Review of Environmental Factors

Malabar System Investment Program Near Term Works – Package 3 and 4B

Sydney WATER

Table of contents

Figures

Tables

Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Malabar System Investment Program (MSIP) Near Term Works – Package 3 and 4B (the proposal). The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

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

Decision Statement

The potential environmental impacts of the proposal are typical of construction works including noise, amenity, and biodiversity impacts. During operation, the benefits are associated with improved air quality by minimising odour generation and reduced wet weather overflows to Orphan School Creek. 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.

Certification

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

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
Renee Attard REF author Sydney Water Date: 10 May 2024	Jude Gregory Lead Environmental Scientist Sydney Water Date: 15 May 2024	Sergio Giglioli Project Manager Sydney Water Date: 20 May 2024	Murray Johnson Environment and Heritage Manager Sydney Water Date: 23 May 2024

1 Introduction

1.1 Context

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

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

1.2 Proposal background and need

The Malabar wastewater system services a large area. The system contains four Water Resource Recovery Facilities (WRRF) at Liverpool, Glenfield, Fairfield and Malabar. It also has over 7000 kilometres (km) of sewer reticulation, including the Northern Georges River Submain (NGRS), and 150 sewer pumping stations (SPS). An assessment of the system identified key issues related to current performance and ability to service forecasted population growth.

The Fairfield WRRF is one of three plants in the Georges River Treatment Hub (Liverpool, Glenfield, and Fairfield). Fairfield WRRF is a wet weather treatment facility, activated only in certain network conditions to reduce wet weather overflows in the NGRS. Treatment performance of the Fairfield WRRF is also declining, associated with the aging of the infrastructure.

The Fairfield WRRF provides recycled water to the neighbouring Veolia's Aquanet Recycled Water Plant (Aquanet). Aquanet then supplies recycled water to various large scale water users such as Boral and Rosehill Racecourse. Upgrading Fairfield WRRF ensures that we can continue to supply recycled water to Aquanet. This aligns with the Sydney Water Strategy to embrace circular economy principles by diverting additional recycled water flows to Aquanet. This encourages increased use of recycled water in industry and commercial activities.

Odour

Fairfield WRRF experiences odour issues during plant start-up, operation and shutdown/cleanout. This is made worse due to the inability to safely maintain and clean the inlet works during operation. The odour issues have led to odour complaints and have contributed to a Pollution Reduction Program (PRP) applied by the Environment Protection Authority (EPA) on the Georges River Hub WRRFs. The proposal will ensure compliance with the PRP requirements.

Non-compliant discharge frequency

Primary treated wet weather flows are discharged from Fairfield WRRF to Orphan School Creek. Due to bottlenecks in the NGRS, Fairfield WRRF is non-compliant with the Environment Protection Licence (EPL) discharge frequency of 50 discharges over 10 years. Data from 2017 – 2021 shows

54 discharges over this five-year period. Assuming no change to the NGRS' capacity, system modelling indicates that Fairfield WRRF would have a discharge frequency of 123 times in 10 years by 2026. The proposal will reduce wet weather overflows in the network and at Fairfield WRRF.

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

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

Aspect	Relevance to proposal
Proposal need	Capacity issues in the NGRS and declining performance of the Fairfield WRRF has led to: • non-compliance with EPL 372 due to increased frequency and volume of wet weather overflows • increased risk of dry weather overflows • odour issues across the network and at Fairfield WRRF • reduced operability and reliability of assets • a PRP being applied to EPL 372.
Proposal objectives	The proposal objectives are to: • address odour issues and hence community complaints • improve WRRF safety, operability, and reliability • use the existing Liverpool to Ashfield pipeline (LAP) to increase capacity in the NGRS and reduce wet weather overflows in the network and at Fairfield WRRF • provide required flow levels in the NGRS to help desilting and rehabilitation works and defer/avoid NGRS duplication • continue to provide recycled water to the Aquanet.
Consideration of alternatives/options	<u>Do nothing scenario</u> If the proposal is deferred, wastewater flows in the NGRS will be too high to undertake required maintenance. This will also lead to increased operation of the Fairfield WRRF and will worsen compliance issues such as uncontrolled discharges to the environment and odour. The risks of deferring the project are provided in Table 1-2. <u>Options assessment</u> Sydney Water's options assessment process determined the preferred option. A long list of options was developed which addressed key objectives. These options were refined and costed. Options were then considered using a Multi Criteria Analysis. Criteria considered included cost, social impact, environmental impact, operational flexibility, maintainability, wet weather overflow abatement and circular economy contribution. The preferred option for Package 4B is to permanently divert flow away from the NGRS using the LAP, and recommission SP1151 and its associated odour control facilities.

Aspect	Relevance to proposal
	The preferred option for Package 3 is to upgrade the Fairfield WRRF to reduce odours during operation.

Table 1-2 Consequences of deferral

Project Deferral Risk Rating	Risk Area	Short Description	Post Project Completion Rating
Very High 1 critical, very likely	Reputation	Increased customer/community complaints due to odours emitted from WWTP and negative impact to reputation due to odour complaints. Ministerial intervention, media coverage, decrease in customer trust non-compliance to odour requirements.	L6 - Low 6 Minor, unlikely
H2 - High 2 Moderate, very likely	Compliance	Ministerial / EPA intervention, legal action due to non-compliance to odour requirements in the EPL, Penalty Infringement Notice.	L6 - Low 6 Minor, unlikely
Very High 1 critical, very likely	Reputation	Higher frequency and volume of poor-quality discharge to local environment (Orphan School Creek) leading to increased waterway pollution. Ministerial intervention, media coverage, decrease in customer trust.	M4 – Medium 4 Moderate, Possible
H2 - High 2 Moderate, very likely	Compliance / Environ	Higher frequency and volume of off specification discharge to local environment (Orphan School Creek). Ministerial / EPA intervention, legal action due to non-compliance in the EPL, Penalty Infringement Notice.	M4 – Medium 4 Moderate, Possible
H2 - High 2 Moderate, very likely	Injury / Illness	Plant operator safety. Manual handling injuries. Permanent partial disability / loss of capacity due to high level, constrained requirement to undertake manual handling.	L6 - Low 6 Minor, Very Unlikely)

1.3 Consideration of Ecologically Sustainable Development

Table 1-3 considers how the proposal aligns with the principles of ecologically sustainable development (ESD).

Table 1-3 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*	The driver for the proposal is to ensure that threats to the surrounding environment from wastewater operations are reduced (e.g. minimising odour, reducing wet weather discharges to the environment). Therefore, the proposal will not result in serious or irreversible damage. Mitigation

Principle	Proposal alignment
practicable, and an assessment of the risk-weighted consequences of various options.	measures will be implemented during construction to further reduce any risk of environmental damage.
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 continuing to provide a reliable wastewater service and reducing the potential environmental impacts from odours and wet weather discharges.
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 has been designed to use previously disturbed areas and will not significantly impact on biological diversity or impact ecological integrity.
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*	Cost was a key input to the MCA process and decision-making. The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment.

2 Proposal description

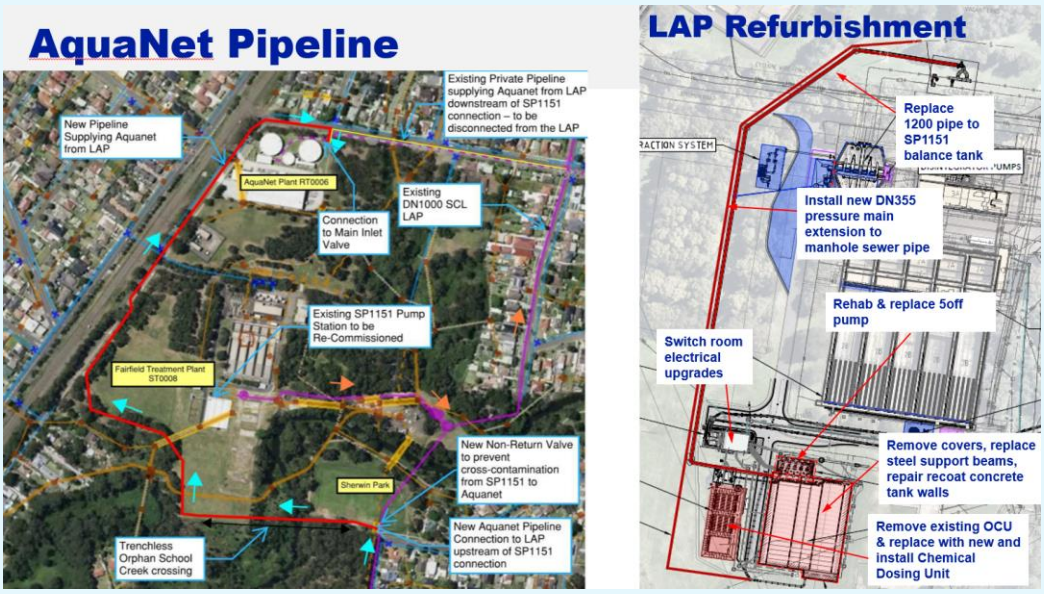
2.1 Proposal details

Table 2-1 describes the proposal and Figure 2-2 and Figure 2-3 shows the location and key environmental constraints.

Table 2-1 Description of proposal

Aspect	Detailed description
Proposal description	The proposal includes the following activities: ○ Install approximately 1.2 kilometres of polyethylene pipe (DN630) via trenched and trenchless methods to connect the LAP to Aquanet. ○ Install a new maintenance hole and access pits for valves in Sherwin Park. ○ Within Fairfield WRRF: ○ Upgrade inlet work equipment including a new OCU to manage odour. ○ Upgrade components of the screening and grit handling system. ○ Replace one grit blower. ○ Remove existing screening pumps. ○ Refurbish the primary sedimentation system. ○ Relocate or widen internal access roads. ○ Upgrade electrical and control systems. ○ Install a pre-cast treated water tank (14 m diameter, 8 m height). ○ Recommission SP1151. ○ Install and operate a new odour control unit (OCU). ○ Install and operate a new chemical dosing unit (CDU). ○ Upgrade and recommission an existing OCU in Ashfield in the same location. ○ Replace odour canister units along the LAP from within existing pits.

Aspect	Detailed description



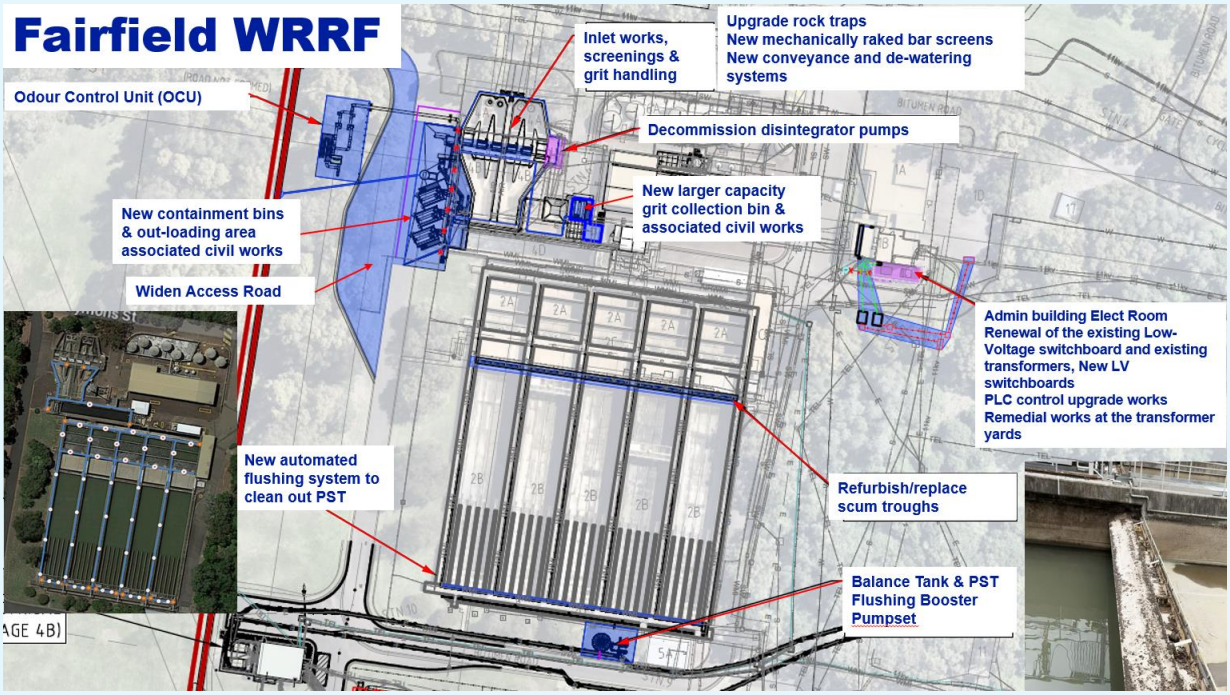


Figure 2-1 Proposed Activities within Fairfield WRRF

Location and land ownership	Most of the proposal is at the Fairfield WRRF, 1 North Street, Fairfield, which is owned by Sydney Water. A pipeline will be trenched around the Fairfield WRRF on both Sydney Water owned land and the council road corridor, East Parade. The pipeline will then be under bored beneath Orphan School Creek connecting into the existing network in Department of Education owned land,

<table>
<tr><th>Aspect</th><th>Detailed description</th></tr>
<tr><td></td><td>which is managed as a park and sports field by Canley Vale High School (Sherwin Park – refer to Figure 2-1, Figure 2-2).

The upgrade and recommissioning of the OCU at Lewis Herman Reserve (Robert Street, Ashfield) is on Sydney Water Land. Table 2-2 provides the Lot and DP details of the proposal.

Works related to the LAP pipeline are in existing pits along the Fairfield to Ashfield portion of the pipeline. These pits are either on Sydney Water land or in the road corridor.

Table 2-2 Location of the proposal
<table>
<tr><th>LGA</th><th>Lot/DP</th></tr>
<tr><td>Fairfield LGA</td><td>1/611366, 1/569683, 6/11959, 10/131187, 1/912951, 1/11959, 2/11959, 10/1124322, 102/1143961, 11/1124322</td></tr>
<tr><td>Inner West LGA</td><td>12/1145726</td></tr>
</table></td></tr>
<tr><td>Site establishment and access tracks</td><td>The proposal will use existing roads and internal Sydney Water roads, where possible. New internal roads (within the WRRF) will be constructed as part of the proposal to access new infrastructure.</td></tr>
<tr><td>Ancillary facilities (compounds)</td><td>A construction compound will be required to house site sheds, construction amenities and materials laydown. This will be in already cleared areas of Fairfield WRRF (see Figure 2-2).</td></tr>
<tr><td>Methodology (pre-construction works)</td><td>During pre-construction we will:
prepare management plans, procedures and site inductions
undertake required investigations (e.g. service locating)
establish and mark out designated construction areas and areas for material and equipment storage
install environmental controls
clear vegetation within the construction area
set up temporary site sheds, amenities and associated infrastructure.</td></tr>
<tr><td>Methodology</td><td>Typical trenched pipeline installation:
string the pipe along the construction corridor
excavate a trench approximately 3 m wide and 3 m deep
stockpile soil
shore trenches
spread granular bedding material
install the pipeline
test pipeline pressure/ vacuum</td></tr>
</table>

Aspect	Detailed description
	• connect to the existing sewerage network • backfill trench with compacted excavated or imported fill • replace topsoil and reinstate disturbed areas (in accordance with landowners' requirements). Typical trenchless pipeline installation (HDD): • establish launch and receival pits • install thrust block and rig in the launch pit • push rods into the receival pit, with a boring head on the front rod • enlarge the bore by pulling a back reamer to the launch pit which will drag the product pipe through the bore • return drill cuttings and fluids to the launch pit • pit restoration. Installing a new OCU and CDU: • prepare site, • install formwork • pour a concrete slab • install utilities and pipework • connect to required areas of the WRRF • deliver and assemble prefabricated modular units. Replacing the OCU unit at Ashfield: • disassemble existing unit with hand tools • remove each modular unit (via crane) • increase the size of the existing slab (prepare site, formwork and concrete pour) • deliver and assemble new OCU unit. Upgrading SP1151 in the Fairfield WRRF: • refurbish existing pumps and valves • concrete repair • pipework repairs including the install of a brine pipeline and sewer line to SP1151 balance tank • recoat the balance tank • replace balance tank cover steel support elements • replace chains, platforms, ladders, small flow pumps. Replacing the canister units along the LAP: • set-up of traffic control around required maintenance holes (MH) • open and clean approximately 40 MH (using a vacuum truck) • remove and replace canisters by hand • replace MH lid.

Aspect	Detailed description
	Other Fairfield WRRF upgrades: • remove redundant structures and equipment • install pre-fabricated mechanical and electrical equipment to above ground areas of the WRRF • install buried and above ground services (electrical and communications) • install ancillary equipment such as pumps, valves and piping • modify the operation of some existing infrastructure and processes to accommodate new infrastructure (e.g. some infrastructure may be temporarily offline while the upgrades are completed) • widen the access road and relocating the associated stormwater drainage.
Commissioning	Commissioning involves testing and running the new equipment to ensure it works correctly and is integrated with existing plant operations. The exact commissioning steps depend on the type of the equipment, but typically include: • factory testing • pre-commissioning checks • dry and wet testing of installed equipment • process commissioning including trialling and process proving of new and affected existing processes • training and providing operation and maintenance manuals • process performance testing.
Restoration	Work areas will be restored to a pre-construction condition or better, in consultation with the landowners. In accordance with Sydney Water's Biodiversity Offset Guide, cleared native vegetation will be offset in an adjacent or alternative location. This will require the planting of like for like vegetation species.
Materials/ equipment	Plant: • excavators (various sizes) • haulage trucks (various sizes) • compactors • roadsaws • vacuum trucks • concrete trucks and pumps • water cart and pump

Aspect	Detailed description
	• horizontal borer • hydraulic pipe jackers • vibratory rollers • truck mounted crane • semi-trailers and large delivery trucks • light commercial and passenger vehicles. Equipment: • pumps (various sizes) • pipe welding equipment • air compressors • compaction equipment • generators • jackhammers • davit systems • fall arrest equipment • temporary fencing • hand tools • skip bins • jersey kerbs • water-filled barriers • portable amenities. Materials: • stabilised sand • asphalt • select fill (granular backfill material) • excavated spoil • formwork timber • concrete • pipework and appurtenances • diesel and petrol.
Work hours	Work and deliveries will be scheduled to occur during standard daytime hours of: • 7 am to 6 pm, Monday to Friday • 8 am to 1 pm, Saturdays. During construction the proposal is not expected to require work outside these hours. However, Sydney Water's Project Manager can approve work outside of standard daytime hours if needed. The approval process is described in the mitigation measures in Section 6.
Proposal timing	Construction is expected to start late 2024 and take about 14 months.

Aspect	Detailed description
Operational requirements	We will operate Fairfield WRRF with upgraded components, including the new pipeline, to meet EPL compliance and reduce community impacts. The Ashfield OCU will operate 24-hours a day, in accordance with Sydney Water operational requirements.

2.2 Proposal area and changes to the scope of work

The proposal shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The final proposal may change based on detailed design or 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.

This information has been redacted.

Figure 2-2 Proposal working areas and environmental constraints.

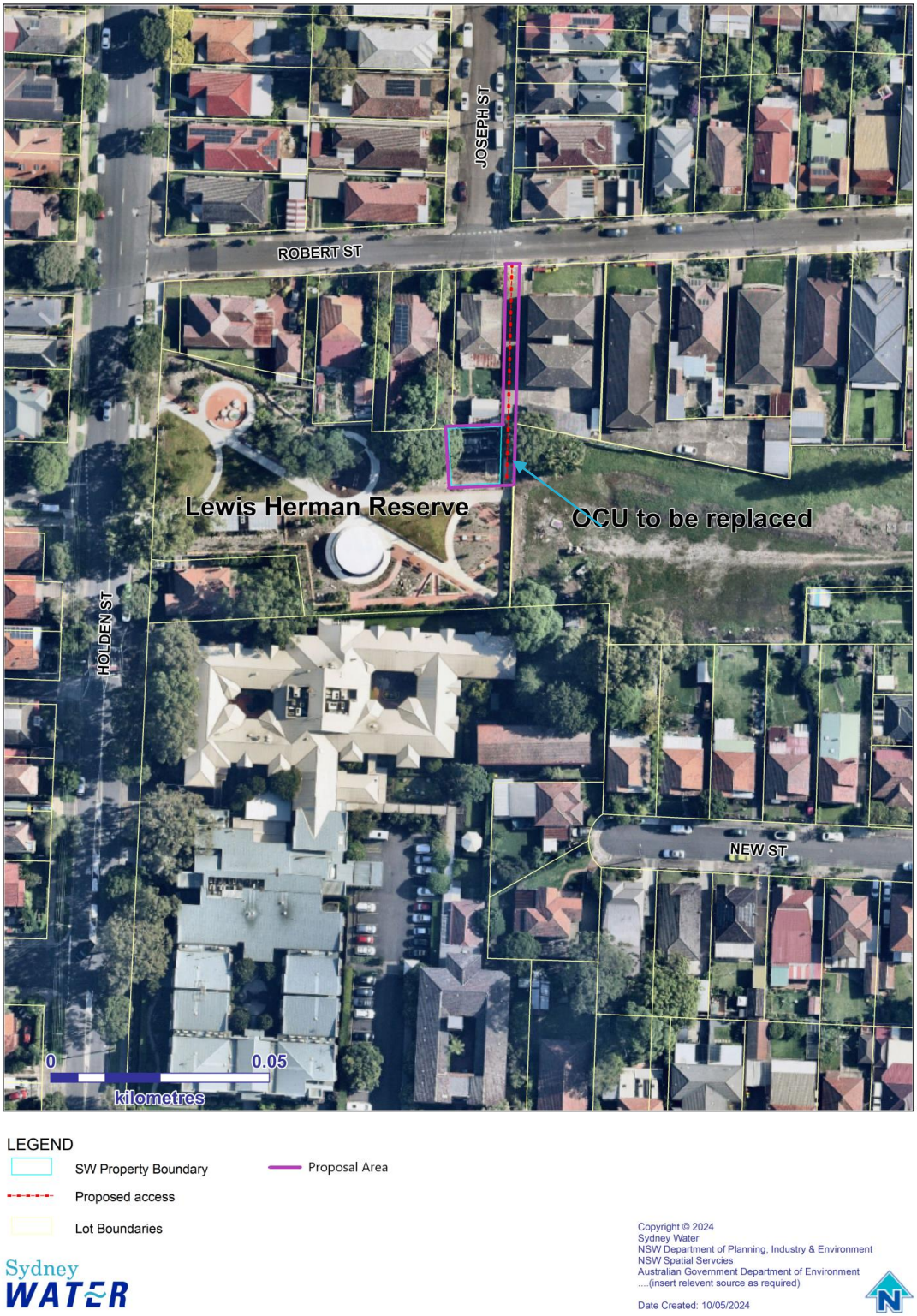


Figure 2-3 Proposal working areas and environmental constraints.

3 Consultation

3.1 Community and stakeholder consultation

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

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

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

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

During a meeting held 11 April 2024, Canley Vale High School were consulted about the proposal including the proposed impacts to Sherwin Park. The following key items were raised by the school:

- Prior incidences of flooding in Sherwin Park.
- Current construction work has reduced open space within the school and Sherwin Park is used more. This work is scheduled till July 2024.
- The path around the field is owned by Fairfield City Council (FCC) and is a popular route for cyclists.

As a result of current limitations on open space within the school, representatives requested that the north-west portion of the sports field (including the access path from the school) remain clear for students. Sydney Water advised that this preference will be conveyed to the contractor undertaking the works.

FCC were briefed on the proposal on 7 April 2024. Key issues raised by FCC were regarding impacts to:

- Sherwin Park
- FCC assets from the proposal
- Land value (due to new easements sought by Sydney Water).

3.2 Consultation required under State Environmental Planning Policies and other legislation

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

In accordance with section 2.10 of the TISEPP, FCC were notified on 19 April 2024. The notification related to excavation of the road and footpaths (East Parade and North Street). FCC provided a response on 9 May 2024. Items raised relevant to section 2.10 included:

- Road closures may need to be referred to the local Traffic Committee. Sydney Water are to seek advice from FCC Traffic and Transport team.
- Alternative routes or diversions to pedestrians must be approved by FCC's open space manager.
- Road opening permits are required for road trenching.

We have also consulted with the Western Parkland City Authority (WPCA) as the proposal has a capital investment value of over $30 million and is in the Western City operational area (section 2.15 of the TISEPP). WPCA provided their written support on 3 April 2024. WPCA consider the proposal aligns with their Blueprint to provide a connected city and will improve the liveability of the Western Parkland City and the safety of residents within it.

The Department of Primary Industry – Fisheries (DPI Fisheries) was notified on 23 February 2024 under s199 of the *Fisheries Management Act 1994*, as the work involves underboring a waterway classified as 'Key Fish Habitat'. DPI Fisheries replied on 1 March 2024 stating that they were "satisfied with the listed mitigation measures and has nothing further to add".

4 Legislative requirements

4.1 Environmental legislation

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

The following environmental planning instruments (Table 4-1) and legislation (

Table 4-2) are relevant to the proposal.

Table **4-2** also documents any licences and permits required, and timing and responsibility for obtaining them.

Table 4-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Fairfield Local Environmental Plan 2013 (Fairfield LEP)	The proposal is on land zoned Environmental Conservation (C2), Special Activities (SP1) and Infrastructure (SP2).
Inner West Local Environmental Plan 2022 (Inner West LEP)	The proposal is located on land zoned Public Recreation (RE1).
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126 of the TISEPP permits development for the purpose of sewage reticulation without consent on any land in the prescribed circumstances. Section 2.126 also permits development for the purpose of sewerage treatment plants without consent on land in a prescribed zone. Fairfield WRRP upgrades are in land zoned SP1, which is listed as a prescribed zone. As Sydney Water is a public authority, the proposal will be carried out in the prescribed circumstances and may proceed without consent. We have consulted with Fairfield City Council and the Western Parkland City Authority as required in section 2.10 and 2.15 of the TISEPP.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Vegetation in non-rural areas (Chapter 2)** The proposal is in an area or zone listed in subsection 2.3(1). However, subsection 2.4(1) states: '*This Policy does not affect the provisions of any other SEPP….*', and as the works are permissible under the TISEPP, a council permit to clear vegetation under this SEPP is not required.

Environmental Planning Instrument	Relevance to proposal
	Water catchments (Chapter 6) Chapter 6 of this SEPP applies as the proposal is within the Georges River Catchment, a regulated catchment area. Section 5 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minimal and meet the requirements of part 6.2 of the SEPP.
State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP)	**Coastal Management (Chapter 2)** A small portion of the work is on existing infrastructure in Fairfield WRRF is within area defined as "proximity area for coastal wetlands". While our works do not require consent, we have had regard of the following requirements (as per section 2.8 of the SEPP): a) the biophysical, hydrological or ecological integrity of the adjacent wetlands, or b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland. These works will not impact any mapped wetlands.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations Act 1997 (POEO Act)	The works are on the Malabar wastewater system which is covered by EPL 372. These works are required, in part, to ensure Fairfield WRRF operates in accordance with the EPL discharge requirements, and to meet the EPL PRP requirements for odour reduction. Temporary relaxation of EPL limits is not required during construction/ commissioning. A variation to EPL 372 is not required for operation.	NA	NA

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Biodiversity Conservation Act 2016 (BC Act)	A Biodiversity Assessment was prepared to assess vegetation trimming and clearing (Section 5.2.4 and Appendix C). Tests of Significance (ToS) were prepared in accordance with the BC Act to assess the impact of this proposal on threatened species, communities, and their habitats. The assessment concluded that the works are unlikely to result in a significant impact.	REF	Pre-construction, Sydney Water
National Parks and Wildlife Act 1974 (NPW Act)	Three listed Aboriginal sites are within 200m of the works area. A due diligence assessment was undertaken to determine the potential for the works to impact on Aboriginal Heritage. The assessment found that the proposal is unlikely to impact Aboriginal objects (see Section 5.2.4).	NA	NA
Fisheries Management Act 1994 (FM Act)	Orphan School Creek is mapped as Key Fish Habitat (KFH). In accordance with s199 of the FM Act, before carrying out or authorising dredging or reclamation work public authorities must provide written notice to the Minister and consider any matters raised within a 21-day period. DPI Fisheries were provided notice of the proposal on 23 February 2024. DPI Fisheries were satisfied with the listed mitigation measures and had no further comment.	Notification, permit	Pre-construction, Sydney Water
Water Act 1912/ Water Management Act 2000 (WM Act)	The delivery contractor has confirmed that the works are unlikely to intercept groundwater (see Section 5.2.2).	NA	NA
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	A Biodiversity Assessment was prepared to assess vegetation trimming and clearing (Section 5.2.4 and Appendix C). The assessment identified that 0.046 ha of River Flat Eucalypt Forest (Critically Endangered under the EPBC Act) was proposed to be cleared. An Assessment of	NA	NA

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Significance (AoS) prepared in accordance with the EPBC Act concluded that the proposed clearing was unlikely to result in a significant impact. An AoS was also prepared for the Grey headed Flying Fox (vulnerable) and concluded that the proposal was not considered to have a significant impact.		

5 Environmental assessment

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

5.1 Existing environment

The proposal area is on the Cumberland Plain, with floodplains, valley flats and drainage depressions. The proposal area is generally flat, ranging from 8-10 m Australian Height Datum (AHD), sloping down towards Orphan School Creek (2 m AHD). The proposal area is dominated by Cenozoic Quaternary Alluvium derived from Wianamatta Group shales. Soils are mapped as belonging to the South Creek Soil Landscape (Bannerman & Hazelton, 1990). Other soil landscapes mapped within 200 m of the proposal area include Berkshire Park and Blacktown.

Orphan School Creek is in the proposal area. An unnamed tributary is to the northwest, with Prospect Creek and the Georges River within a 2 km radius. Orphan School Creek is part of the Prospect Creek sub catchment, which is a part of the Port Jackson/Georges River catchment. Previous site investigations indicate that depth to groundwater ranges from 2.5 – 5 m and is likely to flow towards Orphan School Creek.

The proposal area has a history of disturbance from the 1930s. Rural lots dominated the area with light agricultural use until the 1960s. Wastewater treatment infrastructure construction started in the 1940s. However, the oxidation ponds and sludge lagoon were decommissioned and filled between the 1980s and 2000s. The Veolia Recycled Water Treatment Plant, on the northwestern portion of the proposal area was constructed in 2010.

Today, the proposal area is generally cleared of vegetation (Fairfield WRRF and Sherwin Park). Some pockets of dense vegetation are present in Ada Reserve and on the banks of Orphan School Creek. The surrounding land use is predominately residential, with Canley Vale High School adjacent to the Fairfield WRRF in the south. Fairfield WRRF is not near an arterial road and is accessed via residential streets. Two railway lines are near to the proposal area to the west and south.

Vegetation across the proposal area consists of weedy, low quality remnant vegetation, as well as some areas of planted Cumberland Plain Woodland species and exotic maintained lawns in open areas.

The Ashfield OCU site is bordered by residential properties, Lewis Herman Park an existing retirement village and a vacant lot proposed to be another retirement village.

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment and potential impacts

The proposal:

- is in an area impacted by soil contamination (mainly friable asbestos). Figure 5-1 provides the findings of Detailed Site Investigations (Sydney Water, 2023) and the extent of Asbestos contamination. Low levels of Polyfluoroalkyl Substance (PFAS) was also identified in the former oxidation ponds and sludge lagoon. While the low levels are unlikely to impact human and ecological health the proposed excavations avoid this area.

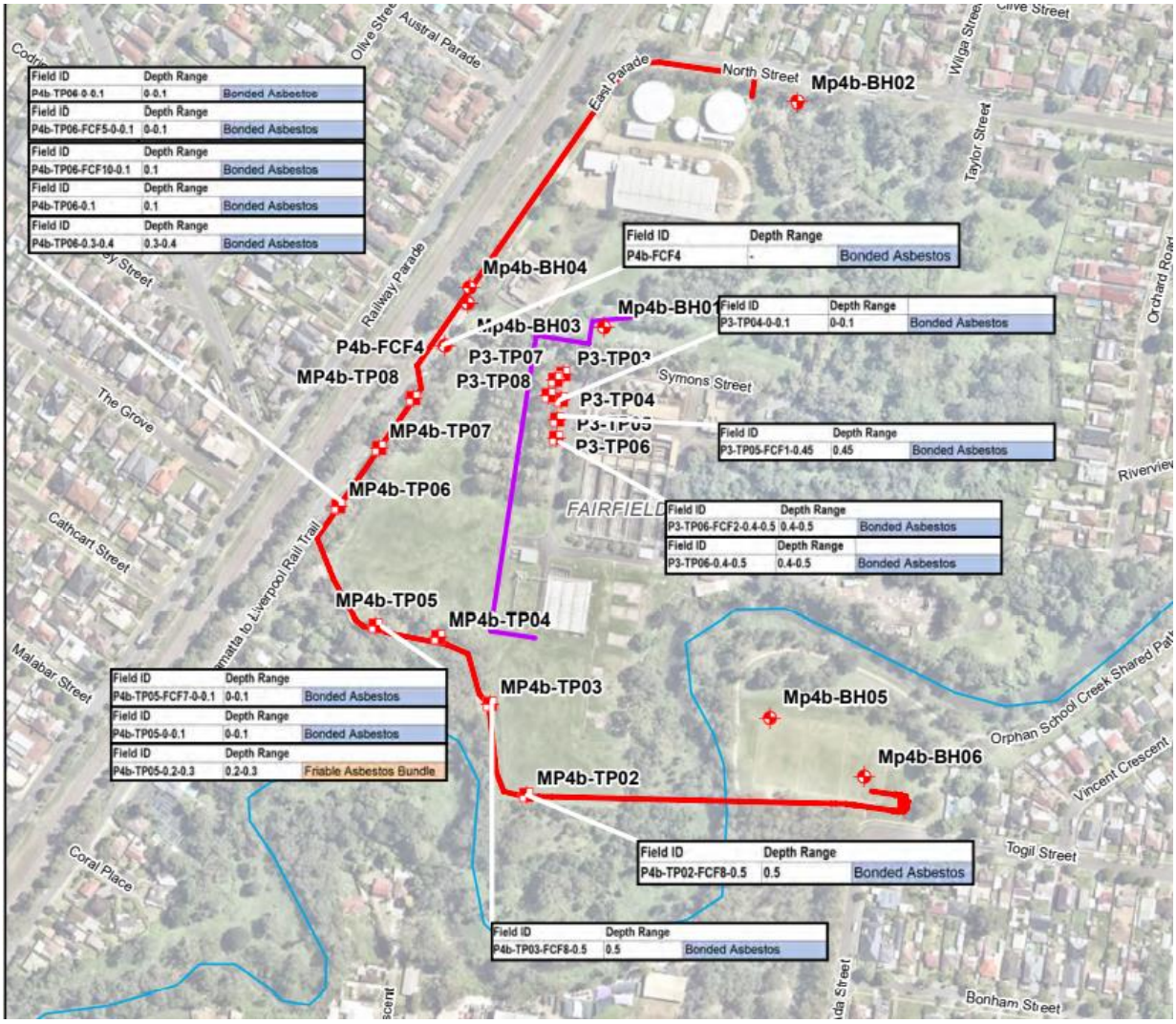


Figure 5-1 Asbestos contamination

- the vicinity of Orphan School Creek is mapped as having acid sulfate soils (ASS) as indicated on NSW OEH (eSPADE 2.0). This is not proposed to be disturbed.

- is in an area of moderate to high soil salinity risk as indicated on Western Sydney Hydrogeological Landscapes Land Salinity Map.

During construction, we will disturb ground, remove vegetation, excavate (3 m x 3 m trench), and stockpile soil including imported clean fill, which could result in potential offsite erosion and sedimentation of surrounding land and waterways.

Inappropriate management of ASS, saline soils and contaminated soils have potential to impact surrounding land and waterways from off-site leaching of contaminants or acid/ saline soils.

The proposal will not permanently change the surface topography and drainage patterns of the area. The area will be returned to its original topography and drainage pattern following construction.

We do not anticipate any impacts on geology, soils and topography during operation of the proposal.

Mitigation measures

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

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

Mitigation measures
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
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 a NSW EPA Resource Recovery Order/Exemption the Delivery Contractor must ensure the conditions in that Order/Exemption are strictly adhered to.
The Sydney Water Project Manager will ensure an Asbestos Management Plan (AMP) is prepared by a suitably qualified person as part of the CEMP. The AMP is to be reviewed by Sydney Water's Environmental Representative in consultation with Property Portfolio Environmental team. The plan must identify the type and location of known/potential contamination, management requirements (waste minimisation, waste segregation and classification) and reuse, offsite recycling and/or disposal measures. The AMP should also consider findings of the Sydney Water Hazardous Building Materials Management Plan (Nov 2020).
Manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998).

Mitigation measures
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Adopt appropriate soil salinity mitigation measures in accordance with Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). This may include: • stabilising existing areas of erosion • minimising water use on site • avoiding rotation and vertical displacement of the original soil profile • backfilling excavations deeper than one metre in the same order or treating or using this material as fill at depths more than one metre from the finished level.

5.2.2 Water and drainage

Existing environment and potential impacts

The proposal will underbore Orphan School Creek, a KFH. Orphan School Creek flows into Prospect Creek approximately 230 m northwest of the proposal area. Preliminary geotechnical and geophysics survey confirmed the underbore is in rock. This minimises the risk of drilling fluids leaking into the groundwater or surface water. The entry and exit pits for the underbore are outside of KFH to minimise impacts. Some trenching works are also required above the top of bank and on the fringe of KFH within Fairfield WRRF (see Figure 2-3). This area is currently a mown lawn and was previously cleared and disturbed during construction of the WRRF.

Construction works include excavation, stockpiling of soils and storage of fuels and chemicals. If not managed properly these activities could impact water quality increasing the risk of sediment or contaminants entering the stormwater system and waterways. East Parade lacks kerb and guttering so stormwater drains onto the grassed verges. The WRRF contains a stormwater system that drains into Orphan School Creek.

Flooding has the potential to impact construction and cause movement of spoil offsite. Areas immediately adjacent to Orphan School Creek and Sherwin Park are identified as a high or medium flood risk, with the remainder of the proposal area (i.e. the Fairfield WRRF) considered a low risk (Fairfield City Council, 2010).

The proposal will not alter existing topography or drainage patterns of the area. All excavations will be backfilled and restored to their pre-construction condition.

Previous site investigations indicate groundwater levels in the proposal area are shallow around Orphan School Creek and much deeper within the Fairfield WRRF. As excavations around the WRRF are to a depth of 3 m there is a low risk of encountering groundwater. Should a small amount of groundwater need to be removed from the excavation the contractor will use this water for dust suppression in accordance with Exemption 38 of the *Water Management (General) Regulation 2018*. There are no groundwater dependent ecosystems that would be impacted.

We anticipate that during operation the enhancement of Fairfield WRRF's treatment performance, and increased capacity of the sewerage network, wet weather overflows into the creek will be reduced. This will help improve water quality in Orphan School Creek

Mitigation measures

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

Table 5-2 Environmental mitigation measures — water and drainage

Mitigation measures
Bund potential contaminants and store on robust waterproof membrane, away from drainage lines
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills, and an aquatic spill kit on site for clean-up of accidental chemical/fuel spills in the vicinity of Orphan School Creek. 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.
Groundwater removed from excavations is required to be used for dust suppression (via a pump or water tanker) in accordance with Exemption 38 of the *Water Management (General) Regulation 2018*.
If the potential for intercepting more groundwater than identified in the REF (following its determination), the contractor will obtain a groundwater Water Supply Works Approval. Where dewatering is >3ML per water year (from 1 July), Sydney Water will also obtain a Water Access Licence from NRAR. The Delivery Contractor is responsible for: • providing expert hydrogeological technical information to obtain the approvals • preparing a Dewatering Management Plan • complying with the conditions of the approvals (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).
Dewater excavations in accordance with the Program Delivery Guidance Standard 9.1 Excavation Dewatering (ENV-GS-001).
No equipment or personnel is permitted to enter Orphan School Creek.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Ensure bunded areas have 110% capacity of the largest chemical container, or an additional 25% capacity of the total volume stored within (whichever is greater). Tightly secure chemicals and fuels in vehicles. Clearly label all chemicals.
Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Conduct any equipment wash down within a designated washout area.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.

Mitigation measures
Prepare Drilling Fluid Management Plan, including measures to: • contain and monitor drilling fluids at entry/exit points • identify and manage frac-outs • re-use and/or dispose of drilling fluids (checking waste classification).

During trenchless pipeline installation contractor will monitor the pressure of the drilling fluid to determine if there is a sudden decrease in pressure which indicates that a frac-out has occurred. A CEMP would be prepared and include contingency measures to be implemented to respond to a frac-out.

5.2.3 Flora and fauna

Existing environment and potential impacts

A specialist Biodiversity Assessment (BA) was conducted for the proposal (see Appendix C). The BA consisted of a desktop assessment and a field survey by two ecologists on 6th July 2023.

The desktop assessment identified the following plant community types (PCTs) mapped in the proposal area:

- PCT 4024 Cumberland Blue Box River Flat Forest, and
- PCT 3320 Cumberland Shale Plains Woodland.

The PCTs above are associated with the following Threatened Ecological Communities (TEC) listed on both the BC and EPBC Acts:

- Cumberland Plain Woodland in the Sydney Basin Bioregion, and
- River Flat Eucalypt Forest on Coastal Floodplains of New South Wales North Coast, Sydney Basin and South East Corner Bioregions (as per BC Act) or River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (as per EPBC Act (RFEF).

BioNet threatened entity records found 19 threatened flora and 33 threatened fauna in a 10 km radius from the proposal area. The BA determined that 6 threatened flora and 10 threatened fauna were likely to occur in the proposal area based on the number and proximity of the records.

The field survey confirmed that the proposal area consisted of low quality remnant vegetation, portions of planted Cumberland Plain Woodland species and areas of open space with maintained exotic grasses. The vegetation showed a high volume of weeds and exotic species which dominated both the mid story and ground cover.

The proposal will clear a total of 0.34 hectares (ha) of vegetation, predominately exotic and planted. Approximately 0.046 ha of RFEF (Endangered under the BC Act and Critically Endangered under the EPBC Act) will be impacted by the proposal. No hollow bearing trees will be impacted.

A ToS was prepared in accordance with the BC Act, and an AoS was prepared in accordance with the EPBC Act to determine if the proposal will cause a significant impact to the respective PCTs.

The ToS concluded that the clearance of 0.046 of PCT 4024 was unlikely to result in a significant impact. The removal of this small area of poor quality PCT would not have an adverse on the extent of the TEC such that its local occurrence would be at risk of extinction. A similar conclusion was provided by the AoS.

No threatened fauna were observed within the proposal area during the survey. A ToS or AoS (where applicable) was undertaken for the species that were considered to have a moderate or high rating in the Likelihood of Occurrence assessment. This included the Little Lorikeet, Microbats and the Grey Headed Flying Fox. The assessments concluded that the proposal is unlikely to have a significant impact on these species.

As no threatened flora was identified during the field visit, and the quality of the vegetation was poor, threatened species occurring within the proposal area was considered unlikely and no further assessment was required.

Orphan School Creek is a KFH, and in the proposal area is mapped as 'fair' for Freshwater Fish Community Status. Orphan School Creek is not associated with a Groundwater Dependent Ecosystem.

The BA concluded that the proposal was unlikely to have any significant impacts on Orphan School Creek. This is due to the underboring the creek to and from previously cleared areas, temporary nature of the work and that groundwater dewatering is not required.

Although formal offsets are not required under the BC Act, Sydney Water has an internal position to deliver a 'maintained or enhanced' biodiversity outcome if proposals have residual biodiversity impacts. Based on the vegetation to be cleared an area of 1.02 ha will be restored within the Fairfield WRRF, including 0.14 ha PCT 4024.

No impacts to flora and fauna are anticipated during operation.

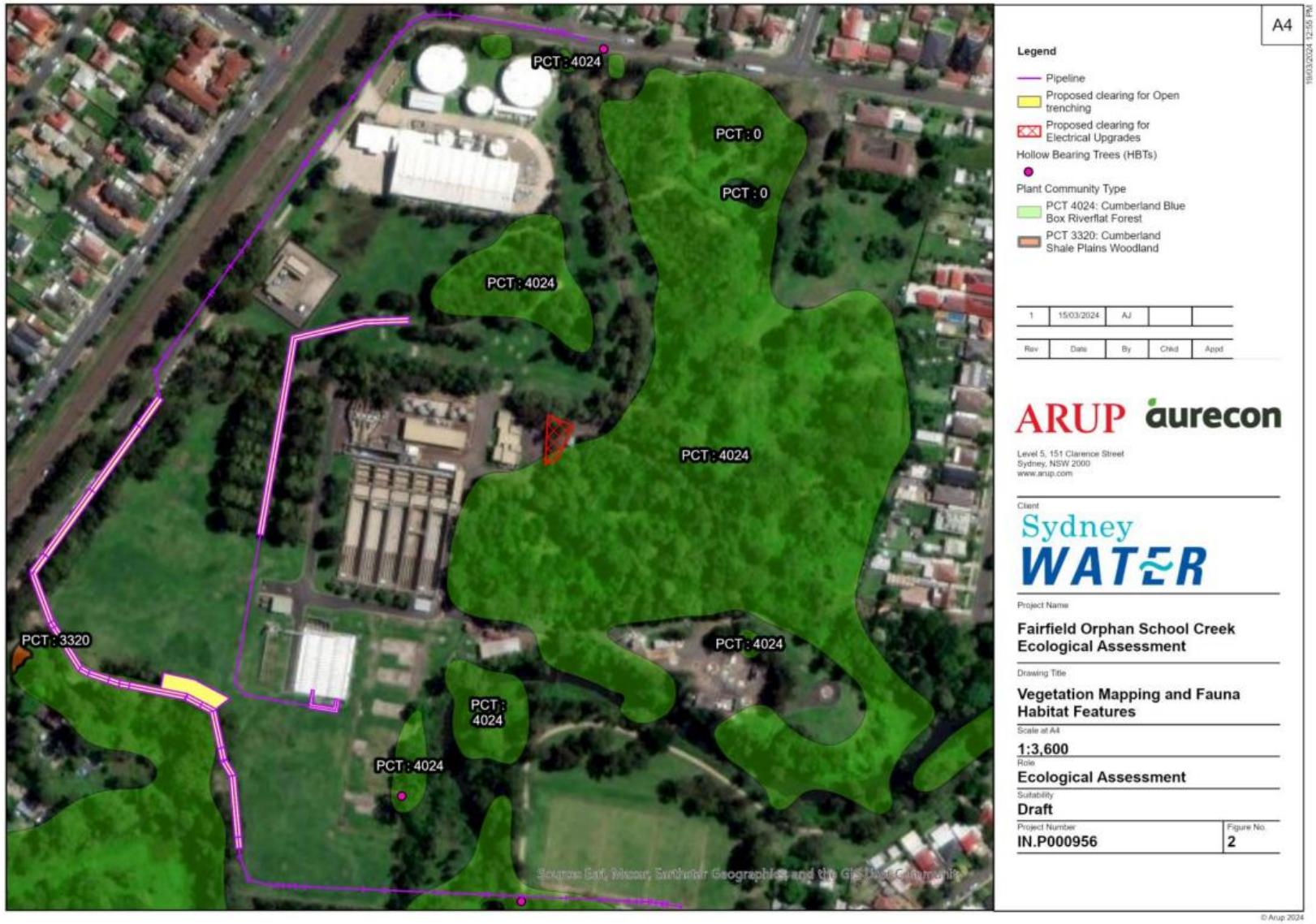


Figure 5-2 Vegetation mapping and clearing areas

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 minor.

Table 5-3 Environmental mitigation measures — flora and fauna

Mitigation measures
Provided it is essential for delivering the project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the Environmental and Community Representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact. • Any minor: - vegetation trimming or - removal of exotic vegetation or - removal of planted native vegetation where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value. • Any removal of remnant vegetation where there is no net change to environmental impact (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).
Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.
No impacts to the vegetation within the riparian zone of Orphan School Creek is permitted.
Minimise vegetation clearance and disturbance, including impacts to standing dead trees. Where possible, limit clearing to trimming rather than the removal of whole plants.
Offset residual impacts to native vegetation and trees in accordance with the Biodiversity Offset Guideline (SWEMS0019.13). The total area of a threatened ecological community cleared is to be offset onsite at a ratio of 3:1.
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.
If native fauna is encountered on site, stop work and allow the fauna to move away unharassed. Engage WIRES or a licenced ecologist if assistance is required to move fauna.
If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Project Manager. Work will only recommence once the impact on the species has been assessed and appropriate control measures implemented.
If any damage occurs to vegetation outside of the disturbance corridor (as shown in the CEMP), notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.

Mitigation measures

Manage biosecurity in accordance with:

- *Biosecurity Act 2015* (see NSW Weedwise), including reporting new weed infestations or invasive pests
- contemporary bush regeneration practices, including disposal of sealed bagged weeds to a licenced waste disposal facility.
- Record Pesticides and Herbicides use in accordance with SWEMS0017

To prevent spread of weeds:

- All equipment and plant machinery should be cleaned prior to the start of works.
- Wrap straw bales in geofabric to prevent seed spread.
- Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.

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.

5.2.4 Heritage

Existing environment and potential impacts

Aboriginal heritage:

AECOM Australia (AECOM) were commissioned to undertake an Aboriginal Archaeological Due Diligence Assessment (AADDA) for the proposal. This was prepared in accordance with the requirements of the Heritage NSW's *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*.

A desktop review was undertaken as part of the AADDA which considered:

- landscape context
- Aboriginal Heritage Information Management System (AHIMS) data
- Native Title searches
- Previous Aboriginal heritage investigations of the local area.

The AADDA also considered site conditions gathered during a site visit by AECOM's Archaeologist (6 July 2023).

The key findings of the AADDA include:

- There is one registered Aboriginal site ([redacted]
- No new Aboriginal objects/sites were identified during the site inspection.
- The majority of the proposal area has been previously disturbed.

[redacted]

The AADDA concluded that as the proposal will be restricted to previously disturbed areas, will implement trenchless pipeline installation methods in lesser disturbed areas and provided mitigation measures, the likelihood of the works to impact Aboriginal Heritage objects is low.

The works can proceed without further heritage assessment.

Non-Aboriginal heritage

One locally listed heritage property (a Federation Cottage) is located within 200 m of the proposed works at Fairfield WRRF. This property is on the opposite side of North Street and not proposed to be accessed during construction works. More than 20 listed heritage items are in a 200 m radius of the OCU replacement site. However, no sites occur in the immediate vicinity (ie 50 m radius). It is unlikely that the works (both construction and operation) would impact on any heritage items.

This information has been readacted.

Figure 5-3 Proposal area and proximity to AHIMS site

Mitigation measures

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

Table 5-4 Environmental mitigation measures — heritage

Mitigation measures
[redacted]
Before construction establish a no-go area around the item by installing protective hard barriers (eg ATF fencing, concrete barriers or water-filled barriers) and signage to protect it from damage.
Site personnel are not to access vegetated areas within Ada Street Reserve.
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.
All site personnel must be inducted 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 unexpected Aboriginal objects, including possible human skeletal material (remains), are identified during works, the Sydney Water unexpected finds procedures should be followed.

5.2.5 Noise and vibration

Existing environment and potential impacts

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

The purpose of the noise assessment was to assess the predicted worst-case noise impacts. This understanding of noise impacts allowed for the determination of appropriate mitigation measures recommended for each group of affected residences (e.g. moderate or highly impacted) and consultation requirements. The Transport for NSW (TfNSW) Construction and Maintenance noise estimator tool was used.

The proposal is within developed residential areas bordered by two train lines and busy roads. The majority of the upgrade works are within the operational Fairfield WRRF which is buffered from residential areas by vegetation and earth bunds. The pipeline installation around the WRRF perimeter are generally progressive, stationary only at the drilling launch point in Sherwin Park (6 weeks) approximately 30 m from residences on Togil Road. One sensitive receiver, Canley Vale

High School is approximately 150 m from the works. Works to replace the OCU unit in Ashfield are short in duration (3-4 weeks) with the use of hand tools and an excavator to lift out the old OCU and replace it with an upgraded unit. No noisy demolition activities are required. The works will be undertaken during standard construction hours. The need for out of hours work associated with the delivery of the OCU and water tank will be determined during construction, and further environmental assessment will be carried out if required.

The noisiest construction equipment is the drilling rig and excavator along the pipeline. The worst-case noise impacts showed that only one receiver was moderately affected by the drilling works (as shown in Figure 5-2). No residences were impacted by the trenched pipeline works. The noise estimator tool recommended that appropriate notification about the works should be provided to this residence as a mitigation measure. Works at the Ashfield OCU was also assessed where the use of hand tools was considered as the noisiest activity. While works at Ashfield may potentially shielded by existing equipment housing this was not used in the worst-case scenario. The tool estimated that the proposal is moderately intrusive to two single story residences and partially impacted one unit block (see Figure 5-3). It was also recommended that notification about the works be provided to these residents.

The Ashfield OCU will require 24 hour operation. The OCU has been designed to minimise noise impacts to the surrounding community and ensuring that operation of the OCU will not exceed 5dBA above background noise at night as per Sydney Water standards and the Noise Policy for Industry (EPA, 2017).

The proposal will not generate vibration during construction and operation. The works do not require equipment that generates vibration. No vibration impacts are anticipated during operation.

Figure 5-4 Predicted noise impacts Canley Vale

Figure 5-5 Predicted noise impacts Ashfield

Mitigation measures

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

Table 5-5 Environmental mitigation measures — noise and vibration

Mitigation measures
Works must comply with the EPA Construction Noise Guideline (Draft, 2021), including scheduling work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sunday nights or public holidays. Any proposed work outside of these hours must be justified. The Proposal will also be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056 • Noise Policy for Industry (EPA, 2017). All reasonable and feasible noise mitigation measures should be justified, documented and implemented on-site to mitigate noise impacts.
At least a week (5 working days) before starting works notify moderately affected residents of the proposal. This notification should provide advance warning of upcoming works and potential disruptions via letterbox drop or equivalent. This should detail work activities, time periods over which these activities will occur, impacts and mitigation measures.
Incorporate **standard daytime hours noise management safeguards** into the CEMP, including but not limited to: • Identify and consult with the potentially affected residents prior to commencement of works, and on an ad-hoc basis as required during works. This should: ▪ describe the nature of works, the expected noise impacts, approved hours of work, duration, complaints handling and contact details ▪ determine need for, and appropriate timing of respite periods (eg times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences). • Implement a noise complaints handling procedure. • Do not warm-up plant or machinery near residential dwellings before the nominated working hours. • Select appropriate plant for each task, to minimise the noise impact (eg all stationary and mobile plant will be fitted with residential type silencers). • Do not use engine brakes when entering or leaving the work site(s) or within work areas. • Regularly inspect and maintain equipment in good working order. • Arrange work sites where possible to minimise noise (eg generators away from sensitive receivers, site set up to minimise use of vehicle reversing alarms, site amenities and/ or entrances away from noise sensitive receivers). • Use natural landforms/ mounds or site sheds as noise barriers. • Schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).
Consider the use of noise barriers between the works areas and residences on Togil Road, Canley Vale and Roberts Road, Ashfield.
If works **beyond standard daytime hours are needed (beyond those identified in this REF)**, the Delivery Contractor would: • justify the need for out of hours work (OOHW) and why it is not possible to carry out the works during standard daytime hours • consider potential noise impacts and implement the relevant standard daytime hours safeguards, follow Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and document all reasonable and feasible management measures to be implemented • identify additional community notification requirements and outcomes of targeted community consultation

Mitigation measures
seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.
If **night works are needed (beyond those identified in this REF),** the Delivery Contractor would: • justify the need for night works • consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and document consideration of all reasonable and feasible management measures • identify community notification requirements (ie for scheduled night work (not emergency works)) • notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.
If works on **Sundays or public holidays are required**, the Delivery Contractor would: • justify why all other times are not feasible • consider potential noise impacts and implement relevant standard daytime, out of hours and night-time safeguards and other reasonable and feasible management measures • identify community notification requirements seek approval from the Sydney Water Project Manager in consultation with the environment and communications representatives.

5.2.6 Air and energy

Existing environment and potential impacts

The proposal is in a residential area. Potential sensitive receivers include Canley Vale High School, users of Ada Reserve or Sherwin Park and residents along East Parade and North Street. Currently, receivers surrounding the Fairfield WRRF experience odour issues. The odour issues have led to odour complaints with the Georges River Hub (Glenfield, Liverpool and Fairfield WRRF's).

The proposal could result in impacts to air associated with:

- dust generated during pipeline trenching works
- emissions from construction machinery, equipment, and vehicles
- odour from construction work including decommissioning the Ashfield OCU and operation of the new OCU.

The proposal has the potential to generate dust from ground disturbance and spoil storage. However, potential dust impacts would be short term and managed through appropriate timing of the works (i.e. excavation works minimised during windy conditions) and mitigation measures. The upgrade of the Ashfield OCU has the potential to generate odour while removing the old unit and installing the new unit. However, these will be short term (less than 4 weeks) and minimised through mitigation measures.

The Preliminary Site Investigation (Sydney Water, 2023) identified fragments of asbestos (friable and non-friable) across the Fairfield WRRF. The proposal is designed to avoid areas of known

contamination, however inappropriate management of contaminated soils could be hazardous to workers on the site, the surrounding community, and the environment. The proposal works will adhere to SafeWork requirements as documented in a site-specific Asbestos Management Plan to minimise potential air quality impacts.

Fuels are required for vehicles and plant during construction. We expect this to be a minor impact to energy use given the scale of the work and short duration of construction.

An objective of the proposal is to address odour issues around the Fairfield WRRF. The design considered the maximum wastewater flows and ensured that the proposed odour management system included recommendations from the EPA's PRP and is fit for purpose. By implementing the proposal (eg chemical dosing, new OCU units and canister units along the LAP), we anticipate that air quality to the surrounding area will be improved.

Mitigation measures

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

Table 5-6 Environmental mitigation measures — air and energy

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

5.2.7 Waste and hazardous materials

Existing environment and potential environmental impacts

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

Preliminary site investigations identified asbestos in fill material across the Fairfield WRRF site. Efforts were made during design of the pipeline route to avoid this contaminated fill area to minimise waste and impacts to the surrounding receivers.

The proposal will generate:

- excavated material (including Asbestos Containing Materials)
- drilling fluids
- green waste
- demolition waste (from buildings and hardstand areas)
- decommissioned mechanical equipment
- general waste.

The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the Waste Management Plan or CEMP.

The proposal may involve the transportation of approximately 600 tonnes of asbestos waste (associated with soil containing asbestos). Requirements to track waste via the EPA's Waste Locate online tracking System will be confirmed by the contractor.

An Asbestos Management Plan will be prepared as part of the CEMP. The plan will provide management requirements (waste minimisation, waste segregation, classification and tracking requirements) and reuse, offsite recycling and/or disposal measures.

During operation we do not expect changes to the types or volumes of waste produced.

Mitigation measures

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

Table 5-7 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Prepare a Waste and Resource Recovery Plan (WRRP) to appropriately manage and classify any materials including soils, construction/demolition wastes and associated stockpiles The plan will be prepared by the Delivery Contractor (or nominated environmental consultant) and approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Property Portfolio Environmental team. The WRRP should include:

Mitigation measures
• 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 / cross-contamination of waste / resource types • ex-situ waste and resource recovery classification program, including timing relative to project / excavation phases as well as proposed hold points • waste minimisation and resource recovery methodologies (including consideration of onsite reuse or management if contaminated) • roles and responsibilities in relation to stockpile and material management and monitoring program • proposed onsite reuse locations and reuse methodology (if applicable) • proposed offsite reuse, offsite recycling and / or offsite disposal locations / facilities • legislative compliance requirements • consideration of future maintenance • restoration.
Manage waste in accordance with relevant legislation and maintain records to show compliance eg waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise stockpile size and ensure delineation between different stockpiled materials.
Minimise the generation of waste and sort waste streams to maximise reuse/recycling in accordance with the legislative requirements.
Manage waste and excess spoil in accordance with the NSW EPA Resource Recovery Orders and Exemptions (if applicable) and / or Waste Classification Guidelines. Where materials are not suitable or cannot be reused onsite or offsite, recycle where appropriate. Recycle soils at a licensed soil recycling facility or dispose at an appropriately licenced landfill facility.
Prevent pollutants from escaping including by covering skip bins.
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.

5.2.8 Traffic and access

Existing environment and potential impacts

Construction will generate light and heavy vehicle movements across the three work areas (Fairfield WRRF/ East Parade and North Street, Sherwin Park, and Lewis Herman Reserve). The proposal will use existing sealed access routes. The proposal will require approximately 205 truck movements over a 3 month period.

All work locations are within residential areas at some distance from arterial roads. The pipeline is in the WRRF and on local roads East Parade and a small portion of North Street. The roads are managed by Fairfield City Council. East Parade is a quiet no through road servicing 21 properties. It has a footpath but no formal kerb and guttering. Fairfield WRRF can be accessed from East Parade. Partial road closures (East Parade and North Street) are required. Sydney Water has

consulted with council regarding impacts to roads and pathways (see Section 3) and agreed measures to mitigate impacts. The proposal will not impact access to private properties. Street parking near Sherwin Park and Lewis Herman Reserve may be temporarily impacted during the works.

During operation, traffic movements, street parking availability or access to private properties will not change. During maintenance works of the Ashfield OCU access and parking will be on the existing driveway and we don't anticipate that this will impact surrounding residences.

Mitigation measures

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

Table 5-8 Environmental mitigation measures — traffic and access

Mitigation measures
Develop management measures to minimise traffic impacts near residential properties, schools and businesses by consulting with them (eg no major materials deliveries at school drop off or pick up times etc).
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycle, pram and wheelchair access.
Consult with Fairfield City Council's open space manager when alternative routes or diversions to pedestrians are required.
Prepare a Traffic Management Plan (TMP) in consultation with Fairfield City Council (Traffic and Transport team). Where required, refer works to the local Traffic Committee. This should also consider traffic control and pavement restoration.
Seek road opening permits from Fairfield City Council for road trenching.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

5.2.9 Social and visual

Existing environment and potential impacts

The proposal area and surrounds are mostly residential urban with small pockets of reserves/parkland. There is an adjacent train line.

Much of the construction works will be in operational Sydney Water properties, including the Ashfield OCU site. However, there may be temporary visual and amenity impacts associated with site compounds and worksites in Sherwin Park. This will also impact Canley Vale High School who use the park.

These temporary impacts will be mitigated in consultation with stakeholders such as council, the school and residents, in accordance with the mitigation measures below.

All infrastructure in Sherwin Park will be at or below surface level and will not alter the visual character of the park once construction is complete. On the completion of works a new maintenance hole and valve covers will remain. Consultation with the school and council on how Sydney Water can reduce impacts to the park is ongoing (see Section 3).

New above ground structures including the treated water tank in the WRRF will likely blend in with the existing infrastructure or be hidden by existing tree screening. The new OCU will replace the existing unit including the 16 m ventshaft, which is behind buildings and fences. During operation we anticipate that the potential visual impacts will be minor.

Mitigation measures

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

Table 5-9 Environmental mitigation measures — social and visual

Mitigation measures
Undertake works in accordance with Sydney Water Communications policies and requirements including: • Notify impacted residents and businesses. • Erect signs to inform the public on nature of work. • Treat community enquiries appropriately.
Contractor to organise the work areas to reduce the area of sports field required.
Access to Sherwin Park from the School (north western portion of Sherwin Park) to remain clear for students during construction.
Restore work sites to pre-existing condition or better.
Minimise visual impacts (eg retain existing vegetation where possible).
Maintain work areas in a clean and tidy condition.

5.2.10 Cumulative and future trends

Potential environmental impacts

Sydney Water will coordinate these works with other proposed projects at the Fairfield WRRF to ensure cumulative impacts to the community are low. It is likely that works at the Ashfield OCU will occur at the same time as the construction of the proposed neighboring retirement village. Sydney Water will liaise with the relevant development to ensure impacts to the surrounding community is minmised.

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

The proposal has considered future trends and is unlikely to further exacerbate them. The upgrades are generally within existing hardstand areas so it is unlikely to create additional

stormflow that would contribute to local flooding. The proposal has been designed to reduce wet weather overflows into Orphan School Creek providing additional capacity during heavy rain.

Mitigation measures

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

Table 5-10 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Sydney Water to coordinate works (including truck movements) within the Fairfield WRRF and at Ashfield to minimise impacts to the surrounding residential area.

5.2.11 General environmental management

Table 5-11 Environmental mitigation measures — general environmental management

Mitigation measures
Sydney Water's Project Manager (after consultation with the environmental and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities: • limit proximity to sensitive receivers • do not disrupt property access • have no impact to known items of non-Aboriginal and Aboriginal heritage • are outside high risk areas for Aboriginal heritage • use existing cleared areas and existing access tracks • have no impacts to remnant native vegetation or key habitat features • have no disturbance to waterways • do not require additional safeguards beyond those included in the EIA • do not disturb contaminated land or acid sulfate soils • will be rehabilitated at the end of construction. The Delivery Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.

Should the proposal change from the EIA, no further environmental assessment is required provided the change:

- remains within the assessment area for the EIA and has no net additional environmental impact or
- is outside the assessment area 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 representatives.

Mitigation measures

Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should specify 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 (eg heritage item, Ada Street Reserve) and boundaries of the work areas, including locations of lay-down and storage areas for materials and equipment
- location of environmental controls (such as erosion and sediment controls, fences or other measures to protect vegetation or fauna, spill kits)
- location and full extent of any vegetation disturbance.

The CEMP will identify appropriate delineation with (eg metal fencing for heritage items, white flagging for construction corridor, red flagging for no go zones etc). Delineate approved work areas before construction.

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

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

All site personnel must be inducted into the IMP.

To ensure compliance with legislative requirements for incident management (eg *Protection of the Environment Operations Act 1997)*, Follow SWEMS0009 and attach SWEMS0009 to the CEMP.

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

6 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of Malabar System Investment Program Near Term Works – Package 3 and 4B. This proposal is required to improve environmental performance of the Fairfield WRRF and ensure compliance with EPL 372.

The potential environmental impacts of the proposal are typical of construction works including noise, amenity, and biodiversity impacts. During operation, the benefits are associated with improved air quality by minimising odour generation and reduced wet weather overflows to Orphan School Creek. 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.

References

Bannerman, S. M., & Hazelton, P. A. (1990). Soil Landscapes of the Penrith 1:100 000 Sheet. Soil Conservation Service of NSW.

Fairfield City Council 2010, Prospect Creek – Flood Planning Map

NSW Environmental Protection Authority (EPA) 2017, NSW Noise Policy for Industry, NSW Government Sydney

NSW Environment Protection Authority (EPA) 2020, Draft Construction Noise Guideline, NSW Government Sydney

Sydney Water 2023, Fairfield Wastewater Treatment Plant – Aquanet Pipeline Upgrade Preliminary Site Investigation.

Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short-term impacts on the community associated with noise and reduced access to Sherwin Park. There will be environmental improvements by implementing EPA's requirements to minimise odour and provide a more efficient and reliable wastewater service.
Any transformation of a locality	The proposal will occur mostly on Sydney Water land and will not result in the transformation of a locality.
Any environmental impact on the ecosystems of the locality	The proposal will not result in environmental impacts to ecosystems of the locality. The quality of the vegetation to be impacted is low (mostly planted natives) and will be offset in line with the Sydney Water policy. The proposal will lead to environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater, minimising any impacts on the ecosystem, and Orphan School Creek in particular.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	There may be temporary impacts to the locality from construction traffic, road closures and visual impacts from construction equipment. The works protect the locality in the longer term, through reduced odour problems and reduced overflows to Orphan School Creek.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal will not have any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations. Mitigation measures will avoid impacts to Aboriginal Heritage.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The BA confirmed that areas to be impacted during works are unlikely to provide habitat to any protected animals.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.
Any long-term effects on the environment	The proposal aims to minimise long-term impacts on the environment by catering for growth, reducing odours and overflows to Orphan School Creek.

Section 171 checklist	REF finding
Any degradation of the quality of the environment	The proposal will not cause the degradation of the quality of the environment. The proposal will reduce odours, and overflows to Orphan School Creek.
Any risk to the safety of the environment	The proposal will not increase risk to the safety of the environment. The proposal will reduce risks to the safety of the environment by reducing odours, and overflows to Orphan School Creek.
Any reduction in the range of beneficial uses of the environment	The proposal will not reduce the range of beneficial uses of the environment. The proposal will reduce odours, and overflows to Orphan School Creek and may improve the use of the environment.
Any pollution of the environment	Environmental mitigation measures will mitigate the potential for the proposal to pollute the environment during construction. The works will reduce the likelihood of pollution to the environment during operation by reducing odours and overflows to Orphan School Creek.
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 increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The mitigation measures will ensure the proposal will not have any cumulative environmental effect with other existing or likely future activities.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not have any impact on coastal processes or hazards, and coastal processes and coastal hazards will not have any impact on the proposal.
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?		✓
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		✓
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		✓
Connect to, and use a substantial volume of water from a council owned water supply system?		✓
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?		✓
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?	✓	
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?		✓
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?		✓
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)?		✓
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?		✓
Section 2.15, consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act*? If so, consult with DPE (NPWS).*		✓
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).*		✓
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*		✓
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.*		✓
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*.	✓	
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).*		✓

Appendix C – Ecology Assessment

Appendix D – Aboriginal Heritage Due Diligence