



Environmental Consulting

Native Vegetation Clearance Data Report

Talia Farms – Irrigation Infrastructure Development

Clearance under the *Native Vegetation Regulations 2017*

5/07/22

Prepared by Sheree Bowman, Principal Consultant | TS Environmental Consulting



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1. Application information

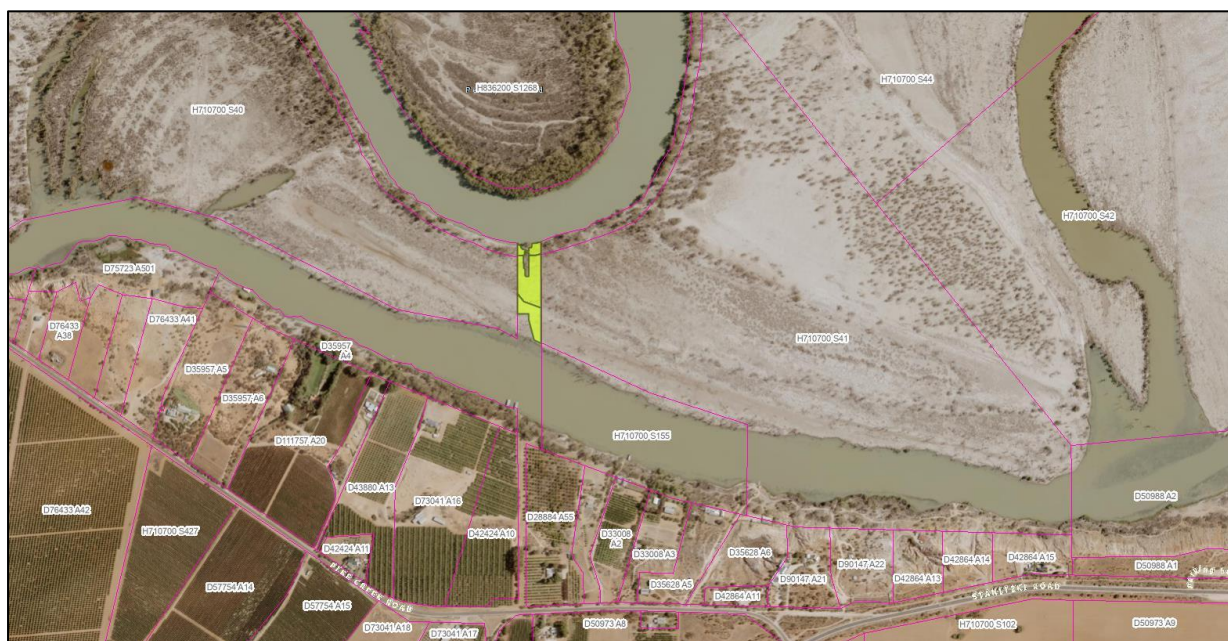
Application Details

Applicant:	Talia Farms		
Landowner:	As above		
Site Address:	Council Road Reserve between Lower Pike Creek and River Murray, Lyrup (Renmark Paringa Council) and adjoining allotment 155		
Local Government Area:	Renmark Paringa	Hundred:	Paringa
Title ID:	N/A	Parcel ID	N/A

Summary of proposed clearance

Purpose of clearance	Clearance required for the construction of irrigation infrastructure associated with an agricultural development at Lyrup.
Native Vegetation Regulation	Regulation 12, Schedule 1; clause 34, Infrastructure
Description of the vegetation under application	0.12 Ha <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> mid woodland over +/- <i>Acacia stenophylla</i> over <i>Duma florulenta</i> tall shrubs over, +/- <i>Phragmites australis</i> . 0.64 Ha <i>Duma florulenta</i> mid open shrubland over low grasses 0.33 Ha <i>Tecticornia pergranulata</i> ssp. low samphire shrubland 0.05 Ha <i>Enchylaena tomentosa</i> shrubland with emergent <i>Acacia stenophylla</i> , fringing <i>Eucalyptus largiflorens</i>
Total proposed clearance - area (ha) and number of trees	1.14 ha of native vegetation is proposed to be cleared
Level of clearance	Level 4
Overlay (Planning and Design Code)	Native Vegetation Overlay applies.

Map of proposed clearance area



Mitigation hierarchy	<p><u>Avoidance:</u> Native vegetation could not be avoided as part of this development. All measures and potential impacts to native vegetation have been considered in planning this project. Initial discussions regarding impact minimisation and avoidance began during the initial site visit by the accredited consultant in 2020.</p> <p>Due to the previous DA approval, construction commenced with the associated approval to draw water from the Lower Pike Creek. Due to the repeal of the Water Resource Works Approval since the initial DA approval, native vegetation is now proposed to be impacted on the island between the River Murray and the Lower Pike Creek. This will allow for the drawing of irrigation water from the River Murray, as instructed by the Department of Environment and Water as an alternative (to the Lower Pike Creek).</p> <p><u>Minimization:</u> The applicant has minimized clearance of native vegetation by:</p> <ul style="list-style-type: none"> • Firstly, seeking approval (incl initial DA approval for the development) to utilize water from the Lower Pike Creek (to avoid clearance and impacts to adjoining wetland environments), unfortunately this is no longer a feasible option due to the application to vary the Water Resources Works Approval being refused by the Department for Environment and Water. • Noting the previous applications have sought to avoid and minimize clearance at all levels of the development planning process. • The irrigation plans needed to change significantly between the first and subsequent (current) development application. • The applicant was able to utilise most of the existing clearance footprint for the infrastructure associated with the project on the southern (land) side of the Lower Pike Creek but significant additional native vegetation impacts are now proposed for the area across Lower Pike Creek. • Avoiding the clearance of some large, long dead and standing <i>Eucalyptus camaldulensis</i> ssp <i>camaldulensis</i> as well as <i>Myoporum parvifolium</i> (Rare in SA) within the native vegetation clearance footprint. • The plans are avoiding the clearance of a stand of regenerating <i>Eucalyptus camalulensis</i> ssp <i>camalulensis</i> on the River Murrays edge of the site. • Bunding will be used in areas across the site to avoid collateral damage to native vegetation not included in the application, areas and with reference to the rated and significant vegetation detailed above. Refer to plans. <p><u>Rehabilitation or restoration:</u> The native vegetation clearance is temporary. The applicant will implement actions to re-establish the vegetation after clearance has occurred. This will be undertaken by scraping off the top 100mm of topsoil, vegetation and sticks and placing it into a windrow to enable reinstating as final top dressing immediately following the construction. No new fill will be brought onto the site. Enabling the soil structure and seed bank to re-establish post construction activities. It is highly anticipated that this activity will be effective in restoring much for the site in the medium term, due to the site location, duration of site disturbance and site hygiene and protection measures which will be applied during the proposed activities. A 0.5 reduction factor for rehabilitation of the impact site has been applied in the assessment spreadsheets to reflect this rehabilitation works.</p>
SEB Offset proposal	<p>The applicant plans to pay into the Native Vegetation Fund to address the SEB offset associated with this proposal. \$12,995.95 (no GST) PLUS an admin fee of \$714.27 (incl GST) = \$13,710.22. This has been calculated with a reduction applied for rehabilitation of the impact site (0.5) (only A1-C1), directly related to the backfilling and use of existing topsoil to re-establish the seed bank of the area.</p>

2. Purpose of clearance

2.1 Description

The native vegetation clearance proposal is incidental to an irrigation infrastructure project being delivered by Talia Farms.

2.2 Background

This application seeks approval to clear native vegetation, incidental to finalising and executing this project in adherence to the development application submitted to the Renmark Paringa Council by Talia Farms. Two other native vegetation clearance proposals have been previously approved as part of this project and due to unforeseen circumstances, this application is being submitted to finalise the requirements of this project.

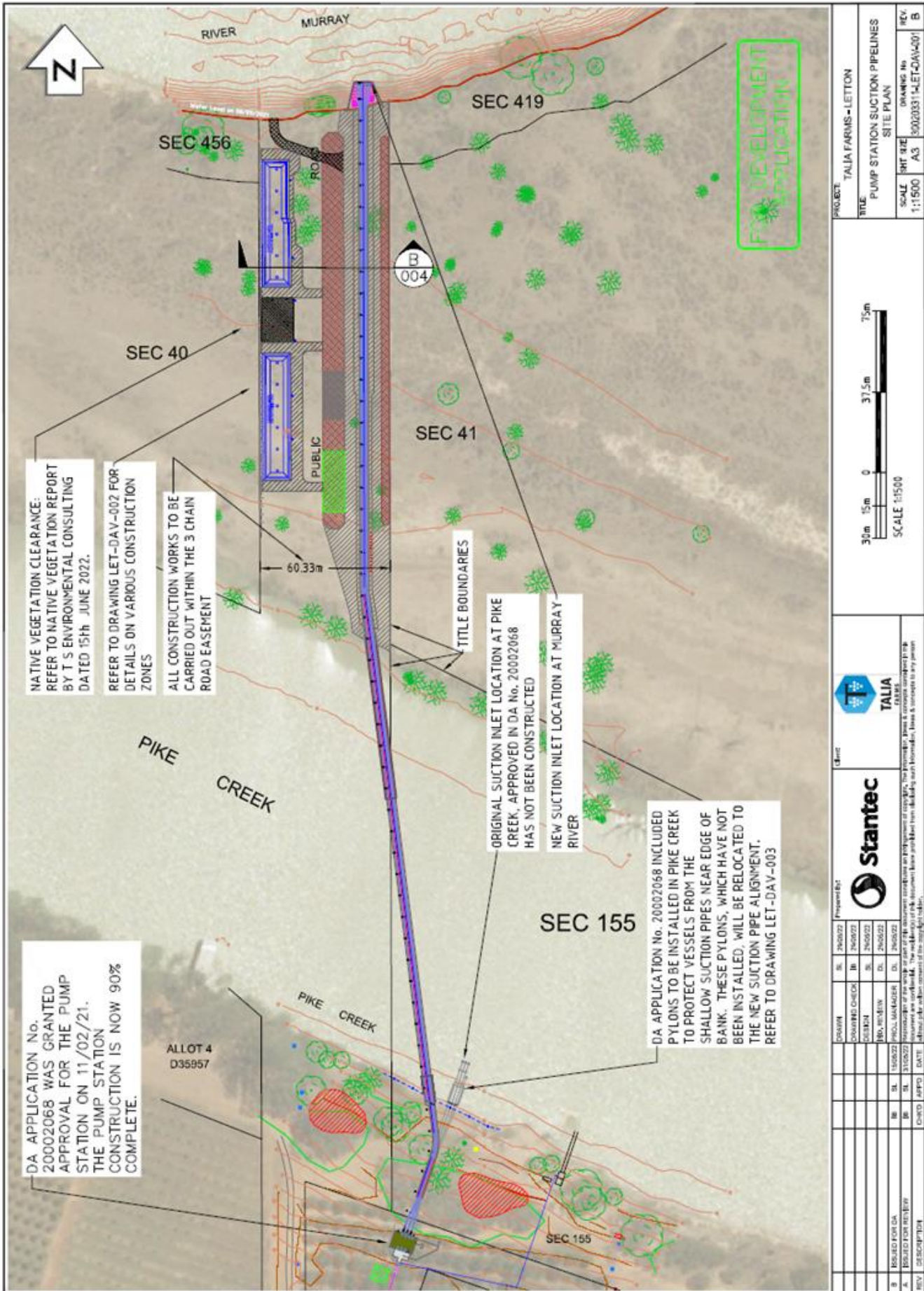
A native vegetation clearance assessment was undertaken in October 2020, with several small areas assessed for clearance, incidental to the development of an area of table grapes for the export market. The proposal included clearance for the development's infrastructure, including a packing and processing shed, pump shed and irrigation pipelines to the Lower Pike Creek. The table grape crop has been established at Stanitzki Road, Lyrup (S102 CT/5923/165, Hundred of Paringa). An additional application was approved to remove 2 x scattered trees (*Alectryon oleifolius ssp canescens*) in 2021 (S102 CT/5923/165, Hundred of Paringa).

The development application for this proposal and native vegetation application was approved for the initial development, including approvals to pump water from the Lower Pike Creek. Since the Development Application approval by the Renmark Paringa Council and subsequent commencement of the development, the approval to pump from the Lower Pike Creek has been repealed, now requiring Talia Farms to expand the irrigation infrastructure across through the Pike-Mundic Wetland Complex to the River Murray (North of the Pike Creek). A new (& revised) development application is being submitted for the revised infrastructure requirements for this project.

2.3 General location map



2.4 Details of the proposal



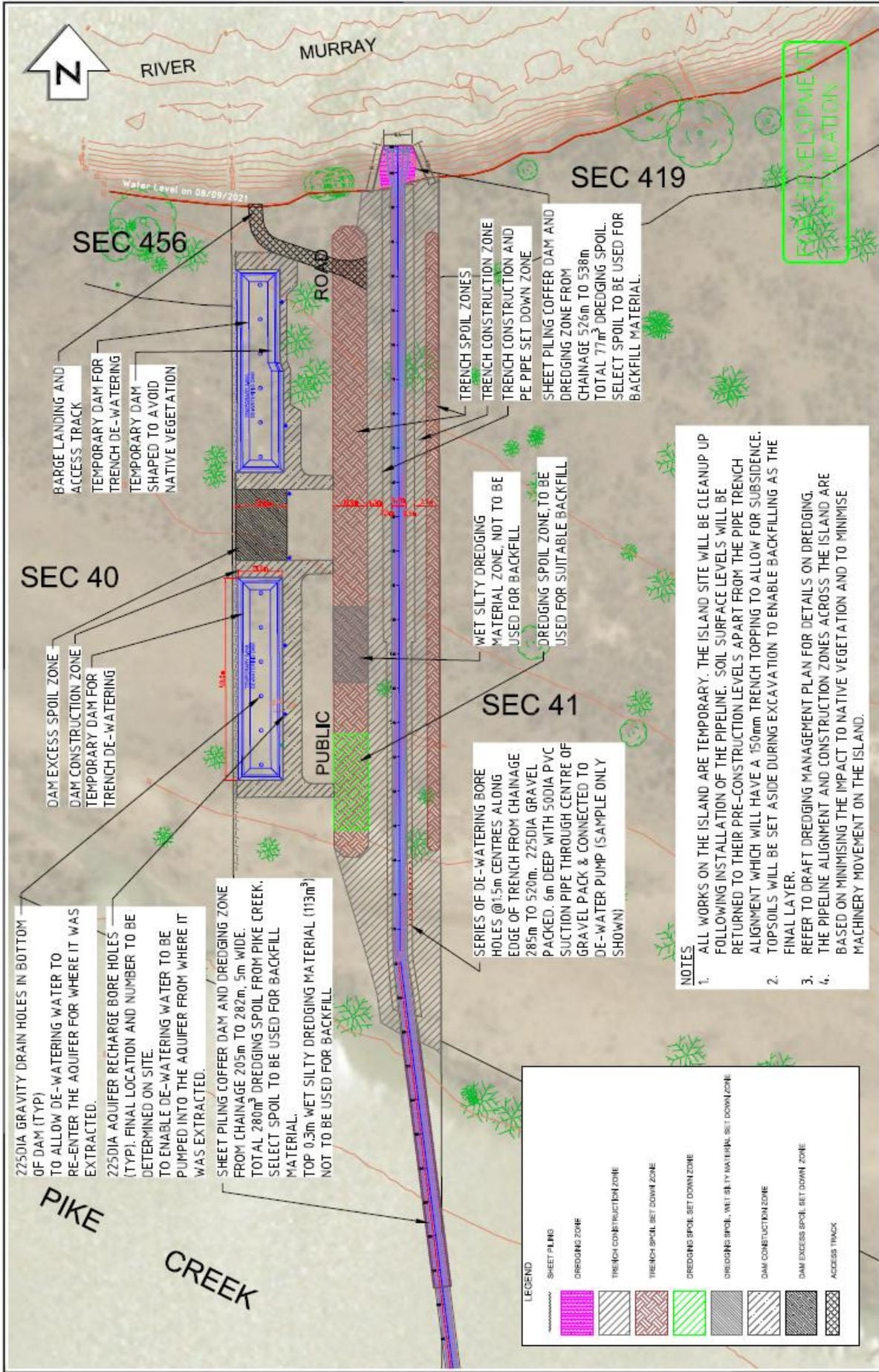
PROJECT: TALIA FARMS - LETTON	
TITLE: PUMP STATION SUCTION PIPELINES	REV: B
SITE PLAN	
SCALE: 1:1500	DRAWING No: 3902031-LET-DAV-001
BRT SIZE: A3	REV: B

30m	15m	0	37.5m	75m
SCALE 1:1500				

 Stantec	 TALIA
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DRAWN: JL, 16/06/22 CHECKED: JL, 16/06/22 COLLECT: JL, 16/06/22 MGR REVIEW: JL, 16/06/22 PROJ MANAGER: JL, 16/06/22 DATE: 31/05/22	PREPARED BY: JL, 16/06/22
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REV	DESCRIPTION	DATE
A	ISSUED FOR DA	
B	ISSUED FOR REVIEW	



2250IA GRAVITY DRAIN HOLES IN BOTTOM OF DAM (TYP) TO ALLOW DE-WATERING WATER TO RE-ENTER THE AQUIFER FOR WHERE IT WAS EXTRACTED.

2250IA AQUIFER RECHARGE BORE HOLES (TYP). FINAL LOCATION AND NUMBER TO BE DETERMINED ON SITE.

TO ENABLE DE-WATERING WATER TO BE PUMPED INTO THE AQUIFER FROM WHERE IT WAS EXTRACTED.

SHEET PILING COFFER DAM AND DREDGING ZONE FROM CHAINAGE 205m TO 282m, 5m WIDE. TOTAL 280m³ DREDGING SPOIL FROM PIKE CREEK. SELECT SPOIL TO BE USED FOR BACKFILL MATERIAL.

TOP 0.3m WET SILTY DREDGING MATERIAL (113m³) NOT TO BE USED FOR BACKFILL

BARGE LANDING AND ACCESS TRACK

TEMPORARY DAM FOR TRENCH DE-WATERING

TEMPORARY DAM SHAPED TO AVOID NATIVE VEGETATION

DAM EXCESS SPOIL ZONE

DAM CONSTRUCTION ZONE

TEMPORARY DAM FOR TRENCH DE-WATERING

SERIES OF DE-WATERING BORE HOLES @1.5m CENTRES ALONG EDGE OF TRENCH FROM CHAINAGE 285m TO 520m. 2250IA GRAVEL PACKED. 6m DEEP WITH 500DIA PVC SUCTION PIPE THROUGH CENTRE OF GRAVEL PACK & CONNECTED TO DE-WATER PUMP (SAMPLE ONLY SHOWN)

WET SILTY DREDGING MATERIAL ZONE, NOT TO BE USED FOR BACKFILL

DREDGING SPOIL ZONE, TO BE USED FOR SUITABLE BACKFILL

TRENCH SPOIL ZONES

TRENCH CONSTRUCTION ZONE

TRENCH CONSTRUCTION AND PE PIPE SET DOWN ZONE

SHEET PILING COFFER DAM AND DREDGING ZONE FROM CHAINAGE 526m TO 538m

TOTAL 77m³ DREDGING SPOIL. SELECT SPOIL TO BE USED FOR BACKFILL MATERIAL.

- NOTES**
- ALL WORKS ON THE ISLAND ARE TEMPORARY. THE ISLAND SITE WILL BE CLEANUP UP FOLLOWING INSTALLATION OF THE PIPELINE. SOIL SURFACE LEVELS WILL BE RETURNED TO THEIR PRE-CONSTRUCTION LEVELS APART FROM THE PIPE TRENCH ALIGNMENT WHICH WILL HAVE A 150mm TRENCH TOPPING TO ALLOW FOR SUBSIDENCE. TOPSOILS WILL BE SET ASIDE DURING EXCAVATION TO ENABLE BACKFILLING AS THE FINAL LAYER.
 - REFER TO DRAFT DREDGING MANAGEMENT PLAN FOR DETAILS ON DREDGING THE PIPELINE ALIGNMENT AND CONSTRUCTION ZONES ACROSS THE ISLAND ARE BASED ON MINIMISING THE IMPACT TO NATIVE VEGETATION AND TO MINIMISE MACHINERY MOVEMENT ON THE ISLAND.

LEGEND

[Pink Box]	SHEET PILING
[Diagonal Lines]	DREDGING ZONE
[Cross-hatch]	TRENCH CONSTRUCTION ZONE
[Red-hatch]	TRENCH SPOIL SET DOWN ZONE
[Green-hatch]	DREDGING SPOIL SET DOWN ZONE
[Grey-hatch]	DREDGING SPOIL, WET SILTY MATERIAL, SET DOWN ZONE
[Blue-hatch]	DAM CONSTRUCTION ZONE
[Black-hatch]	DAM EXCESS SPOIL SET DOWN ZONE
[White Box]	ACCESS TRACK

PROJECT:	TALJA FARMS - LETTON
TITLE:	PUMP STATION SUCTION PIPELINES ISLAND CONSTRUCTION PLAN
SCALE:	1:1,000
SHEET SIZE:	A3
DRAWING No:	30020331-14-LET-DAM-002
REV:	B

Drawn:	24/06/22	Checked:	
Design:	24/06/22	Reviewed:	
Drawn:	24/06/22	Checked:	
Design:	24/06/22	Reviewed:	

Rev:	0	Date:		Description:
Rev:	1	Date:		Description:
Rev:	2	Date:		Description:
Rev:	3	Date:		Description:
Rev:	4	Date:		Description:
Rev:	5	Date:		Description:
Rev:	6	Date:		Description:
Rev:	7	Date:		Description:
Rev:	8	Date:		Description:
Rev:	9	Date:		Description:
Rev:	10	Date:		Description:

2.5 Approvals required or obtained

- Native Vegetation Act 1991 (Previous and related approval 2021/3081/753, which includes 1 subsequent variation, to include the clearance of 2 x scattered trees).
- Planning, Development, and Infrastructure Act 2016. Previous Development Application. (Ref: 20002068 – lodged 14/12/2020)
- Water Resources Act 1997 – Permit associated with water use for irrigation purposes from the River Murray.

2.6 Native Vegetation Regulation

Schedule 1, Division 5 of the Native Vegetation Regulations – Regulation 12(34) – Infrastructure.

2.7 Development Application information

Relevant DA Information relating to Overlays and Zones:

Conservation and Rural Zones.

Native Vegetation - The Native Vegetation Overlay seeks to protect, retain, and restore areas of native vegetation.

3. Method

3.1 Flora assessment

The flora assessment was undertaken by Sheree Bowman (Native Vegetation Accredited Consultant) on the 14th of May 2022, with approximately 2 hours spent on site. The Bushland Assessment Methodology as detailed in the Native Vegetation Council Bushland Assessment Manual (Feb 2017) approved by the Department for Environment and Water. 1.14 Hectares of native was assessed as directed by Mark Lueth from Talia Farms during the field inspection. A Level 4 assessment was completed due to the size and nature of the proposed native vegetation clearance footprint.

Calibrated field assessment techniques were used to undertake the assessment. Plant specimens were collected where required for further identification. A GPS with +/- 5m accuracy, ContextCam® and field maps were used to record photo point locations. Both 50m and 100m tapes are employed to measure assessment site quadrats where possible.

A pre-field desktop assessment was undertaken, including searches records of threatened flora species listed under the National Parks and Wildlife Act 1972 (SA) and the Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth). The following databases were queried for records since 1995 and within proximity to the proposed clearance site - EPBC Act Protected Matters Search Tool, Biological Database of South Australia, and Atlas of Living Australia.

3.2 Fauna assessment

A pre-field desktop assessment was undertaken utilizing searches for the presence of threatened fauna species listed under the National Parks and Wildlife Act 1972 (SA) and the Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth). The following databases were queried for records since 1995 and within 5km's of the proposed clearance site - EPBC Act Protected Matters Search Tool, Biological Database of South Australia, and Atlas of Living Australia. Refer to Appendix 3 for the EPBC Matters of National Significance Report.

Observations of both fauna species and habitat value were taken during the site visit on the 14th of May 2022. This was undertaken at 8:00am with Mark Lueth from Talia Farms, accompanied by the bushland assessment. Refer to 4.2: Threatened Species Assessment for information on threatened species and habitat suitability.

4. Assessment Outcomes


4.1 Vegetation Assessment

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

The site is situated within the Upper Murray Valley Land System. The land system is a complex landscape of wetlands and older terraces, with slopes and cliffs running up to the adjacent highlands. The soils are highly variable depending on the nature of the alluvium (on flats), or the older material exposed (on slopes) by the downcutting of the river. The wetlands and low terraces are little used for primary production but have high conservation and recreation value. The higher terraces dominated by medium to fine textured soils are commonly used for horticultural irrigation. The slopes with a range of sandy-to-sandy loam soils over highly calcareous subsoils are also widely used for horticulture, except where they are too steep and / or eroded.

The impact site is located within the Pike-Mundic Wetland Complex, on an island between the River Murray and the Lower Pike Creek. The proposed clearance footprint is restricted to a road reserve under the care and control of the Renmark Paringa Council. The site is immediately south of Penky Island, in the River Murray National Park, which is part of the Riverland Biosphere Reserve. The impact site is on land which is subject to inundation and within the 1956 River Murray flood extent. The assessment was completed over 3 vegetation associations and guided by the minimum requirements for clearance by Talia Farms.

Details of the vegetation associations proposed to be impacted


Vegetation Association	A1: <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> mid woodland over +/- <i>Acacia stenophylla</i> over <i>Duma florulenta</i> tall shrubs over +/- <i>Setaria jubiflora</i> , +/- <i>Cyperus gymnocaulos</i> low tussock grasses
	<div style="display: flex; justify-content: space-between; align-items: center; background-color: #cccccc; padding: 5px;"> DIRECTION N (T) 473148 6207843 ACCURACY 5 m DATUM GDA2020 </div>  <div style="text-align: right; padding-right: 10px;"> 2022-05-14 10:45:00+09:30 </div>
General description	Open woodland vegetation, fringing the River Murray. The impact site has been minimized to exclude a section of regenerating <i>Eucalyptus camaldulensis</i> ssp. <i>camaldulensis</i> where an individual <i>Myoporium parvifolium</i> (Creeping boobialla) plant was recorded during the site assessment. The Creeping Boobialla is rated Rare in SA. This area will be protected against impacts during construction by using bunding. The vegetation is patchy and has long dead


	standing <i>Eucalyptus camaldulensis</i> ssp <i>camaldulensis</i> present. The ground cover is consistent across the site and dominated by chenopods and annual ephemeral species. Die back of <i>Duma florulenta</i> observed across the site, consistent with a seasonally inundated vegetation community. This vegetation is benchmarked against: <u>MDBSA 10.4: Red Gum Woodlands with Dense Lignum Shrub Understorey.</u>				
Threatened species or community	No threatened flora or fauna under the NP&W Act or EPBC Act listed species or community observed during the site assessment.				
Landscape context score	1.17	Vegetation Condition Score	57.60	Conservation significance score	1.08
Unit biodiversity Score	72.78	Area (ha)	0.12	Total biodiversity Score	8.73

Vegetation Association	<i>B1: Duma florulenta</i> mid open shrubland over low grasses				
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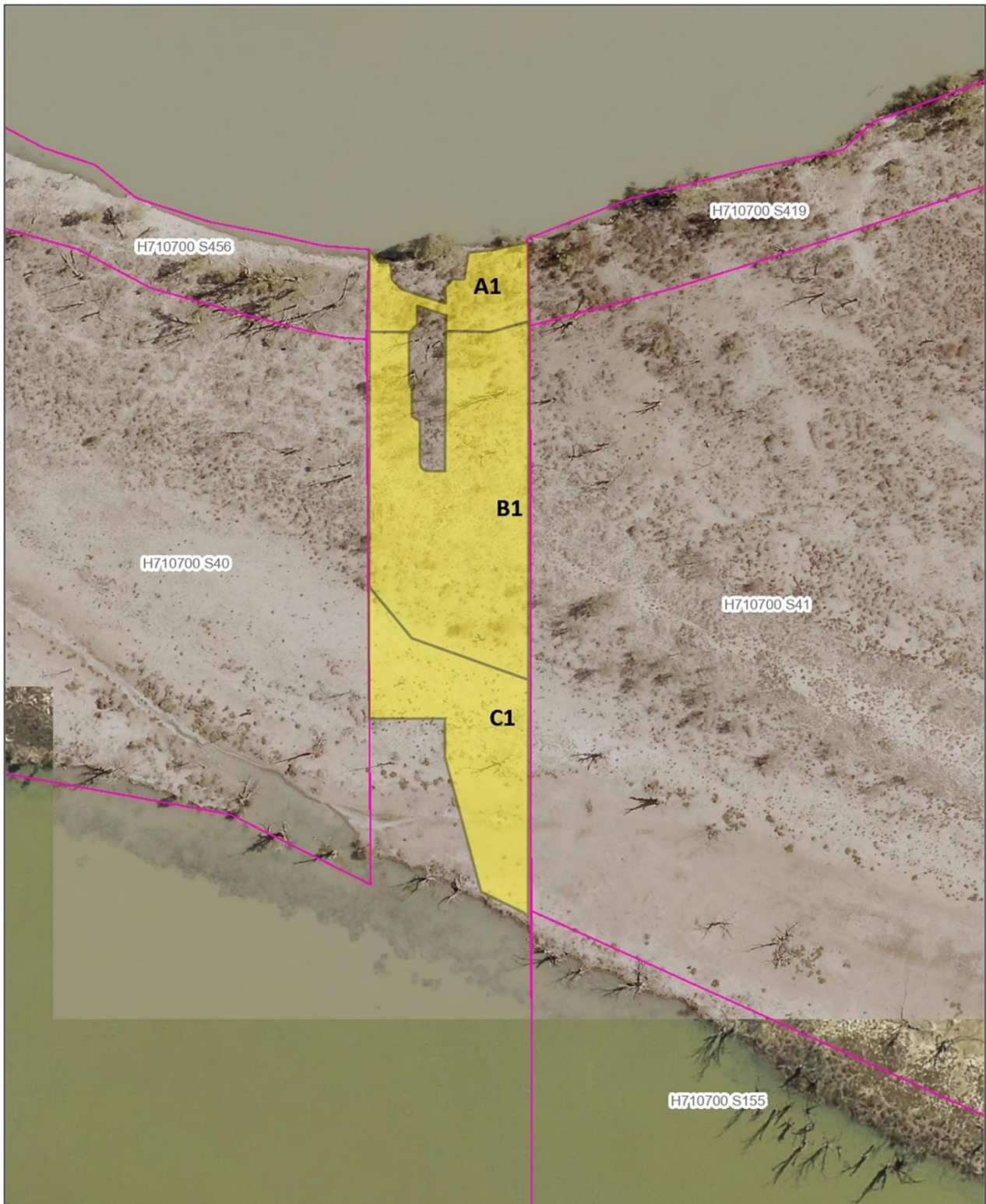
General description	The vegetation is patchy and has long dead standing <i>Eucalyptus camaldulensis</i> ssp <i>camaldulensis</i> present. Some trees will be protected against impacts during construction by using bunding – refer to the plans for specific area. The ground cover is consistent across the site and dominated by chenopods and annual ephemeral species. Die back of <i>Duma florulenta</i> observed across the site, consistent with a seasonally inundated vegetation community. This vegetation is benchmarked against: <u>MDBSA 10.3: Freshwater/ Brackish Tall Herblands/ Emergent Shrubs and Trees</u>				
Threatened species or community	No threatened flora or fauna under the NP&W Act or EPBC Act listed species or community observed during the site assessment.				
Landscape context score	1.17	Vegetation Condition Score	54.39	Conservation significance score	1.10
Unit biodiversity Score	44.80	Area (ha)	0.64	Total biodiversity Score	70.00

Vegetation Association	C1: <i>Tecticornia pergranulata</i> ssp. low samphire shrubland				
	<div style="display: flex; justify-content: space-between;"> DIRECTION N (T) 473093 6207677 ACCURACY 4 m DATUM GDA2020 </div>  <div style="text-align: right; margin-top: 10px;"> 2022-05-14 11:00:08+09:30 </div>				
General description	<p>The ground cover is sparse and consistent across the site and consists of only three plant species. Long dead <i>Duma florulenta</i> observed across the site. Large open areas of muddy flats, inter-dispersed with vegetated clumps and woody debris.</p> <p>This vegetation is benchmarked against: <i>MDBSA 11.1: Low Samphire Shrublands with Tidal Inundation/ Hypersaline Soils</i></p>				
Threatened species or community	No threatened flora or fauna under the NP&W Act or EPBC Act listed species or community observed. Refer to the threatened species assessment.				
Landscape context score	1.17	Vegetation Condition Score	41.59	Conservation significance score	1.08
Unit biodiversity Score	52.55	Area (ha)	0.33	Total biodiversity Score	17.34

Vegetation Association	<i>D1: Enchylaena tomentosa</i> shrubland with emergent <i>Acacia stenophylla</i> , fringing <i>Eucalyptus largiflorens</i>				
					
General description	The ground cover is regenerating low shrubs with areas of <i>Eucalyptus largiflorens</i> and <i>Eucalyptus camaldulensis</i> ssp <i>camaldulensis</i> fringing the proposed clearance site. There is a small patch of <i>Acacia stenophylla</i> regenerating. NOTE: This is an additional area – which is adjoining a site which already has approval to be cleared. Refer to plans and maps for details.				
Threatened species or community	No threatened flora or fauna under the NP&W Act or EPBC Act listed species or community observed. Refer to the threatened species assessment.				
Landscape context score	1.13	Vegetation Condition Score	23.28	Conservation significance score	1.08
Unit biodiversity Score	28.66	Area (ha)	0.05	Total biodiversity Score	1.43

Site maps showing areas of proposed impact

Proposed Clearance Footprint - Talia Farms (A1-C1)



Map data is compiled from a variety of sources and hence its accuracy is variable.

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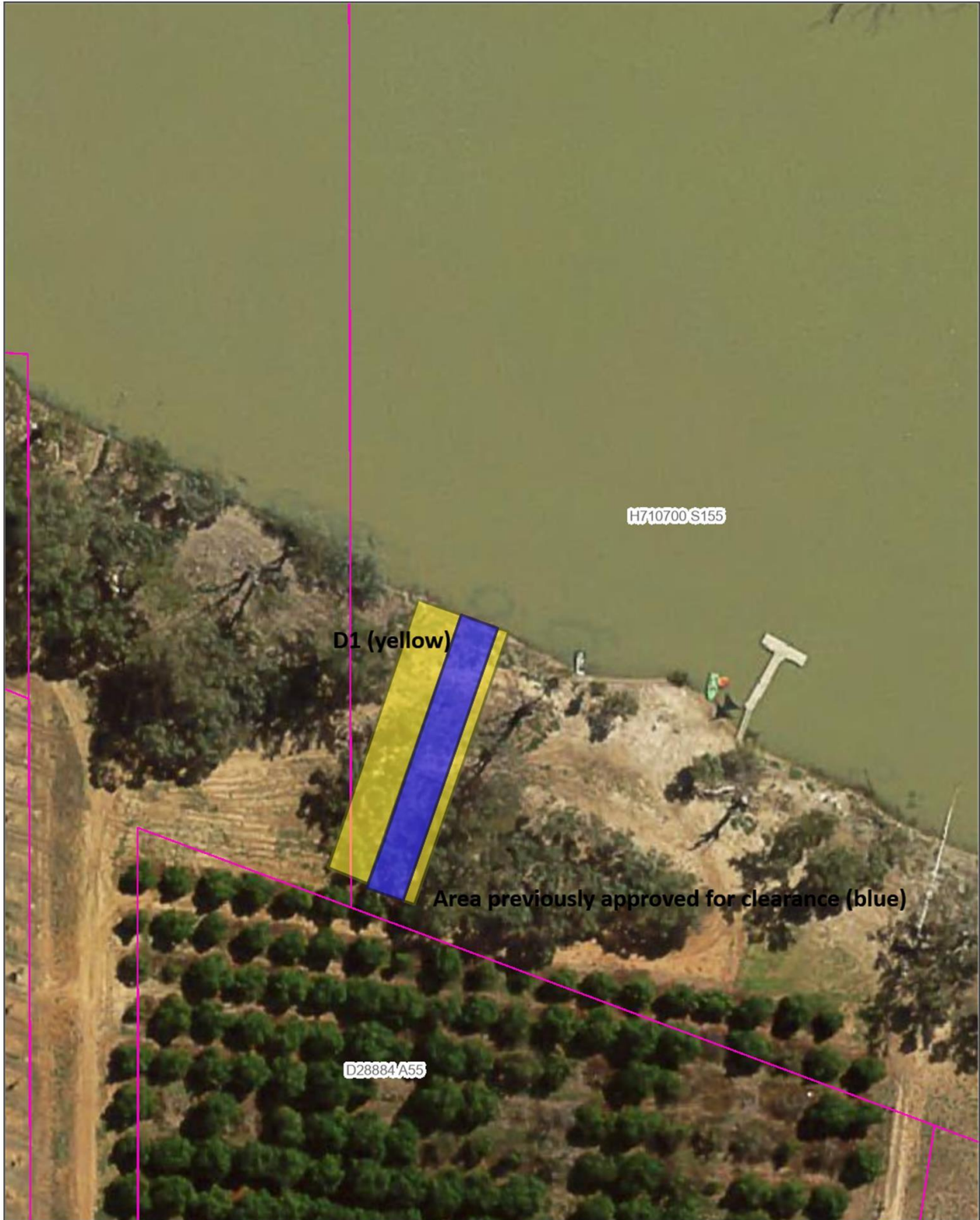
0 93 Kms

Compiled: 16-Jun-2022
Generated at: www.naturemaps.sa.gov.au
Datum: Geocentric Datum of Australia, 2020
Projection: Web Mercator (Auxiliary Sphere)



Government of South Australia
Department for Environment
and Water

Proposed Clearance Footprint - Talia Farms (D1)



Map data is compiled from a variety of sources and hence its accuracy is variable.

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Compiled: 5-Jul-2022
Generated at: www.naturemaps.sa.gov.au
Datum: Geocentric Datum of Australia, 2020
Projection: Web Mercator (Auxiliary Sphere)



4.2 Threatened Species assessment

Species observed on site, or recorded within 5km (50km in the arid zone) of the application area since 1995, or the vegetation is considered to provide suitable habitat

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Polytelis anthopeplus monarchoides</i> (Regent Parrot)	V	VU	4	-	Habitat comprises River Red Gum and sometimes Black Box communities for nesting, and large diverse blocks of mallee woodland for feeding. Nest trees are usually located within proximity to water but variable up to 200 metres from water and within 20 km of mallee foraging habitat. Non-breeding adults and immature birds rely on areas of mallee away from the Murray River floodplain throughout the year.	Not recorded during the visit or within 5kms in the BDBSA or MNES Search. The impact site provides roosting, perching, and nesting habitat for Regent Parrots and the site occurs within their natural range. There is a high likelihood of use of large standing dead River Red Gums in B1.
<i>Litoria raniformis</i> (Southern Bell-Frog)	V	VU	3, 5	14-Sep-1996	Adults are usually found close to or in water or very wet areas in woodlands, shrublands, and open and disturbed areas. Eggs and tadpoles can be found in permanent lakes, swamps, dams, and lagoons with still water.	Possible – offers valuable and varied habitat for this species. Last record is greater than 20 years ago which may reflect lack of survey effort, rather than populations numbers.
<i>Anhinga novaehollandiae</i> (Australasian Darter)	R		3	02-May-2015	Habitat is wetlands and sheltered coastal waters. It prefers smooth, open waters, for feeding, with tree trunks, branches, stumps, or posts fringing the water, for resting and drying its wings. Most often seen inland, around permanent, and temporary water bodies at least half a metre deep. It requires waters with sparse vegetation that allow it to swim and dive easily. It builds its nests in trees standing in water and will move to deeper waters if the waters begin to dry up.	Unlikely – the vegetation impacted is unlikely to provide valuable habitat for this species. Whilst the species may utilize tree trunks and branches fringing and overhanging water bodies, this is unlikely to be impacted in this development.
<i>Melanodryas cucullata</i> (Hooded Robin)	ssp		3	18-Nov-2003	Hooded Robins are found in lightly timbered woodland, mainly dominated by acacia and/or eucalypts.	Unlikely – the vegetation impacted is unlikely to provide valuable habitat for this species.

<i>Northiella haematogaster</i> (Bluebonnet)	ssp		3	02-May-2015	Blue Bonnets live in arid and semi-arid areas, on plains with low shrub layers such as saltbush or bluebush and sometimes scattered trees or open woodland consisting of trees like Myall, Mulga and native pine. They are also found on lightly timbered grasslands and sand-dune areas.	Unlikely – the vegetation impacted does not reflect the habitat requirements for this terrestrial species.
<i>Philemon citreogularis citreogularis</i> (Little Friarbird)	R		3	26-Oct-2017	The Little Friarbird is found near water, mainly in open forests and woodlands dominated by eucalypts. Also found in wetlands, monsoon forests, mangroves, and coastal heathlands. Pairs nest in vegetation almost always near or overhanging water.	Unlikely – the vegetation impacted is unlikely to provide valuable habitat for this species.
<i>Stictonetta naevosa</i> (Freckled Duck)	V		3	26-Oct-2017	The Freckled Duck prefers permanent freshwater swamps and creeks with heavy growth of bullrushes, lignum or tea-tree. During drier times, the Freckled Duck moves from ephemeral (not permanent) breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewerage ponds. They generally rest in dense cover.	Possible – this area does not provide valuable habitat for this species. It is degraded habitat and lacks much of what this species requires to thrive or utilize frequently.
<i>Zapornia tabuensis</i> (Spotless Crane)	R		3	14-Nov-2003	Australian Spotted Cranes inhabit the margins of well vegetated saline, brackish freshwater or wetlands, swamps, estuaries, saltmarsh lagoons, billabongs, and sewage ponds, and where they can usually remain hidden among dense shrubs, grass, or thickets, though they are sometimes seen out in the open on areas of bare mud.	Likely – offers valuable and varied habitat for this species. Last record is almost 20 years ago which may reflect on lack of survey effort, rather than population numbers.
<i>Morelia spilota</i> (Carpet Python)	R		3	27-Mar-2009	Carpet Pythons are often associated with River Red Gum habitat but can also be found in rocky areas and other habitats. They are known to sometimes shelter in roof spaces and pump houses.	Likely – large standing long dead red gums provide valuable habitat for this species and is in an area frequented by this species.

<i>Varanus varius</i> (Lace Monitor)	R		3	19-Nov-2003	Lace Monitors prefers heathy woodland and wet or dry forests and temperate woodland habitats with large Eucalypt trees with hollows. They shelter in burrows, hollow logs, and rock crevices. They utilise open paddocks and grazing land to search for food and shelter and when moving between patches of vegetation.	Possible– due to the seasonal inundation this site is unlikely to provide valuable habitat for this species, but it is possible to be utilized in drier times of the year.
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NP&W Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable						

Criteria for the likelihood of occurrence of species within the Study 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 provides 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 provides 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.

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.

As part of the final approvals process and thorough environmental impact and mitigation measures, all indirect and direct, including cumulative impacts have been taken into account in this application to clear native vegetation.

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 could not be avoided as part of this development. All measures and potential impacts to native vegetation have been considered in planning this project. Initial discussions regarding impact minimisation and avoidance began during the initial site visit by the accredited consultant in 2020.

Due to the previous DA approval, construction commenced with the associated approval to draw water from the Lower Pike Creek. Due to the repeal of the Water Resource Works Approval since the initial DA approval, native vegetation is now proposed to be impacted on the island between the River Murray and the Lower Pike Creek. This will allow for the drawing of irrigation water from the River Murray, as instructed by the Department of Environment and Water as an alternative (to the Lower Pike Creek).

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 applicant has minimized clearance of native vegetation by:

- Firstly, seeking approval (incl initial DA approval for the development) to utilize water from the Lower Pike Creek (to avoid clearance and impacts to adjoining wetland environments), unfortunately this is no longer a feasible option due to the application to vary the Water Resources Works Approval being refused by the Department for Environment and Water.
- Noting the previous applications have sought to avoid and minimize clearance at all levels of the development planning process.
- The irrigation plans needed to change significantly between the first and subsequent (current) development application.
- The applicant was able to utilise most of the existing clearance footprint for the infrastructure associated with the project on the southern (land) side of the Lower Pike Creek, but additional native vegetation impacts are now proposed for the area across Lower Pike Creek.
- Avoiding the clearance of some large, long dead and standing *Eucalyptus camaldulensis* ssp *camaldulensis* as well as *Myoporum parvifolium* (Rare in SA) within the native vegetation clearance footprint.
- The plans are avoiding the clearance of a stand of regenerating *Eucalyptus camalulensis* ssp *camalulensis* on the River Murrays edge of the site.
- Bunding will be used in areas across the site to avoid collateral damage to native vegetation not included in the application, areas and with reference to the rated and significant vegetation detailed above. Refer to plans.

b) 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.

The native vegetation clearance is temporary. The applicant will implement actions to re-establish the vegetation after clearance has occurred. This will be undertaken by scraping off the top 100mm of topsoil, vegetation and sticks and placing it into a windrow to enable reinstating as final top dressing immediately following the construction. No new fill will be brought onto the site. Enabling the soil structure and seed bank to re-establish post construction activities. It is highly anticipated that this activity will be effective in restoring much for the site in the medium term, due to the site location, duration of site disturbance and site hygiene and protection measures which will be applied during the proposed activities. A 0.5 reduction factor for rehabilitation of the impact site has been applied in the assessment spreadsheets to reflect this rehabilitation works.

c) 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 applicant plans to pay into the Native Vegetation Fund to address the SEB offset associated with this proposal. \$12,995.95 (no GST) PLUS an admin fee of \$714.27 (incl GST) = \$13,710.22. This has been calculated with a reduction applied for rehabilitation of the impact site (0.5) (only A1-C1), directly related to the backfilling and use of existing topsoil to re-establish the seed bank of the area.

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.

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*.

Principle of clearance	Considerations
Principle 1a - it comprises a high level of diversity of plant species	<p><u>Relevant information</u> The number of plant species recorded (native and introduced) for each vegetation association:</p> <p>A1: 20 native & 1 introduced. Plant Diversity Score of 20/30 B1: 10 native & 0 introduced. Plant Diversity Score of 24/30 C1: 3 native and 0 introduced. Plant Diversity Score of 20/30 D1: 7 native and 3 introduced. Plant Diversity Score of 9/30</p>
	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> – B1</p> <p><u>At Variance</u> – A1 & C1</p> <p><u>Not at Variance</u> – D1</p>
	<p><u>Moderating factors that may be considered by the NVC</u> – The Native Vegetation Council may choose to consider the ‘Amount of clearance related to area of remnant’ moderating factor when assessing this native vegetation application. This determination is at the assessment and discretion of the Native Vegetation Council.</p> <p>Where only a very small area of vegetation will be impacted relative to the amount of vegetation within the local vicinity (less than 0.25% of the native vegetation within a 5 km radius to be impacted), this may reduce the impact from ‘Seriously at variance’ to ‘At variance’, or ‘At variance’ to ‘Not at variance’.</p> <p>There is approx. 3,377 ha of native vegetation remaining within a 5k radius. (Calculation based on 43% (NatureMaps, June 2022)). 0.25% of this total is 8.44 ha of native vegetation. The area of impact is 1.14 ha, which is less than the 0.25% of the native vegetation within the 5km radius. The Native Vegetation Council may wish to reduce the impact from ‘Seriously at Variance’ to ‘At Variance’ for vegetation association identified as B1 and from ‘At Variance’ to ‘Not at Variance’ for vegetation associations identified as A1 & C1.</p>

**Principle 1b -
significance
as a habitat
for wildlife**

Relevant information

List of threatened species that were recorded or may use the vegetation:

Polytelis anthopeplus monarchoides (Regent Parrot) (B1 predominantly) VU Nationally, V in SA
Litoria raniformis (Southern Bell-Frog) - VU Nationally, V in SA
Anhinga novaehollandiae (Australasian Darter) – Rare in SA
Melanodryas cucullata (Hooded Robin) – Rare in SA
Northiella haematogaster (Bluebonnet) – Rare in SA
Philemon citreogularis citreogularis (Little Friarbird) – Rare in SA
Stictonetta naevosa (Freckled Duck) – Vulnerable in SA
Zapornia tabuensis (Spotless Crane) – Rare in SA
Morelia spilota (Carpet Python) – Rare in SA
Varanus varius (Lace Monitor) – Rare in SA

The vegetation supports a high diversity of animal species, as part of the greater area in this wetland complex. The vegetation assists in providing a corridor for movements across the landscape and habitat refuge, particularly the large, long dead standing River Red Gums which provide habitat for many species on this list. The ephemeral vegetation across the site is transformative and adapts to the changing water heights and quality (salinity). This is observed in the dead and dying *Duma florulenta* and emergence of germination annuals and diverse perennials. Refer to Section 4.2: Threatened Species Assessment for a thorough assessment of individual species requirements.

Patches A1, C1 & D1.

Threatened Fauna Score – 0.08

Unit biodiversity Score – 72.78 (A1), 52.55 (C1) & 28.66 (D1).

Patch B1.

Threatened Fauna Score – 0.1

Unit biodiversity Score – 70.00 (B1)

Total Biodiversity Score: 72.62

Assessment against the principles

Seriously at Variance – A1-D1.

Moderating factors that may be considered by the NVC: The Native Vegetation Council may choose to consider the 'Impact Significance' moderating factor when assessing this native vegetation application.

The Native Vegetation Council may wish to decrease the risk from 'Seriously at variance' to 'At Variance' with impact significance considerations. This determination is at the assessment and discretion of the Native Vegetation Council.

It is unlikely that this clearance impact will result in accelerated declines of the listed threatened species. Including a decrease in species occupancy and population size. Due to the location, it is unlikely to fragment existing local threatened species populations or adversely affect critical habitats of a species. It is noted that the cumulative impacts (from clearance, land degradation and other impacts) contribute to declines across the landscape and this can be seen in incremental and long-term degradation of habitats and species decline. However, much of the declines in species' have been observed from long term historical degradation across the landscape.

	<p>The clearance impacts are likely to displace some threatened fauna species such as the Regent Parrot, Lace Monitor and Carpet Python which may inhabit the long dead standing red gums on site. Other species such as Southern Bell Frog and wetland birds will be more likely to utilise higher quality and more suitable habitat in adjoining areas.</p>
<p>Principle 1c - plants of a rare, vulnerable, or endangered species</p>	<p><u>Relevant information</u> No threatened flora species were recorded for the site or that may be present but undetectable at the time of assessment.</p>
	<p>Threatened Flora Score(s) - 0</p>
	<p><u>Assessment against the principles</u> <u>Not At Variance</u> – A1, B1, C1 & D1</p>
	<p><u>Moderating factors that may be considered by the NVC- N/A</u></p>
<p>Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:</p>	<p><u>Relevant information</u> No threatened communities under the EPBC Act or threatened ecosystems under the DEW Provisional list of threatened ecosystems present.</p>
	<p>Threatened Community Score – 1</p>
	<p><u>Assessment against the principles</u> <u>Not at Variance</u> - A1, B1, C1 & D1</p>
	<p><u>Moderating factors that may be considered by the NVC – N/A</u></p>
<p>Principle 1e - it is significant as a remnant of vegetation in an area which has been extensively cleared.</p>	<p><u>Relevant information</u> Remnancy figures for IBRA Association and IBRA Subregion: IBRA Association (Renmark): 58% IBRA Subregion (Murray Scroll Belt): 56%</p> <p>The health of the remnant is relatively poor and declining, with long dead and standing River Red Gums and dead and dying <i>Duma florulenta</i>. There are areas which are dominated by only a handful of plant species with a low cover abundance. The vegetation has high diversity ratings, against their assigned benchmark vegetation communities.</p> <p>Total Biodiversity Score – 72.62</p>
	<p><u>Assessment against the principles</u> <u>At Variance</u> – A1, B1, C1 & D1.</p>
	<p><u>Moderating factors that may be considered by the NVC –</u> The Native Vegetation Council may choose to consider the 'Impact Significance' moderating factor when assessing this native vegetation application. The Native Vegetation Council may wish to decrease the risk from 'At variance' to 'Not at Variance' with impact significance considerations. This determination is at the assessment and discretion of the Native Vegetation Council.</p>

Principle 1f - it is growing in, or in association with, a wetland environment.	<u>Relevant information</u> The vegetation is associated with a wetland. The impact site is located within the Pike-Mundic Wetland Complex, on an island between the River Murray and the Lower Pike Creek. The site is immediately south of Penky Island, in the River Murray National Park, which is part of the Riverland Biosphere Reserve. The impact site is on land which is subject to inundation and within the 1956 River Murray flood extent.
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> – A1, B1, C1 & D1
	<u>Moderating factors that may be considered by the NVC</u> – The Native Vegetation Council may choose to consider the 'Area of Impact' and 'Impact Significance' moderating factors when assessing this native vegetation application. The wetland area is relatively small, considering the wetlands within the River Murray wetland and tributary system and in a close proximity to the impact site. The Native Vegetation may consider the risk be reduced to 'At variance', from 'Seriously at Variance'. This determination is at the assessment and discretion of the Native Vegetation Council. The vegetation clearance would not impact the functioning of the adjoining wetland and riparian areas. The vegetation impact would not affect the ecological functioning or character of the adjoining wetland system. No hydrological change would occur, in addition to the habitat or lifestyle of any native species dependent upon the wetland being seriously affected. No measurable change in the physio-chemical status of the wetland would occur, i.e., change in the level of salinity, pollutants, or nutrients in the wetland, change in water temperature which may adversely impact on biodiversity.
Principle 1g - it contributes significantly to the amenity of the area in which it is growing or is situated.	<u>Relevant information</u> The proposed clearance footprint is restricted to a road reserve under the care and control of the Renmark Paringa Council. The amenity of the site in the long term will not be impacted due to the remediation works to be completed post construction as well as impact minimization onsite. The location of the site cannot be easily viewed or accessed by the public.
	<u>Moderating factors that may be considered by the NVC</u> – N/A

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)	1.14
	Total biodiversity Score	72.62
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1b
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Area Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1	20	1	0	.08	72.78	.12	8.73	1		.5	4.59	\$1,539.29	\$84.66
B	1	24	1	0	.1	70.00	.64	44.80	1		.5	23.52	\$7,895.06	\$434.23
C	1	20	1	0	.08	52.55	.33	17.66	1		.5	9.10	\$3,056.43	\$168.10
D	1	9	1	0	.08	28.66	.05	1.43	1		0	1.5	\$505.17	\$27.28
Total							1.14	72.62				38.71	\$12,995.95	\$714.27

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	72.62	38.71	\$12,995.95	\$714.27	\$13,710.22

Economies of Scale Factor	0.5
Rainfall (mm)	251

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:

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:

- **\$12,995.95 (no GST) PLUS an admin fee of \$714.27 (incl GST) = \$13,710.22**
- This has been calculated with a reduction applied for rehabilitation of the impact site (0.5) (only A1-C1), directly related to the backfilling and use of existing topsoil to re-establish the seed bank of the area.

7. Appendices

Appendix 1. Bushland Assessment Scoresheets A1-D1 in Excel Format

Appendix 2. Flora Species List

Appendix 3. EPBC Matters of National Significance Report in PDF Format

Appendix 2 Flora Species List

Vegetation Association: A1

Botanical Name	Common Name	Introduced*
<i>Eucalyptus camaldulensis</i> ssp. <i>camaldulensis</i>	River Red Gum	
<i>Acacia stenophylla</i>	River Cooba	
<i>Enchylaena tomentosa</i> var.	Ruby Saltbush	
<i>Setaria jubiflora</i>	Warrego Summer-grass	
<i>Einadia nutans</i> ssp.	Climbing Saltbush	
<i>Nitraria billardierei</i>	Nitre-bush	
<i>Duma florulenta</i>	Lignum	
<i>Atriplex rhagodioides</i>	River Saltbush	
<i>Sclerolaena tricuspis</i>	Three-spine Bindyi	
<i>Atriplex vesicaria</i>	Bladder Saltbush	
<i>Threlkeldia diffusa</i>	Coast Bonefruit	
<i>Dysphania pumilio</i>	Small Crumbweed	
<i>Stemodia florulenta</i>	Bluerod	
<i>Tetragonia implexicoma</i>	Bower Spinach	
<i>Glossostigma elatinoides</i>	Small Mud-mat	
<i>Teucrium racemosum</i>	Grey Germander	
<i>Heliotropium curassavicum</i>	Smooth Heliotrope	*
<i>Phragmites australis</i>	Common Reed	
<i>Cyperus gymnocaulos</i>	Spiny Flat-sedge	
<i>Cotula australis</i>	Common Cotula	
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	

Vegetation Association: B1

Botanical Name	Common Name	Introduced*
<i>Atriplex stipitata</i>	Bitter Saltbush	
<i>Acacia stenophylla</i>	River Cooba	
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	
<i>Sclerolaena muricata</i> var.	Five-spine Bindyi	
<i>Einadia nutans</i> ssp.	Climbing Saltbush	
<i>Nitraria billardierei</i>	Nitre-bush	
<i>Dysphania pumilio</i>	Small Crumbweed	
<i>Glossostigma elatinoides</i>	Small Mud-mat	
<i>Tetragonia implexicoma</i>	Bower Spinach	
<i>Teucrium racemosum</i>	Grey Germander	

Vegetation Association: C1

Botanical Name	Common Name	Introduced*
<i>Tecticornia pergranulata</i> ssp.	Black-seed Samphire	
<i>Sclerolaena muricata</i> var.	Five-spine Bindyi	
<i>Dysphania pumilio</i>	Small Crumbweed	

Vegetation Association: D1

Botanical Name	Common Name	Introduced
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush	
<i>Sclerolaena bicuspis</i>	Two-spine Bindyi	
<i>Psilocalon granulicaule</i>	Match-head Plant	
<i>Sisymbrium erysimoides</i>	Smooth Mustard	
<i>Chenopodium nitrariaceum</i>	Nitre Goosefoot	
<i>Atriplex nummularia</i> ssp.	Old-man Saltbush	
<i>Acacia stenophylla</i>	River Cooba	
<i>Maireana brevifolia</i>	Short-leaf Bluebush	
<i>Sonchus asper</i>	Rough Sow-thistle	*
<i>Phragmites australis</i>	Common Reed	