

Review of Environmental Factors

305 South Street, Marsden Park Sewer Lead-in Carrier, Case No. 171308WW



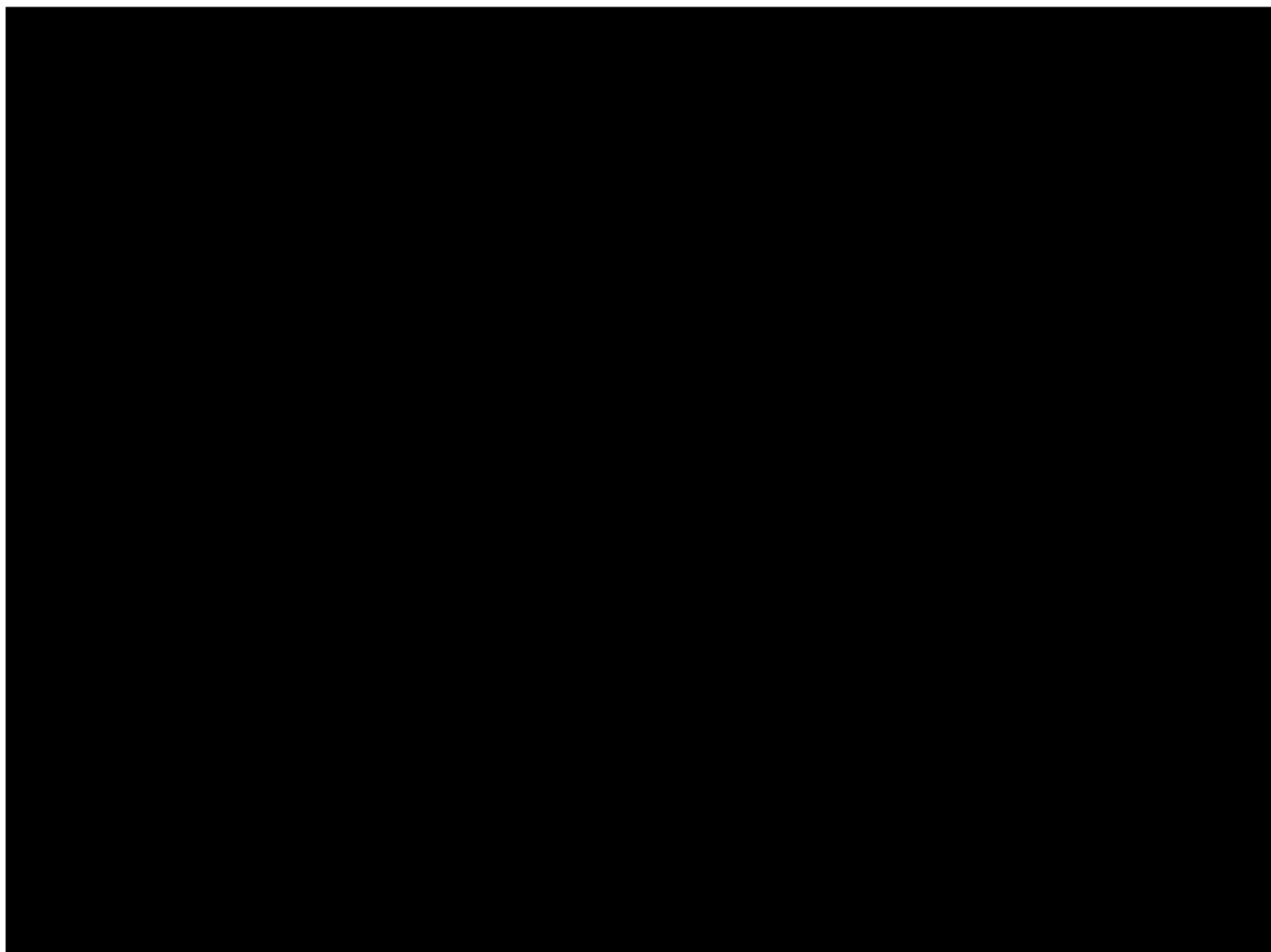
1 Determination

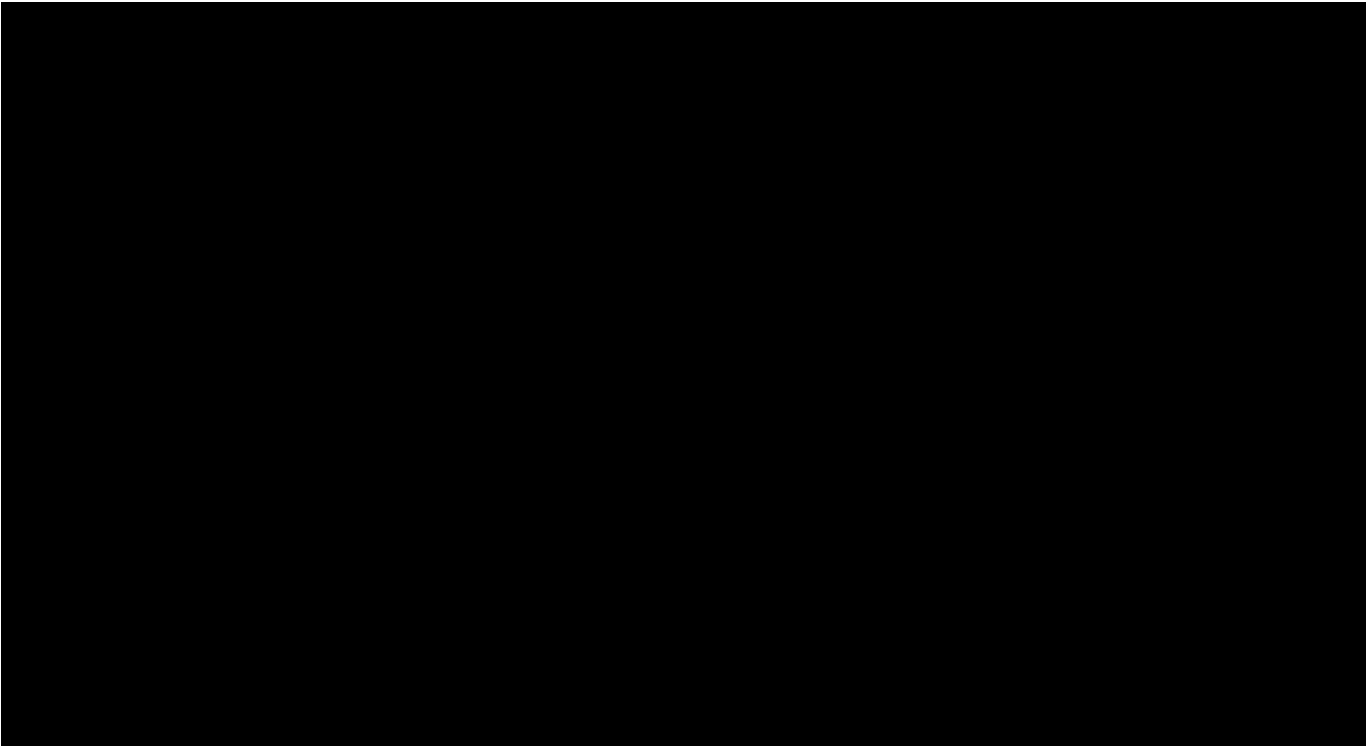
This Review of Environmental Factors (REF) assesses potential environmental impacts of the proposal to construct a sewer lead-in carrier (herein referred to as 'pipeline' in this report) to service 305 South Street, Marsden Park. The proposal has been assessed under Part 5 of the *Environmental Planning and Assessment* (EP&A) Act.

The proposal is unlikely to have a significant impact on the environment or a threatened species, population or ecological community, and is not on land that is critical habitat, and accordingly, an Environmental Impact Statement is not required. The below signatories certify that the REF:

- examines and takes into account all matters affecting or likely to affect the environment as a result of activities associated with the proposal
- is accurate and does not omit any material information
- subject to the implementation of the safeguards, it is unlikely that there will be any significant environmental impacts associated with the proposal
- considers the proposal in accordance with the principles of Ecological Sustainable Development
- will be adhered to by the Developer, including undertaking the proposal as described, implementing the safeguards, and managing construction risks.

Sydney Water is the proponent and determining authority for the proposal. Under Section 5.5 and 5.6 of the EP&A Act, Sydney Water must examine all matters likely to affect the environment from this activity.





2 Proposed works and permissibility

Scope of Work	Description of Work / Activity
Case Number	Case No. 171308WW
Location / Land Ownership	<p>The proposed works are located in the Blacktown local government area (LGA). The proposed sewer lead-in (herein referred to as the 'pipeline') is located off South Street, Marsden Park to service 305 South Street, Marsden Park.</p> <p>The pipeline will have an approximate length of 1200 m and be majority under-bored (915 m) with approximately 225 m of open trenching. The pipeline will pass through the following land parcels:</p> <ul style="list-style-type: none"> • Lot 30 (DP 1246320) • Lot 8 (DP 262886) • Lot 8 (DP 1088344) • Lot 9 (DP 262886); • Lot 11 (DP 1215245); and • Lot 1 (DP 1237359). <p>The proposed location and scope of works is shown in Figure 1.</p> <p>The 'site' encapsulates the space needed for:</p> <ul style="list-style-type: none"> • Pipeline placement; and • Machinery and vehicle access.
Proposal Description / Scope of Work	<p>The works propose to construct a 1307m long sewer pipeline south of South Street, to service 305 South Street, Marsden Park (Figure 1). Detailed design can be found in Appendix A.</p> <p>The detailed scope of works currently includes:</p> <ul style="list-style-type: none"> • Under-boring for the majority (915 m) of the pipeline; • Open trenching for a length of approximately 264 m; • Construction of entry/exit pits; and • Storage of topsoil, spoil and quarry materials immediately adjacent to the excavated areas, within the construction buffers around the entry/exit pits. <p>The proposed heavy machinery to be used will include:</p> <ul style="list-style-type: none"> • Excavators; • Horizontal Directional Driller (HDD); • Bob cat; • Bogie; and • Flatbed Truck <p>Additional machinery may be used that will ensure that only similar low impacts occur to the soil.</p>

Scope of Work	Description of Work / Activity
	<p>Other ancillary tools and machinery may be required to undertake the works including pumps, generators, utility vehicles, jack hammers / rock hammering equipment, hand tools etc.</p> <p>As part of this assessment Eco Logical Australia (ELA) has undertaken an Aboriginal Due Diligence Assessment. This report has also summarised the findings of the Geotechnical Investigation (Douglas Partners, 2020).</p>
<p>Access Tracks and Compound</p>	<p>Access into the site will be via an existing road (South Street and Richmond Road). No new access road is proposed.</p> <p>The works addressed in this REF include the construction phase of the pipeline. The works will include the temporary open trenching of the ground and the permanent placement of a pipeline.</p> <p>The site compound area will be within the property of 305 South Street, Marsden Park.</p>
<p>Work Hours</p>	<p>Work hours will be in accordance with the <i>Draft Construction Noise Guidelines</i> (EPA 2020):</p> <ul style="list-style-type: none"> • Monday to Friday 7.00am to 6.00pm • Saturday 8.00am to 1,00pm • No work on Sunday or public holidays
<p>Proposal Timing</p>	<p>The proposed works have commenced and are expected to be completed early 2024.</p>

Permissibility / Relevance to proposal
Permits

Land Zoning According to the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (Western Parkland City SEPP) the proposed works are on land zoned as:

- R3 (Medium Density Residential);
- B7 (Business Park); and
- SP2 (Infrastructure).

Infrastructure SEPP Sewerage reticulation systems may be carried out by or on behalf of a public authority without consent on any land in accordance with Section 2.125 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP).

Note: The Transport and Infrastructure SEPP superseded the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) as of 1 March 2022.

Is the work in a National Park, Regional Park owned by National Parks and Wildlife Service (NPWS)? No. The proposed works are not located in a National Park or a Regional Park owned by NPWS.

Is the work within a Growth Centre and will the proposal involve clearing existing native vegetation (ENV) or native vegetation retention (NVR)? Yes. The proposed works are within a Growth Centre under the Western Parkland City SEPP. The proposed works are located within the Marsden Park Industrial Precinct, which is addressed in Appendix 3 ‘Marsden Park Industrial Precinct Plan’.

The study area is wholly biodiversity certified under Part 8 of the new *Biodiversity Conservation Act 2016* (BC Act). See Figure 2.

The entire study area is biodiversity certified under s126 of the *Threatened Species Conservation Act 1995* (now repealed) (Figure 2). In accordance with clause 35 of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*, biodiversity certification that was conferred on land under Part 7AA of the TSC Act and that was in force on the repeal of that Act is taken to be biodiversity certification conferred on the land under Part 8 of the new *Biodiversity Conservation Act 2016* (BC Act).

Development on certified land is taken to be development that does not have a significant impact on threatened species, endangered populations or endangered ecological communities.

[Redacted content]

Permissibility
Permits

/ Relevance to proposal

[REDACTED]

Will construction in Key Fish Habitat be required?

The *Fisheries Management Act 1995* (FM Act) provides for the protection, conservation, and recovery of threatened species defined under the Act. It also makes provision for the management of threats to threatened species, populations, and ecological communities defined under the Act, as well as the protection of fish and fish habitat in general. In particular, the FM Act has mechanisms for the protection of marine vegetation (mangroves, saltmarsh, seagrass and seaweeds) on public water, land and foreshores. No mangroves, saltmarsh, seagrasses, and seaweeds are located within or in close proximity to the site. No Key Fish Habitat will be impacted by the proposed works.

The works will not involve dredging of the bed, land reclamation, excavations to the bed or bank or the obstruction of fish passage. Thus, a Part 7 Permit under the FM Act is not required.

Will dewatering > 3ML per year be required?

Under the *Water Management Act 2000* (WM Act) and in accordance with NSW Aquifer Interference Policy (DPI, 2012) activities that may impact or interfere with groundwater aquifers require approval. The policy lists trenches and pipelines as having minimal impact on water-dependent assets. In this context, the installation of the pipeline is unlikely to trigger the relevant requirements of the WM Act and the Aquifer Interference Policy doesn't apply.

A Controlled Activity Approval under s91 of the WM Act is not required as the proponent is a public authority and therefore exempt under Section 38 of the *Water Management Regulation 2011*.

Does the proposal involve work on a major road?

Both South Street and Richmond Road are not listed on the RMS 'Schedule of Classified Roads and Unclassified Regional Roads' and are not main roads as defined by the *Roads Act 1993*. The proposed works are not likely to significantly impact on traffic flow. A Road Occupancy Licence under the *Roads Act 1993* will not be required.

Are there any other permits, licences or

No other permits or licenses are needed as a result of the proposed works.

Permissibility / Relevance to proposal
Permits

consultation
notification needed?

/ Clause 2.10 of the Transport and Infrastructure SEPP provides for consultation with Council in relation to development with impacts on council-related infrastructure or services. South Street and Richmond Road are Council managed roads. Minor works within the Richmond Road reserve will be required. Therefore, consultation with Council may be required prior to works commencing.

Clause 2.11 of the Transport and Infrastructure SEPP provides for consultation with Council in relation to development with impacts on local heritage. The proposed works will not impact on any known historical sites or objects therefore consultation is not required.

Clause 2.12 of the Transport and Infrastructure SEPP provides for consultation with Council in relation to development with impacts on flood liable land. The works are not proposed on flood liable land under the Western Parkland City SEPP, therefore consultation with Council is not required.

[REDACTED]

3 Location of Proposal and Environmental Constraints

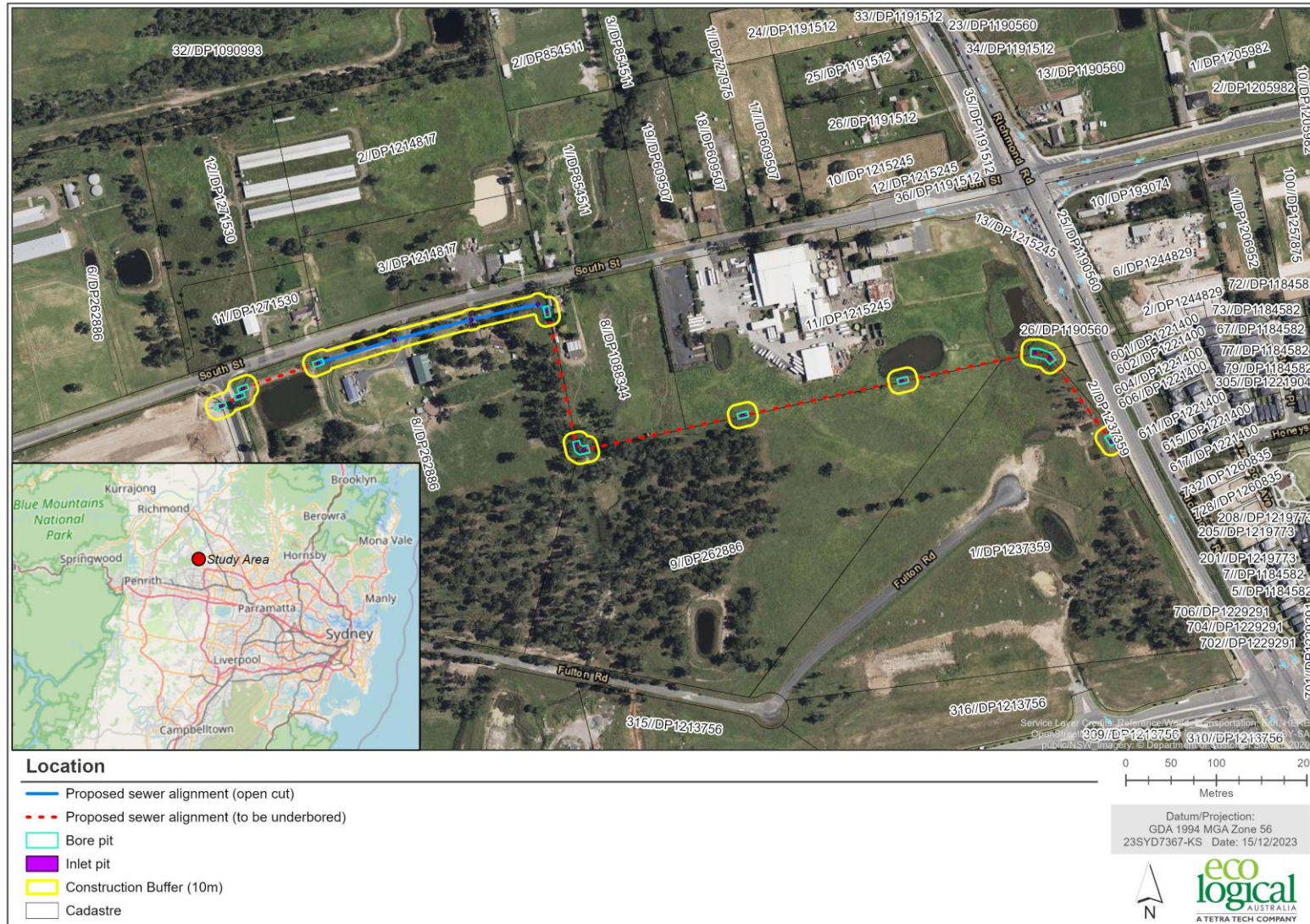


Figure 1: Location of the proposed works

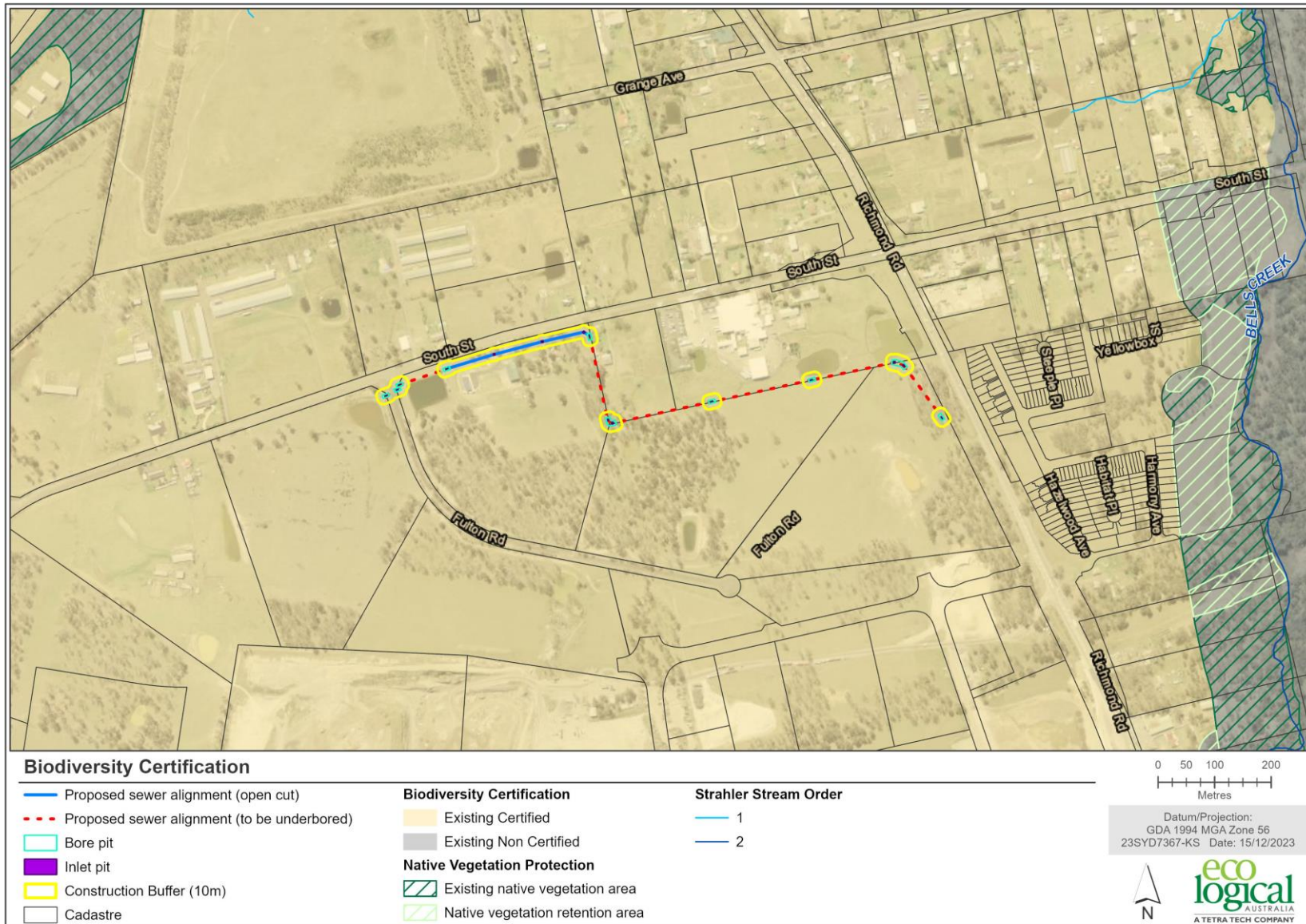


Figure 2: Location of Biodiversity Certified land in relation to the pipeline

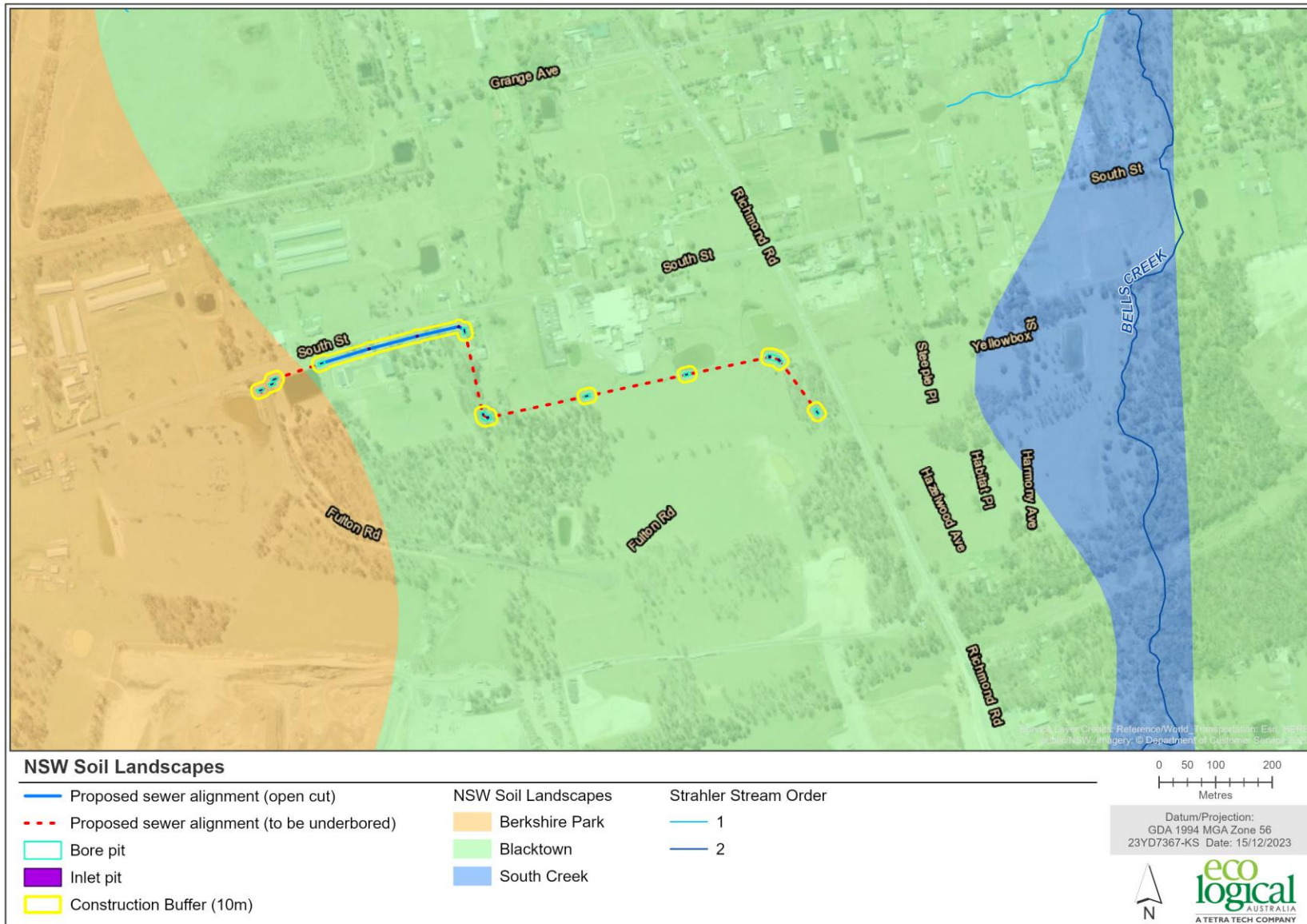


Figure 3 Mapped Soil Landscapes in relation to the study area

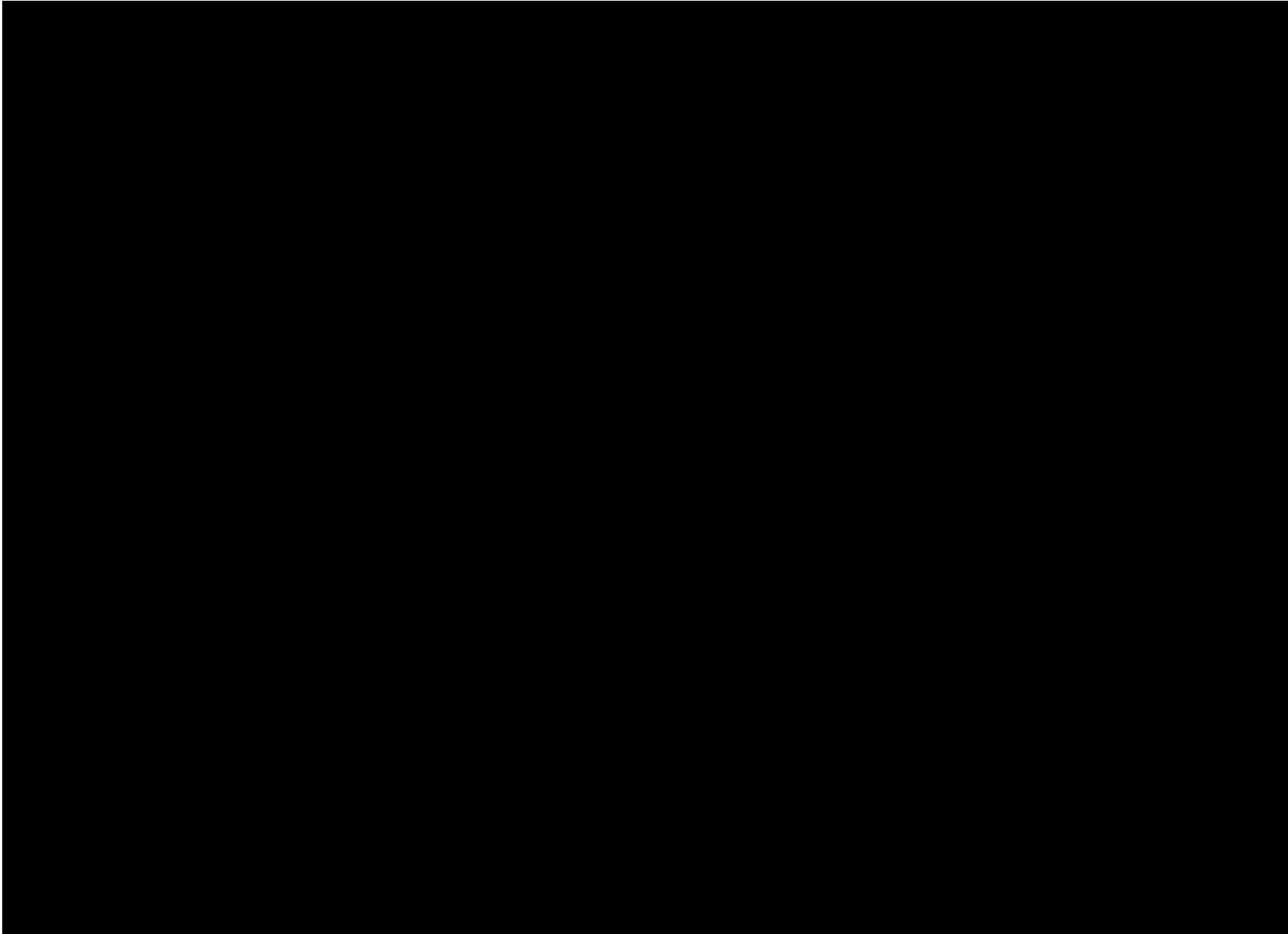


Figure 4: Mapped waterways in proximity to the study area

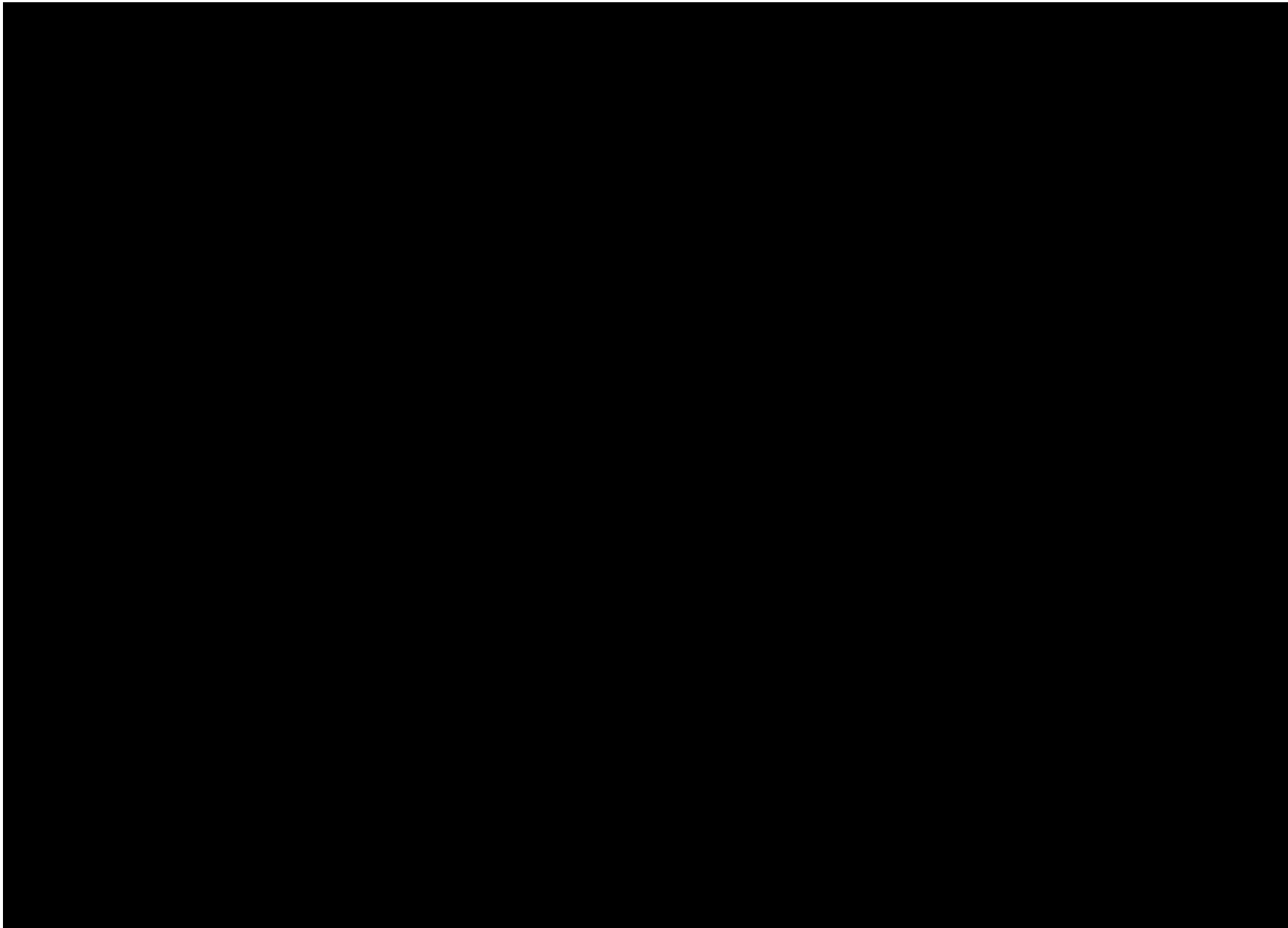


Figure 5: AHIMS Sites in the vicinity of the proposed works

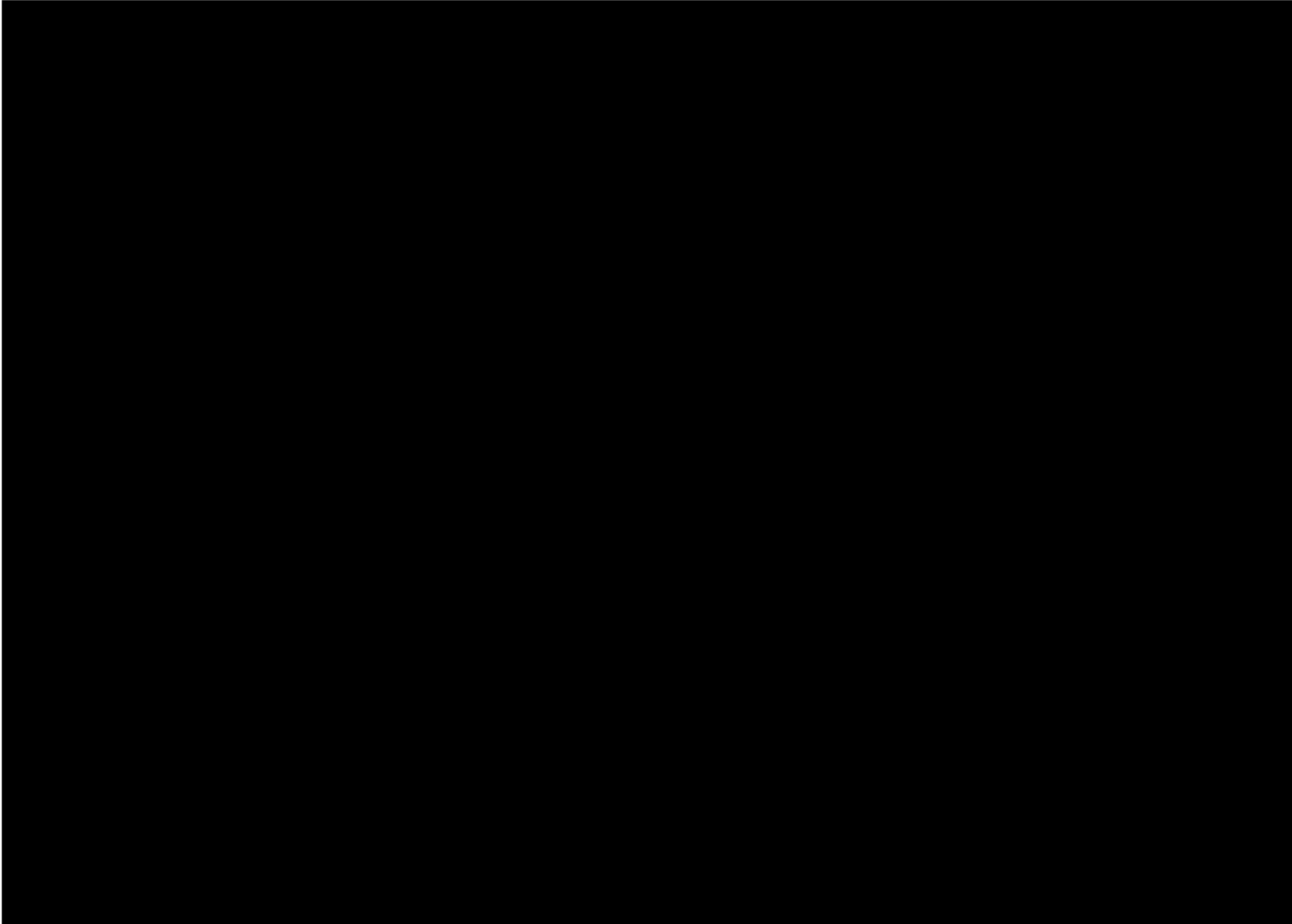


Figure 6: Identified Aboriginal archaeology potential within study area

4 Environmental Assessment

The table below identifies the proposal’s key potential environmental impacts. All other potential environmental impacts are considered minor and will be mitigated by implementing the environmental safeguards documented in Section 5 of this REF.

Aspect	Potential impacts												
Soils, geology and topography	<p>Existing Environment</p> <p>The study area crosses into both the Blacktown and Berkshire Park soil landscapes. The Blacktown soil landscape consists of shallow to moderately deep hard setting texture contrast soils. Erosional susceptibility of this soil landscape is relatively low and is increased where surface vegetation is not maintained.</p> <p>The South Creek landscape is derived from quaternary alluvium from Wianamatta Group shales and Hawkesbury sandstone. It is a dynamic soil landscape with many areas of erosion and deposition.</p> <p>The study area is within the Sydney Basin bioregion, on the Cumberland Plain. The Cumberland Plains are characterised by gently undulating low hills and plains atop Wianamatta Group shales (OEH, 2017).</p> <p>The Geotechnical Investigation (Douglas Partners, 2020) concluded that the site is underlain by Bringelly Shale of Triassic Age, which is comprised of interlayered siltstone/claystone with some fine to medium grained sandstone layers, which weather to a residual clay profile of medium to high plasticity.</p> <p>The subsurface conditions encountered during the Geotechnical Investigation Douglas Partners, 2020) are summarised in Table 1.</p> <p>Table 1 Subsurface conditions (Douglas Partners, 2020)</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Depth (m)</th> </tr> </thead> <tbody> <tr> <td>Topsoil – Silty clay topsoil with inclusions of gravel, sand and rootlets.</td> <td>0.05 – 0.3</td> </tr> <tr> <td>Fill – Silty clay or sandy clay with inclusions of sand, gravel and glass.</td> <td>0.2 – 2.0</td> </tr> <tr> <td>Natural Soil – Firm to hard silty clay or sandy clay</td> <td>1.4 – 7.6</td> </tr> <tr> <td>Very Low and Low Strength Bedrock – Very low and low strength, highly to moderately weathered, highly fractured to fractured, sandstone, siltstone or laminite</td> <td>1.4 – 7.6</td> </tr> <tr> <td>Low, Medium and High Strength Bedrock – Low and medium strength with occasional very low and high strength bands, slightly weathered to fresh with some moderately weathered zones, slightly fractured or unbroken siltstone, sandstone and laminite</td> <td>1.4 – 11.7</td> </tr> </tbody> </table>	Description	Depth (m)	Topsoil – Silty clay topsoil with inclusions of gravel, sand and rootlets.	0.05 – 0.3	Fill – Silty clay or sandy clay with inclusions of sand, gravel and glass.	0.2 – 2.0	Natural Soil – Firm to hard silty clay or sandy clay	1.4 – 7.6	Very Low and Low Strength Bedrock – Very low and low strength, highly to moderately weathered, highly fractured to fractured, sandstone, siltstone or laminite	1.4 – 7.6	Low, Medium and High Strength Bedrock – Low and medium strength with occasional very low and high strength bands, slightly weathered to fresh with some moderately weathered zones, slightly fractured or unbroken siltstone, sandstone and laminite	1.4 – 11.7
Description	Depth (m)												
Topsoil – Silty clay topsoil with inclusions of gravel, sand and rootlets.	0.05 – 0.3												
Fill – Silty clay or sandy clay with inclusions of sand, gravel and glass.	0.2 – 2.0												
Natural Soil – Firm to hard silty clay or sandy clay	1.4 – 7.6												
Very Low and Low Strength Bedrock – Very low and low strength, highly to moderately weathered, highly fractured to fractured, sandstone, siltstone or laminite	1.4 – 7.6												
Low, Medium and High Strength Bedrock – Low and medium strength with occasional very low and high strength bands, slightly weathered to fresh with some moderately weathered zones, slightly fractured or unbroken siltstone, sandstone and laminite	1.4 – 11.7												

Aspect	Potential impacts
--------	-------------------

Douglas Partners (2020) selected samples from the boreholes to test for determination of aggressivity to concrete and steel, sodicity and salinity. The results are summarised in Table 2.

Table 2 Results of laboratory testing (Douglas Partners, 2020)

Parameter	Results
Aggressivity to concrete and steel	Soil tests of pH, sulphate concentrations and chloride against the aggressivity class ranges indicated in Australian Standard AS 2159 concluded that the soil samples have very low permeability, which are therefore classified as 'non-aggressive' to 'mildly aggressive' to concrete and 'non-aggressive' to steel with reference to AS2159.
Sodicity	The sodicity test indicates sodic to highly sodic soils, indicating a moderate to high potential for erosion of soils left exposed.
Salinity	Electrical conductivity testing indicates that the samples tested were 'slightly saline' to 'moderately saline'.

Senior Environmental Scientist

Potential Impacts

Erosion and Sedimentation

Prevention of soil erosion and sedimentation is a key aspect of environmental management. Land disturbances resulting from the construction of infrastructure such as sewage reticulation increases the potential for soil erosion and sediment pollution. Sedimentation has the potential to impact waterways, including aquatic flora and fauna, as well as increase the risk of flooding due to blocked drains, facilitate the transportation of chemicals (including nutrients and contaminants) to sensitive ecosystems, and reduce the aesthetic value of the environment (DEC, 2006). Soils are a non-renewable resource and contribute significantly to the health and integrity of the environment (SoE, 2021). Changes in erosion can have impacts on water quality, ecosystem services, agricultural lands, and cause damage to public utilities (OEH, 2015; WaterNSW, 2020).

Erosion within the Blacktown soil landscape is generally moderate (DPIE, 2013). There is potential for sedimentation and erosion to occur during excavation of the manholes launch pits. Sedimentation may also arise from the stockpiling of excavated materials in the case of rainfall. Mitigation measures have been provided in Section 5 which will reduce the potential risk and impacts associated with erosion and sedimentation. The preparation of a Construction Environmental Management Plan (CEMP) is required to address sedimentation risks.

Contaminated Soils/ Acid Sulfate Soils

The NSW EPA Contaminated Land Register (NSW EPA 2022) of contaminated land or potential contamination risk within the suburb of 'Marsden Park' did not identify any current or previous notices that apply to the site. This does not however eliminate the risk of contaminated soils occurring within the site. It is unlikely that gross contamination exists or

Aspect	Potential impacts
	<p>that any existing contamination would pose a risk to human health or the environment. However, illegal dumping may have occurred within the area.</p> <p>A review of the Western Parkland City SEPP Acid Sulfate Soils Map (DPE, 2022b) and Acid Sulfate Soils Risk mapping (DPE, 2022c) indicated that there are no known occurrence of acid sulfate soils (ASS) within the site.</p> <p>ASS do not pose a risk when left undisturbed. Potential impacts of disturbed ASS cause a chemical reaction, resulting in damage to waterways, plants, corrosion (including of infrastructure) and irritation or illness. Mapping has indicated there is no known potential for ASS to occur within the site, therefore their potential impacts are considered negligible. Considering the absence of known occurrences of ASS within the site, it is unlikely that ASS will be disturbed by the works.</p> <p><i>Salinity</i></p> <p>Reference to the Map of Salinity Potential in Western Sydney, prepared by the Department of Infrastructure, Planning and Natural Resources in 2002, indicates that the landscape across the site has moderate salinity potential.</p> <p>Soil salinity is correlated with the groundwater; high groundwater can transport salt to the surface and create salt deposits as groundwater drops. Saline impacts can cause vegetation to diminish or die, or impact manmade structures such as piles, slabs, and pathways (McGhie, 2003). Salinity can also cause damage to soil quality and infrastructure including roads and pipelines (DPE, 2018b).</p> <p>The works are not proposing to impact on factors that are likely to change salinity levels such as changing water tables. Considering this, despite the area having moderate salinity potential, salinity is not likely to be exacerbated by the proposed works.</p>

<p>Waterways</p>	<p>Existing Environment</p> <p>The study area lies within the Hawkesbury Nepean River Catchment. Bells Creek, which is a second order tributary of Eastern Creek, is located approximately 540 m east of the proposed pipeline.</p> <p>No Ramsar Wetlands or Coastal Wetlands, Littoral Rainforests or Coastal Areas as defined within the <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> have been identified within the site.</p> <p>The Atlas of Groundwater Dependent Ecosystems (BoM, 2016) was reviewed for the potential of Groundwater Dependent Ecosystems (GDEs) to be present within the site. No GDEs were identified.</p> <p>Potential Impacts</p> <p><i>Surface Water</i></p> <p>The commissioning phase presents the greatest risk of pipe leakage, when the sewer main is connected to the existing system. A Controlled Activity Approval under s91 of the WM Act is not required as the proponent is a public authority and therefore exempt under s38 of the WM Regulation 2011.</p>
------------------	---

Aspect	Potential impacts
--------	-------------------

Provided the safeguards are followed, a sewer leak during commissioning and impacts to surface water during construction are considered to have low potential to occur. The preparation of a Construction Environmental Management Plan (CEMP) will address any sedimentation risks.

The dam in the northwest of the study area will not require dewatering, and is to be retained. Given the proximity of excavations to this dam, strict sediment and erosion controls are to be implemented and no refuelling activities are to take place adjacent to or nearby this dam. Measures to protect water quality are recommended in Section 5.

Drinking Water Catchment

The site is within the Hawkesbury Nepean River Catchment and this does not fall within a Sydney Catchment Authority (SCA) catchment area and will therefore not impact on the drinking water.

Groundwater and Aquifers

Under the WM Act and in accordance with NSW Aquifer Interference Policy (DPI, 2012) activities that may impact or interfere with groundwater aquifers require approval. The policy lists trenches and pipelines as having minimal impact on water-dependent assets. In this context, the installation of pipelines is unlikely to trigger the relevant requirements of the WM Act and the Aquifer Interference Policy doesn't apply.

A Controlled Activity Approval under s91 of the WM Act is not required as the proponent is a public authority and therefore exempt under s38 of the *Water Management Regulation 2011*.

The groundwater level appears to be at a level at, or below near the interface with the soil/bedrock. It is likely that groundwater seepage flows will occur within the upper weathered bedrock profiles. Groundwater levels are likely to fluctuate, particularly after wet weather (Douglas Partners, 2020). It is anticipated that there may be some seepage of groundwater into the excavation. Such seepage will need to be collected during construction by the placement of drainage sumps and by intermittent pumping. At this stage, it is not possible to estimate the likely extent and rate of seepage although it is anticipated that it should be readily handled by sump and pump measures (Douglas Partners, 2020).

GDEs

No potential for GDEs was identified within the site. Potential impacts to GDEs are considered unlikely.

Flora and fauna	<p>Existing Environment</p> <p>The site is located on rural residential land with some vegetation.</p> <p>The site is located within the Marsden Park Industrial Precinct of the North West Growth Centre. The study area is biodiversity certified under Part 8 of the BC Act. Therefore, the assessment of impacts to threatened species, populations or ecological communities listed under the BC Act and <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) is not required for this area.</p>
-----------------	---

Aspect	Potential impacts
--------	-------------------

No areas of Existing Native Vegetation (ENV) and Native Vegetation Retention (NVR) are mapped within the site. No species listed under the FM Act have been identified as being impacted by the proposed works.

Potential Impacts

As the entirety of the proposed impact area is located on ‘certified land’ no detailed flora and fauna assessments were undertaken for the pipeline.

The proposed pipeline will be constructed through under-boring and open trenching. Impacts to native flora and fauna have been minimised by under-boring wherever possible. Where open trenching is proposed for launch/receive pits and for the length of pipeline in the northwest, impacts to flora and fauna will be managed by a range of mitigation measures recommended in Section 5. Native fauna may be impacted during construction works through noise and vibration associated impacts, and native vegetation clearing including trees. Overall, impacts to biodiversity on certified land were considered as part of the Growth Centres strategic assessment and are offset elsewhere in the growth centres. Regardless, all native fauna are protected and pre-clearance surveys are recommended to minimise potential harm to fauna as a result of tree removal.

Air Quality	Existing Environment
-------------	-----------------------------

The current air quality within the site is likely to be typical of a rural area with air quality likely to be moderate.

A search of the National Pollution Inventory was undertaken. No known facility sources are in close proximity to the study area.

Potential Impacts

Minor dust emissions are predicted as part of the disturbance of soil that may have a minor impact to the adjoining residents. The anticipated impact on local residents is low given the short-term duration of the project and the proximity of the closest receivers. Mitigation measures have been recommended to reduce this impact further in Section 5.

Odour emissions have a low potential to impact local residents. Safeguards have been provided to minimise the likelihood of odour impacts during the construction phase such as appropriate design.

Waste and Hazardous Materials	Existing Environment
-------------------------------	-----------------------------

A search of the NSW EPA Contaminated Land Register (accessed 25 July 2022) of contaminated land or potential contamination risk within the suburb of Marsden Park and Blacktown LGA did not return any results on known contaminated land records or investigations in proximity to the site (NSW EPA, n.d.).

Potential Impacts

It is not anticipated that the works will involve the management of hazardous waste. The construction contractor is to identify all hazardous materials and chemicals that are to be

Aspect **Potential impacts**

used/transported during the works and manage them in accordance with the relevant Safe Work Australia standards.

Some spoil will result due to under-boring and excavations. Soil will be reused as fill wherever possible. However, if required, soil waste is to be classified and removed in accordance with the NSW EPA (2014) *Waste Classification Guidelines Part 1: Classifying Waste*.

There is the potential for contaminated soils to exist within the site. Excavation of contaminated material poses a risk to human and ecosystem health. There is the potential for further contamination of soil as a result of chemical or oil spills during construction of the pipeline. If the recommended safeguards are adopted (Section 5), the impact and likelihood of further contamination will be minimised.

Mitigation measures have been provided in Section 5 to guide the management of waste.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED] other stakeholder groups can provide a cultural assessment for the area if required.

Aspect	Potential impacts
--------	-------------------

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

- [Redacted list item]
- [Redacted list item]
- [Redacted list item]
- [Redacted list item]

[Redacted text block]

[Redacted text] significantly affected by distance from the watercourse (White & McDonald 2010: 33).

Aspect	Potential impacts
--------	-------------------

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Visual Inspection

A visual inspection of the study area was undertaken by ELA Archaeologist Declan Coman on the 31st of August 2020. The visual inspection targeted the areas identified as being impacted by the proposed works.

The visual inspection identified no new Aboriginal objects as the area was well vegetated and there were no visible ground surfaces. The visual inspection observed multiple disturbances from previous land use across portions of the site.

In the west of the study area multiple impacts from the construction of the road corridor, artificial dams and modified landforms, as well as impacts from residential developments including fences (Figure 8), unsealed driveways (Figure 9) and residential structures (Figure 10) have all impacted ground surfaces, indicating that it is unlikely any deposits have been preserved *in situ*. Similar impacts from residential development are present at 235 South Street (Figure 11).

The northwest corner of 253 South Street shows multiple impacts from the residence as well as from residential land use in the back yard (Figure 12) and agricultural structures with concrete foundations (Figure 13). These developed landforms can be considered to have been impacted and any archaeological potential that may have been present has been disturbed.

However, as the alignment moves further south it leaves the areas of disturbance and enters and open, low sloping landform with minimal disturbance (Figure 14). This landforms continues around to the south crossing an ephemeral drainage line (Figure 15), there is an old shed (Figure 16) with no foundations on the flat open area (Figure 17).



Figure 8: Residential fencing in west of study area



Figure 9: Unsealed residential driveway in west of study area



Figure 10: Residential development in west of study area



Figure 11: Residential structure on 235 South Street



Figure 12: Back yard of 235 South Street showing impacts from residential land use and modification



Figure 13: Agricultural shed at back of 235 South Street, showing impacts from a concrete foundation



Figure 14: Flat open landform at south-west of 235 South Street



Figure 15: Evidence of ephemeral drainage line at back of 235 South Street



Figure 16: Agricultural shed at back of 235 South Street



Figure 17: Flat open landform at south-west of 235 South Street



Figure 18: Modified landform at southern extent of Freezex Compound



Figure 19: First artificial lake at southern extent of Freezex Compound

Aspect **Potential impacts**



Figure 20: Second Artificial Lake at southern extent of Freezex Compound



Figure 21: Area of modified drainage lines and low sloping landforms between the two artificial lakes



Figure 22: Ground surfaces within road corridor of Richmond Road at eastern extent of study area

Summary of Due Diligence assessment

[Redacted text block consisting of several lines of blacked-out content]

Potential Impacts

Aspect	Potential impacts
--------	-------------------

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

<p>Historic Heritage</p>	<p>Existing Environment</p> <p>Local, State and Heritage Register Searches</p> <p>Searches of the Australian Heritage Database, the Blacktown LEP 2015 and the State Heritage Inventory were conducted on 18 December 2023 in order to determine if any places of historic archaeological significance are located within, or in proximity to, the study area.</p> <p>No historic heritage items were recorded as being located within, or in proximity to, the study area (Figure 7).</p> <p>Potential Impacts</p> <p>The proposed works will not impact on any known historical sites or objects. No further historical archaeological assessment is required.</p>
--------------------------	--

<p>Noise and Vibration</p>	<p>Excavation will generally encounter filling and natural soils, which should be readily achieved by bulldozer blade or hydraulic excavator (Douglas Partners, 2019). It is therefore unexpected that heavy rock breaking equipment will be required therefore, impacts to nearby residents are likely to be minimal and short-term. Nonetheless, mitigation measures have been recommended to reduce potential noise impacts. Work hours will be in accordance with the <i>Draft Construction Noise Guidelines</i> (EPA 2020):</p> <ul style="list-style-type: none"> Monday to Friday 7.00am to 6.00pm Saturday 8.00am to 1.00pm No work on Sunday or public holidays <p>The works are short term and will not have ongoing impacts. The operational noise impacts from the pipeline will be negligible and therefore an operational noise assessment is not required.</p>
----------------------------	--

<p>Traffic and Access</p>	<p>Temporary impacts to some residents may occur where the construction works are required to occur in close proximity to existing dwellings. Notification to individual residents are recommended prior to works.</p> <p>As the works are not located near or adjacent to any roads, impacts to existing traffic are thought to be negligible.</p>
---------------------------	---

Aspect	Potential impacts
Social, Visual and Land Use	As the works will occur in an area where land clearing has already been undertaken and no major clearing of vegetation is proposed, no impact on the visual amenity of the site is thought to occur. Furthermore, given the future development proposed for the area, the proposed pipelines are not likely to have any significant long-term impacts. Temporary changes will occur during the construction works however these impacts will be minor and short term.
Cumulative Impacts	No other construction works are known to be occurring in the area however construction works for new developments are likely to occur in the general vicinity. The cumulative impact of the proposed works will be minor and temporary.
Strategic Planning Context	<p>In accordance with Section 171 of the EP&A Regulation, the proposed works should be considered in relation to applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act.</p> <p><i>A Metropolis of Three Cities – the Greater Sydney Region Plan (GSRP)</i></p> <p>The GSRP aims to boost Greater Sydney’s liveability and sustainability and is integrated with the State Infrastructure Strategy for improved land use planning and infrastructure delivery. Falling within the ‘Central City’ precinct of the plan, goals include increased housing and infrastructure delivery over the next ten to fifteen years. The first key directive for the Plan is ‘a city supported by infrastructure’, which includes goals for infrastructure to support new developments, align with population growth and service future needs. The works are proposed in the Sydney Growth Centres, designated for future housing development. As such, the pipeline is part of a network of key infrastructure to support the GSRP.</p> <p><i>Central City District Plan (CCDP)</i></p> <p>The CCDP supports the implementation of the GSRP at a district level. Like the GSRP, infrastructure and liveability are key directives. The proposed works will have a positive impact on the implementation of the CCDP by expanding essential infrastructure which supports housing in the district.</p> <p><i>Blacktown Local Strategic Planning Statement (Blacktown LSPS)</i></p> <p>The proposed works support the objective of provision of diverse and affordable housing in the Blacktown LSPS (BCC, 2020), in providing a pipeline for the safe and effective management of wastewater to service new developments in the Growth Centres. The site is within the Marsden Park Industrial. A key objective of the Blacktown LSPS is to create new residential communities. Appropriate infrastructure is required to support new housing, including wastewater management.</p>

5 Environmental Safeguards

The following safeguards have been developed to mitigate against potential impacts. They will be included in as conditions in any contract or work specification for the proposal and incorporated into a project-specific construction environmental management plan (CEMP) to be endorsed by the WSC, approved by the Developer and reviewed by Sydney Water prior to any works.

General	
1	All project staff and contractors will be inducted on the environmental sensitivities of the work site(s) and relevant safeguards prior to commencement.
2	The WSC will be notified immediately of any complaints relating to management of environmental issues.
3	To ensure compliance with Section 148(3) of the <i>Protection of the Environment Operations Act 1997</i> , Sydney Water Case Manager must be notified of any pollution incidents that have caused or threaten material harm to the environment (as per Section 3.2 of the CEMP).
4	The WSC will be notified if damage occurs to an area (vegetation, etc) outside of the nominated work area.
5	Prepare a Construction Environmental Management Plan (CEMP) prior to any construction works to address measures to be adopted to minimise impacts on the environment as a result of the construction works.
Soil and erosion	
1.1	Prepare and implement an erosion and sediment control map.
1.2	Install erosion and sediment control measures around excavation pits before construction commences consistent with 'the Blue Book' <i>Managing Urban Stormwater, Soils and Construction</i> (Landcom, 2004)
1.3	Divert surface runoff away from sensitive areas, stockpiles and erodible material.
1.4	Inspect erosion controls weekly and after rainfall. Fix damaged controls immediately.
1.5	Install measures to prevent tracking soils/sediments offsite.
1.6	Sweep roads/pathways at least daily, and before rainfall.
1.7	Keep vehicles in designated areas.
1.8	Stabilise disturbed areas as soon as possible.
1.9	Develop contingency /incident measures for dealing with unexpected rain.
1.10	Care should be taken to replace spoil in the same area from which it is excavated.
1.11	Minimise potential for ponding or water logging areas on the site.
1.12	Maintain sewer infrastructure to minimise impacts of pipe leaks.
Water quality	

2.1	Locate site amenities away from watercourses or drainage lines.
2.2	Test excavation water to ensure suitable quality for ground/stormwater disposal.
2.3	Discharge any potable water in accordance with Sydney Water's Discharge Protocols.
2.4	Keep a functioning 'spill kit' on site at all times for clean-up of accidental spills.
2.4	Store chemicals and fuels within designated bunded areas, identified with appropriate signage. Record all stored chemicals on a register with their MSDS's.
2.6	Do not use equipment with fuel, oil or hydraulic leaks. Repair or remove equipment immediately.
2.7	Develop emergency procedures for chemical/fuel spills.
2.8	Prior to commencement of construction, the successful contractor would need to determine the anticipated volume of groundwater likely to require collection and disposal off-site. The contractor must obtain an Aquifer Interference approval from DPI Water if groundwater extraction volume will be greater than 3ML / year, although it is highly unlikely that this will occur. The contractor must also monitor groundwater extraction during construction and obtain a licence if needed.
2.9	A Water Supply Approval is to be obtained from NRAR before any dewatering of groundwater from excavations works can occur. Where dewatering is >3ML per water year (from 1 July) a Water Access Licence from NRAR is also to be obtained.
Flora and fauna	
3.1	Identify vegetation that may be cleared on site plans. Keep vegetation clearance and disturbance to a minimum (e.g. trim rather than remove branches) wherever possible.
3.2	Delineate no-go areas on site to protect flora and fauna and ensure vegetation clearing is limited to the approved works boundary (i.e. 10 m construction buffer).
3.4	All staff are to be made aware of the significant ecological values present within the site (e.g. as part of the site induction).
3.5	Protect mature trees, hollow bearing or standing dead trees wherever possible.
3.6	Ensure that no harm to fauna occurs as a result of felling trees in the approved work areas. Engage a suitably qualified ecologist to complete a pre-clearance inspection for hollow-dependent and nesting fauna in trees prior to felling.
3.6	All weeds and topsoil material likely to be infested with weeds will be bagged, removed from site within a week and disposed of at a licensed waste disposal facility
3.7	If fauna is found on the construction site, stop work – all native fauna is protected. Do not touch the animal but wait for it to leave. If it is a threatened species, call an ecologist immediately for advice. If animal is accidentally injured, call WIRES or a rescue agency.
Air quality – dust and odour	
4.1	Cover all loads.
4.2	Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress.
4.3	Minimise time maintenance holes are open.

6.4	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
Noise and vibration	
7.1	<p>Work and deliveries will be scheduled to occur during hours: 7am to 5.30pm, Monday to Saturday. Work hours will be in accordance with the <i>Draft Construction Noise Guidelines</i> (EPA 2020):</p> <ul style="list-style-type: none"> • Monday to Friday 7.00am to 6.00pm • Saturday 8.00am to 1.00pm • No work on Sunday or public holidays
7.2	<p>The local residents should be given reasonable notice of the proposed works (including proposed start date, work methods and duration).</p>
7.3	<p>All machinery and equipment to be used will comply with the relevant Australian standard for noise attenuation (e.g. have noise mufflers and be well maintained).</p>
7.4	<p>Where possible, avoid the simultaneous operation of two or more noisy plant items in close vicinity to sensitive noise receivers.</p>
7.5	<p>Where possible, orientate equipment such that offensive noise carries away from potential receivers.</p>
7.6	<p>Implement all feasible and reasonable work practices to minimise construction noise impacts.</p>
Traffic and access	
8.1	<p>Comply with Council or RMS requirements regarding traffic control, access and road/footway restoration.</p>
8.2	<p>Erect signs regarding proposed works, temporary road / pavement closures, diversions etc.</p>
8.3	<p>Provide alternate access (e.g. ramps and bike ramps) if access is impeded.</p>
8.4	<p>Avoid blocking access to vehicular or pedestrian roads, private driveways, public facilities or businesses wherever possible and only do so following consultation.</p>
8.5	<p>Adequately notify affected people and businesses and restore access quickly.</p>
Social and visual	
9.1	<p>Contain all work within the boundaries designated on the site plan.</p>
9.2	<p>Restore work sites to as close to their original condition as possible.</p>
9.3	<p>Minimise spread of stockpiles, waste, and parking.</p>
9.4	<p>Display public information signs until site restoration is complete.</p>
9.5	<p>Carry out community and stakeholder consultation before works start.</p>
9.6	<p>Notify the WSC immediately of any complaints or any accidental damage to property.</p>
9.7	<p>Locate services on DBYD search and peg out no-go areas to avoid service-disruption.</p>

9.8	All personnel will exercise courtesy in dealing with the community.
9.10	Liaise with other development sites to co-ordinate works and minimise impacts (e.g. delivery times, parking etc).

Clause 171 Check

REF finding

The environmental impact on the community

There may be short-term minor impacts on the community from dust emissions and noise however, these are thought to be minimal. There will be environmental improvements by providing a reliable wastewater system to the local community.

The transformation of the locality

The proposed work will not result in the transformation a locality.

The environmental impact on the ecosystems of the locality

The proposed works have the potential to have minor impacts on native vegetation however, on land which is currently biodiversity certified. Impacts to this vegetation have already been offset through the Biodiversity Certification Order. There will be environmental improvements by ensuring a reliable wastewater service will collect and treat wastewater, minimising any impacts on the ecosystem.

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED]

The endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air

As the study area is within biodiversity certified land, no threatened species, populations or ecological communities will require assessment through tests of significance or application of the significant impact criteria.

Long-term effects on the environment

The proposed works will not have any long-term impacts on the environment but will have a long-term benefit by providing a reliable and modern wastewater service for the area.

Clause 171 Check	REF finding
Degradation of the quality of the environment	The proposed works will not cause the degradation of the quality of the environment.
Risk to the safety of the environment	The proposed works will not increase risk to the safety of the environment.
Reduction in the range of beneficial uses of the environment	The proposed works will not have any reduction in the range of beneficial uses of the environment.
Pollution of the environment	Environmental safeguards will mitigate the potential for the proposed works to pollute the environment. No pollution of the environment is expected.
Environmental problems associated with the disposal of waste	The disposal of wastes will be conducted in accordance with the environmental safeguards, and no environmental problems associated with the disposal of waste are expected.
Increased demands on natural or other resources that are, or are likely to become, in short supply	The proposed works will not increase demand on resources, that are, or are likely to become, in short supply.
The cumulative environmental effect with other existing or likely future activities	The proposed works will not have any cumulative environmental effect with other existing or likely future activities.
The impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposed works will not have any impact on coastal processes or hazards.
Consistency with applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1,	The proposal is consistent with A Metropolis of Three Cities – the Greater Sydney Region Plan, Central City District Plan and the Blacktown Local Strategic Planning Statement as it provide critical infrastructure support an increase to the housing stock.

Reference List

Australian Government, Bureau of Meteorology (BOM) 2016, Atlas of Groundwater Dependent Ecosystems, Available at: <http://www.bom.gov.au/water/groundwater/gde/map.shtml> [Accessed 17 September 2020]

Australian Heritage Database, accessed online 18 December 2023 <https://www.dcceew.gov.au/parks-heritage/heritage/publications/australian-heritage-database>

Blacktown Local Environmental Plan 2015, accessed online 18 December 2023 <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2015-0239#sch.5-pt.1>

Department of Environment and Climate Change (DECC), 2009, *Interim Construction Noise Guideline*, Department of Environment and Climate Change NSW.

Department of Primary Industries (DPI), 2012, *NSW Aquifer Interference Policy: NSW Government Policy for the licensing and assessment of aquifer interference activities*, NSW Department of Primary Industries, NSW.

Eco Logical Australia, 2023. *305 South Street Marsden Park – Aboriginal Heritage Assessment*. Prepared for Universal Property Group.

eSpade, Berkshire Park soil landscape, accessed online 18 December 2023 <https://www.environment.nsw.gov.au/Salisapp/resources/spade/reports/9030bp.pdf>

eSpade, Blacktown soil landscape, accessed online 18 December 2023 <https://www.environment.nsw.gov.au/Salis5app/resources/spade/reports/9130bt.pdf>

NSW Environment Protection Authority (EPA), Contaminated land, record of notices, Available at: <http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx> [Accessed 17 September 2020]

New South Wales *National Parks and Wildlife Act 1974*.

New South Wales *Heritage Act 1977*.

The Department of Environment, Climate Change and Water, 2010. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

New South Wales State Heritage Inventory, accessed online 18 December 2023 https://www.hms.heritage.nsw.gov.au/App/Item/SearchHeritageItems?_ga=2.165972984.714120821.1658117920-344545924.1656901875

State Environmental Planning Policy (Precincts – Central River City) 2021, accessed online 18 December 2023 <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2021-0725#sch.5-oc.2>

Appendices (removed for publication)