



Native Vegetation Clearance

Piggott Range Road Upgrade

Data Report

Clearance under the *Native Vegetation Regulations 2017*

6 October 2023



Table of contents

1. Application information
2. Purpose of clearance
 - 2.1 Description
 - 2.2 Background
 - 2.3 General location map
 - 2.4 Details of the proposal
 - 2.5 Approvals required or obtained
 - 2.6 Native Vegetation Regulation
 - 2.7 Development Application information (if applicable)
3. Method
 - 3.1 Flora assessment
 - 3.2 Fauna assessment
4. Assessment outcomes
 - 4.1 Vegetation assessment
 - 4.2 Threatened Species assessment
 - 4.3 Cumulative impacts
 - 4.4 Addressing the Mitigation hierarchy
 - 4.5 Principles of clearance
 - 4.6 Risk Assessment
5. Clearance summary
6. Significant environmental benefit
7. Appendices

1. Application information

Application Details

Applicant:	City of Onkaparinga		
Key contact:	[REDACTED]		
Landowner:	City of Onkaparinga		
Site Address:	Piggott Range Road, Chandlers Hill and Clarendon, vicinity Gonyah and Easton Roads		
Local Government Area:	City of Onkaparinga	Hundred:	Noarlunga
Title ID:	N/A Road Reserve	Parcel ID	N/A Road Reserve

Summary of proposed clearance

Purpose of clearance	Clearance required to facilitate safety upgrades to Piggott Range Road including widening, curve realignment and shoulder sealing, and achievement of safe intersection sight distance.
Native Vegetation Regulation	Regulation 12, clause 34, Infrastructure
Description of the vegetation under application	<u>Size, type and general condition</u> – 0.044 ha of Grey Box/Blue Gum (<i>E. microcarpa</i> / <i>E. leucoxylon</i> ssp <i>leucoxylon</i>) Woodland in fair to good condition; and 92 scattered trees including 25 <i>Eucalyptus fasciculosa</i> , 21 <i>E. microcarpa</i> , 38 <i>E. leucoxylon</i> , 6 <i>E. viminalis</i> ssp. <i>cygnetensis</i> , 1 <i>Exocarpus cupressiformis</i> , and 1 <i>Acacia pycnantha</i> in fair to good condition.
Total proposed clearance - area (ha) and number of trees	0.044 ha and 92 scattered trees are proposed to be impacted.
Level of clearance	Level 4
Overlay (Planning and Design Code)	Native Vegetation Overlay

Map of proposed clearance area



Mitigation hierarchy	A significant redesign reduced impacts from 173 to 92 scattered trees, and from 0.115 ha to 0.044 ha of bushland. Further measures to mitigate impact include exclusion bunting during construction; seed collection from impacted plants; and development of a fauna management plan.
SEB Offset proposal	Total SEB obligation value of \$214,740.10 to be met via combined SEB Credit Sites and payment of outstanding offset value into the NV fund.

2. Purpose of clearance

2.1 Description

Piggott Range Road has a history of road crashes. An S-bend on either side of Easton and Gunyah Roads is the focus of a proposed safety upgrade, to reduce vehicle accidents and improve road conditions. Pavement realignment, cut and fill batters required to facilitate curve realignment and associated improvements will impact 92 scattered trees across both sides of the road, and an area of Grey Box/Blue Gum Woodland adjacent a Heritage Agreement.

2.2 Background

The site is the road reserve of Piggott Range Road. The road services rural holdings and hobby farms in the Clarendon and Chandlers Hill areas and facilitates access to Grants Gully Road and Chandlers Hill Road to the north, and Bains Road to the south. Traffic volumes peak at morning and afternoon commute times with delivery and heavier transport vehicles throughout the day. Properties surrounding the road are generally small to medium farms, many used for horse agistment.

An upgrade of the junction of Piggott Range and Bains Road is an associated stage of this project, and subject to a separate clearance assessment (complete).

2.3 General location map

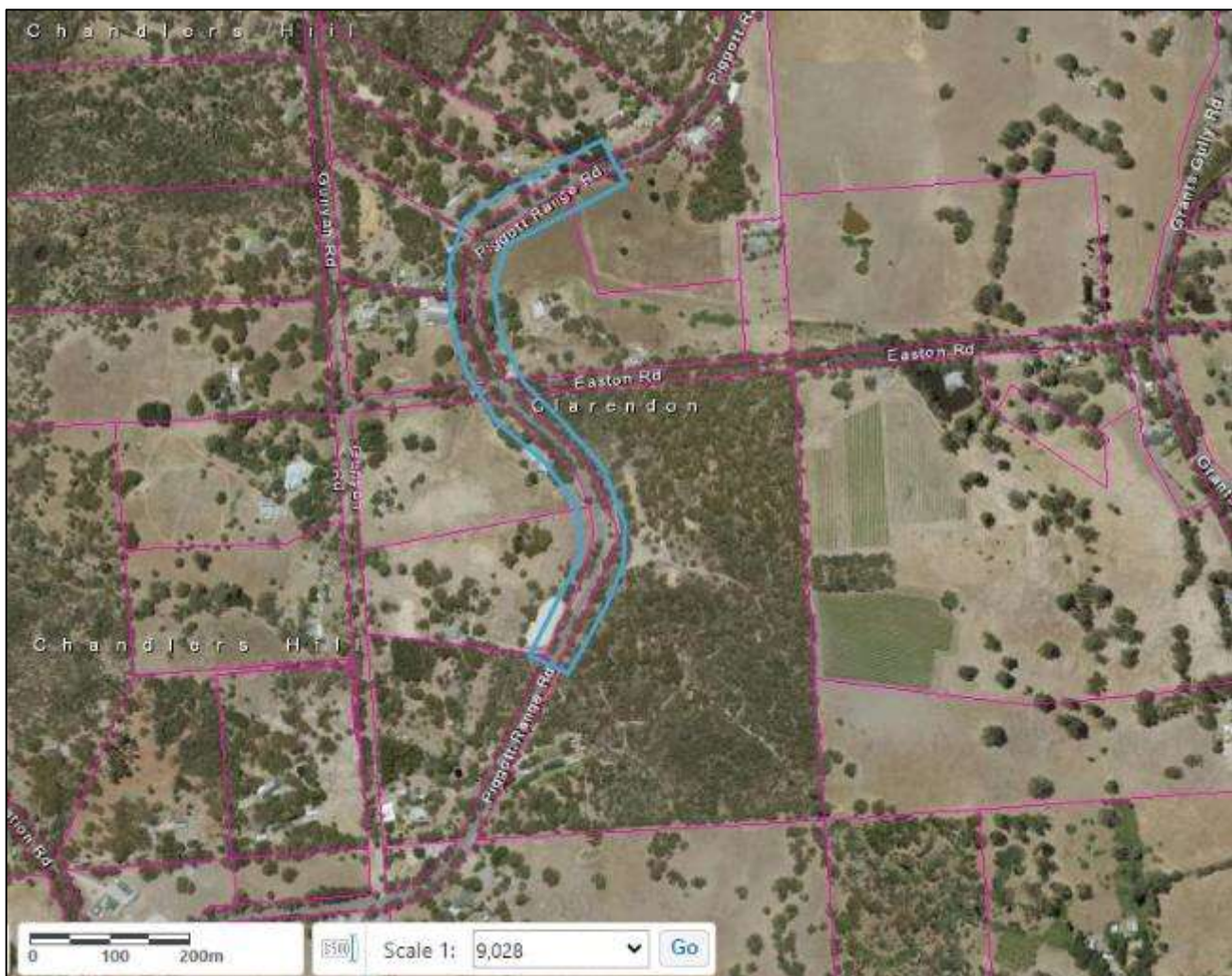


Figure 1. Location of the site, in blue

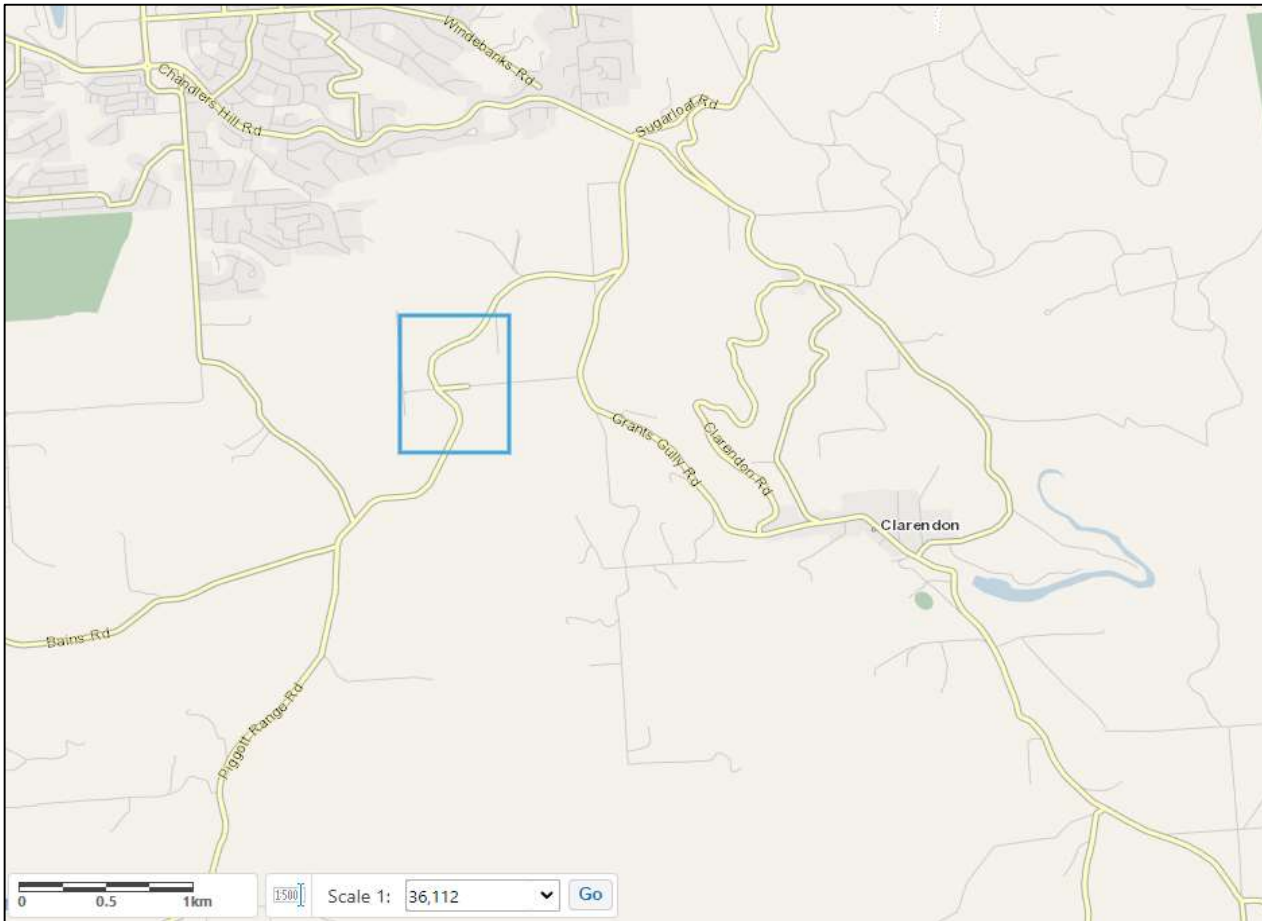


Figure 2. The site in context with surrounding areas

2.4 Details of the proposal

Impacts are based on design plans provided on 5 October 2023 (see Appendix 3). Improvements to the section of road under assessment require vegetation clearance to facilitate curve realignment and sight distance improvements; modified or upgraded driveways; and improvements to property access. Kerb and gutter is proposed at strategic locations to improve drainage.

Where impacts were difficult to determine, exploratory investigations using hydrovaccing identified several trees that would not be impacted due to minimal or no significant roots within the works, thus reducing the overall total of trees to be cleared.

Tree protection measures and tree-sensitive methodology is proposed during construction around high value vegetation. Trees with any potential to be impacted have been included within the assessment tally, assuming worst case scenario. Ongoing efforts to reduce impact are likely to result in a further reduction in trees affected.

Mitigation strategies include seed collection from impacted (and other) vegetation, to grow seedlings to reintroduce or re-establish within nearby natural reserves; development of a fauna management plan specific to the project site; and formulation of a Native Vegetation Management Plan for another council reserve (within 1.2km of the clearance site) to be designated as an SEB credit site.

2.5 Approvals required or obtained

Provide details of the following approvals or applications under the following legislation, where relevant:

- Native Vegetation Act 1991 – this is in part fulfillment of the requirements under this Act
- Planning, Development and Infrastructure Act 2016
- Aboriginal Heritage Act 1988 – the site is within previously disturbed road shoulder and the presence of sites remains or artefacts is unlikely. Council has a 'stop work' policy and should remains or objects be disturbed works will cease until appropriate advice is sought.

2.6 Native Vegetation Regulation

Regulation 12, clause 34, Infrastructure.

2.7 Development Application information (if applicable)

Zone - Rural, Public Road or other tenure; Native Vegetation Overlay.

3. Method

3.1 Flora assessment

Following a review of background information and literature, a 12 hour field survey was undertaken on 10th and 12th May 2022 by Jackie Ayre of JS Ayre & Associates. The scope of works was provided by the client and informed by NatureMaps and Google Earth street view. The survey involved a general assessment of the remnant vegetation and scattered trees on 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. Twenty eight threatened plant species were recorded in the database search. One - *Eucalyptus fasciculosa* - was found on site, and others are considered to have potential to be present. *Austrostipa gibbosa*, *A. oligostachya* and *Rytidosperma tenuius* are listed; plants of these genera were observed, but species ID was not achieved due to the absence of notable features at the time of assessment. Several threatened orchid species are also listed. Orchids are present amongst the less degraded parts of the site, and in the vegetation adjacent or within the Heritage Agreement (No. 714) on the SE corner of Easton/Piggott Range Roads, but no threatened species were observed in a subsequent assessment by Council environmental staff in September 2023.

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. 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. Twenty four listed species were recorded within 5km since 1995. Four were discounted due to habitat not being found at the site (wetland species) and 7 because the subspecies listed are not found in this part of the State. See Part 4.2 and Appendix 1 for further details.

Following the vegetation assessment, additional time was dedicated to searching for evidence of fauna. Observation of bird species amongst better areas of vegetation occurred, as did checking for faeces, scratchings, diggings and other evidence. Species observed include the Grey Currawong, Little Raven, Adelaide and Crimson Rosella, Australian Magpie, Yellow-tailed Black Cockatoo, Rainbow Lorikeet, Musk Lorikeet, Corella, Red Wattlebird, Laughing Kookaburra, Eastern Spinebill, Thornbill spp., Grey Shrike Thrush, Black-faced Cuckoo-shrike, Crescent Honeyeater, Superb Fairy Wren, Silvereye, Noisy Miner, Common Froglet, Garden Skink (sp. NC), Western Grey Kangaroo (scats). Scratch marks on tree stems were observed, possibly from the State Rare Common Brushtail Possum, and diggings, likely Echidna, were seen. Numerous small (2-3cm dia) excavated holes were noted on both sides of the road, which

are understood to be mouse holes (a dead mouse was found at one hole). The closest record of the Southern Brown Bandicoot is 7km to the southeast in 2017. Suitable habitat exists in the Heritage Agreement adjacent the site.

Of the thirteen species listed as having potential to occur, 7 were considered highly likely to find habitat at the site, 1 is known; 4 were likely and 1 was unlikely.

4. Assessment Outcomes

4.1 Vegetation Assessment

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

- *Landform, geography and soils*
Moderately steep to steep low hills, on the western edge of the Mount Lofty Ranges block. The flats through which watercourses flow occupy less than 5% of the total area. Elevation ranges from 570 m in the north to 120 m. Loamy surfaced soils, usually with red or brown clayey subsoils are most common, with sandier soils on sandstones, and shallow stony profiles on steeper slopes. There are minor areas of ironstone soils and deep sandy, clay loamy and texture contrast soils on alluvium.
- *Landform feature of significance (rivers, creeks, rocky outcrops, etc.)*
Several stream order 1 streams have their source in the vicinity of the site, none of which cross the site. There are no significant rocky outcrops or other physical features on or near the site.
- *General overview of the vegetation under application as a whole (e.g. contains x number of vegetation associations / trees)*
Two vegetation associations were assessed; *Eucalyptus fasciculosa* Woodland and *E. microcarpa*/*E. Leucoxylon ssp leucoxylon*/*Exocarpus cupressiformis* Woodland. The associations as represented on the road reserve are somewhat degraded, with weed infestation evident. Where roadside vegetation is adjacent the Heritage Area on the SE corner of the intersection with Easton Road, it is in better condition and exhibits greater diversity than in other sites assessed. One hundred and seventy three trees of 8 species were assessed, with 92 trees being impacted. An area of approximately 0.044 ha (440m²) is also impacted
- *General description of the vegetation relating to type and condition (i.e. is the vegetation relatively homogeneous, or there significant variation)*
The associations demonstrate fair consistency in their condition, density, and species diversity.
- *Provide a description of the landscape context for the vegetation*
The general area retains much of its original flora in roadsides and on large allotments, especially to the west of the assessment site. The roadside flora is consistent with the general area. A Heritage Agreement sits adjacent the eastern side of Piggott Range Road. The closest NPW property is Onkaparinga National Park, 3.5km to the south.

Details of the vegetation association proposed to be impacted

Vegetation Association	Vegetation Association 1; <i>Eucalyptus leucoxyton</i> / <i>E. microcarpa</i> woodland.
------------------------	---



Photo 1. Looking SE, an area of approximately 440m² of roadside vegetation across two small sites (aggregated), may be impacted by works.

General description	The Association covers the vegetation adjacent Piggott Range Road and Easton Road. It shows reasonable diversity, but is not as complex nor as dense as the adjacent HA. <i>E. microcarpa</i> is the dominant Eucalypt. Species lists for the area show high potential annual species presence, and a revisit in September 2023 identified several of these, and other ground layer species. No threatened species were noted at the original nor later visits. Weed coverage and diversity was relatively low (annuals not evident generally). Disturbance appeared to be restricted to weed invasion and edge effects. Impact to a number of trees within this area will be avoided, and the impact tally is considered worst case scenario.				
Threatened species or community	<i>E. fasciculosa</i> , SA Rare, was present at the site; the Yellow-tailed Black Cockatoo (State R) was observed flying over the site.				
Landscape context score	1.11	Vegetation Condition Score	46.40	Conservation significance score	1.14
Unit biodiversity Score	58.71	Area (ha)	0.044	Total biodiversity Score	2.58

Details of the scattered trees proposed to be impacted

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	General comments	Photo #
2	<i>Eucalyptus fasciculosa</i>	1	7.0	0	30	5	0.57	Small tree in good condition providing habitat for a number of threatened species	1
3	<i>Eucalyptus fasciculosa</i>	1	8.0	0	60	5	1.41	Small tree in good condition providing habitat for a number of threatened species	2
6	<i>Eucalyptus fasciculosa</i>	3	10.0	0	20	10	1.56	Medium tree in good condition providing habitat for a number of threatened species	3
8	<i>Eucalyptus fasciculosa</i>	1	6.0	0	25	10	0.45	Small tree in good condition providing habitat for a number of threatened species	4
9	<i>Eucalyptus fasciculosa</i>	1	6.0	0	20	15	0.37	Small tree in good condition providing habitat for a number of threatened species	5
10	<i>Eucalyptus fasciculosa</i>	7	14.0	0	40	5	15.00	Medium tree in good condition providing habitat for a number of threatened species	6
13	<i>Eucalyptus fasciculosa</i>	4	8.0	0	25	10	2.05	Small tree in good condition providing habitat for a number of threatened species	7
14	<i>Eucalyptus fasciculosa</i>	4	14.0	0	70	20	10.24	Medium tree in fair condition providing habitat for a number of threatened species	8
15	<i>Eucalyptus fasciculosa</i>	1	14.0	0	45	20	2.01	Medium tree in fair condition providing habitat for a number of threatened species	9
18	<i>Eucalyptus fasciculosa</i>	1	14.0	1s	110	10	4.81	Medium tree in good condition providing habitat for a number of threatened species	10
20	<i>Eucalyptus fasciculosa</i>	1	12.0	0	40	20	1.28	Medium tree in fair condition providing habitat for a number of threatened species	11
23	<i>Eucalyptus porosa</i>	1	16.0	1s	45	40	3.67	Large tree in poor condition providing habitat for a number of threatened species	12
24	<i>Eucalyptus porosa</i>	1	10.0	0	40	30	3.28	Medium tree in fair condition providing habitat for a number of threatened species	13
26	<i>Eucalyptus microcarpa</i>	3	12.0	1m	50	30	6.31	Medium tree in fair condition providing habitat for a number of threatened species	14
27	<i>Eucalyptus porosa</i>	4	10.0	1m	25	10	13.13	Medium tree in good condition providing habitat for a number of threatened species	15

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	General comments	Photo #
28	<i>Eucalyptus porosa</i>	1	10.0	0	20	10	2.07	Medium tree in good condition providing habitat for a number of threatened species	16
29	<i>Eucalyptus porosa</i>	1	9.0	0	15	30	1.19	Small tree in fair condition providing habitat for a number of threatened species	17
30	<i>Eucalyptus porosa</i>	1	14.0	1s	50	20	4.35	Medium tree in fair condition providing habitat for a number of threatened species	18
31	<i>Eucalyptus microcarpa</i>	1	5.0	0	20	40	0.25	Small tree in poor condition providing habitat for a number of threatened species	19
33	<i>Eucalyptus microcarpa</i>	1	13.0	0	30	30	1.05	Medium tree in fair condition providing habitat for a number of threatened species	20
34	<i>Eucalyptus porosa</i>	1	16.0	0	40	20	3.51	Large tree in fair condition providing habitat for a number of threatened species	21
35	<i>Exocarpus cupressiformis</i>	1	6.0	0	45	10	2.61	Small tree in good condition providing habitat for a number of threatened species	22
36	<i>Eucalyptus porosa</i>	1	7.0	1s	50	10	3.64	Small tree in good condition providing habitat for a number of threatened species	23
37	<i>Eucalyptus microcarpa</i>	1	14.0	1s	70	20	3.81	Medium tree in fair condition providing habitat for a number of threatened species	24
38	<i>Eucalyptus microcarpa</i>	1	10.0	0	40	20	1.15	Medium tree in fair condition providing habitat for a number of threatened species	25
39	<i>Eucalyptus microcarpa</i>	1	7.0	0	25	10	0.47	Small tree in good condition providing habitat for a number of threatened species	26
40	<i>Eucalyptus microcarpa</i>	1	12.0	0	20	15	0.59	Medium tree in good condition providing habitat for a number of threatened species	27
49	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	14.0	0	50	5	2.11	Medium tree in good condition providing habitat for a number of threatened species	28
56	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	45	20	2.11	Large tree in good condition providing habitat for a number of threatened species	29
57	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	70	10	3.38	Large tree in good condition providing habitat for a number of threatened species	30
58	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	7.0	0	30	30	0.39	Small tree in fair condition providing habitat for a number of threatened species	31

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	General comments	Photo #
60	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	14.0	0	40	20	1.27	Medium tree in good condition providing habitat for a number of threatened species	32
61	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	17.0	0	40	50	1.18	Large tree in poor condition providing habitat for a number of threatened species	33
65	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	18.0	0	80	10	4.05	Large tree in good condition providing habitat for a number of threatened species	34
67	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	2	20.0	1s	70	20	8.65	Large tree in good condition providing habitat for a number of threatened species	35
68	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	20.0	0	70	10	4.06	Large tree in good condition providing habitat for a number of threatened species	36
69	<i>Eucalyptus microcarpa</i>	1	14.0	0	30	30	1.13	Medium tree in fair condition providing habitat for a number of threatened species	37
73	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	50	10	2.25	Large tree in good condition providing habitat for a number of threatened species	38
75	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	18.0	0	40	10	2.26	Large tree in good condition providing habitat for a number of threatened species	39
78	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	18.0	1s	120	5	6.64	Large tree in good condition providing habitat for a number of threatened species	40
85	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	30	30	1.06	Large tree in fair condition providing habitat for a number of threatened species	41
92	<i>Acacia pycnantha</i>	1	6.0	0	10	60	0.47	Small tree in poor condition providing habitat for a number of threatened species	42
93	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	14.0	0	40	10	1.38	Medium tree in good condition providing habitat for a number of threatened species	43
95	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	5.0	0	20	20	0.28	Small tree in good condition providing habitat for a number of threatened species	44
97	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	10.0	0	30	10	0.58	Medium tree in good condition providing habitat for a number of threatened species	45
98	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	12.0	0	30	5	1.03	Medium tree in good condition providing habitat for a number of threatened species	46
99	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	4	11.0	1m	20	20	2.14	Medium tree in good condition providing habitat for a number of threatened species	47

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	General comments	Photo #
100	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	4	14.0	0	20	20	2.15	Medium tree in good condition providing habitat for a number of threatened species	48
104	<i>Eucalyptus viminalis ssp cygnetensis</i>	1	16.0	0	80	25	3.94	Large tree in good condition providing habitat for a number of threatened species	49
106	<i>Eucalyptus viminalis ssp cygnetensis</i>	1	17.0	0	130	20	6.31	Large tree in good condition providing habitat for a number of threatened species	50
107	<i>Eucalyptus viminalis ssp cygnetensis</i>	3	17.0	0	60	15	11.22	Large tree in good condition providing habitat for a number of threatened species	51
108	<i>Eucalyptus viminalis ssp cygnetensis</i>	1	17.0	0	90	10	4.76	Large tree in good condition providing habitat for a number of threatened species	52
109	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	10.0	0	30	20	0.53	Medium tree in good condition providing habitat for a number of threatened species	53
112	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	15.0	0	60	10	2.35	Large tree in good condition providing habitat for a number of threatened species	54
113	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	2	16.0	0	50	10	4.49	Large tree in good condition providing habitat for a number of threatened species	55
114	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	70	10	3.38	Large tree in good condition providing habitat for a number of threatened species	56
115	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	11.0	0	25	20	0.50	Medium tree in good condition providing habitat for a number of threatened species	57
116	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	30	20	1.15	Large tree in good condition providing habitat for a number of threatened species	58
118	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	30	30	1.06	Large tree in fair condition providing habitat for a number of threatened species	59
119	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	40	10	2.04	Large tree in good condition providing habitat for a number of threatened species	60
121	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	40	10	2.04	Large tree in good condition providing habitat for a number of threatened species	61
122	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	40	30	1.31	Large tree in fair condition providing habitat for a number of threatened species	62
123	<i>Eucalyptus leucoxylon ssp leucoxylon</i>	1	16.0	0	40	20	1.42	Large tree in good condition providing habitat for a number of threatened species	63

Site maps showing scattered trees and vegetation association impacted (approximate locations)



Figure 3. Bushland area impacted (two small sites, aggregated)



Figure 4. Scattered trees impacted



Figure 5. Scattered trees impacted



Figure 6. Scattered trees impacted

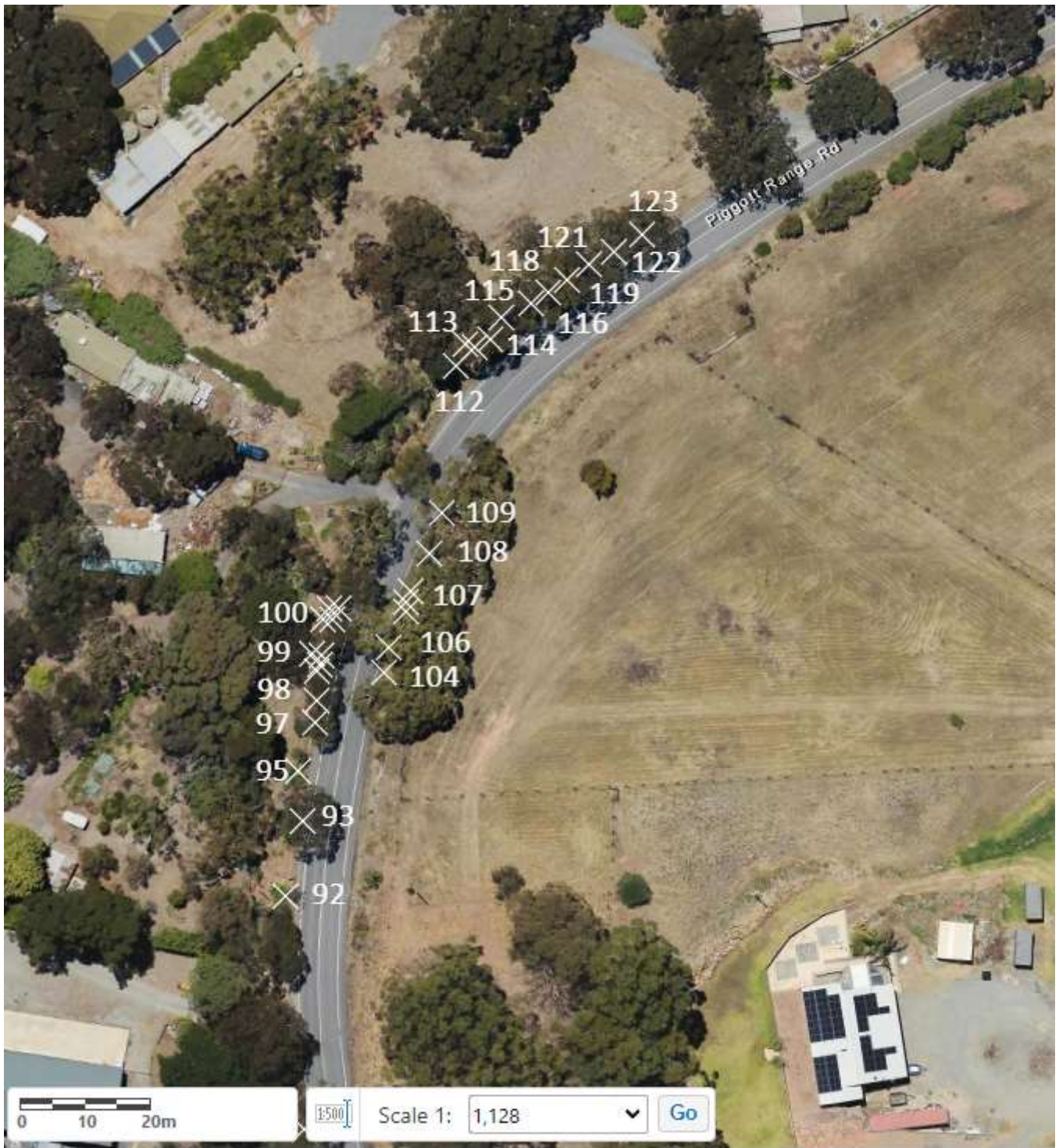


Figure 7. Scattered trees impacted

4.2 Threatened Species assessment

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

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Corcorax melanorhamphos</i> White-winged Chough	R		3	2022	Found in open forests and woodlands, preferring the wetter areas with lots of leaf-litter for feeding, and available mud for nest building	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent.
<i>Falco hypoleucos</i> Grey Falcon		VU	5		Shrubland, grassland, along watercourses	Unlikely, suitable habitat not present
<i>Falco peregrinus macropus</i> Peregrine Falcon	R		3	2014	Found in most habitats, from rainforests to the arid zone, and from coast to alpine areas. Requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water. May be found nesting on high city buildings	Likely. The surrounding environment provides ample habitat for perching, hunting and feeding, and the Onkaparinga River National Park provides potential cliff nesting habitat.
<i>Hylacola pyrrhopygia parkeri</i> Chestnut-rumped Heathwren (Mount Lofty Ranges)	E	EN	5	2021	Heath and dense undergrowth within Eucalypt forests and woodlands, especially in rocky areas. Vegetation type varies throughout their range, dense understorey appears to be a chief characteristic of habitat	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent
<i>Neophema elegans elegans</i> Elegant Parrot	R		3	2021	Found in a wide variety of open habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent
<i>Petroica boodang boodang</i> Scarlet Robin	R		3	2021	Open forests and woodlands; open habitats such as grasslands, farmland and urban parks and gardens	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent

<i>Turnix varius varius</i> Painted Buttonquail	R		3	2006	A range of Eucalypt associations wherever leaf litter is prominent	Likely. The Heritage Agreement adjacent provides suitable habitat.
<i>Zanda funerea whiteae</i> Yellow-tailed Black Cockatoo	V		4	2021	Stringybark forest and woodland, with Sheoaks, Banksias and Hakeas. Plantation Pine forests and individual Pine trees	Known, observed flying over the site during the assessment. Suitable habitat present in the vicinity of the assessment site.
<i>Isoodon obesulus obesulus</i> Southern Brown Bandicoot (SA mainland and KI)	V	EN	5	2021	Known to inhabit a variety of habitats including heathland, shrubland, sedgeland, heathy open forest and woodland and are usually associated with infertile, sandy and well drained soils, but can be found in a range of soil types	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	R	VU	5	2020	Will feed in remnant native vegetation patches as well as in urban areas, also take advantage of new resources, including fruits of cultivated trees, especially when their preferred food resources are limited	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent
<i>Trichosurus vulpecula</i> Common Brushtail Possum	R		3	2022	Found in Eucalyptus and Sheoak woodlands. Nests in tree hollows or other dark confined spaces such as hollow logs, dense vegetation roof spaces or crevices. Have adapted to life in the suburbs and enjoy eating planted gardens	Highly likely. Recently recorded, with suitable habitat present in the vicinity of the assessment site, especially the Heritage Agreement adjacent. Some tree scratchings were found.
<i>Egernia cunninghami</i> Cunningham's Skink	E		3	2008	Forests and open woodlands with rock outcrops	Likely. The assessment site and Heritage Agreement adjacent provides potentially suitable habitat.
<i>Varanus rosenbergi</i> Heath Goanna	V		3	2012	Variety of habitats from coastal and desert heaths to humid woodlands	Likely. The Heritage Agreement adjacent provides suitable habitat.
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

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must consider the potential cumulative impact, both direct and indirect, that is reasonably likely to result from a proposed clearance activity.

- *clearance directly required for the development (e.g. access, building footprints, associated infrastructure – power and water, etc.),*
All associated impacts are accounted for in this assessment. Site compounds are located outside the footprint and do not have native vegetation impacts. It is not anticipated that further clearance will be required once the project is delivered.
- *subsequent clearance that will be permitted or required (e.g. 10m around a building, 20m around a dwelling, clearance for fire protection),*
These clauses do not apply to this type of development.
- *indirect clearance that may occur as a result of the development (e.g. dust generation smoothing vegetation, altered hydrology inundating or drying vegetation, impacting on tree root zones (the application of fill) impacting on tree health),*
Drainage design has considered impact to hydrology, and these are included in the vegetation assessment, as have level changes impacting tree roots. Dust suppression measures, if required, will be applied during construction.
- *future stages or associated components of a development (noting, the clearance for future stages of a development does not need to be assessed as part of this application, only discussed to provide the NVC with the full context of the proposed clearance)*
The upgrade of the junction of Bains Road with Piggott Range Road was recently completed and was subject to a separate clearance application.

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

The original design has been reviewed frequently and significant changes made in order to avoid impacting vegetation, including a reduction of impact to the adjacent Heritage Area. Level changes have been avoided or reduced and clearance reduced from 173 trees and 0.115 ha to 92 trees and 0.044 ha.

A fauna management plan is proposed which will assess the direct impact on fauna species due to clearance activities and recommend proactive measures to minimise and address fauna impacts from pre- to post construction, and to outline immediate actions to mitigate the loss of fauna habitat features.

The assessment outcome reflects worst case scenario and ongoing effort during construction is likely to result in fewer trees and a smaller area of bushland affected.

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).

Relocation of the project site is not an option. During construction, tree protection measures are proposed which will reduce impact to vegetation to be retained. Additionally, alternative, tree-sensitive methodology for works in proximity to vegetation is to be implemented wherever feasible. Further reductions in impact are considered possible.

Intact areas of bushland and scattered trees that won't be cleared will be protected and identified during construction through the installation of bunting and silt fencing.

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.

The remnant understorey vegetation that remains post clearance and project construction will continue to be managed within councils Roadside Marker System (RMS) Vegetation Management contract. Sensitive weed control will be undertaken by environmental contractors to ensure that existing and weed species stimulated by site disturbance do not impact on native vegetation condition.

As Council recognises the value of the remnant understorey at the site, seeds from this roadside will be harvested pre clearance and used to grow seedlings for reintroduction into nearby natural reserves, including the proposed McHarg Reserve, Happy Valley SEB credit site.

The offset obligation will be met via extensive ecological restoration works using existing and proposed SEB Credit sites and if these don't achieve the full offset, payment will also be made.

A broader mitigation strategy is to develop a Native Vegetation Management Plan for McHarg Reserve in Happy Valley, allowing designation of this site as another SEB offset credit area. This plan is currently in production and will be completed by December 2023.

- 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 offset will be made via a combination of utilising City of Onkaparinga Credit Sites (including the proposed McHarg Reserve, Happy Valley credit site) and, if required, payment of any outstanding offset requirements into the NV fund.

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

The Native Vegetation Council will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The Native Vegetation Council will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act 2016*.

Principle of clearance	Considerations
Principle 1a - it comprises a high level of diversity of plant species	<u>Relevant information</u> The number of plant species recorded (native and introduced) for each vegetation association; 67 native and 15 introduced species were recorded. Patches; Bushland Plant Diversity Score - 24
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> Vegetation Association 1 - SAV <u>At Variance</u> – - N/A
	<u>Moderating factors that may be considered by the NVC</u> Amount of clearance related to area of remnant – less than 25% of native vegetation within a 5km radius
Principle 1b - significance as a habitat for wildlife	<u>Relevant information</u> <i>List of threatened species that were recorded or may use the vegetation.</i> Appendix 1 lists the threatened fauna recorded within 5km of the site. Of the 13 species with potential to be present, 1 is known, 7 were considered highly likely, 4 likely and 1 unlikely. <i>Detail if the vegetation supports a high diversity of animal species</i> One species – Yellow-tailed Black Cockatoo – was observed flying over during the assessment. <i>Detail if the vegetation provides a corridor or a habitat refuge, especially in heavily cleared areas.</i> The vegetation assessed exhibits a high degree of connectivity with other remnants and roadside vegetation. The HA adjacent provides significant refuge and part of the site adjoins this.
	Patches; Threatened Fauna Score – 0.1 Unit biodiversity Score – 58.71 Trees; Fauna Habitat Score – all scattered trees scored 1.8 Biodiversity Score – ranges from 0.25 (tree 31) to 6.64 (tree 78), total 165.66.
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> - VA 1 is SAV (UBS > 50). All scattered trees are SAV (FHS > 1.2) <u>At Variance</u> – N/A

	<u>Moderating factors that may be considered by the NVC</u> Impact significance
Principle 1c - plants of a rare, vulnerable or endangered species	<u>Relevant information</u> List threatened species that were recorded for the site or that may be present but undetectable at the time of assessment (e.g. orchids) – <i>E. fasciculosa</i> (Pink Gum) was recorded on site, and five orchid species were listed but not observed, including <i>Caladenia rigida</i>, <i>Prasophyllum pallidum</i>, <i>Pterostylis foliata</i>, <i>Thelymitra grandiflora</i> and <i>T. ixioides</i>. There is reasonable potential for their presence within the Heritage Agreement adjacent, but less potential in the road reserve vegetation. They were not noted in a follow-up survey in September 2023. Identify the distribution of species within the area of impact – Pink Gum was distributed across the southern part of the site up to Easton Road, on both sides, but was almost absent from the northern section. What level of impact on the local population of the plant species? – 25 individual Pink Gums are proposed for clearance. The species tends to be well represented in the area. It is likely that impact to these individuals will not have significant negative consequences. Number of plants likely to be impacted in the clearance area – 25 individual trees of a threatened species are impacted Bushland Threatened Flora Score – 0.04 Scattered Tree Threatened Flora Score(s) – 25 trees scored 0.3, the remainder scored 0 <u>Assessment against the principles</u> <u>Seriously at Variance</u> - Impact to all <i>E. fasciculosa</i> (25 trees) is SAV <u>At Variance</u> – - Vegetation Association 1 <u>Moderating factors that may be considered by the NVC</u> Impact significance; number of plants to be cleared
Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:	<u>Relevant information</u> Identify any threatened communities under the EPBC Act or threatened ecosystems under the DEW Provisional list of threatened ecosystems present? N/A Threatened Community Score - 1 <u>Assessment against the principles</u> <u>Seriously at Variance</u> N/A <u>Moderating factors that may be considered by the NVC</u> N/A
Principle 1e - it is significant as a remnant of vegetation in an area which has been extensively cleared.	<u>Relevant information</u> Remnancy figures for IBRA Association – 34% and IBRA Subregion – 15% Discuss the health and likely longevity of remnants. The remnant vegetation is likely to continue to remain viable as long as management actions such as weed and pest control are undertaken. The proximity to the Heritage Agreement is a benefit as any management actions applied to that site could have flow on benefits to the roadside remnant. However, the proximity to rural living blocks with urban gardens will present ongoing threats including foreign species infiltration, and predation of fauna by domestic pets. Total Biodiversity Score – $2.58 + 165.66 = 168.24$ <u>Assessment against the principles</u> <u>Seriously at Variance</u> N/A <u>At Variance</u> All ST's and patch are AV

	<u>Moderating factors that may be considered by the NVC</u> N/A
Principle 1f - it is growing in, or in association with, a wetland environment.	<u>Relevant information</u> The vegetation assessed is not associated with a wetland
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> N/A
	<u>At Variance –</u> N/A
	<u>Moderating factors that may be considered by the NVC</u> – N/A
Principle 1g - it contributes significantly to the amenity of the area in which it is growing or is situated.	<u>Relevant information</u> <i>Detail the location of trees or vegetation relative to sites frequented by the public (e.g. roads, towns, lookout, etc.)</i> The vegetation occurs on road reserve and the edge of a Heritage Agreement. It is a highly trafficked road used by commuters but not in frequent or regular use as a scenic route. The site is not associated with any scenic stops or towns.
	<i>Provide details of cultural or historical values</i> There are no known or obvious cultural or heritage values evident; however the association with the adjacent Heritage Agreement adds value to the site.
	<i>Discuss possible effect on landscape character</i> Given the density of the vegetation surrounding the site, it is not anticipated that the impact proposed would have significant negative impact on landscape character.
	<u>Moderating factors that may be considered by the NVC</u> - N/A

4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	92
	Area (ha)	0.044
	Total biodiversity Score	168.24
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b) and 1(c)
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Area Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
1	VA1	24	1	0.04	0.1	58.71	0.044	2.58	1	0	0	2.71	\$3,481.54	\$191.48
						Total	0.044	2.58				2.71	\$3,481.54	\$191.48

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	1	1.8	0.3	0.5679912	1	0.60	\$765.50	\$42.10
3	1	1.8	0.3	1.4104438	1	1.48	\$1,900.89	\$104.55
6	3	1.8	0.3	0.5200466	1	1.64	\$2,102.64	\$115.65
8	1	1.8	0.3	0.4459829	1	0.47	\$601.06	\$33.06
9	1	1.8	0.3	0.3705257	1	0.39	\$499.37	\$27.47
10	7	1.8	0.3	2.1428489	1	15.75	\$20,215.83	\$1,111.87
13	4	1.8	0.3	0.5134259	1	2.16	\$2,767.83	\$152.23
14	4	1.8	0.3	2.5594277	1	10.75	\$13,797.64	\$758.87
15	1	1.8	0.3	2.0147663	1	2.12	\$2,715.36	\$149.34
18	1	1.8	0.3	4.8108088	1	5.05	\$6,483.66	\$356.60
20	1	1.8	0.3	1.282367	1	1.35	\$1,728.28	\$95.06
23	1	1.8	0	2.3831597	1	2.50	\$3,211.85	\$176.65
24	1	1.8	0	1.0615835	1	1.11	\$1,430.73	\$78.69
26	3	1.8	0	2.1028324	1	6.62	\$8,502.14	\$467.62
27	4	1.8	0	1.0615835	1	4.46	\$5,722.90	\$314.76
28	1	1.8	0	0.5273693	1	0.55	\$710.75	\$39.09
29	1	1.8	0	0.3481151	1	0.37	\$469.16	\$25.80
30	1	1.8	0	2.5495474	1	2.68	\$3,436.10	\$188.99
31	1	1.8	0	0.246322	1	0.26	\$331.97	\$18.26
33	1	1.8	0	1.0512973	1	1.10	\$1,416.86	\$77.93
34	1	1.8	0	2.2726555	1	2.39	\$3,062.92	\$168.46
35	1	1.8	0	2.6058732	1	2.74	\$3,512.01	\$193.16
36	1	1.8	0	1.329717	1	1.40	\$1,792.10	\$98.57
37	1	1.8	0	3.8108449	1	4.00	\$5,135.98	\$282.48
38	1	1.8	0	1.1533406	1	1.21	\$1,554.39	\$85.49

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
39	1	1.8	0	0.4700421	1	0.49	\$633.49	\$34.84
40	1	1.8	0	0.5882829	1	0.62	\$792.85	\$43.61
49	1	1.8	0	2.1056437	1	2.21	\$2,837.83	\$156.08
56	1	1.8	0	1.9873396	1	2.09	\$2,678.39	\$147.31
57	1	1.8	0	3.3830358	1	3.55	\$4,559.41	\$250.77
58	1	1.8	0	0.3948439	1	0.41	\$532.14	\$29.27
60	1	1.8	0	1.2721408	1	1.34	\$1,714.50	\$94.30
61	1	1.8	0	1.1820702	1	1.24	\$1,593.11	\$87.62
65	1	1.8	0	4.0458394	1	4.25	\$5,452.69	\$299.90
67	2	1.8	0	4.3244781	1	9.08	\$11,656.44	\$641.10
68	1	1.8	0	4.0601972	1	4.26	\$5,472.04	\$300.96
69	1	1.8	0	1.1285016	1	1.18	\$1,520.91	\$83.65
73	1	1.8	0	2.2464914	1	2.36	\$3,027.66	\$166.52
75	1	1.8	0	2.2554971	1	2.37	\$3,039.80	\$167.19
78	1	1.8	0	6.6377469	1	6.97	\$8,945.87	\$492.02
85	1	1.8	0	1.0563312	1	1.11	\$1,423.65	\$78.30
92	1	1.8	0	0.4722018	1	0.50	\$636.40	\$35.00
93	1	1.8	0	1.3754934	1	1.44	\$1,853.79	\$101.96
95	1	1.8	0	0.2840229	1	0.30	\$382.79	\$21.05
97	1	1.8	0	0.583407	1	0.61	\$786.27	\$43.25
98	1	1.8	0	1.0318181	1	1.08	\$1,390.61	\$76.48
99	4	1.8	0	0.5340218	1	2.24	\$2,878.86	\$158.34
100	4	1.8	0	0.5381412	1	2.26	\$2,901.07	\$159.56
104	1	1.8	0	3.9448424	1	4.14	\$5,316.57	\$292.41
106	1	1.8	0	6.3084927	1	6.62	\$8,502.13	\$467.62
107	3	1.8	0	3.7412479	1	11.78	\$15,126.55	\$831.96
108	1	1.8	0	4.7612432	1	5.00	\$6,416.86	\$352.93
109	1	1.8	0	0.5326534	1	0.56	\$717.87	\$39.48
112	1	1.8	0	2.3515136	1	2.47	\$3,169.20	\$174.31
113	2	1.8	0	2.2464914	1	4.72	\$6,055.32	\$333.04
114	1	1.8	0	3.3830358	1	3.55	\$4,559.41	\$250.77
115	1	1.8	0	0.5018209	1	0.53	\$676.32	\$37.20
116	1	1.8	0	1.1477896	1	1.21	\$1,546.91	\$85.08
118	1	1.8	0	1.0563312	1	1.11	\$1,423.65	\$78.30
119	1	1.8	0	2.0374833	1	2.14	\$2,745.97	\$151.03
121	1	1.8	0	2.0374833	1	2.14	\$2,745.97	\$151.03
122	1	1.8	0	1.3116946	1	1.38	\$1,767.81	\$97.23
123	1	1.8	0	1.4171506	1	1.49	\$1,909.93	\$105.05
Total	92			165.66		173.94	\$200,063.58	\$11,003.50

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	168.24	176.65	\$203,545.12	\$11,194.98	\$214,740.10

Economies of Scale Factor	0.5
Rainfall (mm)	860

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:

- ☒ Use SEB Credit that the proponent has established. SEB Credit Ref. No. 2018_4002, 2013_2014 and 2007_3109 Note, Council intends to develop a Native Vegetation Management Plan for McHarg Reserve in Happy Valley, allowing designation of this site as an SEB offset credit area. Use of this site, subject to NVC approval, and the established credit sites is the preferred method of achieving the required offset for this project.
- ☒ If required SEB Points not met via SEB Credit Sites, pay any outstanding offset requirements (to be determined) into the Native Vegetation Fund.

PAYMENT SEB

NOTE, the total SEB obligation payment amount is as follows, however, the applicant intends to meet part of the SEB obligation via use of SEB Credit Sites already established and/or the proposed McHarg Reserve, Happy Valley SEB credit site (see above)), and any outstanding amount, if applicable, via payment into the fund:

- Total payment amount required (including admin. fee) **\$214,740.10**

7. Appendices

Appendix 1. Flora and Fauna Species Lists

FAMILY NAME	SPECIES	COMMON NAME	NATIONAL RATING	STATE RATING	DATE OF LAST RECORD
COMPOSITAE	Senecio pinnatifolius var. pinnatifolius			R	16-Aug-2000
CYPERACEAE	Cladium procerum	Leafy Twig-rush		R	24-Feb-2009
DENNSTAEDTIACEAE	Hypolepis rugosula	Ruddy Ground-fern		R	03-Jan-1996
DROSERACEAE	Drosera praefolia	Early Sundew		R	09-Apr-1998
EUPHORBIACEAE	Phyllanthus calycinus	Snowdrop Spurge		R	19-Oct-2020
GRAMINEAE	Austrostipa gibbosa	Swollen Spear-grass		R	01-Dec-2010
GRAMINEAE	Austrostipa oligostachya	Fine-head Spear-grass		E	01-Dec-2010
GRAMINEAE	Rytidosperma tenuius	Short-awn Wallaby-grass		R	29-May-2020
JUNCACEAE	Juncus amabilis			V	01-Apr-2003
JUNCACEAE	Juncus australis	Austral Rush		R	29-Dec-1995
LEGUMINOSAE	Acacia iteaphylla	Flinders Ranges Wattle		R	08-Jun-2017
LEGUMINOSAE	Glycine tabacina	Variable Glycine		V	12-May-2010
LEGUMINOSAE	Pultenaea graveolens	Scented Bush-pea		R	
LEGUMINOSAE	Sphaerolobium minus	Leafless Globe-pea		R	
LEGUMINOSAE	Viminaria juncea	Native Broom		R	03-Jan-1996
LOGANIACEAE	Logania saxatilis	Rock Logania		R	11-Sep-1995
MYRTACEAE	Eucalyptus fasciculosa	Pink Gum		R	19-Oct-2020
ORCHIDACEAE	Caladenia rigida	Stiff White Spider-orchid	EN	E	01-Jan-1995
ORCHIDACEAE	Prasophyllum pallidum	Pale Leek-orchid	VU	R	30-Sep-2008
ORCHIDACEAE	Prasophyllum pruinosum	Plum Leek-orchid	EN		
ORCHIDACEAE	Pterostylis foliata	Slender Greenhood		R	23-Sep-2013
ORCHIDACEAE	Pterostylis cucullatus	Leafy Greenhood	VU		
ORCHIDACEAE	Thelymitra grandiflora	Great Sun-orchid		R	19-Oct-2020
ORCHIDACEAE	Thelymitra ixioides	Spotted Sun-orchid		E*	19-Oct-2020
POTAMOGETONACEAE	Potamogeton ochreatus	Blunt Pondweed		R	29-Dec-1995
UMBELLIFERAE	Eryngium ovinum	Blue Devil		V	12-Jan-1997
PLANTAGINACEAE	Veronica derwentiana subsp. homalodonta	Mount Lofty Speedwell	CE		

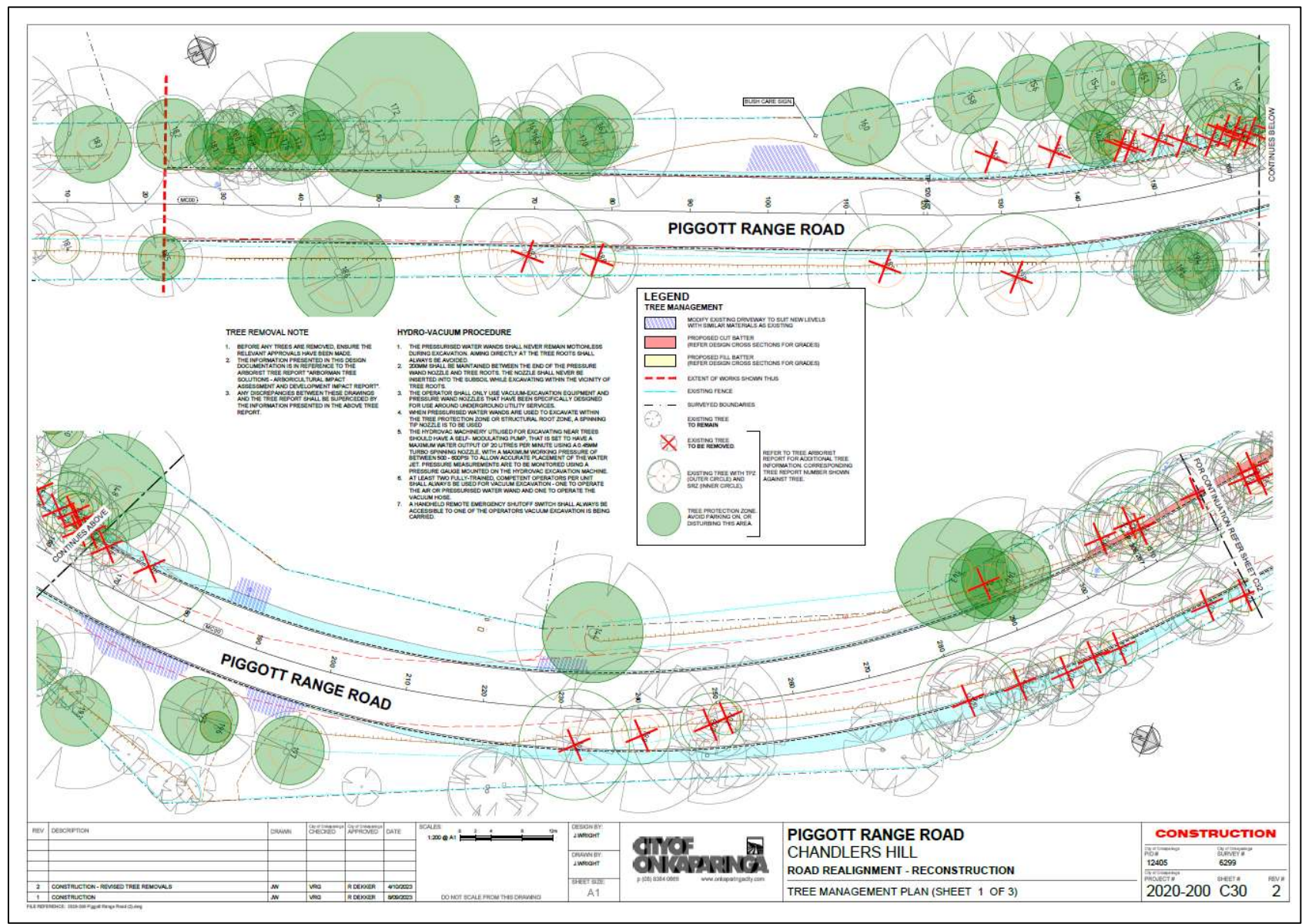
CLASS NAME	SPECIES	COMMON NAME	NATIONAL RATING	STATE RATING	DATE OF LAST RECORD
AVES	<i>Acanthiza lineata</i>	Striated Thornbill	ssp		11-Sep-2021
AVES	<i>Anhinga novaehollandiae</i>	Australasian Darter		R	26-Dec-2019
AVES	<i>Anthochaera chrysoptera</i>	Little Wattlebird	ssp		18-Nov-2017
AVES	<i>Biziura lobata menziesi</i>	Musk Duck		R	02-Jan-2022
AVES	<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN		
AVES	<i>Corcorax melanorhamphos</i>	White-winged Chough		R	02-Jan-2022
AVES	<i>Falco hypoleucos</i>	Grey Falcon	VU		
AVES	<i>Falco peregrinus macropus</i>	Peregrine Falcon		R	23-Mar-2014
AVES	<i>Hylacola pyrrhopygia parkeri</i>	Chestnut-rumped Heathwren (Mount Lofty Ranges)	EN	E	11-Sep-2021
AVES	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	ssp		11-Sep-2021
AVES	<i>Melithreptus gularis</i>	Black-chinned Honeyeater		ssp	01-Apr-2008
AVES	<i>Neophema elegans elegans</i>	Elegant Parrot		R	11-Sep-2021
AVES	<i>Petroica boodang boodang</i>	Scarlet Robin		R	11-Sep-2021
AVES	<i>Platycercus elegans</i>	Crimson Rosella	ssp		02-Jan-2022
AVES	<i>Strepera versicolor</i>	Grey Currawong		ssp	24-Jan-2022
AVES	<i>Thinornis cucullatus cucullatus</i>	Eastern Hooded Plover, Eastern Hooded Plover	VU		
AVES	<i>Turnix varius varius</i>	Painted Buttonquail		R	20-Jun-2006
AVES	<i>Zanda funerea whiteae</i>	Yellow-tailed Black Cockatoo		V	11-Sep-2021
MAMMALIA	<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (SA mainland and KI)	EN	V	01-May-2021
MAMMALIA	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	R	17-Mar-2020
MAMMALIA	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	ssp	ssp	21-Sep-2021
MAMMALIA	<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	24-Jan-2022
REPTILIA	<i>Egernia cunninghami</i>	Cunningham's Skink		E	23-Nov-2008
REPTILIA	<i>Varanus rosenbergi</i>	Heath Goanna		V	01-Oct-2012

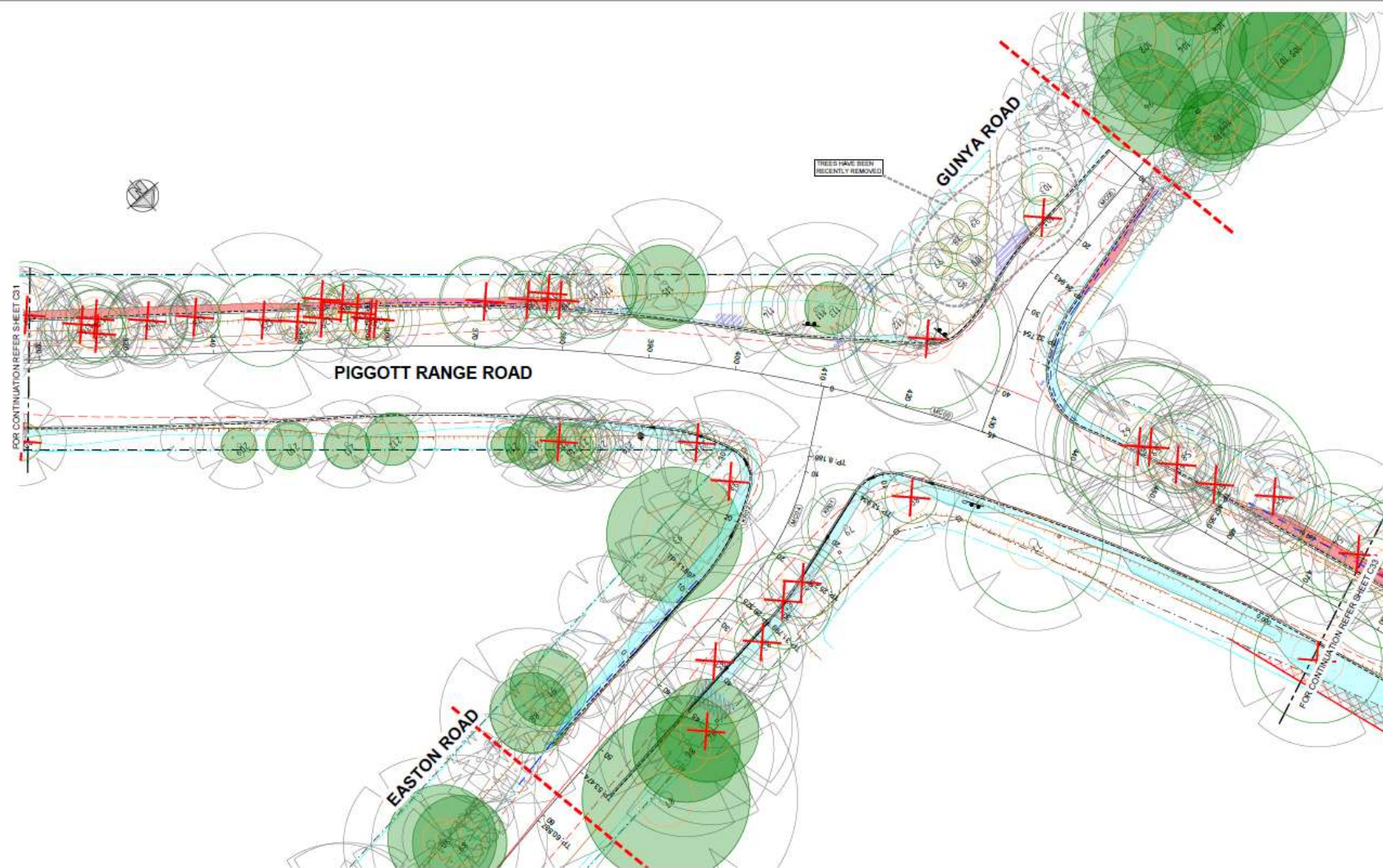
Highlighted species excluded – ssp not occurring in the area or no suitable habitat

Vegetation Condition Scores		Assessment for Clearance	
SITE: VEGETATION ASSOCIATION DESCRIPTION SIZE OF SITE (Ha)		Is the vegetation association considered a Threatened Ecological community or Ecosystem? State (Provisional List of Threatened Ecosystems of SA) Rare community (0.1 pts) 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) <i>Note: all sites will score a minimum Conservation Significance Score of 1</i>	
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)		Threatened Community Score	
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 juvenile 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 juveniles present with varying age classes (12 points) Regeneration Score (Max 12)		Number of Threatened Flora Species recorded for the site (within the site) <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> State Rare species recorded (1 pt each) State Vulnerable species recorded (2.5 pt each) State Endangered recorded (5 pts each) Nationally Vulnerable species recorded (10 pts each) Nationally Endangered or Critically endangered species recorded (20 pts each) 0 = 0 pts; <2 = 0.04 pts; 2 - <5 = 0.08 pts; 5 - <10 = 0.12 pts; 10 - <20 = 0.16 pts; 20 or > = 0.2 pts Threatened Flora Score	
Native Plant species diversity score (max score of 30)		Potential habitat for Threatened Fauna Species (number observed or previously recorded) <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> State Rare species observed or locally recorded (1 pt each) State Vulnerable species observed or locally recorded (2.5 pt each) State Endangered species observed or locally recorded (5 pt each) Nationally Vulnerable species observed or locally recorded (10 pts each) Nationally Endangered or Critically endangered species observed or locally recorded (20 pts each) 0 = 0 pts; <2 = 0.02 pts; 2 - <5 = 0.04 pts; 5 - <10 = 0.06 pts; 10 - <20 = 0.08 pts; 20 or > = 0.1 pts Threatened Fauna Score	
Weed Scores Does the site contain plant species declared under the <i>NRM Act 2004</i> (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) Weed Score (max score of 15)		CONSERVATION SIGNIFICANCE SCORE	
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)		Total Scores for the Site LANDSCAPE CONTEXT SCORE VEGETATION CONDITION SCORE CONSERVATION SIGNIFICANCE SCORE	
Native:exotic Understorey biomass score (max 5)		Vegetation Condition x Landscape Context x Conservation Significance = UNIT BIODIVERSITY SCORE Total Biodiversity Score (Biodiversity Score x hectares)	
Vegetation Condition Score calculation Positive Vegetation Attributes Score = Native species diversity + Regeneration + Native Plant Life Forms + Mature Trees + Fallen timber/debris + Hollow-bearing trees <i>If the community is naturally treeless this score is multiplied by 1.24</i> Negative Vegetation Attributes Score = (15 - Weeds) + ((10 - Biomass score - Tree Canopy Cover Score) x 2/2) VEGETATION CONDITION SCORE (Positive veg attributes x ((Negative vegetation attributes + 60) / 80))		Photo Point and Vegetation Survey Location Direction of the Photo Southeast GPS Reference Datum WGS84 Zone (52, 53 or 54) 54 Easting (6 digits) 281351 Northing (7 digits) 6113049 Description E. microcarpa woodland over native species with few exotics primarily on the edge of shoulder	
Assessment for Clearance Loss Factor Loadings for clearance of protected areas Reductions for rehabilitation of impact site SEB Points required		Approximate hectares required Economies of Scale factor Mean Annual rainfall for the site (mm) Payment into the fund (GST Exclusive) Administration fee (GST inclusive)	
Bar Chart: 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		Final Scores: Loss Factor SEB Points required	

Page 30 of 34

Appendix 3. Design Plans (provided 5 October 2023). Note tree numbers do not match assessment tree numbers – see Figures 3-7 for plans of these





REV	DESCRIPTION	DRAWN	CITY OF CHANDLERHILL CHECKED	CITY OF CHANDLERHILL APPROVED	DATE
2	CONSTRUCTION - REVISED TREE REMOVALS	JW	VRG	R DENNER	4/10/2023
1	CONSTRUCTION	JW	VRG	R DENNER	30/6/2023

P:\2020-200 Piggott Range Road (2).dwg

SCALE: 1:200 @ A1



DO NOT SCALE FROM THIS DRAWING

DESIGN BY:
J WRIGHT
DRAWN BY:
J WRIGHT
SHEET SIZE:
A1

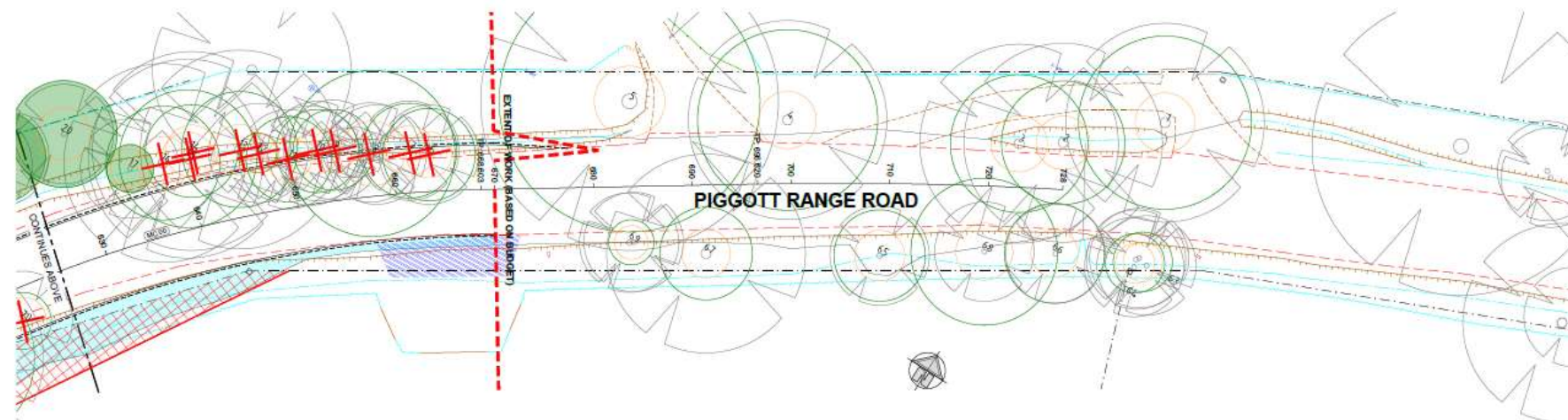
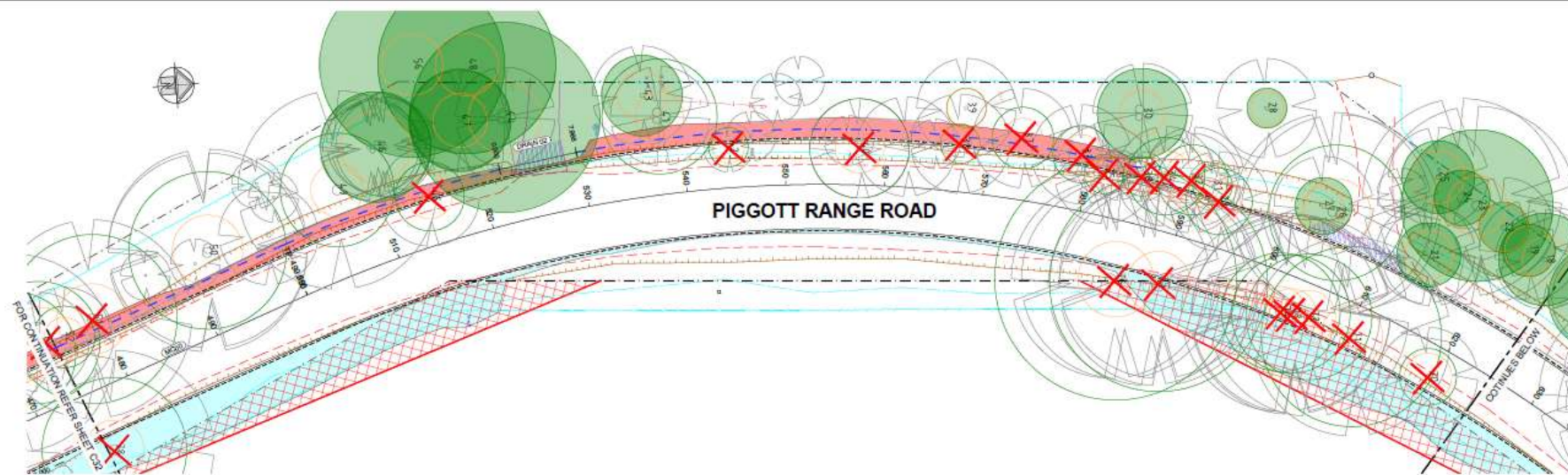


p (08) 5384 0666 www.civilengineeringchandlerhill.com

**PIGGOTT RANGE ROAD
CHANDLER HILL
ROAD REALIGNMENT - RECONSTRUCTION**
TREE MANAGEMENT PLAN (SHEET 2 OF 3)

CONSTRUCTION

CITY OF CHANDLERHILL PLAN # 12405	CITY OF CHANDLERHILL SURVEY # 6299
CITY OF CHANDLERHILL PROJECT # 2020-200 C31	REV # 2



REV	DESCRIPTION	DRAWN	CHK'D	APP'D	DATE
2	CONSTRUCTION - REVISED TREE REMOVALS	JW	VRG	R DEKKER	4/10/2023
1	CONSTRUCTION	JW	VRG	R DEKKER	9/26/2022

FILE REFERENCE: 2020-200 Piggott Range Road C32.dwg

SCALE:	1:200 @ A1
DO NOT SCALE FROM THIS DRAWING	

DESIGNED BY	JWRIGHT
DRAWN BY	JWRIGHT
SHEET SIZE	A1



PIGGOTT RANGE ROAD
CHANDLERS HILL
ROAD REALIGNMENT - RECONSTRUCTION
TREE MANAGEMENT PLAN (SHEET 3 OF 3)

CONSTRUCTION		
CD of Construction	CD of Construction	CD of Construction
PROJECT #	12405	6299
PROJECT #	2020-200	C32
SHEET #		2

Appendix 4. Photographs

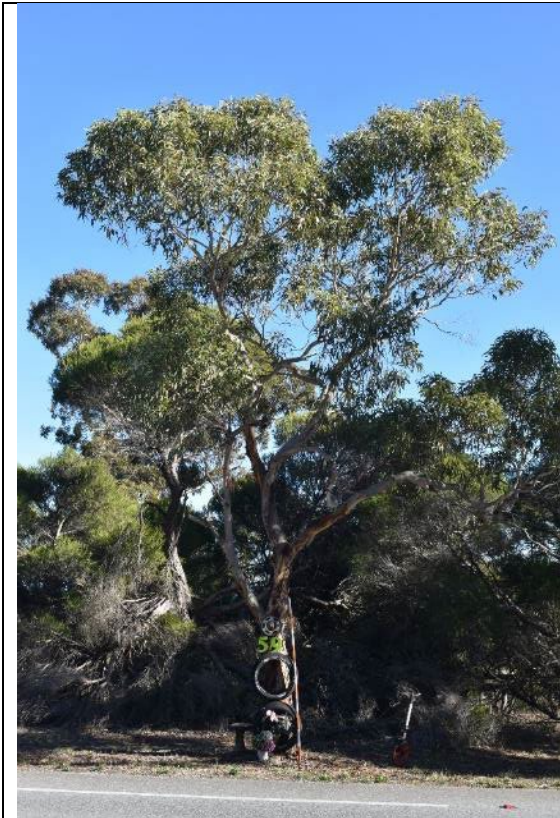


Photo 1 Tree 2



Photo 2 Tree 3



Photo 3 Tree 6



Photo 4 Tree 8



Photo 5 Tree 9



Photo 6 Tree 10



Photo 7 Tree 13



Photo 8 Tree 14



Photo 9 Tree 15

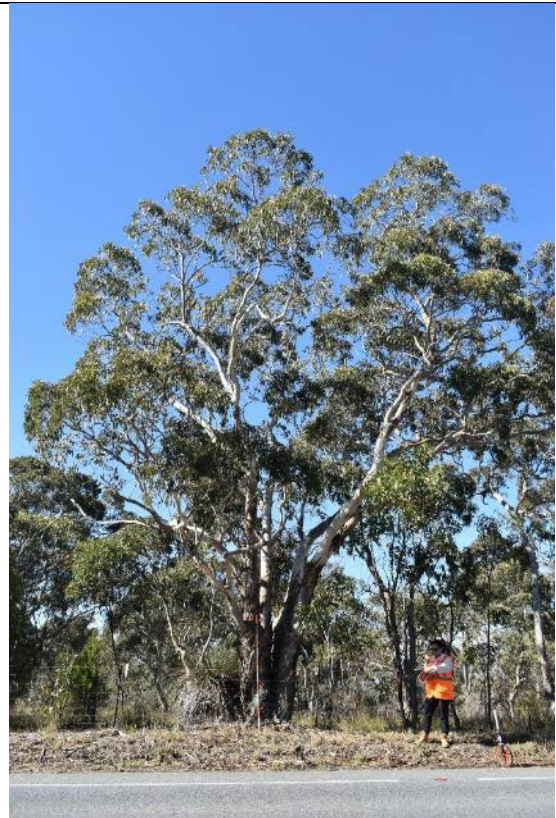


Photo 10 Tree 18



Photo 11 Tree 20



Photo 12 Tree 23



Photo 13 Tree 24



Photo 14 Tree 26



Photo 15 Tree 27



Photo 16 Tree 28



Photo 17 Tree 29



Photo 18 Tree 30



Photo 19 Tree 31



Photo 20 Tree 33



Photo 21 Tree 34

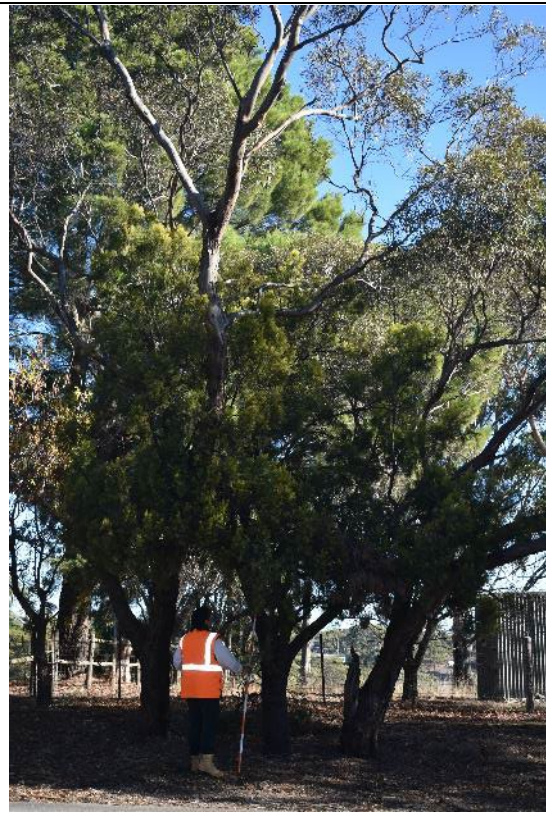


Photo 22 Tree 35



Photo 23 Tree 36



Photo 24 Tree 37



Photo 25 Tree 38



Photo 26 Tree 39



Photo 27 Tree 40



Photo 28 Tree 49



Photo 29 Tree 56

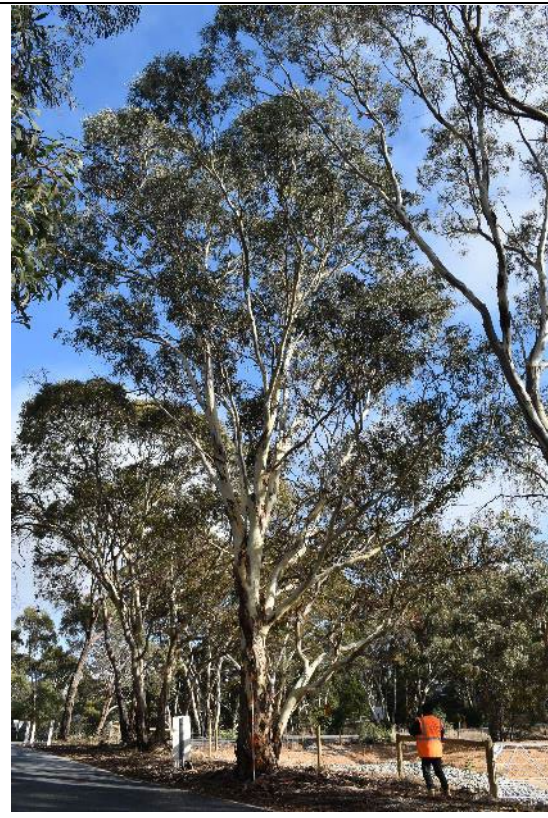


Photo 30 Tree 57

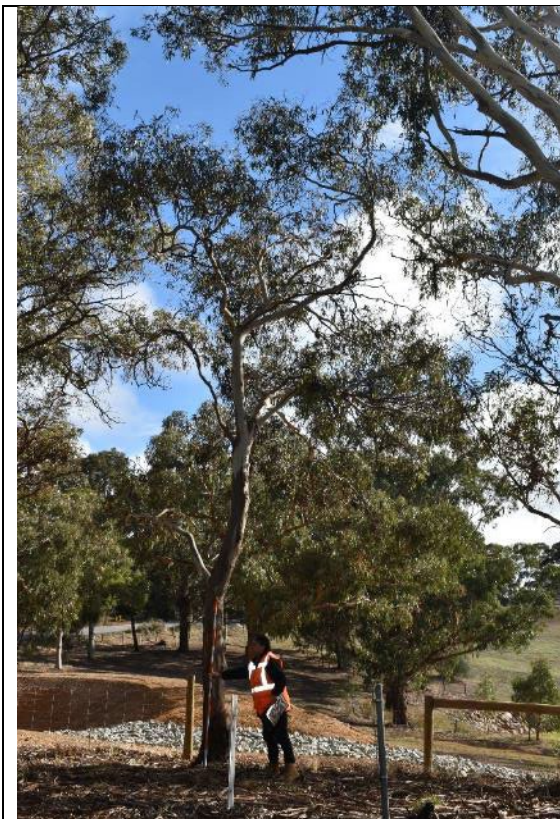


Photo 31 Tree 58



Photo 32 Tree 60



Photo 33 Tree 61

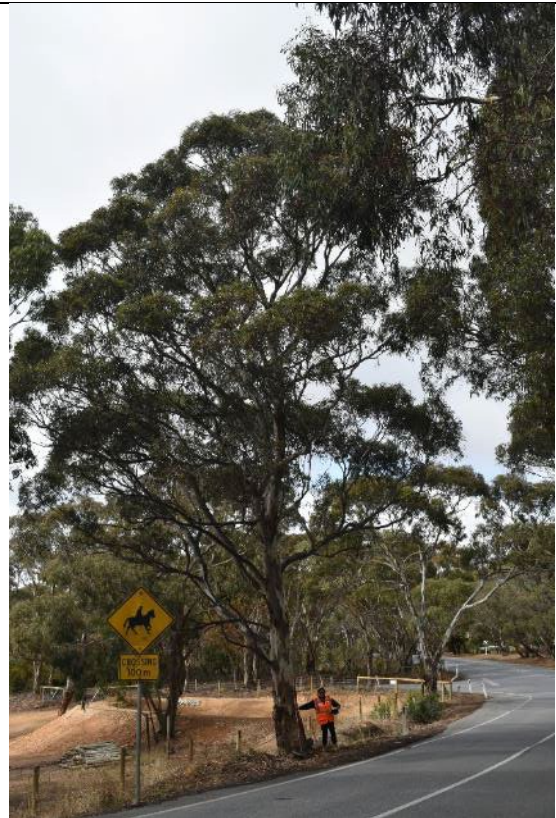


Photo 34 Tree 65



Photo 35 Tree 67



Photo 36 Tree 68



Photo 37 Tree 69



Photo 38 Tree 73



Photo 39 Tree 75



Photo 40 Tree 78



Photo 41 Tree 85

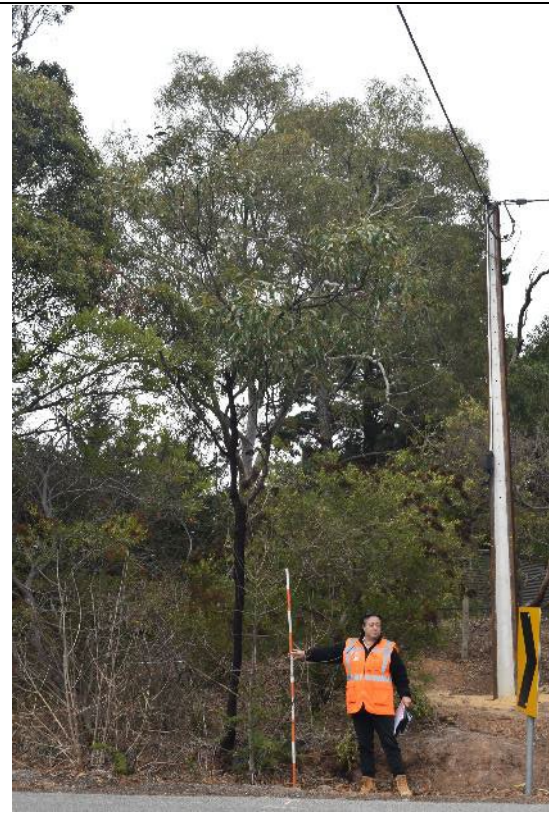


Photo 42 Tree 92



Photo 43 Tree 93



Photo 44 Tree 95



Photo 45 Tree 97



Photo 46 Tree 98



Photo 47 Tree 99



Photo 48 Tree 100



Photo 49 Tree 104



Photo 50 Tree 106



Photo 51 Tree 107



Photo 52 Tree 108



Photo 53 Tree 109



Photo 54 Tree 112

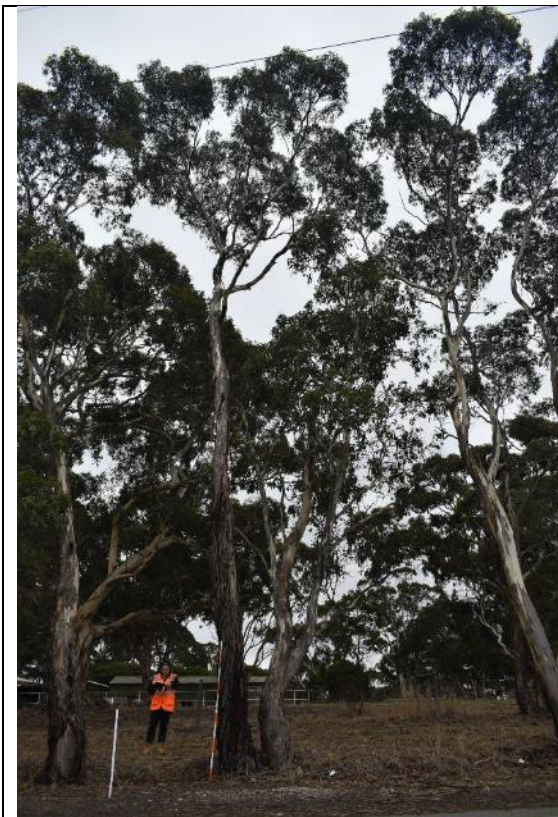


Photo 55 Tree 113



Photo 56 Tree 114



Photo 57 Tree 115



Photo 58 Tree 116



Photo 59 Tree 118



Photo 60 Tree 119



Photo 61 Tree 121



Photo 62 Tree 122



Photo 63 Tree 123