Review of Environmental Factors

Upper Parramatta Source Control – Stage 1 Group

C (February 2022)

SW 135 06/22

Sydney WATER

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of Upper Parramatta Source Control – Stage 1 Group C and 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 State Environmental Planning Policy (Infrastructure) 2007 allows the proposal to be carried out without development consent. The proposal has also been considered against the matters listed in clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) (Appendix A).

This REF is divided into two parts (Part 1 and Part 2). Part 1 of this REF assesses the potential environmental impacts associated with generic work activities conducted as part of the proposal within Sydney Water's area of operations and prescribes safeguards that are required to minimise the risk of environmental impacts. Part 2 of this REF are site-specific assessments that consider individual proposal sites with additional environmental constraints and requirements that are not consistent with Part 1.

To determine if a Part 2 is required, an environmental desktop assessment has been undertaken to determine the approval pathway and assessment required at each site. The approval pathway and assessment requirement are detailed in Appendix B under the following classifications:

- Exempt development
- Part 1 REF (the works are covered by Part 1 of this REF, no further assessment required)
- Part 2 REF (further site-specific assessment required).

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as noise, odours, traffic, erosion and sedimentation. During operation, there is not expected to be any impacts. The assessment shows that if we adopt the measures identified in both Part 1 and Part 2 of this REF, the proposal will not have a significant environmental impact. Accordingly, we do not require an Environmental Impact Statement (EIS).

The Sydney Water Project Manager will make sure the proposal is carried out as described in both Part 1 and Part 2 of the REF. If the scope of work or work methods described in this REF change significantly following determination, additional environmental impact assessment may be required.

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1 Introduction

1.1 Context

Sydney Water provides water, wastewater, recycled water and some stormwater services to almost five million people. Sydney Water operates under the *Sydney Water Act 2014* and has three equal objectives to; protect public health, protect the environment and be a successful business.

Sydney Water is a statutory State-owned corporation and is classified as a public authority under Section 1.4 and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF (Parts 1 and 2) assesses the potential environmental impacts associated with Upper Parramatta Source Control – Stage 1 Group C and identifies safeguards that avoid or minimise potential impacts.

1.2 Proposal background and need

It is recognised that during heavy rainfall events, stormwater may overflow into the wastewater network, resulting in wastewater discharges to the environment. The overloading of the wastewater system presents a public health risk in the affected areas.

Sydney Water is undertaking internal surcharge improvement for these affected areas through source control. This involves increasing the capacity of existing wastewater system and installing or modifying emergency relief structures (ERSs) which release excess wastewater to the environment in accordance with Environment Protection Licences (EPLs) held by Sydney Water.

As part of this program, Sydney Water proposes to improve the wastewater systems across Sydney Water's operations area. The proposal locations are discussed in Section 2.

A summary of the proposal need, objectives and consideration of alternatives are provided in **Table 1-1**.

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

Aspect	Relevance to proposal
Proposal need	The proposal is part of the Upper Parramatta Source Control project – Stage 1 Group C. During heavy rainfall events Sydney Water's wastewater network receives high flows due to stormwater infiltration. These additional flows can result in uncontrolled wastewater discharges. These impacts inconvenience Sydney Water's customers and can result in property damage or potential impacts on public health and the environment. The proposal is needed to address wastewater discharge issues and stormwater infiltration experienced at Sydney Water assets.

Aspect	Relevance to proposal
Proposal objectives	The proposal will replace, renew, or upgrade existing wastewater infrastructure to address wet weather wastewater discharge issues. The proposal would improve the efficiency of wastewater infrastructure, minimise potential impacts on the environment and public health and adhere to the conditions of Sydney Water's Operating Licence as well as Sydney Water's relevant EPL for each location.
Consideration of alternatives/options	Alternatives and options for the proposed works were short listed, the preferred option was determined through a risk assessment process. The results of that process were reported in the respective Planning Reports issued by Sydney Water.

1.3 Consideration of Ecologically Sustainable Development

The proposal has been considered against the principles of ecologically sustainable development (ESD) (refer to **Table 1-2**).

Table 1-2 Consideration of principles of ESD

Principle	Consideration in proposal
Precautionary principle - *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal will not result in serious or irreversible environmental damage and there is no scientific uncertainty relating to the proposal. The environmental impacts of construction would be minor, localised and short-term. The proposal will help protect the environment from uncontrolled wastewater discharges in wet weather.
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 and preventing the discharge of wastewater into the environment.
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 avoid vegetation removal and limit activities to previously disturbed areas. Activities associated with the proposal are unlikely to significantly disturb flora, fauna or threatened ecological communities if the safeguards identified in this REF (Part 1 and Part 2 if relevant) are implemented. The proposal will not significantly impact on biological diversity or impact ecological integrity.
Improved valuation, pricing and incentive mechanisms - *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals*	Sydney Water has identified the need to invest in its existing systems to reduce pollution and protect the environment. The proposal will provide cost efficient use of resources and provide optimum outcomes for the community, environment and with respect to financial cost.

2 Proposal Description

2.1 Proposal details

Table 2-1 identifies the scope of work for the proposal.

Table 2-1 Description of proposal

Scope of work	Detailed description of work/ activity
Land ownership and location	The proposal involves work across Sydney Water's area of operations and involves work on Sydney Water assets within the Cumberland, City of Parramatta, The Hills Shire and Blacktown Local Government Areas (LGAs) (see Figure 1). Appendix B outlines the location and proposed works at each site. Part 2 of the REF provides further details on specific locations with environmental sensitivities beyond the scope of this Part 1 REF.
Proposal description	The proposal involves maintenance and rehabilitation works on existing wastewater infrastructure including emergency relief structures (ERS), headwalls, maintenance holes (MH) and pipes. Some additional infrastructure (e.g. valves and weirs) may be installed/constructed to improve the reliability of the network.
Site establishment and access tracks	The proposal will be confined to previously disturbed areas where possible, such as road and road reserves, residential properties or council managed land. The proposal locations are generally accessible from the existing road network, and most of the sites will not need to create access tracks. Any additional access requirements for worksites will be detailed in the site-specific assessments (Part 2).
Ancillary facilities (compounds)	Construction compounds may be required for laydown, temporary storage, sheds or amenities. When possible, equipment and materials would be stored in vehicles and taken off-site overnight. The need for construction compounds will depend on the needs of the works at each site. The need and location of construction compounds will be determined by the Delivery Contractor, in consultation with the relevant landowner(s) and approved by Sydney Water's Project Manager as described in the safeguards in **Section 5**.
Construction activities	The program of works includes the following activities that are generic to different stages of work. Any activities that are not covered by the scope below will be assessed in Part 2 of this REF. • **Preconstruction works**: ○ Dilapidation surveys (including photographs) at each site

- Services location and asset inspection (e.g. CCTV).
- Soil testing.
- Set up of temporary enclosures, fences and signage.
- Set up of equipment (e.g. scaffolding, gantry, fans) to delivery of the proposal and/or facilitate safe access to wastewater assets.
- Setup, operation and maintenance of temporary odour control units (OCU).
- Dewatering less than 3 ML groundwater from trenches/pits.
- Set up and operation of bypass pumping and/or tankering to drain remaining wastewater from MH/chambers.
- Temporary removal and replacement of urban/community/traffic fixtures (e.g. Fences, posts, kerbing).

- **Install valve** (e.g. non-return/inline check valves) – existing flap valve would be removed from the ERS chamber and a non-return valve would be installed in an adjacent pipe.
- **Replace vent –** the existing vent would be cut out and replaced with a new vent. Welding may be required, and minor vegetation clearing/trimming may be needed around the vent.
- **Maintenance Hole (MH) cover replacement/rainstopper installation** – an existing MH cover would be removed and a new MH cover/rainstopper would be installed.
- **Water jetting/tree root cutting** – high pressure jetting and/or root cutter equipment would be inserted into an opening to the wastewater system to remove roots/debris from the adjacent pipes.
- **Decommission ERS/pipes** – the existing ERS may be converted to a standard MH, bricked and filled. Pipes may be plugged and/or grout filled.
- **Open trenching for exhuming and replacing pipes**

  Open trenching for exhuming and replacing the existing wastewater pipe and installing a new wastewater pipe have similar construction methods. This type of proposal is often needed for severely deteriorated pipelines or when additional capacity is required in the wastewater system. The project footprint often extends from one maintenance hole to another and can be a few hundred metres long. For exhume and relay, temporary wastewater bypass pumping may be needed to maintain services to customers.

Scope of work	Detailed description of work/ activity

Prior to excavation, surface material along the alignment such as concrete and road base will need to be removed. Other services may need to be located and protected or relocated prior to works and will need to be carried out in accordance with the requirements of that service provider. Typical excavation rates for conventional open excavation are approximately 40 m per day. The size of the excavation will depend upon pipe size and range from approximately 0.5 m to 1.5 m standard depth with a varying trench width (up to 15 m). Excavations are backfilled at the end of each day except for small end sections, which are covered and securely fenced to ensure safety. Driveways, trees and curbs may be under-bored, or trees carefully excavated around roots to minimise impacts. Following the installation of the new wastewater main, it is pressure tested with water for commissioning.

No creek crossings are required.

- **ERS upgrade, replacement of headwall and/or modifications**

  The contractor excavates to the chamber and removes the old roof. Once the roof is off the contractor will determine if there is sufficient space in the existing chamber to install the valve, if not there are two options. Option 1 – cut the concrete in the chamber to suit. Option 2 – cut out a wall and extend the chamber by about 0.5 m. Once walls are adjusted, extend walls to surface, fit cover and tidy site.

  In cases where the ERS cannot be modified to fit the valve, civil works to construct a replacement ERS or separate valve chamber and connecting pipework may be needed adjacent to the existing ERS. The proposed asset is usually within a 5 m radius of the existing structure, in a location that avoids existing services, and minimises traffic disruptions and biodiversity impacts. The works will require excavation and concreting, and potentially minor vegetation removal.

- **Smoke testing and general plumbing**

  Smoke testing involves blowing an artificially created non-toxic, non-corrosive and odourless smoke into the wastewater pipes to identify unwanted stormwater-to-wastewater-pipeline connections. These connections are generally located through plumbing works and rectified within the property. These plumbing works may require minor soil disturbance and the removal of garden plants and/or other domestic structures (e.g., sheds, garden beds and driveway).

- **Relining, junction seals and patch repairs**

  Relining, junction seals and patch repairs all involve sealing an impermeable lining in place within an existing pipeline to prevent water from seeping in or out. It requires access to at least one MH, and

Scope of work	Detailed description of work/ activity
	relining needs both MHs at either end of the section to be rehabilitated. The works may require minor ground and/or vegetation disturbance to access the MHs. Prior to the installation of a liner, seal or patch, the pipe will be cleaned by water jetting and/or tree root cutting. Junction seals are applied up to the first joint of the lateral connection. These are T-shaped fibreglass seals, cured in place with resins and applied remotely. Patches are occasionally used to line a wastewater pipe when access is only available from one end. Patches are also occasionally used for a localised repair, when lining the full length of a wastewater pipe cannot be justified. For relining proposals, the liner will be pulled into the pipe, and depending on the technique used, will either be cured or locked in place. • **Install local pump unit** These are underground tank-and-pump units installed to pump wastewater to Sydney Water's wastewater network. The installation will require excavation for the unit, concrete, plumbing and connections. The typical location is to the side of a private property and requires a new property connection. Vegetation, usually the garden, may need to be removed for the works.
Commissioning	Commissioning involves testing and running the new equipment to ensure the equipment is working correctly and integrated with existing plant operations. The proposal will be commissioned immediately following construction. This involves a series of checks to ensure the proposal has been correctly constructed and integrated with the existing infrastructure.
Restoration	The work sites will be restored following construction, in consultation with landowners. Restoration will involve: • backfilling of excavated areas with appropriate bedding material • restoration of vegetation • restoration of pavements to the appropriate standards • disposal of waste, including spoil, at an appropriate facility • tidying of construction site and demobilisation.
Materials/ equipment	The equipment used to construct the proposal will be confirmed during the pre-construction phase. Typical equipment likely to be used includes but is not limited to:

Scope of work	Detailed description of work/ activity
	• trucks (transporting equipment to the work sites and waste material to appropriate disposal facilities) • trench-rollers and compactors • drill rigs, tunnelling and boring equipment • welding equipment and power tools • site generators and compressor • main control van • water jetting equipment • mechanical root cutter • CCTV and other surveying equipment • smoke testing equipment • hand tools • pipes • pumps and flexible hoses for flow diversion • equipment for the supply of pressurised water • excavation equipment (i.e., small excavator, jack hammer, compressor and de-watering pump).
Work hours	Work and deliveries will be scheduled to occur during standard daytime hours: • 7am to 6pm, Monday to Friday • 8am to 1pm, Saturdays. The proposal is generally not expected to require work outside these hours. Sometimes work is required at different times (e.g., for work in roads or delivery of oversize equipment). Sydney Water's Project Manager can approve work outside of standard daytime hours, following the approval process described in the safeguards in **Section 5**.
Proposal timing	Construction is expected to start mid 2022 and take up to 12 months.

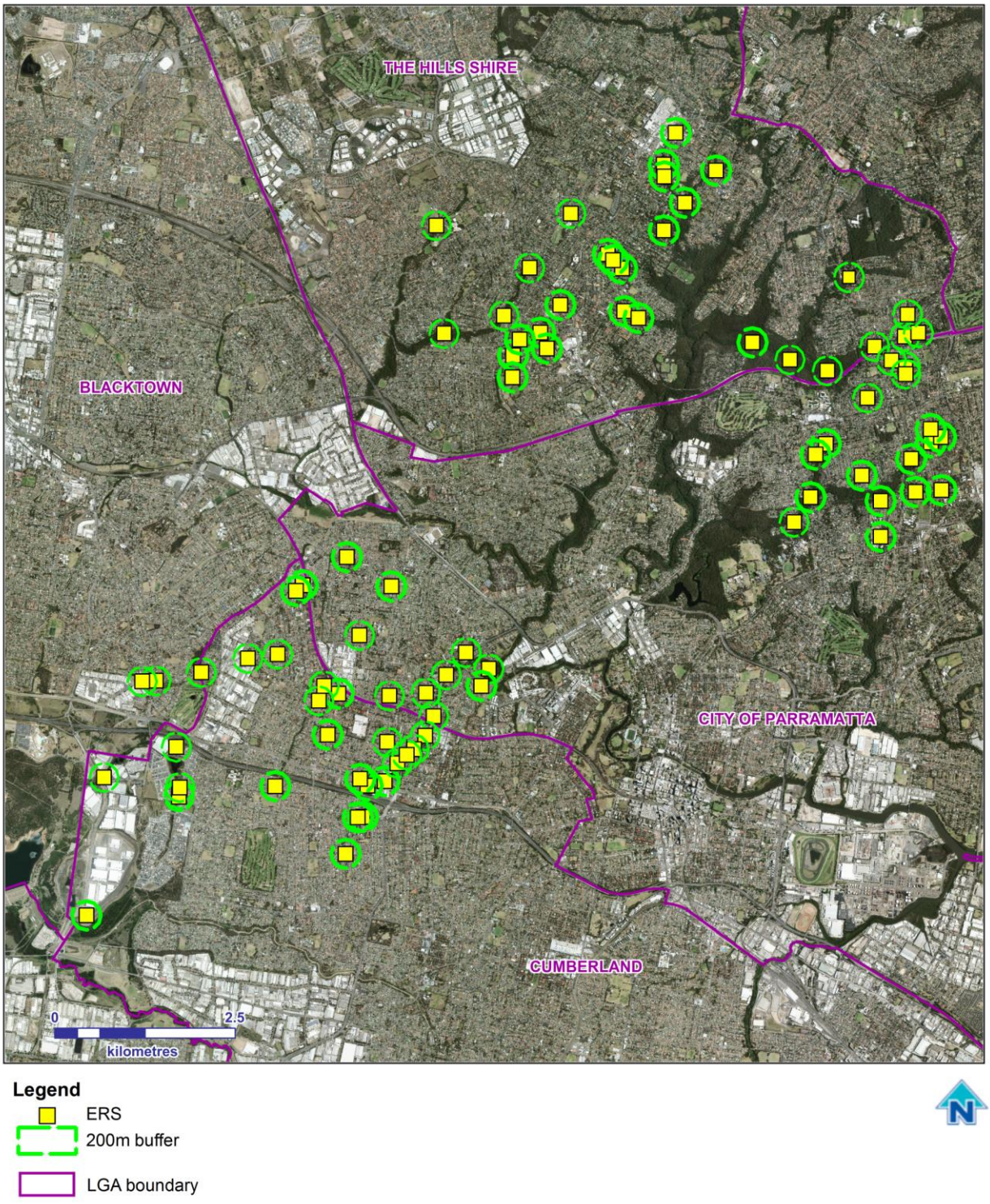

Figure 1 ERS sites overview

2.2 Field assessment area and changes to the scope of work

This REF (Part 1 and Part 2) has assessed a 200 m wide study area around all specific site locations. The proposal design shown in this REF is indicative and based on the latest concept design at the time of REF preparation. The final design may change based on detailed design and/or construction planning. If the design/scope of work or construction methods described in this document change significantly, supplementary environmental impact assessment must be prepared for the amended components in accordance with SWEMS0019. An addendum is not required provided the changed design assessed by the Environmental Representative:

- remains within the study area of the REF and has no net additional environmental impact; or
- is outside the study area of the REF but reduces the overall environmental impact of the proposal (s.5.4 (a) of the Act)
- is assessed and approved in a Part 2 site-specific REF.

Changes to the proposal outside the study 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 will demonstrate in writing how the changes meet these requirements and Sydney Water's Project Manager will review the request, in consultation with the environmental and communication representatives.

3 Consultation

3.1 Community and stakeholder consultation

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

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

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

If our work will impact the community in some way, we will consult with affected groups through a variety of ways and through different stages of a project. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions.

We will also provide local councils with reasonable notice when we would like to commence works, regardless of the need for development consent. Local council(s) will be consulted about matters identified in environmental planning instruments (refer Section 3.2), including public safety issues, the placement of any temporary site sheds or laydown areas on council land, or full or partial road closures of council managed roadways.

3.2 Consultation required under State Environmental Planning Policies and other legislation

Sydney Water must consult with councils and other authorities for work in sensitive locations or where the work may impact other agencies infrastructure or land (specified in Part 2 Division 1 of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP)). In this instance, no formal consultation was required under the ISEPP for activities under Part 1 of this REF. Further detail, for site-specific consultation is provided in Part 2 of the REF.

4 Legislative requirements

The following environmental planning instruments (Table 4-1)**Table 4-1** and legislation (Table 4-2) are relevant to the proposal. Table 4-2 also documents any licences and permits, timing and responsibility for obtaining them. Site-specific legislative requirements, including relevant environmental planning instruments, are detailed in Part 2 of this REF.

Table 4-1 Consideration of environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)	Clause 106(3B) of ISEPP states development for the purpose of sewage reticulation systems may be carried out without consent on any land in the prescribed circumstances. Clause 106(1)(a) states that development is carried out in prescribed circumstances if it is carried out by or on behalf of a public authority. The proposal involves development for the purpose of sewage reticulation systems and is to be carried out by Sydney Water as a public authority. As such, the proposal may be carried out without consent. In addition, some maintenance activities included in the proposal are considered exempt development under Clause 107 of ISEPP. This includes the following routine maintenance or associated landscaping works (if any disturbance to soil or vegetation is no greater than necessary, and complies with Clause 20): • removal of litter, silt or debris from any part of the sewerage system • maintenance or replacement of sewerage system components that does not increase capacity (or increases capacity only to a minimal extent) • excavations to expose a pipeline for inspection or testing and the creation of temporary stockpiles associated with pipeline maintenance or replacement • flushing or relining of a pipeline if access is by a manhole • maintenance of access tracks or fire trails (including access tracks along or to corridors, pipelines or other infrastructure). No further assessment for these activities classified as exempt development is required (see Appendix B for a list of these sites), however the standard safeguards listed in this REF should be applied where applicable.

Environmental Planning Instrument	Relevance to proposal
SEPP (Vegetation in Non-Rural Areas) 2017	This SEPP applies as the proposal is in areas listed in Clause 5.1a and/ or land within the zones listed in Clause 5.1b. However, section 6.1 states: '*This Policy does not affect the provisions of any other SEPP….*' As the works are permissible under ISEPP a Council permit to clear vegetation under this SEPP is not required.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Environmental Planning and Assessment (EP&A) Act 1979	Sydney Water is the proponent and determining authority under this 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 proposal also includes some maintenance activities which have been assessed and found to meet the criteria of exempt development in accordance with section 1.6. Refer to Appendix B.	REF	Pre-construction, Sydney Water
Protection of the Environment Operations (POEO) Act 1997	The POEO Act aims to, amongst other objectives, protect, restore and enhance the quality of the environment in NSW. It includes offences for polluting the environment and establishes a regime of environment protection licences. Sydney Water holds EPLs for its wastewater systems. This work will ensure we are maintaining and operating our systems in accordance with EPL requirements. No variations to our existing licences are required for these works.	N/A	—

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Biodiversity Conservation (BC) Act 2016	The proposal is predominantly located in roads, road reserves, residential properties, modified parkland and other previously cleared areas. Overall, the proposal is unlikely to have a significant impact on threatened biodiversity. Work sites where the proposal is identified to potentially impact threatened biodiversity have been assessed in Part 2 of this REF.	REF	Pre-construction, Sydney Water
National Parks and Wildlife (NPW) Act 1974	Sections 86, 87 and 90 of the NPW Act require approval from Heritage NSW for any works which may impact an item of Aboriginal Heritage. The proposal is unlikely to disturb any Aboriginal objects, however any work sites where there is the potential to impact Aboriginal objects have been assessed in Part 2. If unexpected archaeological items or items of Aboriginal heritage significance are discovered during the construction of the proposal, all work would cease and appropriate advice sought.	REF	Pre-Construction, Sydney Water
Heritage Act 1977	The *Heritage Act 1977* aims to protect and preserve items of State and local heritage significance and outlines processes for approval of development that may impact items of environmental heritage owned by Sydney Water. Any work sites where there is the potential to impact items of environmental heritage have been assessed in Part 2.	REF	Pre-construction, Sydney Water
Fisheries Management (FM) Act 1994	The FM Act protects threatened species, populations, and communities of fish and marine vegetation, as well as commercial and recreational fishing areas, in NSW waters. If the proposal involves dredging work (excavation in water land) or obstructs fish	Notification and permit s199 or s205 (if relevant).	Pre-construction, Sydney Water

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	passage in Key Fish Habitat, and/or harms marine vegetation then a permit from NSW Department of Primary Industries Fisheries may be needed. Part 2 of this REF provides details on any sites impacting Key Fish Habitat.		
Water Management Act 2000 (WM Act)	It is likely that minor dewatering of excavations, such as trenches, will be required for the project. In accordance with Schedule 4 of Water Management (General) Regulation 2018, a Water Supply Work Approval (WSWA) is required for all activities that involve dewatering (pumping) of groundwater. Projects with the potential to dewater more than 3 megalitres of groundwater, require a Water Access Licence (60A).	WSWA/WAL	Pre-construction, Sydney Water (to submit application), Contractor (to provide information)
Roads Act 1993 (Roads Act)	The Roads Act declared NSW Roads and Maritime Services (now Transport for NSW) and other public authorities as roads authorities, and conferred functions on those road authorities including regulating activities on public roads. All necessary traffic approvals from TfNSW or Local Councils will be obtained prior to commencing works.	Road Occupancy Licence (ROL)	Pre-construction, Contractor

5 Environmental assessment

The potential environmental aspects and impacts associated with construction and operation of the proposal are identified in this section as well as safeguards to minimise these. A site-specific environmental assessment will be undertaken for each worksite in sensitive environmental locations to document any additional environmental constraints and specific safeguards to be implemented. Both the generic and site-specific safeguards will be incorporated into contract documents and a Construction Environmental Management Plan (or similar) to be developed by the Contractor prior to commencement of work.

A risk assessment will be undertaken by the Project Manager following Sydney Water's Corporate Risk Framework (QMAF0081).

5.1 Environmental aspects, impacts and safeguards

5.1.1 Topography, geology and soils

Existing environment and potential impacts

The proposed worksites are in a variety of soil types and terrains. It is likely that most sites would not have their original soil landscape and/or profile due to previous construction of wastewater infrastructure.

Excavation may be required for the following types of activities:

- to expose buried MHs (e.g., in roadways or beneath grass/ garden/ bushland) or for replacement or modification of MH lids, chambers or headwalls
- open trenching for the exhume and relay of existing pipe or the installation of new wastewater pipes
- minor levelling of compound areas if required to ensure flat surface for plant/ equipment laydown.

Where excavation is required for replacement of pipe sections, the extent of excavation will be minimised and restricted to the width of the existing trench. Soil stockpiling will also be of minimal duration. Nevertheless, there will be potential for soil erosion and generation of sediment-laden run-off during pipe replacement activities. Potential impacts can be adequately mitigated by implementing the erosion and sediment control safeguards identified in this REF.

Work sites near waterways have the potential to adversely impact waterways and their banks by increasing erosion and washing of sediments into nearby waterways.

Any sites identified with acid sulfate soil (ASS), saline or contaminated land or the potential for these will be assessed in Part 2 of this REF. Inappropriate management of ASS, saline soils or

contaminated soils include potential impacts to surrounding land and waterways from off-site leaching.

The works do not propose to permanently change the surface topography and/or drainage patterns of the sites. The sites will be returned to their original topography and drainage pattern following construction. Any permanent change in surface topography would be addressed in the site-specific assessments in Part 2 of this REF.

Safeguards
Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008), including: • develop a Soil and Water Management Plan (SWMP) as part of the CEMP for areas of disturbance greater than 2,500 m^2 and erosion and sediment (ERSED) plans for smaller areas • divert surface runoff away from disturbed soil and stockpiles • install sediment and erosion controls before construction starts • reuse topsoil where possible and stockpile separately • inspect controls at least weekly and immediately after rainfall • rectify damaged controls immediately • remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.
Minimise ground disturbance and stabilise disturbed areas progressively.
Imported material must be certified for intended use and free from contamination including asbestos.
Stop work in the immediate vicinity of suspected contamination. Indicators of contamination include discoloured soil, anthropogenic fill material, asbestos, strong chemical or petrol odours and leachate. Contain disturbed material on an impermeable surface and cordon areas off. Notify the Sydney Water Project Manager and the Environmental Representative. Sydney Water Project Manager to contact Property Environmental Services for advice on management options.
If contamination is anticipated, a Contamination Management Plan would be prepared by a suitably qualified person as part of the CEMP and reviewed by Sydney Water's Environmental Representative in consultation with Property Environmental Services. The plan would identify the type and location of known/potential contamination, management and disposal measures.
Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.
Sweep up any sediment/soil transferred off site at least daily, or before rainfall.
Eliminate ponding and erosion by restoring natural landforms to the pre-works condition.
Manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998).

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

5.1.2 Water and drainage

Existing environment and potential impacts

Generally, the works will be undertaken within urban environments, however, there is likely to be constructed drainage lines, modified waterways, creeks and stormwater pits nearby. Potential impacts to water quality may arise during excavation, runoff from the inappropriate storage of silt/ debris collected from the sewer during cleaning activities and/ or accidental spills of chemicals and fuels.

The amount of excavation required at each worksite is expected to be relatively minor, no creek crossings are required. Provided the safeguards are implemented below, impacts are not expected to be significant.

There is potential for groundwater to be present at some sites, particularly those near waterways. The volume of groundwater that would be encountered is expected to be limited due to the shallow depth of the excavations and the low rate of groundwater inflow.

If groundwater is encountered a Water Supply Work Approval under the *Water Management Act 2000* is required for dewatering. Dewatering involves the pumping of groundwater from an excavation, temporary storage of the groundwater and/or release of the groundwater to the adjacent waterway, stormwater network or sewer, depending on its water quality. A Water Access License is required if dewatering >3ML of groundwater.

The works present a minor risk to water quality. Provided the safeguards identified in this REF are implemented, there will be no significant impacts on water quality. The site-specific assessments in Part 2 of this REF identifies any additional constraints and impacts of the works on existing waterways and drainage.

Safeguards
Use appropriate controls to avoid potential sedimentation to waterbodies e.g., floatation boom.
No creek crossings are required.

Safeguards
Bund open maintenance holes if risk of wastewater spills.
Bund potential contaminants and store on robust waterproof membrane, away from drainage lines.
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Locate portable site amenities away from watercourses or drainage lines.
Minimise groundwater ingress through detailed design. Prepare a Dewatering Management Plan as part of the CEMP for groundwater dewatering, including: protecting water quality and monitoring extraction volumes. If the potential for intercepting groundwater is identified after the REF is determined, Sydney Water will obtain a groundwater Water Supply Works Approval and where dewatering is >3ML per water year (from 1 July) a Water Access Licence from NRAR will also be obtained. The Delivery Contractor is responsible for: • providing expert hydrogeological technical information to obtain the approvals preparing a Dewatering Management Plan • complying with the approval conditions (such as protecting water quality; minimising aquifer extraction volumes, monitoring extraction with flow meters and recording volumes).
If discharge to the environment is not possible, seek approval and discharge criteria from the relevant Sydney Water Network Area Manager prior to discharge to the wastewater system. Otherwise, tanker by a licensed waste contractor and dispose off-site to an appropriately licensed facility.
Dewater excavations in accordance with the Delivery Management Guidance Standard 9.1 Excavation Dewatering.
If wastewater bypass is required: • pressure test hoses before, and monitor during bypass • monitor wastewater flows to ensure critical flows are not reached • stop bypass if leaks occur • bund access chambers • contain wastewater spills and pump back to wastewater system or disposal tanker.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Bunded areas to have 110% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled.
Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.
Conduct any equipment wash down within a designated washout area.
Ensure equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.
Prepare management plan to avoid impacts from drilling, including:

Safeguards

- contain and monitor drilling fluids at entry/exit points
- identify and manage frac-outs
- re-use and/or disposal of drilling fluids.

5.1.3 Flora and fauna

Existing environment and potential impacts

The wastewater infrastructure will be accessed via existing access chambers, which are located predominantly in roads, road reserves, residential properties, modified parkland and other previously cleared areas. Many access chambers are easily accessible and visible. At some sites, however, minor trimming and/or removal of vegetation may be required to facilitate vehicle, personnel or equipment access to the work site or entry to the access chamber. More extensive vegetation removal may be required when pipe replacement is necessary. All work sites will be restored to their original condition, with site restoration commencing immediately after works completion.

It is possible that the works may impact aquatic fauna in nearby waterways because of off-site transport of sediment, accidental spillage of fuel or chemicals, stormwater flooding or wastewater overflows. The risk of such impacts will be minimal if the safeguards outlined in this REF are implemented.

Any site-specific ecological constraints, impacts and safeguards are identified in Part 2 of this REF.

Safeguards

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 Sydney Water's 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.

Safeguards
Residual impacts to native vegetation and trees will be offset in accordance with the Biodiversity Offset Guideline (SWEMS009.13).
Map and report native vegetation clearing greater than 0.01 ha in extent (and any associated rehabilitation) as per SWEMS0015.26 Contractor Native Vegetation Clearing and Rehabilitation template.
Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. Where possible, limit clearing to trimming rather than the removal of whole plants.
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 >50 mm are impacted within the Tree Protection Zone.
Potentially affected residents will be notified of any tree removal.
Retain dead tree trunks, bush rock or logs in-situ unless they are in the study 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 inspect the removal 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 removal of hollow bearing trees, engage 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 a licenced ecologist if assistance is required to move fauna.
Avoid impeding/blocking fish passage. Retain snags and natural obstructions in waterways where possible.
If any threatened species (flora or fauna) is discovered during the works, stop work immediately and notify the Sydney Water Project Manager. Work will only recommence once the impact on the species has been assessed and appropriate control measures provided.
If any damage occurs to vegetation outside of the site-specific location, notify the Sydney Water Project Manager and Environmental Representative so that appropriate remediation strategies can be developed.
Manage biosecurity in accordance with: • *Biosecurity Act 2015* (see NSW Weedwise), including reporting new weed infestations or invasive pests

Safeguards
• contemporary bush regeneration practices, including disposal of sealed bagged weeds to a licenced waste disposal facility. • Record Pesticides and Herbicides use in accordance with SWEMS00017
For works in Council-owned urban bushland, the Contractor will consult with Councils to identify known plant pathogens or pests and management requirements. If risk of infestation and spread, prepare Hygiene Management Plan prior to works.
To prevent spread of weeds: • Clean all equipment including PPE prior to entering or leaving the work sites. • Wrap straw bales in geofabric to prevent seed spread.
Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.
If replanting near Sydney Water pipelines refer to '*Which trees can damage wastewater pipes?*' link from Sydney Water website.
In TOBAN period: 1. Check specific TOBAN notice to confirm whether the work can be carried out under standard exemptions (Govt Gazette No18 Feb 2018) 2. If not, apply to RFS for specific exemption.

5.1.4 Air and energy

Existing environment and potential impacts

Works are often located close to residential receivers. The following aspects of the proposed works have the potential to cause adverse impacts on air quality:

- emissions from works equipment and vehicles
- release of gases from the wastewater system when access chambers are opened
- odour emissions during the cleaning process
- generation of dust during excavation.

As the works are relatively minor and of short duration, it is not expected that the proposed works will generate large quantities of dust, vehicle emissions or odours.

Construction activities at each site have the potential to generate dust from earthworks and/or exhaust emissions from equipment and machinery. As the works are in connection to the existing sewer, and include the opening of wastewater infrastructure, there is also the potential for odour to be generated during construction. Due to the limited scale of the works, emissions to air are not expected to be noticeable at residences. Potential impacts on other receptors such as pedestrians or recreational users in the vicinity of the sites would be limited and intermittent. Any impacts on air

quality as a result of the proposed works will be localised and short-term and will not persist after works completion. The severity of short-term impacts is expected to be minor.

Safeguards to avoid, mitigate and manage the potential impacts on air and energy are provided below. Providing the proposed safeguards are implemented it is considered the proposal could be constructed and operated with a low level of environmental risk.

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

5.1.5 Waste and hazardous materials

Potential environmental impacts

The following waste may be generated by the proposed works:

- non-liquid wastes from the cleaning of pipes and access chambers, including tree roots and sediment
- redundant pipes and pipe fittings
- redundant work materials
- groundwater
- excess grouting solution
- green waste

- general site garbage
- excess spoil.

Liquid waste generated by the pipe cleaning process will be retained within the system. Similarly, any water from trench de-watering (if excavation is required) that shows any sign of contamination will be disposed at an appropriately licenced facility. If there are no signs of contamination, water may be filtered through a geotextile sock over land in accordance with DM Guideline. If this is not suitable then discharge into the nearest suitable wastewater maintenance hole will be required. The discharge will comply with Sydney Water trade waste policy criteria.

The proposal will not generate significant quantities of waste material or spoil. There is the potential, however, for some of the waste materials generated to be contaminated. Any root material, sediment and redundant pipes removed from the wastewater system, for example, will be contaminated with a range of organic and inorganic pollutants. Nevertheless, provided adequate construction site management practices are followed, in conjunction with the safeguards identified below, the generation of waste by the works will not result in any significant adverse impacts on human health or the environment.

Problems of waste generation and disposal may increase where excavation is required in areas with potential acid sulfate soil (PASS) or site contamination issues. As such, sites located in areas with PASS or potential site contamination issues are addressed in Part 2 of this REF.

Safeguards
Manage waste in accordance with relevant legislation and maintain records to show compliance e.g., waste register, transport and disposal records. Record and submit SWEMS0015.27 Contractor Waste Report.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Minimise the generation of waste, sort waste streams to maximise reuse/recycling in accordance with the *Waste Avoidance and Resource Recovery Act 2001*.
Manage waste and excess spoil in accordance with the NSW EPA Waste Classification Guidelines. Dispose wastes at an appropriately licensed facility.
Prevent pollutants from escaping including covering skip bins.
Dispose excess vegetation (non-weed) that cannot be used for site stabilisation at an appropriate green waste disposal facility.
If fibro or other asbestos containing material is identified, restrict access and follow Sydney Water's Asbestos Management procedure, WHSMS0064. Contact Sydney Water Project Manager (who will consult with Property Environmental Services).

Safeguards
Manage lead paint in accordance with the WHS Regulation (2017) Part 7.2 and the Australian Standard Lead Paint Management Guidelines. Contact Property Environmental Services for advice and develop a Lead Management plan if required.

5.1.6 Heritage

Existing environment and potential impacts

Aboriginal heritage

The proposal would be conducted predominantly on or within existing Sydney Water infrastructure, usually within urban areas, modified parklands and or previously disturbed areas and are considered low impact activities under OEH's Due Diligence Code of Practice. A due diligence assessment has been undertaken for all sites as part of this REF. If sites are in higher risk landscape areas, any minor excavation would be limited to previously disturbed areas adjacent to the existing wastewater infrastructure and therefore no impacts to Aboriginal heritage are anticipated. Sites with specific heritage constraints, requiring additional safeguards, will be listed in the site-specific assessments in Part 2.

Non-Aboriginal heritage

The proposed work involves minor impacts outside existing wastewater infrastructure. Where new structures or replacement of pipelines is required, excavation will be limited to small areas and will likely take place within a previously disturbed area, namely the existing trench.

Impacts to infrastructure within Heritage Site curtilages listed on Sydney Water's Section 170 Register, the State Heritage Register (SHR), or the heritage register of any environmental planning instrument are not expected as a result of the works.

The potential impacts of the proposal on non-Aboriginal heritage would include causing harm to already known non-Aboriginal heritage items or previously unidentified items. While adverse impacts are not expected to affect any other item listed on any heritage register, or any items classified as 'relics' under the *Heritage Act 1977* (see **Table 4-2** Consideration of key environmental legislation), safeguards should be implemented to minimise unforeseen impacts.

Some of the sites may be located near non-Aboriginal heritage items listed on local or state heritage registers and these will be noted in the site-specific assessments in Part 2 of this REF.

Safeguards
Do not make publicly available or publish, in any form, Aboriginal heritage information on sites / potential archaeological deposits, particularly regarding location.
Repeat the basic AHIMS search if it is older than 12 months. Conduct additional assessment if new sites are registered and could be impacted by the works.

Safeguards
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify SW Project Manager in accordance with SWEMS0009.

5.1.7 Noise and vibration

Existing environment and potential impacts

The existing environment at many of the sites is characterised as disturbed urban areas, close to residential housing. It is assumed for this assessment that the background noise in the areas surrounding the sites is relatively low.

The following aspects of the works will result in generation of noise:

- movement of work trucks to and from the work sites
- use of generators
- use of equipment and machinery
- staff movement and activity around the work site.

If excavation works are required, noise will also be generated from the use of excavation equipment, and the loading of materials for disposal.

Sites may also be in recreational or environmental areas, as such, there is also potential that the proposal would generate noise affecting recreational users of these areas. Potential impacts on such other receptors would be limited and intermittent.

Noise generated by construction activities would be short term. Construction activities are only planned to occur during standard daytime working hours. During this time the noisiest works, such as excavation or pavement breaking, would be intermittent.

During operation, there will be no permanent changes to background noise. Noise generated during operation will not exceed the noise criteria in the Noise Policy for Industry (EPA, 2017).

General safeguards to avoid, mitigate and manage the potential impacts on noise and vibration are provided below. Providing the proposed safeguards are implemented it is considered the proposal could be constructed and operated with a low level of environmental risk. The specific noise constraints and mitigation measures for these sites are listed in Part 2 of this REF.

Safeguards
Works must comply with the Interim Construction Noise Guideline (DECC 2009), including schedule work and deliveries during standard daytime working hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturday. No work to be scheduled on Sundays or public holidays. The Proposal will also be carried out in accordance with: • Sydney Water's Noise Management Procedure SWEMS0056

Safeguards
• Reasonable and feasible noise mitigation measures should be implemented to mitigate noise impacts.

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

If **works beyond standard daytime hours are needed**, the Contractor would: • justify the need for out of standard daytime work • consider potential noise impacts and: implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and other reasonable and feasible management measures • identify community notification requirements • seek approval from the Sydney Water Project Manager in consultation with Sydney Water's Environment and communications representatives.
If **night works are needed**, the Contractor would: • justify the need for night works • consider potential noise impacts and implement the relevant standard daytime and out of hours safeguards and other reasonable and feasible management measures • identify community notification requirements (i.e., for scheduled night work (not emergency works)) • notify all potentially impacted residents and sensitive noise receivers not less than one week prior to commencing night work. • seek approval from the Sydney Water Project Manager in consultation with Sydney Water's Environment and communications representatives.
If **works on Sundays or public holidays are required**, the Contractor would: • justify why all other times are not feasible • consider potential noise impacts and, implement relevant standard daytime, out of hours and night-time safeguards and other reasonable and feasible management measures • identify community notification requirements

Safeguards
• seek approval from the Sydney Water Project Manager in consultation with Sydney Water's Environment and communications representatives.
Conduct a dilapidation survey / asset condition assessment prior to works which have potential to damage existing structures.
Monitor compliance with the recommended vibration levels in DIN 4150-3 1999: Structural Vibration – Part 3; Effects of vibration on structures.

5.1.8 Traffic and access

Existing environment and potential impacts

The works will result in increased localised traffic movements for the duration of the works. Some sites will require partial closure of public recreation areas and may also restrict pedestrians accessing these areas. These sites may require construction of a temporary access way (e.g., through park) and this would be established in consultation with the relevant council either using track mats or aggregate material laid on geo-fabric material. This makes it easier to remove and restore the area following construction.

Some proposed worksites may require partial or full road closures to obtain safe access to MHs or ERSs and these would be managed in accordance with approved Traffic Management Plans and Road Opening Permits as required.

Other MH worksites may temporarily impact private property access, if the MHs are located near driveways or within residential properties. All efforts would be made to ensure access to private properties is maintained and any temporary changes to access would be fully communicated to stakeholders.

Following site establishment, construction traffic volumes are expected to be low and related to personal vehicles, delivery of materials and removal of skip bins. There may be a temporary disruption to street parking, footpaths and cycle paths in some locations. These impacts would be short-term and minor and managed in consultation with affected stakeholders. Additional site-specific access and traffic constraints and mitigation measures are listed in Part 2 of this REF.

Safeguards
Prepare a Traffic Management Plan (TMP) in consultation with the relevant traffic authority. Meet NSW Roads and Maritime Service's Traffic Control at Worksites Manual v5 requirements for TfNSW roads. The Contractor will obtain a Road Occupancy Licence (ROL) from TfNSW, including if works are within 100 m of traffic signals when construction commences.

Safeguards
Minimise traffic impacts near residential properties, schools and businesses by consulting with them e.g. no major materials deliveries at school drop off or pick up times etc.).
Manage sites to allow people to move safely past the works, including alternative pedestrian, bicycles, pram and wheelchair access.
Consult with the relevant traffic authority on managing impacts to pedestrian traffic, signposting, meters, parking, line-marking or if traffic control or pavement restoration is required.
Erect signs to inform road users of the proposed works and any temporary road closures.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.
Any work on private property is to be carried out with minimum inconvenience to the occupants and only after consultation.

5.1.9 Social and visual

Existing environment and potential impacts

The main social impact would most likely be from cumulative construction impacts to sensitive receivers near the works. Individually, potential traffic, access, noise and visual amenity impacts can be of nuisance, and the cumulative impacts over the duration of works (up to three months) may cause complaints if poorly managed.

Visual impacts would be associated with the temporary presence of plant, machinery, construction compounds and access roads. The construction activities at some sites would involve the temporary disruption of existing social infrastructure. This would include works within roads, parks, and reserves.

During operation, the proposal is not expected to result in any major visual impacts to the surrounding community, as the proposed infrastructure will be in and below the ground.

As discussed in Section 1, the proposal is required to meet Sydney Water's objective to improve the efficiency of wastewater infrastructure, minimise potential impacts on the environment and public health. The proposal is therefore considered to have a positive social impact for the community.

Due to the minor nature of works, with activities being localised and of short duration at each work site, the proposal will not have a significant impact on the visual amenity of any area. Any minor impacts will be temporary and will not extend beyond the work period.

Safeguards to avoid, mitigate and manage the potential social and visual impacts are provided below. Providing the proposed safeguards are implemented it is considered the proposal could be constructed and operated with a low level of environmental risk.

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

5.1.10 Cumulative

Potential environmental impacts

Any cumulative impacts with other construction projects occurring in the area is expected to be minimal and would be managed through consultation with Council and other stakeholders. Sydney Water is not aware of any other non-Sydney Water works occurring in and around the sites.

5.1.11 General Environmental Management

Safeguards
Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should specify license, approval and notification requirements. Prior to the start of work, all project staff and contractors will be inducted in the CEMP. The CEMP should be readily available on site and include a site plan which shows: • no go areas and boundaries of the work area • 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.
Sydney Water's Project Manager (after consultation with Sydney Water's environment and community representatives and affected landowners) can approve temporary ancillary construction facilities (such as compounds and access tracks), without additional environmental assessment or approval if the facilities meet the following principles: • limit proximity to sensitive receivers • no disruption to property access • no impact to known items of non-Aboriginal and Aboriginal heritage • outside high-risk areas for Aboriginal heritage

Safeguards
• use existing cleared areas and existing access tracks • no impacts to remnant native vegetation or key habitat features • no disturbance to waterways • potential environmental impacts can be managed using the safeguards in this REF • no disturbance of contaminated land or acid sulphate soils • will be rehabilitated at the end of construction. The Delivery Contractor must demonstrate in writing how the proposed ancillary facilities meet these principles. Any facilities that do not meet these principles will require additional environmental impact assessment. The agreed location of these facilities must be shown on the CEMP site plan and appropriate environmental controls installed.
Prepare an Incident Management Plan (IMP) outlining actions and responsibilities during: • onset of heavy rain during works • spills • unexpected heritage finds • other potential incidents relevant to the scope of works. All site personnel should be inducted into the IMP.
Immediately notify the Sydney Water Project Manager and Community Relations Representative of any complaints.
To ensure compliance with legislative requirements for incident notification (e.g., *Protection of the Environment Operations Act 1997*), Sydney Water's employees and contractors will follow SWEMS0009.

6 Conclusion

Sydney Water has prepared this REF to assess the potential environmental impacts of construction and operation of Upper Parramatta Source Control – Stage 1 Group C. The objective of the proposal is to address wastewater surcharge issues experienced during wet weather events. The proposal would contribute to the efficient operation and greater capacity of wastewater infrastructure, the protection of public health and the requirements of Sydney's Water's EPL. This Part 1 REF applies to all sites listed in Table B1 and further site-specific issues will be considered in Part 2 of the REF. Part 1 and Part 2 REFs should be considered in conjunction with each other.

During construction, the main potential environmental impacts of the proposal are typical construction impacts such as noise, odours, traffic, erosion and sedimentation. Operational impacts are not expected. Given the nature, scale and extent of impacts and implementation of the safeguards outlined in this Part 1 REF, the proposed work is unlikely to have a significant impact on the environment. Part 2 of the REF would be used to confirm this conclusion for any individual site within the program of works with additional environmental constraints and safeguards. As such, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

7 Appendices

Appendix A – Clause 228 checklist

Clause 228 checklist	REF finding
Any environmental impact on a community	The proposal would have limited short-term impacts on the community including localised and temporary traffic impacts due to partial road closures, noise and air quality impacts. There will be environmental improvements by providing a reliable wastewater service to the local community.
A transformation of a locality	The proposal will not result in the transformation of a locality.
Any environmental impact on the ecosystem of the locality	The proposal will not result in environmental impacts to ecosystems of the locality. There will be environmental improvements by ensuring a reliable wastewater service will collect and treat wastewater, minimising any impacts on the ecosystem.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal would occur in previously disturbed residential and public areas. The proposal may result in a localised and temporary reduction of aesthetic and recreational values of effected sites during construction and would be restored to pre-existing conditions after the works. The proposal will not result in a long-term reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	The proposal would occur in previously disturbed areas and is not expected to have a direct or indirect impact on heritage listed items. The proposal would not have any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal would involve a small amount of clearing of urban vegetation which is unlikely to be the natural habitat for any protected animals. The proposal is therefore not expected to have any environmental impact on the habitat of protected animals within the meaning of the *Biodiversity Conservation Act 2016*.

Clause 228 checklist	REF finding
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The proposal will not be endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.
Any long-term effects on the environment	The proposed work will not have any long-term impacts on the environment but will have a long-term benefit improving the wastewater service for the area.
Any degradation of the quality of the environment	The proposed work will not cause the degradation of the quality of the environment.
Any risk to the safety of the environment	The proposal would prevent future wastewater discharges inside houses and would have improved health and safety outcomes in this respect.
Any reduction in the range of beneficial uses of the environment	The proposed work will not have any reduction in the range of beneficial uses of the environment.
Any pollution of the environment	Environmental safeguards will mitigate the potential for the proposed work to pollute the environment. No pollution of the environment is expected.
Any environmental problems associated with the disposal of waste	The proposal would generate small volumes of waste which will be disposed of in accordance with the environmental safeguards, and no environmental problems associated with the disposal of waste are expected.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal would involve earthworks which potentially contribute to temporary impact on local soil, water and air quality. The sites would be restored to a similar state to their pre-existing condition at the end of construction.
Any cumulative environmental effect with other existing or likely future activities	No cumulative environmental effects with other existing or likely future activities are expected.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal will not impact on coastal processes and coastal hazards, including those under projected climate change conditions.

Appendix B – Approvals pathway classification

1 Overview

Part 1 of this REF addresses the typical risks associated with the Upper Parramatta Source Control – Stage 1 Group C and prescribes safeguards that are required to minimise the risk of environmental impacts. Part 2 of this REF are site-specific assessments that consider individual proposal sites with additional environmental constraints and requirements that are not consistent with Part 1.

Table B1 lists all works proposed as part of Upper Parramatta Source Control – Stage 1 Group C. All works listed are classified under the ISEPP as exempt development or development without consent as detailed in Table 4-1 of the Part 1 REF.

All safeguards listed in Part 1 are to be applied to all sites listed in Table B1 below. Sites that require further environmental assessment, additional safeguards or additional site-specific permits or licenses are detailed in Part 2.

Exempt development classification

Exempt development classification in Table B1 must meet the following requirements:

- The works are defined as exempt development under the Infrastructure SEPP.
- The works comply with provisions of the Building Code of Australia and fire safety regulations.
- The works will be carried out in accordance with all relevant requirements of the Blue Book (Managing Urban Stormwater: Soils and Construction (4th edition, Landcom, 2004)).
- The works must not be designated development (as defined in section 4.10 of the EP&A Act).
- If the works are likely to affect a State or local heritage item or a heritage conservation area, must involve no more than minimal impact on the heritage significance of the item or area.
- Must not involve the demolition of a building or works that is a part of a state or local heritage item.
- If the works involve the demolition of a building, must be carried out in accordance with Australian Standard AS 2601-2001, the demolition of structures.
- Must be installed in accordance with the manufacturers' specifications (if applicable).
- The works must not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for the removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent.

- If the works involve the removal of asbestos, it must be done in accordance with *How to safely remove asbestos*, and *How to manage and control asbestos in the workplace* (2018, SafeWork).
- The works will only take place on land previously disturbed by human activity such as installation of infrastructure or utilities, soil ploughing, construction of buildings, substantial grazing or earthworks.

Part 1 REF classification

Part 1 REF classification in Table B1 must meet the following requirements:

- SWEMS19.01 has been undertaken and no environmental issues have been identified outside of those detailed in section 5 of the Part 1 REF.
- No specialist assessments are required due to the works having a low level or negligible impact.
- No impacts to threatened vegetation.
- The Part 1 REF lists all the relevant legislation for the site and no further consideration.
- Only standard / routine licenses or permits are required (e.g., ROL, WSWA)
- The works do not require further consultation under following clauses of the ISEPP:
    - Clause 13, council related infrastructure or services – consultation with council
    - Clause 14, local heritage – consultation with council
    - Clause 15AA, flood liable land – consultation with State Emergency Services
    - Clause 15A, development with impacts on certain land within the coastal zone– council consultation
    - Clause 16 – consultation with public authorities other than councils (including Office of Environment and Heritage, Department of Industry, Sydney Harbour Foreshore Authority, Subsidence Advisory NSW.
- The safeguards listed in Part 1 ensure that the works will have minor to no impact on the environment and no site-specific safeguards are required.

Part 2 REF classification

If the works do not meet the requirements under the above classifications, the work will require further assessment under Part 2 of this REF.

Table B1: Multisite Assessment Checklist[1]

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
1	1190750	Kingfisher Place	Inline check valve in gas check chamber on upstream relief pipe, remove existing GRP flap valve. Chamber modification likely.			✓- waterway, TEC clearing
2	1188923	Wildara Avenue	Install DN300 inline check valve in downstream discharge pipe of gas check chamber, may need to modify walls or use mounting tabs. Covers to be replaced with gatic.		✓	
3	1189343	Lisle Court	Install DN225/DN300 inline check valve in downstream relief pipe of gas check chamber. Fix benching, remove bar at the end.			✓ - TEC trimming
4	1393672	North Connex	Insert DN375 inline check valve in downstream relief pipe. Desilt overflow line and chamber. Removal plastic gas check valve. Remediate precast MH joints to be watertight		✓	
5	1393616	Westmore Drive	Install DN450 flange duckbill valve at discharge point, remediate headwall as			✓ - TEC clearing

[1] This table has been prepared using information detailed in site-specific SWEMS19.01 and site figures prepare on MapInfo – site-specific SWEMS19.01 and figures can be provided on request from the environmental representative.

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			required. Desilt pipe and remove bar screen and uncover sewer MH.			
6	1188403	Murray Farm Road	Install DN300 inline check valve into upstream relief pipe at gas check chamber. Remove existing GRP valve, make relief pipe flush with the wall. Replace covers.	✓		
7	1191139	Oakes Road	Install DN300 inline check valve in downstream discharge pipe of gas check chamber, modify walls to create sufficient install length.		✓	
8	1190290	Carmen Drive	Install DN300/37 inline check valve in downstream relief pipe. Modify benching if required to allow installation and removal.		✓	
9	1191598	Christel Avenue	Install DN300 inline check valve in downstream discharge pipe of gas check chamber, modify benching and walls if required.		✓	
10	1393432	Darling Mills	Install DN525 Duckbill valve at the discharge point (headwall). Desilt pipe			✓ - waterway, TEC clearing,

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			and remove bar screen and metal screen in the check valve.			widening access track
11	1395527	Darling Mills	Install DN525 Duckbill valve at the discharge point (headwall). Desilt pipe and remove bar screen.			✓ - waterway, TEC clearing/trimming, widening access track
12	1395471	Darling Mills	Install DN450 Duckbill valve, recess and build new headwall.			✓ - KFH, TEC clearing, widening access track
13	1183494	Mercer Street	Install a DN300 inline check valve in downstream discharge pipe of gas check chamber, adjust benching, modify wall at flap valve if required.		✓	
14	1185546	Orange Grove	Install DN375 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve, make relief pipe flushed with the wall. Modify the benching.		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
15	1185510	Francis Street	Decommission ERS. Plug relief pipe, pour concrete/fill with de-stabilise sand, backfill.	✓		
16	1182983	Crane Road	Install DN400 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve. Modify the benching.		✓	
17	1183726	Stone Cottage Court	Insert DN525 inline check valve at discharge point. Desilt pipe and clean chamber. Remediate scour apron.			✓ - waterway, TEC trimming
18	1185466	Woodhill Street	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve. Modify the benching as needed. Fix pipe.		✓	
19	1306149	Rydal Avenue	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve. Modify the benching.		✓	
20	1303813	Drayton Avenue	Install DN300 inline check valve into downstream relief pipe at gas check		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			chamber. Remove existing metal flap valve. Modify the benching as needed.			
21	1306969	George Mobbs Drive	Modify existing chamber, install inline check valve on downstream side of gas check chamber.		✓	
22	1306921	Jindabyne Avenue	Install DN300 inline check valve in downstream relief pipe of gas check chamber. Modify chamber benching if required. Remove existing metal flap valve		✓	
23	1178097	Cross Street	Modify existing chamber install inline check valve on downstream side of gas check chamber.		✓	
24	1306592	Talisman Avenue	Install DN300 inline check valve in downstream side of gas check chamber. Replace concrete covers.	✓		
25	1303959	Roxborough Park Road	Install DN450 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify benching as needed.		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
26	1302863	Torry Burn Reserve	Relay overflow line and raise invert levels by 100 mm. Retain existing grade. Desilt discharge point, construct new headwall and new DN525 duckbill. Patch repair GCC MH lid with concrete.			✓ - TEC clearing/trimming
27	1303420	Chelsea Avenue	Insert DN300 inline check valve in downstream relief pipe. Modify chamber benching as necessary. Desilt overflow line and chamber.		✓	
28	1304659	Meryll Avenue	Insert DN300 inline valve in discharge, downstream of gas check chamber, modify benching as required. Walls may need to be modified.		✓	
29	1302655	Lindsay Street	Install DN300 inline check valve in downstream relief pipe. Potential chamber modifications.		✓	
30	1303555	Coronation Road	Install DN375 inline check valve in downstream relief pipe. Modify benching and likely chamber wall modifications.		✓	
31	1305935	Katherin Road	Install DN375 inline check valve in downstream relief pipe. Modify		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			benching. Potential chamber wall modifications. Replace covers with gatic covers.			
32	1303183	Kentwell Street	Insert DN300 inline check valve in downstream relief pipe. Desilt overflow line and chamber.	✓		
33	1302141	Sophia Doyle Reserve	Pour and form new headwall against existing council gabion wall. Build one upstream wingwall and install DN600 duckbill valve at discharge point. Remediate MH lids with concrete.			✓ - TEC clearing, BSA (BCT notification)
34	1299473	Chapel Lane	Install a DN450 ICV, no duckbill. Inline preferred so there is no damage to the bank.	✓		
35	1187731	Lynden Avenue	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve, make relief pipe flushed with the wall. Modify the benching.		✓	
36	1188220	Douglass Avenue	Install DN300 inline check valve into downstream relief pipe at gas check		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			chamber. Remove the metal flap valve. Modify the benching.			
37	1190439	Bradley Drive	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove the metal flap valve. Modify the benching. Replace with gatic covers.		✓	
38	1188771	Lindisfarne Crescent	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove the metal flap GRP valve. Modify the benching.		✓	
39	1190900	Parklea Place	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove the (GRP) metal flap valve. Modify the benching.		✓	
40	1191467	Baker Street	Construct new headwall and apron. Install DN400 duckbill at the discharge point. Remove existing metal flap valve. Clear chamber and discharge point of silt and debris.			✓ - TEC clearing
41	1189186	Karingal Avenue	Install DN300 inline check valve into downstream relief pipe at gas check		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			chamber. Modify the benching. Replace concrete covers to gatic.			
42	1191898	Blenheim Road	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Modify the benching.		✓	
43	1191070	Balaka Drive	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Modify walls to allow installation and removal. Replace concrete cover on sewer MH.		✓	
44	1185617	Paragon Drive	Install DN375 inline check valve into downstream relief pipe. Modify chamber walls to allow install and removal of inline check valve.		✓	
45	1184828	McDonald Street	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify the benching as needed. Replace covers with gatic.			✓- TEC trimming
46	1184300	Northam Drive	Install DN300 inline check valve into downstream relief pipe at gas check		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			chamber. Remove existing metal flap valve. Modify the benching as needed.			
47	1185644	Camelot Court	Remove existing pollution trap, install DN525 duckbill valve at discharge in location of pollution trap. No vegetation impacts, excavation, creek crossings, or blockage of waterways required. All work will be located adjacent to, not within the waterway.		✓	
48	9399258	Dolerite Way	Install DN525 inline check valve into downstream discharge pipe in gas check chamber. Modify benching if required.		✓	
49	8521060	Foundation Place	Remediation of existing headwall and duckbill installation at the discharge point of relief pipe into an open stormwater channel. Desilt overflow pipe and chambers. **Build and maintain permanent access route to access.**			✓ - new access route
51	8664041	Baraba Crescent	Construct new headwall and DN450 duckbill at the discharge point. Remove		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			bar screen. Clear and remediate scour path.			
53	9207805	Nijong Drive	Construct and recess new headwall away from creek line. Install DN375 flanged duckbill valve on headwall.			✓- waterway, TEC clearing
54	1360304	Rowood Road	Move ERS upstream to MH 1359883 and relay overflow line to connect to existing 2400 x 1200 council stormwater. Construct weir chamber and duckbill as per Arrangement 2B (a new weir chamber and new valve chamber in separate structures). Decommission existing ERS 1360304.		✓	
55	1360548	Metella Reserve	Construct new headwall at discharge point and construct flanged DN450 duckbill valve. Clear vegetation, clean chamber and desilt overflow.	✓		
56	1359568	Oklahoma Avenue	Construct new headwall at discharge point and construct flanged DN525 duckbill valve. Remediate scour path. Clear vegetation.			✓- TEC clearing/trimming

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
57	1361301	Gilba Road	Construction arrangement 1 chamber and DN275 duckbill along existing overflow line. Desilt overflow line and chamber. CCTV discharge pipe to confirm length.		✓	
58	1362369	Girraween Road	Construct DN1200 MH over existing overflow line and insert DN300 inline check valve in upstream relief pipe. Desilt overflow line and chamber. CCTV overflow line to confirm length.		✓	
59	1359545	MacLeay Street	Install DN400 inline check valve into downstream relief pipe at gas check chamber. Remove existing GRP valve. Modify the benching as needed.		✓	
60	1364342	Rowley Street	Install DN300 inline check valve in downstream relief pipe of gas check chamber. Modify chamber wall to allow installation of valve. Modify chamber benching if required. Remove existing metal flap valve.		✓	
61	1364110	Gilba Road	Install DN500 inline check valve in downstream, relief pipe at stormwater discharge. Replace concrete cover on	✓		

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			sewer MH. Remove existing metal flap valve.			
63	1364386	Billabong Road	Install DN500 inline check valve in downstream relief pipe at stormwater discharge. Repair displaced joint. Remove vertical bar screen. Remove existing metal flap valve.	✓		
64	1363463	Bungaree Road	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify benching as needed.		✓	
65	1363386	Toongabbie Road	Install DN300 inline check valve in downstream discharge pipe of gas check chamber, remove existing metal flap valve, modify benching as needed. Desilt relief pipe and chamber.		✓	
66	1363666	Toongabbie Road	Install DN375 inline check valve in downstream discharge pipe of gas check chamber, remove existing metal flap valve, modify benching as needed. Desilt relief pipe and chamber.		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
67	1364954	Hanbury Street	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify benching as needed.		✓	
68	1365747	Old Prospect Road	Construct arrangement 1 valve chamber along the relief pipe. Install DN450 duckbill valve. Remove existing metal flap valve from gas check chamber. Relay upstream relief pipe to achieve falls.		✓	
69	1366083	Old Prospect Road	Install DN300 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify benching as needed. CCTV relief pipe to confirm condition.		✓	
71	1363387	Great Western Highway	Install DN1200 maintenance hole along relief pipe. Install DN300 inline in the downstream of the new manhole. Remove existing metal flap valve.		✓	
72	1367091	Wenty Leagues	Insert DN450 inline check valve at discharge point from Sydney Water stormwater channel.	✓		

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
73	1365315	Mashman Avenue	Replacing cover and frame for the maintenance hole. Install DN450 inline check valve into downstream discharge pipe at stormwater channel with internal mounting tabs.	✓		
74	1362984	Emert Street	Install DN300 inline check valve into downstream discharge pipe in gas check chamber. Modify benching as necessary to accommodate valve.		✓	
75	1363308	Emert Street	Install DN525 inline check valve into relief pipe at discharge point.	✓		
76	1367123	Oatlands Street	Install DN300 inline check valve into downstream discharge pipe in gas check chamber. Modify benching as necessary to accommodate valve.		✓	
77	1363896	Pritchard Street W	Change cover of gas check chamber. No works to offset the slope. Install DN525 inline check valve into downstream discharge pipe at	✓		

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			stormwater channel with internal mounting tabs.			
78	1366964	Wentworth Avenue	DN1200 to be constructed with existing relief pipe. Install DN525 inline check valve into downstream discharge pipe at stormwater channel with internal mounting tabs. Remove bar screen.		✓	
79	1364759	Sheehan Street	Insert DN450 inline check valve in downstream relief pipe of existing gas check chamber. Modify benching and chamber as required. Lower GCC MH to surface. Liaise with resident to build a new 'removable panel' over GCC MH. Lower sewer MH and replace concrete sewer lid with gatic.		✓	
80	1363932	Fyall Avenue	Install DN400 inline check valve into downstream relief pipe at gas check chamber. Remove existing metal flap valve. Modify benching as needed.		✓	
81	1365124	Cumberland Highway	Relocate ERS further downstream to MH1366009 on Fulton Avenue and lower WCL to 14.8mAHD (new weir		✓	

Site name	Asset Number	Location	Proposed works *(provide a brief outline of the works required at each the site)*	Exempt Development	Part 1 REF. (No further assessment required)	Part 2 REF. (Further site-specific assessment required)
			chamber and new valve chamber in one structure).			
82	1363573	Mahony Road	Raise gas check chamber to surface, install DN150/300 inline valve in downstream relief pipe of gas check chamber.		✓	
84	1367301	Hopkins Street	Construct a headwall and install DN525 duckbill valve at discharge location.			✓- KFH, TEC clearing
85	1405144	Henson Street	Install DN300 inline check valve in downstream relief pipe of gas check chamber. Modify chamber benching if required. Modify chamber wall if required. Remove existing metal flap valve.		✓	
86	8505561	Fitzwilliam Road	Install DN375 incline check valve in downstream relief pipe of gas check chamber. Modify chamber benching. Remove existing GRP flap valve.		✓	

Appendix C – Part 2 – Site-specific environmental assessments