

C3828 Morgan Whyalla Pipeline No1 Renewal - Stage 1

Project Environmental Management Plan

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South Australia**

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1 Introduction

Our Environment Policy provides clear boundaries and guiding principles on how we deliver environmental outcomes that our customers value to achieve our vision of '*delivering trusted water services for a sustainable and healthy South Australia*'. This policy should also apply to contractors and suppliers who undertake works for us.

Furthermore, our Environment Corporate Strategy sets aspirational strategic and operational change for our business for the benefit of our environment and customers with a view to 2040. Our business relies on and has an impact on the environment, and we have set clear goals and actions to minimise adverse impacts and deliver sustainable benefits for generations to come.

This document provides a summary of the environment and heritage risk assessment. It sets the management processes, controls and activities that should be implemented by SA Water and its contractors to mitigate potential environment and heritage impacts arising from project construction works and activities. Furthermore, our contractors will be required to operate under their Construction Environmental Management Plans (CEMP) and implement site environmental plans (SEP). Section 3 contains the specific Acts and legislation that this project falls under, while Section 6 outlines the performance criteria relating to environmental management controls.

1.1 Project Description

The Morgan Whyalla Pipeline (MWPL) 1 was constructed during World War II (1941-1944). The rigid mild steel with cement lining pipeline (MSCL) runs parallel to the more recently built MWPL 2 from Morgan to Baroota. From Baroota to Whyalla MWPL 1 is the sole water supply to the north.

The MWPL is used for the transfer of bulk supplies from the River Murray at Morgan to the Iron Triangle cities and to significant areas of the mid-north, Yorke Peninsula and Eyre Peninsula via an extensive distribution system. The MWPL 1 and 2 are a critical water supply to regional areas north of Adelaide, including Clare Valley, Yorke Peninsula, Port Pirie, Port Augusta, Whyalla, and parts of the Eyre Peninsula, including some large industrial customers. Both pipelines supply approximately 100,000 customers, along with the largest customers in the system being the Liberty OneSteel at Whyalla and the Nyrstar Lead Smelter at Port Pirie. The section of MWPL1 from Baroota to Whyalla is the sole water supply to Port Augusta and surrounding areas.

The current performance of MWPL 1 indicates that it is still operational but requires ongoing maintenance due to its age and continued deterioration, including the requirement to carry out numerous repairs to weeps (small leaks). Extensive investigations into the pipeline condition have been undertaken, with the key issues being:

- Loss of cement mortar lining in isolated sections throughout the alignment of the pipeline.
- Loss of cement mortar lining has also resulted in pipe wall thinning from steel corrosion.

The purpose of the project is to reduce the risk of failure of the MWPL 1 and maintain the current level of service by replacing between 15-22 km priority sections of the pipeline. This includes sections of pipeline, gulleys, valve chambers, and decommissioning of the existing pipeline asset.

1.2 Project Scope

The current scope of works for delivery is to renew the pipeline sections that are in the poorest condition. A summary of the construction components of the Project include:

Pre-construction activities:

- Establishment of the main site compound at pump station 2 (located east of Section 22).
- Establishment of two satellite compounds at Section 16 and 17.
- Establishment of five nominated temporary laydown areas at Section 16, 17, 21 and 22.

- Establishment of washdown areas.
- Grading of access tracks where required to provide safe access for construction plant.
- Erection of signage and temporary fencing.
- Truck loading and haulage for transport of the new Pipeline Sections from Victoria and Western Australia to temporary laydown areas.
- Truck loading and haulage of precast chair components from Adelaide to temporary laydowns areas.

Construction activities including:

- clearance of vegetation within the Right of Way (ROW).
- vegetative material and topsoil removed and stockpiled.
- clearing and grubbing of the ROW.
- excavation every 12 m to install 2.5 m x 1.6 m x 0.65 m chair foundations to support DN750/DN650 overground water pipeline installation.
- Installation of Mild Steel Cement Lined (MSCL) pipe onto support/chair foundations.
- Trenching at gullet location to support underground DN750/DN650 water pipeline installation at road and railways.
- Construction of cast in-situ concrete below ground pipeline support and restraint structures.
- Installation of isolating valves, scour valves, manual air valves and pipe anchors.
- Tie in and connections to the existing pipeline.
- Decommissioned of the old pipeline following the construction of the new Pipeline.

Post-construction activities including:

- Installation of permanent fencing.
- Revegetation of non-operational areas including ripping and relaying of stockpiled vegetative material and topsoil and weed management.

It is intended that the same diameter pipe is installed above ground, except gullets and railway crossings, where these will be constructed underground. Table 1-1 and Figure 1 outline the sections to be renewed during stage one of the project.

Table 1-1 MWPL 1 renewal sections

Section reference	Description	Replacement length (m)	Pipe diameter (mm)
MWPL1-0016	Adelaide to Burra Railway Line Gullet, Hanson	1190	650
MWPL1-0017	Koo-owie Gap Road, Emu Downs (Rising Main)	4360	750
MWPL1-0018	Mickan Road, Bower (Rising Main)	4580	750
MWPL1-0020	Pipeline Road, Lindley	2210	750
MWPL1-0021	Pipeline Road, Beatty	2700	750
MWPL1-0022	Pipeline Road, Bower links into Section-0018 Eastern End	10790	750

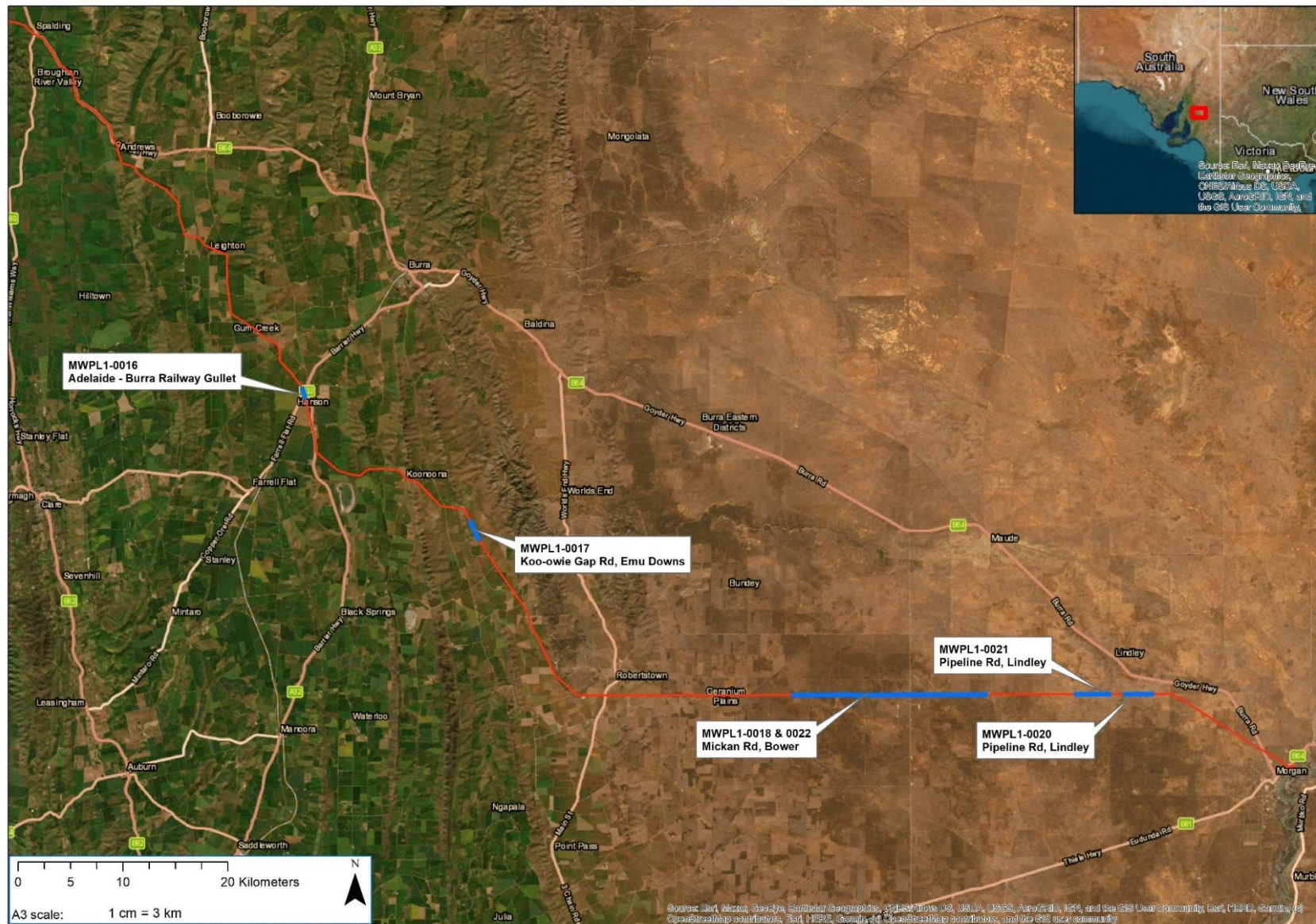


Figure 1 MWPL1 Stage 1 renewal sections

1.3 Key Construction Activities

Table 1-2 provides a summary of typical project construction activities and potential environmental issues/impacts. It includes activities which are likely to be undertaken as part of the works. Where an issue is identified the management / environmental controls included in the Project Environmental Management Plan (PEMP) should be implemented by the contractor.

Table 1-2 Construction Activities and associated environmental impacts.

Activity / Aspect	Potential Environmental Issues/Impact
Use of vehicles, equipment & plant, including excavation and earth works	<ul style="list-style-type: none"> • Damage to vegetation and fauna • Disturbance or damage to Aboriginal and non-Aboriginal Heritage • Discovery/management of soil or groundwater contamination • Erosion of exposed surfaces • Introduction/spread of weed seeds or plant pathogens • Pollution to water (watercourses or stormwater) • Property damage (fencing, gates, cattle grids, stock feeding and watering points) • Noise and dust emissions • Fire (hot works or use near dry vegetation)
Wash-down of equipment/plant	<ul style="list-style-type: none"> • Pollution to water (watercourses or stormwater) • Introduction/spread of weed seeds or plant pathogens
Stockpiling / spoil management	<ul style="list-style-type: none"> • Damage to vegetation and fauna • Pollution to water bodies from poor location / erosion /runoff • Water management and flooding • Dust • Inappropriate waste management/disposal • Contamination
Waste Management and Disposal	<ul style="list-style-type: none"> • Aesthetics – litter/debris • Inappropriate waste management/disposal • Resource use
Import of fill material	<ul style="list-style-type: none"> • Introduction of weeds • Contamination (imported)
Site / compound establishment	<ul style="list-style-type: none"> • Aesthetics – visually intrusive structures • Access impacts and nuisance to neighbours • Noise creating nuisance
Dewatering or other discharges/ water released from site	<ul style="list-style-type: none"> • Pollution • Water management and flooding • Contamination
Night works	<ul style="list-style-type: none"> • Noise • Light spill and nuisance to neighbours
Management of contaminated or hazardous materials, storage of materials, refuelling	<ul style="list-style-type: none"> • Pollution to soil or water • Spills leading to pollution and contamination of soil, water • Damage to vegetation and fauna • Emissions of noxious / toxic gases

2 Context

This section describes the context of the PEMP and how it will be implemented on the project.

2.1 Objectives

The general objectives of this PEMP are to ensure:

- Environment and heritage legislative requirements are met (Section 3).
- Control measures are implemented to minimise identified risks, in line with SA Water's key environmental objectives and performance criteria (Section 6.1).
- Potential environmental or heritage risks associated with construction activities are considered as part of the planning and delivery of works associated with the project.
- Achieve the project environmental and heritage management objectives.
- Ensure the works are undertaken in accordance with our customers' expectations.
- Continually assess and improve environmental controls and mitigation measures in relation to the management of project impacts.
- Establish clear environment and heritage management responsibilities.

2.2 Sustainability

SA Water's Corporate Environment Policy provides clear boundaries and guiding principles on how we provide environmental outcomes that our customers value to achieve our vision of *delivering trusted water services for a sustainable and healthy South Australia*.

Additionally, the SA Water Environment Corporate Strategy outlines the below objectives:

- Environmental leadership and accountability
- Liveable places and revitalised ecosystems
- Net zero greenhouse gas emissions
- Adapting to climate change
- Efficient and balanced energy
- Maximising the value of our resources

In addition, SA Water requires that the delivery contractor's greenhouse emissions associated with the project are quantified and reported.

3 Legal and other requirements

A key governing legal requirement for all projects is set out in the SA *Environment Protection Act 1993*, Section 25:

A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

A summary of the environment and heritage approval / permits associated with the project is provided below, with the status and where relevant, conditions, for each.

Act	Description	Applies to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	Approval from the Commonwealth Environment Minister is required for actions that have or are likely to have a significant impact on matters of national environmental significance (MNES). If project triggers above, referral under EPBC Act required.	☒	The project has been referred to DCCEEW - EPBC 2022/09438 for direct impacts to the MBC TEC and other matters of national significance.	The project is currently undergoing review and assessment. Any conditions imposed on the project are to be implemented.
Aboriginal Heritage Act 1988	Authorisation from the Minister for Aboriginal Affairs is required to interfere, damage, or disturb Aboriginal heritage sites, objects or remains.	☒	A search of the Register for Aboriginal sites and objects through the Aboriginal Affairs and Reconciliation Central Archive, has identified no sites within the sections to be renewed.	<ul style="list-style-type: none"> All Aboriginal sites and objects protected under the Aboriginal Heritage Act 1988. In event of a discovery works will cease and SA Water's Standard Operating Procedure for Aboriginal Heritage Discovery will be followed (Appendix A).
Native Title Act 1993 (Cth)	Under the Native Title Act "future acts" may only proceed in accordance with the Act. Future acts are defined as an act which affects Native Title. An act affects native title if it extinguishes the native title rights and interests, or if it is otherwise wholly or partly inconsistent with their continued existence, enjoyment, or exercise. Note: ILUA notification process may be applicable in some areas.	☒	Although the Project Area is within a registered Native Title application area, SA Water is advised that Native Title does not exist in the relevant land parcels.	NA
Planning, Development, and Infrastructure Act 2016	Works that constitute Development require approval. Development includes (not limited to): Change of land use. Building works. Prescribed earthworks. Impacts to Significant/Regulated Trees.	☐	Development approval is not required as per section 131 (Crown Development) as the (General) Regulations 2017 states that other than in relation to State heritage places the construction, reconstruction, alteration, repair or maintenance of any drain, pipe or underground cable is exempt from development approval when a State agency is undertaking the works.	NA

Heritage Places Act 1993 (SA)	Works that impact on State heritage require development authorisation.	☒	Construction within Section 16 will impact on a historic mine shaft that was discovered during site investigations.	Construction to be implemented in line with Permit Number 00012/22 issued under Section 27 of the Act.
Environmental Protection Act 1993 (Section 36 – Requirement for licence)	Prescribed activities of Environmental Significance require an EPA licence. (e.g., dredging/earthworks drainage/abrasive blasting, transport of contaminated soil, sewage treatment, desalination, etc).	☒	EPA Approval required	The contractor will be required to obtain or hold an EPA licence for: <ul style="list-style-type: none"> transport of contaminated soil.
Environmental Protection Act 1993 (Section 10 & 25) General Environmental Duty & Standard for the Production and Use of Waste Derived Fill (WDF)	Excavation of borrow pits, diversion channels and construction of temporary roads, blocking banks etc. where materials are planned for re-use off site, or materials are imported from off-site.	☒	No approval required	Need to ensure spoil management is undertaken in accordance with the EPA's Waste Derived Filled requirements.
Environment Protection Act 1993 - (Water Quality) Policy 2015)	Establishes processes and requirements for the protection of streams, rivers, oceans, and groundwater by encouraging better management of wastewater and promoting best practice environmental management by: <ul style="list-style-type: none"> avoiding its production eliminating, or reducing recycling and re-using treating it to reduce potential harm to the environment. Allowing discharge limits for particular activities to be established.	☒	No approval required	Contractor to manage through implementation of site-specific control measures.
Environment Protection Act 1993 - (Noise) Policy 2023	Noise emissions from construction activities must meet the requirements of the policy.	☒	No approval required	Contractor to Manage in accordance with the policy.
Native Vegetation Act 1991	Approval for clearance of native vegetation is required under the Act.	☒	State vegetation clearance approval has been granted.	Project to be implemented in line with the conditions outlined in Decision Notifications

	Native vegetation includes trees, shrubs, groundcovers, and grasses.			2022/3106/711, 2022/3135/711, and 2022/3106/711.
Landscape South Australia Act 2019 (Section 104 - Water affecting activities)	Works in creek beds and floodplains and/or discharges of water may require a Water Affecting Activities Permit (WAAP) or approval under SA Waters BPOP	☒	Any discharges associated with commissioning of pipelines will require a discharge approval from Environment and Heritage Expertise.	Advice regarding the requirement for a WAAP is being sought from respective Landscape Boards. Requirements will be determined as part of the discharge request process.
Landscape South Australia Act 2019 (Section 186 – Movement of declared plants)	It is prohibited to transport declared plants in South Australia.	☒	Part A outlines the weeds that require management.	The contractor is required to: <ul style="list-style-type: none"> • Undertake a weed survey prior to works commencing, documenting any weed of concern. • Appropriately managing any declared/environmental weeds.
Parliamentary Committees Act 1991	16A: Certain public works referred to Public Works Committee (PWC). Subject to subsection (3), a public work is referred to the PWC by force of this section if the total amount to be applied for the construction of the work will, when all stages of construction are complete, exceed \$4M.	☒	Infrastructure construction works in excess \$4M require Public Works Committee (PWC) referral and associated Cabinet Submission.	A referral to PWC was approved in 2021.

4 Environmental Management System and Structure

4.1 Environmental system requirements

As a minimum, the contractor should have in place systems and methods for ensuring that the environmental requirements identified in this document are implemented. Normally this would be through the development of a site specific or project specific CEMP for the works.

4.2 Inductions and Training

All project staff, including subcontractors, must be inducted to the requirements of the project CEMP and associated procedures. The induction should ensure that any site-specific environmental controls and/or requirements associated with Aboriginal Heritage are communicated to staff prior to the commencement of on-site works.

A record of inductions must be maintained.

4.3 Records and Record Keeping

Relevant schedules and records should be retained on site during the construction phase of the project. As a minimum this should include:

- CEMP.
- Prestart inspection checklists.
- Induction / Training registers.
- Monitoring/inspection reports and audit reports.
- Non-conformance reports.
- Environmental incident reports/register.
- Waste tracking and disposal records.
- Listed/controlled waste transport certificates and volumes.
- Complaints register.

4.4 Roles and Responsibilities

4.4.1 Superintendents Representative

The nominated Superintendents Representative is responsible for:

- Ensuring that Contractors work crews are provided with and made aware of the contents and requirements of the CEMP.
- Monitoring the effectiveness of implementation of the CEMP and associated site plans.
- Being a point of communication with SA Water's Environmental Representative.

4.4.2 Contractors Site Supervisor/ Site Manager

The Contractors Site Supervisor (or nominated onsite environmental representative) is responsible for:

- Implementing the control measures in this document such as establishing site controls.
- Inducting site personnel into the requirements of the CEMP.
- Undertaking regular site inspections and monitoring the effectiveness of onsite controls, instigating improvements where necessary.

- Maintaining site records such as site inspections/monitoring reports, induction records, non-conformance reports (NCRs) or incident reports.
- Liaising with the Superintendents Representative where environmental issues or concerns are raised that require further attention.
- Enforcing work practices that minimise adverse environmental impacts through due diligence.
- Ensuring all employees report any environmental risks or hazards.
- Implementing additional mitigation measures in the event of non-conformances or emergencies.

4.4.3 Employees, Sub-contractors, and Labour Hire Personnel

All employees (including subcontractors) have an obligation to protect the environment when carrying out their work this includes:

- Being aware of the contents of the CEMP including general environmental statutory requirements to carry out their work with due diligence.
- Complying with instructions/directions given by the Contractors Site Supervisor
- Report any incident that may result in environmental harm that arises during or in connection to their work.

5 Project Environmental Setting

The following summarises the environment and heritage values and constraints within the project.

5.1 General Environment

The general landscape can be described as extensive gently undulating sand and clay plain of Tertiary and Quaternary age frequently overlain by aeolian dunes. Vegetation consists of semi-arid woodlands, Open Mallee shrublands in previously disturbed conditions ranging from low to moderate. The native vegetation outside the Action footprint exists as patches of mallee, chenopod grassy shrublands and low shrublands surrounding a previously cleared MWPL1 corridor.

The native vegetation in the project area is sparse and has patchy canopy cover with a very low diversity and cover of natives within the ground and middle stratum consisting only of persistent graving tolerant low chenopod shrubs such as *Maireana sedifolia* and *Maireana pyramidata*.

The native vegetation within the Action footprint and surrounds has been modified by grazing and agricultural practices and is in lower condition than surrounding native vegetation patches (that are 'protected' under the NPW Act, or where stock grazing has been removed). As such the Action footprint provides limited habitat for fauna and is located immediately adjacent an existing pipeline and access road which provide little refugia for fauna as the area is affected by local traffic and is highly exposed.

The southern sections of the Project Area (sections 18, 20, 21 and 22) are located on the flat, semi-arid plains west of Morgan. These sections fall within the Murray Mallee subregion of the Murray Darling Depression (MDD) IBRA region. The MDD Bioregion is described in the Revision of the IBRA and the Development of Version 5.1 - Summary Report as 'An extensive gently undulating sand and clay plain of Tertiary and Quaternary age frequently overlain by aeolian dunes. Vegetation consists of semi-arid woodlands of Black Oak / Belah, Bullock Bush/ Rosewood and Acacia spp., mallee shrublands and heathlands and savanna woodlands'. The current land use across this section is grazing, predominantly from sheep. The vegetation communities form a mosaic of Mallee dominated woodlands interspersed with Chenopod shrublands, Bull-oak woodlands and Acacia shrublands. Numerous tracks, mostly associated with the surrounding farmland, cross this section of the study area. There are numerous dams that fall both within and in close proximity to each of these sections of the study area.

The two northern sections of the study area (Sections 16 and 17) fall within the Broughton subregion of the Flinders-Lofty Block IBRA region. Rainfall in this region is high enough to permit cereal cropping and this dominates the surrounding landscape for both sections. Cereal cropping is also supplemented by grazing which frequently extends into the study area. There are no waterways through either section, but Stony Creek (a tributary of Burra Creek) flows just to the north of Section 17. The topography for Section 17 is gently rolling hills while section 16 is largely flat. Both sections contain highly modified grasslands dominated by introduced tussock grasses with isolated pockets of native grasses. Section 16 crosses the disused Burra-Adelaide railway gullet approximately mid-way along its length. Section 16 is intersected 3 times- once by the Farrel Flat Road and twice by unnamed farm tracks. There are no tracks crossing section 17. There are two ephemeral dams in close proximity to Section 17. Section 16 contains a derelict, open well in the north of the study area.

The Project Area occurs in a mostly flat plain, within the Mount Mary Land System and the elevation is approximately 240 m in the northeast to 70 m in the south. The Mount Mary Land System is a weakly dissected calcrete outwash fan. The original land surface was very gently inclined to level with a slope of less than 1%, overlain by a mantle of calcrete. Streams emanating from the ranges to the west have partially eroded the calcrete cap. The resulting land surface includes alluvial flats where the calcrete cap has been entirely removed, gently undulating plains where it has been partly removed, and stony bench-like rises where it is largely intact. The flats include narrow alluvial drainage depressions (usually nearer the ranges in the west) and broader lacustrine flats in the east. The benches are commonly almost flat with very low relief, but around the old lake systems in the east, the benches have relief of 10-15 m and side slopes of 10% or more.

The closest conservation parks to the Action include White Dam Conservation Park approximately 2 km north of Pipeline Section 0020, and two Conservation Parks located east of Pipeline Section 0017 (Hopkins Conservation Park ~2 km and Mimbara Conservation Park ~11 km).

The Action will be located adjacent to the existing MWPL asset which sits within an existing SA Water easement, however, will require acquisition of the following:

- Section 16; 18; 20; 21 & 22 – Private farmland acquisition for 10 m from current fence line to establish new easement for The Project.
- No land acquisition required for Section 17. Private farmland to be utilised during construction and landowners compensated for land used during this time.

Due to the linear nature of the Project, the Action crosses multiple land parcels.

5.2 Heritage

5.2.1 European Heritage

There are no Commonwealth Heritage Places, World Heritage Properties or National Heritage Places within 5 km of The Project Area including the Action footprint.

SA Water's Environment and Heritage team have reviewed the Project Area and advised that the alignment has no state listed European heritage items nearby.

5.2.2 Indigenous Cultural Heritage

SA Water has an established process with the SA Crown Solicitors Office for obtaining Native Title advice, and an Aboriginal Heritage risk assessment procedure with the Office for Aboriginal Affairs and Reconciliation, to identify risks to Aboriginal Heritage and, where necessary, associated management requirements.

Although the Project Area is within a registered Native Title application area, SA Water is advised that Native Title does not exist in the relevant land parcels that will be utilised for the Action. However, the risk assessment identified that the following Aboriginal organisations/traditional owners may have an interest:

- Ngadjuri Nation Aboriginal Corporation
- Mannum Aboriginal Community Association Incorporated
- First Peoples of the River Murray and Mallee Aboriginal Corporation

As part of the risk assessment process, SA Water requests a review of the available information within the Department of the Premier and Cabinet's Aboriginal Heritage Register, which identifies previously recorded and/or registered sites. This risk assessment was undertaken during the early Project development phase (2020-2021) to assist with understanding potential design constraints. The search did not identify any registered sites within 200 m of The Project Area.

Although the search did not identify any known/registered sites, SA Water understands that sites containing objects or remains may exist in the area. SA Water has therefore identified the Action as presenting a potential risk to Aboriginal heritage.

In consultation with the Department of Aboriginal Affairs, the Attorney-General's Department, and various archaeologists, SA Water has an established an Aboriginal Heritage Discovery Standard Operating Procedure (SOP). The SOP applies to all projects and identifies actions in the event of a discovery, or suspected discovery. SA Water's SOP is considered best practice and is highly regarded across SA.

SA Water's construction contractor is required to comply with the SOP in the event heritage is uncovered. The SOP requires that construction workers attend a site-specific Aboriginal cultural heritage induction, prior to conducting ground disturbing works.

5.3 Hydrology

5.3.1 Surface Water

The Project Area is not located within any surface water catchment areas. The closest surface water catchment is Burra Creek, which is approximately 3.4 km from The Project Area (Nature Maps 2022). The Project Area is also 12.5 km from the River Murray Prescribed Watercourse. Given the distance and the scope of the Action, changes to surface water are considered unlikely.

5.3.2 Groundwater

There are five non-prescribed groundwater networks located in proximity (between 0.07 km to 0.47 km) to The Project Area (NatureMaps 2022). The drillhole number and depth to groundwater in metres below ground level (mbgl) is listed below.

- Drillhole No. 770407 (121.5 mbgl).
- Drillhole No. 77385 (168 mbgl).
- Drillhole No. 77404 (63 mbgl).
- Drillhole No. 87058 (166 mbgl).
- Drillhole No. 87059 (84 mbgl).

Other than identified above, there are no other groundwater features intersected nor in the proximity of the Action. Due to minor excavations required for the Action, it is unlikely that groundwater will be impacted.

5.4 Flora, Fauna and Ecological Communities

5.4.1 Desktop assessment and MNES Habitat Use Assessment

Prior to the field investigations database searches and literature reviews were undertaken to understand the ecological features and threatened species that have habitat and have the potential to occur within The Action Area.

The Protected Matters Search Tool (PMST) was used to identify nearby occurrences of Matters of National Environmental Significance (MNES) relevant to the Action. The initial PMST report undertaken to support the referral submission (2022/09438) and was dated October 25 2022.

The updated PMST report identified 5 Threatened Ecological Communities, 29 fauna (including migratory species) and 16 flora MNES as either recorded presence or habitat predicted to occur within 5 km of the Action Area.

None of the listed threatened flora species were recorded during the field investigations undertaken in December 2021, January 2022, June 2023 and February 2024 and the field investigation, habitat assessment and referral to DCCEW concluded that there was no suitable habitat for these species within The Action Area.

Outlined in the Preliminary Documentation, the project will have an impact on the following Matters of National Environmental Significance (MNES) comprising:

- Mallee Bird Community of the Murray Darling Depression Bioregion (MBC; EPBC Act Endangered)
- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) (EPBC Act Vulnerable; NPW Act Rare)
- Southern Whiteface (*Aphelocephala leucopsis*) (EPBC Act Vulnerable)

It is considered that that with the implementation of suitable mitigation measures that the Action will not constitute a significant impact. Further information on MNES and mitigation is provided in **Appendix C (Attachment 9 of the Preliminary Documentation Report)**. All other MNES were considered not likely to be within the project footprint.

5.4.2 Section-specific Flora and Vegetation

The soils in The Project Area vary from calcareous loamy sand to clay loam supporting a mosaic of Native Vegetation Associations intergrading from chenopod shrublands in shallower sandy soils to mallee woodlands in deeper calcareous loamy soils. Native Vegetation within The Action Area is composed of: Mallee woodland in poor to moderate condition; small sections of *Casuarina pauper* low open woodland; *Acacia nysophylla* open shrubland; and chenopod shrubland and grassland. The Native Vegetation Association identified within each section are summarised below with full descriptions provided in the SA Native Vegetation Clearance Assessment Reports (NVC) prepared for the project. Native Vegetation Associations recorded within the Action Area are included in Table 3-1 below.

Native Vegetation within The Action Area as outlined above is fringing the existing MWPL1 asset and SA Water easement, and majority of the Action Areas also are adjacent to an unsealed access road (Pipeline Road). The open mallee and shrubland vegetation associations are largely part of larger blocks that extend south into the adjoining pastoral properties.

The recorded Native Vegetation exists as patches which are edge effected by native vegetation previously cleared for the existing MWPL1 asset. This is shown by the high cover of exotic species, patchy and modified canopy, limited structural diversity and lack of diversity in the ground and mid-storey consisting only of persistent grazing tolerant species.

The field assessment identified several Weeds of National Significance which will be appropriately managed through the contractor's CEMP.

As such Native Vegetation within the Action Area is in low to moderate condition.

The Vegetation Associations have been mapped. Native Vegetation Associations recorded within the Action Area have been summarised in Table 3-1 below.

Table 3-1 Native Vegetation Associations and land characterisation within the Action Area

Section	Land Characterization and Vegetation Association	Area (ha)
Section 16	Cereal cropping (not native vegetation)	1.380
	Exotic vegetation / existing infrastructure (roads)	2.775
	A1: <i>Austrostipa nodosa</i> and <i>Aveana barbata</i> * Grassland	0.031
	A2: <i>Austrostipa scabra</i> , <i>Austrostipa blackii</i> , <i>Rytidosperma fulvum</i> and <i>Aveana barbata</i> grassland	0.297
Section 17	B1: <i>Austrotipa</i> ssp. Grassland	5.108
	Cereal cropping (not native vegetation)	3.633
	Exotic vegetation / existing infrastructure (roads)	0.795
Section 18	C1: <i>Eucalyptus socialis</i> mallee with Chenopod understory in low condition	4.251
	* C2: <i>Eucalyptus gracilis</i> mallee over a sparse Chenopod understory	6.026
	Exotic vegetation / existing infrastructure (roads)	4.906
	Tree Protection Zones (avoided impacts to native vegetation)	0.0005
Section 20	Exotic vegetation / existing infrastructure (roads)	2.847
	F1 <i>Casuarina pauper</i> low open woodland over <i>Maireana sedifolia</i> shrubland	4.626

	F2: <i>Acacia nyssophylla</i> open shrubland	1.424
Section 21	E1: Very open <i>Alectryon oleifolius</i> and <i>Myoporum platycarpum</i> woodland	0.753
	E2: <i>Eucalyptus oleosa</i> , <i>Alectryon oleifolius</i> and <i>Myoporum platycarpum</i> mallee	0.785
	E3: <i>Acacia nyssophylla</i> +/- <i>Lawrencia squamata</i> open shrubland	2.496
	E4: <i>Austrostipa nitida</i> grassland with emergent <i>Lycium australis</i> and <i>Acacia nyssophylla</i> shrubland	3.972
	Exotic vegetation / existing infrastructure (roads)	3.532
Section 22	D1: <i>Eucalyptus socialis</i> and <i>Eucalyptus gracilis</i> open mallee over <i>Maireana sedifolia</i> shrubland in moderate condition	5.684
	* D2: <i>Eucalyptus socialis</i> and <i>Eucalyptus gracilis</i> open mallee over <i>Maireana sedifolia</i> shrubland in low condition	0.865
	* D3: <i>Eucalyptus oleosa</i> +/- <i>Eucalyptus gracilis</i> over <i>Maireana sedifolia</i> shrubland	7.109
	D4: <i>Maireana sedifolia</i> , <i>Senna artissimoides</i> ssp. <i>coriacea</i>	3.815
	D5: Low open <i>Maireana sedifolia</i> shrubland with emergent <i>Eucalyptus oleosa</i>	3.211
	D6: <i>Maireana brevifolia</i> and <i>Lycium australe</i> low shrubland over <i>Sclerolaena</i> ssp.	3.110
	Exotic vegetation / existing infrastructure (roads)	10.747
	Tree Protection Zones (avoided impacts to native vegetation)	0.006
	Total Action Area	84.186
	* Denotes Vegetation Association meeting diagnostic criteria for MBC TEC	

5.4.3 Iron-grass Natural Temperate Grassland of South Australia

Two surveys of Section 16 were undertaken in winter and spring 2023 to explore potential occurrence of Iron-grass Natural Temperate Grassland of South Australia in the Action Area and surrounding area. Much of this section is currently cropped either with beans or cereal crops with the remainder being degraded grasslands dominated by exotic grass species including *Avena barbata*, *Bromus hordecus* as well as the forbs *Scabiosa atropurpurea* and *Medicago minima*. None of these communities would fit the criteria for the Iron-grass Natural Temperate Grassland of South Australia based on either the size of the patch, or the diversity and cover of native key species. Two Native Vegetation Council Bushland Assessment Methodology sites and two 50 m tussock count transect were conducted in the site in line with methods outlined in the Recovery Plan for Iron-grass Natural Temperate Grassland of South Australia, 2012. Images of this site are contained in the interactive maps provided as part of the EPBC Act Preliminary Documentation.

The southern end of section 16 is split by a gravel turn around area which allows access to the pipeline as well as a small service hut. Like the rest of section 16 this southern section is a degraded exotic grassland with but does contain some small pockets of native *Rytidosperma*. A very small patch (0.04ha) north of this turn around area contains a patch of Irongrass grassland in reasonable condition. The condition and class assessment contained in the Recovery Plan indicates that this patch would not meet the criteria for level A or Level B based on the size of the patch but would meet the criteria for class C. Whilst not meeting the criteria (and therefore allowed to be cleared under the act) this small patch represents one of the better examples of an Irongrass grassland in the surrounding area and so will be avoided during construction.

6 Management Measures

6.1 Performance Criteria

The following pages include key performance criteria for design, construction, and operation management measures of the MWPL 1 Renewal Project, to ensure that environment and heritage protection objectives are achieved for the project.

Issue	Objective	Performance Criteria/Requirements and Environmental Management measures
Terrestrial Flora & Fauna	Protect biodiversity values of the site and avoid/minimise impacts to native vegetation or fauna	<ul style="list-style-type: none"> Comply with the requirements of the Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth). Comply with the Morgan Whyalla Pipeline Renewal Stage 1 – Southern Whiteface, South-eastern Hooded Robin, and Mallee Bird Community TEC Management Plan (Appendix C) Comply with the requirements of the Native Vegetation Act 1991 (SA). No native vegetation removal is to be undertaken at the site without prior approval of SA Water. Design to ensure that impacts to terrestrial flora and fauna are avoided or minimised during, construction, commissioning, and operation. Design to incorporate opportunities for habitat restoration and regeneration at the site, especially around watercourses, sensitive vegetation. No new incursions of declared plants or plant pathogens because of construction activities. Development of a Project Native Vegetation Management Plan to support the delivery of the project. A CEMP and associated supporting documents (i.e., Site Environmental Plan (SEP), watercourse remediation plan) are to be developed to identify 'no go' zones and address biodiversity protection (including flora and fauna management), weed and pathogen management including: <ul style="list-style-type: none"> Ensure compliance with any statutory approval and conditions. weed management strategies, hygiene procedures and the control of any declared weeds at the site. management of construction vehicles, machinery, equipment, and any imported materials (e.g., soil) used during construction to ensure such equipment and imported materials are weed and pathogen free. Ensuring open excavations are covered or secured overnight to prevent wildlife from becoming trapped and that open trenches are ramped at ends to allow fauna egress. Injured or trapped wildlife is handled by a professional animal handler or fauna rescue team.
	Ensure that all staff working (civil contractors and sub-contractors) on the MWPL Renewal Project	<ul style="list-style-type: none"> Reference to the CEMP and an overview of its content and applicability; Sensitivity of habitat for MNES and MBC TEC areas; and the preventative measures in place to avoid impact such as fencing and exclusion zones. Contractors are to

	under-take a site-specific environmental induction. The induction must include:	<p>be advised that costs associated with incursions requiring rehabilitation may be borne by the contractor.</p> <ul style="list-style-type: none"> • Site environmental procedures to be developed (vegetation management, marking of Hollow Bearing Trees, sediment and erosion control, protective fencing, limits of clearing, noxious weeds – includes photographs and description details of all noxious weeds, MBC TEC and threatened species (MNES) and their habitats); • Need for tool-box talk at the start of each day to discuss avoidance of impacts to MBC TEC and MNES and their habitats. • What to do in case of discovery of threatened species (e.g. Southern Whiteface (<i>Aphelocephala leucopsis</i>), South-eastern Hooded Robin (<i>Melanodryas cucullata cucullata</i>), Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>) or injured fauna; • Key contacts in case of environmental emergency e.g. Fauna Rescue SA Inc - Ph: (08) 2829 0896 • Inductions are to be provided by the Contractors Environmental Officer.
Waterways	Protect waterways and surface water and groundwater quality	<ul style="list-style-type: none"> • Comply with the requirements of the Landscapes SA Act 2019. • No works are to occur in watercourses until the requirements of a WAAP has been satisfied by the relevant Landscapes Board. • Works to comply with the conditions set under any WAAP obligations. • Pipe scour outlets to watercourses and stormwater are required to ensure adequate scour protection is incorporated into the design. Scour points are to have ease of access for operators for maintenance and to mitigate impacts to the aquatic environment during operational discharges.
Sediment & Erosion	Minimise erosion and sediment movement	<ul style="list-style-type: none"> • Comply with the requirements of the Environment Protection (Water Quality) Policy 2015 and other relevant regulations. • Design and construction methodology to address soil erosion and drainage of scour valves to minimise impacts to native vegetation and waterways. • Follow the requirements of the SA EPA Guideline for Stockpile Management. • The CEMP is to address or include the following management and monitoring strategies: <ul style="list-style-type: none"> ◦ the management of excavated material and fill, incorporating measures to suppress dust and control the transport of dirt and mud onto local roads. ◦ comply with the Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry (1998). ◦ Minimising areas disturbed, location of stockpiles to protect drainage lines, installation of erosion control devices and ongoing monitoring of erosion control measures. ◦ Appropriate maintenance of erosion control devices and sediment control measures. • Progressive rehabilitation and stabilisation (including revegetation/reinstatement) of disturbed areas, including appropriate rehabilitation of watercourses.

Fire Management	Manage construction activities to avoid emergency incidents such as starting a fire	<ul style="list-style-type: none"> Comply with the <i>South Australian Fire and Emergency Services Act 2005</i>. No uncontrolled fire as a result of construction activities. <p>Pre-construction</p> <ul style="list-style-type: none"> Develop a bushfire management statement that outlines how existing processes and procedures (both SA Water and MDJV) will be utilised to manage bushfire risk during construction and ongoing operational management. Review fire danger season and schedule works to minimise risks associated with fire, where possible. Conduct a risk assessment on days notified as total fire ban days before undertaking any works on site. Have in place an emergency response plan for the works. <p>Construction</p> <ul style="list-style-type: none"> Fire extinguishers/onsite fire-fighting equipment to be available on site and in work vehicles, major plant and equipment and workers should be trained in their use. Hot work permits required for 'hot works' on total fire ban days, no works on catastrophic fire rating days unless approved by SAW. Maintain all machinery and vehicles in good condition to minimise risk of fires. Fit plant with spark arrestors. No burning off or burning of wastes.
Land Management/Site Rehabilitation	Restore and rehabilitate disturbed areas including incorporating opportunities for enhancing site environmental values	<ul style="list-style-type: none"> Ensure that the site is progressively rehabilitated during construction works. Incorporate opportunities in the design for habitat restoration and regeneration on the site, including respreading of topsoil in undeveloped areas and undertaking revegetation (where appropriate) using locally indigenous plant species. Comply with the conditions outlined in the Native Vegetation Decision Notifications. Delivery of watercourse reinstatement plan (where required).
Aboriginal Heritage	Protect sites of Aboriginal heritage significance and avoid impacts. Manage interactions with known and unknown heritage sites	<ul style="list-style-type: none"> Ensure compliance with the requirements of the <i>Aboriginal Heritage Act 1988 (SA)</i>. Manage all Aboriginal Heritage discoveries in accordance with SAW SOP for the discovery of Aboriginal Heritage.
Air Quality	Protect air quality during construction, by ensuring that particulate and gaseous emissions do not cause environmental nuisance or harm to the surrounding community and environment	<ul style="list-style-type: none"> Atmospheric emissions to comply with regulatory requirements, including the <i>National Environmental Pollution Measure for Air Quality (NEPM)</i>, the <i>Environment Protection (Air Quality) Policy 2016 (SA)</i> and the <i>Environment Protection Act 1993 (SA)</i>. Record all community complaints received during construction in relation to air quality (dust, odours). Validated complaints to be addressed and rectified The CEMP to include the following management measures: <ul style="list-style-type: none"> Minimise areas disturbed and potential dust emissions and ensure disturbed areas are protected and reinstated as soon as possible. Prevention measures are to be put in place such as use of water carts and spraying water via hoses in

		<p>active excavation zones (particularly in windy conditions).</p> <ul style="list-style-type: none"> ○ Spoil stockpiles are reduced in height, preferable less than 3m to minimise potential of dust generation in windy conditions. ○ All construction vehicles must be maintained and have covers (as required) to prevent any loss of load, whether in the form of dust, liquid, solids or otherwise during transportation. ○ The Contractor must ensure that all plant and equipment at the site, or used in connection with the Contractor's activities, are maintained and operated in a proper and efficient manner and serviced regularly. ○ Undertake regular inspections and reviews to confirm compliance with regulatory requirements. Maintain a complaint register from the community.
Greenhouse Gases	Minimise energy use and greenhouse gas emissions throughout design, construction, and operation	<ul style="list-style-type: none"> ● The CEMP is to include the following management measures to be employed onsite during construction: <ul style="list-style-type: none"> ○ Minimise environmental impact of energy use during construction and operation by minimising the consumption of all forms of energy (fuels, electricity), minimising production of emissions. ○ Recycling of waste and opportunities to reuse spoil. ○ Ensuring machinery and equipment is regularly maintained and serviced / with appropriate records kept. ● Reporting greenhouse gas scope 1 and 2 emissions e.g., fuels, construction materials as per SA Water's procurement reporting requirements.
Noise & Vibration	Protect local amenity and minimise terrestrial noise during construction	<ul style="list-style-type: none"> ● Comply with the South Australian Environment Protection (Noise) Policy 2023. ● Record all community complaints received during construction in relation to noise. Validated complaints to be addressed and rectified
Hazardous Materials	Protect the environment and human health from the impacts of hazardous materials, during construction and operation	<ul style="list-style-type: none"> ● The CEMP is to include the following management measures to be employed onsite during construction: <ul style="list-style-type: none"> ○ In accordance South Australia EPA's Liquid Storage: Bunding and Spill Management guideline (2016) and relevant Australian Standards, hazardous materials (including chemicals and fuels) must be stored within bunded areas and must ensure that any spills do not enter the site stormwater system or aquatic environment. ○ Bunding should be covered where possible, preferably in self-contained units that meet Australian standards. Bunding capacity should be at least 120% of hazardous substances volume stored. Thin film plastic over earthen bunds does not meet these standards. ○ Limit the on-site storage of hazardous substances. ○ Emergency Response and Contingency Plans must be developed that include procedures for the management and reporting of any spills. Appropriate spill response kits to be available on site and maintained to relevant standards. ○ Waste from spills is to be appropriately disposed of to an EPA licenced waste facility.

Contaminated Land	Protect human health and the environment through management of any contamination issues onsite	<ul style="list-style-type: none"> Assess risk and management requirements associated with any identified contamination issues in accordance with the National Environment Protection (Assessment of Site Contamination) Measures, NEPC 1999, and any EPA regulatory requirements. CEMP to address contaminated land management, in accordance with EPA requirements, that outlines measures for the assessment, management or removal of any contaminated material. Where practicable, re-use and remediate any contaminated material encountered on site. Where disposal of contaminated material is required, this should be undertaken at an appropriately EPA licensed landfill.
Waste	Minimise waste production and manage wastes consistent with relevant State waste policies and guidelines	<ul style="list-style-type: none"> Ensure compliance with all statutory requirements relating to management of waste (including SA EPA Waste to Resources Policy). The Contractor must have strategies in place to ensure that waste produced because of construction activities is minimised. In assessing waste management options, adopt the waste management hierarchy in order of preference: <ul style="list-style-type: none"> Waste avoidance and reduction. Maximise waste reuse, recovery, and recycling. Waste treatment. Waste disposal. Waste to be disposed of in accordance with EPA guidelines. Where possible, design excavation works should balance cut to fill to minimise the requirement for offsite disposal. The CEMP is to include the following management measures to be employed onsite during construction: <ul style="list-style-type: none"> Reuse of spoil and excess materials where possible. Waste segregation bins are placed onsite as per waste providers requirements. Bins to have covers or temporary covers put in place e.g., rod and shade cloth, to prevent wind blowing out waste materials into the environment and prevent fauna being attracted to the bins. Waste recycling and waste to landfill records should be tracked for reporting purposes.
Traffic & Transport	Manage effects of increased traffic and transportation during construction and operation to minimise impacts to the community and protect public safety	<ul style="list-style-type: none"> Develop and implement a Traffic Management Plan in consultation with relevant Authorities to manage and minimise any adverse traffic impacts to the local community and businesses during construction and operation. Access to the site to consider impacts on the local and regional road network and to incorporate measures to reduce these impacts. Ensure ongoing communication with DIT, the local council, community, and businesses to manage any impacts associated with traffic, road reinstatement and laydown areas
Social	Assist to manage and maintain ongoing communication with the local community, stakeholders, and other interested parties	<ul style="list-style-type: none"> Liaise with SA Waters Community Stakeholder Engagement to ensure effective support for community and stakeholder engagement during all project stages. The plan will incorporate:

		<ul style="list-style-type: none"> ongoing communication with potentially affected communities to identify and address concerns in line with SA Waters agreed communications principles. communicating measures to minimise any adverse or perceived adverse impacts. measures to encourage community support and ownership of the project.
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The Contractor is required to have in place a CEMP that addresses the key environmental performance criteria above, including any conditions related to formal environmental approvals or permits. The CEMP and associated plans must detail the environmental management requirements to be implemented and managed on-site during the construction of the new pipeline.

Site specific environmental plans should also be provided for outlining 'no-go' zones, locations of compounds including locations for spoil storage, sites offices, waste/recycling bins, spill kits, storage of hazardous substances, soil and erosion prevent measures etc.

6.2 Specific Mitigation Measures

The following describes the environment and heritage management measures that are to be implemented by the contractor.

6.2.1 Native Title

Although the Project Area is within a registered Native Title application area, SA Water is advised that Native Title does not exist in the relevant land parcels that will be utilised for the Project.

6.2.2 Aboriginal Heritage

The Aboriginal Heritage Act 1988 applies to the project and provides for the protection of all Aboriginal sites, objects and remains. Including recorded, reported, or undiscovered heritage.

A search of the Central Archive, which contains the Register of Aboriginal Sites and Objects (DPC-AAR) did not identify any registered sites within 200m of the works. Whilst the search of the central database did not identify any known/registered sites, it is advised that sites, objects or remains may exist in the development area. All Aboriginal sites and objects are protected under the Aboriginal Heritage Act 1988, whether they are listed in the central archive or not.

This project has been assessed by SA Waters Aboriginal Heritage Advisor and has given a medium risk of impacting heritage.

Mitigation Measures to be Implemented by Contractor

- If any Aboriginal sites, objects or remains are found, work should cease immediately, an exclusion zone placed around the site and an Environmental Services representative contacted for further advice/directions.
- SA Water's Standard Operating Procedure (SOP) for Discovery of Aboriginal Heritage should be provided to contractors and included as part of their CEMP, should be displayed in site huts and be available to construction staff (Appendix B).
- Prior to conducting ground disturbance works all personnel should have attended a site-specific Aboriginal cultural heritage induction. This should be conducted prior to the first morning of ground disturbing works on site. The heritage induction will be conducted by a SA Waters Aboriginal Heritage and Engagement Advisor who will discuss site specific cultural awareness.

6.2.3 Ecology

The pipeline renewal has been designed to be positioned as close as practically possible to the existing MWPL 1. This area has been previously cleared for the placement of the existing pipeline and road infrastructure. As such the construction footprint provides limited habitat for fauna, due to edge effects, previous clearance, existing infrastructure etc.

However, the clearance of vegetation will result in the removal of some habitat of species known to occur, especially mallee bird's dependent on the MBC TEC. Construction related impacts (noise, traffic, dust) may also result in short term disturbance to fauna within the project area. It is anticipated based on the implementation of suitable controls and limited duration of works; impacts to fauna associated with these aspects will be minor.

Mitigation Measures to be Implemented by Contractor

Please note – The Contractor must implement all measures outlined in Appendix C, which are summarised in this table. This section is to be reviewed following a decision under the EPBC Act.

Phase	Management Requirement
Pre-construction	<ul style="list-style-type: none"> Hollow Bearing Trees to be cleared and retained are clearly identified on site specific SEPs. Prior to any works, trees and significant vegetation (including MBC TEC, Hollow Bearing Trees and highly suitable habitat for MNES as modelled by ELA) considered to be at risk during construction are to be identified and protected with protective fencing (e.g., temporary fluoro orange para-web fencing or similar). Signs indicating 'no go zones' are to be installed at intervals of no greater than 30m in clear view of site workers. A register of Hollow Bearing Trees removals is to be maintained, with tree number, photos, removal date, number of tree hollows checked, and fauna removed/noted prior to clearance. During vegetation clearance, a MDJV Environment representative must be present during pre-clearing control implementation and during vegetation clearance activities. No vegetation clearance is to occur between July to November in Section 18, Section 22, Section 21 and Section 20 (to avoid the South-eastern Hood Robin and Southern Whiteface breeding season). Immediately prior to the commencement of vegetation clearance within Section 18, Section 22, Section 21 and Section 20, a pre-clearance survey is to be undertaken by a suitably qualified and experienced ecologist. The survey is to determine the presence of threatened fauna species, including <i>Aphelocephala leucopsis</i> (Southern Whiteface) and <i>Melanodryas cucullata cucullata</i> (South-eastern Hooded Robin). The survey is to include searches of habitat features including Hollow Bearing Trees and nests. If nesting birds are identified during pre-clearance site inspections, the Project Manager and Environmental Manager are to be notified immediately to determine action required to relocate the nest safely if brood free or to abandon works in the immediate location until the nest is free of brood. If threatened bird species are encountered, the individual will be provided an opportunity to move outside of the Project Footprint, which will likely occur, before works proceed. Low mobility fauna recorded during the pre-clearance surveys are to be relocated to suitable habitat a safe distance from the works by a qualified ecologist. This will include (where opportunistically encountered during pre-clearing works) species such as small reptiles (e.g., <i>Tiliqua rugosa</i> (Sleepy lizards)). Release areas to be marked on site plans. Potential species will be covered in PEMP with site photos including relocation area and protocol. A licenced fauna handler is to be present for the duration of vegetation clearance within Section 18, Section 22, Section 21 and Section 20 to monitor for non-breeding individuals. Prior to the commencement of vegetation clearance in Section 17 a licenced fauna handler is to conduct a pre-clearing survey to identify high-risk areas of where fauna is likely to be present. If nesting birds are identified during pre-clearance site inspections, the Project Manager and Environmental Manager are to be notified immediately to determine

	<p>action required to relocate the nest safely if brood free or to abandon works in the immediate location until the nest is free of brood.</p> <ul style="list-style-type: none"> Low mobility fauna recorded during the pre-clearance surveys are to be relocated to suitable habitat a safe distance from the works by a qualified ecologist. This will include (where opportunistically encountered during pre-clearing works) species such as small reptiles (e.g., <i>Tiliqua rugosa</i> (Sleepy lizards)). Release areas to be marked on site plans. Potential species will be covered in PEMP with site photos including relocation area and protocol. A licenced fauna handler is to be present during the removal of any Hollow Bearing Trees. A licenced fauna handler is to be on call during vegetation clearance within Section 17 and is to be called onto site if any fauna is encountered during vegetation clearance.
Construction	<ul style="list-style-type: none"> Traffic within the Action area and ROW to be speed limited (10km/h) to reduce potential impacts to fauna crossing into the Action Area. In line with table 23 of the Threatened Species Management Plan, invasive construction activities including the use of heavy machinery, and other site activities will not be undertaken between July to November in Section 18 and Section 22 to avoid the South-eastern Hood Robin and Southern Whiteface breeding season. In line with table 23 of the Threatened Species Management Plan, invasive construction activities including the use of heavy machinery are permitted in section 21 and section 20 between July to November. If <i>Aphelocephala leucopsis</i> (Southern Whiteface), <i>Melanodryas cucullata cucullata</i> (South-eastern Hooded Robin) or <i>Tiliqua adelaidensis</i> (Pygmy Blue-tongue Lizard) are observed in the Action Area at any time during construction works, the number and locations of individuals will be recorded, and records submitted to DEW for inclusion into the Biological Databases of South Australia (BDBSA). Appropriate measures are put in place to minimise direct/indirect impacts to fauna. Any fauna strikes and /or deaths are to be recorded and reported immediately to SA Water's Environmental Representative.

6.2.4 Surface Water

Phase	Management Requirement
Pre-construction	<ul style="list-style-type: none"> The contractor is required to determine the discharges that may be required for each section, including type, volumes, method of discharge (via scour outlets, fire plugs, isolation valves, cutting of pipe etc), and erosion/sediment controls to be presented to SA Water's Environment and Heritage Expertise Team at least 5 months prior to planned discharge, to ensure appropriate approvals are in place (including the requirement of external approval through associated Landscape Boards).
Construction	<ul style="list-style-type: none"> Appropriate sediment control devices are to be in place around work zones, around watercourses and within potential drainage lines around laydown areas and that these are appropriately maintained. Stockpiles of spoil and fill should be placed away from watercourses and natural drainage lines. Appropriate scour protection measures need to be implemented at the point of any discharge and monitored for effectiveness. Plan to commence the works during forecast dry weather. Where rain is predicted, works should be stood down until inclement weather clears, if possible

6.2.5 Weeds and Pests

A desktop assessment, along with a vegetation assessment undertaken by Eco-Logical identified the following WONS (W), declared (D) and/or environmental (E) weeds along the alignment (Refer

to [Controlling declared weeds in SA - PIRSA](#) for weed profiles, control measures and legal requirements):

The movement and transport of machinery, vehicles and equipment that are contaminated with weed seed is a source of spreading declared plants from infested areas to weed free locations or areas with minimal infestations. This form of spread has the potential to move declared pest plant's reproductive material over long distances from the original source or a core infestation area.

Mitigation Measures to be Implemented by Contractor

Phase	Management Requirement
Pre-construction	<ul style="list-style-type: none"> NVC data assessment reports (A1-A, A1-B, A1-C) are to be reviewed for locations of identified weeds. A baseline weed survey is to be conducted of the clearance corridor to identify location of existing weed infestations (ground truth data reports). All priority weeds listed for the Landscape Management Region or Weeds of National Significance are to be removed or destroyed prior to ground disturbance and vegetation clearing in line with requirements of the Landscape SA Act. A designated wash-down bay is to be installed to clean vehicles and construction equipment during construction works and prior to leaving site. The Project is to adhere to principles of the Arrive Clean, Leave Clean Guideline (<i>Guidelines to help prevent the spread of invasive plant diseases and weeds threatening our native plants, animals and ecosystems CoA 2015</i>).
Construction	<ul style="list-style-type: none"> Include weed identification material in site work plans and display fact sheets of any weeds controlled within the Action Area on notice boards and in crib rooms. A map detailing the location of weed infestations and identification of weeds is to be provided to the construction crew. All footwear, tools, equipment, machinery and vehicles are to be free of weed seeds, mud, soil and organic matter before starting works within MBC TEC sections of the Action area. Boot cleaning stations will also be used at main entry/exit points to the Action Area. All construction machinery/plant, vehicles (including third party) and equipment are to be cleaned prior to arrival to the site. Plant hygiene inspections are to be completed for all vehicles and plant on arrival and captured on system as part of Plant Induction. Where vehicles are washed down, wash water should be directed to a sump (onsite earthen bunded sumps if possible) and not discharged to land or a watercourse. Ensure all fill is clean from pests/ pathogen/ contaminates prior to importing to site. Ensure imported fill is sourced from a designated weed free source. To mitigate the potential risk of spreading weeds and other pathogens, a work instruction, hold point or similar should be implemented to ensure all vehicles, machinery and equipment arrive to each new site clean and free of weeds and potentially infected soil.
Post-Construction	Post-construction weed survey of the construction corridor to be conducted 6 months and 12 months post construction to identify the presence of weed infestation.

6.2.6 Contamination

A risk assessment including geotechnical investigations have been completed for the sections to be renewed. No existing contamination or hazardous materials were identified at any of the sites besides Section 16, where construction will occur within a disused rail corridor. As part of general business practice, rail corridors are identified as a high risk from contaminating activities and further investigations are required to determine the type of contamination that may be present to assist with mitigation and management control measures.

Mitigation Measures to be Implemented by Contractor

Phase	Management Requirement
Pre-construction	<ul style="list-style-type: none"> Ensure all geotechnical investigations have been completed, including any soil and groundwater contamination testing (where appropriate) to inform onsite controls and management measures. Ensuring all soil materials have been classified during geotechnical investigations for SA EPA waste derived fill guidelines for transport and disposal requirements.
Construction	<ul style="list-style-type: none"> Contingency plans should be in place for discovery of contaminated soils, including appropriate testing, management, and disposal. Any excess spoil excavated from within the railway corridor to be retained and respread within the same land parcel. Material which is to be disposed of offsite will require additional testing and certification by an environmental consultant engaged by the Contractor. If an unexpected find is located, works are to cease and nominated contamination consultant engaged on direction to manage. Contaminated soils are to be stockpiled separately to clean materials and to be transported, remediated, reused, or disposed of in accordance with local regulations.

6.2.7 Waste

A multi-criteria analysis workshop was held to compare the quantitative and qualitative impacts of various pipeline material options and construction methodologies. This included the use of MSCL, HDPE, and DICL pipe materials for an above or below ground pipeline. As discussed above under greenhouse and energy use, the preferred option was to maintain an above ground MSCL pipeline. This construction methodology will minimise the need for vegetation clearance and management of excess spoil associated with trenching.

The following waste management and mitigation measures are either being investigated or will be implemented during project delivery:

- Pre-casting and shipment to site of the concrete chair supports to minimise waste generated onsite.
- Investigating the re-use of existing support infrastructure within major watercourses.
- Designing the renewal in a manner that minimises pipe off-cuts and waste.
- Waste generated from the decommissioning of the existing pipeline will be sold as scrap to the closest recycling facility.

Mitigation Measures to be Implemented by Contractor

Given the remote location of the project opportunities for recycling are reduced, however the contractor has committed to the following general approach to waste and resource use management:

- Paper and cardboard will be separated if local collection point can be identified.
- Steel offcuts will be recycled.
- Crushed concrete will usually be reused (e.g., provided to local council or farmers).
- Site won spoil will be reused onsite wherever possible or alternatives explored i.e., provided to local stakeholders for reuse.
- Construction and general waste will go to landfill where there are no recycling opportunities.

6.2.8 Air Quality

Construction and removal of the pipelines will involve activities that have the potential to impact on air quality. This includes excavation and stockpiling as well as the use of mobile plant and equipment, either through emissions or the generation of dust. Although the project will generally occur in remote areas, dust still has the potential to have an environmental impact to surrounding vegetation and create an environmental nuisance to road users and residents if not managed appropriately.

Mitigation Measures to be Implemented by Contractor

It is important to control and limit dust and other atmospheric emissions due to the impact that they may have on human health and the environment, including impacts to native flora and fauna and surface water.

Phase	Management Requirement
Pre-construction	<ul style="list-style-type: none"> Clearly define and delineate construction access prior to works commencing. Define sensitive receptors, to delineate specific control where required.
Construction	<ul style="list-style-type: none"> Haulage and delivery vehicles shall be confined to designated roadways (paved and non-paved) within the works area Implement industry practice controls of dust at earth works sites to control air quality such as the spreading chipped vegetation to suppress dust. Restrict vehicle movements to 30 kph within ROW Truck and machinery load appropriately covered when entering leaving site (where these loads have potential to emit dust). Water down work areas prior and during construction as vehicle and heavy machinery movements will disturb ground and generate dust. Implement industry practice controls of dust at earth works sites to control air quality such as the spreading chipped vegetation to suppress dust. Prevailing wind conditions and weather forecasts to be recorded on daily pre-start sheets and warnings issued to site crew of any adverse meteorological conditions that may give rise to dust dispersal and requirement for additional dust suppression controls (i.e., additional watering down of ROW). In dry and windy conditions, minimise as far as possible any dust generating activities, increase use of watering systems and stop work if nuisance dust is excessive. Watering equipment such as hoses and tanker to be always kept on site. Any vehicle or item of plant or machinery which emits visible and constant air pollutants will not be permitted on site. No materials, including waste, will be burnt on site
Post-Construction	<ul style="list-style-type: none"> Implement rehabilitation measures as soon as practicably possible post construction. Spread chipped vegetation (obtained from vegetation removed for Action), across the work areas as new sections of pipeline are installed to limit the potential for windblown dust and aid rehabilitation.

6.2.9 Greenhouse Gas

A high-level sustainability analysis was undertaken on several pipeline materials including mild steel concrete lined (MSCL), high-density Polyethylene (HDPE), and ductile iron cement lined (DICL) pipe materials. This analysis calculated the CO₂ emissions for a 10km section based on the most accurate information available on emission factors. The factors considered in this high-level analysis were:

- Weight of pipeline based on density and wall thickness.
- Delivery to site from supply source (locally vs overseas).

- Concrete requirements (noting additional pipeline supports required for above ground installation).
- Bedding sand requirements (noting additional sand requirements for below ground installation).
- Fuel consumption (noting below ground construction increases excavation requirements and CO2 emissions).

MSCL was determined to be the only suitable material for above ground installation.

Mitigation Measures to be Implemented by Contractor

The project contractor aims to reduce greenhouse gas emissions and energy use by implementing the following initiatives wherever possible:

- Sourcing materials locally where these are available.
- Use of local waste management companies.
- Engaging local sub-contractors where the expertise exists in the area.
- Use concrete with increased Supplementary Cementitious Materials (SCMs) where attainable.

Given the remote nature of the project there are limited opportunities to use renewable energy (solar huts have been explored however this option is still significantly more expensive than use of generator power). Solar options can be utilised for security systems.

6.2.10 Noise and Vibration

Given the remote location of the works, impacts to human populations from construction noise and vibration will be minimal. However, the following measures are required to minimise indirect impacts to MNES and other fauna species.

Mitigation Measures to be Implemented by Contractor

Phase	Management Requirement
Construction	<ul style="list-style-type: none"> • The duration of noise exposure to be controlled by the contractor in the Action area through the appropriate timing of activities during construction. Only conduct clearing and operation of machinery inside of typical work hours (6 am – 7 pm everyday with additional night shift work if required) However, clearing activities will be restricted to daylight hours only. • Undertake preparatory work offsite where there is low potential for impacting people (e.g., formwork, cutting or prefabrication of materials offsite prior to transporting to the construction site). • Plan vehicle movements to avoid manoeuvres and idling at location nearest to nearby sensitive receptors. • Maintain equipment by: <ul style="list-style-type: none"> ◦ inspecting regularly and maintaining equipment to ensure good working order ◦ checking machines with enclosures, including doors and door seals and that the door closes properly against seals ◦ maintaining air lines on pneumatic equipment so they do not leak • Maintain vehicles by: <ul style="list-style-type: none"> ◦ considering good working conditions of mufflers ◦ securing loose parts that may rattle. ◦ Plan transport and haulage routes to minimise the number of trucks/vehicles. Where there are large numbers of truck movements, consider truck route and truck waiting protocols (e.g., engines on/off and restart requirements).

6.2.11 Access

The current pipeline is either positioned next to a public road or maintenance access points along the pipeline alignment already exist, these will be utilised wherever possible. Some sites may require new access points or upgrades to existing access/farm tracks to assist with safe machinery access.

Some sections of the pipeline border farmland or easements exist within private land. Several gates and fences may be impacted by the project during implementation and/or decommissioning of the existing pipeline. SA Water and Contractors stakeholder teams will work with affected stakeholders to negotiate renewal of this infrastructure.

Mitigation Measures to be Implemented by Contractor

- Contractor to develop a Traffic Management Plan.
- Ensure access tracks are properly delineated and constructed to minimise erosion.
- Ensure any impacts to farm gates and/or fences are reinstated based on reasonable negotiations with the landholder.

7 Emergency Response and Environmental Incidents

7.1 Emergency Planning, Preparedness and Response

Emergency response and incident procedures should be in place for the project, these procedures should provide an effective response whilst minimising environmental harm or disruption ([SAWP-ENV-0024 Environmental Emergency Response Plans](#)).

The Emergency Response Procedure must be available and on display at the worksite/site office and all personnel must be inducted into its requirements. The procedure should include key contact details.

Also included on the contact list should be the details of:

- contacts for emergencies that will be available 24 hours a day, seven days a week, and has the authority to stop or direct works.
- emergency response personnel.
- SA Water Superintendents Representative.
- local councils and the local hospital/s.
- if necessary, nearby residents.

In the event of an emergency, the emergency response procedure should be enacted. A post event review should be undertaken to evaluate the effectiveness of the response against the procedure and determine if any amendments are considered appropriate.

Contact	Contact details
Superintendent Representative/SA Water Project Manager	Intentionally left blank for privacy reasons
SA Water Environmental Representative	Intentionally left blank for privacy reasons
Police, Fire and Ambulance	000
Country Fire Service (CFS)	1300 362 361
Metropolitan Fire Service (MFS)	08 8204 3600
Environment Protection Authority (EPA)	08 8204 2004 / 1800 623 445
SafeWork SA	1300 365 255 / 1800 777 209 (for serious incidents/ injuries)
RSPCA (Head Office, Adelaide)	1300 477 722
National Parks and Wildlife South Australia (NPWSA)	08 8688 3111

7.2 Environmental Incident Management

In the event of an incident, action should be taken to stop/modify the work to effectively minimise impacts to the environment. Where an environmental incident occurs that causes or threatens to cause serious or material environmental harm (breach of legislative requirements, widespread impact etc) then as per Section 82 of the *Environment Protection Act* the EPA should be notified.

Incidents may include:

- flooding events
- chemical or fuel spills
- discharge of contaminated water
- unauthorised/unintended impacts to vegetation etc.

Any environmental incidents must be investigated and reported to the Superintendents Representative as soon as practicable or **no later than 24 hours after the incident is identified**. Reports should include details of the incident and any corrective actions taken.

A record of all incidents should be maintained ([SAWP-ENV-0027 Environmental Incident Reporting](#)).
In the case of an environmental emergency the Emergency Response Procedure/Plan should be followed.

8 Performance Evaluation

8.1 Inspections and Monitoring of Environmental Performance

Inspections of the work area should be carried out by the Contractor to ensure the environmental management controls are effective. Monitoring of the environmental controls should consider the performance indicators each of the environmental issues provided in Section 5.

Issues arising from site inspections should be addressed as soon as possible, in some cases non-conformance reports may be raised. Issues identified should also be discussed at toolbox or site meetings together with any improvement measures that have been implemented.

Monitoring records should be retained by the Contractor. A suggested monitoring schedule is outlined below:

Frequency	Issues
Prior to works	<ul style="list-style-type: none"> Compound/worksite controls are in place, locations for materials/stockpiles and access identified. Location of sensitive neighbours. Location of stormwater entry points, drainage lines, watercourses identified. Location of spill control measures and appropriate spill kits available.
Daily	<ul style="list-style-type: none"> Site is maintained in a neat and tidy manner. Waste appropriately contained. Chemicals and materials appropriately stored. No evidence of dust nuisance. No evidence of water contamination/runoff from site. Adjacent roads clean (not covered in sediment etc).
Before/during rainfall events (where safe to do so) #	<ul style="list-style-type: none"> Runoff controls in place and maintained. Protection of stormwater, watercourse entry points. Adjacent roads clean (not covered in sediment etc). Drainage lines clear of debris
Weekly/monthly	<ul style="list-style-type: none"> Overall environmental management measures as per CEMP in place.

Monitoring will not take place during flooding events or when there are heavy rainfall events taking place, resulting in unsafe driving conditions on public dirt roads. Once the rainfall has ceased and it is safe to access via public roads monitoring will recommence. Regular monitoring will continue until such event and recommence as soon as practically possible post event to ensure controls are adequately maintained.

8.2 Audits and Inspections

During the construction phase of the project SA Water will undertake inspections/audits of the contractor to ensure compliance with the requirements of the project environmental controls.

8.3 Non-conformance and Corrective Actions

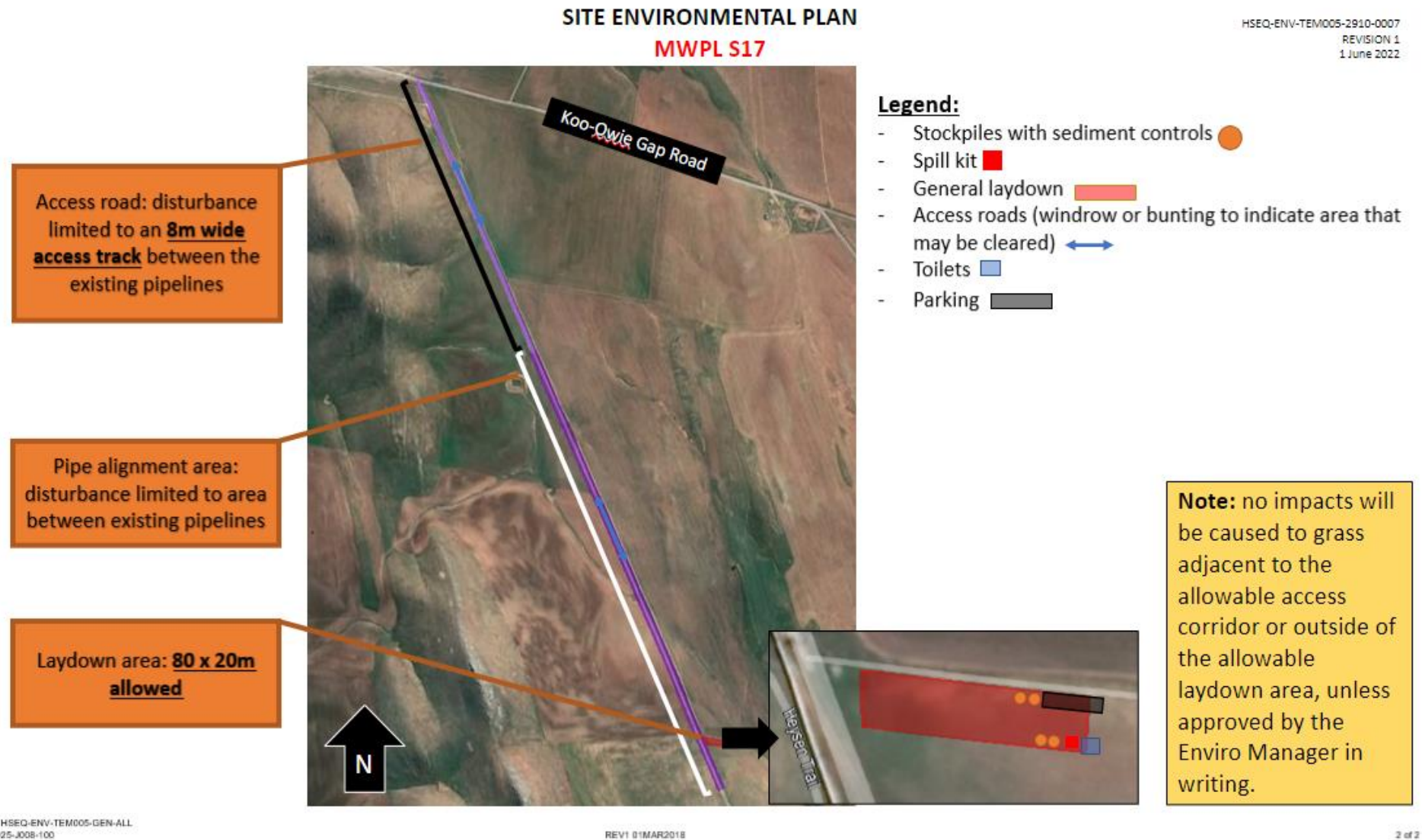
A process for handling non-conformances must be in place. As a minimum requirement, this should include procedures for the identification and reporting of any non-conformances with the project documentation, including the CEMP.

If inspections/monitoring/auditing activities identify an environmental non-conformance the following actions should be undertaken:

- Inspect/Review the non-conformance, where necessary stop/control the activity until the environmental non-conformance is addressed.
- Reporting of the non-conformance by the contractor to the Superintendents Representative.
- Investigate the reasons for the non-conformance.

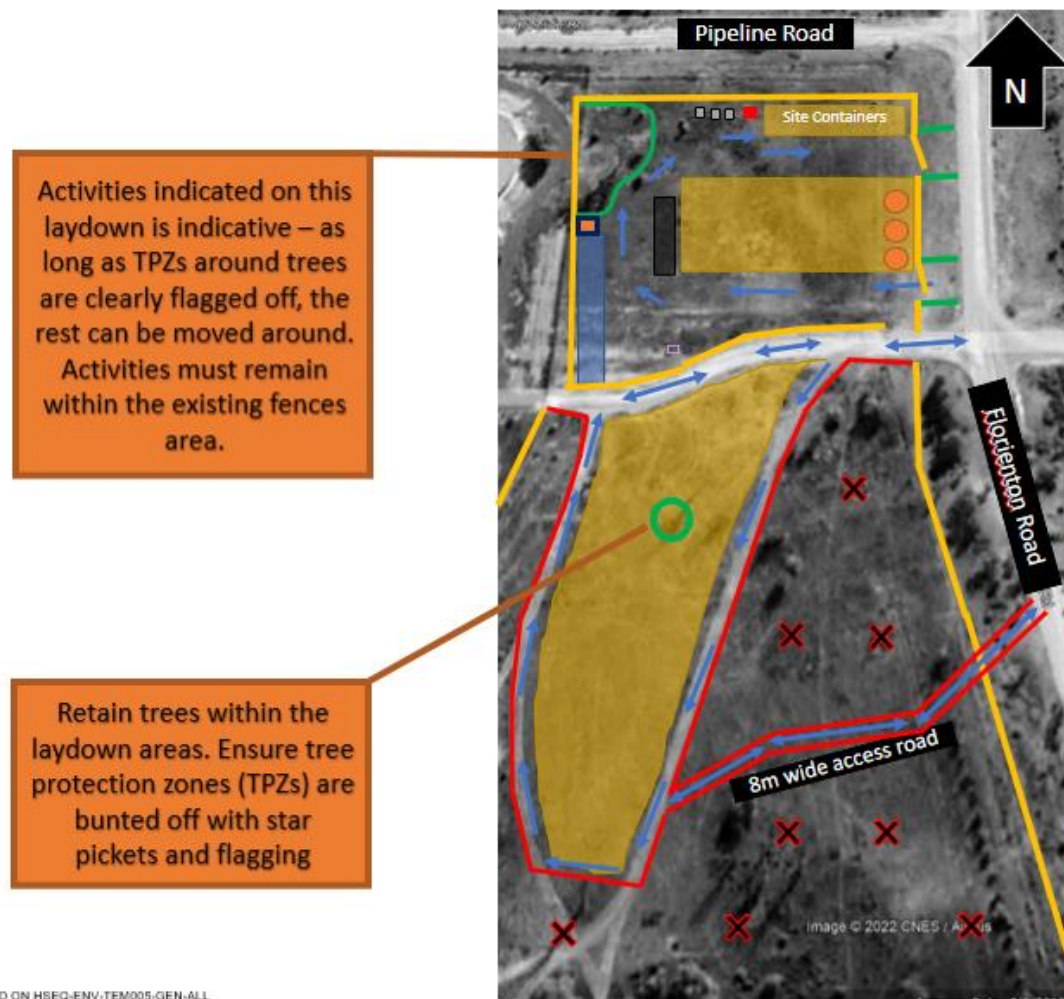
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- Implement appropriate action to address the non-conformance, amend project CEMP/Project plans, as necessary.
 - Record details of the non-conformances.

A SEP Example



SITE ENVIRONMENTAL PLAN MWPL PS2 LAYDOWN

HSEQ-ENV-TEM005-2910-0007
REVISION 1
1 June 2022



Legend:

- Stockpiles with sediment controls (orange circle)
- Waste skips (general waste; paper and cardboard; 10c recyclables) (grey square)
- Spill kit (red square)
- General laydown (yellow rectangle)
- Designated smoking area (purple square)
- Vegetation / Tree / Weed protection areas (disturbance only allowed within the green area) (green circle)
- Access roads (blue double arrow)
- Site compound (toilets / office block / first aid room) (blue rectangle)
- Parking (grey rectangle)
- No access (potential asbestos) (red circle with cross)
- Existing fence / gate (yellow rectangle)
- Generator (blue square)

Note:

- surface asbestos fragments must be removed from site and air quality monitoring done to clear the area as safe to our people by an asbestos professional. Air quality monitoring sheets are displayed on the notice board.
- This site layout is indicative of the footprint and specific locations of amenities may differ.

BASED ON HSEQ-ENV-TEM005-GEN-ALL
Former id: 025-J008-100

REV1 01MAR2018

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SITE ENVIRONMENTAL PLAN

MWPL S17, PS2 LAYDOWN

HSEQ-ENV-TEM005-2910-0007
REVISION 1
1 June 2022

Drainage, Erosion and Sediment Control

- Stormwater is to be diverted away from site
- Erosion and sediment controls must be installed where necessary around disturbed areas or stockpiles
- Material stockpiles to be bunded (i.e., sediment fence)
- No works to occur in a waterway without prior approval from SAW
- No construction water, hydrotesting water or rainwater may be released / pumped without prior SAW approval and MDJV water discharge permit in place

Dust, Noise, Vibration and Light

- Site works are scheduled for a 10/4 roster, 6 am to 6 pm. Where community sensitive receptors are within 200m from site, additional noise mitigation measures are required (none identified) as per consultation with the Enviro Manager.
- Dust suppression will be conducted on site via the use of a water tanker or other means when required

Waste & Spoil Management

- No site won soils may not be taken off-site, unless it is tested and classified, and approved by the MDJV Environmental Manager
- Any unexpected discovery of contaminated soil is to be left in-situ and reported to the Environmental Rep. A soil consultant will be engaged to provide recommendation.
- Waste to be segregated appropriately (general / construction waste, 10c recycling, paper and cardboard) - a separate stream will be generated for hazardous chemical containers - must be disposed at a licensed facility for hazardous waste.
- Concrete washout skip on site and must be double-lined with plastic before use (an earth lined concrete wash-out area can also be utilised).
- Regulated waste to be tracked (e.g., oil filters, grease cartridges, asbestos, etc.)

Flora & Fauna Management

- No harm to be caused to the flora & fauna through these works - only disturb flora as per approvals in place.
- Prior to vegetation clearance, a pre-screen check must be done by a licensed fauna handler for habitat trees; and an enviro rep for the remainder of the corridor where high value native vegetation is present.
- Vegetation clearing only to occur following approval from SAW (this SEP) and the MDJV Vegetation Disturbance Permit to Work.
- No parking of machinery beneath drip line of trees or on grass unless permitted. No excavations / cranes / trucks within TPZ of trees unless approved by SAW and Arborist; or unless heavy duty track matting is used and approved by the MDJV Enviro Manager.
- If any animal is injured on site, notify the Environmental Representative.
- Minimal declared weeds were identified on site - general plant hygiene practices must be followed i.e., all plant arriving to site to be clean and free of weeds and mud. Confirmed as part of incoming plant inspection. All site won spoil must remain on site. Plant must be cleaned before leaving site.

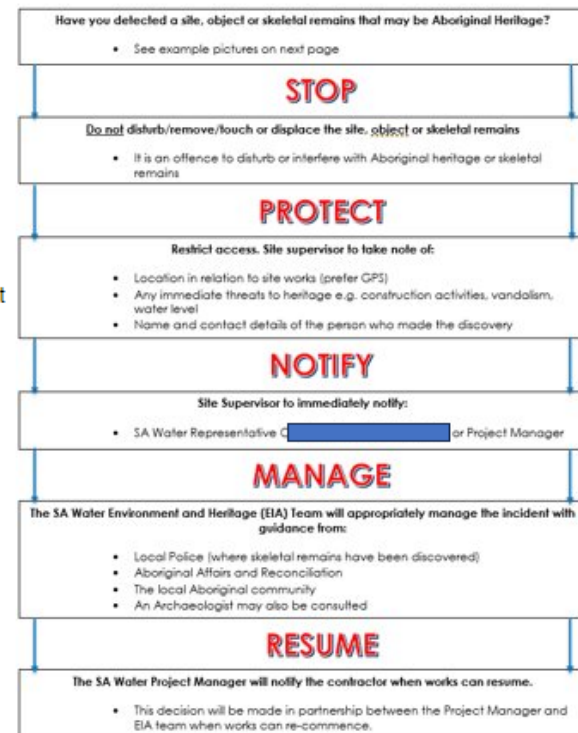
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Former ID: 025-J008-100

REV1 01MAR2018

Environmental Concerns: The aspects of concern for these works are flora (native shrubs and grasses) and noxious weeds. Refer to the MDJV CEMP and CEP for further environmental mitigation measures applicable to all works. **Note that native vegetation is a medium risk - control measures must be implemented and adhered to.**

Hazardous Materials & Spill Response

- Fuels and chemicals must be stored and bunded appropriately; and SDSs must be available on site
- Refueling must not occur within 20m of a watercourse
- Refueling must be always attended and use of drip tray / rag during refueling to prevent drips
- Spills are to be cleaned up immediately with spill kits & reported to the Environmental Representative.
- Spills are to be reported to SAW within 24 hours of event occurring.
- Spill kits to be available at the work front and fully stocked and personnel trained in use

Cultural Heritage

- If a cultural heritage item is discovered on site, stop works immediately, report to supervisor and do not re-commence works in area until given the all clear by SAW
- Follow the SAW Aboriginal Heritage Discovery Protocol as outlined on the left
- Establish a no-go zone & do not recommence works in the area until instructed SAW / Heritage Advisor

Environmental Representative

Note: all environmental incidents must be reported to the MDJV Environmental Manager within 24 hours.

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B Aboriginal Heritage Discovery SOP

Aboriginal Heritage Discovery SOP



Have you detected a site, object or skeletal remains that may be Aboriginal Heritage?

- See example pictures in Appendix A

STOP

Do not disturb/remove/touch or displace the site, object, or skeletal remains

- It is an offence to disturb or interfere with Aboriginal Heritage or skeletal remains

PROTECT

Restrict access. Site Supervisor to take note of:

- Location in relation to site works (GPS location)
- Any immediate threats to heritage e.g., construction activities, vandalism, water level
- Name, contact details of person who made discovery

NOTIFY

Site Supervisor to immediately notify:

- SA Water Representative (Project Manager, Manager EHE)

MANAGE

The SA Water Environment and Heritage Expertise (EHE) Team will appropriately manage the incident with appropriate guidance from:

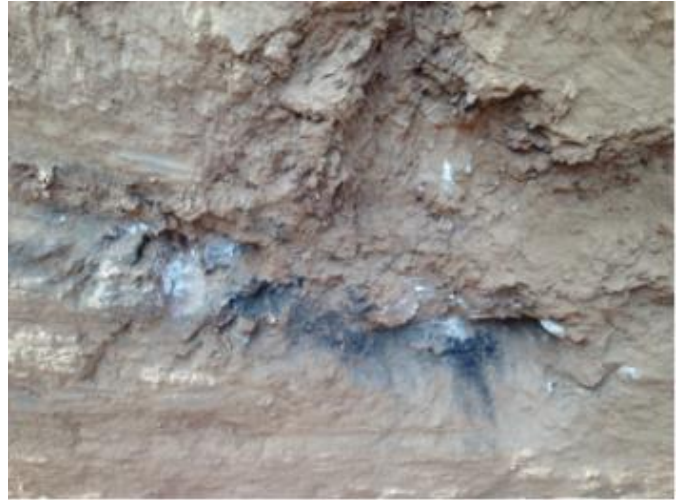
- Local Police (where skeletal remains have been discovered)
- Aboriginal Affairs and Reconciliation
- The local Aboriginal community
- An Archaeologist may also be consulted

RESUME

The SA Water Project Manager will notify the contractor when works can resume.

- This decision will be made in partnership between the Project Manager and EHE team when works can re-commence.

Example Pictures



C Southern Whiteface, South-eastern Hooded Robin, and MBC TEC Management Plan (Ecological Australia)

Refer to attachment 9 of Preliminary Documentation Report