

Review of Environmental Factors

Malabar System Improvement Program – Liverpool Water Resource Recovery Facility Upgrades

04/2026

Sydney WATER
Water IS OUR LIFE



Acknowledgement of Country

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

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the Malabar System Improvement Program – Liverpool Water Resource Recovery Facility (WRRF) Upgrades. The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

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

Certification

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

Prepared by:	**Reviewed and endorsed by:**	**Endorsed by:**
[redacted]		

Decision Statement

The main potential construction environmental impacts of the proposal include impacts to biodiversity and waste and hazardous material. During operation the main potential environmental impacts will be to visual amenity. The benefits of the proposal are associated with improved air quality by minimising odour generation and social benefit by accommodating growth and providing a resilient wastewater system. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

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

Determined By:	[redacted]

1 Executive Summary

Sydney Water proposes to upgrade Liverpool Water Resource Recovery Facility (WRRF) in the Liverpool local government area (LGA). We propose to modify and expand wastewater treatment processes within the Liverpool WRRF. The proposal will increase the amount of wastewater that can be treated to accommodate forecasted growth in the Malabar catchment and is part of the Malabar System Investment Program (MSIP) near-term works.

The proposal will improve the quality of the treated wastewater produced by the WRRF to meet the water quality requirements in its environment protection licence (EPL) and meet the objectives of the pollution reduction program (PRP). These will be met by increasing secondary treatment capabilities at Liverpool WRRF and improving wet weather effluent quality being discharged into the Georges River.

The proposal area is adjacent to the Georges River and contains native vegetation and threatened ecological communities. The proposal is in an industrial area with the closest sensitive receiver over 250 m away. Construction of the proposal is expected to start in mid 2026 and take about 3 years to build.

Most environmental impacts are expected in the construction phase and are temporary. The main construction impacts are to biodiversity and from waste and hazardous material. We will implement a range of mitigation measures to manage these impacts, as part of a Construction Environmental Management Plan.

During operation the main potential environmental impacts will be to visual amenity. The benefits of the proposal are associated with improved air quality by minimising odour generation, improvement to the quality of wet weather releases to Georges River and social benefit by accommodating growth and providing a resilient wastewater system. Sydney Water has considered a range of options and refined the proposal to minimise environmental impacts. The proposal aligns with the principles of ecologically sustainable development.

This review of environmental factors (REF) assesses the proposal's environmental impacts and will be determined by Sydney Water under Division 5.1 of the *Environmental Planning and Assessment Act 1979*. Sydney Water has been consulting with the community and other stakeholders throughout proposal planning, and will continue this as design and construction progress.

2 Introduction

2.1 Context

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

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

2.2 Proposal background and need

Table 2-1 summarises the proposal need, objectives and consideration of alternatives.

Table 2-1 Proposal need

Aspect	Relevance to proposal
Proposal need/ context	The proposal is for the upgrades to the Liverpool WRRF as part of the MSIP. The proposal will allow for an increase in both primary and secondary treatment capacity at Liverpool WRRF to service growth to 2046 and enable flow diversion away from the Northern Georges River Submain (NGRS) to the Liverpool Ashfield Pipeline (LAP). To improve the performance of the Malabar system, and particularly the capacity of the NGRS, the following works are currently planned: • Near-term works (completion by 2029) – upgrades to Liverpool and Glenfield WRRF, refurbishment of Fairfield WRRF and reconfiguration of the LAP and NGRS systems. **This REF assesses the near-term works associated with Liverpool WRRF upgrades.** • Desilting and rehabilitation of the NGRS (completion by 2033). • Mid-term works (completion by 2033) – reconfiguration of the broader Malabar network infrastructure to manage increased flow driven by population growth. The mid-term works will continue to provide capacity for system maintenance and improve wet weather performance. • Malabar long-term works – potential for further recycling opportunities. Liverpool WRRF currently provides secondary treatment for 20% of wastewater coming into the WRRF. The secondary treated effluent is then discharged into the LAP for effluent supply to the Recycled Water Treatment Plant (RWTP) at Fairfield. The primary treated effluent (80% of incoming wastewater) is discharged into the NGRS and conveyed to Malabar WRRF. Sections of the NGRS are at hydraulic capacity and there is need for immediate and long-term rehabilitation. Catchment growth is forecast at around 10% per year, resulting in a 50% increase in wastewater flows by 2046. To meet the increase in flows the Liverpool WRRF requires upgrades to ensure environmental compliance and meet system performance targets. Odour issues from storage of primary treated effluent in the Liverpool WRRF oxidation ponds during wet weather have led to odour complaints. A PRP has been applied by the Environment Protection Authority (EPA) on the Georges River Hub WRRFs (Fairfield, Liverpool and Glenfield) which aims to implement measures to minimise offensive odour emissions. The proposal will: • reduce odour impacts by decreasing wet weather discharge

Aspect	Relevance to proposal
	• increase secondary treatment capabilities at Liverpool WRRF • improve effluent quality in the Georges River during wet weather.

Proposal objectives	The proposal objectives of the Liverpool WRRF upgrades are to:
	• increase secondary capacity to 66ML per day for dry weather and 198ML per day peak wet weather flow to service growth to about 2046
	• reduce odour by:
	  ○ reducing frequency and volume of bypasses to the oxidation pond from current 99% of all wet weather events to 2%
	  ○ no longer storing primary treated effluent in the oxidation ponds during dry weather operation and most wet weather events
	  ○ reducing manual handling of biosolids and improving odour control
	• meet wet weather EPL discharge limits
	• provide capacity for maintenance of the NGRS by increasing utilisation of the LAP
	• provide necessary baseline infrastructure for mid-term works.

Consideration of alternatives/ options	**Do nothing scenario** Deferral of the proposal would contribute to wider system impacts such as: • inability to service growth in the Malabar catchment as the NGRS network capacity becomes more constrained • increased impacts on water quality and loss of amenity from wet weather overflows, with potential consequences for public health and the environment • non-compliance with the system licence and other regulatory requirements • higher costs of future maintenance, or an inability to undertake safe and reliable maintenance in the system. **Options assessment** An options assessment process was undertaken to evaluate the effectiveness of each option to meet the project objectives, technical feasibility, environmental outcomes and cost. Two broad options were considered: **Option 1: increased odour control across site** This option focused on a treatment solution at the WRRF rather than a network solution. The removal of the oxidation ponds was not possible due to the design of the Malabar system. Odour control across the site was investigated, focusing on options such as covering the oxidation ponds and upgrading the ventilation system. This was determined unfeasible due to: • constructability of installing covers for the oxidation ponds due to large area of ponds • risk and cost uncertainties of cleanout of the oxidation ponds and geotechnical requirements • constructability of ventilation system • long term operational maintenance of covers and ventilation system as access to the ponds would not be possible after installation of the covers and ventilation system. Although this option addressed the odour issues it did not address the other key project objectives. **Option 2: amplify and upgrade treatment capacity**

Aspect	Relevance to proposal
	This option considered upgrades to the WRRF to increase capacity and treatment. This would involve upgrading: • primary treatment • secondary treatment • effluent management • odour management • biosolids. Upgrading this infrastructure would address odour issues and improve environmental performance of the WRRF by: • reducing the frequency and volume of bypasses into the oxidation pond from the current 99% of all wet weather event to 2% • no longer storing partially treated flows in the oxidation pond during dry weather • reducing manual handling of biosolids. The upgrades would meet growth demand in the area by increasing capacity to service growth to 2046. It aligns with mid-term and long-term plans for the WRRF. It supports resilience in the system by using the LAP, allowing maintenance of the NGRS. The upgrades require more financial investment than option 1 but are justified by the long-term ability to service growth and align with future works as part of the MSIP.

2.3 Consideration of Ecologically Sustainable Development

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

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

Aspect	Relevance to proposal
Precautionary principle – *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The driver for the proposal is to ensure Liverpool WRRF can service future growth, meet EPL wet weather limits and odour reduction. The proposal will not result in serious or irreversible damage. Mitigation 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 providing a reliable wastewater service by increasing capacity to support a growing population. The upgrades to Liverpool WRRF will improve the environment by reducing odour and wet weather discharges into the Georges River.

Aspect	Relevance to proposal
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.*	Where possible the proposal has been designed to use previously disturbed areas and will not significantly impact on biological diversity or 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*	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community and environment. The proposal aligns with future works within the Malabar system. Once operational, the proposal will reduce potential impacts associated with odour and capacity issues.

3 Proposal description

3.1 Proposal details

The proposal is for upgrades to the Liverpool WRRF to accommodate growing demands on the system and reduce odour issues. The works are shown on Figure 3-2 and will involve:

- refurbishing and relocating existing buildings and Primary Sediment Tanks (PST)
- decommissioning existing digesters, out loading facilities and wet well
- upgrading secondary treatment at Liverpool WRRF to Activated Granular Sludge (AGS) treatment process
- upgrading primary treatment, biosolids treatment, and effluent flow management systems to match full secondary capacity and reduce the odour potential
- upgrading odour control systems to enhance odour capture and treatment
- draining and filling disused sludge lagoon to be used as compound area.

During dry weather, all flows from Liverpool WRRF are currently transferred to Malabar WRRF. Overflows to the Georges River only occur during wet weather and when the downstream systems are at capacity. These wet weather overflows receive primary treatment. Currently, Liverpool WRRF receives 50-55 ML per day under average dry-weather conditions, with the full flow provided with primary treatment. Only 10-12 ML per day undergoes further secondary treatment. The secondary effluent produced is discharged to the LAP, which then connects to the Western Branch Submain (WBSM). The remaining primary treated effluent is transferred to the Malabar system via the NGRS. In dry weather, this means that only 20% of inflows can be diverted to the LAP while 80% is discharged into the NGRS.

The proposed upgrades to Liverpool WRRF will provide up to 198 ML per day of secondary treatment capacity. This will allow the plant to provide full secondary treatment to all dry weather flows (up to 85 ML per day) and wet weather events (up to the remaining 113 ML per day). This capacity enables sufficient secondary effluent to be diverted to the LAP (100-110 ML per day capacity) and therefore reduces the load on the NGRS.

3.2 Location and ownership

Liverpool WRRF (asset number ST0009) is an existing Sydney Water owned site at Lot 1 DP 553288 and Lot 1 DP 87962. The address is 32-40 Scrivener Street, Warwick Farm in the Liverpool LGA.

3.3 Site access

The proposal will be accessed from the existing driveway on Scrivener Street and internal roads within the Liverpool WRRF site. New internal roads (within the WRRF) with access from Scrivener Street will be constructed as part of the proposal to facilitate construction and access new infrastructure. Construction

compounds will be required for site sheds, construction amenities, material laydown, parking space and stockpiles. Indicative locations for the compounds are shown on Figure 3-2.

3.4 Methodology

3.4.1 Site establishment

Site establishment will involve:

- removing vegetation
- prefabricating yard set up
- installing access tracks.

3.4.2 Construction

Construction activities are shown in Table 3-1 and Figure 3-2 below.

Table 3-1 Construction activities and figure reference

Activity	Figure 3-2 reference number/location
Temporary construction works including: • installing sheet piling • constructing piling platform	Multiple locations
Geotechnical and borehole works	Multiple locations
Construct associated high voltage/low voltage equipment including a step down 33 kV substation	A04, A07, E07, E08, K13, K14, 008
Dewater sludge lagoon into the oxidation pond	Within the site compound on the eastern border
Fill and compact sludge lagoon	Within the site compound on the eastern border
Refurbish existing PSTs and modification of primary effluent channel to direct flow of primary effluent to secondary treatment	D01
Decommission, demolish and / or make safe disused structures including: • old A-works area (treatment structures) • soil-bed odour scrubbers • existing chemical scrubbers	E03, E04, E05, E06, E07, E08, E09, E10, E11, K06, K10, L01, M04

Activity	Figure 3-2 reference number/location
• ferric storage and dosing • existing biosolids storage shed	
Install new AGS bioreactor and associated equipment, including: • buffer tanks, pumping building and sludge holding tanks • aeration blowers building and associated mechanical / electrical equipment • effluent outlet structure • other ancillary systems	E03, E04, E05, E06, E07, E08, E09, E10, E11, K01, K02
Install stormwater pumping station	M02
Install gas holders and renew ancillary system	N01, N02, N03, N06
Install new primary effluent distribution structure	D02
Construct new connection between the Glenfield to Liverpool Effluent Distribution Structure and AGS buffer tanks	E03
Upgrade ferric chloride dosing system	K17
Install 2 new digesters, one existing to be relocated and 2 new rotary drum thickeners (RDT) and associated ancillary equipment in the new digesters area	K03, K05, K07, K08, K12
Relocate the existing centrifuge polymer dosing system	K16
Construct a new biosolids outloading building	K09, K11, K13, K14, K15
Install a new odour control treatment unit, ducting and ventilation system	L02, L03
Connect to the existing Liverpool extended wet well	E12
Install supervisory control and data acquisition (SCADA) and associated controls, instrumentation for all new assets	Multiple locations
Relocate utilities	Multiple locations
Demobilise site	Multiple locations

3.5 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.

3.5.1 Restoration

Site restoration will involve:

- dismantling compounds, removing and disposing of waste material and removing construction signage
- restoring ground cover and vegetation
- restoring road pavement surfaces and drainage
- removing erosion and sediment control, fencing and traffic management measures.

Non-operational areas of the work site will be restored to the pre-existing condition following construction. 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.

3.5.2 Materials and equipment

Materials

Typical materials likely to be used include but are not limited to:

- polyethylene (PE) pipe for the pressure pipelines
- pipe/box culvert for the gravity pipelines
- pumps and other equipment
- building materials, steel and timber
- fuel for minor plant and equipment
- topsoil, bitumen and concrete activity
- valves and other fixtures
- concrete for encasement
- granular materials
- reused excavated material for fill.

Equipment

Typical equipment likely to be used includes but is not limited to:

- excavators
- rock breakers / jackhammers
- compactors
- padfoot roller / vibration roller
- slurry extractor
- concrete truck and pump
- concrete saws
- drill rig
- microtunnelling / HDD equipment
- horizontal auger
- backhoe
- tipper trucks
- bogie / truck and dog
- light and heavy vehicles
- street sweeper
- water truck
- cranes
- generators
- air compressors
- skip bins
- dump trucks
- portable pumps and sediment tank
- welding equipment and power
- tools (various)
- confined spaces safety equipment (eg gantry/davit)
- site facilities and amenities
- storage containers.

3.5.3 Work hours

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

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

The proposal is not expected to require work outside these hours. However, Sydney Water's Project Manager can approve work outside of standard daytime hours. The approval process is described in the mitigation measures in Section 6.

3.6 Proposal timing

Construction is expected to start mid 2026 and take about 36 months.

3.7 Operational requirements

Liverpool WRRF will be operated with upgraded components, to meet EPL compliance and associated PRP with the EPL. The proposal will not require any significant or complex changes to the EPL. Subject to final design arrangements, minor administrative amendments to the nominated locations of volume and quality monitoring points may be required. The proposal will reduce odour by increasing the secondary treatment capacity at Liverpool WRRF.

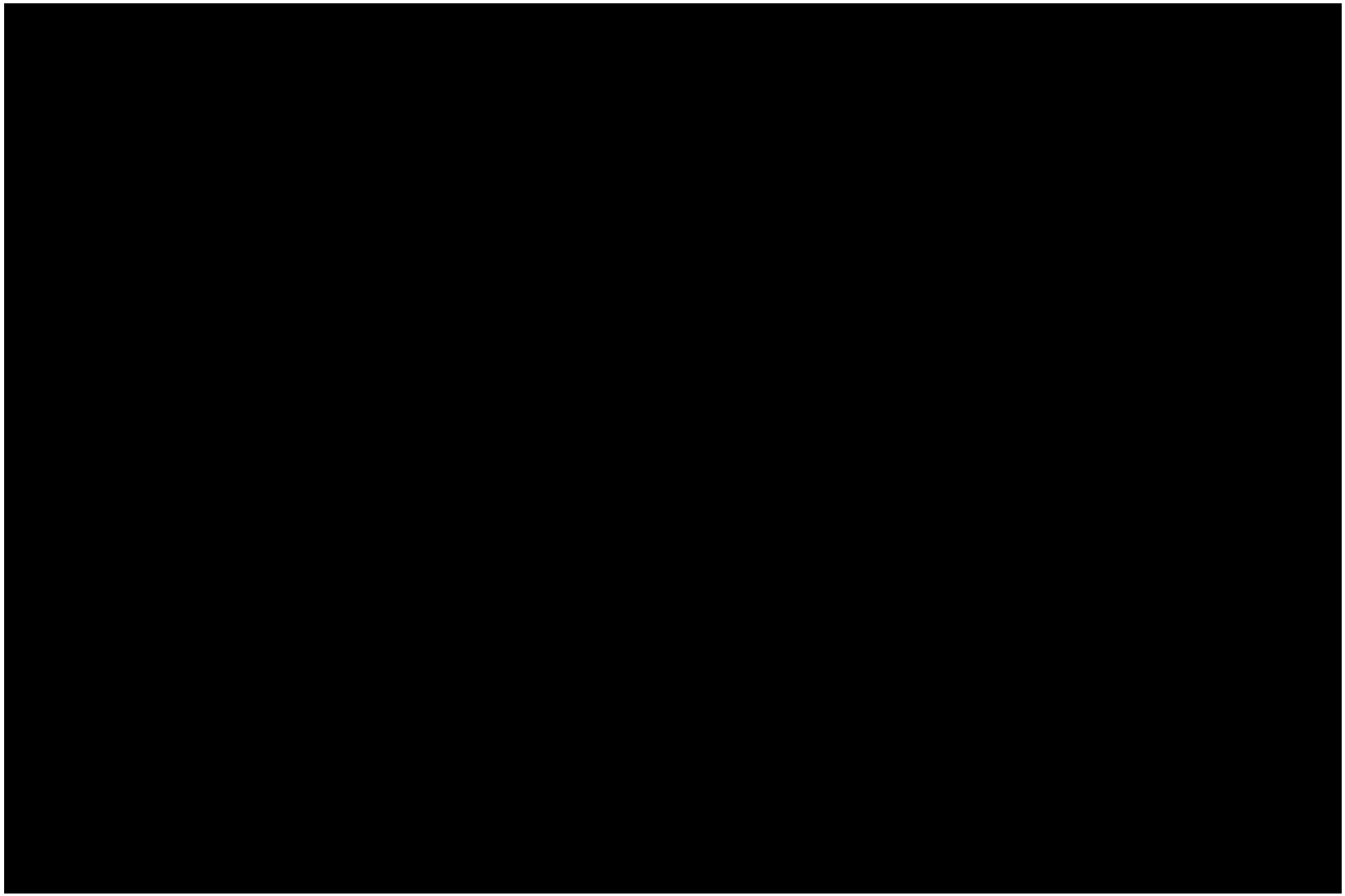


Figure 3-1 Location of proposal and key environmental constraints



Figure 3-2 Proposal design as of 27 October 2025

3.8 Changes to the scope of work

The proposal shown in Figure 3-2 of this REF is indicative and based on the latest reference design at the time of REF preparation. The final proposal may change based on detailed design and/or construction planning. An addendum is not required provided the change:

- remains within the proposal area, refer to Figure 3-1 and Figure 3-2, and has no net additional environmental impact; or
- is outside of the proposal area but reduces the overall environmental impact of the proposal.

The general mitigation measures outline when changes to the proposal trigger supplementary environmental impact assessment. If required, further assessment must be prepared in accordance with SWEMS0019. Changes to the proposal outside of the proposal area can only occur:

- to reduce impacts to biodiversity, heritage or human amenity; or
- to avoid engineering (for example, geological, topographical) constraints; and
- after consultation with any potentially affected landowners and relevant agencies.

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

4 Consultation

4.1 Community and stakeholder consultation – general

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

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

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

The nature, scale and extent of the proposal's potential impact has been evaluated in this REF. If our work impacts the community in some way, we will consult with affected groups throughout the proposal. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions. Local residents and businesses were consulted about the proposal in March 2026 through a combination of doorknocking and written notifications. The notifications included information about the proposal, indicative construction hours and upcoming site establishment. Residents and businesses were provided contact details for a project hotline and email address to facilitate community queries.

Residents and businesses were positive about the proposal contributing to odour reductions. Some residents raised concerns over mosquitos in the area. Information was provided on how Sydney Water handled the mosquito outbreak that occurred in late 2024. Sydney Water will continue to consult with residents and businesses throughout detailed design and throughout construction.

The works are in the Liverpool City LGA and we will provide council with reasonable notice when we would like to commence works. We will also be consulting council about any partial road closures of council managed roads and providing general construction updates.

4.2 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).

No formal consultation was required under the TISEPP. Further detail is provided in Appendix B.

Sydney Water notified the Bradfield Development Authority (previously Western Parkland City Authority) on 23 January 2026 as the proposal has a capital investment value of over $30 million and is in the Western City operational area. Bradfield Development Authority responded to the notification on 4 February 2026 supporting the proposal.

5 Legislative requirements

5.1 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 5-1) and legislation (Table 5-2) are relevant to the proposal. Table 5-2 also documents any licences and permits required, and timing and responsibility for obtaining them.

Table 5-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Liverpool Local Environmental Plan 2008 (Liverpool LEP)	The proposal is located on land zoned SP2 infrastructure.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Section 2.126(2) of the TISEPP permits development for sewage treatment plants without consent on any land in a prescribed zone in the prescribed circumstances. Liverpool WRRF upgrades are in land zoned SP2 Infrastructure, which is listed as a prescribed zone. Prescribed circumstances are when the work is performed by or on behalf of a public authority. As Sydney Water is a public authority, the proposal is permissible without consent. Bradfield Development Authority has been notified of the proposal as required in section 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. **Koala habitat protection Chapter 3 2020** **(2020 and 2021) (Chapter 3 and 4)** Chapter 3 applies to land zoned RU1, RU2 or RU3. As the proposal area is on land zoned SP2, this chapter does not apply. The proposal area is within Liverpool LGA, listed in chapter 4 of the BCSEPP. There are no known records of koalas within one kilometre of the proposal area and the proposal is not a preferred habitat nor has koala feed. No impacts to koalas from the proposal are anticipated. **Water catchments (Chapter 6)**

Environmental Planning Instrument	Relevance to proposal
	Chapter 6 of the BCSEPP applies as the proposal is within the Georges River Catchment, a regulated catchment area. Section 6 of this REF assessed potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. The assessment confirmed that potential impacts are minor and meet the requirements of part 6.2 of the SEPP (refer to Appendix A).
State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP)	**Coastal Management (Chapter 2)** The works are on land to which Chapter 2 of this SEPP applies. The works are in an area mapped as Coastal Wetlands Proximity Area. Development consent under this SEPP is not required for the works, but Sydney Water has had regard to its requirements in considering potential impacts: • to the biophysical, hydrological and ecological environment • the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

Table 5-2 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 to ensure Liverpool WRRF operates in accordance with the EPL discharge requirements, and to meet the EPL PRP requirements for odour reduction. A variation to EPL 372 is not required for operation. There is a requirement under Part 5.7 of the POEO Act to immediately report any pollution incidents to the relevant authority where material harm to the environment is caused or threatened. The definition of material harm and the relevant authorities are defined in Part 5.7 of the POEO Act. The delivery contractor is responsible for immediately reporting such incidents in accordance with SWEMS0009 responding to incidents with an environmental impact.	NA	Pre-construction, Sydney Water

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 6.2.3 and Appendix D). 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. Refer to Section 6.2.3 for further details.	REF	Pre-construction, Sydney Water
Heritage Act 1977	The proposal is located within the curtilage of Liverpool Sewage Treatment Plant, which is listed on Sydney Water's section 170 Heritage & Conservation Register (ID: 4573723). A Local Heritage Item Impact Approval has been prepared. Refer to Section 6.2.4 for further details.	Local heritage impact approval	Pre-construction, Sydney Water
Fisheries Management Act 1994 (FM Act)	The proposal is located adjacent to the Georges River which is mapped as key fish habitat (KFH). All construction activities will be undertaken outside of areas mapped as KFH so a permit under the FM Act is not required. The proposal will reduce the frequency of wet weather overflows into the Georges River resulting in a positive benefit to aquatic habitat and marine vegetation.	NA	Pre-construction, Sydney Water
Water Act 1912/ Water Management Act 2000	The proposal will dewater groundwater during construction. The proposal is not anticipated to dewater more than 3 ML. A water supply work approval (WSWA) is required under Section 90(2) of the Act for groundwater removal.	WSWA	During or post REF if >3ML known during planning (Sydney Water to initiate).
Biosecurity Act 2015	The object of this Act is to provide a framework for the prevention, elimination and minimisation of biosecurity risks. Several priority Weeds of National Significance (WoNS) were identified in the construction corridor. Weeds must be managed in accordance with the general biosecurity duty.	N/A	Delivery contractor during construction

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act is the principal environmental law administered by the Commonwealth. It provides for the protection of matters of national environmental significance. Under the EPBC Act, an action that is likely to have a significant impact on a matter of national environmental significance must be referred to the Commonwealth Minister for the Environment and Water. An assessment using the significant impact guidelines for potential impacts to EPBC listed fauna species confirmed that the proposal is not likely to have a significant impact.	REF	Pre-construction, Sydney Water

6 Environmental assessment

Section 6.2 describes the existing environment and assesses direct and indirect impacts of construction and operation. It also identifies mitigation measures to minimise impacts. These will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) prior to starting work.

6.1 Existing environment

The proposal area is within the Liverpool WRRF. The proposal area has been subject to previous disturbance from the construction, operation and maintenance of the WRRF. The proposal area is adjacent to the Georges River to the south and vegetated landscape to the east. There are commercial properties to the north and west of the proposal area. The proposal will be accessed from Scrivener Street which is a local two-way divided road.

There are some nearby sensitive receivers to the proposed works such as the Liverpool Hospital (850 metres (m) west), Rosedale Oval (600 m north), residential receivers (600 m north and 250 m south) and those using the Georges River for recreational activities (250 m to the south).

6.2 Environmental aspects, impacts and mitigation measures

6.2.1 Topography, geology and soils

Existing environment

The proposal area is relatively flat, with a steep slope along the banks of the Georges River at the southern boundary of the site. A desktop search identified the geology within the proposal area as disturbed terrain, Berkshire Park Soil Landscape and Blacktown Soil Landscape. The search indicated that the proposal area is in an area of low soil salinity risk and low probability of occurrence of acid sulfate soils (ASS). The proposal is not in a mine subsidence area. Asbestos containing material (ACM) has previously been found within the proposal area during excavation and waste classification for the burial of Frogbit. Awareness of potential further ACM finds should be maintained during construction. Waste management for this material is discussed in Section 6.2.7.

Potential impacts

The main potential impacts to geology and soils during construction are:

- erosion and sedimentation from excavation, vegetation removal and spoil management
- contamination from:
    - accidental chemical and fuel spills
    - inappropriate management of saline soils and ASS.

About 40 000 m^3 of spoil will be excavated during construction of the AGS. Excavated material will be stockpiled onsite and used to infill the dewatered sludge lagoon. In the event of rainfall, stockpiled material has the potential to erode and lead to sedimentation and impact water quality. To protect earthworks during

construction erosion and sediment controls will be installed prior to commencing works. Embankment batters will be revegetated and maintained during construction.

Inappropriate management of saline soils and ASS has the potential to impact surrounding land and waterways from off-site leaching of saline soils and ASS.

Infilling the sludge lagoon will change topography and drainage patterns. The sludge lagoon will be infilled to make the compound area. The compound area will be levelled, and runoff will flow into drainage within the WRRF. The proposal will not have a significant impact on surface topography and drainage patterns.

Impacts to geology and soils are not expected during operation.

Mitigation measures

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

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

Mitigation measures
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including, but not limited to: • develop a Soil and Water Management Plan (SWMP) as part of the CEMP • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • 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 where possible • 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.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic material within fill, asbestos, chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative (who will contact Contamination and Hazardous Materials team) to agree on proposed management approach.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.

Mitigation measures

Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.

Adopt appropriate soil salinity mitigation measures in accordance with Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). This may include:

- 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.

Assessment of contamination risks should be undertaken prior to disturbing groundwater, surface water, sediments or soils at the site.

Manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998). Prepare an Acid Sulfate Soils Management Plan (if required).

6.2.2 Water and drainage

Existing environment

The proposal area is adjacent to the Georges River and is in a medium to high-risk flood area (Liverpool LEP 2008). Due to its elevation from the river the proposal is outside of the 1% annual exceedance probability (AEP) event and unlikely to be flood affected. The proposal area is not within Key Fish Habitat.

A decommissioned sludge lagoon (artificial dam) is located within the proposal area. The sludge lagoon is a still body of turbid water with limited fringing aquatic vegetation and scattered canopy trees.

Regional groundwater flow direction is expected to be consistent with the topography, moving towards Georges River. The groundwater level in the proposal area ranges from 5 to 7 m below ground level. There are no recognised subterranean ecosystems present within the proposal area.

The Georges Riverkeeper monitors riparian vegetation, water quality and macroinvertebrates across the catchment to provide a snapshot of river health. In the most recent report for 2023-24 the estuarine section of the river was rated as good, with some sites considered fair (Georges Riverkeeper 2026).

Liverpool WRRF only discharges to the Georges River in wet weather when there is insufficient capacity in the Malabar wastewater system. In addition to stormwater and other pollutant sources, this contributes to reduced water quality in the river during wet weather. The WRRF complied with all its EPL concentration limits for 2024-2025, with increasing trends in biological oxygen demand and total suspended solids attributed to accumulation in the oxidation ponds of solids from primary effluent (Sydney Water 2025).

Sydney Water has an Aquatic Monitoring Program (Sydney Water 2025) endorsed by the EPA that aims to monitor performance of WRRF discharges and quantify positive or negative impacts on the aquatic environment. In the Georges River, this program includes monitoring sites upstream and downstream of Glenfield WRRF to assess its impacts. Sydney Water is currently developing a feasibility study for including monitoring of Liverpool WRRF in this program. Challenges of impact monitoring in this location include the tidal influence (which makes it difficult to isolate WRRF impacts from other pollutant sources) and no standard methods for using estuarine invertebrates as ecosystem indicators.

Potential impacts

Construction impacts

The proposal requires excavation, temporary soil stockpiles and the storage of fuels and chemicals. The proposal has the potential to impact water and drainage from:

- sedimentation from poor site management of excavations and stockpiles
- contamination from accidental chemical and fuel spills.

The proposal requires the excavation of soils and establishment of temporary stockpiles. These activities increase the risk of sediment-laden runoff which has the potential to enter waterways and cause turbidity and sedimentation. This can result in decreased light levels for submerged aquatic vegetation and smothering of benthic organisms. Potential sedimentation impacts are assessed in section 6.2.1 above can be managed by the above mitigation measures.

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

Coastal wetlands proximity area

A portion of the proposal will occur within the Coastal Wetlands Proximity Area. Section 2.8(1) of the RHSEPP states that the “consent authority should be satisfied that the proposed development will not significantly impact on: a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or b) the quality and quantity of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

The proposal is unlikely to result in significant impacts that modify the biophysical characteristics of the area. The ecological integrity of the proximity area may be temporarily impacted where native vegetation is being removed. Measures have also been identified to restore disturbed areas progressively following works to minimise impacts upon the biophysical, hydrological and ecological integrity of coastal wetlands and proximity areas for coastal wetlands.

Mitigation measures will be implemented to assist in controlling risks to surface and ground water flows to adjacent coastal wetland areas. Mitigation measures include actions to remediate disturbed land progressively following works.

Groundwater

Impacts associated with dewatering excavations, such as aquifer supply loss or issues associated with the management of silt laden construction water will be temporary and manageable with standard safeguards.

As dewatering groundwater is needed, a WSWA is required before dewatering starts. Preliminary estimates indicate the volume of groundwater to be extracted is 0.05 ML. Additional groundwater investigations during the detailed design will confirm standing groundwater levels and groundwater dewatering calculations. The volume of dewatered groundwater will be monitored across the proposal area.

Operational impacts

Once constructed, the proposal will increase the impervious areas in the WRRF. Stormwater within the WRRF is captured in internal drainage system and pumped into the oxidation pond then pumped via SP582 into the NGRS. The increased runoff from new hardstand areas in the WRRF may have minor increase in turbidity and nutrients entering the oxidation pond and in extreme wet weather events, the Georges River. Liverpool WRRF is protected by a flood levee located near the riverbank, which plays a key role in safeguarding the site from flood events. Critical infrastructure including the HV/LV switch rooms will be designed at least 300 mm above the 1 % AEP.

The additional flows to the Western Branch Submain (WBSM) via the LAP will not result in dry weather overflows as the WBSM has sufficient available capacity. During wet weather, both the WBSM and the NGRS have sensors to ensure flows are distributed amongst both pipelines as needed until either is full, to help moderate downstream impacts and wet weather overflows throughout the system. When the NGRS is at capacity, the oxidation pond will fill up. When the oxidation pond is full, overflows will still occur into the Georges River at Kentucky Reserve downstream.

Increasing secondary treatment capacity will allow more flows to be sent down the LAP and will help to reduce the frequency and volume of wet weather discharges to the Georges River by up to 30%. In addition to the capacity upgrade, the new secondary process will also produce improved effluent quality (lower total nitrogen) subsequently improving the quality of wet weather overflow stored in the oxidation ponds. Total nitrogen concentrations are expected to decrease from a current median of about 12 mg/L to about 5 mg/L. This will reduce contaminant concentrations and reduce contaminant loads discharged to the environment during wet weather by up to 80%. The reduction in discharge volumes and contaminant loads during wet weather overflows are expected to lead to improved water quality and reduce the potential for any aquatic ecology or geomorphology impacts in these waterways.

Mitigation measures

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

Table 6-2 Environmental mitigation measures – water and drainage

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

Mitigation measures

Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills and aquatic spill kit on site for clean-up of accidental chemical/fuel spills in mapped key fish habitat. 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.
Sydney Water/the contractor will obtain a groundwater Water Supply Works Approval. The Delivery Contractor is responsible for: • providing expert hydrogeological technical information to obtain the approvals • preparing a Dewatering Management Plan • complying with the conditions of the approvals (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).
Discharge all water in accordance with Sydney Water's Water Quality Management During Operational Activities Policy (D0001667) including erosion controls, discharge rate, dechlorination, monitoring. Re-use potable / groundwater water where possible.
Dewater excavations in accordance with the Program Delivery Guidance Standard 9.1 Excavation Dewatering (ENV-GS-001).
Seek approval and discharge criteria from the relevant Sydney Water Network Area Manager prior to discharge of water to the wastewater system. Otherwise tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.
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.
Protect Groundwater Dependent Ecosystems by minimising extraction of groundwater and removal of native vegetation.

6.2.3 Flora and fauna

Existing environment

A flora and fauna assessment report was prepared by Biosis (2025) to assess the potential impacts of the proposal on flora and fauna. Findings and recommendations outlined in the flora and fauna report are

summarised below and provided in full in Appendix D.

Vegetation

Vegetation within the proposal area includes planted native and exotic vegetation, and native remnant vegetation. The vegetation within the proposal area is not classified as bush fire prone. Six vegetation types, consisting of 4 PCTs were ground-truthed in the proposal area:

- PCT 3320: Cumberland Shale Plains Woodland
- PCT 3963: Estuarine Reedland
- PCT 4023: Coastal Valleys Riparian Forest
- PCT 4025: Cumberland Red Gum Riverflat Forest.

Two threatened ecological communities (TECs) listed under the *NSW Biodiversity Conservation Act* were ground-truthed in the proposal area:

- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Endangered, BC Act)
- River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregion (Endangered, BC Act).

Although two of the PCTs are listed TECs under the EPBC Act, the vegetation on site did not meet the criteria for the listing.

No threatened flora species were recorded within the proposal area. It was assessed that threatened flora species have a low likelihood of occurring in the area.

Under Schedule 1 of the *Biosecurity Act (2015)* all private landowners, occupiers, public authorities and councils are required to control weeds on their land. Several priority weeds were identified within the proposal area including:

- Frogbit (*Limnobium laevigatum*)
- Ground Asparagus (*Asparagus aethiopicus*)
- Bridal Creeper (*Asparagus asparagoides*)
- Green Cestrum (*Cestrum parqui*)
- Chilean Needle Grass (*Nassella neesiana*)
- African Olive (*Olea europea subsp. Cuspidate*)
- Common Prickly Pear (*Opuntia stricta*)
- Fireweed (*Senecio madagascariensis*).

Threatened fauna

No threatened fauna species were observed within the proposal area. A likelihood of threatened fauna

occurrence was undertaken based on BioNet Atlas and Protected Matters Search Tool report. Three threatened fauna species were assessed as having a moderate likelihood of occurrence within 5 km of the proposal area.

- Southern Myotis *Myotis marcocarous* (Vulnerable, BC Act)
- Grey-headed Flying-fox *Pteropus poliocephalus* (Vulnerable, EPBC Act and BC Act)
- Green and Golden Bell Frog *Litoria aurea* (Vulnerable, EPBC Act and Endangered, BC Act).

Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDE) have been identified along the southern boundary of the proposal area. Areas of PCT 4025, PCT 4023, and PCT 3963 have been mapped as having a high probability of being a GDE within the study area (refer to Figure 3-1). However, these PCTs are not considered to be obligate, nor are they dependent on groundwater. Hydrology within the study area is primarily influenced by the Georges River, which is likely to provide sufficient moisture to sustain vegetation present. Although mapped as having moderate or higher potential groundwater dependence, they are unlikely to rely on groundwater to maintain ecological function in this local context.

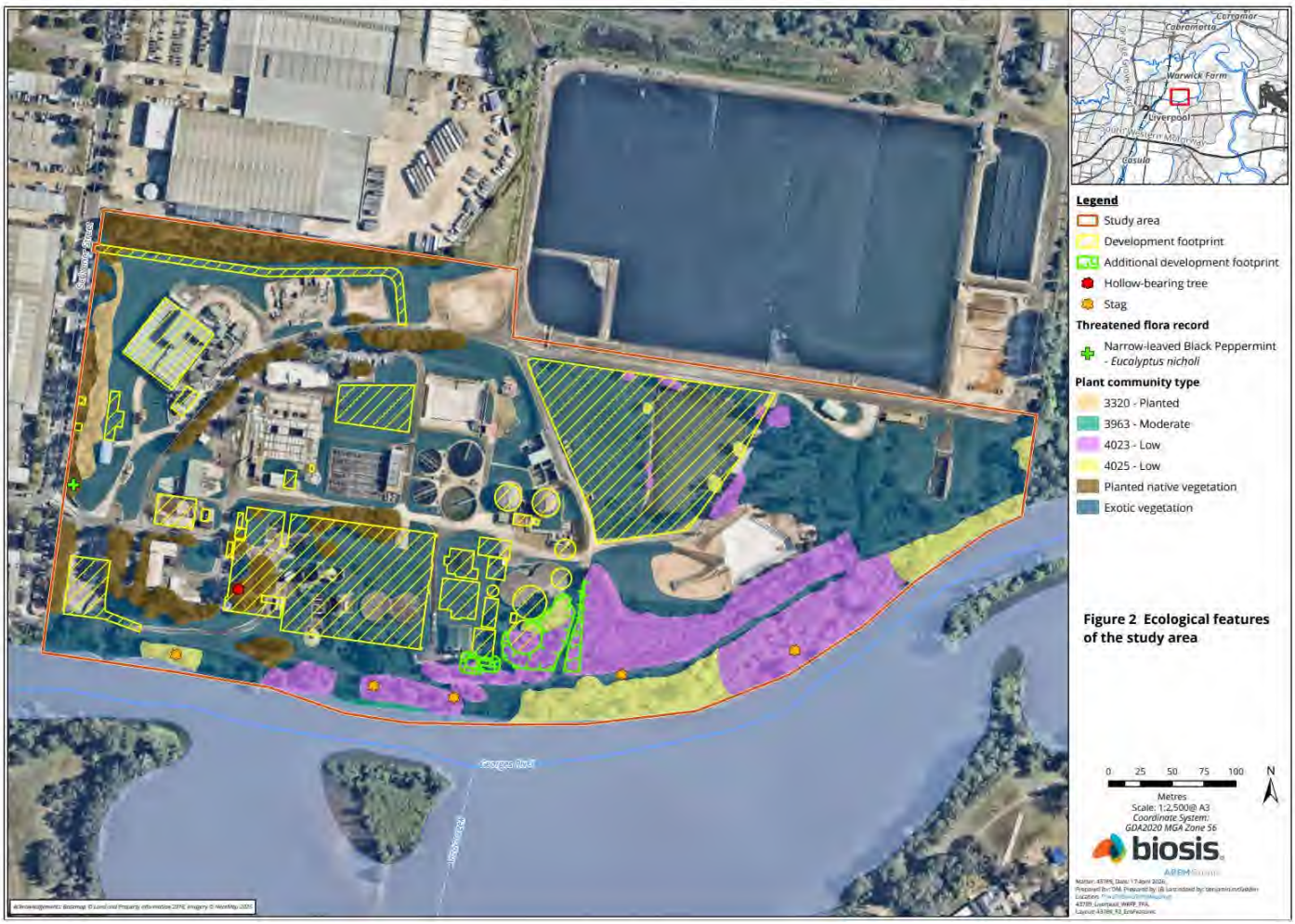


Figure 6-1 Ecological features

Potential impacts

Vegetation

It is assumed that all vegetation within development footprint will be removed, as a worst-case scenario. Table 6-3 below shows the areas of TEC impacted. The location for offsetting will be decided during detailed design.

Table 6-3 Native vegetation/TEC impact

Biodiversity Value Impacted	Total Impact	Proposal Impact	Offset Multiplier	Offset required
Moderate impact – larger scale impacts (> 100 m^2), that are not considered significant (e.g. removal of native vegetation associated with new infrastructure projects).				
PCT 4023 PCT 4025 **Total TEC**	0.23 ha 0.09 ha **0.32 ha**	Removal of native vegetation	3:1	0.96 ha
Planted native vegetation	0.25 ha	Trimming or removal of native vegetation	2:1	0.5 ha
Hollow bearing trees	1	Trimming trees containing habitat values or removal of habitat values	2:1	2

ToS for impacts to the TECs were assessed in accordance with section 7.3 of the BC Act. The ToS concluded that the proposal will not have a significant impact and therefore would not trigger the Biodiversity Offset Scheme and a SIS is not required (refer to Appendix D).

Threatened fauna

Direct impacts from vegetation clearing and trimming will result in the loss of potential habitat for threatened fauna species with the known or moderate likelihood of occurrence in the proposal area. Additionally, the proposal will remove one hollow bearing tree. This will be offset in accordance with Sydney Water's Biodiversity Offset guideline (SWEMS0019.13). The vegetation removal will have minor impact on fauna species.

- **Southern Myotis** – The proposal will remove 0.57 ha of vegetation comprising of marginal foraging habitat. The Southern Myotis is a highly mobile species influenced by suitable foraging and breeding habitat. The removal of vegetation will not fragment the vegetated riparian corridor associated with the Georges River and will not impede the ability for Southern Myotis to freely forage over the water course. More suitable foraging habitat occurs over the Georges River adjacent to the site. The proposal is not likely to significantly impact the Southern Myotis within the study area or wider locality.
- **Grey-headed Flying-fox** - The proposal will remove 0.57 ha of potential foraging habitat for the Grey-

headed Flying-fox. Whilst native vegetation is considered important to this species' overall national recovery and survival, habitat removal for the proposal is not considered critical to roosting or breeding and is not considered critical to the species local survival. Additionally, habitat removal will not become fragmented to the point that Grey-headed Flying-fox are isolated. The proposal is unlikely to result in a significant impact on Grey-headed Flying-fox.

- **Green and Golden Bell Frog** - The sludge lagoon and grassy lawns were identified as marginal breeding habitat and dispersal habitat for the Green and Golden Bell Frog. The proposal area occurs in a modified and fragmented landscape which has been impacted by historical land use and ongoing water treatment operations. Additionally, the closest record occurring within a known extant Green and Golden Bell Frog population approximately 3 km from the proposal area. The proposal is unlikely to have a significant impact on the Green and Golden Bell Frog.

Assessments of significance under the BC Act and EPBC Act were carried out for threatened fauna species with known or moderate likelihood of occurrence (Appendix D). The assessments found that no significant impact to threatened fauna species were likely.

Weeds

There is high potential for weed species to be spread through construction machinery movement, as well as soil disturbance and transportation. Multiple weeds (including WoNS) were recorded within the proposal area and are at higher risk of further invading the local plant communities. The weed spread will be managed with the implementation of the mitigation measures below.

Additional management measures for Frogbit (*Limnobium laevigatum*) are discussed in Section 6.2.7.

GDEs

As discussed above, the mapped GDEs are unlikely to rely on groundwater to maintain ecological function in this local context. As such, the minor and temporary groundwater drawdown from dewatering activities is unlikely to affect GDEs.

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 6-4 Environmental mitigation measures – flora and fauna

Mitigation measures
Provided it is essential for delivering the project, Sydney Water's Project Manager can approve the following vegetation removal and tree trimming, without additional environmental assessment (but only after consultation with the Environmental and Community Representatives and affected landowners). Sydney Water considers vegetation removal in these circumstances has minimal environmental impact. • Any minor: - vegetation trimming or - removal of exotic vegetation or

- removal of planted native vegetation

  where the vegetation is not a threatened species (including a characteristic species of a threatened community or population), heritage listed, in declared critical habitat or in a declared area of outstanding biodiversity value.

- Any removal of remnant vegetation where there is no net change to environmental impact (e.g. a different area of vegetation is removed but the total area is the same or less than assessed in the EIA).

Written explanation of the application of this clause (including justification of the need for trimming or removal and any proposed revegetation) should be provided when seeking Project Manager approval. Any impacts to native vegetation and trees must be offset in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).

Offset residual impacts to native vegetation and trees in accordance with the Biodiversity Offset Guideline (SWEMS0019.13).

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

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

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

Protect trees in accordance with the requirements of Australian Standard 4970-2009 for the Protection of Trees on Development Sites. Do not damage tree roots unless absolutely necessary, and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone.

Retain dead tree trunks, bush rock or logs in-situ unless they are in the proposal area and moving is unavoidable. Reposition material elsewhere on the site or approved adjacent sites. If native fauna is likely to be present, a licenced ecologist should conduct a pre-clearance inspection and undertake fauna relocation.

Inspect vegetation for potential fauna prior to clearing or trimming. If fauna is present, or ecological assessment has determined high likelihood of native fauna presence (including hollow bearing trees), engage WIRES or a licenced ecologist to inspect and relocate fauna before works.

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.

When dewatering the sludge lagoon, engage a licensed ecologist to undertake fauna relocation (e.g. turtles, frogs, etc) into an appropriate nearby habitat.

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.

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:

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

Minimise impacts on native vegetation in non-certified areas and native vegetation retention areas. Options to consider where feasible include:

- alternative construction methodologies (under bore vegetation and waterways, compressed construction corridors)
- avoiding impact to hollow bearing and habitat trees.

Vegetation removal must not occur until:

- the area to be removed has been physically delineated
- the Contractor's Environmental Representative has confirmed consistency with approval documentation
- pre-clearing survey of hollow bearing tree
- written authorisation to commence clearing from Sydney Water Project Manager.

Identify the locations of the retained TECs as No-Go zones during the site induction. This should include discussion of the implications of the BC Act should there be an incident that impacts the TECs.

Vegetation to be retained will be protected in accordance with the requirements of *Australian Standard 4970-2025 for the protection of trees on Development Sites* (council of Australian Standards 2025).

6.2.4 Heritage

Existing environment and potential impacts

Aboriginal heritage

[redacted]

Non-Aboriginal heritage

The proposal is partially within the boundary of the Liverpool Sewage Treatment Plant heritage item listed on Sydney Water's S170 Heritage & Conservation Register as item number 4573723. A Local Heritage Item Impact

Assessment was undertaken by a Sydney Water Senior Heritage Adviser on 25 June 2024. Additional heritage advice was sought on the 12 December 2025, refer to Appendix C, which confirmed the assessment outcome from 2024.

The Local Heritage Impact Assessment found that the significance of the heritage item includes the establishment and subsequent upgrading and amplification of the Liverpool Sewage Treatment Plant, and its evidence of the extent and historic expansion of urban settlement in the district. The proposal is a continuation of the same and will help to conserve the primary heritage values of the Liverpool Sewage Treatment Plant as the wastewater treatment role is preserved. As such, the proposal will have a minor or inconsequential impact on the heritage values.

Mitigation measures

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

Table 6-5 Environmental mitigation measures – heritage

Mitigation measures
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.
A basic photographic recording is required before the works commence and after the works are completed. A copy of the basic photographic recording must be lodged with Sydney Water's heritage staff in Environment and Heritage, in WES, to enable the s.170 entry to be appropriately updated, if/as required in section 170(5) of the *Heritage Act 1977*.
Annotated Nearmap aerials that show the changes at the completion of works must also be submitted to Sydney Water's heritage staff in Environment and Heritage, in WES, to enable the s.170 entry to be appropriately updated, if/as required in section 170(5) of the Heritage Act 1977.

6.2.5 Noise and vibration

Existing environment and potential impacts

Liverpool WRRF is located within a mixed urban and commercial setting. It is bordered by the Georges River to the south and surrounded by light industrial and commercial properties to the north and west. Noise around the proposal area is influenced by the industrial area and road traffic noise from the Hume Highway, Newbridge Road and local streets.

The *Draft Construction Noise Guideline* (CNG) (EPA, 2020) refers to sensitive receivers, being people or institutions who are of heightened sensitivity to noise pollution. This can include residences, educational facilities, hospitals, aged care facilities and/or childcare facilities.

Nearby sensitive receivers of the proposal are shown in Table 6-6 below. The WRRF is on the bank of the Georges River and is bordered by vegetation blocking the view from receivers along Georges River and along Scrivener Street. The nearest residential receivers are across the Georges River, blocked from view of the proposal as there is vegetation screening on both the WRRF site and partial screening on the southern bank of the Georges River.

Table 6-6 Sensitive receivers

Receiver	Address	Proximity to Liverpool WRRF
Rosedale Oval	Stroud Avenue, Warwick Farm	600 m north
Liverpool Hospital	Goulburn Street, Liverpool	850 m west
Haigh Beach/Park	Bridges Road, Chipping Norton	250 m south
Residential receivers	Quota Avenue, Chipping Norton Whelan Avenue, Chipping Norton Manning Street, Warwick Farm	250 m south/ 600 m north
Quota Park	Quota Avenue, Chipping Norton	350 m south
Thomas Moore Park	Whelan Avenue, Chipping Norton	400 m south east

Construction 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 impacts is low-medium risk.

The TfNSW Construction and Maintenance Noise Estimator was used to support the quantitative noise assessment. Taking into consideration the type of development surrounding the proposal area, the representative noise environment has been classified as R2 noise category based on the Transport for New South Wales (TfNSW) Construction Noise Estimator Tool (version 11/03/2026). Within the R2 noise category the rating background level (RBL) for residential receivers is assumed to be:

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

The modelled scenarios comprised of the following inputs:

- Day work, 13.5 tonne excavator with hammer, behind solid barrier and across open water and developed areas.

Predicted worst case noise impacts during day works are shown in Figure 6-2 and Figure 6-3. As the work is contained within the Liverpool WRRF, the sensitive receivers most likely to be impacted are expected to be

limited to those listed in Table 6-6. Over the 36 months of the proposal construction the noise levels will generally be less than worst case impacts shown in Figure 6-2 and Figure 6-3.

There are no sensitive residential receivers within the predicted distances for worst-case noise impacts during day works. Therefore, no residents are expected to be impacted by the day works.

Liverpool Hospital is outside the affected distance for worst-case noise impacts and is unlikely to be impacted by noise from the proposal. The northern section of Haigh Beach and park (passive recreation) is within the affected noise distance of the works, where noise impacts are predicted to be 10-20 dB(A) above background levels. Industrial areas within 25 m of the proposal are predicted to be highly affected by the proposed noise impact. Figure 6-2 and Figure 6-3 display recommended mitigation measures at different distances. These are to be considered by the community team and offered where appropriate.

There is potential for traffic noise to impact residents on Manning, Priddle and Scrivener Street. These streets are adjacent to the railway line and are off the Hume Highway. The street provides access to the industrial area to the south and is subject to large vehicle movements daily. Impacts to residents can be adequately managed through the mitigation measures listed below.

Vibratory equipment will be used during construction of the proposal. No vibration impacts are expected during construction as there are no sensitive structures within the minimum working distance where vibratory equipment can cause cosmetic damage.



Figure 6-2 Predicted noise impacts - no residential receivers within 210 m

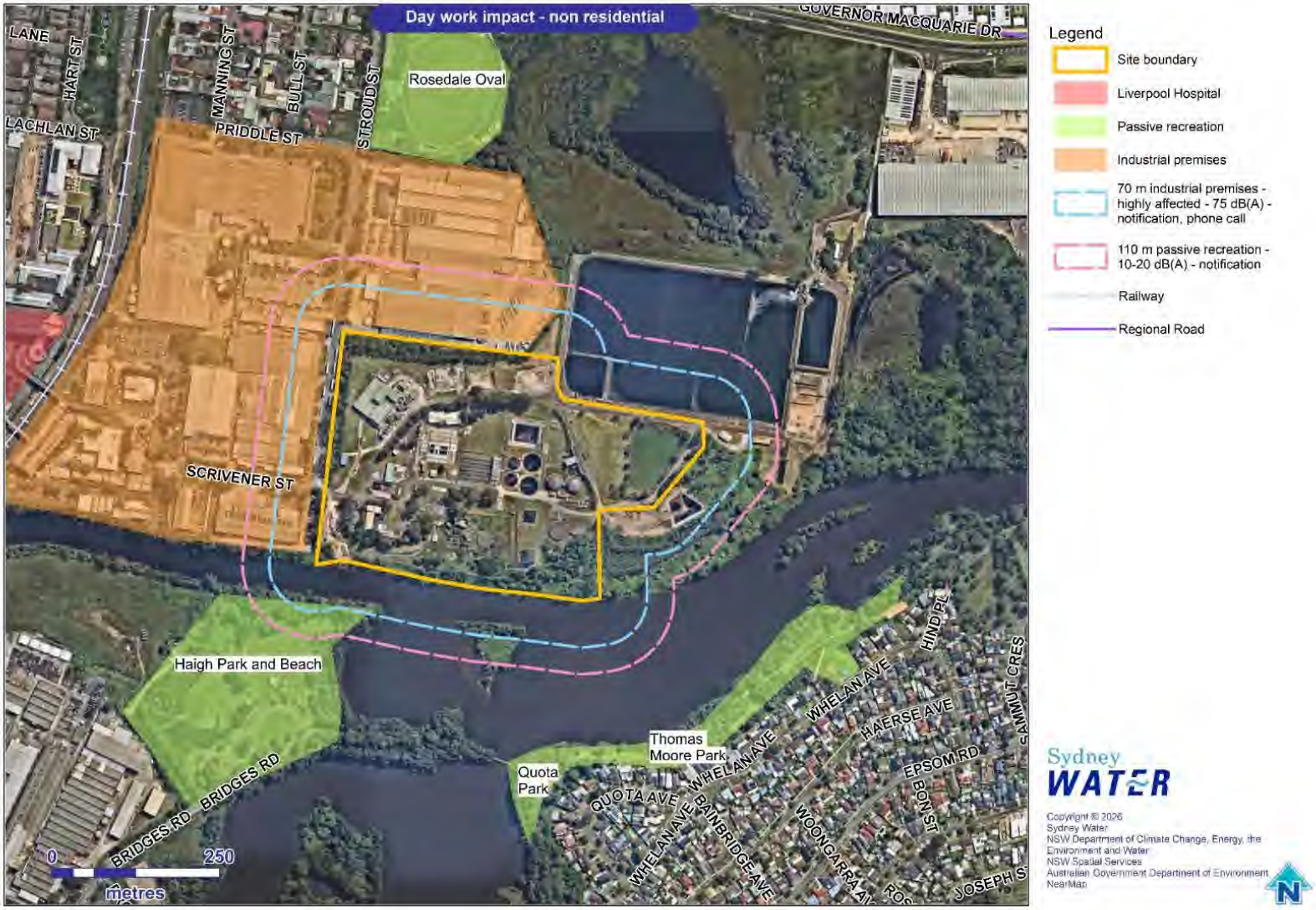


Figure 6-3 Predicted noise impacts – non residential

Operational impacts

During operation it is expected that there will be a minor increase in noise due to the increased size and capacity of the Liverpool WRRF. Operational noise modelling will be conducted during detailed design once final equipment selection is confirmed to confirm compliance with EPA's Noise Policy for Industry (NPfI, 2017).

No vibration impacts are anticipated during operation.

Mitigation measures

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

Table 6-7 Environmental mitigation measures – noise and vibration

Mitigation measures
Works must comply with the Draft 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.

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. This should:
  ○ describe the nature of works, the expected noise impacts, approved hours of work, duration, complaints handling and contact details
  ○ determine need for, and appropriate timing of respite periods (e.g. times identified by the community that are less sensitive to noise such as mid-morning or mid-afternoon for works near residences).
• implement a noise complaint 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 (e.g. 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 (e.g. generators away from sensitive receivers, site set up to minimise use of vehicle reversing alarms, site amenities and/ or entrances away from noise sensitive receivers)
• use natural landforms/ mounds or site sheds as noise barriers.
Schedule noisy activities around times of surrounding high background noise (local road traffic or when other noise sources are active).

Mitigation measures

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

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

Consider less vibration intensive methodologies where practicable and use only the necessary sized and powered equipment.

Operation noise modelling will be undertaken during detailed design to verify compliance with the EPA's Noise Policy for Industry.

Operational noise monitoring will be undertaken during commissioning of the completed works to make sure operational noise levels for the WRRF have been achieved.

6.2.6 Air and energy

Existing environment

The proposal is in an industrial area. Potential sensitive receivers include Liverpool Hospital (850 m west), Rosedale Oval (600 m north), residential receivers (600 m north and 250 m south) and those using recreational areas along the Georges River (250m-400 m south).

Liverpool WRRF has been subject to odour complaints from the community. There are currently existing OCUs that capture, redirect and treat odour however they do not service all equipment. A PRP was applied to the Malabar EPL in 2023 to reduce odour within the Malabar Sewage Treatment System. The oxidation pond has been identified as a contributor to the odour issues as it receives settled wastewater from Liverpool WRRF when peak dry weather flows exceed the primary effluent pumping station capacity or network flows into the NGRS are high. Effluent from Glenfield WRRF is discharged into the oxidation pond once a week to flush the pond and reduce the odour risk. However, at times this secondary effluent from Glenfield WRRF is of poorer quality and can be odorous itself. An objective of the proposal is to reduce odour impacts and meet the outcomes of the PRP.

Liverpool WRRF has a cogeneration unit which turns waste methane gas (biogas) into electricity and heat. Biogas is naturally created during wastewater treatment which is converted into energy which helps power Liverpool WRRF. This process currently produces 548 kW per hour.

Potential impacts

Construction impacts

The proposal will potentially result in air quality impacts from:

- dust generated during construction e.g. excavation and stockpiling
- dust generated by construction vehicles travelling on disturbed/ unsealed access routes
- emissions from construction machinery, equipment and vehicles
- odour associated with construction work such as upgrades to primary treatment, biosolids treatment and dewatering the sludge pond.

These air quality impacts could affect surrounding sensitive receivers. Impacts will depend on wind direction and strength and distance of sensitive receivers to the source. Excavation will happen progressively to minimise disturbed areas. Standard mitigation measures such as dust suppression and covering loads will further reduce potential impacts.

Vehicle and equipment emissions have the potential to cause impacts where they are in place for longer, such as pits and compounds. By implementing the mitigation measures such as maintaining vehicles and switching off equipment when not in use, impacts are expected to be minor.

There may be minor odour impacts during desludging activities. However, odour impacts are not anticipated to be significant or exceed odours emanating from the plant during normal operations.

The delivery contractor will develop a Sustainability Management Plan (SMP) to document the sustainability initiatives to be adopted during design, construction and operation of the proposal including:

- green house gas estimator
- implement renewable energy sources
- demolition waste re-use
- spoil re-use
- biodiversity and nature positive considerations.

Construction activities will be temporary and will not significantly increase Sydney Water's greenhouse gas (GHG) emissions.

Operational impacts

The oxidation ponds have been identified as a key contributor to odour from the WRRF. During operation the increased primary and secondary treatment capacity would reduce frequency and volume of bypasses to the oxidation pond from 99% of all wet weather events to 2%. Primary treated effluent will no longer be stored in the oxidation ponds during dry weather operation and most wet weather events. This is expected to reduce the frequency and duration of odour from this source.

Although the proposal includes new odour generating infrastructure, all structures will be fully enclosed with odour directed to OCUs. New OCUs will have increased capacity to cover new and existing infrastructure.

Odour modelling will be done during detailed design to confirm operational odour would be reduced.

The proposal would require increased energy to operate Liverpool WRRF. This would marginally increase Sydney Water's total energy use. The proposal would be operated in accordance with energy use procedures that apply to Sydney Water's existing network. The proposal will replace like for like the existing cogeneration unit. The output will be the same as current operation levels producing 548 kW per hour.

The installation of solar energy will be investigated during detailed design to reduce the proposal's energy consumption.

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 6-8 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 (e.g. minimise the number of open access chambers, close maintenance holes overnight.)
Ensure odour control measures are available and ready to use during the works, for example: • Conduct odour-generating activities or use odour-generating equipment during the least sensitive time of day or under the most favourable weather conditions. For example, wait until the wind is blowing away from sensitive receptors before flushing a sewage system. • Where a number of odour generating activities may be undertaken, schedule them so they occur separately rather than concurrently. Notify sensitive receivers likely to be impacted by odour.
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.

Mitigation measures

Cover all transported waste.
Odour modelling will be undertaken during detailed design to confirm operational odour has been reduced.
During detailed design, carry out the following: • estimate the proposal's carbon footprint and GHG emissions • consider low carbon alternatives and construction materials • consider opportunities to reduce GHG emissions • consider opportunities for the installation of solar energy systems.
Apply the project sustainability principles during detailed design, construction, operation and procurement where possible. Prepare a Sustainability Management Plan to outline how sustainability requirements will be met during the design, construction and operation of the proposal.

6.2.7 Waste and hazardous materials

Existing environment

Our corporate objectives include to be a resource recovery business with an increasing portfolio of circular economy products and services. This includes reducing waste through recycling and re-use and encouraging our suppliers to minimise waste. The delivery contractor will manage materials in accordance with the 'avoid and reduce, reuse, recycle, recover, recover energy, treat and dispose' waste hierarchy. This will be documented in the Waste Management Plan in the CEMP.

Material excavated on site for a frogbit weed burial pit was found to contain non-friable asbestos containing material (ACM) (refer to Figure 3-1). Remediation was achieved through capping of contaminated soils (205 mm-255 mm below ground level) and offsite disposal. Management of the capped asbestos impacted soil is outlined in the contaminated land management plan (CLMP) (2025). The frogbit weed below the capped asbestos in soil must not be disturbed as it forms part of a Biosecurity Order issued to Sydney Water on 8 November 2024 by Liverpool Council.

The following hazardous materials have been identified at Liverpool WRRF:

- lead paint/lead contaminated dust
- ACM
- polychlorinated biphenyl
- ozone depleting substance
- synthetic mineral fibres.

Potential impacts

Construction impacts

The proposal will generate about 40,000 m^3 of spoil to facilitate the construction of the AGS. Where spoil is determined to be suitable and uncontaminated, it will be reused onsite to fill the sludge lagoon. If spoil cannot be reused it will be tested and classified according to Waste Classification Guidelines (NSW EPA, 2014) and disposed of at an appropriate facility. This will be documented in the Waste Management Plan or CEMP.

It is not expected that frogbit is present in the sludge lagoon. If identified, the frogbit will be extracted, dried out and bagged, as it cannot be moved off site in accordance with the Biosecurity Act. Any frogbit would be buried near the existing burial pit at the WRRF and the CLMP updated.

The proposal will generate waste associated with the demolition of the existing outloading building, OCU, digesters and heating building. The contractor will seek opportunities to reduce, recycle and reuse materials.

The proposal will generate vegetation and other general construction waste. The construction footprint includes the removal of up to 0.25 ha of native/exotic vegetation and 0.32 ha of vegetation associated with a PCT. Weedy and non weedy waste will be managed as separate waste streams to avoid cross contamination.

There is a risk of encountering the hazardous materials in the buildings and structures requiring demolition and refurbishment. Should the work uncover any hazardous or contaminated material, it will be managed through an unexpected finds procedure.

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

Operational impacts

The increase in secondary treatment capacity will increase the biosolids production from about 2500 tonnes per year to 4500 tonnes per year by 2036. The increase in biosolids will not affect the disposal method, biosolids will continue to be applied through direct land application. During operation the new odour control method will use activated carbon. This will generate an additional 100 cubic metres of activated carbon waste every 5 years which will be deposited to landfill.

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 6-9 Environmental mitigation measures – waste and hazardous materials

Mitigation measures
Prepare a Waste and Resource Recovery Plan (WRRP) to appropriately manage and classify any materials including soils, construction/demolition wastes and associated stockpiles

Mitigation measures

The plan will be prepared by the Delivery Contractor (or nominated environmental consultant) and approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Contamination and Hazardous Materials team.

The WRRP should include:

- expected waste types and their location
- 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 offsite reuse, offsite recycling and / or offsite disposal locations / facilities
- legislative compliance requirements
- consideration of future maintenance restoration.

Manage waste in accordance with relevant legislation and maintain records to show compliance e.g. waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.

Provide adequate bins for general waste, hazardous waste and recyclable materials.

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.

Review existing HBM report and implement relevant safeguards. Conduct hazardous materials prior to commencement where works could impact hazardous materials not surveyed in previous HBM assessments.

Manage asbestos in line with Sydney Water's Asbestos Management – Minor Works procedure, Document Number 746607 and SafeWork NSW requirements. Contact Sydney Water Project Manager (who will consult with Contamination and Hazardous Materials team).

The Contractor 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 Contamination and Hazardous Materials team. The plan must identify the type and location of known/potential contamination, management requirements (waste minimisation, waste

Mitigation measures
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 lead paint in accordance with the WHS Regulation (2017) Part 7.2 and the Australian Standard Lead Paint Management Guidelines. Consult with Contamination and Hazardous Materials team where works involve removal of lead-based paint. Develop a Lead Management Plan if required.
If frogbit is identified in the sludge lagoon it will be extracted, dried out and bagged as it cannot be moved off site in accordance with the Biosecurity Act. Frogbit will be buried near the existing burial pit within the WRRF and the CLMP will be updated.

6.2.8 Traffic and access

Existing environment

Access to Liverpool WRRF is located off Scrivener Street, Warwick Farm and is accessed via the Hume Highway (state road) which connects to council managed roads. There are a small number of residential properties located along local roads that provide access to the Scrivener Street. Scrivener Street is in an industrial area and services several businesses such as Direct Freight Express and Visy. These businesses require frequent large vehicle movements for delivery and daily operation. Scrivener Street has a footpath on its western side and is not serviced by public transport.

There is also an existing access track from Governor Macquarie Drive along the eastern boundary of the Liverpool WRRF.

Potential impacts

Site establishment works (mid 2026)

Activities such as movement of equipment and vehicles, and construction activities have the potential to impact traffic and access. During site establishment there will be a minor increase in heavy and light vehicle movements along local roads. Indicative traffic volumes include about 20 heavy and 40 light vehicles per shift equating to 2 heavy vehicle and 4 light vehicle movements per hour. Heavy vehicles will primarily transport material and equipment. These local roads currently service the residential and industrial areas and already experience regular heavy vehicle movements from businesses in the industrial area.

A secondary construction access road will be set up at the northern boundary of the proposal area and accessed from Scrivener Street. This access road will service contractors during construction, reducing traffic impacts to daily operation of the WRRF. Liverpool WRRF site is an operational plant and consultation with onsite personnel will occur to ensure traffic impacts within the site are minor. The secondary access road will reduce 2-3 available street parking space for 3 years to accommodate the driveway. During the works all vehicles will park within the construction compounds. No impacts to property access or public transport are expected.

During construction, the proposal may temporarily impact access to businesses along Scrivener Street to allow the movement of heavy vehicles entering Liverpool WRRF. Local council and businesses will be consulted to approve traffic management plans (TMPs).

Peak construction (mid 2027)

During peak construction indicative traffic volumes are expected to be about 100 heavy vehicles and 280 light vehicles per day. An existing access track to the Liverpool WRRF is available from Governor Macquarie Drive and investigations are underway into the potential for it to be upgraded so it is suitable for use during peak construction periods. Use of this access route would reduce construction traffic volumes on local residential roads leading to Scrivener Street. A Traffic Impact Assessment will be undertaken during detailed design to assess these peak vehicle movements and the upgrade of this access track (if feasible). This will be incorporated in an addendum to this REF. Any mitigation measures will be incorporated into the CEMP to minimise impacts to the surrounding industrial area and local traffic network.

Operational impacts

During operation there will be one additional heavy vehicle movement per week to accommodate the increased volume of biosolids produced by the WRRF. The increase in heavy vehicle movements is not expected to impact residents and businesses in the industrial area.

Mitigation measures

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

Table 6-10 Environmental mitigation measures – traffic and access

Mitigation measures
Prepare a Traffic Management Plan in consultation with the relevant traffic authority.
Develop management measure to minimise traffic impacts near businesses by consulting with them (e.g. no major materials deliveries at shift start and end times etc).
Engage and notify Liverpool WRRF site team on traffic movements and proposed works.
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.
Consult with the relevant traffic authority about managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.
A Traffic Impact Assessment will be undertaken during detailed design. Any mitigation measures will be incorporated into CEMP. Vehicle movements must not exceed the indicative movements identified in this REF for site establishment works until further assessment is completed and approved in an addendum REF.

6.2.9 Social and visual

Existing environment

A visual impact assessment report was prepared by Acciona (2026) to assess the potential impacts of the

proposal on visual amenity. Findings and recommendations outlined in the visual impact assessment are summarised below and provided in full in Appendix E.

The proposal is in an industrial area with industrial warehouses to the north and west and bordered by the Georges River to the south and east. Sensitive receivers of the proposal include:

- Residential receivers - There are residential receivers 250 m south and 600 m north of the proposal. Residents to the south are on the southern side of the Georges River and are mostly screened from the WRRF by vegetation along the river corridor. The residents north of the proposal are in a mixed residential and commercial area. Several large industrial buildings block the view of the WRRF from the residential receivers.
- Public recreation users – There are about 3 parks along the southern side of the Georges River about 250-400 m from the proposal. The parks are connected by a walking track that follows the southern river bank, Moore Lake and Anzac Creek. The WRRF is mostly blocked from view by vegetation along the Riverbank. There are areas of sparse vegetation on the southern bank and pedestrian footbridge where the WRRF area can be seen.
- Warwick Farm racecourse – The racecourse is about 850 m north of the proposal. It is a locally listed heritage item. The northern area of the WRRF can be viewed from the racecourse. Horseshoe Pond and surrounding native vegetation in the northern area of the WRRF provide effective screening, limiting views from the racecourse.
- Industrial areas – There are industrial areas immediately north west of the proposal and 900 m north east of the proposal. Businesses adjacent to the proposal area include a mix of large and small businesses such as Visy (produces packaging), Direct Freight Specialists and smaller businesses such as Australia Tile Wholesale and MTA Euro Parts. The WRRF is consistent with the surrounding industrial character. Vegetation within the WRRF along Scrivener Street screens the WRRF to the adjacent industrial buildings.
- Liverpool Hospital- The hospital is about 850 m west of the proposal. The hospital is adjacent to the railway line, car park and industrial area. Due to distance and other large industrial buildings the WRRF is obscured from view.
- Liverpool Boys High School – The school is 800 m from the proposal area. Due to distance and large industrial buildings, the WRRF would be screened from the school.

The extent of potential visibility from a given viewing location was identified using topographical data and Google Earth in a visual envelope map (VEM). The VEM identified receivers within 1 km that could be impacted by the proposal. It was found that due to the presence of buildings and tree cover, receivers within 0.5km radius were most likely to experience visual impacts from the proposal. Up to 12 viewpoints were identified in the VEM, as shown in Figure 6-4 below.



Figure 6-4 Aerial view of the Visual Envelope Map (VEM) and key viewpoints

Potential impacts

The potential social impacts from noise, vibration, traffic, air quality and access are considered in the sections above. The proposal is within the Liverpool WRRF site and is in keeping with the existing land use. During construction, there may be temporary impacts to visual amenity for surrounding receivers through the increased presence of heavy equipment, machinery and vehicles. Vegetation along the Georges River will screen most of the proposal from public in recreational and residential areas to the south of the proposal.

While some vegetation clearing is required, the proposal has been designed to minimise clearing as far as practicable. We will offset vegetation removal impacts in accordance with the mitigation measures in Section 6.2.3.

The proposal will require new permanent above ground structures. Structures such as the AGS tanks and gas storage (up to 16 m high) will be of similar height and scale to existing infrastructure (up to 14.5 m high) within the WRRF. These structures will be blocked from receivers to the south by vegetation along Georges River. The

proposal will construct 2 new digesters about 22 m high, which has the potential for visual impacts to surrounding receivers.

Each viewpoint was assessed according to the sensitivity of the receptor and magnitude of the change during construction, and operation at day one, year one and at year 10 (representing the study area with vegetation removed and mature planted vegetation). These factors were combined to provide a visual impact rating at each stage of the proposal. A summary of the viewpoint assessments is provided in Table 6-11 below.

Table 6-11 Key viewpoint visual impact summary

Key viewpoint	Sensitivity	Magnitude	Visual impact	Visual impact (1 year)	Visual impact (10 years)
Warwick Farm Racecourse	High	Low	Moderate	Low	Negligible
Haigh Park	High	Negligible	Negligible	Negligible	Negligible
Moore Lake Footbridge	Medium	High	Moderate	Moderate	Moderate-low
House 1	Medium	High	Moderate	Moderate	Moderate-low
House 2	Medium	High	Moderate	Moderate	Moderate-low
Hospital	Medium	Low	Moderate-low	Low	Low
School	Medium	Negligible	Negligible	Negligible	Negligible
Whelan Avenue	Medium	Negligible	Negligible	Negligible	Negligible
Gliders Logistic Warehouse (E1)	Low	Negligible	Negligible	Negligible	Negligible
Scrivener Street (E2)	Low	Negligible	Negligible	Negligible	Negligible
Overall visual impact of the project			**Moderate**	**Moderate-low**	**Low**

A total of 3 viewpoints were identified as the most impacted by the proposal with a moderate visual impact rating with medium sensitivity and high magnitude. These include 2 houses (House 1 and House 2) and Moore Lake footbridge on the southern side of the Georges River.

Visualisations of the digesters from these viewpoints were created to show the effects of the mitigation measures. They show:

- pre-construction (April 2026)
- immediately after construction with no mitigation measures
- 1 year after construction (or before project handover with Sydney Water operations) with the digesters painted environmental green
- 10 years after construction with established vegetation restoration.



Figure 6-5 House 1 view pre construction



Figure 6-6 House 1 view after construction (red arrow shows location of digester)



Figure 6-7 House 1 view 1 year after construction (or before project handover) (red arrow shows location of digester)



Figure 6-8 House 1 view 10 years after construction (red arrow shows location of digester)



Figure 6-9 House 2 view pre construction



Figure 6-10 House 2 after construction (red arrow shows location of digester)



Figure 6-11 House 2 view 1 year after construction (or before project handover) (red arrow shows location of digester)



Figure 6-12 House 2 view 10 years after construction (red arrow shows location of digester)



Figure 6-13 Moore Lake footbridge pre construction



Figure 6-14 Moore Lake footbridge after construction (red arrow shows location of digester)



Figure 6-15 Moore Lake footbridge 1 year after construction (or before project handover) (red arrow shows location of digester)



Figure 6-16 Moore Lake footbridge 10 years after construction (red arrow shows location of digester)

As discussed in Table 6-12 the proposal without mitigation has a moderate visual impact. The number of affected observers is limited to the 2 houses and recreational users of the pedestrian footbridge. Painting the digesters environmental green has an immediate benefit by blending into the natural landscape, reducing the visual impact to moderate-low. Revegetation around the digesters will reduce the visual impact to low after 10 years.

The proposal will provide a positive social benefit by adding resilience to the wastewater supply in the area and ensure that Liverpool WRRF water meets Sydney Water's quality standards. The proposal will reduce odour by upgrading odour control systems and increasing capacity of the WRRF. This will result in improved air quality by minimising odour generation, higher water quality in the oxidation ponds and Georges River and less dry weather and wet weather overflows.

Table 6-12 Overall visual impact

Visual assessment	Sensitivity and magnitude of change	Figures	Overall visual impact
After construction without mitigation	The scale and location of the digesters make them prominent in the landscape. Only 2 houses and recreational users of the footbridge experience a moderate-high level of impact. The number of affected observers is small.	Figure 6-6 Figure 6-10 Figure 6-14	Moderate
Operation day 1 (painting digesters)	Painting the digesters has an immediate benefit of blending the digesters in with the surrounding vegetation. They are still visible but less prominent in the landscape.	Figure 6-7 Figure 6-11 Figure 6-15	Moderate-low

Operation 10 year (established revegetation)	The establishment of perimeter vegetation around the site will gradually screen the view of the digesters reducing the visual impact on the surrounding receivers.	Figure 6-8 Figure 6-12 Figure 6-16	Low

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 moderate.

Table 6-13 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.
Minimise visual impacts (e.g. retain existing vegetation where possible).
Direct artificial light away from sensitive receivers where possible (i.e. residents, fauna or roadways).
Maintain work areas in a clean and tidy condition.
Prior to operational completion the digesters will be painted environmental green.
Landscape the area around the digesters to minimise visual impact.

6.2.10 Cumulative and future trends

Potential environmental impacts

A search of the NSW Department of Planning, Housing and Infrastructure Major Projects register and Liverpool Council Development Application tracker was undertaken on 18 December 2025. Works within 1 km of the proposal include construction of a new medical research facility 850 m west of the proposal on the corner of Forbes and Campbell Streets. Cumulative impacts are not expected, as the proposal is located on the other side of the train line.

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

- higher temperatures
- decreased annual rainfall
- longer dry periods and more extreme weather events such as high intensity storms and bushfires.

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

- it is largely outside of bushfire prone land
- a small amount of vegetation removal is required which is unlikely to change bushfire risk
- it is largely outside of flood prone land
- impervious areas will increase following completion of construction, and stormwater design has been considered in order to mitigate any contribution to flooding.

The proposal will reduce impacts from increased intense storms and wet weather events by increasing secondary treatment capacity at Liverpool WRRF. Increased capacity will mean more ability to capture and treat higher volumes of wastewater during wet weather events so primary effluent isn't discharged into the environment when capacity is reached.

Mitigation measures

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

Table 6-14 Environmental mitigation measures – cumulative and future trends

Mitigation measures
Sydney Water to coordinate works (including truck movements) within the Liverpool WRRF to minimise impacts to the surrounding area.

6.2.11 General environmental management

Table 6-15 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 site for the EIA and has no net additional environmental impact or
- is outside the site 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.

Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should specify licence, approval and notification requirements. Before starting work, all project staff and contractors will be inducted in the CEMP.

The CEMP must be readily available on site and include a site plan which shows:

- go/no go areas and boundaries of the work 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 delineation of 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 (e.g. 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 (e.g. *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.

7 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of the Liverpool WRRF Upgrades. The proposal is required to ensure the Liverpool WRRF can service current and future growth, meet wet weather EPL discharge limits, enable increased network capacity and ensure odour management needs are addressed.

The main potential construction environmental impacts of the proposal include impacts to biodiversity and waste and hazardous material. During operation the main potential environmental impacts will be to visual amenity. The benefits of the proposal are associated with improved air quality by minimising odour generation, improvement to the quality of wet weather releases to Georges River and social benefit by accommodating growth and providing a resilient wastewater system. 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.

SW 17404/06
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Appendices

Appendix A – Section 171 and 171A checklist

Section 171 of the EP&A Regulation requires a determining authority to take into account the environmental factors specified in the environmental factors guidelines that apply to an activity (a proposal). The *Guidelines for Division 5.1 Assessments* (DPIE, 2022) are applicable guidelines for the proposal. Section 3 of the guidelines identifies the environmental factors to be considered, which refers to and lists the factors in section 171(2) of the EP&A Regulation.

These environmental factors are listed below along with the corresponding findings of the REF.

Section 171 Checklist	REF finding
Any environmental impact on a community	There will be low to minor impacts on the community from traffic, noise and to visual amenity. There will be environmental improvements by increasing the capacity of the WRRF to accommodate growth in the region, implementing the EPA's requirements to minimise odour and provide reliable wastewater service.
Any transformation of a locality	The proposal will occur 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 result in minor environmental impacts to ecosystems of the locality. The proposal will result in a loss of 0.57 ha of vegetation, which is not considered to have a significant impact on flora and fauna. The proposal will lead to environmental improvements by ensuring a reliable wastewater service to collect and treat wastewater and reduce wet weather overflows minimising impacts on aquatic ecosystems.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal will not reduce the recreational, scientific or other environmental quality or value of the locality. While there will be moderate visual impacts to several receivers from the construction of new digesters, these can be mitigated by painting and vegetation screening.
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 proposed works are partially within the boundary of the Liverpool Sewage Treatment Plant heritage item listed on Sydney Water's S170 Heritage & Conservation Register. Applying the recommended mitigation measures will ensure potential impacts to the heritage values are avoided.
Any impact on the habitat of any protected animals (within the meaning of the Biodiversity Conservation Act 2016)	The proposal will result in a loss of 0.57 hectares of vegetation, this is not considered to have a significant impact on flora and fauna. One hollow bearing tree will be removed by the proposal. Mitigation measures, including biodiversity offsets have been identified to avoid or minimise impacts on habitat areas.

Section 171 Checklist	REF finding
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not endanger any species.
Any long-term effects on the environment	The proposal will not have any long-term adverse effects on the environment. It will enable a long-term benefit by providing a reliable wastewater service to support predicted population growth.
Any degradation of the quality of the environment	There will be minor and temporary degradation of the social and ecological quality of the environment through vegetation removal. Vegetation removal has been minimised to help retain areas of higher quality vegetation.
Any risk to the safety of the environment	The proposal will not increase risk to the safety of the environment. The proposal will improve safety by removing any asbestos encountered by the proposal.
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 improve odour management performance at the WRRF.
Any pollution of the environment	Environmental mitigation measures will reduce 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 Georges River. The proposal is designed to ensure EPL compliance during operation.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures. Asbestos will be managed in accordance with the Waste and Resource Recovery Plan.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not affect demand on resources.
Any cumulative environmental effect with other existing or likely future activities	The proposal 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 these factors.
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The proposal considered the applicable strategic plans including: • Greater Sydney Region Plan – A Metropolis of Three Cities, Greater Sydney Commission, 2018 This regional strategic plan aims to respond to the needs of Greater Sydney's people and the region's current and future structural challenges. The

Section 171 Checklist	REF finding
	proposal is consistent with this strategy as it will provide reliable wastewater services. • State Infrastructure Strategy, 2022 The proposal is consistent with this strategy such as to 'Embed reliability and resilience'. Liverpool council has a Community Strategic Plan 2025-2035. The proposal aligns with the liveable, sustainable, resilient objectives of the plan.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Section 171A of the EP&A Regulation requires a determining authority to take into account the matters a consent authority must consider under Part 6.2 of the BCSEPP for a proposal within a 'regulated catchment'. As the proposal is within the Georges River catchment, the requirements of Section 171A are applicable and have been considered. Works on flood liable land are addressed in Section 6.2.2. Impacts to aquatic ecology, recreational activities and works on flood liable land, recreation and public access will be negligible. There will be an environmental benefit to water quality and quantity by improving primary and secondary treatment processes, reducing the occurrence of wet weather overflows entering the Georges River.

Appendix B – Consideration of TISEPP consultation

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

TISEPP section	Yes	No
Section 2.15 Consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act? If so, consult with DPE (NPWS).		X
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? *If so, consult with DPE (NPWS).*		X
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*		X
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? If so, consult with *Subsidence Advisory NSW.*		X
Will the proposal be on land in a Western City operational area specified in the *Western Parkland City Authority Act 2018*, Schedule 2 and have a capital investment value of $30 million or more? If so, consult the Western Parkland City Authority.	X	
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? *If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).*		X

Appendix C – Local Heritage impact assessment

Local Heritage Item, Impact Approval

1. Item

For Sydney Water's heritage items of **local** heritage significance (non-Aboriginal), as listed on a Council's LEP *Heritage List* and / or Sydney Water's *S170 Heritage & Conservation Register*.

Item name: Liverpool Sewerage Treatment Facility

Item number: 4573723

Curtilage: The curtilage is defined by the boundary of Lot 1 in DP no.87962.

Statement of Significance: The Liverpool Sewage Treatment Plant is significant as the public utility which services the Liverpool area of Sydney and as one of the several major treatment plants serving the greater metropolitan area. The plant contains a set of structures, equipment and facilities which are representative of their function and period and which together make up a complete treatment process. The process is demonstrated by the equipment and each element of the process is physically and logically displayed. The establishment and subsequent upgrading and amplification of the Liverpool Sewage Treatment Plant is evidence of the extent and historic expansion of urban settlement in the district served by the plant. The level of treatment undertaken at Liverpool Sewage Treatment Plant is indicative of community expectations for sewage treatment at the time when it was designed, with subsequent alterations demonstrating rising expectations during its period of operation. The Liverpool Sewage Treatment Plant, therefore, has some historic and social values relating to its function and contains a set of equipment and structures that are representative of their period and type.

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2. Applicant

[redacted]

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3. Proposed works

Address: 175 Scrivener Street

Suburb: Warwick Farm, Liverpool LGA

Proposal: The proposal would reduce odour issues, increase the WWRF capacity for anticipated population growth, and provide a resilient wastewater system through:

- Provision of full secondary treatment at Liverpool WRRF through new membrane bioreactor (MBR) full secondary treatment
- Upgrades to primary treatment, biosolids treatment, and effluent flow management systems to match full secondary capacity and reduce the plant odour potential

- Upgrades to odour control systems to enhance odour capture and treatment
- Site and general ancillary services for these new assets.

Refer to the attachments for the master plan and heritage item curtilage.

4. Analysis of proposal

It is noted that the Statement of Significance includes the following:

> *The establishment and subsequent upgrading and amplification of the Liverpool Sewage Treatment Plant is evidence of the extent and historic expansion of urban settlement in the district served by the plant.*

The proposed works is a continuation of the same.

The proposed works to reduce odour issues, increase the WWRF capacity for anticipated population growth, and provide a resilient wastewater system will ultimately ensure the site continues to serve the needs of the community in the Liverpool area; one of the reasons it is listed on Sydney Water's s.170 register.

These works will, therefore, help to conserve the primary heritage values of the site as the site's wastewater treatment role is preserved.

This outcome also abides with Sydney Water's heritage conservation position statement, which is to keep its assets functioning for the purpose they were built.

The proposed works will have a minor and inconsequential impact on the heritage values. As such these proposed works, are acceptable.

Appraisal:

The proposed works have been assessed for their impacts on the item's local heritage significance. The works are approved subject to the consent conditions.

Approved by:

[redacted]

Notes:

- Compliance with Part 6 of the *National Parks and Wildlife Act 1974* and Part 6 (Division 9) of the *Heritage Act 1977* is required.
- Compliance with clause 2.11 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 may also be required.

References

Parent document number	Parent document title
SWEMS0031	Heritage Compliance Procedure

5. Consent conditions

Conditions of this approval are:

1. A basic photographic recording is required before the works commence and after the works are completed.
2. A copy of the basic photographic recording must be lodged with Sydney Water's heritage staff in Environment and Heritage, in WES, to enable the s.170 entry to be appropriately updated, if/as required in section 170(5) of the *Heritage Act 1977*.
3. Annotated NearMap aerials that show the changes at the completion of works must also be submitted to Sydney Water's heritage staff in Environment and Heritage, in WES, to enable the s.170 entry to be appropriately updated, if/as required in section 170(5) of the *Heritage Act 1977*

6. Documents provided

Attachment 1 – Approximate proposed works area (yellow dotted outline) in reference to the heritage curtilage (pink outline)



Attachment 2 – Masterplan for the proposal



Outlook

RE: Liverpool WRRF heritage impact assessment

[redacted]

Hi [redacted]

Thanks for your time discussing this project last year. Based on discussions and the information provided below I can confirm that the over impacts remain generally consistent with the previous heritage assessment undertaken – the proposed changes/additional works are consistent with the statement of significance for the site.

Please keep a copy of this email for your records.

[redacted]

[redacted]

Hi [redacted]

Thanks for the meeting this morning and getting onto this so quickly.

Further to our discussion please see outlined changes in scope below:

- New compound location requiring dewatering and infill of the sludge lagoon, outside of study area. The lagoon will be remain infilled when the works for this REF are completed
- New access track from Scrivener Street
- A new Activated Granular Sludge bioreactor and associated equipment (within footprint of previously proposed bioreactor)
- Though much of the scope is unchanged there has been small changes to the location some of the proposed structures. The changes in location of the structures are minor and all within the proposed work area of the heritage assessment done by Yvonne.



Yellow is the proposal area assessed in the heritage assessment, blue is the updated proposal area

[redacted]

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

Read more about our commitment to reconciliation.

Appendix D - Flora and Fauna Report

Appendix E - Visual Impact Assessment