Native Vegetation Clearance Application

Morgan Whyalla Number 1 Pipeline Renewal Stage 1, Package A-**1A**

Data Report

Clearance under the *Native Vegetation Regulations 2017*

March 2022

Prepared by Alice Si and Tobias Scheid (Eco Logical Australia) with input from Anne Brown Greening Australia

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DOCUMENT TRACKING

Project Name	Morgan Whyalla Pipeline Supplementary Assessments
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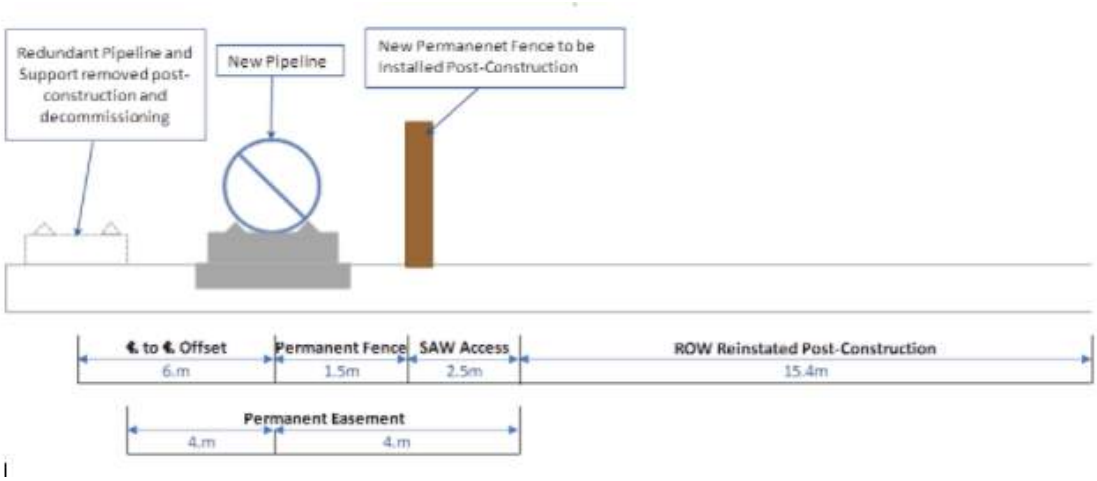
1. Application information

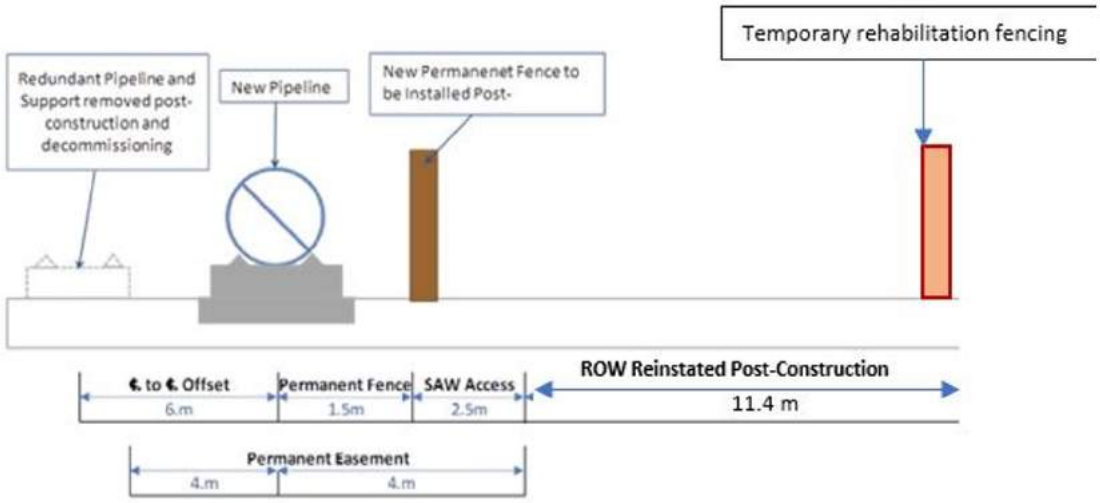
Application Details

Applicant:	SA Water		
Key contact:	Melissa Peake (Environmental Impact Assessment Officer) **E:** Melissa.Peake@sawater.com.au **M**: 0484 593 830		
Landowner:	Crown/ utility easement		
Site Address:	Various locations along Pipeline Road between Morgan and Emu Flat, SA		
Local Government Areas:	Mid Murray	Hundreds:	Maude Beatty Lindley
Title IDs:	CT/6011/362 CT/6078/898 CT/6213/693	Parcel ID	D73871 A61 H201000 S10 H201000 S11 H120300 S165 H120300 S166 H200900 S1 H200900 S3 H200900 S4

Summary of proposed clearance

Purpose of clearance	Clearance is required to facilitate Package A-1A of the first stage of the renewal of the SA Water Morgan Whyalla Pipeline Number 1 (MWPL1) between Morgan and Whyalla. MWPL1 is critical to the delivery of reliable, secure potable water to significant areas of the Mid North, Yorke Peninsula and Eyre Peninsula. The renewal of the full 358 km long pipeline will be undertaken in stages over the next 40 years.
Native Vegetation Regulation	Regulation 12. Schedule 1: Clause 34, Infrastructure
Description of the vegetation under application	The native vegetation within the proposed clearance areas consists of Mallee open woodland over Chenopod shrubland, Austrostipa grasslands, open mixed shrublands and Chenopod shrublands in varying condition. Up to 15 threatened fauna species have been identified occurring within 5 km of the proposed clearance area, and of these, 10 may utilise this area for habitat. The Mallee vegetation association within the proposed clearance area (VA E2) meets criteria for the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* listed Threatened Ecological Community (TEC) of *Mallee Bird Community of the Murray Darling Depression Bioregion* (Endangered). This makes up a total of 1.36 ha. This package of the project will require the clearance of 11.62 ha of native vegetation comprising the following: • 0.72 ha of very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland over mixed *Acacia spp*. and chenopod shrubland • 1.36 ha of *Eucalyptus oleosa, Alectryon oleifolius* and *Myoporum platycarpum* mallee over *Acacia* spp. and chenopod open shrubland • 2.14 ha of *Acacia nyssophylla +/- Lawrencia squamata* open shrubland • 2.21 ha of *Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubland in poor condition

	• 3.84 ha of *Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland • 1.35 ha of *Acacia nyssophylla* open shrubland
Total proposed clearance - area (ha) and number of trees	11.62 ha as described above, 0 scattered trees.
Level of clearance	Level 4
Overlay (Planning and Design Code)	N/A
See Figure 5 (below) for a map of proposed clearance area	
Mitigation hierarchy	A 25 m construction corridor is require to enable the safe and efficient installation of new pipeline infrastructure, necessary to minimise potential interruptions to supply (during construction) and to maintain ongoing supply to the region for the next c. 100 years of the pipeline design life. Where vegetation has been characterized as a TEC, this corridor has been reduced to 21 m. In general, the design and planning phase has limited clearance by locating the new pipeline as close as possible to the existing pipeline, whereby existing maintenance corridors and ancillary infrastructure such as access tracks, roads and laydown areas can be utilised wherever possible. In addition, where new laydown areas are required, these have been located in previously disturbed areas with little or no native vegetation present. Following construction 15.4 m of the 25 m impact corridor width will be allowed to naturally regenerate and will not be subject to further slashing or maintenance activities. Permanent impacts will be limited to an 8 m permanent easement containing both the old and new pipeline and an access easement to facilitate ongoing inspections and minor maintenance. The easement will be permanently maintained, and vegetation cleared as required to ensure continued access (Figure 1). In TEC areas, 11.4 m of the 21 m impact corridor will be allowed to naturally regenerate with help from temporary rehabilitation fencing, to restrict browsing by stock and native grazers (Figure 2).  *Figure 1. Post construction Easement*

	 *Figure 2: Post Construction Easement for TEC areas*
SEB Offset proposal	An SEB payment of $96,831.38 plus Admin fee of $5,325.74 for a total of $102,157.12 is proposed to be paid into the Native Vegetation Fund.

2. Purpose of clearance

2.1 Description

This application is for areas that will be disturbed during the 2020-2024 phase of the renewal of MWPL No. 1 at two renewal sections along the alignment (Figure 5). Table 1 summarizes total clearance per section. A 25 m construction corridor is require to enable the safe, effective and efficient installation of new pipeline infrastructure, necessary to minimise potential interruptions to supply (during construction) and to maintain ongoing supply to the region for the next c. 100 to 150 years of the pipeline design life. A schematic of the proposed construction corridor (impact area) is detailed in Figure 3 below.

All effort will be made to minimize the vegetation disturbance during construction through controls implemented at the planning, design and construction phases. In The new pipeline has been co-located as close as practicably possible to the existing pipeline, making use of existing maintenance corridors and previously disturbed areas, and preventing the need for large areas of new clearance. Where possible, existing laydowns and access tracks will be used, and where necessary new laydowns will be located in previously disturbed areas with little or no remaining native vegetation. Furthermore, the corridor width will be reduced to 21 m for sections with the identified Matters of National Environmental Significance (MNES) *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC (Endangered) (Figure 4).

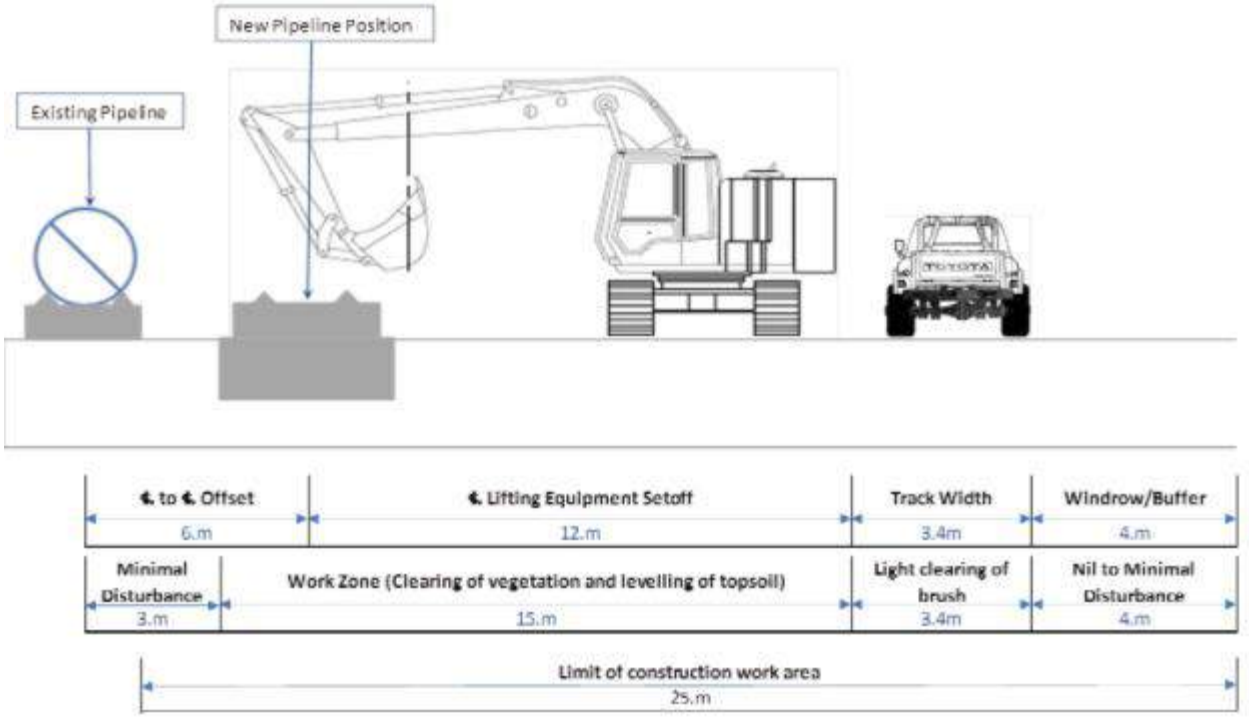


Figure 3: Proposed Construction Corridor and impact area for non- TEC areas are 25 m in width

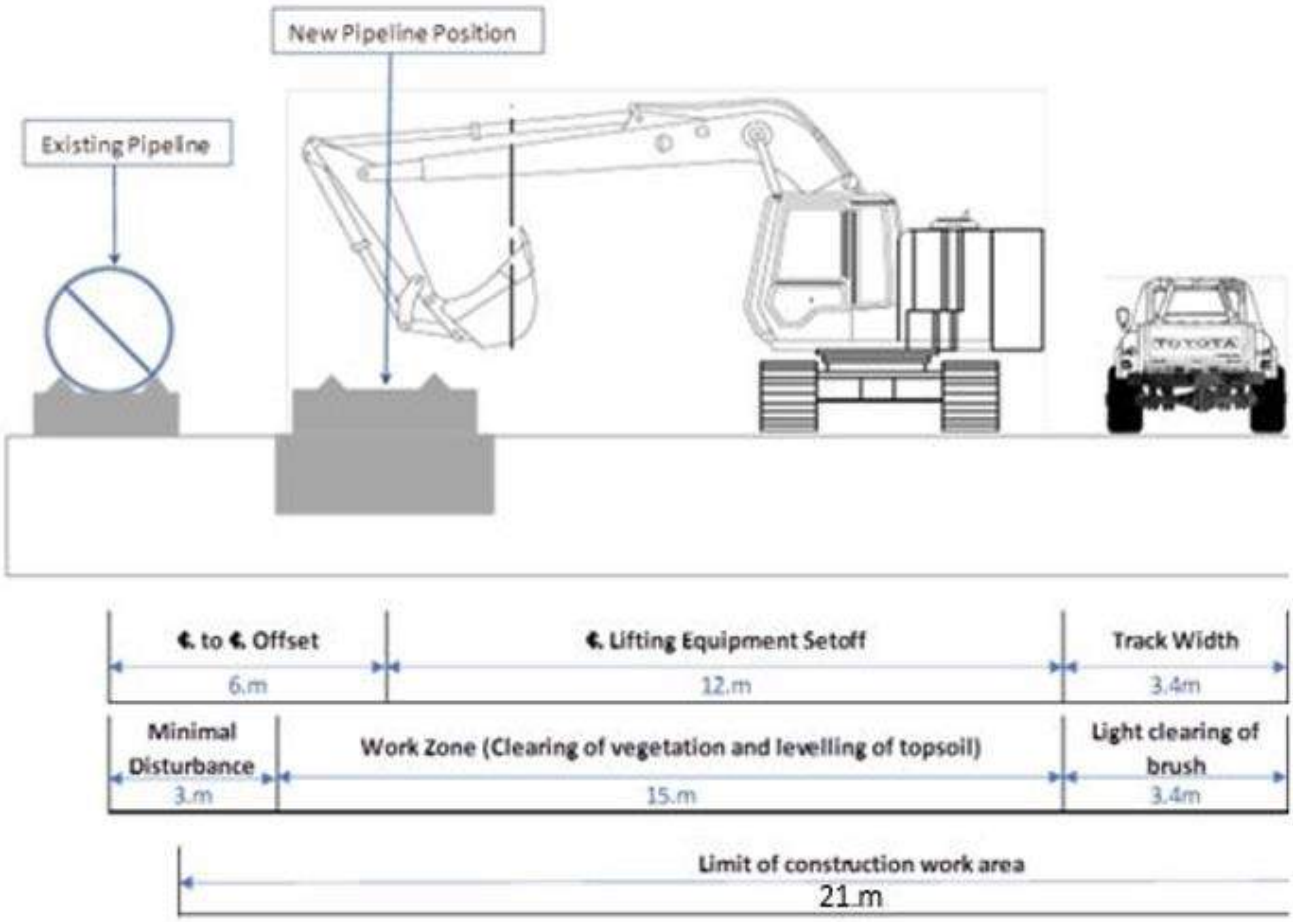


Figure 4. Proposed Construction Corridor and impact area for TEC areas is 21 m in width (note no windrow/ buffer area of 4 m for these areas)

2.2 Background

The Morgan Whyalla Pipeline No.1 was constructed during World War II (1941-1944). The 358 km rigid mild steel, cement lined pipeline (MSCL) runs parallel to the more recently built Morgan Whyalla Pipeline No.2 from Morgan to Baroota.

The Morgan Whyalla Pipeline is used for the transfer of bulk water 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 Morgan Whyalla Pipeline No.1 and No.2 provide a critical water supply to approximately 100,000 customers in these regional areas, including large industrial customers. The largest customers in the system are Liberty OneSteel at Whyalla and the Nyrstar Lead Smelter at Port Pirie.

The approximate 131 km section of Morgan Whyalla Pipeline No.1 from Baroota to Whyalla is the sole water supply to Port Augusta and surrounding areas.

The existing pipeline is near the end of its planned design life, requiring ongoing maintenance due to increasingly frequent failures caused by age and continued deterioration.

SA Water has assessed the current condition of the existing pipeline as high risk of major failures potentially resulting in multi day outages impacting between 15,000 and 100,000 customers. The repair and restoration of service is thus critical, and will take 1-2 weeks.

SA Water undertook extensive condition assessments of the Morgan Whyalla Pipeline No.1 in 2018, identifying key issues as the loss of the internal cement mortar lining, internal pipeline corrosion and control valves becoming blocked due to the dislodged cement lining.

A system augmentation review was undertaken in 2019 to assess the long-term plan for the Morgan Whyalla Pipeline. This review assessed multiple options including full pipeline replacement, selected section replacement and decommissioning of parts of the pipeline with supply replaced by the construction of a strategically placed desalination plant. It was determined that the Morgan Whyalla Pipeline No.1 was still required to be operational to meet future customer demand.

Accordingly, SA Water has identified the requirement for replacing multiple sections of the pipeline, a combined length of up to 34 km during the 2020-24 regulatory period to meet customer demand, which is in line with SA Water's business strategy. The replacement will improve the reliability of water supply to customers. This package focuses on two sections (S21 and S20) of a broader project to be delivered over the next approximately 40 years. The total length of S21 and S20 packages is 4.82 km of pipeline (2.69 and 2.13 km respectively).

SA Water undertook an extensive options assessment in 2020 to determine the most cost-effective and productive solution considering the entire pipeline, including sections which require replacement now and those that will require replacement over the next 40+ years. As a result, an above ground mild steel with cement lining pipeline was identified as the preferred delivery option as it offered the highest operational and construction efficiencies, fewer impacts to the environment and stakeholders, and more efficient construction solution.

The preferred alignment for the new pipeline is parallel to the existing pipeline. The design will utilise existing maintenance access tracks for installation and decommissioning of the old pipeline (MWPL No.1) wherever possible, to minimise impacts to native vegetation. The pipeline renewal will be staged to ensure relatively continued access to water supplies to customers. This vegetation clearance assessment report provides information for a clearance approval of native vegetation identified within the proposed construction corridor.

The construction corridor will be limited to a 21 m wide footprint in TEC areas (Figure 4) and a 25 m wide footprint immediately adjacent from the point of existing infrastructure, including the new maintenance access track (Figure 3).

This Stage 1 Package A-1A will cover two sections (with each section corresponding to a BAM block described within; Figure 5, Table 1) of pipeline totalling approximately 4.82 km along Pipeline Road, between Eba Rd and Dirty Corner Rd, south of White Dam conservation Park. This project in the longer term is planned to span approximately 40 years of pipeline renewal activity. Once replaced, it is estimated that replacement of new pipes will not need to occur for another 100 to 150 years.

2.3 General location map

See Figure 5, below.

Figure 5: Proposed clearance areas

- Proposed clearance area
- Morgan Whyalla Pipeline 1
- IBRA subregions
- Landscape management regions
- Watercourses
- Roads

Conservation parks

- White Dam

0 2 4
Kilometres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 18/03/2022

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2.4 Details of the proposal

This report covers two individual pipeline blocks with accompanying site access and laydowns along the pipeline west from Morgan as shown in Figure 5. The assessment covers all areas that may be impacted during the renewal activity. The blocks occur within the St Mary Interim Biogeographic Regionalisation for Australia (IBRA) Association and contain five vegetation associations (Table 1).

Table 1. Site details

Block	Renewal Section	Clearance purpose	Site	Vegetation Associations	Map reference	Coordinates
E	MWPL1-0021	Pipeline Road, Beatty - 2.7 km of 750 mm rising main renewal	E1 – E4	• Very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland over mixed *Acacia* spp. and chenopod shrubland • *Eucalyptus oleosa, Alectryon oleifolius* and *Myoporum platycarpum* mallee over *Acacia* spp. and chenopod open shrubland • *Acacia nyssophylla +/- Lawrencia squamata* open shrubland • *Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubland	Figure 6	Start Lat -33.970977^{0} Lon 139.527477^{0} Finish Lat -33.971078^{0} Lon 139.498367^{0}
F	MWP1-0020	Pipeline Road, Lindley. 2.2km of 750mm rising main renewal	F1, F2	• *Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland • *Acacia nyssophylla* open shrubland	Figure 7	Start Lat -33.971263^{0} Lon 139.563895^{0} Finish Lat -33.971243^{0} Lon 139.540640^{0}

2.5 Approvals required *or* obtained

The main approval required for this project relates to native vegetation removal and is the subject of this data report. Additional information is provided in regards to other relevant Stale and Commonwealth legislation.

- *Native Vegetation Act 1991* (NV Act)

The clearance of native vegetation is necessary and will occur under the *Native Vegetation Regulations 2017* (Regulation 12. Schedule 1: Clause 34, Infrastructure). Clearance approval and offsetting will be required for the removal of any native vegetation (the subject of this data report). Risk Level is 4 due to a Total Biodiversity Score (TBS) greater than 250.

- *Planning, Development and Infrastructure Act 2016* (PDI Act)

No development approval is required for these works in accordance with Division 2 of the PDI Act.

The project also falls outside of the designated area in which the Regulated and Significant tree controls apply – which is limited to the whole of Metropolitan Adelaide (with exceptions), and parts of the Adelaide Hills Council and the District Council of Mount Barker (with exceptions).

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The *Mallee Bird Community of the Murray Darling Depression Bioregion* Threatened Ecological Community (TEC, Endangered) is present within the proposed clearance area. Furthermore, the Regent Parrot (*Polytelis anthopeplus*) has a "possible" likelihood of occurrence within the proposed clearance area (Table 10). An EPBC Act Self-Assessment of significant impact will be undertaken for relevant MNES.

- *National Parks and Wildlife Act 1972* (NPW Act)

ELA have a current scientific permit (permit number M27061-1) for flora collection, issued by DEW under section 49(1)(a) of the NPW Act.

The project is not impacting directly on any state reserves. Nine bird species listed by Schedules 7, 8 and 9 of the NPW Act (excluding the Regent Parrot mentioned above) are considered to be "highly likely", "likely" or may "possibly" occur: Chestnut Quail-thrush (*Cinclosoma castanotum*), White-winged Chough (*Corcorax melanorhamphos*), Peregrine Falcon (*Falco peregrinus*), Little Eagle (*Aquila morphnoides*), Blue-winged Parrot (*Neophema chrysostoma*), Gilbert's Whistler (*Pachycephala inornata*), Restless Flycatcher (*Myiagra inquieta*), Elegant Parrot (*Neophema elegans*) and Hooded Robin (*Melanodryas cucullata*) (Table 10).

- *Aboriginal Heritage Act 1988*

The site is assessed as medium risk in areas not previously disturbed and all works will follow SA Water standard operating procedures if sites are found during construction.

- *Landscapes South Australia Act 2019* (LSA Act)

According to section 104(4)(g) of the LSA Act a Water Affecting Activity (WAA) permit is required when destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse. There is a riparian corridor within the impact area. SA Water understands this requirement.

2.6 Native Vegetation Regulation

Regulation 12, Schedule 1; clause 34, Infrastructure.

This application is made to maintain essential water supply through installation of new infrastructure, which replaces existing infrastructure that has reached its design life.

2.7 Development Application information (if applicable)

Not Applicable.

3. Method

3.1 Desktop assessment

A desktop assessment was undertaken to determine the potential for any threatened flora and fauna species and TECs (listed under the NPW Act and EPBC Act) to occur within the clearance area. This was achieved by undertaking database searches using a 5 km buffer applied to the clearance area (i.e. as required for the Bushland Assessment Method or BAM).

3.1.1 PMST report

A Protected Matters Search Tool (PMST) report was generated to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act within the study area (Department of Agriculture, Water and the Environment, 2021). In accordance with the Native Vegetation Council (NVC) Bushland Assessment Manual, species identified in the PMST report that are known to occur within the search area were assessed for their likelihood of occurrence within the study area. The *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC was identified as likely to occur, this was confirmed during field survey.

3.1.2 BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from Department for Environment and Water (DEW) to identify flora and fauna species that have been recorded within 5 km of the study area (Department for Environment and Water, 2021). The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia, and the Australasian Wader Study Group, which meet DEWs standards for data quality, integrity, and maintenance. In accordance with the Bushland Assessment Manual, only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.,

3.2 Flora assessment

The sections of existing pipeline for renewal in this Package (A-1A) lies within the Mid Murray District Council Local Government Area (LGA) and the Mt Mary IBRA Associations, within the Murray Mallee Subregion of the Murray Darling Depression bioregion. A field survey of the study area was undertaken by Catherine Miles and Alice Si (NVC Accredited Consultants) on 13th to 15th December 2021. Features of ecological significance were recorded including instances of native vegetation, habitat features as well as presence of *Landscape South Australia Act 2019* (LSA Act) declared weeds. Field surveys were undertaken accordance with the NVC BAM in areas of remnant vegetation within the study area. This enabled losses to be calculated under the permitted clearing regulations should impacts be unavoidable.

3.3 Fauna assessment

Active fauna searches were undertaken at each BAM site surveyed. This included conducting bird counts at each site, as well as inspecting refugia used by fauna, such as hollows, which were also noted as an indication of availability of suitable habitat. Any fauna observed incidentally were also recorded. Particular attention was paid to identifying habitat for threatened species with a high likelihood of occurrence (Table 9).

All native and exotic fauna species encountered (directly observed, or tracks, scats, burrows, nests and other signs of presence) during the field survey were recorded. For each opportunistic fauna observation, the species, number of individuals, GPS location, detection methodology (sight, sound or other evidence) and habitat were recorded.

Given the study area was a maximum of 25 m corridor, and most was traversed on foot, the fauna survey conducted is adequate for such a long, linear study area.

4. Assessment Outcomes

4.1 Vegetation Assessment

General description of the vegetation, the site and matters of significance

The study area occurs in a mostly flat plain, with soils varying from calcareous loamy sand to clay loam. There are no watercourses or wetlands recorded within the study area, although VA F2 appears to . The Murray River is the closest substantial waterbody, at approximately 12 km south-east of the easternmost pipeline renewal section.

Vegetation in S21 comprises open mallee and woodland, interspersed with areas of Acacia shrubland and Austrostipa grassland. Vegetation in S20 comprises of mostly *Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland, with a small section of *Acacia nyssophylla* open shrubland over *Austrostipa* grassland which appears swamp-like in soil structure evidenced by crabholes (Plate 11). Land use surrounding the clearance area include conservation and natural environments, production from dryland agriculture and plantations and production from relatively natural environments (NatureMaps, 2022). White Dam Conservation Park is the closest protected area, occurring approximately 1.3 km north of S21 and S20 (Figure 5).

Six native vegetation associations have been described within the proposed impact areas, these vegetation associations have been summarised in Table 2 and discussed in further detail below in Table 3 to Table 8. Of these, one (VA E2) has been determined to meet criteria for the EPBC Act listed Endangered *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC.

Impacts to these vegetation associations occur through lengths of clearances up to 25 m in width (21 m in width in TEC areas), along the existing pipeline.

Table 2. Native vegetation associations within the proposed impact area

MWPL renewal section ID	BAM Block	BAM Site	Vegetation Association Name	TEC[1]	Impact area (ha)
MWPL1-0021 **(S21)**	E	E1	Very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland over mixed Acacia spp. and chenopod shrubland	No	0.72
		E2	*Eucalyptus oleosa, Alectryon oleifolius* and *Myoporum platycarpum* mallee over *Acacia* spp. and chenopod open shrubland	Yes	1.36
		E3	*Acacia nyssophylla +/- Lawrencia squamata* open shrubland	No	2.14
		E4	*Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubland	No	2.21
MWPL1-0020 **(S20)**	F	F1	*Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland	No	3.84
		F2	*Acacia nyssophylla* open shrubland	No	1.35
				Total	**11.62**

1 TEC as under EPBC Act for *Mallee Bird Community of the Murray Darling Depression Bioregion* (Endangered)

Details of the vegetation associates/scattered trees proposed to be impacted

Table 3. Summary table for Vegetation Association E1; Very open Alectryon oleifolius and Myoporum platycarpum woodland over mixed Acacia spp. and chenopod understorey

Replacement Section	S21				
Vegetation Association	Vegetation Association E1; Very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland over mixed *Acacia* spp. and chenopod shrubland				
 *Plate 1 – taken facing W at easting: 363715, Northing: 6240071*					
General description	Very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland over mixed *Acacia* spp. and chenopod understorey in moderate condition. Tracks parallel to pipeline. Bird stick nests in trees throughout this area.				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence Table 10 for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	52.15	Conservation significance score	1.10
Unit biodiversity Score	62.53	Area (ha)	0.721 ha	Total biodiversity Score	45.08

Table 4. Summary table for Vegetation Association E2; Eucalyptus oleosa, Alectryon oleifolius and Myoporum platycarpum mallee over Acacia spp. and chenopod open shrub understorey

Replacement Section	S21				
Vegetation Association	Vegetation Association E2; *Eucalyptus oleosa, Alectryon oleifolius* and *Myoporum platycarpum* mallee over *Acacia* spp. and chenopod open shrubland				
 *Plate 2 – taken facing W at easting: 363160, Northing: 6240063*					
General description	Vegetation Association E2; *Eucalyptus oleosa, Alectryon oleifolius* and *Myoporum platycarpum* mallee over *Acacia* spp. and chenopod open shrub understorey in good condition. This VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC. Bird stick nests in trees and hollows in trees throughout this area.				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Regent Parrot, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence Table 10 for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	69.78	Conservation significance score	1.50
Unit biodiversity Score	114.09	Area (ha)	1.36 ha	Total biodiversity Score	155.17

Table 5. Summary table for Vegetation Association E3; Acacia nyssophylla +/- Lawrencia squamata open shrubland

Replacement Section	S21				
Vegetation Association	Vegetation Association E3; *Acacia nyssophylla +/- Lawrencia squamata* open shrubland				
 *Plate 3 – taken facing E at easting: 361272, Northing: 6240029*					
General description	*Acacia nyssophylla +/- Lawrencia squamata* open shrubland in moderate condition. Faint tracks within this site. Emu scats (Plate 8) and many lizard (dragon) burrows (Plate 10) in this VA.				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence table (Table 10) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	48.38	Conservation significance score	1.10
Unit biodiversity Score	58.00	Area (ha)	2.141 ha	Total biodiversity Score	124.18

Table 6. Summary table for Vegetation Association E4; Austrostipa nitida grassland with emergent Lycium australis and Acacia nyssophylla shrubs

Renewal Section	S21				
Vegetation Association	Vegetation Association E4; *Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubland				
 *Plate 4 – taken facing SW at easting: 363983, Northing: 6240074*					
General description	*Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubs in moderate condition.				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence table (Table 10) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	36.84	Conservation significance score	1.10
Unit biodiversity Score	44.18	Area (ha)	2.21 ha	Total biodiversity Score	97.63

Table 7. Summary table for Vegetation Association F1; Casuarina pauper low open woodland over Maireana sedifolia shrubland

Replacement Section	S20				
Vegetation Association	Vegetation Association F1; *Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland				
 *Plate 5 – taken facing W at Easting: 367128, Northing: 6240153*					
General description	*Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland in moderate to good condition. Bird stick nests in trees in this area. Declared weeds present: *Chondrilla juncea* (Skeleton Weed) and *Peganum harmala* (African Rue).				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence table (Table 10) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	52.40	Conservation significance score	1.10
Unit biodiversity Score	62.83	Area (ha)	3.843 ha	Total biodiversity Score	241.45

Table 8. Summary table for Vegetation Association F2; Acacia nyssophylla open shrubland fringing Austrostipa grassland

Replacement Section	S20				
Vegetation Association	Vegetation Association F2; *Acacia nyssophylla* open shrubland				
 *Plate 6 – taken facing W at easting: 366060, Northing: 6240127*					
General description	*Acacia nyssophylla* open shrubland with fringing *Austrostipa* grassland. There are many naturally occurring depressions/ sinkholes in the ground (Plate 11), some of which have been colonized by burrowing fauna.				
Threatened species or community	Threatened species that may use this as habitat include: White-winged Chough, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Hooded Robin, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to the likelihood of occurrence table (Table 10) for the full assessment.				
Landscape context score	1.12	Vegetation Condition Score	60.26	Conservation significance score	1.10
Unit biodiversity Score	74.24	Area (ha)	1.351ha	Total biodiversity Score	100.30

Site maps showing areas of proposed impact

Figure 6: Proposed clearance area for S21

Proposed clearance area
Replacement section
Reduced corridor – no impacts in this section
Road
BAM site

Vegetation associations (VA)

E1: Very open *Alectryon oleifolius* and *Myoporum platycarpum* woodland
E2: *Eucalyptus oleosa*, *Alectryon oleifolius* and *Myoporum platycarpum* mallee
E3: *Acacia nyssophylla* +/- *Lawrencia squamata* open shrubland
E4: *Austrostipa nitida* grassland with emergent *Lycium australis* and *Acacia nyssophylla* shrubland

TEC

Mallee Bird Community of the Murray Darling Depression Bioregion - TEC

Declared weed

Marrubium vulgare (Horehound)

Habitat feature

Nest in tree

Hollow bearing tree (HBT)

Myoporum platycarpum (Sugarwood)

0 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 18/03/2022

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Figure 7: Proposed clearance area for S20

- Proposed clearance area
- Replacement section
- Road
- BAM site

Vegetation associations (VA)

- F1: *Casuarina pauper* low open woodland over *Maireana sedifolia* shrubland
- F2: *Acacia nyssophylla* open shrubland

Habitat features

- Nest in tree
- Reptile burrows

Hollow bearing tree (HBT)

- *Casuarina pauper* (Black Oak)

0 150 300
Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 18/03/2022

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Photo log

Plate 7. Example of a birds stick nest, observed in trees within VA E2

Plate 8. Emu scat recorded in VA E3

Plate 9. Example of a tree hollow recorded within VA E2

Plate 10. Example of a reptile burrow recorded within VA E3 F

Plate 11. Example of a sinkhole depression recorded within VA: F2 that has a burrow within it

Plate 12. Example of Marrubium vulgare (Horehound) recorded within the proposed clearance area

4.2 Threatened Species assessment

The database assessment identified 15 national or state significant species (all bird species) that have either been recently (since 1995) recorded within 5 km of the study area (BDBSA results) or known to occur within 5 km of the study area (PMST report). No threatened flora species were recorded by the survey. Yellow-throated Miners (*Manorina flavigula*) were recorded during the field investigation however given their distribution and recorded habitat within the study area it is considered unlikely that recorded individuals were attributed to the threatened subspecies Black-eared Miner (*Manorina melanotis)* (listed as Critically Endangered under the EPBC Act).

Flora

No records of threatened flora species were identified by the PMST or BDBSA searches to occur within 5 km of the proposed clearance area since 1995. Four species were identified by the PMST as "Species or species habitat may occur within area", however they have been assessed as unlikely to occur within the proposed clearance area as these species were not recorded during field survey despite active searching, as well as the lack of suitable habitat. Refer to Table 10 for the full assessment of likelihood for all threatened species identified by the PMST and BDBSA searches.

Fauna

Birds were prevalent in Blocks E and F with nest sites in tree canopies, in shrubs and in hollows along the pipeline.

White-winged Choughs (*Corcorax melanorhamphos*), listed as Rare under the NPW Act, were recorded opportunistically outside of the proposed clearance area, however as they are a highly mobile species and there is suitable habitat within the study area, it is likely that they also occur within the proposed clearance area. No other threatened species were recorded during the 2021 fieldwork, however due to the highly mobile nature of species, it is still possible that other threatened species may use this area as habitat.

Other threatened species identified by the BDBSA and PMST searches as possibly using habitat within the clearance area includes: Regent Parrot, Chestnut Quailthrush, Peregrine Falcon, Little Eagle, Shy Heathwren, Malleefowl, Hooded Robin, Satin Flycatcher, Restless Flycatcher, Blue-winged Parrot, Elegant Parrot, and Gilbert's Whistler. Refer to Table 10 for the full assessment of likelihood for all threatened species identified by the PMST and BDBSA searches.

Table 9: Criteria for the likelihood of occurrence of species within the proposed clearance area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provide limited habitat or feeding resources for the species. Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provide no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

Table 10: Species observed on site, or recorded within 5km of the application area since 1995, or the vegetation is considered to provide suitable habitat

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	Date of last record / PMST presence	Species known habitat preferences*	Likelihood of use for habitat – Comments
Birds							
Cinclosoma castanotum	Chestnut-backed Quailthrush (Chestnut Quailthrush)	-	R	2	2010	Endemic to arid and semi-arid southern Australia, reaching its northern extent in the south of the Northern Territory. Throughout its distribution it occurs in a wide range of arid and semi-arid habitats; mainly in the low shrubs and undergrowth of mallee scrub, but also in Acacia scrubs, dry sclerophyll woodland, heath, and native pine.	**Likely** - recorded in past twenty years, Mallee scrub shrubby habitat present in study area.
Corcorax melanorhamphos	White-winged Chough	-	R	2	2010	White-winged Choughs are found in open forests and woodlands. They tend to prefer the wetter areas, with lots of leaf-litter, for feeding, and available mud for nest building (BirdLife, ND).	**Likely** - recorded in past twenty years, open woodland habitat present in study area.
Falco peregrinus macropus	Peregrine Falcon		R	2	2000	This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices. It has an extremely large range and is found world-wide except for rainforests and cold, dry Arctic regions. This species has increasingly been observed inhabiting urban areas.	Possible - recorded since 1995, the area falls inside the known distribution of the species, but the area provides limited habitat – potentially used for roosting.
Hieraaetus morphnoides	Little Eagle		V	2	2002	The Little Eagle is widespread in mainland Australia, central and eastern New Guinea. It is seen over woodland and forested lands and open country, extending into the arid zone. It tends to	Possible - recorded within the previous 20 years, the area falls inside the known distribution of the

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	Date of last record / PMST presence	Species known habitat preferences*	Likelihood of use for habitat – Comments
						avoid rainforest and heavy forest (BirdLife, ND).	species, but the area provides limited habitat or feeding resources for the species.
Hylacola cauta cauta	Shy Heathwren (EP, YP, FR, MM, upper SE)		R	2	1999	Prefers dense shrubby or heath understorey in mallee woodland, mallee shrubland or mallee heath in coastal and semi-arid regions, often where spinifex (Triodia) occurs and with dense shrubs such as Banksia, Hakea and Grevillea, also tea-tree (Leptospermum) and cypress pine (Callitris) (Gregory, 2020).	Unlikely - not recorded within the past 20 years, lack of dense understorey habitat.
Leipoa ocellata	Malleefowl	VU	V	1	known	Occupies shrublands and low woodlands that are dominated by mallee vegetation, with a sandy substrate and an abundance of leaf litter required for breeding. It also occurs in other habitat types including eucalypt or native pine Callitris woodlands, acacia shrublands, Broombush Melaleuca uncinata vegetation or coastal heathlands.	Unlikely - not recorded within the past 20 years, lack of dense understorey habitat.
Manorina flavigula	Yellow-throated Miner	ssp	ssp	2, 3	2021	Prefers dry forests and woodlands, especially mallee. It also occurs in parks, gardens and farmlands (Birdlife Australia, N.D). The Endangered subspecies Black-eared Miner (*Manorina melanotis*) is endemic to the Murray Mallee region of Victoria and SA. They inhabit Shallow-sand Mallee and Chenopod Mallee.	Unlikely – this study area is outside of the known range for this threatened subspecies. (approximately 30 km west of closest known record; NatureMaps 2022).

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	Date of last record / PMST presence	Species known habitat preferences*	Likelihood of use for habitat – Comments
Melanodryas cucullata cucullata	Hooded Robin (YP, MN, AP, MLR, MM, SE)		R	2	2020	Occurs across south-eastern Australia, most of NSW, VIC and south-eastern SA. South-eastern subspecies found in Eucalypt woodland and mallee and Acacia shrubland (BirdLife, ND).	**Highly Likely** - recorded as recently as 2020, preferred mallee habitat present in study area.
Microeca fascinans	Jacky Winter		ssp	2	2010	This species is widely distributed in mainland Australia. The Rare subspecies occurs in the Mount Lofty Ranges and South-east areas of SA. They prefer open woodland with an open shrub layer and a lot of bare ground. They are often seen in farmland and parks (Birds in Backyards ND).	Unlikely - does not fall within known distribution of the rare subspecies
Myiagra cyanoleuca	Satin Flycatcher	Mi	E	1	known	Known inhabitant of forest, woodland, mangroves and coastal heath scrub. Prefers dense, wet gullies of heavy eucalypt forest in breeding season (Morcombe, 2011).	Unlikely - recorded within previous 40 years, Mallee woodands open and dry, not suitable habitat for this species.
Myiagra inquieta	Restless Flycatcher		R	2	2010	Found throughout northern and eastern mainland Australia, as well as in south-western Australia. The Restless Flycatcher is found in open forests and woodlands and is frequently seen in farmland (Birds in Backyards ND).	**Likely** - Recorded in the last 20 years, open woodlands and farmland habitat present
Neophema chrysostoma	Blue-winged Parrot		V	2	1999	Prefers grasslands and grassy woodlands but will inhabit a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones (Birdlife, ND).	**Likely** – most recently recorded in 1999, preferred grassland and Mallee habitat present

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	Date of last record / PMST presence	Species known habitat preferences*	Likelihood of use for habitat – Comments
Neophema elegans elegans	Elegant Parrot		R	2	1999	Inhabiting open habitats, the Elegant Parrot can be found in a wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland (BirdLife, ND).	**Likely** - recorded since 1995, grassland and Mallee habitat present
Pachycephala inornata	Gilbert's Whistler		R	2	2010	Sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt (OEH, 2020). Habitat is shrubby woodland and mallee (Simpson and Day 1999, p. 227).	**Likely** - recorded within the previous 20 years, Mallee habitat present
Polytelis anthopeplus monarchoides	Regent Parrot	VU	V	1	Likely	The Regent Parrot (eastern) is confined to the semi-arid interior of south-eastern mainland Australia. Primarily inhabits riparian or littoral River Red Gum (*Eucalyptus camaldulensis*) forests with hollows for breeding or woodlands and adjacent Black Box (*E. largiflorens*) woodlands. Feeds within Mallee woodlands in summer, generally within 20km of nest sites (breeding generally occurs along the Murray River).	Possible- no recent records nearby, however suitable habitat present (areas of Mallee woodland within 20km of the Murray River provides suitable feeding habitat for this species).
Plants							
Lepidium monoplocoides	Winged Peppercress	EN	E*	1	May	Historically known from the MurraySA: MU, but now extinct in SA. Occurs predominantly in mallee scrub in semi-arid areas.	Unlikely – extinct in SA, not observed during 2021 field survey

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	Date of last record / PMST presence	Species known habitat preferences*	Likelihood of use for habitat – Comments
Dodonaea subglandulifera		EN	E	1	N/A	Occurs in isolated localities in semi-arid areas of south-east SA.	Unlikely – outside known populations of this species, not observed during 2021 field survey
Pterostylis xerophila	Desert Greenhood	VU	V	1	N/A	The Desert Greenhood is a small, deciduous, terrestrial orchid endemic to inland South Australia and Victoria. It occurs in generally remote locations in semi-desert environments, growing mostly on rock outcrops under low shrubs	Unlikely – outside known populations of this species, not observed during 2021 field survey
Swainsona pyrophila	Yellow Swainson-pea	VU	R	1	N/A	Known from SA, NSW and Vic. Found in Mallee vegetation communities on a variety of soil types including well-drained sands, sandy loams and heavier clay loams. It is usually found after fire growing in association with *Eucalyptus incrassata* (Ridge-fruited Mallee), *E. socialis* (Beaked Red Mallee), *E. brachycalyx* (Gilja), *E. gracilis* (Yorrell), and *E. oleosa* (Red Mallee) mid mallee woodland over *Melaleuca uncinata* (Broombush) tall shrubland (OEH 2020).	Unlikely – outside known populations of this species, not observed during 2021 field survey

Source; 1- Protected matters search tool, 2 - BDBSA 3 –Observed/recorded in the field,
NP&W Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable
*Habitat preference information retrieved from the Department of Agriculture, Water and The Environment (DAWE) Species Profile and Threats (SPRAT) database unless otherwise referenced

4.3 Cumulative impact

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must consider the potential cumulative impact, both direct and indirect, that is reasonably likely to result from a proposed clearance activity.

All clearance directly required for the development of S20 and S21 segments (i.e. the pipeline easement, access tracks and laydowns) have been included in this report.

There will be no other subsequent clearance that will be permitted or required for tS20 and S21 sections in the next 100 – 150 years, until the new pipeline deteriorates and requires Renewal. No new building infrastructure will be required (i.e. pump station already in existence). No additional clearance will be needed for fire protection.

Indirect clearance that may occur because of the development could occur later from accumulated dust related impacts vegetation during construction works.

Most future pipeline repairs will be above-ground, so vegetation will be crushed rather than cleared towards the edges of the clearance area. Hence, tree root zones of trees outside the clearance area are unlikely to be impacted as there should be no ground disturbance.

Further indirect impacts may include spills and leaks of construction vehicles, and damage due to vehicles pulling off track in non-designated areas. Losses from enhanced erosion potential of adjacent construction areas such as gully erosion down watercourses is also possible. These potential impacts are considered in the SA Water Native Vegetation Assessment and Approval Requirements Standard Operating Procedure (SOP) and by the Construction Environmental Management Plan (CEMP) to be developed for the project. They will be addressed in daily tool-box/ pre-start talks on-site.

Furthermore, the following controls from the SA Water Native Vegetation Assessment and Approval Requirements SOP will be put in place to ensure invasive weeds are not spread:

- A baseline weed survey of the clearance area has been completed prior to construction to identify locations of existing weed infestations.
- All vehicles and plant, including third parties, will be cleaned prior to arrival to the site. Weed and seed (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 water should be directed to a sump (onsite earthen bunded sumps if possible) and not discharged to stormwater or a watercourse.
- Ensure imported fill is sourced from a designated weed free source.

A Native Vegetation Clearance Data Report for Package A-1C of Stage 1 has already been submitted, for four areas related to sections of pipeline renewal between Morgan and Burra.

Future stages of this project will include clearances of similar widths along the pipeline, running between Morgan and Whyalla. The staging of clearances will, however, enable staged recovery, reducing the overall impact to the local environment experienced at any one time during this 40 year+ project.

4.4 Address the Mitigation Hierarchy

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must have regard to the mitigation hierarchy. The NVC will also consider, with the aim to minimize, impacts on biological diversity, soil, water and other natural resources, threatened species or ecological communities under the EPBC Act or listed species under the NP&W Act.

a) Avoidance – outline measures taken to avoid clearance of native vegetation

Native vegetation must be cleared as part of renewal works to ensure a continued water supply between Baroota and Whyalla. This data report presents a worst-case clearance scenario that will be further minimized wherever possible (refer below).

b) Minimization – if clearance cannot be avoided, outline measures taken to minimize the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).

- The new pipeline is to be constructed as close to the existing pipeline as possible to make use of existing maintenance corridors, access tracks and roads, and to concentrate new disturbance where possible in areas that have been previously disturbed.
- Laydown areas have been selected in areas with minimal vegetation/previously disturbed areas to minimise disturbance to good condition native vegetation.
- All vegetation clearing works will be confined to the clearance areas identified in this report. The boundary of the clearance areas will be clearly demarcated with survey pegs visible to construction personnel. Areas where disturbance is permitted will be clearly demarcated and communicated to all site personnel through an induction package.
- The width of the clearance area will be reduced at environmentally sensitive locations as identified by removal of windrow buffer, and working around large native remnant trees where possible.
- Branches of trees on the edge of the clearance area, but overhanging into construction / activity areas, will be trimmed as necessary by a qualified arborist to enable safe access. All pruning will be provided with a clean cut angled to prevent pooling or water on the cut (which may cause cracking / splitting).
- Woody vegetation, trees and hollows to be removed are to be inspected for fauna by a suitably qualified wildlife handler immediately prior to removal. This will include:
    - A walk-through/visual inspection of the habitat to be removed immediately prior to clearance to flush out fauna and capture and relocate.
    - Advice on clearing techniques that minimise fauna impact.
    - Keep records of important fauna interactions (including accidental fauna strikes / deaths), listing the species concerned, the nature of the interaction and GPS coordinates.
    - Hollows and large branches to be reinstated on site prior to site finalisation (or earlier if possible) to provide ongoing habitat for fauna.
- All vehicles and plant, including third parties, will be inspected and be free from plant material and weed propagules prior to arrival to the site. Weed and seed (plant hygiene) inspections are to be completed for all vehicles and plant on arrival and captured on system as part of Plant Induction.

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation.

A construction corridor of up to 25 m is proposed for construction machinery, only a 12 m cleared zone will be required for pipeline placement. Following construction, 15.4m of the 25m impact area (or 11.4m in TEC areas where there is only a 21 m impact area) will be allowed to naturally regenerate. This area will be ripped following construction to allow water intrusion and regeneration of the native seed bank within the topsoil and managed actively for any outbreaks of weeds declared under the LSA Act in accordance with SA Water Native Vegetation Assessment and Approval Requirements SOP. See Figure 3 for post-construction easement schematic.

Where topsoil is to be cleared, the topsoil will be stockpiled separately and then reapplied post construction to allow for natural regeneration of the Right of Way Area (RoW) see Figure 2.

d) Offset – any adverse impact on native vegetation that cannot be avoided or further minimized should be offset by the achievement of a significant environmental benefit that outweighs that impact.

The NVC will only consider an offset once avoidance, minimization and restoration have been documented and fulfilled. The ***SEB Policy*** *explains the biodiversity offsetting principles that must be met.*

This report outlines the offset responsibilities of SA Water. The offset will be achieved by payment into the fund of $102,157.12

4.5 Principles of Clearance (Schedule 1, *Native Vegetation Act 1991*)

The Native Vegetation Council will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The Native Vegetation Council will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act 2016*.

Table 11. Principles of Clearance

<table>
<tr><th>Principle of clearance</th><th>Relevant information</th><th>Assessment against the principles</th><th>Moderating factors that may be considered by the NVC</th></tr>
<tr><td>Principle 1b - significance as a habitat for wildlife</td><td>Threatened species that may use the various sections are described in Table 3 to Table 8.

The Threatened Fauna Score (TFS) and Unit Biodiversity Score (UBS) for each VA is shown below:

<table><tr><td>VA</td><td>TFS</td><td>UBS</td></tr><tr><td>E1</td><td>0.1</td><td>62.53</td></tr><tr><td>E2</td><td>0.1</td><td>114.09</td></tr><tr><td>E3</td><td>0.1</td><td>58</td></tr><tr><td>E4</td><td>0.1</td><td>44.18</td></tr><tr><td>F1</td><td>0.1</td><td>62.83</td></tr><tr><td>F2</td><td>0.1</td><td>74.24</td></tr></table></td><td>All sections are seriously at variance to this principle due to possible habitation by the species listed.</td><td>All species identified as known by the PMST or previously recorded within 5 km of the proposed clearance area since 1995 have been included in the BAM scoresheets.
See Table 9 for full likelihood of occurrence.
ELA suggests that the following species be excluded from the assessment, as the proposed clearance area is unlikely to provide habitat for these species:
- Shy Heathwren
- Malleefowl
- Satin Flycatcher</td></tr>
<tr><td>Principle 1c - plants of a rare, vulnerable or endangered species</td><td>No threatened flora species were recorded.
The Threatened Flora Score for all sites is 0.</td><td>Not at variance</td><td>N/A</td></tr>
<tr><td>Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:</td><td>Mallee Bird Community of the Murray Darling Depression Bioregion (EPBC Act TEC) is present in VA E2.

The Threatened Community Score is 1.4 for VA E2, and 1 for remaining VAs where the TEC was not recorded (E1, E3, E4, F1, F2).</td><td>Seriously at Variance
E2.</td><td>Impacts to this TEC are not considered to be significant, however a self-assessment in accordance with the significant impact criteria is being prepared concurrently.</td></tr>
</table>

Principles of Clearance (h-m) will be considered by comments provided by the local NRM Board or relevant Minister. The Data Report should contain information on these principles where relevant and where sufficient information or expertise is available.

4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	-
	Area (ha)	11.626
	Total biodiversity Score	763.81
Seriously at variance with principle 1(b), 1(c) or 1 (d)		**1(b) and 1(d)**
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Areas Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	Economies of Scale Factor	Rainfall	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	Approximate hectares required	SEB payment	Admin Fee
E	1	30	1	0	0.1	0.35	260	62.53	0.721	45.08	1	-	0.5	23.67	2.96	$5,761.20	$316.87
E	2	30	1.4	0	0.1	0.35	260	114.09	1.36	155.17	1	-	0.5	81.46	10.18	$19,828.94	$1,090.59
E	3	30	1	0	0.1	0.35	260	58	2.141	124.18	1	-	0.5	65.20	8.15	$15,869.42	$872.82
E	4	24	1	0	0.1	0.35	260	44.18	2.21	97.63	1	-	0.5	51.25	6.41	$12,476.12	$686.19
F	1	30	1	0	0.1	0.35	257	62.83	3.843	241.45	1	-	0.5	126.76	15.84	$30,078.50	$1,654.32
F	2	30	1	0	0.1	0.35	260	74.24	1.351	100.30	1	-	0.5	52.66	6.58	$12,817.20	$704.95
								Total	**11.626**	**763.81**				**401.00**	**50.12**	**$96,831.38**	**$5,325.74**

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	763.81	401.00	$96,831.38	$5,325.74	$102,157.12

6. Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

ACHIEVING AN SEB

Indicate how the SEB will be achieved by ticking the appropriate box and providing the associated information:

☐ Establish a new SEB Area on land owned by the proponent.

☐ Use SEB Credit that the proponent has established. Provide the SEB Credit Ref. No. _____

☐ Apply to have SEB Credit assigned from another person or body. The **application form** needs to be submitted with this Data Report.

☐ Apply to have an SEB to be delivered by a Third Party. The **application form** needs to be submitted with this Data Report.

☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

If a proponent proposes to achieve the SEB by paying into the Native Vegetation Fund, summary information must be provided on the amount required to be paid and the manner of payment:

- An SEB payment of $96,831.38 plus Admin fee of $5,325.74 for a total of $102,157.12 is proposed to be paid into the Native Vegetation Fund.

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8. Appendices

Appendix 1. Fauna recorded during the field survey

Common Name	Sci Name	Introduced	NPW Act (SA)	EPBC Act (Aus.)
Australian Magpie	*Gymnorhina tibicen*			
Australian Pipit	*Anthus australis*			
Australian Ringneck	*Barnardius zonarius*			
Black-faced Cuckooshrike	*Coracina novaehollandiae*			
Black-shouldered Kite	*Elanus axillaris*			
Bourke's Parrot	*Neopsephotus bourkii*			
Brown Falcon	*Falco berigora*			
Chestnut-crowned Babbler	*Pomatostomus ruficeps*			
Chestnut-rumped Thornbill	*Acanthiza uropygialis*			
Common Starling	*Sturnus vulgaris vulgaris*	*		
Crested Bellbird	*Oreoica gutturalis*			
Crested Pigeon	*Ocyphaps lophotes*			
Eastern Bluebonnet (eastern and central SA)	*Northiella haematogaster haematogaster*			
Emu	*Dromaius novaehollandiae*		ssp	ssp
Fox (Red Fox)	*Vulpes vulpes*	*		
Galah	*Eolophus roseicapilla*			
Jacky Winter	*Microeca fascinans*		ssp	
Little Buttonquail	*Turnix velox*			
Little Raven	*Corvus mellori*			
Masked Woodswallow	*Artamus personatus*			
Mulga Parrot	*Psephotellus varius*			
Nankeen Kestrel	*Falco cenchroides*			
Painted Dragon	*Ctenophorus pictus*			
Rabbit (European Rabbit)	*Oryctolagus cuniculus*	*		
Red Kangaroo	*Macropus (Osphranter) rufus*			
Red Wattlebird	*Anthochaera carunculata*			
Rufous Fieldwren	*Calamanthus campestris*			
Singing Honeyeater	*Gavicalis virescens*			
Sleepy Lizard	*Tiliqua rugosa*			
Southern Whiteface	*Aphelocephala leucopsis leucopsis*			

Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*			
Splendid Fairywren	*Malurus splendens*			
Striated Pardalote	*Pardalotus striatus*			
Unidentified Ctenotus	*Ctenotus sp.*			
Wedge-tailed Eagle	*Aquila audax audax*			
Weebill	*Smicrornis brevirostris*			
White-plumed Honeyeater	*Ptilotula penicillata*			
White-winged Chough	*Corcorax melanorhamphos*		R	
Willie Wagtail	*Rhipidura leucophrys leucophrys*			
Yellow-throated Miner	*Manorina flavigula*		ssp	ssp

Appendix 2. Bushland Assessment Scoresheets associated with the proposed clearance and SEB Area (attached in Excel format)

Appendix 3. Recorded Flora Species List

Scientific Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA E1	VA E2	VA E3	VA E4	VA F1	VA F2	Total
Acacia colletioides	Veined Wait-a-while					Y	Y		Y			3
Acacia nyssophylla	Spine Bush					Y	Y	Y	Y	Y	Y	6
Acacia oswaldii	Umbrella Wattle						Y	Y		Y	Y	4
Acacia victoriae ssp.	Elegant Wattle									Y		1
Alectryon oleifolius ssp. canescens	Bullock Bush					Y	Y	Y		Y	Y	5
Atriplex holocarpa	Pop Saltbush									Y		1
Atriplex stipitata	Bitter Saltbush						Y	Y		Y		3
Austrostipa acrociliata	Graceful Spear-grass							Y			Y	2
Austrostipa eremophila	Rusty Spear-grass						Y		Y	Y		3
Austrostipa nitida	Balcarra Spear-grass					Y	Y	Y	Y			4
Austrostipa nodosa	Tall Spear-grass						Y	Y		Y		3
Austrostipa scabra ssp.	Rough Spear-grass									Y		1
Austrostipa sp.	Spear-grass						Y					1
Brassica tournefortii	Wild Turnip	*						Y			Y	2
Calotis hispidula	Hairy Burr-daisy					Y					Y	2
Carrichtera annua	Ward's Weed	*					Y	Y	Y	Y	Y	5
Carthamus lanatus	Saffron Thistle	*								Y		1
Casuarina pauper	Black Oak					Y	Y			Y		3
Centaurea calcitrapa	Star Thistle	*									Y	1
Chondrilla juncea	Skeleton Weed	*			Y					Y		1
Convolvulus angustissimus	Narrow-leaf Bindweed									Y		1
Convolvulus sp.	Bindweed					Y						1
Dissocarpus paradoxus	Ball Bindyi									Y		1
Einadia nutans ssp.	Climbing Saltbush					Y						1
Enchylaena tomentosa var. tomentosa	Ruby Saltbush					Y	Y			Y	Y	4
Epaltes sp.	Nut-heads										Y	1
Eremophila longifolia	Weeping Emubush										Y	1
Eriochiton sclerolaenoides	Woolly-fruit Bluebush						Y	Y			Y	3
Eucalyptus gracilis	Yorrell						Y					1

Scientific Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA E1	VA E2	VA E3	VA E4	VA F1	VA F2	Total
Eucalyptus oleosa ssp. oleosa	Red Mallee					Y	Y					2
Eucalyptus socialis ssp.	Beaked Red Mallee					Y						1
Eucalyptus sp.							Y					1
Exocarpos aphyllus	Leafless Cherry						Y					1
Geijera linearifolia	Sheep Bush						Y	Y				2
Goodenia paradoxa	Spur Velleia					Y			Y		Y	3
Gramineae sp.	Grass Family					Y						1
Grevillea huegelii	Comb Grevillea					Y						1
Lawrencia squamata	Thorny Lawrencia						Y	Y				2
Leontodon saxatilis	Lesser Hawkbit	*								Y		1
Lepidium sp.	Peppercress							Y				1
Lycium australe	Australian Boxthorn					Y	Y	Y	Y	Y	Y	6
Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe					Y	Y	Y	Y	Y	Y	6
Maireana brevifolia	Short-leaf Bluebush									Y		1
Maireana enchylaenoides	Wingless Fissure-plant						Y	Y				2
Maireana erioclada	Rosy Bluebush						Y					1
Maireana georgei	Satiny Bluebush									Y		1
Maireana pyramidata	Black Bluebush									Y	Y	2
Maireana sedifolia	Bluebush						Y	Y		Y	Y	4
Maireana sp.	Bluebush/Fissure-plant							Y				1
Maireana trichoptera	Hairy-fruit Bluebush					Y	Y	Y	Y		Y	5
Medicago truncatula	Barrel Medic	*				Y					Y	2
Minuria leptophylla	Minnie Daisy								Y			1
Myoporum platycarpum ssp.	False Sandalwood							Y		Y		2
Myoporum platycarpum ssp. platycarpum	False Sandalwood					Y	Y					2
Nicotiana maritima	Coast Tobacco									Y		1
Nicotiana velutina	Velvet Tobacco										Y	1
Nitraria billardierei	Nitre-bush								Y			1
Onopordum sp.	Thistle	*									Y	1

Scientific Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA E1	VA E2	VA E3	VA E4	VA F1	VA F2	Total
Oxalis perennans	Native Sorrel							Y				1
Peganum harmala	African Rue	*			Y					Y		1
Pittosporum angustifolium	Native Apricot						Y					1
Ptilotus seminudus	Rabbit-tails						Y				Y	2
Rhagodia parabolica	Mealy Saltbush					Y		Y			Y	3
Rhagodia spinescens	Spiny Saltbush					Y	Y	Y		Y	Y	5
Rhagodia ulicina	Intricate Saltbush					Y	Y	Y			Y	4
Roepera apiculata	Pointed Twinleaf					Y	Y	Y		Y	Y	5
Roepera aurantiaca ssp. aurantiaca	Shrubby Twinleaf					Y	Y	Y			Y	4
Roepera glauca	Pale Twinleaf									Y		1
Rytidosperma caespitosum	Common Wallaby-grass						Y	Y		Y		3
Rytidosperma sp.	Wallaby-grass								Y			1
Salsola australis	Buckbush							Y				1
Salvia verbenaca var.	Wild Sage	*							Y		Y	2
Salvia verbenaca var. verbenaca	Wild Sage	*								Y		1
Santalum acuminatum	Quandong						Y					1
Scaevola spinescens	Spiny Fanflower					Y	Y	Y		Y		4
Schismus barbatus	Arabian Grass	*					Y	Y		Y		3
Scleranthus pungens	Prickly Knawel						Y					1
Sclerolaena obliquicuspis	Oblique-spined Bindyi					Y	Y	Y	Y			4
Sclerolaena patenticuspis	Spear-fruit Bindyi					Y	Y	Y		Y	Y	5
Sclerolaena sp.	Bindyi								Y			1
Senna artemisioides ssp. artemisioides x ssp. coriacea	Desert Senna									Y		1
Senna artemisioides ssp. petiolaris						Y	Y	Y	Y	Y	Y	6
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna					Y	Y	Y	Y			4
Sida corrugata var.	Corrugated Sida										Y	1
Sida spodochroma						Y	Y	Y				3
Sisymbrium irio	London Mustard	*				Y	Y					2

Scientific Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA E1	VA E2	VA E3	VA E4	VA F1	VA F2	Total
Sisymbrium sp.	Wild Mustard	*								Y		1
Solanum esuriale	Quena									Y		1
Sonchus oleraceus	Common Sow-thistle	*						Y	Y			2
Templetonia egena	Broombush Templetonia									Y		1
Teucrium racemosum	Grey Germander										Y	1
Thysanotus baueri	Mallee Fringe-lily								Y			1
Vittadinia gracilis	Woolly New Holland Daisy					Y			Y	Y	Y	4
Number of Species per VA:						**32**	**43**	**36**	**20**	**40**	**33**	