Native Vegetation Clearance Application

Morgan Whyalla Number 1 Pipeline Renewal Stage 1 (Package A–**1B**)

Data Report

Clearance under the *Native Vegetation Regulations 2017*

April 2022

Prepared by Alice Si and Tobias Scheid (Eco Logical Australia).

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DOCUMENT TRACKING

Project Name	*Morgan Whyalla Number 1 Pipeline Renewal Stage 1, Package A-1B*
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1. Application information

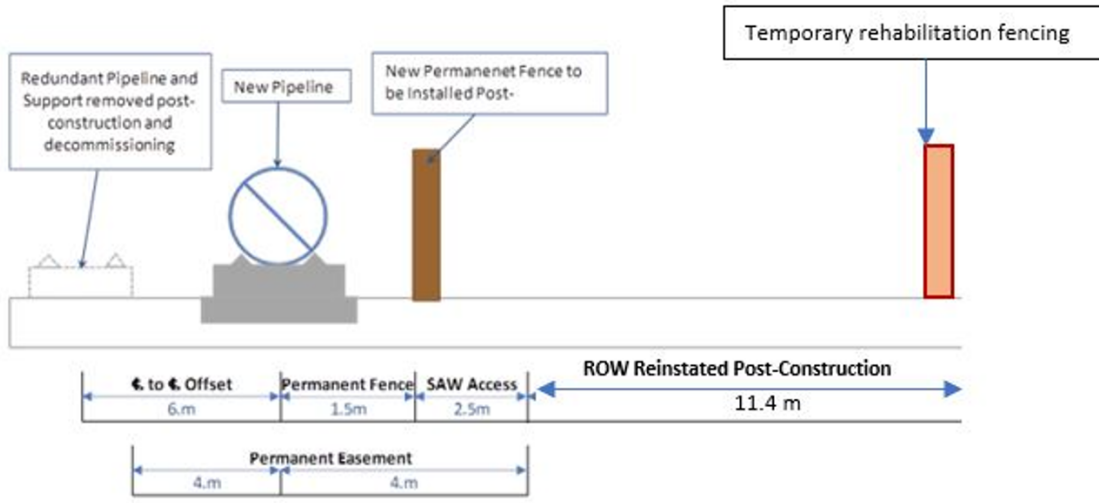
Application Details

Applicant:	SA Water		
Key contact:	Melissa Peake (Environmental Impact Assessment Officer) **E:** [redacted]		
Landowner:	Crown/ utility easement		
Site Address:	Various locations from Morgan to Whyalla, SA		
Local Government Areas:	Mid Murray	Hundreds:	Bower Maude Beatty
Title IDs:	CT/6017/265 CR/5759/527 CT/5908/976 CT/6122/961 CT/6147/505 CT/5728/484 CT/5994/127 CT/5945/774 CT/5967/435 CT/6172/977 CT/6213/696 CR/5759/528	Parcel IDs	H120400 S197 H120400 S142 H120400 S144 H120400 S147 H120400 S149 H120400 S153 H120300 S156 H120300 S157 H201000 S2 H201000 S3 H201000 S4 H120300 S158 H120300 S159 H201000 S248

Summary of proposed clearance

Purpose of clearance	To facilitate Package A-1B of the first stage of the renewal of the SA Water Morgan Whyalla Pipeline Number 1 (MWPL1) between Morgan and Whyalla. The renewal of the full 358km 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	Vegetation in S18 and S22 (MWPL1-0018 and MWPL1-0022) composed of Mallee woodland in poor to good condition, and chenopod shrubland. Up to 9 threatened fauna species may use this area for habitat. Areas of the mallee vegetation associations within the proposed clearance area meets criteria for the EPBC Act listed Endangered Ecological Community (EEC) of *Mallee Bird Community of the Murray Darling Depression Bioregion*. In total, 16.79 ha of the proposed clearance area consists of this EEC. The project will require the clearance of 33.55 hectares (ha) of native vegetation comprising the following: • 2.91 ha of *Eucalyptus socialis* mallee over Chenopod shrubland • 6.96 ha of *Eucalyptus gracilis* mallee over a sparse Chenopod shrubland • 8.00 ha of *Eucalyptus socialis* and *Eucalyptus gracilis* open mallee over *Maireana sedifolia* shrubland in moderate condition

	• 1.50 ha of *Eucalyptus socialis* and *Eucalyptus gracilis* open mallee over *Maireana sedifolia* shrubland in low condition • 8.17 ha of *Eucalyptus oleosa +/- Eucalyptus gracilis* over *Maireana sedifolia* shrubland • 2.38 ha of *Maireana sedifolia, Senna artemisioides* subsp. *coriacea* open shrubland • 3.62 ha of low open *Maireana sedifolia* shrubland with emergent *Eucalyptus oleosa* Of this, just over half (17.38 ha) will be subject to restoration works and allowed to regenerate natural;ly, after the construction period.
Total proposed clearance - area (ha) and number of trees	33.55 ha
Level of clearance	Level 4
Overlay (Planning and Design Code)	N/A
See Figure 3, Figure 4 and Figure 5 below for maps of the proposed clearance area	
Mitigation hierarchy	A 22 m construction corridor is required to enable the safe and efficient installation of new pipeline, 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. 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. During the construction phase, five trees high in habitat value (with multiple hollows in various sizes) have been avoided, and will be protectd during constructions (Figure 3 to Figure 5) These trees will be delineated on-ground and there will be no impacts to these trees or clearance within the Tree protection Zone (TPZ) (calculated in accordance with the Australian Standard (AS) *Protection of Trees on Development Sites AS* ***4970-2009*** Following construction, 11.4 m of the 22 m impact corridor 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 easement containing both the old and new pipeline and an access easement to facilitate ongoing inspections and minor maintenance. The easement will be activily maintained for the asset lifetime which will include regular clearing of vegetation and weeds. . Temporary rehabilitation fencing will be erected to prevent herbivores from grazing and allow regenerating plants to establish (Figure 1).

	 *Figure 1: Post Construction Easement Note – changed to 22 m corridor based on mitigation measures from joint venture and SA water*
SEB Offset proposal	A SEB payment of $501,497.09 plus Admin fee of $27,582.35 for a total of $529,079.44 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 3). Table 1 summarizes total clearance per section A schematic of the proposed construction corridor (impact area) is detailed in Figure 2 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 for these sections have been reduced to 22 m from 25 m to reduce impacts to the identified Matters of National Environmental Significance (MNES) *Mallee Bird Community of the Murray Darling Depression Bioregion EEC* (Endangered) listed under the EPBC Act (Figure 4).

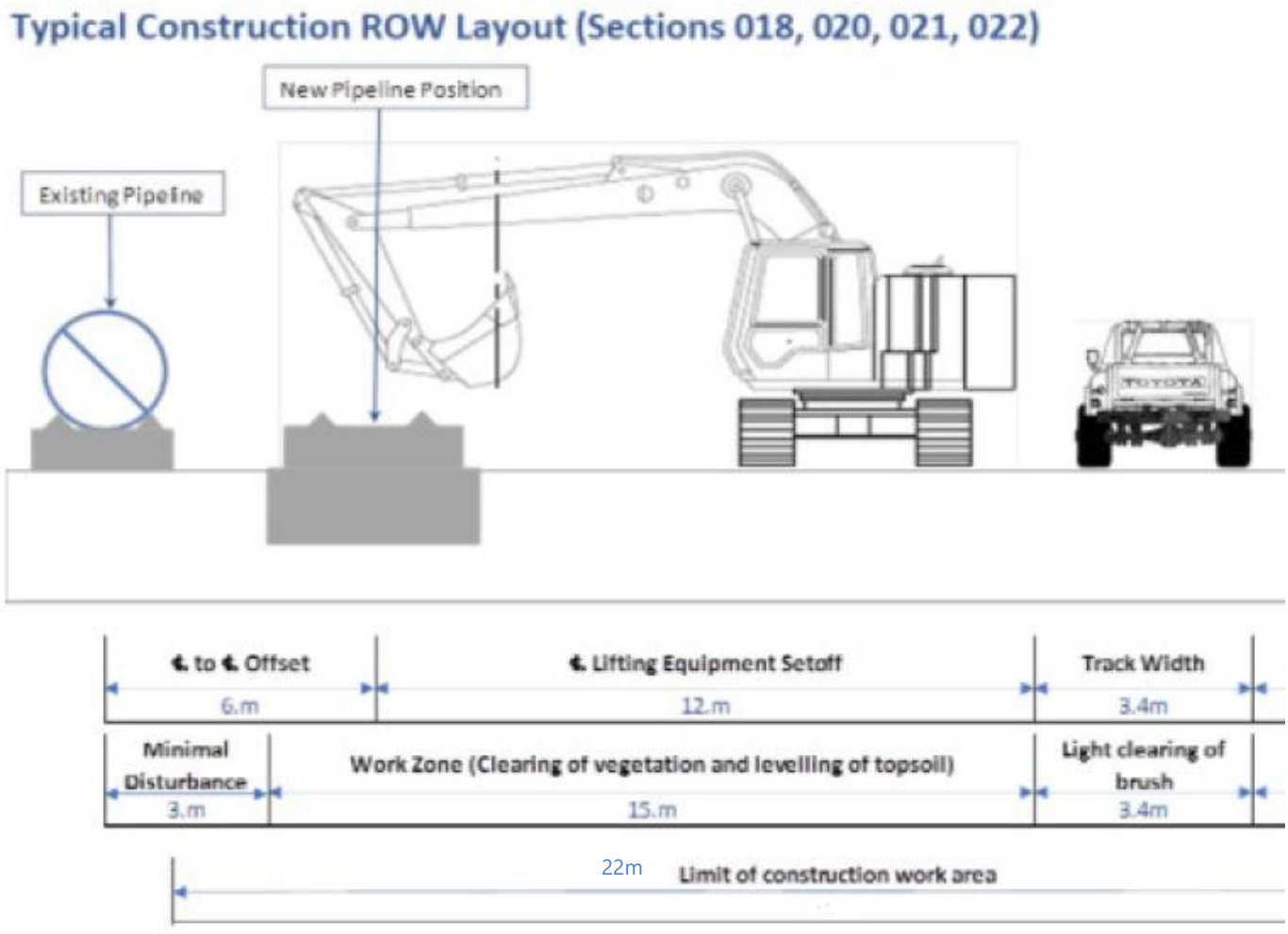


Figure 2: Proposed Construction Corridor and impact area for S18 and S22. Note – changed *to 22 m corridor based on mitigation measures from joint venture and SA water*

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 (S18 and S22) of a broader project to be delivered over the next approximately 40 years. The total length of S18 and S22 packages is 15.3 km of pipeline (4.5 and 10.8 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 22 m wide footprint for these two sections (S18 and S22) as the majority of vegetation within them meet conditions for being a TEC (See Figure 3, Figure 4 and Figure 5).

This Stage 1 Package A-1B will cover two sections (with each section corresponding to a BAM block described within Table 2) of pipeline totalling approximately 15.3 km along Pipeline Road, between Geranium Plains and Morgan. 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 3, below.

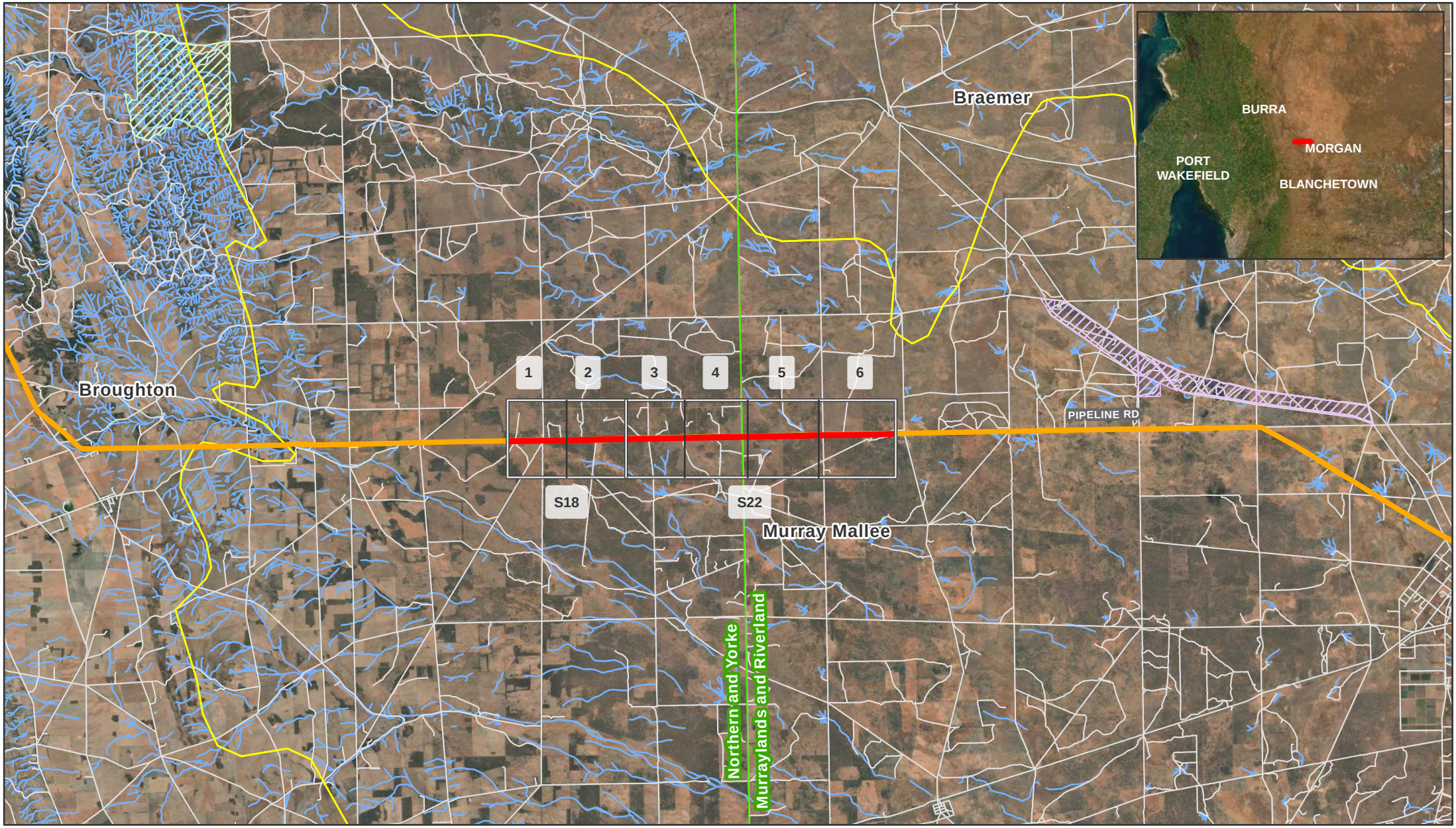


Figure 3: Proposed clearance areas

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

Conservation parks

- White Dam
- Mimbara

0 4 8
Kilometres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 8/04/2022

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2.4 Details of the proposal

This report covers two individual pipeline blocks along the pipeline west from Morgan as shown in Figure 3. The assessment covers all areas that may be impacted during the renewal activity. The blocks occur within the Sutherland and St Mary Interim Biogeographic Regionalisation for Australia (IBRA) Associations and contain seven vegetation associations (Table 1).

Table 1. Site details

Block	Renewal Section	Clearance purpose	Site	Vegetation Association	Map reference	Coordinates
C	MWPL1-0018	Mickan Road, Bower. 4.5km of 750mm pipeline renewal	C1, C2	*Eucalyptus socialis* and *Eucalyptus gracilis* open mallee over *Maireana sedifolia* shrubland in moderate condition	Figure 4	Start Lat -33.971727^{0} Lon 139.304727^{0} Finish Lat -33.971576^{0} Lon: 139.256466 ^{0}
D	MWPL1-0022	Pipeline Rd Bower Link In – 10.8 km of 750 mm rising main (joins into existing renewal section MWPL1-0018 – Mickan Road, Bower)	D1 – D5	*Eucalyptus socialis* and *Euclyptus gracilis* open mallee over *Maireana sedifolia* shrubland in low condition	Figure 5	Start Lat -33.971305^{0} Lon 139.421585^{0} Finish Lat -33.971727^{0} Lon 139.304727^{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 (Endangered Ecological Community) 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 11). An EPBC Act Self-Assessment will be undertaken for relevant MNES in accordance with the Significant Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia 2013). Should the Self assessment determine that the project has the potential to have a significant impact on a MNES then a referral under the EPBC Act will be made to the Australian Government Department of the Environment (the Department) for a decision by the Australian Government Environment Minister (the minister).

- *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. Four 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*), Restless Flycatcher (*Myiagra inquieta*) and Hooded Robin (*Melanodryas cucullata*) (Table 11).

- *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. SA Water understands this requirement.

2.6 Native Vegetation Regulation

Regulation 12, Schedule 1; clause 34, Infrastructure

This application is made to provide essential water supply infrastructure.

2.7 Development Application information (if applicable)

Not Applicable (exempt)

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-1B) lies within the Goyder and Mid Murray District Council Local Government Areas (LGAs) and the Sutherland and 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 11).

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 sign) and habitat were recorded.

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. The Murray River is the closest substantial waterbody, at approximately 24 km east south-east of the easternmost pipeline renewal section.

Vegetation in S18 and S22 (MWPL1-0018 and MWPL1-0022) composed of Mallee woodland in poor to good condition, and chenopod shrubland. 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, approximately 8 km east north-east of S22 (Figure 3).

Seven native vegetation associations have been described within the proposed impact areas, these Vegetation Associations (VA) have been summarized in Table 2 and discussed in further detail below in Table 3 to Table 9. Of these, sections of five VAs (16.79 ha) is determined to meet the diagnostic criteria listed in the conservation advice for *Mallee Bird Community of the Murray Darling Depression Bioregio*n listed as Endangered under the EPBC Act.

Table 2. Native vegetation associations within the proposed impact area

MWPL renewal section ID	BAM Block	BAM Site	Vegetation Association Name	Impact area (ha)	TEC[1] area (ha)
MWPL1-0018 **(S18)**	C	C1	*Eucalyptus socialis* mallee with Chenopod shrubland	2.91	0.22
		C2	*Eucalyptus gracilis* mallee over a sparse Chenopod shrubland	6.96	5.81
MWPL1-0022 **(S22)**	D	D1	*Eucalyptus socialis* and *Eucalyptus gracilis* open mallee over *Maireana sedifolia* shrubland	8.00	1.12
		D2	*Eucalyptus socialis* and *Eucalyptus gracilis* open mallee over *Maireana sedifolia* shrubland	1.50	1.50
		D3	*Eucalyptus oleosa* +/- *Eucalyptus gracilis* over *Maireana sedifolia* shrubland	8.17	8.14
		D4	*Maireana sedifolia, senna artemisioides* subsp. *coriacea* open shrubland	2.38	0
		D5	Low open *Maireana sedifolia* shrubland with emergent *Eucalyptus oleosa*	3.62	0
			Total	33.55	16.79

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

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

Table 3. Summary table for Vegetation Association C1; Eucalyptus socialis mallee with Chenopod shrubland

Replacement Section	S18				
Vegetation Association	Vegetation Association C1; *Eucalyptus socialis* mallee with Chenopod shrubland				
 *Plate 1 – taken facing E at easting: 340237, Northing: 62396223*					
General description	Cleared mallee over Chenopod shrubs, dominated by *Austrostipa* ssp. and *Carrichtua annua* (Wards weed) in moderate condition. Bird stick nests in trees throughout this area. 0.22 ha of this VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC.				
Threatened species or community	Threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.11	Vegetation Condition Score	26.69	Conservation significance score	1.48
Unit biodiversity Score	43.84	Area (ha)	2.91 ha	Total biodiversity Score	127.75

Table 4. Summary table for Vegetation Association C2; Eucalyptus socialis mallee over sparse Chenopod shrubland

Replacement Section	S18				
Vegetation Association	Vegetation Association C2; *Eucalyptus socialis* mallee over sparse Chenopod shrubland				
 *Plate 2 – taken facing East at: easting: 342332, Northing: 6239690*					
General description	*Eucalyptus socialis* mallee over sparse Chenopod shrubland understorey in good condition. Bird stick nests in trees and hollows throughout this area. 5.81 ha of this VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* EEC. Declared weed present: *Marrubium vulgare* (Horehound).				
Threatened species or community	Threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.11	Vegetation Condition Score	54.38	Conservation significance score	1.48
Unit biodiversity Score	89.33	Area (ha)	6.96 ha	Total biodiversity Score	621.89

Table 5. Summary table for Vegetation Association D1; Eucalyptus socialis and Euclyptus gracilis open mallee over Maireana sedifolia shrubland

Replacement Section	S22				
Vegetation Association	Vegetation Association D1; *Eucalyptus socialis and Euclyptus gracilis open mallee* over *Maireana sedifolia* shrubland (moderate condition)				
 *Plate 3 – taken facing W at easting: 353953, Northing: 6239898*					
General description	*Eucalyptus socialis* and *Euclyptus gracilis* open mallee over *Maireana sedifolia* shrubland in moderate condition. Bird stick nests in trees and hollows throughout this area. 1.12 ha of this VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* EEC.				
Threatened species or community	Yellow-throated miners were recorded within this Vegetation Association (VA), which may have been the NPW Act listed subspecies (Black-eared Miner). Other threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	53.29	Conservation significance score	1.44
Unit biodiversity Score	83.64	Area (ha)	8.00 ha	Total biodiversity Score	669.29

Table 6. Summary table for Vegetation Association D2; Eucalyptus socialis and Euclyptus gracilis open mallee over Maireana sedifolia shrubland

Replacement Section	S22				
Vegetation Association	Vegetation Association D2; *Eucalyptus socialis* and *Euclyptus gracilis* open mallee over *Maireana sedifolia* shrubland (low condition)				
 *Plate 4 – taken facing W at easting: 353669, Northing: 6239881*					
General description	*Eucalyptus socialis* and *Euclyptus gracilis* open mallee over *Maireana sedifolia* shrubland in low condition. Track running parallel to pipeline. Bird stick nests and hollows in trees throughout this area. 1.5 ha of this VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* EEC. Declared weed present: *Marrubium vulgare* (Horehound).				
Threatened species or community	Yellow-throated miners were recorded within this Vegetation Association (VA), which may have been the NPW Act listed subspecies (Black-eared Miner). Other threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	43.04	Conservation significance score	1.44
Unit biodiversity Score	67.56	Area (ha)	1.50 ha	Total biodiversity Score	101.41

Table 7. Summary table for Vegetation Association D3; Eucalyptus oleosa +/- Eucalyptus gracilis over Maireana sedifolia shrubland

Replacement Section	S22				
Vegetation Association	Vegetation Association D3; *Eucalyptus oleosa +/- Eucalyptus gracilis* over *Maireana sedifolia* shrubland				
 *Plate 5 – taken facing W at easting: 352821, Northing: 6239872*					
General description	*Eucalyptus oleosa +/- Eucalyptus gracilis* over *Maireana sedifolia* shrubland in very good condition. Bird stick nests and hollows in trees throughout this area. 8.14 ha of this VA qualifies as the *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC.				
Threatened species or community	Yellow-throated miners were recorded within this Vegetation Association (VA), which may have been the NPW Act listed subspecies (Black-eared Miner). Other threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	68.00	Conservation significance score	1.44
Unit biodiversity Score	106.73	Area (ha)	8.17 ha	Total biodiversity Score	872.43

Table 8. Summary table for Vegetation Association D4; Maireana sedifolia, Senna artissimoides subsp. coriacea open shrubland

Replacement Section	S22				
Vegetation Association	Vegetation Association D4; *Maireana sedifolia, Senna artemisioides* subsp. *coriacea* open shrubland				
 *Plate 6 – taken facing W at easting: 349507, Northing: 6239792*					
General description	*Maireana sedifolia, Senna artemisioides* subsp. *coriacea* open shrubland. The *Senna artemisioides* subsp. *coriacea* shrubs appear to occur in rows and seem to all be at a similar age, and therefore it is likely they were planted in the past. However, the lower strata (*Maireana sedifolia* shrubs) appear to be naturally occurring/ remnant native vegetation. As the *Senna artemisioides* subsp. *coriacea* is a species indigenous to the area, we have included it in our native vegetation assessment.				
Threatened species or community	Threatened species that may use this habitat include: Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	43.36	Conservation significance score	1.04
Unit biodiversity Score	49.15	Area (ha)	2.38 ha	Total biodiversity Score	117.08

Table 9. Summary table for Vegetation Association D5; Low open Maireana sedifolia shrubland with emergent Eucalyptus oleosa

Replacement Section	S22				
Vegetation Association	Vegetation Association D5; Low open *Maireana sedifolia* shrubland with emergent *Eucalyptus oleosa*				
 *Plate 7 – taken facing E at easting: 347866, Northing: 6239777*					
General description	Vegetation Association D5; Low open *Maireana sedifolia* shrubland with emergent *Eucalyptus oleosa* in low condition, tracks present in site. Declared weed present: *Marrubium vulgare* (Horehound).				
Threatened species or community	Threatened species that may use this habitat include: Regent Parrot, Chestnut Quailthrush, White-winged Choughs, Hooded Robin and Restless Flycatcher. Refer to the likelihood of occurrence table (Table 11) for the full assessment.				
Landscape context score	1.09	Vegetation Condition Score	19.94	Conservation significance score	1.08
Unit biodiversity Score	23.47	Area (ha)	3.62 ha	Total biodiversity Score	84.94

Site maps showing areas of proposed impact

See Figure 4 to Figure 5.

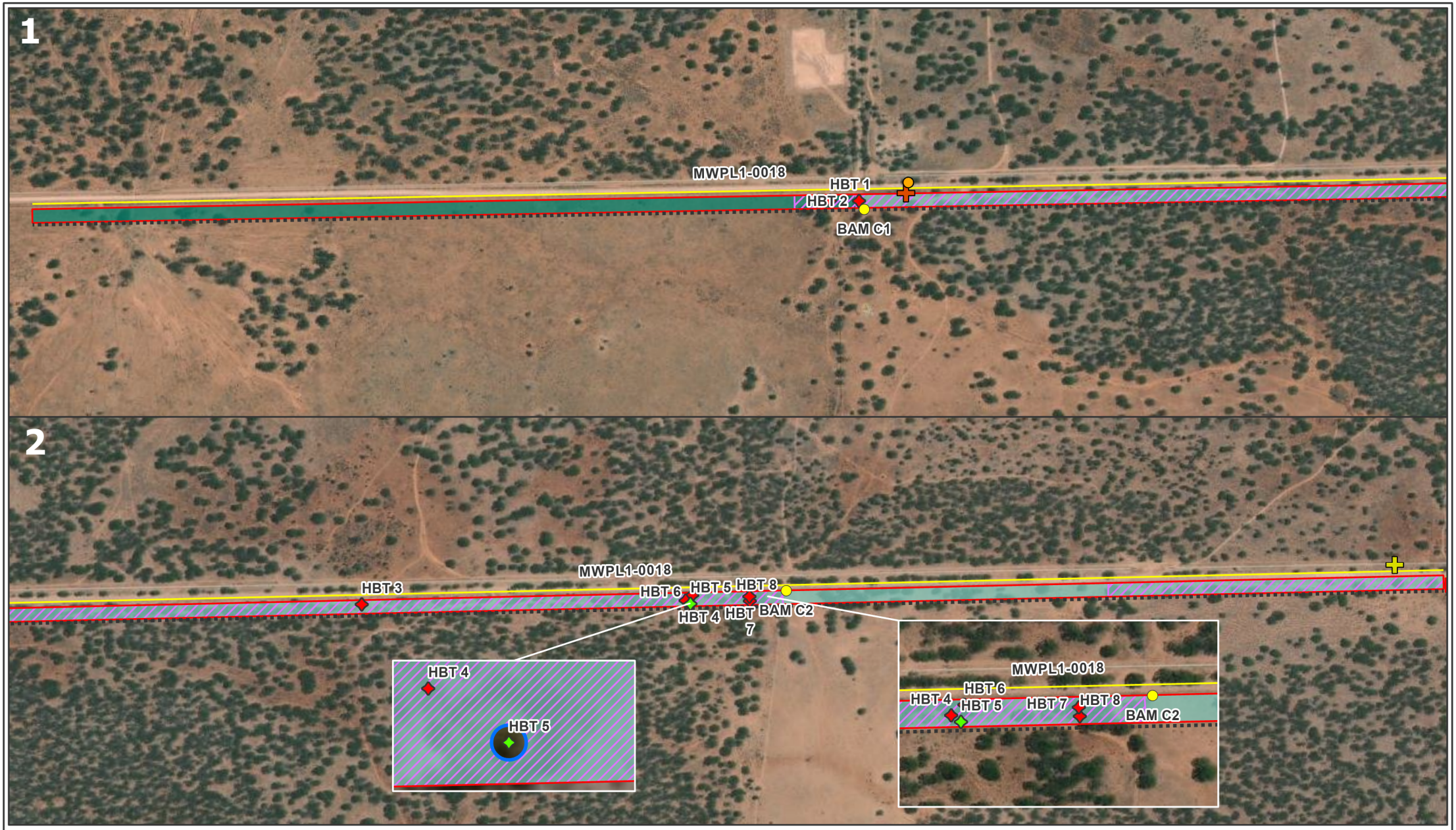

Figure 4: Proposed clearance area for S18

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

Vegetation association

- C1: Eucalyptus socialis mallee with Chenopod understorey win low condition
- C2: Eucalptus gracilis mallee over a sparse Chenopod understorey

Declared weed

- *Lycium ferocissimum* (African Boxthorn)
- *Marrubium vulgare* (Horehound)

Habitat feature

- Nest in tree
- HBT retain
- HBT remove
- Tree protection zone

TEC

- Mallee Bird Community of the Murray Darling Depression Bioregion - TEC

0 150 300
Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 19/04/2022

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Figure 5

Part 1 N:\Projects\21ADL\GIS\20649_Morgan Whyalla Pipeline Supplementary Assessments 1 & 2\Maps\20649_DataReportPackageA_1B_20220302

Figure 5: Proposed clearance area for S22 (Part 2)

0 200 400
Metres

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

Vegetation association

D1: Eucalyptus socialis and Eucalyptus gracilis open mallee over Maireana sedifolia shrubland in moderate condition

D2: Eucalyptus socialis and Euclyptus gracilis open mallee over Maireana sedifolia shrubland in low condition

D3: Eucalyptus oleosa +/- Eucalyptus gracilis over Maireana sedifolia shrubland

D4: Maireana sedifolia, senna artissimoides subsp. coriacea

D5: Low open Maireana sedifolia shrubland with emergent Eucalyptus oleosa

Declared weeds

Horehound

TEC

Mallee Bird Community of the Murray Darling Depression Bioregion - TEC

Habitat features

Nest in tree
Reptile burrows
HBT retain
HBT remove
Tree protection zone

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 5/04/2022

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Photo log

Plate 8. Example of a birds stick nest, observed in trees within the proposed clearance area

Plate 9. Example of emu scat recorded within the proposed clearance area

Plate 10. Example of a tree hollow recorded within the proposed clearance area

Plate 11. Example of a reptile burrow recorded within the proposed clearance area

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

4.2 Threatened Species assessment

The database assessment identified 9 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. 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 state or nationally listed threatened flora species records since 1995 were identified by the PMST or BDBSA as known to occur within 5 km of the study area. *Dodonea subglandulifera* (Peep Hill Hop-bush) was identified by the PMST as 'likely' to occur, however the known range of this species does not extend to the proposed clearance area, and this conspicuous species was not recorded despite targeted searches, hence it has been assessed as unlikely to occur. Refer to Table 11 for the full assessment of likelihood for all threatened species identified by the PMST and BDBSA searches.

Fauna

Birds were prevalent in the proposed clearance area 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 PMST search as known to, or likely to use habitat or recent (since 1995) records identified by the BDBSA search to occur within 5 km of the proposed clearance area include: Regent Parrot, Chestnut Quailthrush, Grey Falcon, Malleefowl, Hooded Robin, Restless Flycatcher, Satin Flycatcher and Carpet Python. Refer to Table 11 for the full assessment of likelihood for all threatened species identified by the PMST and BDBSA searches.

Table 10: 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 11: 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	PMST presence / Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Birds							
Cinclosoma castanotum	Chestnut-backed Quailthrush (Chestnut Quailthrush)	-	R	2	2012	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.	**Highly Likely** - recorded in past ten years, Mallee scrub shrubby habitat present in study area.
Corcorax melanorhamphos	White-winged Chough	-	R	2	2017	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 Australia, 2020).	**Highly Likely** - recorded in past ten years, open woodland habitat present in study area.
Falco hypoleucos	Grey Falcon	VU	R	1	Likely	The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins 1993). The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. They choose the tallest trees along watercourses to nest in, and have been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (DAWE, 2022)	Unlikely – no nesting habitat and no recent records nearby. May only fly over and/ or hunt (prey: birds) over the study area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST presence / Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Leipoa ocellata	Malleefowl	VU	V	1	Likely	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. (Benshemesh 2007; DOE 2014)	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, South Australia and New South Wales. They inhabit Shallow-sand Mallee and Chenopod Mallee.	Unlikely – not within known range of the threatened subspecies (Black-eared Miner - *Manorina melanotis*) Yellow-throated Miners were recorded during 2021 field survey, but unlikely to be threatened subspecies.
Melanodryas cucullata cucullata	Hooded Robin (YP, MN, AP, MLR, MM, SE)		R	2	2012	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 (DEH 2008a).	**Highly Likely** - recorded in past ten years, Mallee habitat present in study area.
Microeca fascinans	Jacky Winter		ssp	2	2012	This species is widely distributed in mainland Australia and in south east New Guinea. 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.	Unlikely - Does not fall within known distribution of the rare subspecies

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST presence / Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
						They are often seen in farmland and parks (Birds in Backyards ND).	
Morelia spilota	Carpet Python		R	2	2007	Prefers riparian vegetation groups, and dry sclerophyll forest with ground cover and logs. Lives in hollows of large River Red Gums and north-facing cliffs along the Murray River (DEH, 2008).	Unlikely - recorded within previous 20 years, no riparian habitat, coarse woody debris, or River Red Gums present.
Myiagra cyanoleuca	Satin Flycatcher	Mi	E	1	1998	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	2012	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).	**Highly Likely** - Recorded in the last 10 years, open woodlands and farmland habitat present
Northiella narethae	Naretha Bluebonnet		R	2	2010	Habitat is semi-arid woodlands.	Unlikely - Recorded within the previous 20 years, but not within known distribution of this subspecies

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST presence / Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Polytelis anthopeplus monarchoides	Regent Parrot	VU	V	2	2013	The Regent Parrot (eastern) is confined to the semi-arid interior of southeastern 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 (DAWE, 2022). Feeds within Mallee woodlands in summer, generally within 100km of nest sites (breeding generally occurs along the Murray River). (Baker-Gabb & Hurley, 2011)	**Possible** - may use the clearance area as foraging habitat, but unlikely to breed there - Recorded in the last 10 years, areas of Mallee woodland within 20km of the Murray River.
Plants							
Dodonaea subglandulifera	Peep Hill Hop-bush	EN	E	1	Likely	Occurs in isolated localities in semi-arid areas of south-east SA.	Unlikely – Outside known range. 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							

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 S18 and S22 pipeline easement segments have been included in this report. Clearance of vegetation for laydowns associated with these sections have been included in a previous native vegetation clearance application (*Morgan Whyalla Number 1 Pipeline Renewal Stage 1, Package A-1C*, ELA 2022)

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.

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 will be completed by the contractor and included in their site environmental plan prior to construction to identify locations of existing weed infestations.
- All vehicles and plant, including third parties, will be clean 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.

Native Vegetation Clearance Data Reports for Package A-1C and A-1B of Stage 1 have already been submitted, for six 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 as much 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 for these sections have been reduced from a 25 m corridor down to a 22 m corridor to minimise clearance of the *Mallee Bird Community of the Murray Darling Depression Bioregion* TEC.
- Five trees that are high in habitat value, that is contain multiple hollows of varying sizes, will be retained as per the SA Waters Native Vegetation Assessment and Approval Requirements SOP. Refer to Figure 5 for the location of these trees (T5, T10, T11, T13 and T15). Their tree protection zones will be demarcated on-ground to prevent impacts to these trees.
- 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.
    - Advise on clearing techniques that minimise fauna impact.
    - Keep records of important fauna interactions, listing the species concerned, the nature of the interaction and GPS coordinates.
    - Hollows and large branches will be left on site to provide habitat for fauna.
- All vehicles and plant, including third parties, will be inspected and be free prom 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 22 m is proposed for construction machinery, only a 8 m clear zone will be required for pipeline placement. Following construction, 11.4m of the 22m impact area will be allowed to naturally regenerate (Appendix 4). This area will be ripped following construction to allow water intrusion and regeneration of the native seed bank within the topsoil. See Figure 2 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 1.

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 either by payment into the fund or an on-ground offset that can take into account future works along this pipeline. This will be negotiated with the Native Vegetation Council.

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 12. 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 9.

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>C1</td><td>0.08</td><td>43.84</td></tr><tr><td>C2</td><td>0.08</td><td>89.33</td></tr><tr><td>D1</td><td>0.08</td><td>83.64</td></tr><tr><td>D2</td><td>0.08</td><td>67.56</td></tr><tr><td>D3</td><td>0.08</td><td>106.37</td></tr><tr><td>D4</td><td>0.08</td><td>49.15</td></tr><tr><td>D5</td><td>0.08</td><td>23.47</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 11 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:
- Grey Falcon
- Malleefowl
- Carpet Python
- 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></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 Endangered TEC) is present in the following VAs:
C1, C2, D1, D2, D3.

Threatened Community Score 1.4 for these, 1 for remaining VAs where the TEC was not recorded.</td><td>Seriously at Variance
C1, C2, D1, D2, D3.</td><td></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)	33.55
	Total biodiversity Score	2594.79
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	SEB payment	Admin Fee
C	1	16	1.4	0	0.08	0.35	274	43.84	1.510	66.20	1	-	**0.5**	34.76	$8,792.70	$483.60
C	1	16	1.4	0	0.08	0.35	274	43.84	1.404	61.55	1	-	**-**	64.63	$16,350.93	$899.30
C	2	30	1.4	0	0.08	0.35	284	89.33	3.607	322.20	1	-	**0.5**	169.16	$44,355.82	$2,439.57
C	2	30	1.4	0	0.08	0.35	284	89.33	3.355	299.69	1	-	**-**	314.68	$82,513.87	$4,538.26
D	1	28	1.4	0	0.08	0.35	260	83.64	4.142	346.44	1	-	**0.5**	181.88	$44,271.95	$2,434.96
D	1	28	1.4	0	0.08	0.35	260	83.64	3.860	322.85	1	-	**-**	338.99	$82,515.55	$4,538.36
D	2	24	1.4	0	0.08	0.35	260	67.56	0.778	52.56	1	-	**0.5**	27.6	$6,717.12	$369.44
D	2	24	1.4	0	0.08	0.35	260	67.56	0.723	48.85	1	-	**-**	51.29	$12,484.51	$686.65
D	3	30	1.4	0	0.08	0.35	260	106.37	4.235	452.01	1	-	**0.5**	237.31	$57,763.77	$3,177.01
D	3	30	1.4	0	0.08	0.35	260	106.37	3.939	420.42	1	-	**-**	441.44	$107,452.88	$5,909.91
D	4	30	1	0	0.08	0.35	260	49.15	1.228	60.36	1	-	**0.5**	31.69	$7,713.39	$424.24
D	4	30	1	0	0.08	0.35	260	49.15	1.154	56.72	1	-	**-**	59.56	$14,497.16	$797.34
D	5	8	1	0	0.08	0.35	260	23.47	1.881	44.15	1	-	**0.5**	23.18	$5,641.75	$310.30
D	5	8	1	0	0.08	0.35	260	23.47	1.738	40.79	1	-	**-**	42.83	$10,425.69	$573.41
								Total	**33.554**	**2594.79**				**2019.00**	**$501,497.09**	**$27,582.35**

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	2594.79	2019.00	$501,497.09	$27,582.35	$529,079.44

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:

- A SEB payment of $501,497.09 plus Admin fee of $27,582.35 for a total of $529,079.44 is proposed to be paid into the Native Vegetation Fund.

7. References

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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 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

Sci Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA C1	VA C2	VA D1	VA D2	VA D3	VA D4	VA D5	Total
Acacia nyssophylla	Spine Bush	-	-	-	-			✓	✓	✓	✓		**4**
Alectryon oleifolius ssp. canescens	Bullock Bush	-	-	-	-					✓			**1**
Amyema miquelii	Box Mistletoe	-	-	-	-				✓	✓			**2**
Asphodelus fistulosus	Onion Weed	*	-	-	-	✓	✓	✓	✓		✓		**5**
Atriplex semibaccata	Berry Saltbush	-	-	-	-							✓	**1**
Atriplex stipitata	Bitter Saltbush	-	-	-	-		✓	✓	✓	✓	✓	✓	**6**
Atriplex suberecta	Lagoon Saltbush	-	-	-	-							✓	**1**
Austrostipa acrociliata	Graceful Spear-grass	-	-	-	-					✓			**1**
Austrostipa elegantissima	Feather Spear-grass	-	-	-	-		✓	✓			✓		**3**
Austrostipa nitida	Balcarra Spear-grass	-	-	-	-			✓	✓	✓	✓	✓	**5**
Austrostipa scabra group	Falcate-awn Spear-grass	-	-	-	-						✓	✓	**2**
Austrostipa scabra ssp.	Rough Spear-grass	-	-	-	-	✓	✓						**2**
Austrostipa sp.	Spear-grass	-	-	-	-			✓		✓		✓	**3**
Brachyscome ciliaris var. ciliaris	Variable Daisy	-	-	-	-				✓				**1**
Bromus rubens	Red Brome	*	-	-	-	✓							**1**
Calotis hispidula	Hairy Burr-daisy	-	-	-	-				✓				**1**
Carrichtera annua	Ward's Weed	*	-	-	-	✓	✓	✓	✓	✓	✓	✓	**7**
Casuarina pauper	Black Oak	-	-	-	-						✓		**1**
Centaurea calcitrapa	Star Thistle	*	-	-	-				✓				**1**
Chenopodium album	Fat Hen	*	-	-	-							✓	**1**

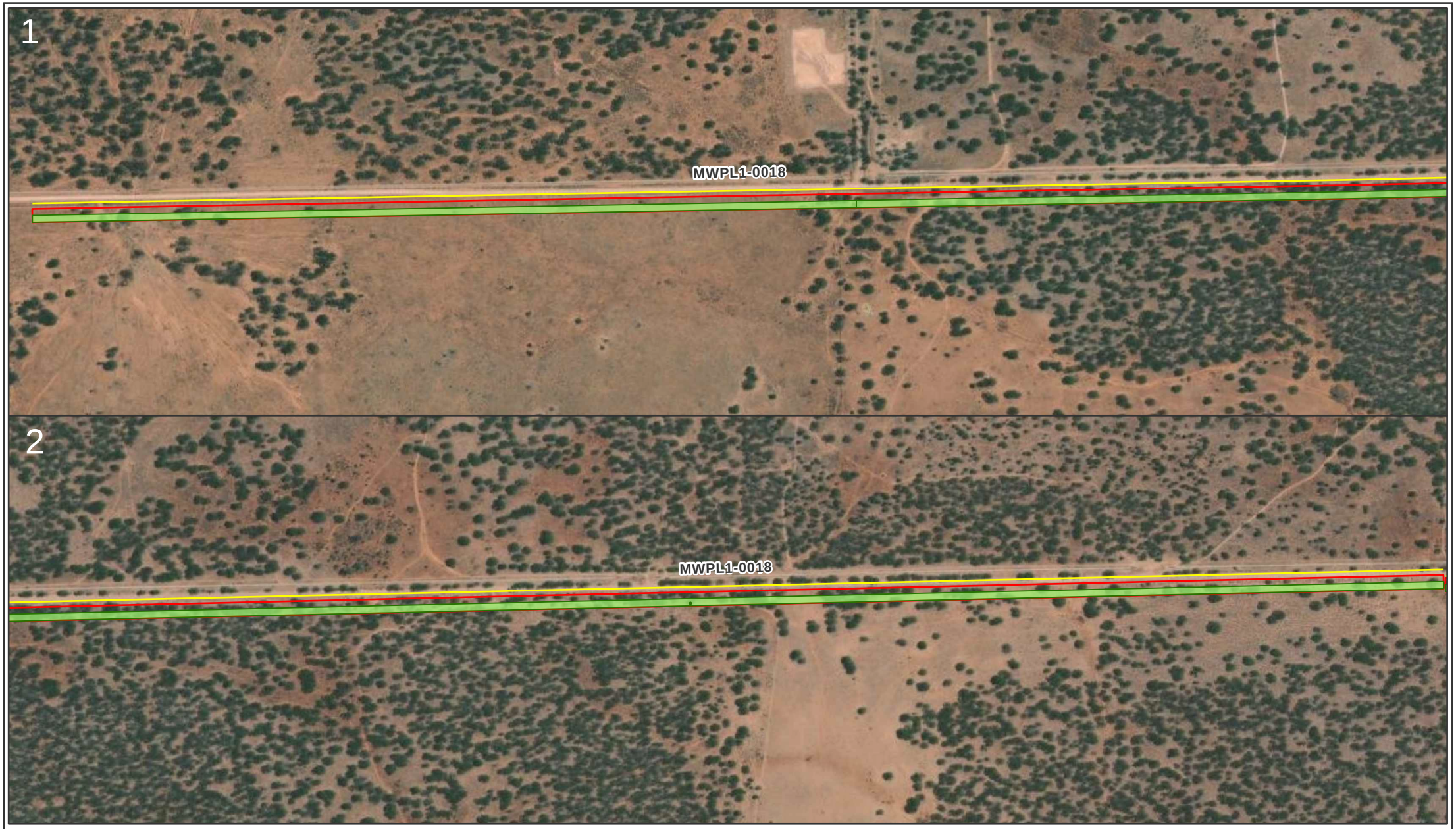
Sci Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA C1	VA C2	VA D1	VA D2	VA D3	VA D4	VA D5	Total
Chenopodium murale	Nettle-leaf Goosefoot	*	-	-	-							✓	**1**
Convolvulus remotus	Grassy Bindweed	-	-	-	-				✓				**1**
Cucumis myriocarpus ssp. myriocarpus	Paddy Melon	*	-	-	-							✓	**1**
Dissocarpus paradoxus	Ball Bindyi	-	-	-	-		✓	✓					**2**
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	-	-	-	-	✓	✓	✓		✓	✓	✓	**6**
Eremophila longifolia	Weeping Emubush	-	-	-	-					✓			**1**
Eremophila scoparia	Broom Emubush	-	-	-	-		✓			✓			**2**
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	-	-	-	-				✓	✓	✓	✓	**4**
Eucalyptus brachycalyx	Gilja	-	-	-	-				✓				**1**
Eucalyptus gracilis	Yorrell	-	-	-	-		✓	✓	✓	✓			**4**
Eucalyptus oleosa ssp.	-	-	-	-	-			✓	✓				**2**
Eucalyptus oleosa ssp. oleosa	Red Mallee	-	-	-	-		✓			✓	✓	✓	**4**
Eucalyptus socialis ssp. socialis	Beaked Red Mallee	-	-	-	-	✓	✓	✓		✓			**4**
Eucalyptus sp.	-	-	-	-	-						✓		**1**
Euphorbia drummondii s.str.	-	-	-	-	-	✓	✓						**2**
Exocarpos aphyllus	Leafless Cherry	-	-	-	-		✓	✓		✓	✓		**4**
Geijera linearifolia	Sheep Bush	-	-	-	-		✓					✓	**2**
Goodenia paradoxa	Spur Velleia	-	-	-	-						✓		**1**
Grevillea huegelii	Comb Grevillea	-	-	-	-		✓			✓			**2**
Hordeum glaucum	Blue Barley-grass	*	-	-	-	✓							**1**

Sci Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA C1	VA C2	VA D1	VA D2	VA D3	VA D4	VA D5	Total
Hordeum leporinum	Wall Barley-grass	*	-	-	-				✓				**1**
Lawrencia squamata	Thorny Lawrencia	-	-	-	-			✓	✓	✓	✓		**4**
Lepidium sp.	Peppercress	-	-	-	-							✓	**1**
Lycium australe	Australian Boxthorn	-	-	-	-		✓	✓	✓	✓	✓	✓	**6**
Maireana aphylla	Cotton-bush	-	-	-	-	✓	✓						**2**
Maireana appressa	Pale-fruit Bluebush	-	-	-	-			✓		✓			**2**
Maireana brevifolia	Short-leaf Bluebush	-	-	-	-						✓	✓	**2**
Maireana enchylaenoides	Wingless Fissure-plant	-	-	-	-			✓	✓		✓		**3**
Maireana georgei	Satiny Bluebush	-	-	-	-					✓	✓		**2**
Maireana pentatropis	Erect Mallee Bluebush	-	-	-	-					✓	✓	✓	**3**
Maireana pyramidata	Black Bluebush	-	-	-	-	✓	✓		✓		✓		**4**
Maireana sedifolia	Bluebush	-	-	-	-		✓	✓	✓	✓	✓	✓	**6**
Maireana turbinata	Top-fruit Bluebush	-	-	-	-	✓	✓	✓			✓		**4**
Malva parviflora	Small-flower Marshmallow	*	-	-	-	✓						✓	**2**
Malva sp.	Mallow	*	-	-	-				✓				**1**
Marrubium vulgare	Horehound	*	-	-	Declared - Landscape - Act -- -Not - For -Sale		✓		✓			✓	**3**
Medicago polymorpha	Burr-medic	*	-	-	-				✓				**1**
Minuria leptophylla	Minnie Daisy	-	-	-	-			✓			✓		**2**
Myoporum platycarpum ssp.	False Sandalwood	-	-	-	-			✓		✓	✓		**3**

Sci Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA C1	VA C2	VA D1	VA D2	VA D3	VA D4	VA D5	Total
Olearia pimeleoides	Pimelea Daisy-bush	-	-	-	-		✓						**1**
Onopordum acaulon	Horse Thistle	*	-	-	-	✓							**1**
Portulaca oleracea	Common Purslane	-	-	-	-							✓	**1**
Psilocaulon granulicaule	Match-head Plant	*	-	-	-							✓	**1**
Ptilotus seminudus	Rabbit-tails	-	-	-	-					✓			**1**
Reichardia tingitana	False Sowthistle	*	-	-	-	✓							**1**
Rhagodia parabolica	Mealy Saltbush	-	-	-	-		✓						**1**
Rhagodia sp.	Saltbush	-	-	-	-			✓					**1**
Rhagodia spinescens	Spiny Saltbush	-	-	-	-		✓			✓	✓	✓	**4**
Rhagodia ulicina	Intricate Saltbush	-	-	-	-			✓	✓	✓		✓	**4**
Roepera ammophila	Sand Twinleaf	-	-	-	-	✓	✓						**2**
Roepera apiculata	Pointed Twinleaf	-	-	-	-					✓			**1**
Roepera aurantiaca ssp. aurantiaca	Shrubby Twinleaf	-	-	-	-			✓	✓		✓	✓	**4**
Roepera glauca	Pale Twinleaf	-	-	-	-	✓	✓						**2**
Rytidosperma caespitosum	Common Wallaby-grass	-	-	-	-	✓	✓				✓		**3**
Rytidosperma geniculatum	Kneed Wallaby-grass	-	-	-	-							✓	**1**
Salsola australis	Buckbush	-	-	-	-	✓	✓				✓		**3**
Salvia verbenaca var.	Wild Sage	*	-	-	-				✓		✓		**2**
Salvia verbenaca var. verbenaca	Wild Sage	*	-	-	-							✓	**1**
Santalum acuminatum	Quandong	-	-	-	-					✓			**1**

Sci Name	Common Name	Introduced	NPW Act	EPBC Act	Declared weed (LSA Act)	VA C1	VA C2	VA D1	VA D2	VA D3	VA D4	VA D5	Total
Scaevola spinescens	Spiny Fanflower	-	-	-	-		✓	✓			✓		**3**
Schismus barbatus	Arabian Grass	*	-	-	-			✓					**1**
Sclerolaena obliquicuspis	Oblique-spined Bindyi	-	-	-	-		✓	✓	✓		✓	✓	**5**
Sclerolaena patenticuspis	Spear-fruit Bindyi	-	-	-	-	✓	✓	✓	✓		✓	✓	**6**
Senna artemisioides ssp. petiolaris	-	-	-	-	-			✓		✓	✓		**3**
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna	-	-	-	-			✓	✓	✓	✓		**4**
Sida spodochroma	-	-	-	-	-				✓				**1**
Sisymbrium irio	London Mustard	*	-	-	-			✓			✓		**2**
Sisymbrium sp.	Wild Mustard	*	-	-	-	✓						✓	**2**
Solanum nigrum	Black Nightshade	*	-	-	-							✓	**1**
Sonchus oleraceus	Common Sow-thistle	*	-	-	-				✓			✓	**2**
Thysanotus baueri	Mallee Fringe-lily	-	-	-	-						✓		**1**
Urtica urens	Small Nettle	*	-	-	-							✓	**1**
Vittadinia gracilis	Woolly New Holland Daisy	-	-	-	-	✓	✓		✓				**3**
Westringia rigida	Stiff Westringia	-	-	-	-					✓			**1**
Number of Species per VA:						**21**	**32**	**31**	**32**	**32**	**37**	**34**	

Appendix 4. Areas allowed to naturally regenerate following construction (map set)



Areas allowed to naturally regenerate (S18)

- Proposed clearance area
- Areas allowed to naturally regenerate
- Renewal section

0 150 300

Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 19/04/2022

ecological AUSTRALIA
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Areas allowed to naturally regenerate (S22)

- Proposed clearance area
- Areas allowed to naturally regenerate
- Renewal section

0 150 300
Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 19/04/2022

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Areas allowed to naturally regenerate (S22)

- Proposed clearance area
- Areas allowed to naturally regenerate
- Renewal section

0 150 300
Metres

Datum/Projection:
GDA 1994 MGA Zone 54
20649-OK Date: 19/04/2022

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