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Native Vegetation Clearance

Stage 2, VS 2020/025
Horrocks Highway Upgrade
Isolated High Risk Sites
MM 151.5 to MM 248.3
Undulation and Drainage Issues and High Risk Curve

Data Report

Clearance under the *Native Vegetation Regulations 2017*

2 September 2021

Prepared by Jackie Ayre, JS Ayre & Associates

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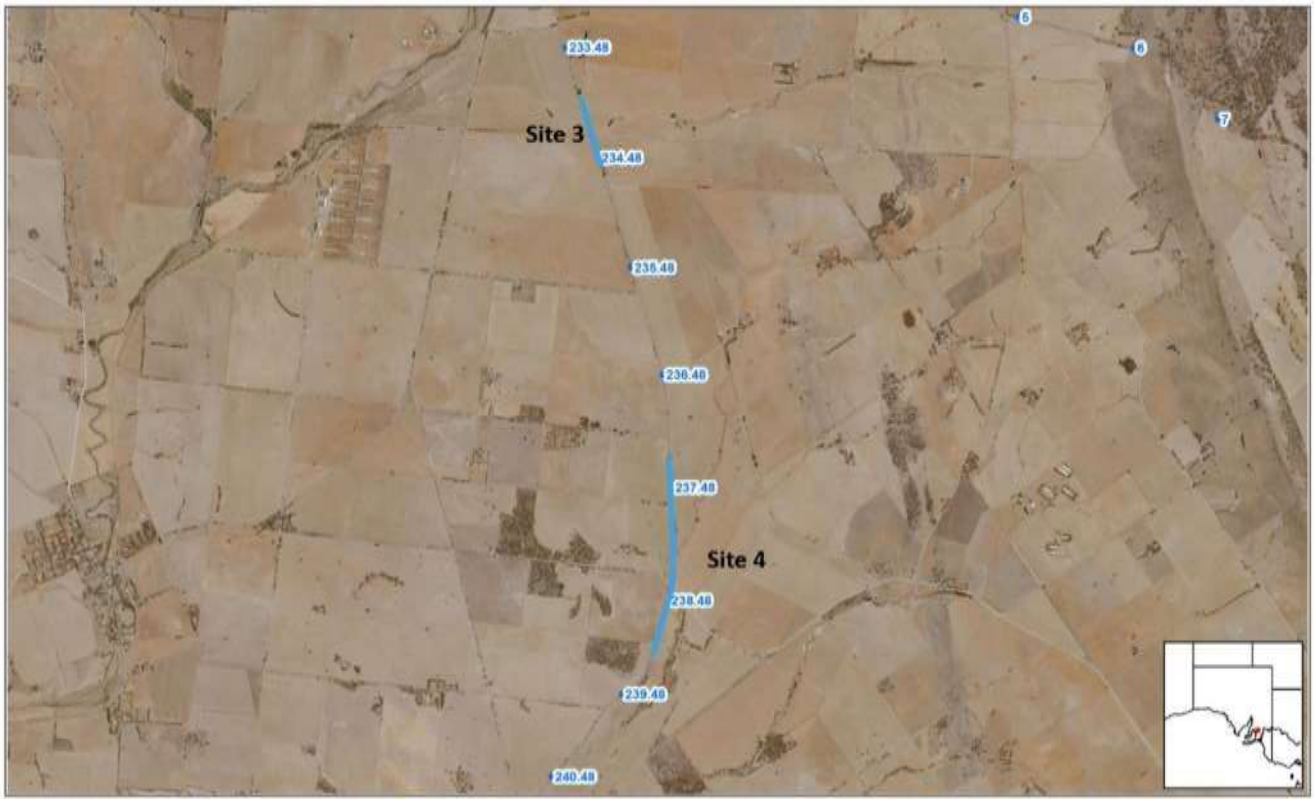
1. Application information

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:	Five sites on the Horrocks Highway, between Magpie Corner (Brinkworth junction) and Morn Hill near Templers. Site 1, MM 151.5 to MM 151.9; Site 2, MM 153.0 – MM 160; Site 3, MM 233.5 – MM 234.5; Site 4, MM 236.7 – MM 239.0; Site 5. MM 248.0 – MM 249.0 **no native vegetation at this site**		
Local Government Area:	Wakefield - Sites 1 & 2 Clare & Gilbert Valleys - Sites 3 and part of Sites 4 & 5 Light – Part Site 4 & 5	Hundreds:	Hart - Sites1&2 Gilbert & Light - Site 3 Light – Site 4 & 5
Title ID:	N/A (Road Reserve)	Parcel ID	N/A (Road Reserve)

Summary of proposed clearance

Purpose of clearance	Clearance required to accommodate repair works to resolve drainage issues which are contributing to severe pavement undulations, and to improve safety
Native Vegetation Regulation	Regulation 12, Schedule 1; clause 32, Works on behalf of Commissioner of Highways
Description of the vegetation under application	Size, type and general condition Site 1. 0.478ha of *Acacia pycnantha Low Open Woodland*, in fair condition, and nil scattered trees Site 2. 0.20 ha of *Allocasuarina verticillata* Woodland in poor condition and 9 scattered trees Site 3. 0.0067ha of *Acacia ligulata* Shrubland in poor condition nil scattered trees Site 4. (incorporating high risk curve) 0.002ha of *Pittosporum angustifolium* Tall Shrubland in poor condition; 0.3ha of very degraded *Acacia notabilis/A. ligulata* Shrubland and 11 scattered trees including one group of 4
Total proposed clearance - area (ha) and number of trees	0.9867ha of remnant vegetation as described above, and clearance of 16 Scattered Trees, including six *Acacia salicina*; one *Bursaria spinosa*; nine *Callitris gracilis* (all Loss Factor 1.0) and major pruning of four *Eucalyptus leucoxylon ssp pruinosa* (Loss factor 0.6)
Level of clearance	Level 3, escalated to Level 4
Overlay (Planning and Design Code)	Native Vegetation Overlay



Mitigation hierarchy	Progressing the design and investigation of mitigation measures such as guardfence installation resulted in a reduction from 29 to 20 scattered trees impacted, with four which were to be removed reduced to pruning; and potential reduction in actual impact to patches from drainage works.
SEB Offset proposal	Payment of **$31 330.38**

2. Purpose of clearance

2.1 Description

The sections of the Horrocks Highway detailed in this report display severely undulating pavements, and one high risk curve, in conflict with road design standards and safety criteria. The proposed upgrade aims to achieve uniform grades across the sites; resolve adjacent drainage issues thought to be contributing to the undulations; and resolve safety issues associated with the high risk curve.

Several scattered remnant trees, and small areas of remnant vegetation patches occur within the road reserve, and many are likely to be impacted.

2.2 Background

The Horrocks Highway High Risk Sites project covers five locations, from MM 151.5 near Brinkworth, to 248.3 at Morn Hill. Only four of the five sites have remnant vegetation which may be impacted, covering from MM 151.5 to MM 238.6, south of Tarlee (see Figures 1-5 below). The impacts across sites covered by the project – nominated as Sites 1, 2, 3 and 4 – have been included in one report but detailed separately. Individual reporting was not considered efficient and would make negligible difference to the outcomes regarding impact level or SEB offset payment.

Each site exhibits small patches, in some cases individual trees or shrubs, of remnant vegetation across the location. These have been aggregated into similar associations within each site, for reporting purposes. For example, Site 1 contains six patches of *Acacia pycnantha* Low Open Woodland in varying condition; these have been aggregated into one association.

The surrounding land use is cropping and grazing. Some parts of the sites have remnant vegetation occurring as scattered trees or patches on private property, with limited occurrence on road reserve.

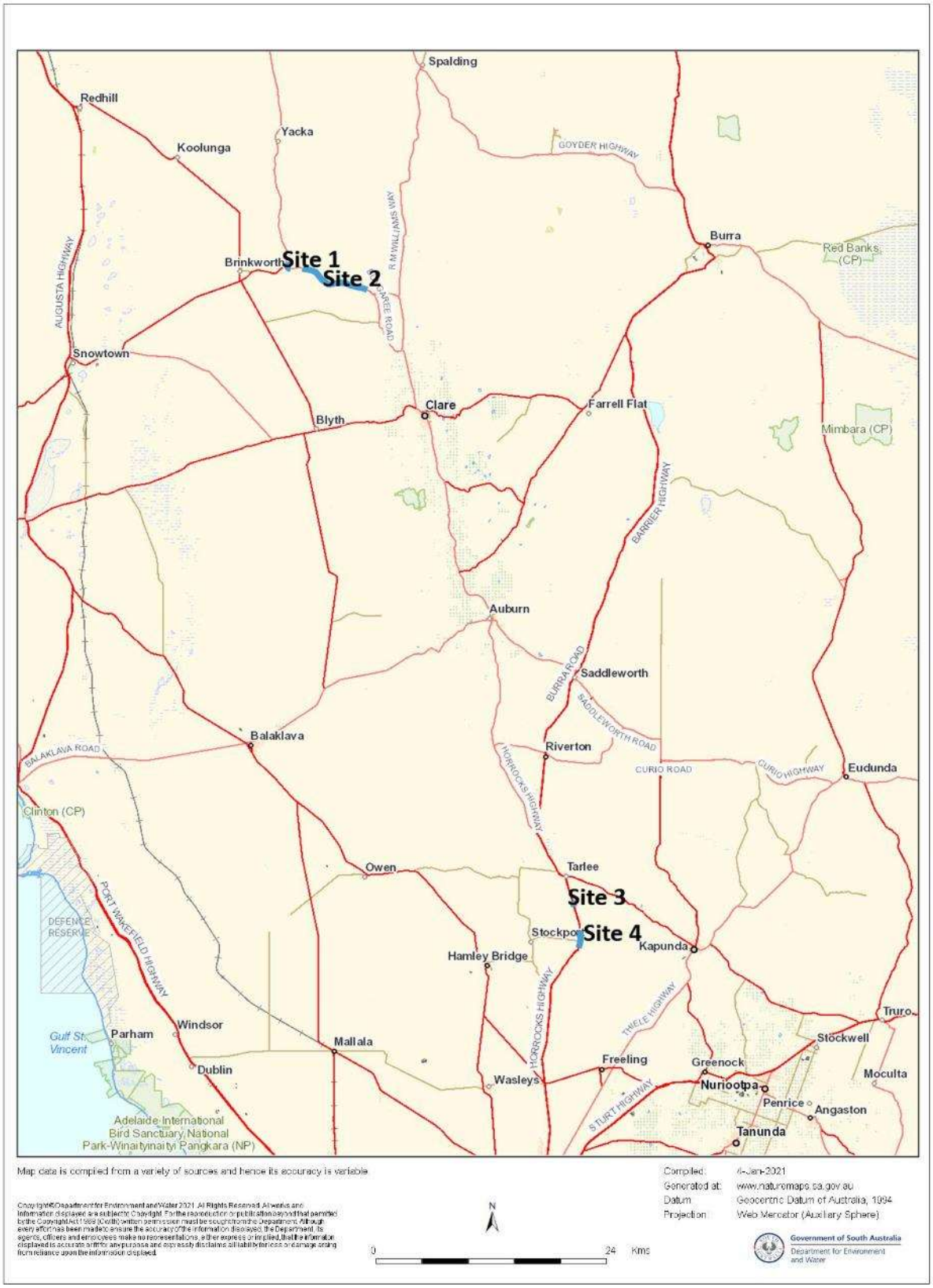


Figure 1. Location of the four sites in context

Figure 2. SITE 1 Magpie Corner Junction Upgrade, MM 151.5 to MM 151.9, sites scattered along the route

Figure 3. SITE 2 Rochester Drainage Improvement, MM 153 to MM 160, remnant patch; sites scattered

Figure 4. SITE 3 Tarlee Undulation Improvements, MM 233.5 to MM 234.5; sites scattered along the route

Figure 5. SITE 4 Undulation Improvements, MM 233.66 to MM 239 (including high risk curve); sites scattered along the route

2.3 Details of the proposal

The works include construction of drainage swales and culvert installations outside the existing unsealed shoulders. Sub surface drainage is also proposed at sites 2 and 4, to be constructed at the edge of the sealed shoulder. This should have minimal impact on remnant vegetation; any potential impact is accounted for in this assessment. See Appendix 3 for concept drawings.

Approvals <u>required</u> *or* <u>obtained</u>

- Native Vegetation Act 1991 - this report is in part fulfillment of the requirements of this Act. There are eight clearance applications associated with the Horrocks Highway upgrade project;

Part 1A – Wilmington to Melrose (Level 4, NVAP approved);
Part 1B – Gladstone to Crystal Brook turnoff (Level 1, internal DIT approval);
Part 1C – Murraytown to Wirrabara (Level 3 – approved);
Part 1D – Clare to Undalya (Level 4, NVAP approved);
Part 1E – Wirrabara to Laura (Level 3, NVC approval in progress);
Part 1F – Gulnare to Yacka (Level 3, approved);
Part 1G – Undalya to Giles Corner (Level 4, NVAP approved);
Part 1H – Spalding Junction to Clare (Level 4, NVAP approved).

- 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.

2.4 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 9.0 hour field survey of the sites was undertaken on 29 and 30 December 2020, by Jackie Ayre of JS Ayre & Associates. Following design review and the addition of works at the high risk curve (MM 238.6 to MM 240), a follow up site visit was undertaken on 3 June 2021 to assess final impacts. 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 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.

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. Twelve threatened plant species (9 at State level, 3 at EPBC level) were recorded in the database search; two each at sites 1 & 2, and 10 each across sites 3 & 4. 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. Four 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. 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**
  Landforms are described as upper slopes of undulating rises and low hills and soils as deep reddish brown cracking clays (Sites 1&2). Sites 3 and 4 are described as slopes of undulating to rolling rises and low hills with soils of hard setting loam over a strongly structured red clay.
- **Landform feature of significance (rivers, creeks, rocky outcrops, etc.)**
  A single stream (order 1) occurs at Sites 1 and 3; a stream order 4 crosses Site 2, and Fannell Creek (stream order 4) crosses Site 4. There are no other significant topographic or landform features
- **General overview of the vegetation under application as a whole**
  The project contains four vegetation associations as below, and twenty scattered trees were assessed as likely to be impacted across sites 2 and 4.

  Site 1. 0.478ha of *Acacia pycnantha* Low Open Woodland, in fair condition
  Site 2. 0.20 ha of *Allocasuarina verticillata* Woodland in poor condition
  Site 3. 0.0067ha of *Acacia ligulata* Shrubland in poor condition
  Site 4. 0.002ha of *Pittosporum angustifolium* Tall Shrubland in poor condition, and 0.3ha of very degraded *Acacia notabilis/A. ligulata* Shrubland
  The total area of vegetation impacted is 0.9867ha.

- **General description of the vegetation relating to type and condition**
  The vegetation associations were relatively homogenous across each individual site, although variation occurred between sites. All associations lacked diversity, and most were in poor condition, and represented by very small fragments of the association.
- **Provide a description of the landscape context for the vegetation**
  All remnant vegetation assessed was situated in very fragmented landscapes with very little vegetation of any size or quality nearby. The exception is Site 2 where a large though quite disjunct patch of remnant vegetation stretches from north to south across the site. There are no heritage agreements or NPWS reserves within 5km of any site.

Details of the vegetation associations proposed to be impacted

Vegetation Association 1	*Acacia pycnantha* Low Open Woodland

Photo 1. Looking southwest across the road reserve from approximate MM 151.0, RHS. GPS 264210/6269511. Impacted by hazard reduction and widening including fill batters.

Photo 2. Looking northwest at the road reserve vegetation from approximate MM 151.3, RHS. GPS 264282/6269338. The ground layer consisted of patches of *Themedia triandra* and *Rytidosperma caespitosum*. in good condition, although patchy. Impacted by hazard reduction and widening including fill batters.

General description	*Acacia pycnantha* dominated the overstorey with few *scattered Bursaria spinosa, Acacia ligulata, Senna artemisioides ssp. filifolia*, and a single *Santalum acuminatum*. The ground layer included *Themeda triandra, Rytidosperma caespitosum* and very few scattered *Dianella revoluta, Lomandra effusa* and *Enchylaena tomentosa* amongst dense Wild Oats and other grassy weeds. Also present were *Pinus halepensis, Schinus molle, Olea europaea, Rosa canina* and *Marrubium vulgare*.				
Threatened species or community	The association is not considered threatened under the NP&W Act or EPBC Act				
Landscape context score	1.13	Vegetation Condition Score	14.00	Conservation significance score	1.04
Unit biodiversity Score	16.45	Area (ha)	0.478	Total biodiversity Score	7.86

Vegetation Association 2	*Allocasuarina verticillata* Woodland

Photo 3. Looking northeast from approximate MM 159.5 GPS 271712/6267237, LHS. Impact is due to hazard reduction (proximity to road) and/or drainage upgrade.

Photo 4. Looking southeast from approximate MM 159.5 GPS 271672/6267235, RHS. Impact is due to hazard reduction (proximity to road) and/or drainage upgrade.

General description	*Allocasuarina verticillata* dominated the overstorey with few *Acacia pycnantha*, five scattered *Xanthorrhoea quadrangulata* and a few *Senna artemisioides ssp.,* one or two *Dianella revoluta* and *Lomandra effusa* across the individual sites making up this association. Wild Oats and other grassy weeds dominated the ground layer. Also present was *Rosa canina*.				
Threatened species or community	The association is not considered threatened under the NP&W Act or EPBC Act				
Landscape context score	1.16	Vegetation Condition Score	11.96	Conservation significance score	1.04
Unit biodiversity Score	14.43	Area (ha)	0.2	Total biodiversity Score	3.75

Vegetation Association 3	*Acacia ligulata* Shrubland

Photo 5. Looking northeast from approximate MM 235.0, LHS. GPS 295716/5202324. The ground layer consisted of Wild Oats and other grassy weeds.

General description	*Acacia ligulata* was represented by very few scattered individual shrubs isolated from other vegetation. Dense Wild Oats and other grassy weeds represented the ground layer.				
Threatened species or community	The association is not considered threatened under the NP&W Act or EPBC Act				
Landscape context score	1.12	Vegetation Condition Score	8.77	Conservation significance score	1.00
Unit biodiversity Score	9.82	Area (ha)	0.0067	Total biodiversity Score	0.07

Vegetation Association 4	*Pittosporum angustifolium* Tall Shrubland

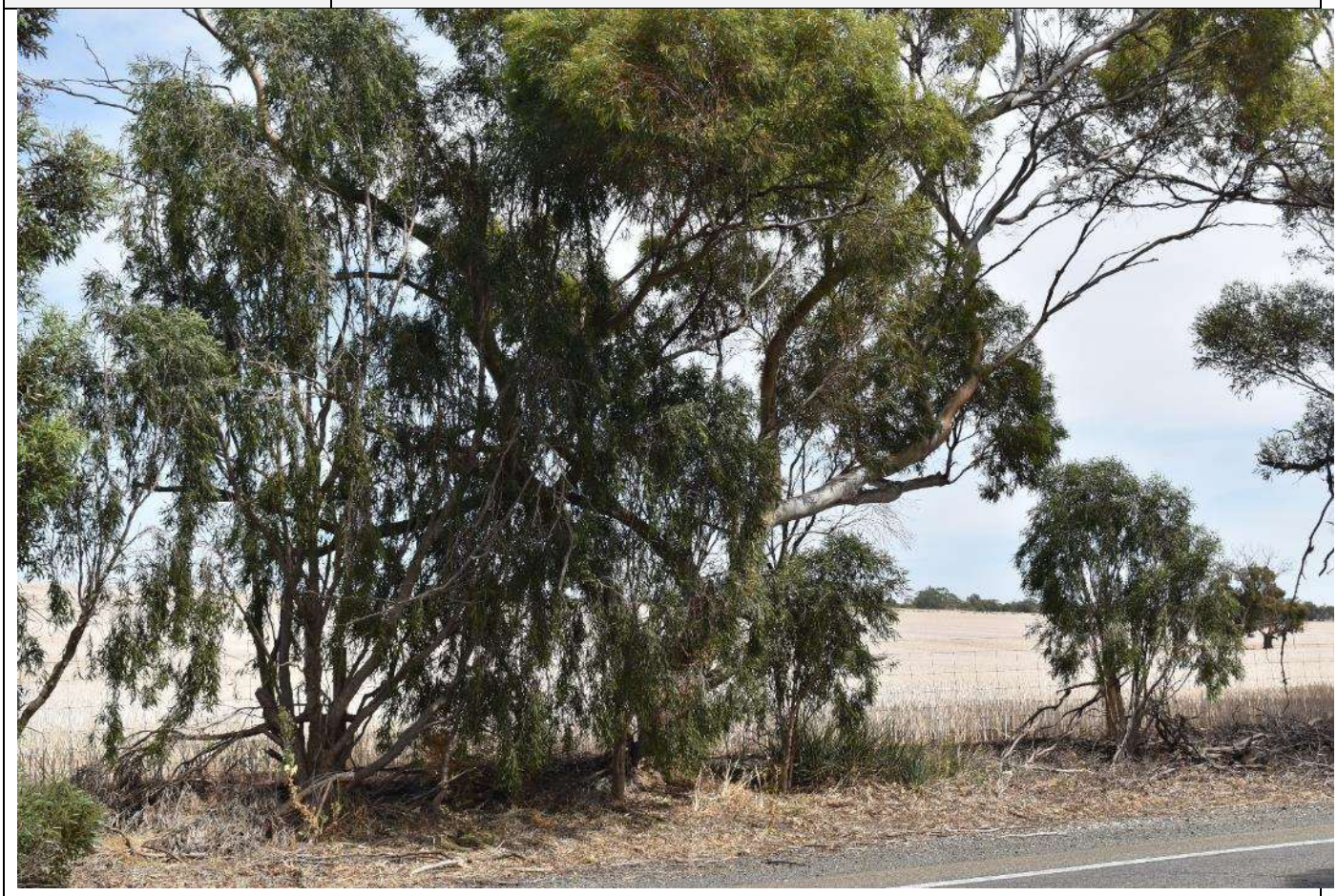


Photo 6. Looking northwest from approximate MM 237.5. GPS 296426/6198819, RHS. The understorey consisted of a very small patch of *Dianella revoluta*, and here, and at sites elsewhere within this association occurred *Acacia ligulata* and *Senna artemisioides*. Wild Oats and other grassy weeds dominated the ground layer.

General description	*Pittosporum angustifolium* was represented by these five or six young plants amongst planted amenity Eucalypts. *Acacia ligulata* and *Senna* presented as scattered individual shrubs isolated from other vegetation. Dense Wild Oats and other grassy weeds represented the ground layer. Overall impact is likely to be less than LF 1.0 but given some of the Acacias and Sennas will be removed, the higher LF is considered appropriate. Removal will only occur where essential for works or safety reasons.				
Threatened species or community	The association is not considered threatened under the NP&W Act or EPBC Act				
Landscape context score	1.13	Vegetation Condition Score	6.39	Conservation significance score	1.00
Unit biodiversity Score	7.22	Area (ha)	0.002	Total biodiversity Score	0.01

Vegetation Association 5	*Acacia notabilis/A. ligulata* Shrubland

Photo 7. Looking northeast from approximate MM 238.88, GPS 296130/6197667. The ground layer consisted of Wild Oats and other grassy weeds. RHS

General description	*Acacia notabilis* was present as mainly juveniles in small patches closer to the road verge. *A. ligulata* and *Pittosporum angustifolium* were represented by very few scattered individuals. A single *Callitris gracilis* and one *Eucalyptus* species (juvenile) was noted. Three *Acacia paradoxa* occur on the eastern side of the road and are included in this block. Dense Wild Oats and other grassy weeds represented the ground layer.				
Threatened species or community	The association is not considered threatened under the NP&W Act or EPBC Act				
Landscape context score	1.13	Vegetation Condition Score	7.78	Conservation significance score	1.00
Unit biodiversity Score	8.80	Area (ha)	0.3	Total biodiversity Score	2.64

Details of the scattered trees proposed to be impacted

Tree ID – Cluster 2	
Tree spp. *Acacia salicina*	**Photo 8. SITE 2** taken facing northwest from near MM 158.8 GPS 271028/6267402, LHS
Number of trees – 5	
Height (m) – 6	
Hollows – 0	
Diameter (cm) –15	
Canopy dieback (%) – 0	
Total Biodiversity Score –10.35	
A group of immature and semi-mature Broughton Willow occurring on the edge of shoulder. Limited habitat value for threatened species. Impacted by hazard reduction requirements (proximity to road).	

Tree ID – Tree 3 Tree spp. – *Eucalyptus leucoxylon ssp. pruinosa* Number of trees – 1 Height (m) –12 Hollows – 0 Diameter (cm) – 60 Canopy dieback (%) –10 Total Biodiversity Score –2.52	 **Photo 9. SITE 2** taken facing north from near MM 159.1 GPS 271274/6267320, LHS
A single Blue Gum at approximately 8m from centreline (CL). No habitat hollows; roosting, perching and foraging value for threatened species. Impacted by hazard protection (guard fence installation). Loss factor 0.6, pruning of canopy for clearance, and potential root pruning from guardrail post installation.	

Tree ID – Tree 4	
Tree spp. – *Eucalyptus leucoxylon ssp. pruinosa*	**Photo 10. SITE 2** taken facing southeast from near MM 159.1 GPS 271376/6267295, RHS
Number of trees – 1	
Height (m) –16	
Hollows – 6 small, 2 medium	
Diameter (cm) –140	
Canopy dieback (%) –5	
Total Biodiversity Score –9.19	
A single Blue Gum at approximately 8m from centreline (CL). Several habitat hollows, providing potential nesting, roosting, perching and foraging habitat for threatened species. Impacted by hazard protection (guard fence installation) and drainage upgrade (subsoil drain). Loss factor 0.6, potential root pruning from guardrail post and drain installation.	

Tree ID – Tree 5	
Tree spp. *Eucalyptus leucoxylon ssp. pruinosa*	**Photo 11. SITE 2** taken facing southeast from near MM 159.1 GPS 271400/6267295, RHS
Number of trees – 1	
Height (m) –18	
Hollows – 3 small 2 medium	
Diameter (cm) – 130	
Canopy dieback (%) – 15	
Total Biodiversity Score – 9.27	
A single Blue Gum at approximately 7m from centreline (CL). Several habitat hollows, including 2 large ones, providing potential nesting, roosting, perching and foraging habitat for threatened species. Impacted by hazard protection (guard fence installation) and drainage upgrade (subsoil drain). Loss factor 0.6, potential root pruning from guardrail post and drain installation.	

Tree ID – Tree 6	
Tree spp. *Eucalyptus leucoxylon ssp. pruinosa*	
Number of trees – 1	
Height (m) –16	
Hollows – 0	
Diameter (cm) – 80	
Canopy dieback (%) –10	
Total Biodiversity Score – 4.76	**Photo 12. SITE 2** taken facing southeast from near MM 159.1 GPS 271427/6267288, RHS
A single Blue Gum at approximately 8m from centreline (CL). No habitat hollows, providing limited roosting, perching and foraging habitat for threatened species. Impacted by hazard protection (guard fence installation) and drainage upgrade (subsoil drain). Loss factor 0.6, potential root pruning from guardrail post and drain installation.	

Tree ID – Tree 7 Tree spp. *Bursaria spinosa* Number of trees – 1 Height (m) – 3 Hollows – 0 Diameter (cm) – 6 Canopy dieback (%) –30 Total Biodiversity Score – 0.44	 **Photo 13. SITE 4** taken facing west from near MM 238.65, GPS 296239/6197850, RHS
A small *Bursaria* in poor condition, having shed one stem. Limited habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 8 Tree spp. *Callitris gracilis* Number of trees – 1 Height (m) – 10 Hollows – 0 Diameter (cm) – 60 Canopy dieback (%) – 40 Total Biodiversity Score – 1.18	 **Photo 14. SITE 4** taken facing west from near MM 238.65, GPS 296236/6197839, RHS
A single mature White Cypress Pine in poor condition with dieback and the loss two main stems. Limited habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 9 Tree spp. *Callitris gracilis* Number of trees – 1 Height (m) – 9 Hollows – 0 Diameter (cm) – 40 Canopy dieback (%) –20 Total Biodiversity Score – 1.00	 **Photo 15. SITE 4** taken facing west from near MM 238.65, GPS 296234/6197833, RHS
A mature White Cypress Pine in fair condition with some dieback, offering potential habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 10	
Tree spp. *Callitris gracilis*	
Number of trees – 2	
Height (m) – 9	
Hollows – 0	
Diameter (cm) – 30	
Canopy dieback (%) – 30	
Total Biodiversity Score – 0.96	**Photo 16. SITE 4** taken facing west from near MM 238.65, GPS 296230/6197820, RHS
Two White Cypress Pines in fair-poor condition with some dieback, providing potential habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 11 Tree spp. *Callitris gracilis* Number of trees – 1 Height (m) – 8 Hollows – 0 Diameter (cm) – 40 Canopy dieback (%) – 0 Total Biodiversity Score – 1.07	 **Photo 17. SITE 4** taken facing west from near MM 238.65, GPS 296226/6197805, RHS
A single young White Cypress Pine in good condition. Potential habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 12 Tree spp. *Callitris gracilis* Number of trees – 4 Height (m) – 8 Hollows – 0 Diameter (cm) – 20 Canopy dieback (%) –10 Total Biodiversity Score – 1.59	 **Photo 18. SITE 4** taken facing north from near MM 238.7, GPS 296216/6197786, RHS
A small group of four young to mature White Cypress Pines in poor - good condition, some with significant dieback. Potential habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Tree ID – Tree 13 Tree spp. *Acacia salicina* Number of trees – 1 Height (m) – 6 Hollows – 0 Diameter (cm) – 15 Canopy dieback (%) – 0 Total Biodiversity Score – 1.07	 **Photo 19. SITE 4** taken facing east from near MM 238.88, GPS 296120/6197633, LHS
A single Broughton Wattle in good condition with no dieback. Potential habitat value for threatened species. Impacted by curve upgrade works and hazard reduction.	

Site map showing areas of proposed impact - patches

Figure 6. SITE 1, VA1 location of sites

Figure 7. SITE 2, VA2 Location of sites

Figure 8. SITE 2, VA2 Location of sites

Figure 9. SITE 2, VA2 Location of sites

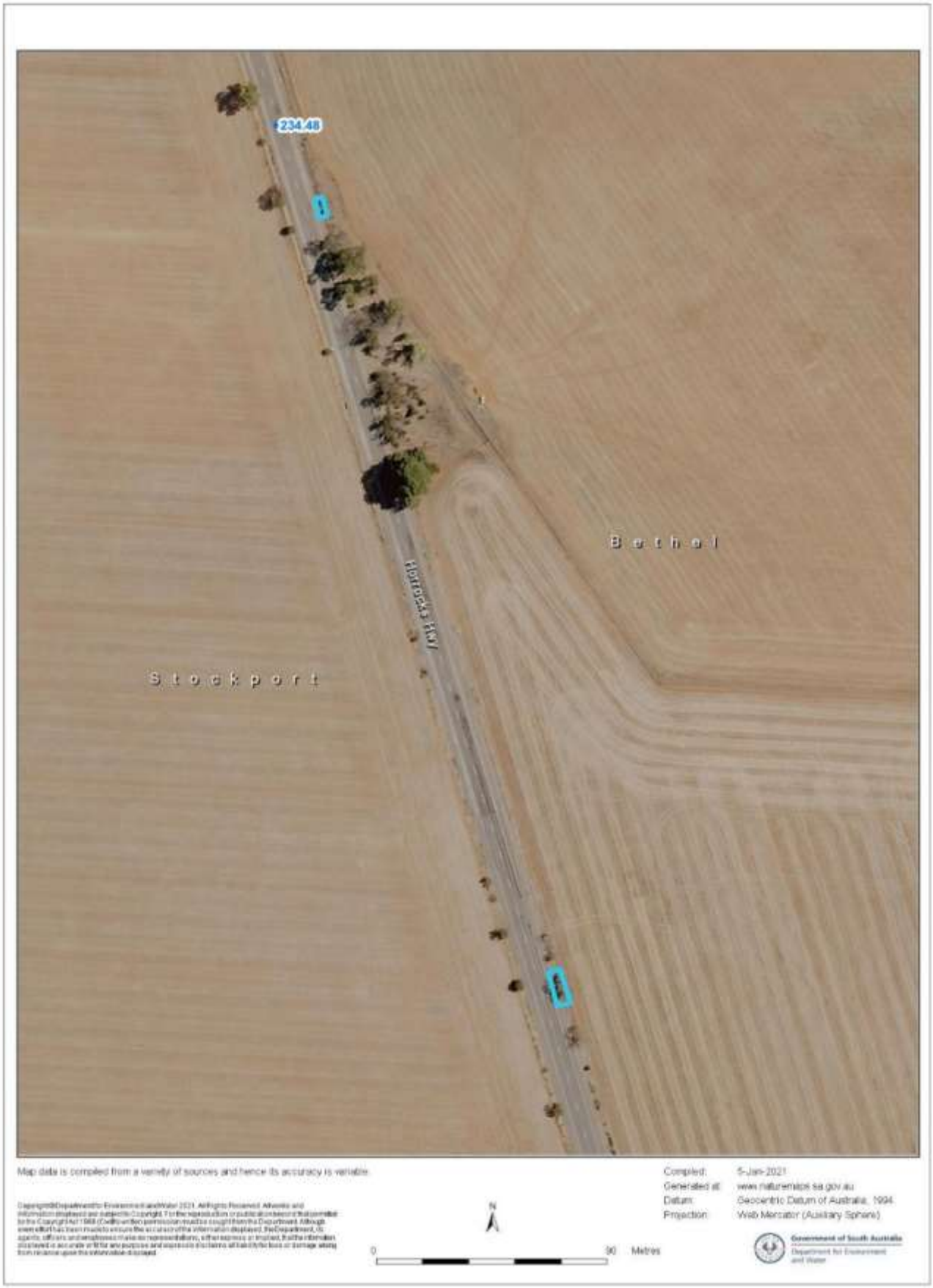


Figure 10. SITE 3, VA3 Location of sites

Figure 11. SITE 3, VA4 Location of site

Figure 12. SITE 4, VA5 Location of site

Site maps showing areas of proposed impact – scattered trees

Figure 13. SITE 2, Location of scattered trees

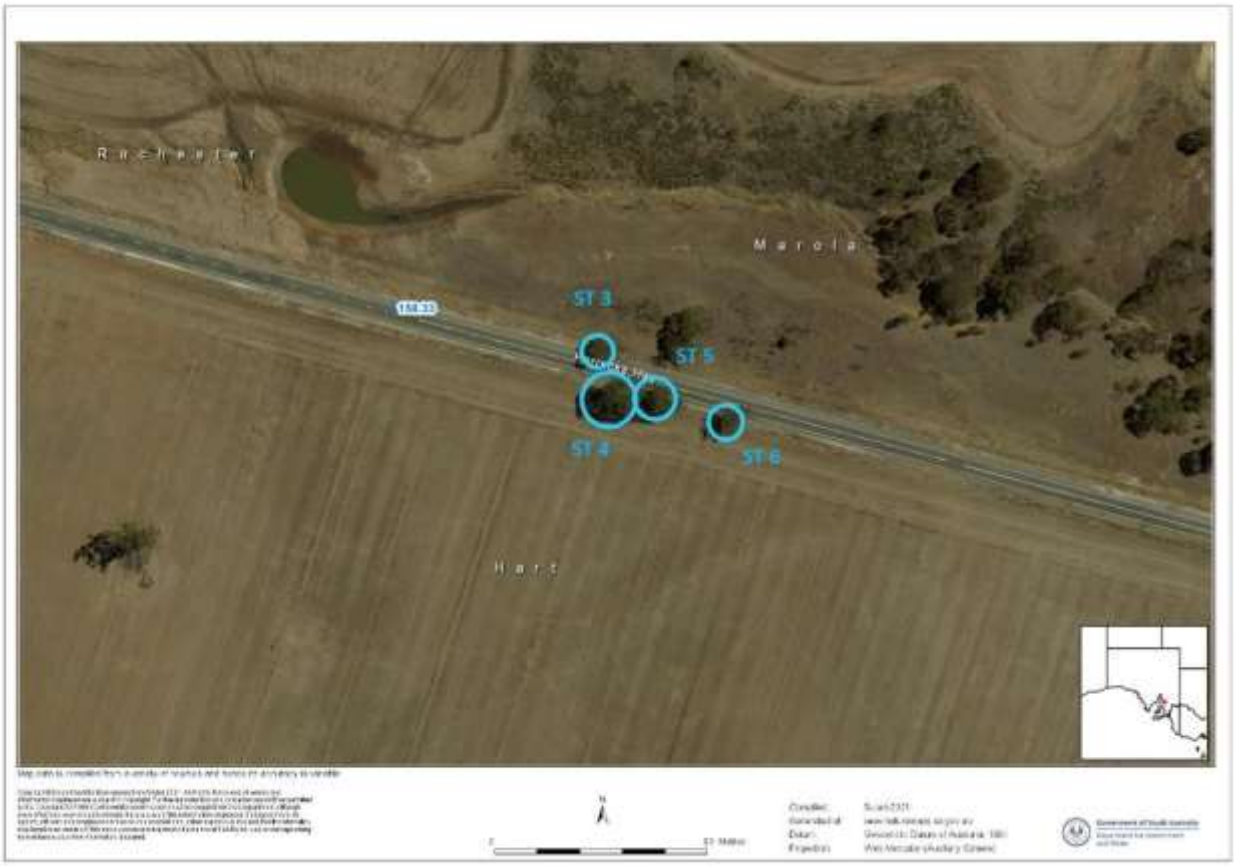


Figure 14. SITE 2, Location of scattered trees

Figure 15. SITE 4, Location of scattered trees

Figure 16. SITE 4, Location of scattered trees

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
Corcorax melanorhamphos (White-winged Chough)	R	-	4	2007	Open forests and woodlands, wetter areas with leaf litter and mud	Likely – recorded in the last 20 years, habitat available.
Stagonopleura guttata (Diamond Firetail)	V	-	4	2016	Grassy eucalypt woodland, open forest, mallee, grasslands	Likely – habitat available
Microeca fascinans (Jacky Winter)	ssp	-	4	2006	Open woodland with open shrub layer and bare ground	Possible – limited suitable habitat available
Pseudophryne bibronii (Brown Toadlet)	V	-	4	1998	Grassy areas beside creeks, and under rocks and logs near water	Possible – limited 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 these specific project sites, apart from that described and/or required under maintenance.

Indirect clearance that may occur as a result of the development

Indirect clearance has been anticipated in this data report.

Future stages or associated components of a development

The Isolated High Risk Sites project is part of Stage 2 of the broader Horrocks Highway upgrade project. There are eight other current (approved or pending) clearance applications associated with the Horrocks Highway upgrade;

Part 1A – Wilmington to Melrose (Level 4, NVAP approved);
Part 1B – Gladstone to Crystal Brook turnoff (Level 1, internal DIT approval);
Part 1C – Murraytown to Wirrabara (Level 3 – approved);
Part 1D – Clare to Undalya (Level 4, NVAP approved);
Part 1E – Wirrabara to Laura (Level 3, NVC approval in progress);
Part 1F – Gulnare to Yacka (Level 3, approved);
Part 1G – Undalya to Giles Corner (Level 4, NVAP approved);
Part 1H – Spalding Junction to Clare (Level 4, NVAP approved).

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

Sites for safety upgrades are prioritized based on results of road safety audits and road crash history data. Consequently, there is minimal scope for amendments or alternatives if standards for design and safety are to be met. Progressing the design resulted in a reduction from 29 to 20 scattered trees impacted, with four of the proposed removals reduced to pruning (LF 0.6) through installation of guardfence and sub-soil megaflow drainage solutions; and likely reduction in actual impact to patches from above ground drainage works.

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).

Few options are available to avoid or minimise impact. Drainage infrastructure is topography dependent, and relocation would compromise function. Works will be undertaken to minimise disruption to traffic and to keep costs and impacts down.

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 **$31 330.38**

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

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	Four threatened species recorded within 5km of the sites: White-winged Chough; Diamond Firetail; Jacky Winter and Brown Toadlet. Some of the trees provide habitat hollows but the listed fauna are not hollow dependent. The associations were highly degraded, unlikely to provide critical habitat. There were few native fauna species observed during the site visit, limited to common species only. Patches; VA 1 Site 1 – Threatened Fauna Score – 0.04 Unit Biodiversity Score – 16.45 VA 2 Site 2 – Threatened Fauna Score – 0.04 Unit Biodiversity Score – 14.43 VA 3 Site 3 – Threatened Fauna Score – 0 Unit Biodiversity Score – 9.82 VA 4 Site 4 – Threatened Fauna Score – 0 Unit Biodiversity Score – 7.22 VA 5 Site 4 – Threatened Fauna Score – 0 Unit Biodiversity Score – 8.8 Trees; Fauna Habitat Score 1.4 (trees 2-6) and 0 (trees 7-13) Biodiversity Score –two trees scored >7; trees 4 (9.19) and 5 (9.27)	Seriously at Variance ST's 2 - 6 At Variance – VA 1 & 2	*Impact Significance* Impact to 20 trees across almost 100km of degraded landscape, is unlikely to result in any of the negative consequences described under dot points in the NV guide for clearance applications. *Non-essential habitat* Clearance of very small areas of disjunct and non-pristine shrubland, and impact to 20 scattered trees on the road verge, is considered to have negligible impact on the local fauna populations over the long term.

Principle 1c - rare, vulnerable or endangered plant species	See Appendix 1 for Flora species list Threatened Flora Score(s) - 0	Seriously at Variance N/A At Variance – N/A	
Principle 1d - threatened plant community	No communities listed under the EPBC Act or the DEW Provisional list of threatened ecosystems were present Threatened Community Score - 0	Seriously at Variance N/A	

4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	20 (including 3 groups and 9 individuals)
	Area (ha)	Five sites totaling 0.9867 ha
	Total biodiversity Score	Combined score = 56.88
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b)
Risk assessment outcome		L3 escalated to L4

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
1	1	9	1	0	0.04	16.45	0.478	7.86	1	0	0	8.26	4846.88	266.58
2	2	9	1	0	0.04	14.43	0.20	2.89	1	0	0	3.03	1850.80	101.79
3	3	6	1	0	0	9.82	0.0067	0.07	1	0	0	0.07	40.54	2.23
4	4	6	1	0	0	7.22	0.002	0.01	1	0	0	0.02	9.24	0.51
5	5	12	1	0	0	8.80	0.3	2.64	1	0	0	2.77	1699.46	93.47
						Total	**0.9867**	**13.47**				**14.15**	**$8446.92**	**$464.58**

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
2	5	1.4	0	10.35	1	10.86	6966.34	
3	1	1.4	0	2.52	0.6	1.59	$1,020.00	
4	1	1.4	0	9.19	0.6	5.79	$3,710.69	
5	1	1.4	0	9.27	0.6	5.84	$3,746.25	
6	1	1.4	0	4.76	0.6	3.00	$1,924.87	
7	1	0	0	0.44	1	0.46	295.36	
8	1	0	0	1.18	1	1.24	796.80	
9	1	0	0	1.00	1	1.05	679.14	
10	2	0	0	0.48	1	1.01	649.94	
11	1	0	0	1.07	1	1.12	723.69	
12	4	0	0	0.40	1	1.67	1,075.87	
13	1	0	0	1.07	1	1.12	723.69	
Total	**20**			41.73		34.75	**$22312.64**	**$incl**

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	56.88	57.93	$29697.05	$1633.34	$31330.38

Economies of Scale Factor	0.5
Rainfall (mm)	(averaged) 456

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) **$31 330.38**

7. Appendices

Appendix 1. Fauna and Flora Species List

CLASSNAME	SPECIES	COMNAME	ESACT STATUS CODE	NPWACT STATUS CODE	BIOREG STAT CODE
AVES	Corcorax melanorhamphos	White-winged Chough		R	VU
AVES	Microeca fascinans	Jacky Winter		ssp	VU
AMPHIBIA	Pseudophryne bibronii	Brown Toadlet		R	EN
AVES	Stagonopleura guttata	Diamond Firetail		V	EN

FAMILYNAME	SPECIES	COMNAME	ESACT STATUS CODE	NPWACT STATUS CODE	BIOREG STAT CODE
LEGUMINOSAE	Acacia montana	Mallee Wattle		R	EN
GRAMINEAE	Austrostipa gibbosa	Swollen Spear-grass		R	NT
MYRTACEAE	Eucalyptus behriana	Broad-leaf Box		R	RA
GRAMINEAE	Eragrostis infecunda	Barren Cane-grass		R	VU
GRAMINEAE	Lachnagrostis limitanea	Spalding Blown-grass	EN	E	EN
GRAMINEAE	Lachnagrostis robusta	Tall Blown-grass		R	VU
CHENOPODIACEAE	Maireana excavata	Bottle Fissure-plant		V	RA
CHENOPODIACEAE	Maireana rohrlachii	Rohrlach's Bluebush		R	RA
COMPOSITAE	Olearia pannosa ssp. pannosa	Silver Daisy-bush	VU	V	VU
LILIACEAE	Thysanotus tenellus	Grassy Fringe-lily		R	VU
RHAMNACEAE	Cryptandra campanulata	Long-flower Cryptandra		R	LC

Appendix 2. Bushland and Scattered Tree Vegetation Assessment Scoresheets

Vegetation Condition Scores

SITE:	A
VEGETATION ASSOCIATION DESCRIPTION	Acacia pycnantha Low Open Woodland
SIZE OF SITE (Ha)	0.478

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)

<5% (3 Points)	☐
5-10% (6 Points)	☐
11 - 20% (9 Points)	☑
21 - 30% (12 Points)	☐
31 - 40 % (15 Points)	☐
41 - 50% (18 Points)	☐
51 - 60% (21 Points)	☐
61 - 70% (24 Points)	☐
71 - 80% (27 Points)	☐
>80% (30 Points)	☐
Native Plant species diversity score (max score of 30)	9

Weed Scores

Does the site contain plant species declared under the *NRM Act 2004* (1.5 points)	☑
Cover rating for all declared weeds (max of 6)	2
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)	☑
Cover rating for all environmental weeds (max of 6)	3
Weed Score (max score of 15)	9

Is the community naturally treeless?	☐
Mature Tree Score (max 8)	0
Fallen timber/debris (max 5)	0
Hollow-bearing trees Score (max 5)	0
Tree Canopy Cover Score (max 5)	2
Native:exotic Understorey biomass score (max 5)	2

Regeneration

No regeneration present (0 Points)	☐
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points)	☑
Regeneration present, consisting of multiple individual juvinile plants but a limited number of species (6 points)	☐
Multiple species regenerating, but low numbers of juvenile plants (9 points)	☐
Multiple species regenerating with multiple individual juviniles present with varying age classes (12 points)	☐
Regeneration Score (Max 12)	3

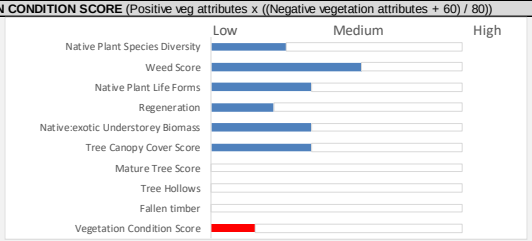
Native Plant life form

All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points)	☐
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points)	☑
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)	☐
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structurally diversity, vegetation cover or structural elements (16 points)	☐
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)	☐
Native Plant life form score (max 20)	8

Vegetation Condition Score calculation

Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees

If the community is naturally treeless this score is multiplied by 1.24	20.00
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score)exp2/2)	24.00
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))	**14.00**



Conservation Significance Score

Is the vegetation association considered a Threatened Ecological community or Ecosystem?	**Yes/No**
State (Provisional List of Threatened Ecosystems of SA) **Rare** community (0.1 pt)	☐
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) V**ulnerable** community (0.35 pts)	☐
Contains a Nationally (EPBC Act) **Endangered** or **Critically Endangered** community (0.4 pts)	☐
Note; all sites will score a minimum Conservation Significance Score of 1 **Threatened CommuntiyScore**	1

Number of Threatened Flora Species recorded for the site (within the site)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
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

Potential habitat for Threatened Fauna Species (number observed or previously recorded)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
State **Rare** species observed or locally recorded (1 pt each)	2
State **Vulnerable** species observed or locally recorded (2.5 pt each)	1
State **Endangered** species observed or locally recorded (5 pt each)	0
Nationally **Vulnerable** species observed or locally recorded (10 pts each)	0
Nationally **Endangered** or **Critically endangered** species observed or locally recorded (20 pts each)	0
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	**4.5**
Threatened Fauna Score	0.04
CONSERVATION SIGNIFICANCE SCORE	**1.04**

Total Scores for the Site

	Score
LANDSCAPE CONTEXT SCORE	1.13
VEGETATION CONDITION SCORE	14.00
CONSERVATION SIGNIFICANCE SCORE	1.04

Vegetation Condition x Landscape Context x Conservation Significance =

UNIT BIODIVERSITY SCORE	16.45
Total Biodiversity Score (Biodiversity Score x hectares)	7.86

Photo Point and Vegetation Survey Location

Direction of the Photo

South

GPS Reference

Datum	WGS84
Zone (52, 53 or 54)	54
Easting (6 digits)	264189
Northing (7 digits)	6269619

Description

Acacia pycnantha Woodland looking south from near MM 150.9

Assessment for Clearance

Loss Factor	1.0
Loadings for clearance of protected areas	
Reductions for rehabilitation of impact site	
SEB Points required	**8.26**

Approximate hectares required	1.03
Economies of Scale factor	0.50
Mean Annual rainfall for the site (mm)	445
Payment into the fund (GST Exclusive)	**$4,846.88**
Administration fee (GST Inclusive)	**$266.58**

151 Bushland Scoresheet V1.xlsm

Vegetation Condition Scores

SITE:	R1
VEGETATION ASSOCIATION DESCRIPTION	Allocasuarina verticillata Woodland
SIZE OF SITE (Ha)	0.2

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)

<5% (3 Points)	☐
5-10% (6 Points)	☐
11 - 20% (9 Points)	☑
21 - 30% (12 Points)	☐
31 - 40 % (15 Points)	☐
41 - 50% (18 Points)	☐
51 - 60% (21 Points)	☐
61 - 70% (24 Points)	☐
71 - 80% (27 Points)	☐
>80% (30 Points)	☐
Native Plant species diversity score (max score of 30)	9

Weed Scores

Does the site contain plant species declared under the *NRM Act 2004* (1.5 points)	☑
Cover rating for all declared weeds (max of 6)	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)	☑
Cover rating for all environmental weeds (max of 6)	3
Weed Score (max score of 15)	10.5

Is the community naturally treeless?	☐
Mature Tree Score (max 8)	4
Fallen timber/debris (max 5)	1
Hollow-bearing trees Score (max 5)	0
Tree Canopy Cover Score (max 5)	1
Native:exotic Understorey biomass score (max 5)	1

Regeneration

No regeneration present (0 Points)	☑
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points)	☐
Regeneration present, consisting of multiple individual juvinile plants but a limited number of species (6 points)	☐
Multiple species regenerating, but low numbers of juvenile plants (9 points)	☐
Multiple species regenerating with multiple individual juviniles present with varying age classes (12 points)	☐
Regeneration Score (Max 12)	0

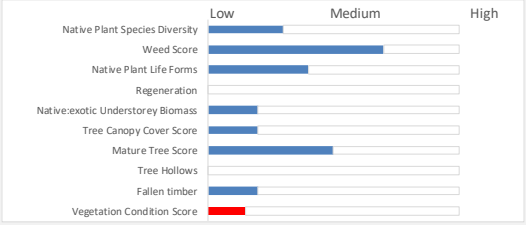
Native Plant life form

All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points)	☐
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points)	☑
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)	☐
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structurally diversity, vegetation cover or structural elements (16 points)	☐
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)	☐
Native Plant life form score (max 20)	8

Vegetation Condition Score calculation

Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees

If the community is naturally treeless this score is multiplied by 1.24	22.00
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score)exp2/2)	36.50
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))	**11.96**



Conservation Significance Score

Is the vegetation association considered a Threatened Ecological community or Ecosystem?	**Yes/No**
State (Provisional List of Threatened Ecosystems of SA) **Rare** community (0.1 pt)	☐
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)	☐
Note; all sites will score a minimum Conservation Significance Score of 1 **Threatened CommuntiyScore**	1

Number of Threatened Flora Species recorded for the site (within the site)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
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

Potential habitat for Threatened Fauna Species (number observed or previously recorded)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
State **Rare** species observed or locally recorded (1 pt each)	2
State **Vulnerable** species observed or locally recorded (2.5 pt each)	1
State **Endangered** species observed or locally recorded (5 pt each)	0
Nationally **Vulnerable** species observed or locally recorded (10 pts each)	0
Nationally **Endangered** or **Critically endangered** species observed or locally recorded (20 pts each)	0
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	**4.5**
Threatened Fauna Score	0.04

CONSERVATION SIGNIFICANCE SCORE	**1.04**

Total Scores for the Site

	Score
LANDSCAPE CONTEXT SCORE	1.16
VEGETATION CONDITION SCORE	11.96
CONSERVATION SIGNIFICANCE SCORE	1.04

Vegetation Condition x Landscape Context x Conservation Significance =	
UNIT BIODIVERSITY SCORE	14.43
Total Biodiversity Score (Biodiversity Score x hectares)	2.89

Photo Point and Vegetation Survey Location

Direction of the Photo

NE

GPS Reference

Datum	WGS84
Zone (52, 53 or 54)	54
Easting (6 digits)	271686
Northing (7 digits)	6267241

Description

Allocasuarina Woodland

Assessment for Clearance

Loss Factor	1.0
Loadings for clearance of protected areas	
Reductions for rehabilitation of impact site	
SEB Points required	**3.03**

Approximate hectares required	0.38
Economies of Scale factor	0.50
Mean Annual rainfall for the site (mm)	463
Payment into the fund (GST Exclusive)	**$1,850.80**
Administration fee (GST Inclusive)	**$101.79**

153 Bushland Scoresheet V2.xlsm

SEB Required for Scattered Trees

(Version - 1 July 2020)

Landscapes Region	**N&Y**	**Total Biodiversity Score**	36.10
Mean Annual Rainfall (mm)	**463**	**Total SEB Points required**	**27.09**
Economies of Scale factor	**0.5**	**Total SEB $ required**	**$17,450.86**

IBRA Association	**Yacka**

Tree Species	Number of Trees	Total SEB Points required	Payment in NV Fund (GST Exclusive)	Administration fee (GST Inclusive)	Total
Acacia salicina	1	10.86	$6,634.61	$364.90	$6,999.51
Eucalyptus leucoxylon ssp pruinosa	4	16.22	$9,906.49	$544.86	$10,451.34
0	0	0.00	$0.00	$0.00	$0.00

153 Scattered Tree Scoresheet V3.xlsx

Vegetation Condition Scores

SITE:	A
VEGETATION ASSOCIATION DESCRIPTION	Acacia ligulata Shrubland
SIZE OF SITE (Ha)	0.0067

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)

<5% (3 Points)	☐
5-10% (6 Points)	☑
11 - 20% (9 Points)	☐
21 - 30% (12 Points)	☐
31 - 40 % (15 Points)	☐
41 - 50% (18 Points)	☐
51 - 60% (21 Points)	☐
61 - 70% (24 Points)	☐
71 - 80% (27 Points)	☐
>80% (30 Points)	☐
Native Plant species diversity score (max score of 30)	6

Weed Scores

Does the site contain plant species declared under the *NRM Act 2004* (1.5 points)	☑
Cover rating for all declared weeds (max of 6)	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)	☑
Cover rating for all environmental weeds (max of 6)	3
Weed Score (max score of 15)	10.5

Is the community naturally treeless?	☑
Tree attributes not scored for treeless community	

Native:exotic Understorey biomass score (max 5)	1

Regeneration

No regeneration present (0 Points)	☐
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points)	☑
Regeneration present, consisting of multiple individual juvinile plants but a limited number of species (6 points)	☐
Multiple species regenerating, but low numbers of juvenile plants (9 points)	☐
Multiple species regenerating with multiple individual juviniles present with varying age classes (12 points)	☐
Regeneration Score (Max 12)	3

Native Plant life form

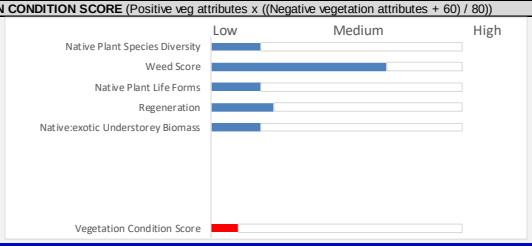
All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points)	☑
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points)	☐
At least one strata of vegetation has been impacted, 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)	☐
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structurally diversity, vegetation cover or structural elements (16 points)	☐
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)	☐
Native Plant life form score (max 20)	4

Vegetation Condition Score calculation

Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees

If the community is naturally treeless this score is multiplied by 1.24

	16.12
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - (Biomass score x 2))exp2/2)	36.50
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))	**8.77**



Conservation Significance Score

Is the vegetation association considered a Threatened Ecological community or Ecosystem?	**Yes/No**
State (Provisional List of Threatened Ecosystems of SA) **Rare** community (0.1 pt)	☐
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) V**ulnerable** community (0.35 pts)	☐
Contains a Nationally (EPBC Act) **Endangered** or **Critically Endangered** community (0.4 pts)	☐
Note; all sites will score a minimum Conservation Significance Score of 1 **Threatened CommuntiyScore**	1

Number of Threatened Flora Species recorded for the site (within the site)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
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

Potential habitat for Threatened Fauna Species (number observed or previously recorded)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
State **Rare** species observed or locally recorded (1 pt each)	0
State **Vulnerable** species observed or locally recorded (2.5 pt each)	0
State **Endangered** species observed or locally recorded (5 pt each)	0
Nationally **Vulnerable** species observed or locally recorded (10 pts each)	0
Nationally **Endangered** or **Critically endangered** species observed or locally recorded (20 pts each)	0
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	**0**
Threatened Fauna Score	0

CONSERVATION SIGNIFICANCE SCORE	**1**

Total Scores for the Site

	Score
LANDSCAPE CONTEXT SCORE	1.12
VEGETATION CONDITION SCORE	8.77
CONSERVATION SIGNIFICANCE SCORE	1.00

Vegetation Condition x Landscape Context x Conservation Significance =	
UNIT BIODIVERSITY SCORE	9.82
Total Biodiversity Score (Biodiversity Score x hectares)	0.07

Photo Point and Vegetation Survey Location

Direction of the Photo	
North east	
GPS Reference	
Datum	WGS84
Zone (52, 53 or 54)	54
Easting (6 digits)	295715
Northing (7 digits)	6202328
Description	
Looking NE from near MM 234.0	

Assessment for Clearance

Loss Factor	1.0
Loadings for clearance of protected areas	
Reductions for rehabilitation of impact site	
SEB Points required	**0.07**

Approximate hectares required	0.01
Economies of Scale factor	0.50
Mean Annual rainfall for the site (mm)	445
Payment into the fund (GST Exclusive)	**$40.54**
Administration fee (GST Inclusive)	**$2.23**

233.5 Bushland Scoresheet V1.xlsm

Vegetation Condition Scores

SITE:	A, B and C
VEGETATION ASSOCIATION DESCRIPTION	Pittosporum angustifolium/Acacia ligulata/Senna artemisioides Shrubla
SIZE OF SITE (Ha)	0.002

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)

<5% (3 Points)	☐
5-10% (6 Points)	☑
11 - 20% (9 Points)	☐
21 - 30% (12 Points)	☐
31 - 40 % (15 Points)	☐
41 - 50% (18 Points)	☐
51 - 60% (21 Points)	☐
61 - 70% (24 Points)	☐
71 - 80% (27 Points)	☐
>80% (30 Points)	☐
Native Plant species diversity score (max score of 30)	6

Weed Scores

Does the site contain plant species declared under the *NRM Act 2004* (1.5 points)	☐
Cover rating for all declared weeds (max of 6)	
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)	☑
Cover rating for all environmental weeds (max of 6)	3
Weed Score (max score of 15)	12

Is the community naturally treeless?	☐
Mature Tree Score (max 8)	0
Fallen timber/debris (max 5)	1
Hollow-bearing trees Score (max 5)	0
Tree Canopy Cover Score (max 5)	1
Native:exotic Understorey biomass score (max 5)	0

Regeneration

No regeneration present (0 Points)	☐
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points)	☑
Regeneration present, consisting of multiple individual juvinile plants but a limited number of species (6 points)	☐
Multiple species regenerating, but low numbers of juvenile plants (9 points)	☐
Multiple species regenerating with multiple individual juviniles present with varying age classes (12 points)	☐
Regeneration Score (Max 12)	3

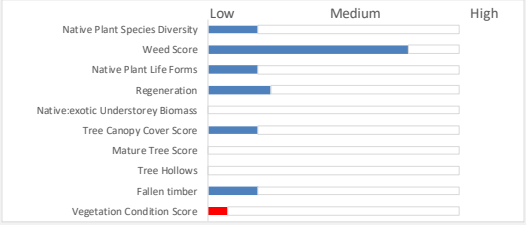
Native Plant life form

All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points)	☑
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points)	☐
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)	☐
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structurally diversity, vegetation cover or structural elements (16 points)	☐
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)	☐
Native Plant life form score (max 20)	4

Vegetation Condition Score calculation

Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees

If the community is naturally treeless this score is multiplied by 1.24	14.00
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score)exp2/2)	43.50
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))	**6.39**



Conservation Significance Score

Is the vegetation association considered a Threatened Ecological community or Ecosystem?	**Yes/No**
State (Provisional List of Threatened Ecosystems of SA) **Rare** community (0.1 pt)	☐
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)	☐
Note; all sites will score a minimum Conservation Significance Score of 1 **Threatened CommuntiyScore**	1

Number of Threatened Flora Species recorded for the site (within the site)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
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

Potential habitat for Threatened Fauna Species (number observed or previously recorded)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
State **Rare** species observed or locally recorded (1 pt each)	0
State **Vulnerable** species observed or locally recorded (2.5 pt each)	0
State **Endangered** species observed or locally recorded (5 pt each)	0
Nationally **Vulnerable** species observed or locally recorded (10 pts each)	0
Nationally **Endangered** or **Critically endangered** species observed or locally recorded (20 pts each)	0
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	**0**
Threatened Fauna Score	0

CONSERVATION SIGNIFICANCE SCORE	**1**

Total Scores for the Site

	Score
LANDSCAPE CONTEXT SCORE	**1.13**
VEGETATION CONDITION SCORE	**6.39**
CONSERVATION SIGNIFICANCE SCORE	**1.00**

Vegetation Condition x Landscape Context x Conservation Significance =

UNIT BIODIVERSITY SCORE	7.22
Total Biodiversity Score (Biodiversity Score x hectares)	0.01

Photo Point and Vegetation Survey Location

Direction of the Photo

North west

GPS Reference

Datum	WGS84
Zone (52, 53 or 54)	54
Easting (6 digits)	296422
Northing (7 digits)	6198820

Description

Pittosporum angustifolium young plants growing amongst amenity planted Eucalypts.

Assessment for Clearance

Loss Factor	1.0
Loadings for clearance of protected areas	
Reductions for rehabilitation of impact site	
SEB Points required	**0.02**

Approximate hectares required	0.00
Economies of Scale factor	0.50
Mean Annual rainfall for the site (mm)	462
Payment into the fund (GST Exclusive)	**$9.24**
Administration fee (GST Inclusive)	**$0.51**

236.7 Bushland Scoresheet V2.xlsm

Vegetation Condition Scores

SITE:	A
VEGETATION ASSOCIATION DESCRIPTION	Acacia notabilis/Acacia ligulata Shrubland w. emergent Callitris gracili
SIZE OF SITE (Ha)	0.3

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)

<5% (3 Points)	☐
5-10% (6 Points)	☐
11 - 20% (9 Points)	☐
21 - 30% (12 Points)	☑
31 - 40 % (15 Points)	☐
41 - 50% (18 Points)	☐
51 - 60% (21 Points)	☐
61 - 70% (24 Points)	☐
71 - 80% (27 Points)	☐
>80% (30 Points)	☐
Native Plant species diversity score (max score of 30)	12

Regeneration

No regeneration present (0 Points)	☐
Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species (3 points)	☐
Regeneration present, consisting of multiple individual juvinile plants but a limited number of species (6 points)	☑
Multiple species regenerating, but low numbers of juvenile plants (9 points)	☐
Multiple species regenerating with multiple individual juvinile present with varying age classes (12 points)	☐
Regeneration Score (Max 12)	6

Weed Scores

Does the site contain plant species declared under the *NRM Act 2004* (1.5 points)	☑
Cover rating for all declared weeds (max of 6)	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)	☑
Cover rating for all environmental weeds (max of 6)	5
Weed Score (max score of 15)	8.5

Native Plant life form

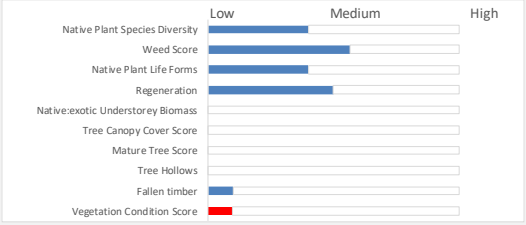
All strata of vegetation heavily impacted and native vegetation represented by only scattered plants (4 points)	☐
All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover (8 points)	☑
At least one strata of vegetation has been impacted, 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)	☐
Limited impacts on native vegetation, with a diversity of structural features and a varied age class, with only a minor loss in structurally diversity, vegetation cover or structural elements (16 points)	☐
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)	☐
Native Plant life form score (max 20)	8

Is the community naturally treeless?	☐
Mature Tree Score (max 8)	0
Fallen timber/debris (max 5)	0.5
Hollow-bearing trees Score (max 5)	0
Tree Canopy Cover Score (max 5)	0
Native:exotic Understorey biomass score (max 5)	0

Vegetation Condition Score calculation

Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees

If the community is naturally treeless this score is multiplied by 1.24	26.50
Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score)exp2/2)	56.50
VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))	**7.78**



Conservation Significance Score

Is the vegetation association considered a Threatened Ecological community or Ecosystem?	**Yes/No**
State (Provisional List of Threatened Ecosystems of SA) **Rare** community (0.1 pt)	☐
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)	☐
Note; all sites will score a minimum Conservation Significance Score of 1 **Threatened CommuntiyScore**	1

Number of Threatened Flora Species recorded for the site (within the site)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
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

Potential habitat for Threatened Fauna Species (number observed or previously recorded)	**Number**
**If a species has both a State (NP&W Act) and National (EPBC Act) rating, it's only recorded for its National rating.*	
State **Rare** species observed or locally recorded (1 pt each)	0
State **Vulnerable** species observed or locally recorded (2.5 pt each)	0
State **Endangered** species observed or locally recorded (5 pt each)	0
Nationally **Vulnerable** species observed or locally recorded (10 pts each)	0
Nationally **Endangered** or **Critically endangered** species observed or locally recorded (20 pts each)	0
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	**0**
Threatened Fauna Score	0

CONSERVATION SIGNIFICANCE SCORE	**1**

Total Scores for the Site

	Score
LANDSCAPE CONTEXT SCORE	1.13
VEGETATION CONDITION SCORE	7.78
CONSERVATION SIGNIFICANCE SCORE	1.00

Vegetation Condition x Landscape Context x Conservation Significance =	
UNIT BIODIVERSITY SCORE	8.80
Total Biodiversity Score (Biodiversity Score x hectares)	2.64

Photo Point and Vegetation Survey Location

Direction of the Photo

NNE

GPS Reference

Datum	WGS84
Zone (52, 53 or 54)	54
Easting (6 digits)	296120
Northing (7 digits)	6197660

Description

Degraded shrubland on inside of curve. Single emergent Callitris gracilis visible in distance.

Assessment for Clearance

Loss Factor	1.0
Loadings for clearance of protected areas	
Reductions for rehabilitation of impact site	
SEB Points required	**2.77**

Approximate hectares required	0.35
Economies of Scale factor	0.50
Mean Annual rainfall for the site (mm)	465
Payment into the fund (GST Exclusive)	**$1,699.46**
Administration fee (GST Inclusive)	**$93.47**

Horrocks HIgh Risk Curve Bushland Asse

SEB Required for Scattered Trees

(Version - 1 July 2020)

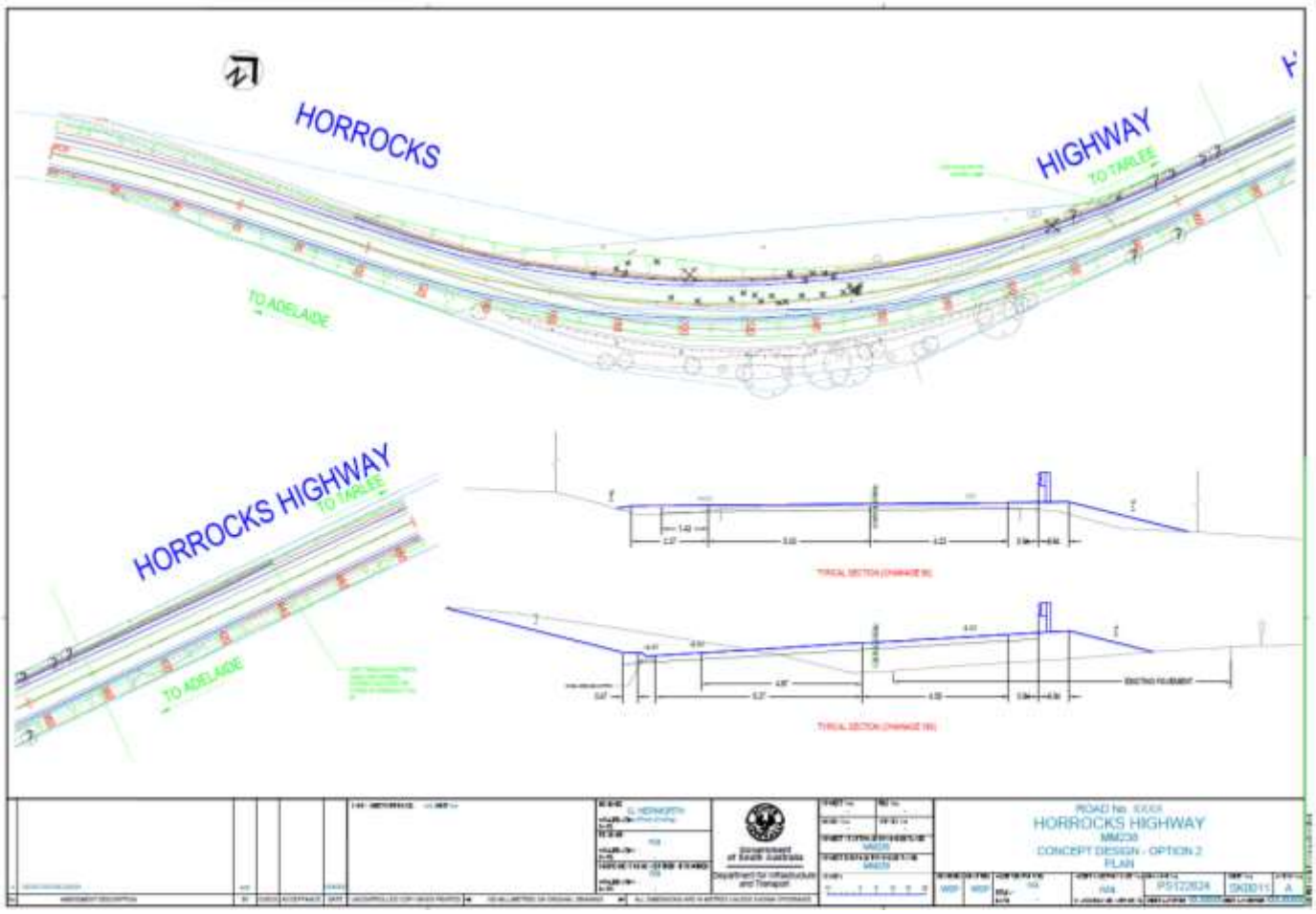
Landscapes Region	**N&Y**	**Total Biodiversity Score**	7.31
Mean Annual Rainfall (mm)	**465**	**Total SEB Points required**	**7.68**
Economies of Scale factor	**0.5**	**Total SEB $ required**	**$4,968.02**

IBRA Association	**Stockport**

Tree Species	Number of Trees	Total SEB Points required	Payment in NV Fund (GST Exclusive)	Administration fee (GST Inclusive)	Total
Bursaria spinosa	1	0.46	$281.29	$15.47	$296.76
Callitris preissii	5	6.10	$3,738.51	$205.62	$3,944.13
Acacia salicina	1	1.12	$689.23	$37.91	$727.14
0	0	0.00	$0.00	$0.00	$0.00

High Risk Curve Scattered Tree Scor

Appendix 3. Design plans



Site 4, High Risk Curve