoirs for Day 1 and Year 10 are provided in Figure 6-19 and Figure 6-20.

Figure 6-19 Viewpoint 1 at Day 1 of operation

Figure 6-20 Viewpoint 1 at year 10 of operation, including mitigation measures and established vegetation

Viewpoint 2

Viewpoint 1 is positioned 550 m northeast of the proposal site, within the future residential development. Photomontages of the reservoirs for Day 1 and Year 10 are provided in Figure 6-21 and Figure 6-22.

Figure 6-21 Viewpoint 2 at Day 1 of operation (proposal shown in red, screened by intervening built form)

Figure 6-22 Viewpoint 2 at year 10 of operation (proposal shown in red, screened by intervening built form)

Viewpoint 3

Viewpoint 3 is positioned 980 m north of the proposal site at Picton Road/Almond Street intersection. Photomontages of the reservoirs for Day 1 and Year 10 are provided in Figure 6-23 and Figure 6-24.

Figure 6-23 Viewpoint 3 at Day 1 of operation (proposal shown in red, screened by intervening topography)

Figure 6-24 Viewpoint 3 at year 10 of operation, including mitigation measures and established vegetation (proposal shown in red, screened by intervening topography and foreground vegetation)

Viewpoint 4

During construction of the proposal, it is anticipated that further housing development will be present in the foreground of viewpoint 4. Reservoir construction works will be on the other side of the hill to residential development. The reservoirs will be barely noticeable to residents, with the residential development in the foreground of the view screening background views. The magnitude of change with the introduction of the reservoirs is considered negligible.

Viewpoint 5

The viewpoint is positioned 470 m east of proposal site, at the perimeter of the future residential development. Photomontages of the reservoirs for Day 1 and Year 10 are provided in Figure 6-25 and Figure 6-26.

Figure 6-25 Viewpoint 5 at Day 1 of operation

Figure 6-26 Viewpoint 5 at Year 10 of operation, including mitigation measures and established vegetation

The proposal is a key piece of infrastructure which will service the residential development in Wilton. The elevated position is an operational requirement that allows water to be efficiently supplied by gravity to residences. The visual impacts for the proposal during construction, at day 1 of operation and residual impacts once mitigation measures are present at year 10, are summarised in Table 6-22.

The visual impact of the reservoirs will be experienced mostly by new neighbouring residents, with three of the four reservoirs expected to be built before residential housing is completed. The key visual components include water reservoirs up to 15.7 m in height, ancillary buildings up to 3 m in height and surrounded by an access road.

The visual impacts of the proposal are provided in Table 6-22. VP1 and VP5 are assessed to have a high-moderate visual impact at day one of operation. The vegetation screening sufficiently mitigates visual impacts, reducing to moderate (VP1) and low (VP5) at year 10. The use of landscape planting assists to provide landscape amenity surrounding the proposal.

Table 6-22 Summary of visual impacts

Viewpoint	Visual receiver	Construction impacts	Day 1 operation impacts	Residual impacts
VP1	Future residents	Negligible	High-moderate	Moderate
VP2	Future residents	Negligible	Negligible	Negligible
VP3	Motorists	Negligible	Low	Negligible
VP4	Residents	Negligible	Negligible	Negligible

Viewpoint	Visual receiver	Construction impacts	Day 1 operation impacts	Residual impacts
VP5	Future residents	Negligible	High-moderate	Low

Mitigation measures

With the implementation of the mitigation measures below, visual impacts can be adequately managed, and residual impacts during operations are expected to be mostly negligible and low to moderate for some receivers.

Table 6-23 Environmental mitigation measures — social and visual

Mitigation measures
Landscape the area around the reservoirs to minimise the visual impact of the reservoirs.

6.2.11 Cumulative and future trends

Potential environmental impacts

New residential development is planned in the Wilton Growth Area. The drinking and recycled water infrastructure proposed in this REF will support parts of this residential development.

Construction by developers (eg earthworks, access road and residences) may result in a cumulative impact with this proposal. TfNSW plan to upgrade the Hume Motorway and Picton Road intersection. This could result in cumulative traffic, air quality and noise impacts with the proposed work around Condell Park Road. The delivery contractors will work with developers, council and TfNSW to reduce impacts where feasible. 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 have broadscale impacts on some environmental impacts, particularly native vegetation and waterway health. Once these residential developments are in place, earthworks will 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 the proposal 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 will 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.

Mitigation measures

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

Table 6-24 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Continue engagement with key stakeholders (eg developers, TfNSW, council, existing residents) during planning and construction to minimise cumulative impacts.

6.2.12 General environmental management

Table 6-25 Environmental mitigation measures — general environmental management

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

Sydney Water's Project Manager (after consultation with the Environment and Community Representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access roads), 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 roads

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

The delivery contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles would require additional environmental impact assessment and may require additional specialist impact assessments (biodiversity, Aboriginal heritage). 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 work
- spills
- unexpected finds (eg heritage and contamination)
- other potential incidents relevant to the scope of work.

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

All site personnel to 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 delivery contractor must demonstrate in writing how the changes meet these requirements, for approval by Sydney Water’s Project Manager in consultation with the environmental and community engagement representatives.

Notify the NPWS Area Manager before starting any work adjacent to NPWS land.

7. Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts associated with constructing and operating drinking water and recycled water infrastructure to service the Wilton Growth Area. The proposal is required to service the initial stages of residential development in South East Wilton and North Wilton, and existing residents in Bingara Gorge.

The main potential construction environmental impacts of the proposal include impacts from erosion and sedimentation, vegetation clearing, noise and traffic. During operation, the impacts are associated with visual amenity. 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.

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Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be noise and traffic impacts on the community. There will be environmental improvements by providing a reliable water service to the local community.
Any transformation of a locality	The proposal aligns with the Wilton Growth Area development strategies which are designed to transform the locality.
Any environmental impact on the ecosystems of the locality	The proposal will not result in environmental impacts to ecosystems of the locality.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The reservoirs will be visible in the surrounding residential development. Landscaping will mitigate the long-term visual impact of the reservoirs.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will not have any effect upon these factors, Sydney Water will obtain a s60 heritage approval for work within the curtilage of the Upper Canal System. However, there will be no impact to the fabric of the heritage item. While no Aboriginal heritage will be impacted the construction footprint overlaps three AHIPs (held by others). Sydney Water will work in accordance with the conditions of the AHIPs.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will clear about 0.8 ha of native vegetation that may provide habitat for protected animals. Sydney Water will offset this impact in accordance with our Biodiversity Offset Guide.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not endanger any species. Tests of significance (BC Act) and significant impact assessments (EPBC Act) found that the proposed vegetation clearing would not have a significant impact on any species.
Any long-term effects on the environment	The proposal will not have any long-term adverse impacts on the environment but will have a long-term benefit by providing a reliable and modern water service for the area.
Any degradation of the quality of the environment	The proposal will maintain the quality of the environment.
Any risk to the safety of the environment	The proposal will ensure the safety of the environment.

Section 171 checklist	REF finding
Any reduction in the range of beneficial uses of the environment	The proposal will maintain the range of beneficial uses of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not affect demand on resources.
Any cumulative environmental effect with other existing or likely future activities	The proposal may occur at the same time as other developments in the area. Mitigation measures will be implemented to minimise cumulative environmental impacts.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on these factors.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposal is to service growth and the applicable strategic planning statements or plans have been considered in the system planning and options selection process.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Appendix B – Consideration of TISEPP consultation

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

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

Appendix C – 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 drinking 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. All stormwater drainage and scours are designed to flow to the future residential development. No water will drain to the drinking water catchment.
3. Will the mitigation measures be adequate for the time required? How will they need to be maintained?	The mitigation measures will 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 during construction. No transfer of water is required for off site treatment. Stormwater from the reservoir site will discharge to an onsite detention basin. The basin will discharge to existing drainage lines in the clearer paddock and to the stormwater system in the area once constructed. No water will flow to the drinking water catchment. Dewatered water from the reservoirs will be dechlorinated in accordance with Sydney Water's protocols and released through scours. The scours will discharge to the paddock and ultimately to the stormwater system.
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 will minimise any potential impacts.

Appendix D – Biodiversity Assessment Report

Appendix E – Aboriginal Heritage Due Diligence

Appendix F – Non-Aboriginal Heritage

Appendix G – Noise and Vibration Report

Appendix H - Visual Impact Assessment

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SWEMS0025.01v22