

Native Vegetation Clearance

Stage 2, VS 2020/025 Part 1G Horrocks Highway Upgrade Undalya to Giles Corner, MM 206 to MM 225.170 Shoulder Sealing, Culvert Extensions and Guard Fence Installation Data Report

Clearance under the *Native Vegetation Regulations 2017*

8 March 2021

Prepared by Jackie Ayre, JS Ayre & Associates



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1. Application information

Application Details

Applicant:	Department for Infrastructure and Transport		
Key contact:	Ms Catherine Gray Senior Environmental Advisor Transport Planning and Program Development Department for Infrastructure and Transport T 8402 1874 • M 0419 851 548 • E catherine.gray@sa.gov.au		
Landowner:	The Crown		
Site Address:	MM 206 to MM 225.170, Horrocks Highway, Undalya to Giles Corner		
Local Government Area:	Clare and Gilbert Valleys Council	Hundred:	Alma (western side); Saddleworth (eastern side to MM 209.5); and Gilbert (eastern side from MM 209.5 to 225.170)
Title ID:	N/A (Road Reserve)	Parcel ID	N/A (Road Reserve)

Summary of proposed clearance

Purpose of clearance	Clearance required to accommodate shoulder sealing, guard rail, curve and pavement widening works and to meet federal funding requirements criteria
Native Vegetation Regulation	Regulation 12, Schedule 1; clause 32, Works on behalf of Commissioner of Highways
Description of the vegetation under application	<u>Size, type and general condition</u> 0.7185ha consisting of 0.6915 ha of (<i>Eucalyptus odorata</i> +/- <i>E. porosa</i> / <i>E. microcarpa</i>) (potential) Grassy Woodland in poor condition; 0.027ha of <i>Phragmites australis</i> / <i>Typha domingensis</i> Reedbed; and 32 scattered <i>Eucalyptus camaldulensis</i> , <i>E. leucoxylon ssp pruinosus</i> , <i>E. odorata</i> , and <i>Pittosporum angustifolium</i> in fair to good condition.
Total proposed clearance - area (ha) and number of trees	Clearance of 0.7185 ha, and impact to 32 scattered trees, 3 at LF1.0; 20 at LF 0.6 and 9 at LF 0.4
Level of clearance	Level 4
Overlay (Planning and Design Code)	Native Vegetation Overlay



Mitigation hierarchy	Guard rail, culvert and property access relocation are proposed to reduce impacts to the minimum possible. A reduction of area impacted from 0.87ha to 0.7185 and from 50 to 32 trees has been achieved in this manner.
SEB Offset proposal	Payment of <u>\$74 778.25</u>

2. Purpose of clearance

2.1 Description

The proposed upgrade aims to achieve a formed width of 10.6m on straight sections, and 11.6m on curves. Federal Government's Stimulus Two Package is a road safety improvement funding initiative, aimed at improving the "star" rating of the Horrocks Highway to three stars. As part of the conditions of achieving this rating, one of the criteria is that all hazards within a minimum 5.0m from the edge line (generally 8.5m from centreline) must be removed or protected.

A number of scattered remnant trees, and an area of remnant vegetation, occur within or close to the construction area and/or funding criteria requirements, and are likely to be impacted. Impacts to some scattered trees have been determined based on the type, and encroachment, of works into the Structural Root Zones and Tree Protection Zones.

2.2 Background

The project site covers both sides of the Horrocks Highway from MM 206.00, 5km south of Auburn, to MM 225.17, at the junction of the Horrocks and Barrier Highways. The impacts to vegetation are a consequence of implementation of construction and safe operation of the highway, and to meet clearance requirements for federal funding criteria.

The surrounding land is used for cropping and grazing. A few remnant vegetation patches exist in the surrounding landscape, mostly around the central part of the project. Scattered trees persist in paddocks adjacent the project site, including on the road reserve.

This project is part of **Stage 2, Part 1G** of the broader Horrocks Highway upgrade project. Further sections to the north are the subject of recent or current clearance applications; 1A Wilmington to Melrose, 1B Gladstone to Crystal

Brook Turnoff (Level 1), 1C Murraytown to Wirrabara, and 1F Crystal Brook Turnoff to Yacka (see part 2.5, Approvals required or obtained). Other sites, including 1D Clare to Undalya, 1E south of Wirrabara to Laura, and 1H, south of Spalding junction to Clare, are proposed in the near future.

2.3 General location map



Figure 1. Project location



Figure 2. Main impact site – patch (see below for Scattered Tree locations)

2.4 Details of the proposal

The upgrade works consist of the following activities:

- Removal or protection of all hazards including non-frangible vegetation, non-trafficable embankments (less than 1:6 batter slope), deep culverts or stobie poles within 5m of the new edge line, in accordance with criteria for Federal Government Stimulus Package funding requirements
- Shoulder sealing, culvert extensions, guard fence installation
- Pavement overlays, 150mm by 10.6m (plus 1m on outside curves).
- Potential cut/fill batter extensions to raise shoulders to match with pavement height
- Potential minor clearance associated with maintenance activities (e.g., around Maintenance Markers). This impact is under the 'maintenance' clause of the SOP and is not accounted for in this report.

Works to seal shoulders and widen curves requires excavation of the shoulder to a depth of 150mm, compaction and sealing. Impact zones are 10.6m on straight sections, and 11.6m on curves, with an additional 1.0m either side for Contractor's Activity Zone (except where significant vegetation precludes this).

Guard rail impacts result from rammed or excavated footings and deflection zone requirements behind safety barriers. Where trees are within 8.5m of the road centreline, in most cases they have been allocated a Loss Factor of 1.0; where outside this area, Loss Factors have been determined based on the nature of works (guard railing/shoulder sealing) and anticipated impact within Structural Root Zones and Tree Protection Zones, or to canopies.

2.5 Approvals required or obtained

- Native Vegetation Act 1991 - this report is in part fulfillment of the requirements of this Act. There are three clearance applications associated with the Horrocks Highway upgrade project; Part 1A – Wilmington to Melrose (Level 4, NVAP approval); Part 1B – Gladstone to Crystal Brook turnoff (Level 1, internal DIT approval) 1C – Murraytown to Wirrabara (Level 3 – approved) and 1F Crystal Brook Turnoff to Yacka (Level 3, in progress).
- Planning, Development and Infrastructure Act 2016 - N/A
- Water Resources Act 1997 – N/A
- Environment Protection and Biodiversity Conservation Act 1999 – N/A
- National Parks and Wildlife Act 1972 – N/A
- Landscapes SA Act 2019 (e.g. water affecting activity permit) – N/A
- Aboriginal Heritage Act 1988 – work will be mainly within the previously disturbed shoulder and is not considered to pose a high risk of encountering Aboriginal sites or objects. The Departmental Policy includes a Stop Works Procedure which is a guideline for the assessment and management of Aboriginal objects, sites and remains, should any be disturbed during construction of infrastructure projects or maintenance activities.

2.6 Native Vegetation Regulation

Regulation 12, Schedule 1; clause 32, Works on behalf of Commissioner of Highways – clearance of vegetation incidental to new work being undertaken; and in accordance with an NVC-approved SOP.

3. Method

3.1 Flora assessment

Following a review of background information and literature, a 14.0 hour field survey of the site was undertaken between 9 and 23 December 2020, by Jackie Ayre of JS Ayre & Associates. The scope of works was outlined in contract documents provided by the client prior to the field survey and informed by research using Naturemaps and Google Earth street view. The project manager was available to clarify the scope during the site assessment. The survey involved an assessment of several trees and remnant patches in relation to the works, and a general assessment of the site including identification of possible habitat for species of conservation significance. Follow up visits occurred in February to determine what mitigation efforts could be applied to the site.

An online search was undertaken for Environment Protection and Biodiversity Conservation (EPBC) Act "Matters of Environmental Significance" and an interrogation of the Atlas of Living Australia (AoLA) and the BDBSA databases was completed as background to the field assessment. Seven threatened plant species were recorded in the database search; five State rated and two EPBC, however, none were observed on site.

3.2 Fauna assessment

A review of databases including the EPBC Act "Matters of Environmental Significance", AoLA and BDBSA was undertaken prior to the site visit to establish fauna species known, or considered likely, to occur at the site. Five threatened species (State rated only) were recorded on databases; none were observed during the field survey.

All observations, calls and evidence of presence were recorded as field notes. Bird species were recorded when heard calling, or when observed within, adjacent to, or flying over the site, aided by the use of binoculars. Evidence of fauna species presence was searched for and recorded when observed. If hollows were found, closer inspection with binoculars was undertaken.

4. Assessment Outcomes

4.1 Vegetation Assessment

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

- *Landform, geography and soils*
The area is described as undulating rises and low hills with soils consisting of coarsely structured heavy clay. Elevation ranges from 225m to 320m above sea level.
- *Landform feature of significance (rivers, creeks, rocky outcrops, etc.)* Multiple 1st, 2nd and 3rd order streams cross the project site, with the largest being the 4th order Macaw Creek at MM 219. Two RSSD sites – #10018 and #10019 occur within the project site but do not relate to vegetation.
- *General overview of the vegetation under application*
Three vegetation associations were observed across the site - *Eucalyptus camaldulensis*/*E. leucoxylon ssp pruinosa* Woodland; *E. odorata* +/- *E. porosa*, *E. microcarpa* (potential) Grassy Woodland; and *Phragmites australis*/*Typha domingensis* Reedbed. The Grassy Woodland occurs between MM 215.6 and 218.2, mostly to the east, and adjoins a larger (c. 30ha) remnant on private property. Although the remnant may constitute the EPBC listed *Peppermint Box Grassy Woodland* Threatened Community (yet to be determined), it is considered doubtful, given its lack of diversity and poor condition, that the roadside remnant would meet the criteria for this community.
River Red Gum was evident around creek lines and low lying areas but also scattered across the site, often associated with SA Blue Gum. Amenity plantings were present to the northern part of the site. Understorey across all associations was almost exclusively exotic herbs, forbs and shrubs (e.g. *Olea europaea*, *Rosa canina*). The occasional *Acacia paradoxa* was noted on road reserve and adjacent, however few of these were impacted except where the remnant bushland patch fringes the road reserve.
- *General description of the vegetation relating to type and condition*
The vegetation occurs as mostly highly degraded woodland consisting of scattered trees over exotic species and infiltrated by Declared and Environmental weeds. Low species diversity was observed across much of the project site. The Reedbed exists within a highly degraded watercourse, with Aleppo Pines and other weeds and non-native species on its banks.
- *Provide a description of the landscape context for the vegetation*
The remnant vegetation subject to this application exists as narrow fringes on road reserve, much of which has connectivity with patches on private property, most under 50ha, via vegetated boundary fencelines, creeks and local roads. Three remnant patches greater than 50ha occur near the site – one with fair connectivity just west of, and one with poor connectivity 3km south east of, Undalya; and one just west of MM 219 with reasonable connectivity via Avondale Road. There are no NPWS reserves, Heritage Agreements or other protected areas in close proximity.

Details of the vegetation association proposed to be impacted

Vegetation Association	Vegetation Association 1; <i>E. odorata</i> +/- <i>E. porosa</i> , <i>E. microcarpa</i> (potential) Grassy Woodland.
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Photo 1. Looking south from approximate MM215.9, GPS 287621/6217858. Understorey is mainly exotic herbaceous and woody species dominated by *Avena barbata/fatua* (Wild Oats). *Olea europaea* and *Rosa canina* were present across much of the association as scattered individuals or groups. A few scattered patches of native grasses/herbs exist closer to the wider remnant patch around MM 215.5 – MM 217.2, but elsewhere the understorey is almost exclusively exotic.

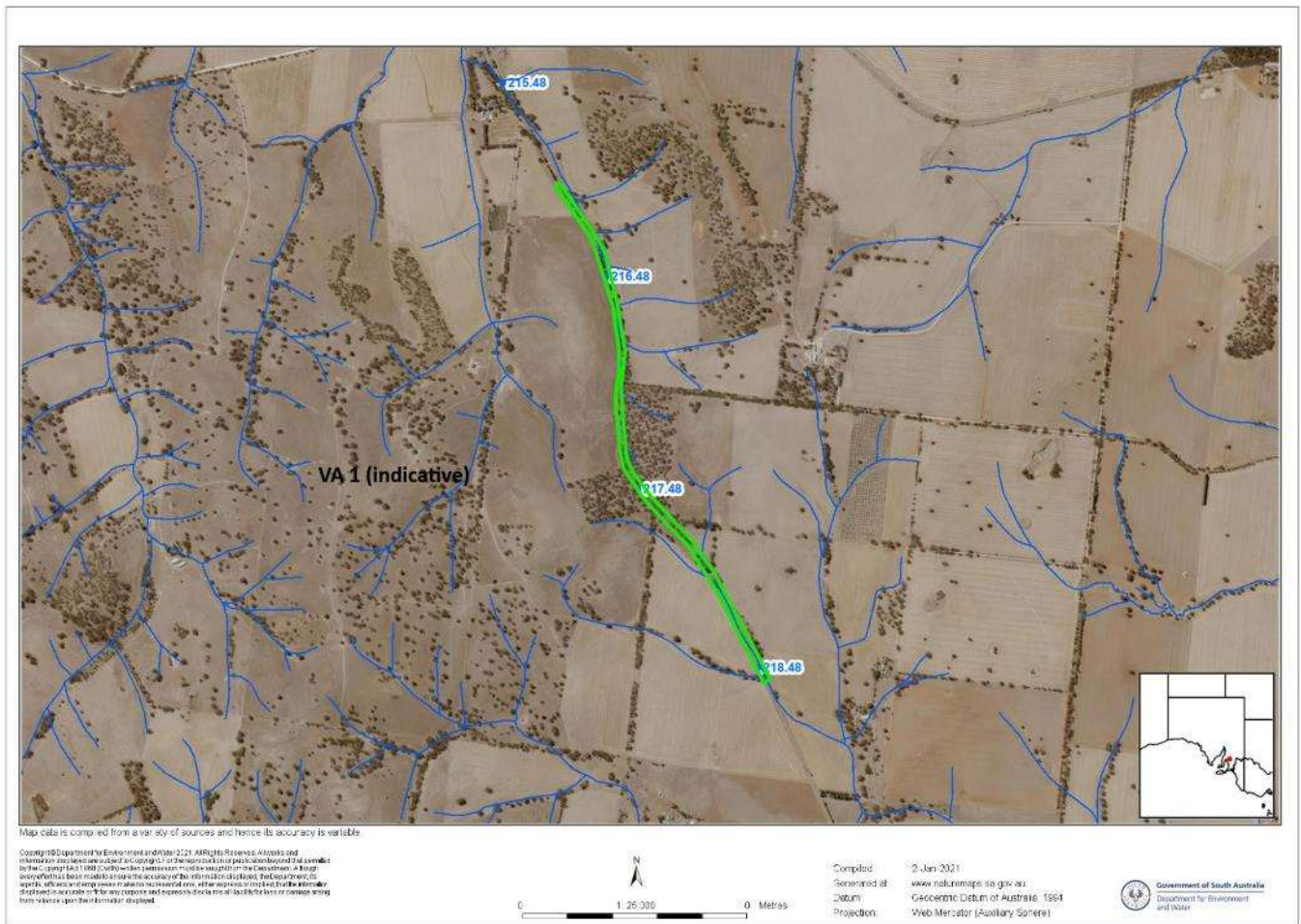


Photo 2. Looking south from approx. MM 216.3, GPS 287730/6217495. In the middle distance the larger remnant is visible. Associated roadside vegetation is subject to impact. Mid storey, where present, is dominated by *Olea europaea* and understorey is dominated by *Avena barbata/fatua* (Wild Oats). Aleppo Pine occurs amongst the remnant, quite densely around MM 217.

<p>General description</p>	<p>The association includes 5 sites of similar composition and condition, aggregated. The sites occur between MM 215.6 – 218.02, on both sides but predominantly on the left. The dominant species is <i>E. odorata</i> with <i>E. porosa</i>, <i>E. microcarpa</i>, <i>E. camaldulensis</i> and <i>E. leucoxyton ssp pruinosa</i> also present on the road verge, which cuts through a larger (c. 30ha) remnant.</p> <p>The remnant was observed to be in fair condition generally (rabbits were observed and grazing by stock and/or kangaroos was evident) however the section occurring on road reserve is very degraded, with significant infiltration of woody and herbaceous weed species. The midstorey consists almost exclusively of <i>Olea europaea</i>.</p> <p>It is doubtful whether the road reserve vegetation would meet the criteria for the EPBC listed <i>Peppermint Box Grassy Woodland</i> Threatened Community, which the larger remnant may be considered part of (see below and Part 4.5).</p> <p>It is estimated that 0.6915ha of this association on road reserve, will be impacted by works and/or federal funding criteria requirements for clearance within 5m of the new road edge line.</p>
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Threatened species or community	The association has potential to be the EPBC listed <i>Peppermint Box Grassy Woodland</i> Threatened Community. No threatened flora or fauna species were observed. Fauna species recorded as occurring in the area include the (State listed) White-winged Chough, Black Falcon, Jacky Winter, Diamond Firetail and Common Brushtail Possum. No EPBC species were listed under the search criteria.				
Landscape context score	1.16	Vegetation Condition Score	37.97	Conservation significance score	1.46
Unit biodiversity Score	64.30	Area (ha)	0.6915	Total biodiversity Score	44.47

Site map showing areas of proposed impact - Vegetation Association 1



Vegetation Association	Vegetation Association 2; <i>Phragmites australis</i> / <i>Typha domingensis</i> Reedbed.
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Photo 3. Looking south west from approx. MM 206.05, GPS 287252/6227266. The reeds occur in the deeper part of the creek which is fringed by exotic species including declared weeds. Drainage infrastructure is to be cleaned out, headwalls replaced, and scour protection provided.

General description	Phragmites and Typha dominate the vegetation in the watercourse at this site. The remnant was observed to be in poor condition with proliferation of the two native species. An estimated that 0.027ha of this association will be impacted by drainage upgrade works.				
Threatened species or community	Not applicable. No threatened flora or fauna species were observed. Threatened fauna species recorded as occurring in the area include the (State listed) White-winged Chough, Black Falcon, Jacky Winter, Diamond Firetail and Common Brushtail Possum. No EPBC species were listed under the search criteria.				
Landscape context score	1.2	Vegetation Condition Score	19.37	Conservation significance score	1.06
Unit biodiversity Score	24.64	Area (ha)	0.027	Total biodiversity Score	0.67

Site map showing areas of proposed impact - Vegetation Association 2



Details of the scattered trees assessed

Loss factor 1.0 (3 trees)

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre-& post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
1 206.32 LHS	Eucalyptus camaldulensis var camaldulensis	2	1.0	1.0	16.0	Nil	60	0	4.92	Large tree in good condition providing limited habitat for threatened species. Main impact = within 7.8m of CL. Potential to guard rail being investigated – worse-case scenario is LF1.0	1
33 224.400 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	1.0	10	Nil	50	0	4.37	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.3m of CL	33

Loss factor 0.6 (20 trees)

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre-& post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
7 209.857 RHS	Eucalyptus leucoxylon ssp pruinosa	1	1.0	0.6	12	Nil	60	5	2.57	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.5m of CL. Impact mitigated by guard rail	7
11 209.952 RHS	Eucalyptus camaldulensis var camaldulensis	1	-	0.6	8	Nil	60	40	0.22	Medium tree in poor condition, providing limited habitat value. Main impact = major prune of overhead branches for clearance above new works.	11
13 210.231 LHS	Eucalyptus leucoxylon ssp pruinosa	1	1.0	0.6	16	Nil	110	20	5.97	Large tree in good condition providing limited habitat for threatened species. Main impact = within 7.0m of CL. Impact mitigated by guard rail.	13

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre-& post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
15 210.460 RHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0.6	14	Nil	70	20	3.59	Large tree in good condition providing potential habitat for threatened species. Main impact = within 7.0m of CL. Impact mitigated by guard rail	15
16 211.377 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	24	2	200	0	10.38	Large tree in very good condition providing potential habitat for threatened species. Main impact = within 6.4m of CL. Impact mitigated by guard rail	16
21 215.050 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	16	Nil	60	5	2.37	Large tree in fair condition providing potential habitat for threatened species. Main impact = within 6.8m of CL. Canopy prune only required.	21
26 215.100 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	24	1	120	25	6.85	Large tree in fair condition providing potential habitat for threatened species. Main impact = within 5.6m of CL. Impact mitigated by guard rail, pending relocation of nearby property access.	26
28 215.200 LHS	Eucalyptus odorata	2	1.0	0.6	14	5	35	10	8.92	Large trees in good condition providing potential habitat for threatened species. Main impact = within 5.7m of CL. Impact mitigated by guard rail.	28
29 215.550 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	22	Nil	100	10	0.46	Medium tree in good condition providing potential habitat for threatened species. Main impact = culvert works. Impact reduced to root pruning.	29
30 218.150 LHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0.6	17	1	90	10	0.43	Large tree in good condition providing potential habitat for threatened species. Main impact = within 5.9m of CL. Impact mitigated by guard rail.	30
31 218.150 LHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0.6	15	Nil	120	10	6.24	Large tree in good condition providing potential habitat for threatened species. Main impact = within 6.8m of CL. Impact mitigated by guard rail	31

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre-& post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
32 223.300 RHS	Pittosporum angustifolium	3	1.0	0.6	7	Nil	20	0	1.66	Small trees in good condition providing limited habitat for threatened species. Main impact = within 7.8m of CL. Major prune required for clearance. Impact mitigated by guard rail.	32
34 224.800 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	16	Nil	75	0	3.52	Very large tree in very good condition providing potential habitat for threatened species. Main impact = within 7.8m of CL. Canopy prune required. Impact mitigated by guard rail.	34
35 224.800 RHS	Eucalyptus camaldulensis var camaldulensis	3	1.0	0.6	20	Nil	60	5	10.57	Large trees in good condition providing potential habitat for threatened species. Main impact = within 5.8m of CL. Impact mitigated by guard rail. Canopy prune required.	35
36 224.820 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.6	16	Nil	40	0	2.03	Medium tree in good condition providing potential habitat for threatened species. Main impact = within 7.5m of CL. Impact mitigated by guard rail	36

Loss factor 0.4 (9 trees)

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre-& post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
4 209.60 RHS	Eucalyptus microcarpa	1	1.0	0.4	7	4	50	80	0.98	Medium tree, poor condition with hollows, providing potential habitat for threatened species. Main impact = within 8.5m. Impact mitigated by guard rail	4
10 209.908 RHS	Eucalyptus leucoylon ssp pruinosa	1	-	0.4	14	Nil	45	5	0.26	Large tree in good condition providing potential habitat for threatened species. Main impact = height clearance pruning required	10
14 210.394 RHS	Eucalyptus leucoylon ssp pruinosa	3	1.0	0.4	14	Nil	50	10	7.71	Large trees in very good condition providing potential habitat for threatened species. Main impact = within 8.0m of CL. Impact mitigated by guard rail	14
18 214.890 RHS	Eucalyptus leucoylon ssp pruinosa	1	1.0	0.4	12	Nil	60	10	2.48	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.2m of CL, canopy pruning required.	18
22 215.050 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.4	18	Nil	80	20	3.50	Large tree in good condition providing potential habitat for threatened species. Main impact = within 6.7m of CL. Impact mitigated by guard rail.	22
23 215.080 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.4	18	Nil	100	20	3.83	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.3m of CL and near culvert. Possible minor root impacts from culvert headwall installation.	23
37 224.860 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0.4	18	Nil	180	5	6.95	Large tree in good condition providing potential habitat for threatened species. Main impact = culvert works. Impact reduced to root pruning.	37

Loss factor 0 (18 trees)

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre- & post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
2 209.37 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0	14.0	Nil	70	50	1.28	Large tree in poor condition providing limited habitat for threatened species. Main impact = culvert works. Impact mitigated.	2
3 209.39 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0	16.0	Nil	100	40	2.46	Large tree in fair condition providing limited habitat for threatened species. Main impact = in culvert, within 7.8m of CL. Impact mitigated by guard rail	3
5 209.90 RHS	Eucalyptus leucoxyton ssp pruinosa	2	1.0	0	14	Nil	85	10	8.54	Large trees in good condition providing potential habitat for threatened species. Main impact = within 8.3m of CL. Impact mitigated by guard rail	5
6 209.90 RHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0	12	Nil	70	20	2.54	Large tree in fair condition providing limited habitat for threatened species. Main impact = within 8.3m of CL. Impact mitigated by guard rail	6
8 209.875 RHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0	10	Nil	70	5	2.48	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.5m of CL. Impact mitigated by guard rail	8
9 209.90 RHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0	14	Nil	60	5	3.63	Large tree in good condition providing potential habitat for threatened species. Main impact = within 8.2m of CL. Impact mitigated by guard rail	9
12 210.115 LHS	Eucalyptus leucoxyton ssp pruinosa	1	1.0	0	12	Nil	40	20	0.20	Medium tree in fair condition providing limited habitat for threatened species. No impact.	12
17 213.780 LHS	Eucalyptus odorata	1	1.0	0	5	Nil	25	40	0.37	Small tree in poor condition providing limited habitat for threatened species. Within 8.2m of CL, in 60kph zone – no impact	17

Tree # & MM	Tree spp.	No. of trees	Loss Factor pre- & post mitigation		Height (m)	Hollows	Diam (cm)	Canopy dieback (%)	Bio diversity Score	General comments, main impact (CL = centre line)	Photo # (see App 1)
19 214.890 RHS	Eucalyptus sp. aff. microcarpa	1	1.0	0	7	Nil	40	10	1.33	Small tree in fair condition providing limited habitat for threatened species. Main impact = within 7.5m of CL. Not impacted.	19
20 215.020 LHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0	22	Nil	200	5	8.57	Large tree in good condition providing potential habitat for threatened species. Main impact = culvert works. Impact mitigated by relocation of culvert outside tree root zone.	20
24 215.080 RHS	Eucalyptus camaldulensis var camaldulensis	1	1.0	0	16	2	90	30	4.10	Large tree in fair condition providing potential habitat for threatened species. Main impact = within 6.5m of CL. No impact.	24
25 215.080 LHS	Eucalyptus camaldulensis var camaldulensis	4	1.0	0	18	1	85	10	17.39	Large trees in good condition providing potential habitat for threatened species. Impact mitigated by guard rail.	25
27 215.200 RHS	Eucalyptus camaldulensis var camaldulensis	2	1.0	0	10	Nil	35	0	2.03	Small trees in good condition providing limited habitat for threatened species. Main impact = within 8.2m of CL. No works proposed here, no impact.	27

Site map showing areas of proposed impact - scattered trees





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

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4.2 Threatened Species assessment

Species observed on site, or recorded within 5km since 1995, or the vegetation may 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>Corcorax melanorhamphos</i> (White-winged Chough)	R	-	4	2011	Open forests and woodlands, wetter areas with leaf litter and mud	Highly likely – recorded in the last 10 years, habitat available.
<i>Falco subniger</i> (Black Falcon)	R	-	4	2002	Woodland, shrubland and grassland, especially eucalypt dominated watercourses	Likely – habitat available
<i>Microeca fascinans</i> (Jacky Winter)	ssp	-	4	2006	Open woodland with open shrub layer and bare ground	Likely – habitat available
<i>Stagonopleura guttata</i> (Diamond Firetail)	V	-	4	2002	Grassy eucalypt woodland, open forest, mallee, grasslands	Likely – habitat available
<i>Trichosurus vulpecula</i> (Common Brushtail Possum)	R	-	4	2020	Eucalyptus and Sheoak woodlands especially with hollows	Highly likely – recorded in the last 10 years, habitat available.

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 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.

4.3 Cumulative impact

Clearance directly required for the development

The direct impacts of the upgrade have been included in this data report. The DIT SOP allows for pruning or removal associated with maintaining clearance envelopes, sight distance, protection or repair of infrastructure, or where vegetation is causing damage to infrastructure or structurally unsound and posing a safety risk. Such activity is allowable and would occur regardless of this upgrade and as such cannot be regarded as cumulative impact.

Subsequent clearance that will be permitted or required

No further clearance is anticipated in relation to the project, apart from that described above and/or required under maintenance.

Indirect clearance that may occur as a result of the development

Indirect clearance has been included in this data report. Sealed shoulders and the installation of guard rail may reduce impact (indirectly) by minimising potential for vehicle/tree impacts and thus clearance of potentially hazardous trees may be avoided, or Loss Factor reduced.

Future stages or associated components of a development

As already noted in 2.2 above, this project is part 1G of Stage 2, of the broader Horrocks Highway upgrade project. Further sections to the north are the subject of recent or current clearance applications (see part 2.5, Approvals required or obtained). Other sites, including 1D Clare to Undalya, and 1E south of Wirrabara to Laura, and 1H south of Spalding junction to Clare, are proposed in the near future.

4.4 Address the Mitigation Hierarchy

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

An area of potential Federally listed Critically Endangered Peppermint Box (*E. odorata*) Grassy Woodland between MM 215.6 and MM 218.2 was deemed to require clearance as it lay within 8.5m of the centreline, contravening the Federal Government's criteria for stimulus package funding. A subsequent review of impacts determined that parts of this association could be protected by guard rail, which resulted in a reduction of impacts from 0.87ha, to 0.6915ha. Not all the vegetation impacted will result in a 1.0LF - most will be 0.6 or 0.4 LF as a result of root impacts from guard rail footings. For this reason, a 0.8 LF has been applied to the bushland scoresheet.

Estimated impact was based on a clearance width of 3m for the length of the association. This is an intentional overestimate, not accounting for discontinuity in the vegetation. It is more likely the actual impact will be less than 2m width along disjunct segments of the road reserve within this association.

Where guard rail is to be installed, impacts vary from zero to 0.6 LF; removals are avoided where guard rail is installed, thus the size of the area impacted is deemed to be 50% of the total guard rail length.

After mitigation, the total area of Peppermint Box (*E. odorata*) Grassy Woodland to be impacted is 0.6915ha.

The initial site assessment identified 50 Scattered Trees within 8.5m of the road centreline, therefore subject to Federal Government clearance criteria. This impact was considered avoidable where trees could be protected by guard rail. As a result of post-assessment site visits, impact was reduced to 32 trees, with three trees with a LF of 1.0, 20 with a LF 0.6, and 9 with a LF of 0.4. Eighteen trees were reduced to LF 0 – no impact. One tree initially identified as impacted was subsequently determined to be structurally unsound and removed for safety reasons; it is not included in this application.

The original assessment also identified an area of 0.02 ha of *Acacia victoriae* shrubland at 6.7- 8.5m from the centreline, at (approximate) MM 206.2, RHS. This vegetation is considered frangible and thus not subject to new federal funding criteria. Potential impacts will be limited to minor pruning within the Maintenance Activity Zone (MAZ), allowable under the SOP.

- 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 works are programmed to occur where justified by road safety audits and crash data. Whilst there is limited scope for amendments or alternatives, in some cases lower impact methods are proposed to minimise clearance.

Relocation of a culvert and (potentially) a property access is proposed to minimise impact to two high value trees, numbered 17 and 23.

- 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.**

This is not an option at the development site; however, the appropriate SEB offset will be provided.

- 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 appropriate SEB offset requirement will be met, in this case via a payment into the Native Vegetation Fund of **\$74 778.25**

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	Relevant information	Assessment against the principles	Moderating factors that may be considered by the NVC
Principle 1b - significance as a habitat for wildlife	<p>State Listed White-winged Chough (R), Black Falcon (R), Jacky Winter (ssp), Diamond Firetail (V), and Common Brushtail Possum (R) were recorded as likely to be present.</p> <p>Patches; VA1 <i>E. odorata</i> Grassy Woodland Threatened Fauna Score – 0.06 Unit biodiversity Score – 64.30 Total Biodiversity Score 44.47 VA2 <i>Phragmites australis</i> Reedbed Threatened Fauna Score – 0.06 Unit biodiversity Score – 24.64 Total Biodiversity Score 0.67</p>	<p><u>Seriously at Variance</u> VA1 <i>E. odorata</i> Grassy Woodland. VA2 <i>P. australis</i> Reedbed All Scattered Trees</p> <p><u>At Variance</u> – N/A</p>	<p><i>Impact significance.</i> Impact to up to 32 trees, 0.6915ha of Grassy Woodland in poor condition, and 0.027ha of degraded Reedbed is unlikely to result in any of the negative consequences described under dot points in the NV guide for clearance applications. Scattered Trees numbered 4, 16, 28 and 30 have hollows, however impact here is restricted to potential root pruning from guard rail installation, and unlikely to impact habitat values of these trees. Much of the impact across</p>

	<p>Scattered Trees; Fauna Habitat Score – all trees scored 1.4. Trees 14 (three trees), 16 (one tree), 28 (two trees), and 35 (three trees) have a biodiversity score above 7. Total Biodiversity Score 155.71</p>		<p>the Woodland patch is also confined to root pruning for guard rail installation.</p> <p><i>Common species.</i> Many of the listed species are locally common, and the linear nature of much of the area impacted is unlikely to represent optimum habitat</p> <p><i>Non-essential habitat.</i> Clearance of small linear segments of non-pristine woodland, and trees scattered and on the fringe of a larger remnant, is considered to have negligible impact on the local populations over the long term.</p>
<p>Principle 1c - plants of a rare, vulnerable or endangered species</p>	<p>Federally listed <i>Acacia spilleriana</i> (E), <i>Lachnagrostis limitanea</i> (E) and State listed <i>Austrostipa gibbosa</i> (R), <i>Choretrum chrysanthum</i> (R), <i>Crassula sieberiana</i> (E), <i>Cryptandra campanulata</i> (R), and <i>Dianella longifolia var grandis</i> (R) were listed as previously recorded in the area. None were observed on site.</p> <p>Threatened Flora Score(s) Patches VA1 <i>E. odorata</i> Grassy Woodland – 0</p> <p>Scattered Trees – all trees scored 0</p>	<p><u>Seriously at Variance</u> N/A</p> <p><u>At Variance</u> – N/A</p>	
<p>Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:</p>	<p>The association is potentially an EPBC listed <i>Peppermint Box Grassy Woodland</i> Threatened Community. The remnant on private property has potential to meet the criteria for this threatened community. Whilst it is not considered likely that the segment of the association which occurs on road reserve would meet the criteria, confirmation of this may only be achievable during spring. As works are programmed to occur sooner than that, the assumption is made that the roadside vegetation may be representative of this threatened community.</p> <p>Threatened Community Score – 1.4</p>	<p><u>Seriously at Variance</u> VA1 <i>E. odorata</i> Grassy Woodland</p>	<p><i>Impact significance:</i> the clearance is considered very unlikely to cause issues listed as dot points under this factor in the Guidelines. Removal of weed species on the roadside in association with this project may actually confer some benefit to the remnant in that it may reduce the source of weed propagules adjacent.</p> <p><i>Area of impact:</i> the area of impact is considered an overestimate as clearance is restricted to individual trees which contravene the requirement for clearance within 5m of the new edge line.</p> <p><i>Condition of the vegetation:</i> the vegetation on the roadside is</p>

			severely degraded and unlikely to meet the criteria for a Grassy Woodland. Impact is restricted to non-frangible vegetation in the overstorey, much of which will be subject to a LF of 0.6 or 0.4. Understorey is almost entirely woody and herbaceous weeds.
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4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	32 (incl 19 individuals and 5 groups)
	Area (ha)	0.7185
	Total biodiversity Score	200.85 (155.71 + 45.14)
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b), 1 (d)
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Area(s) 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
VA1	A	15	1.4	0	0.06	64.30	0.6915	44.47	1	0	0	37.35	26308.41	1446.96
VA2	A	3	1	0	0.06	24.64	0.027	0.67	1	0	0	0.70	456.91	25.13
Total							0.7185	45.14				38.05	\$26 765.32	\$1472.09

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
1	2	1.4	0	4.92	1.0	5.16	\$3,683.71	incl
2	1	1.4	0	1.28	0.0	0.00	\$0.00	"
3	1	1.4	0	2.46	0.0	0.00	\$0.00	"
4	1	1.4	0	0.98	0.4	0.41	\$294.40	"
5	2	1.4	0	8.54	0.0	0.00	\$0.00	"
6	1	1.4	0	2.54	0.0	0.00	\$0.00	"
7	1	1.4	0	2.57	0.6	1.62	\$1,153.01	"
8	1	1.4	0	2.48	0.0	0.00	\$0.00	"
9	1	1.4	0	3.63	0.0	0.00	\$0.00	"
10	1	1.4	0	0.26	0.4	0.11	\$77.33	"
11	1	1.4	0	0.22	0.6	0.14	\$96.70	"
12	1	1.4	0	0.20	0.0	0.00	\$0.00	"
13	1	1.4	0	5.97	0.6	3.76	\$2,684.78	"
14	3	1.4	0	7.71	0.4	3.24	\$2,308.96	"
15	1	1.4	0	3.59	0.6	2.26	\$1,615.26	"
16	1	1.4	0	10.38	0.6	6.54	\$4,664.10	"
17	1	1.4	0	0.37	0.0	0.00	\$0.00	"
18	1	1.4	0	2.48	0.4	1.04	\$742.48	"
19	1	1.4	0	1.33	0.0	0.00	\$0.00	"
20	1	1.4	0	8.57	0.0	0.00	\$0.00	"
21	1	1.4	0	2.37	0.6	1.50	\$1,066.93	"
22	1	1.4	0	3.50	0.4	1.47	\$1,049.94	"
23	1	1.4	0	3.83	0.4	1.61	\$1,146.45	"
24	1	1.4	0	4.10	0.0	0.00	\$0.00	"
25	4	1.4	0	17.39	0.0	0.00	\$0.00	"
26	1	1.4	0	6.85	0.6	4.32	\$3,078.54	"
27	2	1.4	0	2.03	0.0	0.00	\$0.00	"
28	2	1.4	0	8.92	0.6	5.62	\$4,008.36	"
29	1	1.4	0	0.46	0.6	0.29	\$208.40	"
30	1	1.4	0	0.43	0.6	0.27	\$195.24	"
31	1	1.4	0	6.24	0.6	3.93	\$2,804.94	"
32	3	1.4	0	1.66	0.6	1.04	\$744.69	"
33	1	1.4	0	4.37	1.0	4.59	\$3,272.00	"
34	1	1.4	0	3.52	0.6	2.22	\$1,583.71	"
35	3	1.4	0	10.57	0.6	6.66	\$4,751.12	"
36	1	1.4	0	2.03	0.6	1.28	\$911.60	"
37	1	1.4	0	6.95	0.4	2.92	\$2,081.68	"
Total	50			155.71		62.00	\$44224.33	(\$2316.51)

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	200.85	100.05	\$70989.65	\$3788.60	\$74 778.25

Economies of Scale Factor	0.5
Rainfall (mm)	515

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:

- Payment amount required (including admin. fee) **\$74 778.25**
- Economies of Scale – 0.5
- Rainfall – 515mm


7. Appendices

Appendix 1. Fauna and Flora Species List

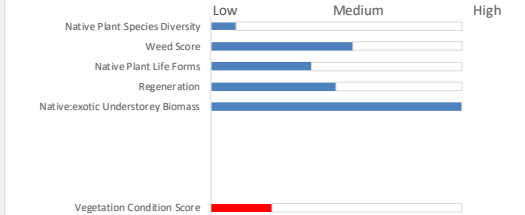
CLASS NAME	SPECIES	COMNAME	ESACT STATUS CODE	NPWACT STATUS CODE	BIOREG STAT CODE
AVES	<i>Corcorax melanorhamphos</i>	White-winged Chough		R	VU
AVES	<i>Falco subniger</i>	Black Falcon		R	RA
AVES	<i>Microeca fascinans</i>	Jacky Winter		ssp	VU
AVES	<i>Stagonopleura guttata</i>	Diamond Firetail		V	EN
MAMMALIA	<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	VU

FAMILYNAME	SPECIES	COMNAME	ESACT STATUS CODE	NPWACT STATUS CODE	BIOREG STAT CODE
GRAMINEAE	<i>Austrostipa gibbosa</i>	Swollen Spear-grass		R	NT
SANTALACEAE	<i>Choretrum chrysanthum</i>	Yellow Sour-bush		R	EN
CRASSULACEAE	<i>Crassula sieberiana</i>	Sieber's Crassula		E	
RHAMNACEAE	<i>Cryptandra campanulata</i>	Long-flower Cryptandra		R	LC
LILIACEAE	<i>Dianella longifolia</i> var. <i>grandis</i>	Pale Flax-lily		R	EN
GRAMINEAE	<i>Lachnagrostis limitanea</i>	Spalding Blown-grass	EN	E	EN
LEGUMINOSAE	<i>Acacia spilleriana</i>	Spillers Wattle	EN		

Appendix 2. Bushland and Scattered Tree Scoresheets

Vegetation Condition Scores		Conservation Significance Score																																													
SITE: A		Is the vegetation association considered a Threatened Ecological community or Ecosystem?																																													
VEGETATION ASSOCIATION DESCRIPTION Eucalyptus odorata +/- E. porosa/E. microcarpa Grassy Woodland		State (Provisional List of Threatened Ecosystems of SA) Rare community (0.1 pt)																																													
SIZE OF SITE (Ha) 0.6915		State (Provisional List of Threatened Ecosystems of SA) Vulnerable community (0.2 pts)																																													
Native Plant species diversity Score the diversity of species present in the site as a proportion to what would be expected in a vegetation of that community in very good condition (approaching a pre-European state)		State (Provisional List of Threatened Ecosystems of SA) Endangered community (0.3 pts)																																													
<table border="1"> <tr><td><5% (3 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>5-10% (6 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>11 - 20% (9 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>21 - 30% (12 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>31 - 40 % (15 Points)</td><td><input checked="" type="checkbox"/></td></tr> <tr><td>41 - 50% (18 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>51 - 60% (21 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>61 - 70% (24 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>71 - 80% (27 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>>80% (30 Points)</td><td><input type="checkbox"/></td></tr> </table>		<5% (3 Points)	<input type="checkbox"/>	5-10% (6 Points)	<input type="checkbox"/>	11 - 20% (9 Points)	<input type="checkbox"/>	21 - 30% (12 Points)	<input type="checkbox"/>	31 - 40 % (15 Points)	<input checked="" type="checkbox"/>	41 - 50% (18 Points)	<input type="checkbox"/>	51 - 60% (21 Points)	<input type="checkbox"/>	61 - 70% (24 Points)	<input type="checkbox"/>	71 - 80% (27 Points)	<input type="checkbox"/>	>80% (30 Points)	<input type="checkbox"/>	Nationally (EPBC Act) Vulnerable community (0.35 pts)																									
<5% (3 Points)	<input type="checkbox"/>																																														
5-10% (6 Points)	<input type="checkbox"/>																																														
11 - 20% (9 Points)	<input type="checkbox"/>																																														
21 - 30% (12 Points)	<input type="checkbox"/>																																														
31 - 40 % (15 Points)	<input checked="" type="checkbox"/>																																														
41 - 50% (18 Points)	<input type="checkbox"/>																																														
51 - 60% (21 Points)	<input type="checkbox"/>																																														
61 - 70% (24 Points)	<input type="checkbox"/>																																														
71 - 80% (27 Points)	<input type="checkbox"/>																																														
>80% (30 Points)	<input type="checkbox"/>																																														
Regeneration		Contains a Nationally (EPBC Act) Endangered or Critically Endangered community (0.4 pts)																																													
No regeneration present (0 Points) <input type="checkbox"/>		<i>Note: all sites will score a minimum Conservation Significance Score of 1</i>																																													
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points) <input type="checkbox"/>		Threatened Community Score 1.4																																													
Regeneration present, consisting of multiple individual juvenile plants but a limited number of species (6 points) <input checked="" type="checkbox"/>		Number of Threatened Flora Species recorded for the site (within the site)																																													
Multiple species regenerating, but low numbers of juvenile plants (9 points) <input type="checkbox"/>		<i>If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.</i>																																													
Multiple species regenerating with multiple individual juveniles present with varying age classes (12 points) <input type="checkbox"/>		State Rare species recorded (1 pt each) 0																																													
Regeneration Score (Max 12) 6		State Vulnerable species recorded (2.5 pt each) 0																																													
Native Plant species diversity score (max score of 30) 15		State Endangered recorded (5 pts each) 0																																													
Weed Scores		Nationally Vulnerable species recorded (10 pts each) 0																																													
Does the site contain plant species declared under the <i>NRM Act 2004</i> (1.5 points) <input checked="" type="checkbox"/>		Nationally Endangered or Critically endangered species recorded (20 pts each) 0																																													
Cover rating for all declared weeds (max of 6) 2		0 = 0 pts; <2 = 0.04 pts; 2 - <5 = 0.08 pts; 5 - <10 = 0.12 pts; 10 - <20 = 0.16pts; 20 or > = 0.2 pts																																													
Does the site contain environmental weeds (introduced plants with the capacity to invade and exclude native species from bushland. This typically includes species with a BCM weed threat rating of 3, 4 or 5). (1 Point) <input checked="" type="checkbox"/>		Threatened Flora Score 0																																													
Cover rating for all environmental weeds (max of 6) 5		Potential habitat for Threatened Fauna Species (number observed or previously recorded)																																													
Weed Score (max score of 15) 7		<i>If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.</i>																																													
Is the community naturally treeless? <input type="checkbox"/>		State Rare species observed or locally recorded (1 pt each) 3																																													
Mature Tree Score (max 8) 5		State Vulnerable species observed or locally recorded (2.5 pt each) 1																																													
Fallen timber/debris (max 5) 4		State Endangered species observed or locally recorded (5 pt each) 0																																													
Hollow-bearing trees Score (max 5) 3		Nationally Vulnerable species observed or locally recorded (10 pts each) 0																																													
Tree Canopy Cover Score (max 5) 4		Nationally Endangered or Critically endangered species observed or locally recorded (20 pts each) 0																																													
Native:exotic Understorey biomass score (max 5) 3		0 = 0 pts; <2 = 0.02 pts; 2 - <5 = 0.04 pts; 5 - <10 = 0.06 pts; 10 - <20 = 0.08pts; 20 or > = 0.1 pts																																													
Vegetation Condition Score calculation		Threatened Fauna Score 0.06																																													
Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees 45.00		CONSERVATION SIGNIFICANCE SCORE 1.46																																													
<i>If the community is naturally treeless this score is multiplied by 1.24</i>		Total Scores for the Site																																													
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score)exp2/2) 12.50		<table border="1"> <tr><th>Score</th><th>Vegetation Condition x Landscape Context x Conservation Significance =</th></tr> <tr><td>LANDSCAPE CONTEXT SCORE</td><td>UNIT BIODIVERSITY SCORE</td></tr> <tr><td>VEGETATION CONDITION SCORE</td><td>37.97</td></tr> <tr><td>CONSERVATION SIGNIFICANCE SCORE</td><td>1.46</td></tr> <tr><td colspan="2">Total Biodiversity Score 64.30</td></tr> <tr><td colspan="2">(Biodiversity Score x hectares) 44.47</td></tr> </table>		Score	Vegetation Condition x Landscape Context x Conservation Significance =	LANDSCAPE CONTEXT SCORE	UNIT BIODIVERSITY SCORE	VEGETATION CONDITION SCORE	37.97	CONSERVATION SIGNIFICANCE SCORE	1.46	Total Biodiversity Score 64.30		(Biodiversity Score x hectares) 44.47																																	
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Total Biodiversity Score 64.30																																															
(Biodiversity Score x hectares) 44.47																																															
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80)) 37.97		Photo Point and Vegetation Survey Location																																													
<table border="1"> <tr><th></th><th>Low</th><th>Medium</th><th>High</th></tr> <tr><td>Native Plant Species Diversity</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Weed Score</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Native Plant Life Forms</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Regeneration</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Native:exotic Understorey Biomass</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Tree Canopy Cover Score</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Mature Tree Score</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Tree Hollows</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Fallen timber</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> <tr><td>Vegetation Condition Score</td><td>██████████</td><td>██████████</td><td>██████████</td></tr> </table>			Low	Medium	High	Native Plant Species Diversity	██████████	██████████	██████████	Weed Score	██████████	██████████	██████████	Native Plant Life Forms	██████████	██████████	██████████	Regeneration	██████████	██████████	██████████	Native:exotic Understorey Biomass	██████████	██████████	██████████	Tree Canopy Cover Score	██████████	██████████	██████████	Mature Tree Score	██████████	██████████	██████████	Tree Hollows	██████████	██████████	██████████	Fallen timber	██████████	██████████	██████████	Vegetation Condition Score	██████████	██████████	██████████	Direction of the Photo	
	Low	Medium	High																																												
Native Plant Species Diversity	██████████	██████████	██████████																																												
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		South																																													
		GPS Reference																																													
		Datum WGS84																																													
		Zone (52, 53 or 54) 54																																													
		Easting (6 digits) 287621																																													
		Northing (7 digits) 6217858																																													
		Description																																													
																																															
		Assessment for Clearance																																													
		Loss Factor 0.8																																													
		Approximate hectares required 4.67																																													
		Economies of Scale factor 0.50																																													
		Loadings for clearance of protected areas																																													
		Mean Annual rainfall for the site (mm) 534																																													
		Reductions for rehabilitation of impact site																																													
		Payment into the fund (GST Exclusive) \$26,308.41																																													
		SEB Points required 37.35																																													
		Administration fee (GST Inclusive) \$1,446.96																																													

Vegetation Condition Scores		Conservation Significance Score																																			
SITE: VA 2		Is the vegetation association considered a Threatened Ecological community or Ecosystem?																																			
VEGETATION ASSOCIATION DESCRIPTION Phragmites australis Reedbed		State (Provisional List of Threatened Ecosystems of SA) Rare community (0.1 pt)																																			
SIZE OF SITE (Ha) 0.027		State (Provisional List of Threatened Ecosystems of SA) Vulnerable community (0.2 pts)																																			
		State (Provisional List of Threatened Ecosystems of SA) Endangered community (0.3 pts)																																			
		Nationally (EPBC Act) Vulnerable community (0.35 pts)																																			
		Contains a Nationally (EPBC Act) Endangered or Critically Endangered community (0.4 pts)																																			
		Threatened Community Score 1																																			
Native Plant species diversity		Number of Threatened Flora Species recorded for the site (within the site)																																			
Score the diversity of species present in the site as a proportion to what would be expected in a vegetation of that community in very good condition (approaching a pre-European state)		<i>If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.</i>																																			
<table border="1"> <tr><td><5% (3 Points)</td><td><input checked="" type="checkbox"/></td></tr> <tr><td>5-10% (6 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>11 - 20% (9 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>21 - 30% (12 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>31 - 40 % (15 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>41 - 50% (18 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>51 - 60% (21 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>61 - 70% (24 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>71 - 80% (27 Points)</td><td><input type="checkbox"/></td></tr> <tr><td>>80% (30 Points)</td><td><input type="checkbox"/></td></tr> </table>		<5% (3 Points)	<input checked="" type="checkbox"/>	5-10% (6 Points)	<input type="checkbox"/>	11 - 20% (9 Points)	<input type="checkbox"/>	21 - 30% (12 Points)	<input type="checkbox"/>	31 - 40 % (15 Points)	<input type="checkbox"/>	41 - 50% (18 Points)	<input type="checkbox"/>	51 - 60% (21 Points)	<input type="checkbox"/>	61 - 70% (24 Points)	<input type="checkbox"/>	71 - 80% (27 Points)	<input type="checkbox"/>	>80% (30 Points)	<input type="checkbox"/>	<table border="1"> <tr><td>State Rare species recorded (1 pt each)</td><td>0</td></tr> <tr><td>State Vulnerable species recorded (2.5 pt each)</td><td>0</td></tr> <tr><td>State Endangered recorded (5 pts each)</td><td>0</td></tr> <tr><td>Nationally Vulnerable species recorded (10 pts each)</td><td>0</td></tr> <tr><td>Nationally Endangered or Critically endangered species recorded (20 pts each)</td><td>0</td></tr> <tr><td>0 = 0 pts; <2 = 0.04 pts; 2 - <5 = 0.08 pts; 5 - <10 = 0.12 pts; 10 - <20 = 0.16pts; 20 or > = 0.2 pts</td><td>0</td></tr> <tr><td>Threatened Flora Score</td><td>0</td></tr> </table>		State Rare species recorded (1 pt each)	0	State Vulnerable species recorded (2.5 pt each)	0	State Endangered recorded (5 pts each)	0	Nationally Vulnerable species recorded (10 pts each)	0	Nationally Endangered or Critically endangered species recorded (20 pts each)	0	0 = 0 pts; <2 = 0.04 pts; 2 - <5 = 0.08 pts; 5 - <10 = 0.12 pts; 10 - <20 = 0.16pts; 20 or > = 0.2 pts	0	Threatened Flora Score	0
<5% (3 Points)	<input checked="" type="checkbox"/>																																				
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0 = 0 pts; <2 = 0.04 pts; 2 - <5 = 0.08 pts; 5 - <10 = 0.12 pts; 10 - <20 = 0.16pts; 20 or > = 0.2 pts	0																																				
Threatened Flora Score	0																																				
Native Plant species diversity score (max score of 30) 3		Potential habitat for Threatened Fauna Species (number observed or previously recorded)																																			
Weed Scores		<i>If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.</i>																																			
Does the site contain plant species declared under the NRM Act 2004 (1.5 points) <input checked="" type="checkbox"/>		State Rare species observed or locally recorded (1 pt each) 3																																			
Cover rating for all declared weeds (max of 6) 3		State Vulnerable species observed or locally recorded (2.5 pt each) 1																																			
Does the site contain environmental weeds (introduced plants with the capacity to invade and exclude native species from bushland. This typically includes species with a BCM weed threat rating of 3, 4 or 5). (1 Point) <input checked="" type="checkbox"/>		State Endangered species observed or locally recorded (5 pt each) 0																																			
Cover rating for all environmental weeds (max of 6) 2		Nationally Vulnerable species observed or locally recorded (10 pts each) 0																																			
Weed Score (max score of 15) 8.5		Nationally Endangered or Critically endangered species observed or locally recorded (20 pts each) 0																																			
Is the community naturally treeless? <input checked="" type="checkbox"/>		0 = 0 pts; <2 = 0.02 pts; 2 - <5 = 0.04 pts; 5 - <10 = 0.06 pts; 10 - <20 = 0.08pts; 20 or > = 0.1 pts																																			
Tree attributes not scored for treeless community		Threatened Fauna Score 5.5																																			
		Conservation Significance Score 1.06																																			
		CONSERVATION SIGNIFICANCE SCORE 1.06																																			
		Total Scores for the Site																																			
		<table border="1"> <tr><th>Score</th><th></th></tr> <tr><td>LANDSCAPE CONTEXT SCORE</td><td>1.20</td></tr> <tr><td>VEGETATION CONDITION SCORE</td><td>19.37</td></tr> <tr><td>CONSERVATION SIGNIFICANCE SCORE</td><td>1.06</td></tr> </table>		Score		LANDSCAPE CONTEXT SCORE	1.20	VEGETATION CONDITION SCORE	19.37	CONSERVATION SIGNIFICANCE SCORE	1.06																										
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VEGETATION CONDITION SCORE	19.37																																				
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		Vegetation Condition x Landscape Context x Conservation Significance = UNIT BIODIVERSITY SCORE 24.64																																			
		Total Biodiversity Score (Biodiversity Score x hectares) 0.67																																			
Native:exotic Understorey biomass score (max 5) 5		Photo Point and Vegetation Survey Location																																			
Native Plant life form		Direction of the Photo																																			
All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points) <input type="checkbox"/>		SW																																			
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points) <input checked="" type="checkbox"/>		GPS Reference																																			
At least one strata of vegetation has been impacted, with reduced structural diversity, elements may be missing (such as plant species that provide specific structural features e.g. sedges or mid layer shrubs) and reduce vegetation cover (12 points) <input type="checkbox"/>		Datum WGS84																																			
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structural diversity, vegetation cover or structural elements (16 points) <input type="checkbox"/>		Zone (52, 53 or 54) 54																																			
All strata of vegetation present, little or no sign of disturbance. A variety of life forms and associated age classes present. Vegetation cover near complete (20 points) <input type="checkbox"/>		Easting (6 digits) 287252																																			
		Northing (7 digits) 6227266																																			
		Description																																			
		Phragmites/Typha reedbed in watercourse on edge of road																																			
		Assessment for Clearance																																			
		Approximate hectares required 0.09																																			
		Loss Factor 1.0																																			
		Economies of Scale factor 0.50																																			
		Loadings for clearance of protected areas 496																																			
		Mean Annual rainfall for the site (mm) 496																																			
		Reductions for rehabilitation of impact site																																			
		Payment into the fund (GST Exclusive) \$456.91																																			
		SEB Points required 0.70																																			
		Administration fee (GST Inclusive) \$25.13																																			



SEB Required for Scattered Trees		(Version - 1 July 2020)	
Landscapes Region	N&Y	Total Biodiversity Score	155.71
Mean Annual Rainfall (mm)	515	Total SEB Points required	62.00
Economies of Scale factor	0.5	Total SEB \$ required	\$44,434.92
IBRA Association	Clare		
Tree Species	Number of Trees	Total SEB Points required	Payment in NV Fund (GST Exclusive)
Eucalyptus camaldulensis	19	38.69	\$26,280.84
Eucalyptus odorata	4	6.03	\$4,097.86
Eucalyptus leucoxylon ssp pruinosa	13	16.24	\$11,030.48
Pittosporum angustifolium	1	1.04	\$709.23
	0	0.00	\$0.00
			Administration fee (GST Inclusive)
			\$0.00
			Total
			\$0.00

Appendix 3. Scattered Tree Photos