Locality Plan Bacchus Marsh SUBJECT Melbourne SITE Werribee Dandenong Geelong

Site Overview

A Cultural Heritage Assessment was undertaken at 181 Cummings Road in Maddingley in 2018. An area was identified for rehabilitation works and is illustrated below. Measuring 28.5 hectares in size, the study area is located 47 kilometres west of Melbourne. The site is bordered by Parwan Creek and the currently operating Maddingley Coal Mine to the north, rural properties to the south, Cummings Road and rural properties to the east and Parwan Creek and rural properties to the west. Historically, the northern third of the site operated as an open cut coal mine from 1950 until 1979. Once operations at the mine were ceased, the mine void was filled with water and turned into an artificial dam. A basalt quarry and sand mine were operational on the central part of the land from 1985 until 2006. The southern third of the site has been used for pastoral farming since the 1860's. Significant past alteration of the landform, the hydrology and soil composition in conjunction with vegetation clearance and severe erosion has resulted in a degraded and dilapidated site. The proposed works represent a valuable opportunity to remediate land that has been degraded for some time. The proximity of the site to Parwan Creek reiterates the need for a holistic approach to any works undertaken on the land. Erosion, weed management, pest animals, surface water runoff and ongoing land management are essential considerations to any remediation works.

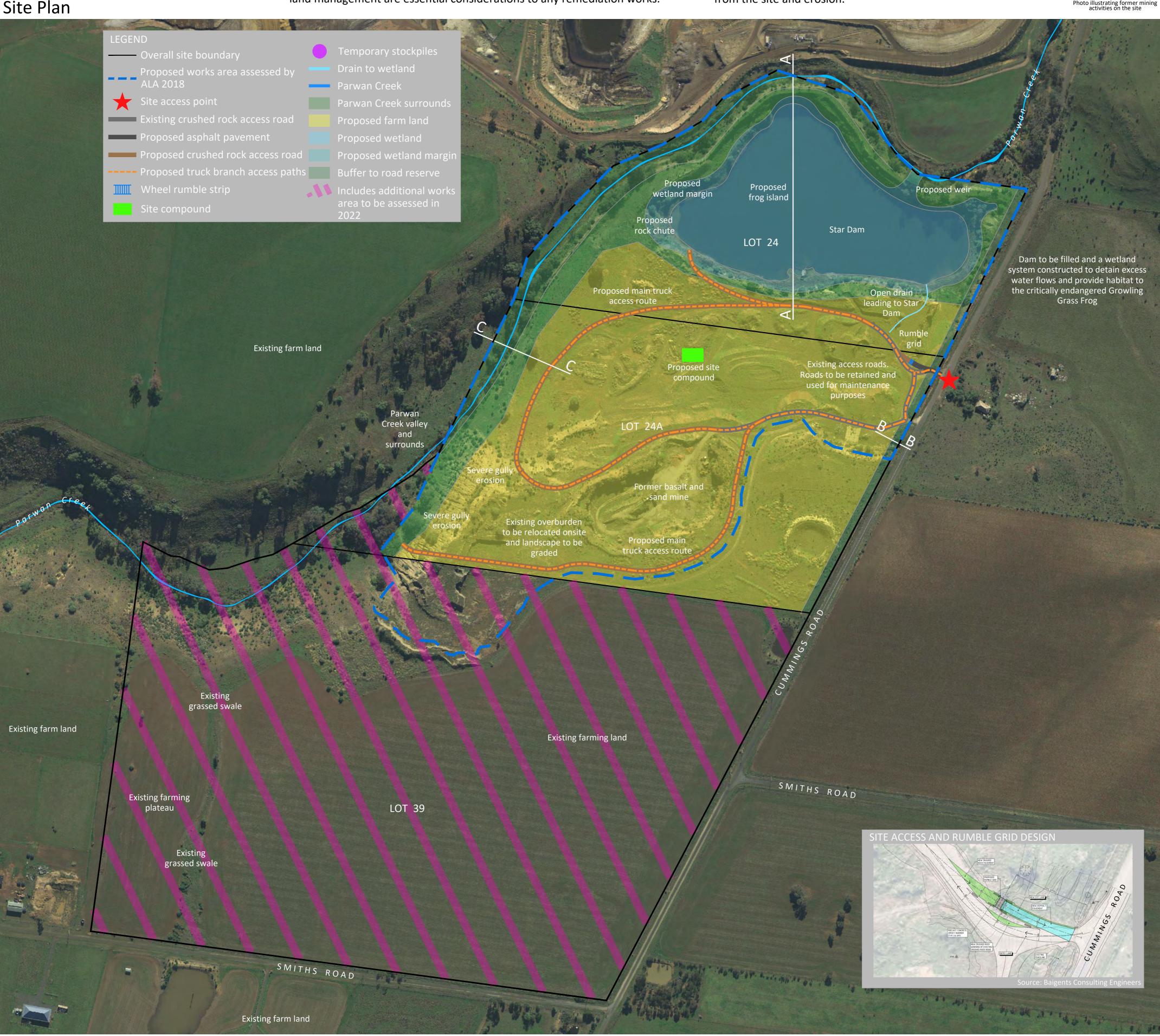
The Proposal

An open, eucalypt woodland to 15m tall occupying poorly drained, fertile soils on flat or gently undulating plains would have occurred across most of the land prior to European settlement and the mining operations. The land adjacent to the Parwan Creek would have also been a eucalypt-dominated woodland to 15m tall but with a scattered shrub layer. The implementation of fill material, re-grading of the ground plane and remediation of the former quarry void, mines and surrounds, and the land adjacent to the Parwan Creek will aid in soil stabilisation, reduce the quantity of run-off and sediment entering the Creek, assist with managing downstream flooding and provide habitat to local fauna including the nationally threatened Growling Grass Frog (Litoria raniformis). These works, in association with ongoing management, will ensure establishment of the revegetation species, reduce the presence of pest plant and animal species, provide habitat to local fauna and reduce water runoff from the site and erosion.









Movement of Fill Audit Process

The Star Dam site will operate under the management and systems of the Maddingley Brown Coal Landfill site, directly to the north of the site, across the Parwan Creek. Fill material destined for the Star Dam site will have to complete a Maddingley Brown Coal Clean Fill Declaration Form and come over the weighbridge at the Maddingley Brown Coal Landfill Site. Non-conforming loads identified by weighbridge personnel are managed under the Maddingley Brown Coal Non-conforming Procedure and will not arrive at Star Dam. Conforming loads will traffic from the Maddingley Brown Coal Landfill site to the Star Dam.

Fill and Remediation Process

Conforming loads of fill material from the Maddingley Brown Coal Landfill site will enter the Star Dam site from the existing access point on Cummings Road. To remove dirt from the tyres and underside of trucks and other vehicles, a heavy duty rumble grid will be located at this existing site access point. This will aid in keeping nearby roads free from dirt and debris and create a safer and cleaner work site. A staging plan is contained on Page 2. As the rehabilitation works progress, the layout of temporary access routes across the site will change. Trucks will enter, traverse and tip the fill material in the appropriate working area before exiting the site over the rumble grid. Trucks will enter and exit the site at the same point, at the existing northern access gate.







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AJD 04.08.2020 Works Plan prepared 13.10.2020 Client review - minor amendments AJD 04.02.2022 © This drawing is protected by Copyright and remains the property of Davidson Design Studio Pty Ltd. These drawings are to be used solely for the purpose nominated in the drawing title and are not to be used for any other application to the contrary or for any purpose unless specifically approved in writing by the landscape architect REFERENCE: DRAWN: AJD 200510

DESCRIPTION

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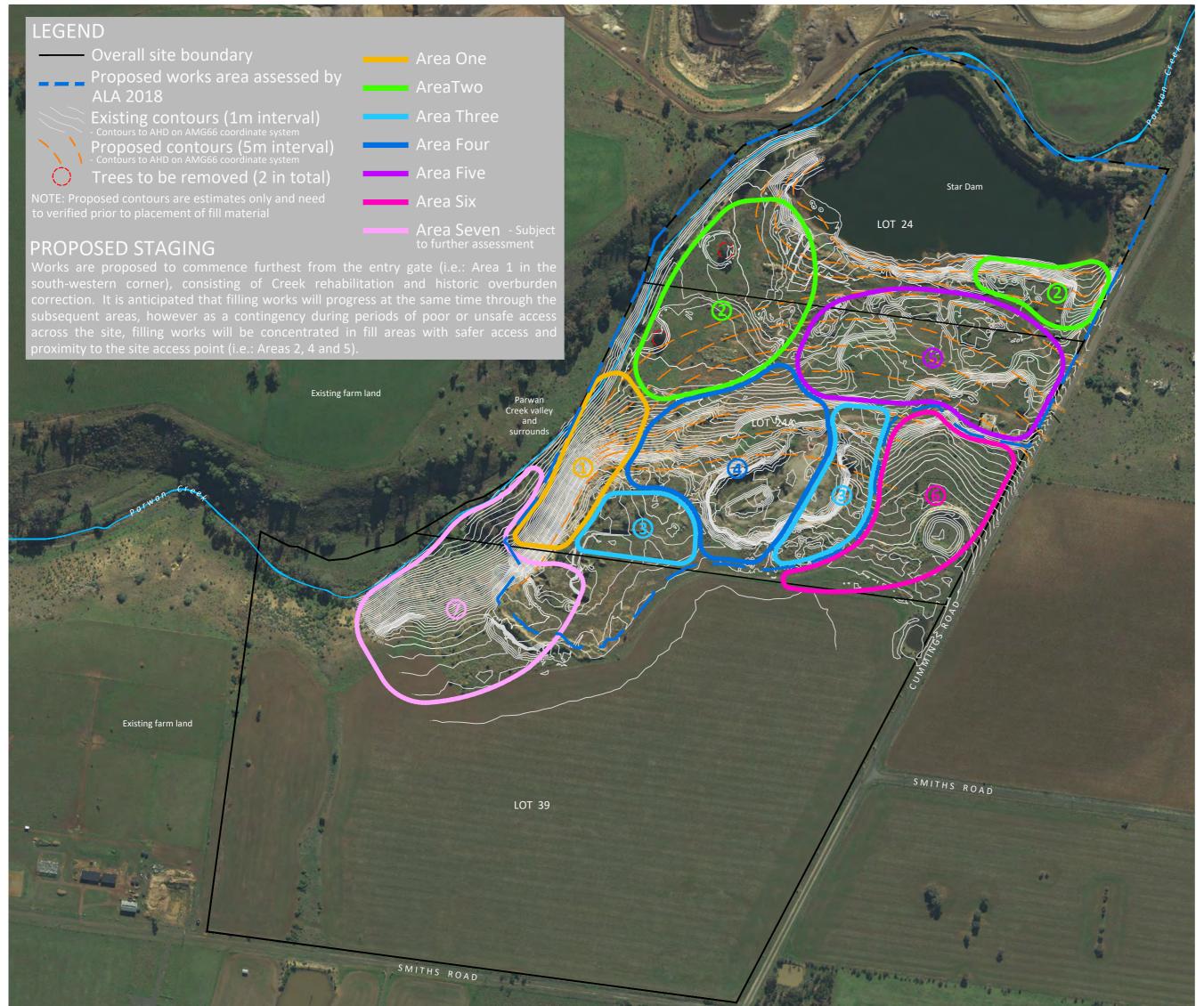
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Shinboner Nominees Pty Ltd 181 Cummings Road, Maddingley **Moorabool Shire Council**

Proposed Works Plan

Existing Contours (1m interval), Proposed Contours (5m interval) and Areas of Works



Parwan River and Remediation of the Adjacent Landscape

The soils adjacent to the Parwan Creek are shallow with a stiff clay subsoil admitting low water infiltration. The topsoil becomes saturated during heavy rains and, combined with historic land use including clearing and heavy grazing, is washed away. The channelling of water across the then exposed soil results in the extensive gully erosion evident on site. The best methods of stabilising soil and protecting against gully erosion includes stabilising the ground plane and reducing runoff. The regrading of the existing soil profile and the introduction of fill material will aid in stabilising the site whilst revegetation with suitable indigenous species is an excellent method of reducing run off and suppressing weeds. In accordance with the Catchment and Land Protection Act (1994), noxious weed species including the present Common Prickly Pear, Serrated Tussock and African Box-thorn, must be controlled. Precision control methods that minimise off-target kills should be used in environmentally sensitive areas such as adjacent to the Parwan Creek and in proximity to Star Dam. Weed treatment and weed management is a priority action for soil stabilisation and habitat generation.

Creekline Revegetation Plant Schedule

VICTORIAN VOLCANIC PLAIN BIOREGION CREEKLINE GRASSY WOODLAND (EVC 68 AREA: 22,000m²		N CLASSES				
BOTANIC NAME	COMMON NAME	SIZE (MATURITY)	RECOMMEND POT SIZE	% COVER	PLANTING DENSITY	QUANTITY
TREES				15% (3,300m²)		
Acacia melanoxylon	Blackwood	12-15 x 5	150mm	40%	n/a	25
Eucalyptus camaldulensis	River Red-gum	30 x 15	150mm	60%	n/a	20
SHRUBS	15% (3,300m²)					
Acacia retinodes	Wirilda	4-6 x 4	Tubestock	100%	0.2 per 1m ²	660
GRASSES				65% (14,300m ²)		
Austrodanthonia caespitosa	Common Wallaby-grass	1 x 1	Tubestock	35%	1 per 1m²	5,005
Austrodanthonia racemosa var. racemosa	Stiped Wallaby-grass	1 x 1	Tubestock	35%	1 per 1m²	5,005
Poa labillardierei	Common Tussock-grass	1 x 1	Tubestock	20%	1 per 1m²	2,860
Phragmites australis	Common Reed	1 x 1	Tubestock	10%	1 per 1m²	1,430
GROUNDCOVERS / CLIMBERS	5% (1,100m²)					
Glycine cladestina	Twining Glycine	climber	Tubestock	33%	2 per 1m²	726
Microlaena stipoides var. stipoides	Weeping Grass	0.1 x prostrate	Seed	33%	4 per 1m²	1,452
Oxalis perennans	Grassland Wood-sorrel	0.2 x prostrate	Tubestock	33%	4 per 1m²	1,452

Creekline Verge Revegetation Plant Schedule

VICTORIAN VOLCANIC PLAIN BIOREGION CREEKLINE GRASSY WOODLAND (EVC 68 AREA: 33,000m ²						
BOTANIC NAME	COMMON NAME	SIZE (MATURITY)	RECOMMEND POT SIZE	% COVER	PLANTING DENSITY	QUANTITY
TREES				15% (4,950m²)		
Acacia melanoxylon	Blackwood	12-15 x 5	150mm	40%	n/a	24
Eucalyptus camaldulensis	River Red-gum	30 x 15	150mm	60%	n/a	35
SHRUBS	15% (4,950m²)					
Acacia retinodes	Wirilda	4-6 x 4	Tubestock	40%	0.2 per 1m ²	396
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	0.5-1.0 x 1.0	Tubestock	10%	1 per 1m²	495
Hymenanthera dentata	Tree Violet	4-6 x 3-4	Tubestock	40%	0.2 per 1m ²	396
Rubus parvifolius	Small-leaf Bramble	1 x 1	Tubestock	10%	1 per 1m²	495
GRASSES				65% (21,450m²)		
Austrodanthonia caespitosa	Common Wallaby-grass	1 x 1	Tubestock	35%	1 per 1m²	7,508
Austrodanthonia racemosa var. racemosa	Stiped Wallaby-grass	1 x 1	Tubestock	35%	1 per 1m²	7,508
Poa labillardierei	Common Tussock-grass	1 x 1	Tubestock	20%	1 per 1m²	4,290
Phragmites australis	Common Reed	1 x 1	Tubestock	10%	1 per 1m²	2,145
GROUNDCOVERS / CLIMBERS				5% (1,650m²)		
Microlaena stipoides var. stipoides	Weeping Grass	0.1 x prostrate	Seed	100%	4 per 1m²	6,600

Creekline Verge Revegetation Planting Palette





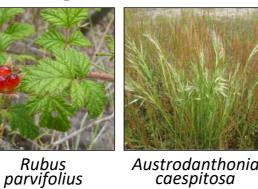
Acacia retinodes



Hymenanthera

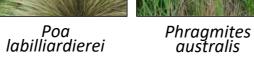
dentata











Soil Additives and Soil Conditioning

The imported soils for the planting zones (top metre of fill material) will have additives to best match the soil drainage, aeration and moisture retention requirements of the proposed species. The species have been taken from ecological vegetation classes that group plants that would have likely occurred together prior to settlement and land clearing. These plants have similar soil requirements. Additives for inclusion are gypsum, greensand, peat, manure, sand and compost.



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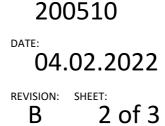
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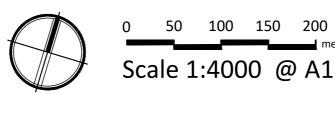
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caespitosa

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Star Dam and Creation of Growling Grass Frog Habitat

Sites for safe management of naturally occurring Possible Acid Sulphate Soil (PASS) materials are required to support significant infrastructure projects in Victoria. A safe way of managing PASS material is to prevent exposure to air that can result in the oxidisation of pyrite within the soils and formation of acid. Placing PASS material below the water table in a void such as the Star Dam is a safe management method for these materials. The nationally threatened Growling Grass Frog (Litoria raniformis) was once common and widespread throughout much of south-eastern Australia. Habitat loss has seen a significant decline in the populations of the species. A Growling Grass Frog Survey Report was undertaken by Water Technology (2020) and found the subject site had the opportunity to provide habitat and refuge for the nationally threatened species. Growling Grass Frogs require still or slow-moving water with emergent vegetation around the edges and mats of floating or submerged plants. The placement of PASS and the rehabilitation of the surrounds will produce a habitat that will be significantly enhanced for Growling Grass Frogs. Key enhancements will include a greater range of water depth to provide microclimates within the dam, more vegetation for food and cover from predators, an island, rock banks for basking and localised water warming. In addition, the banks will be more resistant to wave erosion and support a greater range of aquatic and emergent vegetation.

Growling Grass Frog Habitat Vegetation

Tall emergent vegetation provides protection to adult frogs from predation while submerged and floating attached vegetation protects tadpoles and eggs. Rock piles, grass and shrub cover on the banks protects emerging froglets from predators.

Growling Grass Frog Habitat Vegetation

MELBOURNE WATER CONSTRUCTED WETLAND SYSTEMS - DESIGN GUIDELINES

PERMANENT WATER BODY - BASALTIC SOILS AREA: 45,400m² RECOMMEND | % COVER OF **PLANTING BOTANIC NAME COMMON NAME DENSITY POT SIZE** ZONE SUBMERGED MARSH - 0.4-0.9m BELOW NORMAL TOP WATER LEVEL Potamageton ochreatus **Blunt Pondweed** 2 per 1m² Tubestock 50% 50% 2 per 1m² Tubestock Vallisneria americana Eel-grass **DEEP MARSH - 0.2-0.4m BELOW NORMAL TOP WATER LEVEL** Eleocharis sphacelata Tall Spike-rush 4 per 1m² Tubestock 25% 25% Schoenoplectus tabernaemontani River Club-rush 4 per 1m² Tubestock 25% Triglochin procerum Water Ribbons 4 per 1m² Tubestock 4 per 1m² Small-leaf Bramble 25% Vallisneria americana Tubestock SHALLOW MARSH - 0-0.2m BELOW NORMAL TOP WATER LEVEL 25% Baumea articulata Jointed Twig-rush 4 per 1m² Tubestock 25% Bolboschoenus medianus Marsh Club-rush 4 per 1m² Tubestock Juncus semisolidus Rush 4 per 1m² Tubestock 25% Schoenoplectus pungens Sharp Club-rush 4 per 1m² Tubestock 25%

Star Dam Wetland Margin Plant Schedule

MELBOURNE WATER CONSTRUCTED WETLAND SYSTEMS - DESIGN GUIDELINES **EPHEMERAL MARSH AND WETLAND MARGIN - BASALTIC SOILS** AREA: 13,400m² RECOMMEND | % COVER OF **PLANTING BOTANIC NAME COMMON NAME DENSITY POT SIZE** ZONE EPHEMERAL MARSH - ABOVE NORMAL WATER LEVEL, TEMPORALLY INNUNDATED DURING HIGH **FLOWS** Carex tereticaulis Basket Sedge 6 per 1m² Seed 33% Common Spike-sedge Eleocharis acuta 6 per 1m² Seed 33% Poa labillardierei Seed 33% Common Tussock-gras 6 per 1m² **EPHEMERAL WETLAND - ABOVE NORMAL WATER LEVEL, FREQUENTLY INNUNDATED** 33% Carex appressa Tall Sedge 6 per 1m² Tubestock 33% 6 per 1m² Juncus semisolidus Rush Tubestock Poa labillardierei 33% Common Tussock-gra 6 per 1m² Tubestock **WETLAND MARGIN** 25% Carex appressa Tall Sedge 6 per 1m² Tubestock 25% 6 per 1m² Carex tereticaulis Basket Sedge Tubestock Juncus semisolidus Tubestock 25% Rush 6 per 1m² Microlaena stipoides var. stipoides | Weeping Grass 6 per 1m² 25% Tubestock

Star Dam Planting Palette



acuta



appressa





labillardierei



tereticaulis



Cummings Road Frontage Plant Schedule

Buffer planting is proposed to the Cummings Road frontage of the site. Suitable plants have been selected from the Plains Grassy Woodland (#55) and Plains Grassland (#132) Ecological Vegetation Classes. This planting will provide a visual break between the road verge and the existing/proposed farming land.

BOTANIC NAME	COMMON NAME	SIZE (MATURITY)	RECOMMEND POT SIZE	% COVER	PLANTING DENSITY	QUANTIT
TREES				15% (875m²)		
Acacia melanoxylon	Blackwood	12-15 x 5	150mm	30%	n/a	6
Acacia pycnantha	Golden Wattle	4-8 x 4	150mm	30%	n/a	6
Eucalyptus camaldulensis	River Red-gum	30 x 15	150mm	40%	n/a	8
SHRUBS	25% (1,455m²)					
Acacia paradoxa	Hedge Wattle	2-3 x 3-4	Tubestock	40%	0.3 per 1m ²	194
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	0.5-1.0 x 1.0	Tubestock	10%	1 per 1m²	145
Hymenanthera dentata	Tree Violet	4-6 x 3-4	Tubestock	40%	0.2 per 1m ²	116
Pimelea humilis	Common Rice-flower	0.3 - 0.6 x 0.5	Tubestock	10%	2 per 1m²	290
GRASSES				50% (2,915m²)		
Austrodanthonia caespitosa	Common Wallaby-grass	1 x 1	Tubestock	15%	1 per 1m²	437
Poa labillardierei	Common Tussock-grass	1 x 1	Tubestock	35%	1 per 1m²	1,020
Themeda triandra	Kangaroo Grass	1 x 1	Tubestock	50%	1 per 1m²	1,457
GROUNDCOVERS / CLIMBERS				10% (580m²)		
Dichondra repens	Kidney Weed	prostrate	Viro-tubes	50%	4 per 1m ²	1,160
Microlaena stipoides var. stipoides	Weeping Grass	0.1 x prostrate	Viro-tubes	50%	4 per 1m ²	1,160

Cummings Road Frontage Planting Palette



melanoxylon



pycnantha







triandra





stipoides var.

stipoides

TOWN PLANNING ISSUE NOT TO BE USED AS WORKING DRAWING

repens

Proposed



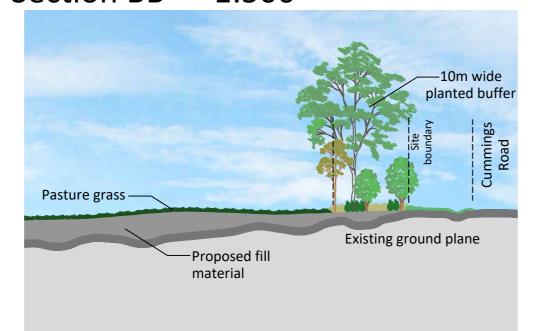
Section AA - Star Dam Remediation Works and Creation of Habitat 1:500



Ongoing Management of the Land

The site was initially purchased for pastoral use with the land grazed and cropped prior to the 1950's. This activity still occurs on the southern third of the site and is not affected by this proposal. The landscape in this location is more stable, generally devoid of the pest plant species evident elsewhere on site and there is reduced gully and tunnel erosion. The proposal for the land south of Star Dam and west of graded land adjacent to Parwan Creek is the reprofiling of degraded land to a gently undulating ground plane. As outlined on the plan, sensitive areas of the landscape (roadside verges, land adjacent to the creek, etc) will be vegetated with suitable indigenous species. The less sensitive areas of the site will be sown with pasture grasses and cropped as part of ongoing management. Access routes will be defined and managed accordingly while the management strategies outlined in the Growling Grass Frog Management Plan prepared by Zone Environmental will be in place. Protection measures will be executed during the remediation works.





TOWN PLANNING ISSUE NOT TO BE USED AS WORKING DRAWING



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	REVISION	DATE	DESCRIPTION	BY			
	-	04.08.2020	Works Plan prepared	AJD			
	Α	13.10.2020	Client review - minor amendments	AJD			
	В	04.02.2022	Amendment to study area boundary	AJD			
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AJD REFERENCE: 200510

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Scale 1:500 @ A1

Section CC 1:500



Shinboner Nominees Pty Ltd

ADDRESS:
181 Cummings Road, Maddingley

MUNICIPALITY:
Moorabool Shire Council

Proposed Works Plan