

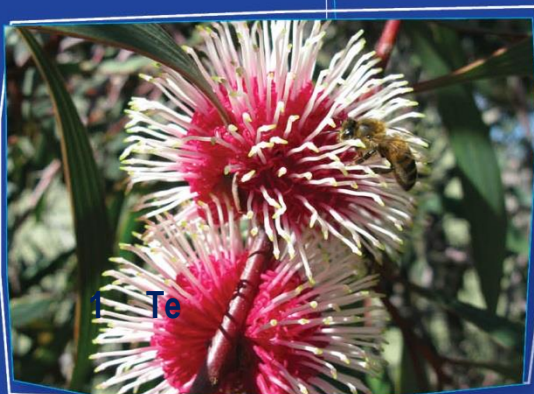
## Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report

Shire of Esperance Strategic Purpose Permit 2021/22  
Site C – Holt Road SLK 6.4-11.61



Report compiled by Shire of Esperance Environmental Team:  
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## 1 Executive Summary

This 'Vegetation, Flora, Fauna and Environmental Considerations and Targeted Flora Report' has been undertaken in accordance with the 'Environmental Protection Authority (EPA) Technical Guidance, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (2016)' as part of the application to the Department of Water and Environmental Regulations (DWER) to clear 5.37 ha of native vegetation for the purpose of widening the road footprint to meet standards for the class of road during the road re-sheet.

## 2 Introduction

The Shire of Esperance endeavors to maintain a high level of road safety, being proactive in identifying high risk road designs and progressively upgrading them. The Shire of Esperance manages the largest road network of any local government in Western Australia, encompassing a total of 4 593 km of road. The Shire of Esperance is submitting 'Holt road SLK 6.4-11.61' project as Site C under the '2022 Strategic Purpose Permit' (Figure 1), for the purpose of road widening during a road re-sheet.

Holt Road is particularly narrow resulting in safety issues during harvest season. Holt Road requires widening to maintain the safety of road users during harvest. This road is classified as a Rural Access B road giving access to properties north east of Salmon Gums. No traffic counts showing heavy vehicle percentages are available for this road however it is an approved RAV route.

To complete these works, native vegetation up to 2m from the current road footprint on both sides of the road is required to be cleared, increasing the active road footprint to 18m. This requires clearing of 5.37 ha of native vegetation. To mitigate impact of clearing vegetation, where feasible clearing will not occur to the full permitted width, conserving vegetation.

The proposed works are located 114 km north of Esperance, within the Shire of Esperance managed road reserve of Holt Rd. Specifically, it is located 6km east of Coolgardie Esperance Highway, at straight line kilometre (SLK) 6.4 to 11.61 (Main Roads, 2021). A point within the proposed clearing permit area is 6364499m N, 376089m E (UTM Zone 51 H, GDA94).

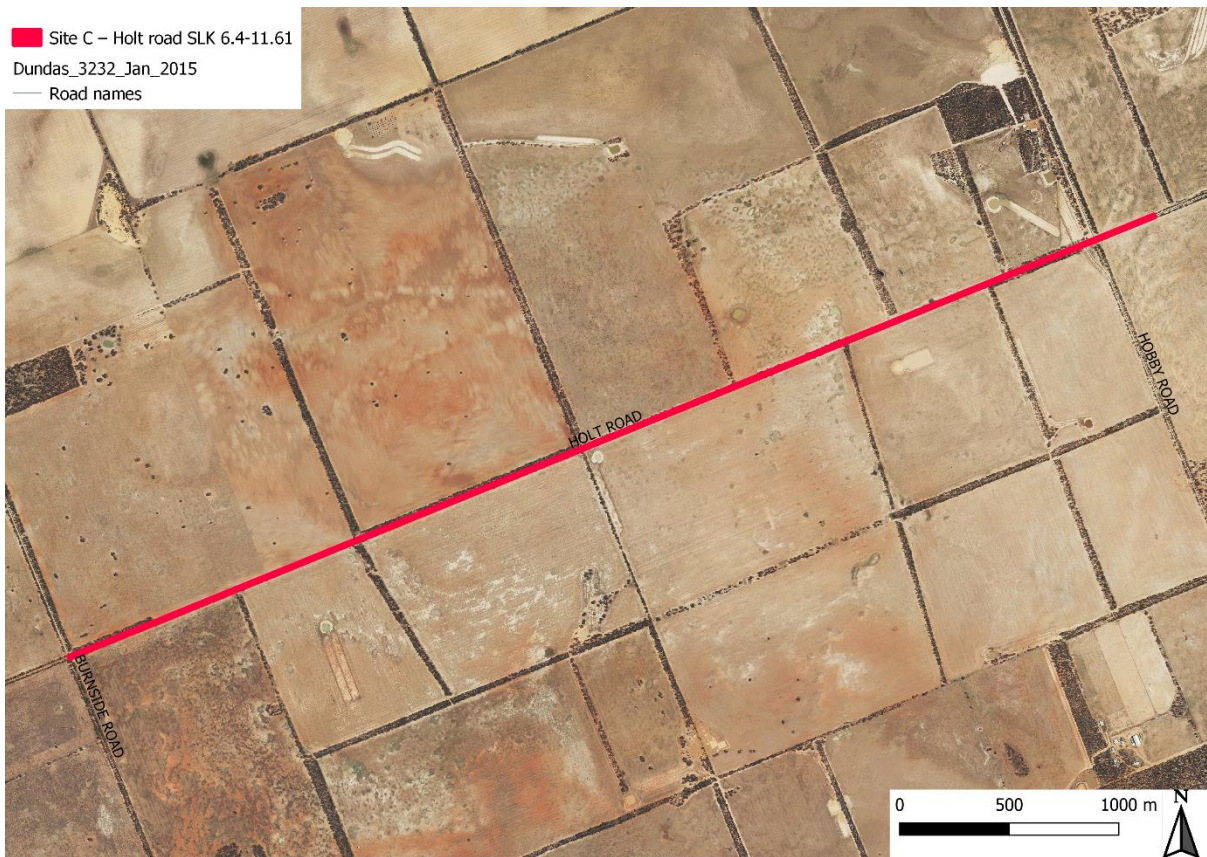


Figure 1. Location of 'Site C – Holt Road SLK 6.4-11.61'

### 3 Environmental Background

#### 3.1 Scope

The removal of native vegetation to an 18m road footprint has the potential to affect a multiple environmental factors.

Possible impacts include;

- Threatened Flora (TF) and Priority Flora (PF).
- Threatened fauna.
- Threatened Ecological communities (TEC) and Priority Ecological Communities (PEC).

Assessing these impacts involves two approaches; desktop study and field survey. The desktop study gathered background information on the target area. The field survey allows for detailed understanding of vegetation communities, targeted flora surveys for possible TF or PF, environmental condition, presence of PEC and TEC, and overall potential impact of clearing.

#### 3.2 Catchment

'Site C – Holt Road SLK 6.4-11.61' is primarily present within the Balladonia catchment area, with a small portion located in the Bandy Creek Catchment. It is located approximately 110km from the coast.

#### 3.3 Climate

The Salmon Gums climate is described as Mediterranean, characterised by cool wet winters and dry warm summers (BoM 2022). The area receives an average annual rainfall of 354 mm.

### 3.4 Geology

A single geological unit was identified within 'Site C – Holt Road SLK 6.4-11.61', by Schoknecht et al. (2004). It is described as "Thin tertiary sediments with additions of calcareous aeolian material over weathered bedrock".

### 3.5 Soils

The soil of 'Site C – Holt Road SLK 6.4-11.61' dominated by Salmon Gums 1 Subsystem and Salmon Gums 2 Subsystem both described as "Alkaline grey shallow sandy duplex soils and calcareous loamy earths with minor non-cracking clays and bare rock" (Schnoknecht et al. 2004).

### 3.6 Topography

During the field survey, topography was observed to be dominated by Level plains. Using Schnoknecht et al. (2004), the project topography is mapped at a fine scale, traversing two topographic areas. These include:

- Level plain or plateau of low relief and poor external drainage and extensive Gilgia microrelief.
- Very gently inclined scarp with external drainage via a well developed network of incipient streams.

### 3.7 Vegetation

The site is located within the Eastern Mallee (Mal01) Interim Biogeographic Regionalisation of Australia (Thackway & Cresswell 1995) region. The Eastern Mallee bioregion is described as "the south-eastern of Yilgarn Craton is gently undulating, with partially occluded drainage. Mainly Mallee over Myrtaceous-Proteaceous heaths on duplex (sand over clay) soils. Melaleuca shrublands characterize alluvia, and Halosarcia low shrublands occur on saline alluvium. A mosaic of mixed Eucalypt woodlands and Mallee occur on calcareous earth plans, and sandplains overlying the Eocene Limestone strata in the East. Semi-arid (dry) and warm Mediterranean".

Beard (1973) mapped one vegetation association (VA) within the "Site C – Holt Road SLK 6.4-11.61" area – VA486 described as Mosaic: Medium woodland; salmon gum & red mallee / Shrublands; mallee scrub, *Eucalyptus eremophila*.

**Table 1.** Vegetation associations mapped by Beard (1973) within the 'Site C – Holt Road SLK 6.4-11.61', and statistics on pre-European remaining areas.

Nt. Acronyms used include Interim Biogeographic Regionalisation of Australia (IBRA), Eastern Mallee bioregion (Mal01), local government area (LGA) and International Union of Conservation Nature (IUCN).

Vegetation Association	
Name	Salmon Gums VA486
Description	Mosaic: Medium woodland; salmon gum & red mallee / Shrublands; mallee scrub <i>Eucalyptus eremophila</i>
Pre-European extent in IBRA region Mal01(%)	35.53%
Pre-European extent in LGA (%)	39.38%
Current extent conserved in IUCN area (%)	2.61%

### 3.8 Land use

The area directly included in the clearing permit application 'Site C – Holt road SLK 6.4-11.61' is currently intact and vegetated 20m & 27m wide road reserve, managed by the Shire of Esperance. The current road footprint occupies 10m. The surrounding land use is broad acre agriculture. The area is within rural zoning.

## 4 Methodology

### 4.1 Desktop study

A desktop study was completed prior to any site visit. Geographical Information System (GIS) review existing

- Existing site digital orthophotos, as sourced from LandGate (Dundas 2015).
- Data provided by Department of Biodiversity, Conservation and Attractions (DBCA) and Western Australian Herbarium was used to assess threatened flora (TF), priority flora (PF), and threatened (TEC) and priority (PEC) ecological communities within 20 km radius of the site. Specifically, spatial data included;
  - WAHerb extract (DBCA 2021f).
  - Threatened and Priority Reporting (TPFL; DBCA 2021d).
  - Esperance District Threatened Flora (DBCA 2021a).
  - TEC and PEC 'Likely to Occur' buffer and boundary areas (DBCA 2021d).
  - Department of Agriculture, Water and the Environment Protected Matters Search Tool
  - Index of Biodiversity Surveys for Assessment (IBSA).
- To assess fauna, the following databases were searched with a 20km buffer from the center of the site (376845M E, 6364802m N GDA 94 zone 51);
  - Department of Biodiversity, Conservation and Attractions (DBCA) and Western Australian Museum (WAM) NatureMap data portal
  - DBCA Threatened and Priority Fauna database
  - BirdLife Australia's Atlas and Birddata datasets
  - Department of Agriculture, Water and the Environment Protected Matters Search Tool
  - Index of Biodiversity Surveys for Assessment (IBSA).

### 4.2 Field investigation: possible ecological impacts

The site was initially inspected on 6/09/2021, by Julie Waters and Katherine Walkerden the Shire of Esperance's Environmental Coordinator and Environmental Officer. An assessment of possible ecological impacts included historical clearing, artificial water way constructions, impact of fire regimes, regeneration from disturbance, waterlogging, senescence, weeds, erosion, sedimentation, invasive fauna, *Phytophthora cinnamomi* Dieback, and illegal dumping of rubbish.

Vegetation community was also assessed during the field survey. Broad vegetation types defined by structure and composition were recorded and described. Condition of vegetation was assessed using Keighery (1994) categories, as 'Excellent', 'Very Good', 'Good', 'Degraded' or 'Completely Degraded'. This illustrates how healthy vegetation is, determined by number of dead or dying plants, weed cover and other forms of degradation. Additionally, possible environmentally sensitive areas, such as wetlands or granite, were noted. Overall, an assessment of environmental impacts to Department of Water and Environmental Regulation's (DWER) biodiversity values were inspected and valued.

Only a very basic fauna survey was conducted as per EPA (2020) guidelines. Observations of fauna presence, such as call sounds, footprints and scats were also noted, and the area assessed for

suitability of endangered Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) feeding, roosting and nesting habitat. Additionally, species that corresponded with suitable habitat within 'Site C – Holt road SLK 6.4-11.61' identified in the desktop 20 km radius search were assessed, including *Acacia amyctica*.

### **4.3 Field investigation: Assessing Threatened and Priority Ecological Communities**

The vegetation community of 'Site C – Holt road SLK 6.4-11.61' was assessed for the presence of TECs or PECs (DBCA 2018, 2021b) comparing that to descriptions in approved conservation advice for these communities. There were no TEC's or PEC's listed within 20km of the area (DBCA 2021e).

### **4.4 Field Investigation: Targeted flora survey**

The targeted flora survey was undertaken following the Environmental Protection Authority's (EPA) 'Technical Guidance, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (2016)'. The entirety of the proposed impact area was surveyed on foot in mid-spring, between 6/09/2021 and 8/09/2021 by Julie Waters and Katherine Walkerden, Shire of Esperance's Environmental Coordinator and Environmental Officer. Due to the timing, the majority of species were flowering, decreasing the likelihood of missing species. The road was used as a continuous transect. Due to the narrow nature of the road reserve all vegetation was assessed to accurately cover the 18 m width proposed clearing permit area. Suitable associated habitat for TF or PF identified in the desktop study were particularly focused on, and extensively searched.

Due to the high diversity and complexity of Esperance's flora, all species were recorded to compile an incidental species list (Appendix 8.1). All species unknown in the field were collected and identified exsitu, using keys, WA Herbarium's Florabase (DBCA 2021C), manuals and Esperance District Herbarium, to ensure no TF or PF were missed. Material was collected under Julie Waters' and Katherine Walkerden's Regulation 61, Biodiversity Conservation Regulations 2018 Licences for Flora Taking, FT61000787 and FT61000788. Any species that were unable to be identified were submitted to the WA Herbarium for identification.

Over the course of the 2021 wildflower season, surveyors re-familiarised themselves with key taxonomic indicators and associated habitat, by visiting verified populations of *Acacia amyctica* in the Southern sections of Holt Rd. For other PF or TF species identified in the desktop survey as possible to occur, scans of pressed specimens from the local Esperance District Herbarium were taken into the field. Any flora thought to be TF or PF was formally collected, counted and mapped using a Panasonic FS-G1 Toughpad with the program ROAM or a GPS Garmin GPS64. Specimens were then lodged with the WA Herbarium for formal verification. When PF were confirmed, TPFL forms were completed and submitted to the DBCA's District Conservation Officer, and Species and Communities Branch.

## **5 Results and Discussion**

### **5.1 Ecological Impact**

#### **5.1.1 Vegetation Communities**

One vegetation community was identified within the 'Site C – Holt road SLK 6.4-11.61', defined as "Mixed Mallee over mixed Melaleuca and Acacia understorey". The incidental flora list identified a total of 108 species, 89 native species and 19 non-natives. It is believed that the Beard (1973) vegetation association VA486 described as 'Mosaic: Medium woodland; salmon gum & red mallee / Shrublands; mallee scrub *Eucalyptus eremophila*' is an accurate match for the vegetation association.



**Figure 2.** Vegetation in 'Site C – Holt road SLK 6.4-11.61' project, described as Mixed Mallee over mixed Melaleuca and Acacia understorey. Photo taken by Katherine Walkerden on 7.09.2021

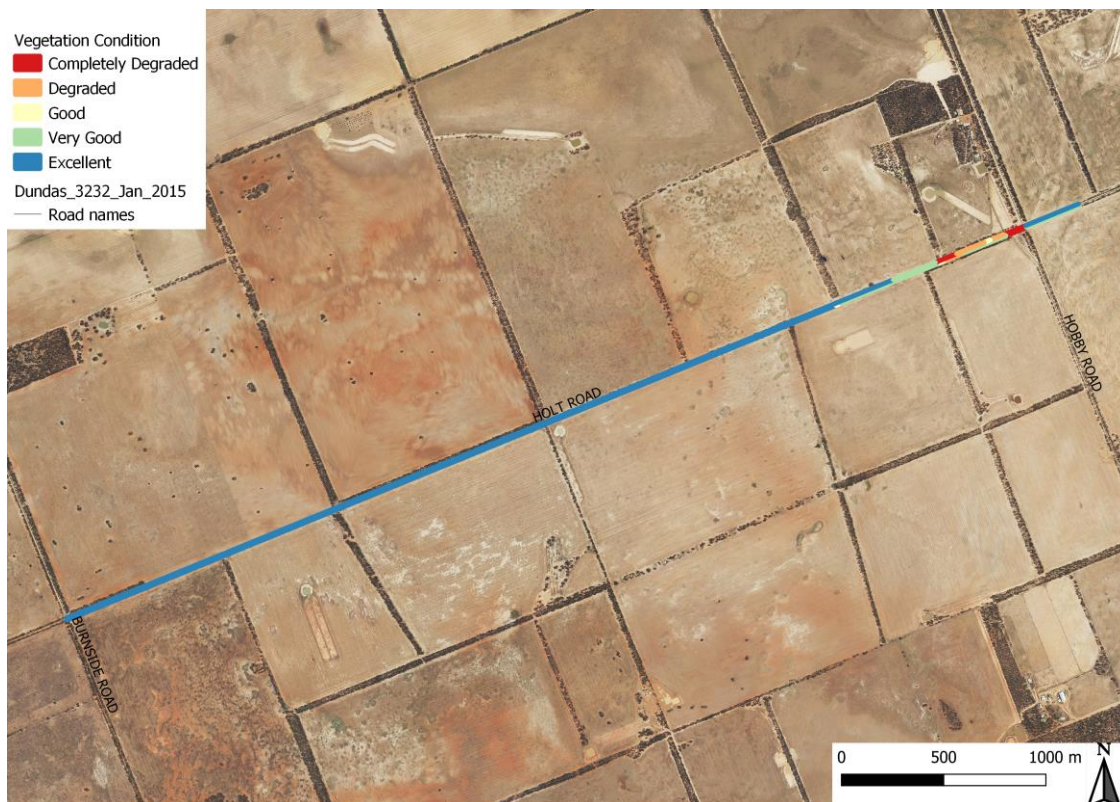


**Figure 3.** Vegetation in 'Site C – Holt road SLK 6.4-11.61' project, described as Mixed Mallee over mixed Melaleuca and Acacia understorey. Photo taken by Katherine Walkerden on 7.09.2021

## 5.2 Vegetation Condition

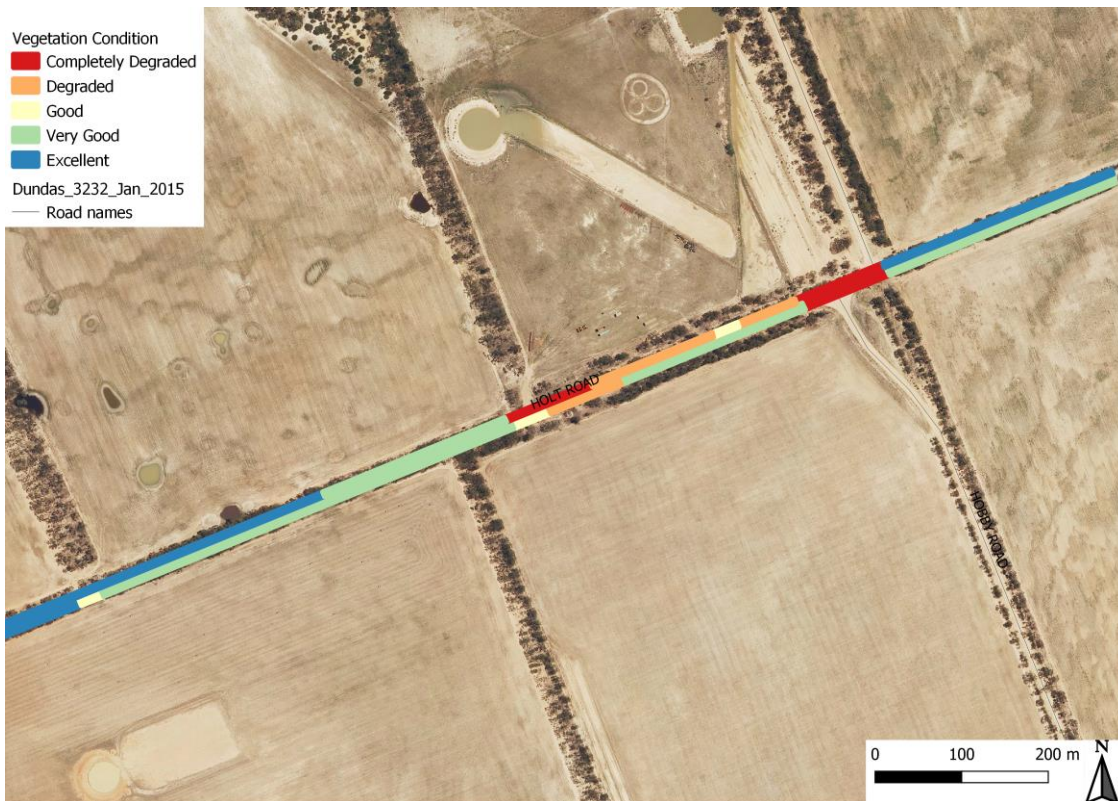
The western section of the site was in an excellent condition (Figure 4), eastern parts of the site were of a variable quality varying from excellent to completely degraded. Heavy weed invasion and historic clearing was evident in the eastern section of the road reserve, Degradation was particularly evident outside of a heavily used paddock. Prior fire events were not visible and no historic fires were listed for the area. Quantifying vegetation condition, there is:

- 4.54ha of vegetation within a 5.37ha footprint (84%) is in Excellent condition
- 0.58ha of vegetation within a 5.37ha footprint (10%) is in Very good condition
- 0.03ha of vegetation within a 5.37ha footprint (0.55%) is in Good condition
- 0.11ha of vegetation within a 5.37ha footprint (2%) is in Degraded condition
- 0.05ha of vegetation within a 5.37ha footprint (0.93%) is in Completely degraded condition



**Figure 4.** Vegetation condition across 'Site C – Holt Road SLK 6.4-11.61' project, ranging from Excellent to a Completely degraded condition.





**Figure 5.** Vegetation condition in eastern section of ‘Site C – Holt road SLK 6.4-11.61’ project, ranging from Excellent to a Completely degraded condition.



**Figure 6.** Vegetation in Degraded condition in eastern section of ‘Site C – Holt road SLK 6.4-11.61’ project, due to historic clearing.

Heavy weed burden was found in the eastern extent of the project (SLK 11-11.54), with historical clearing and high weed burden. Overall, 19 invasive species were identified within the project area (Appendix 8.1). Of these, the most extensive was African Love Grass (*Eragrostis curvula*) and several other Poaceae weeds. It is highly likely that proposed works may increase the distribution of weeds and degrade vegetation along the entire road reserve where works occur. Ideally, regular wash downs during the course of works to remove weed seeds or follow up herbicide control of invasive species needs to occur. However, this will be extremely expensive to employ contractors and mobilise equipment, which may not be feasible with given budgets.

### **5.3 *Phytophthora* Dieback**

Dieback Information Delivery and Management System (DIDMS; GAIA Resources, SCNRM & State NRM 2021) data shows negative *Phytophthora cinnamomi* or other *Phytophthora* sp. Dieback sample results in the area. There was no positive results of *P. cinnamomi* in the Salmon Gums area, and the annual rainfall in this area is too low for *P. cinnamomi* to survive. Based on Dieback Management Plans prepared for Shire of Esperance road construction and management projects. Proposed works will be conducted using appropriate hygiene measures to limit spreading of diseases, including clearing in dry conditions and clean down of vehicles and machinery before entering the site.

### **5.4 Threatened and Priority Ecological Communities**

The desktop study did not identify any Threatened Ecological Communities or Priority Ecological Communities (PEC) as being within 'Site C – Holt Road SLK 6.4-11.61' or within a 20 km buffer of the site. The field survey confirmed this.

### **5.5 Threatened and Priority Flora**

One threatened flora (TF) and 27 priority flora (PF) were recorded within a 20 km radius of the proposed impact site (Table 2; DBCA 2021a, DBCA 2021d, DBCA 2021f). Of these, nine PF species had suitable known associated habitat that corresponded with vegetation communities and soil type of 'Site C – Holt Road SLK 6.4-11.61' project.

**Table 2.** Threatened or priority flora identified by the desktop study to be present within a 20 km radius of 'Site C – Holt Road SLK 6.4-11.61' project area, using Threatened and Priority Flora Reporting (TPFL; DBCA 2021d), WA Herbarium (DBCA 2021f) and Esperance District Threatened Flora (DBCA 2021a).

Nt. Acronyms used in the table include priority flora (P), threatened flora (TF), Biodiversity Conservation (BC) Act 2018, Environmental Protection and Biodiversity Conservation (EPBC) Act 1999, critically endangered (CN) and endangered (EN).

Species	Conservation Status	Associated Habitat	Likely to occur
<i>Acacia amyctica</i>	P2	Salmon Gums area on well-drained loams and sandy clay plains with <i>Eucalyptus flocktoniae</i> low woodland	Yes
<i>Acacia glaucissima</i>	P3	Salmon Gums on open low/Mallee woodland with dwarf scrub or low heath *Difference to NT species is long curly pods	Yes
<i>Acacia bartlei</i>	P3	Salmon Gums area, waterlogged depressions in brown/grey sandy clay. Tolerates low level salinity	Unlikely
<i>Acacia diminuta</i>	P1	Scattered populations from Jerramungup to Scaddan. Grows in sandy clay.	No
<i>Acacia dissona var. indoloria</i>	P3	Single record north of Salmon Gums, two records in Frank Hann National Park. Sand, Sandy Loam. Undulating plains. Mallee Woodland.	Possible
<i>Acacia truculenta</i>	P3	Single record north of Salmon Gums, five records in Frank Hann National Park. Sand, clay, calcareous loam. Near salt lakes. Gently undulating plains.	No
<i>Adenanthos ileticos</i>	P4	Salmon Gums area – sandy soil, open woodland with various <i>Eucalyptus</i> species	Yes
<i>Angianthus sp. Salmon Gums</i>	P1	Grey clayey sand, yellow clay, deep sand. Edge of salt lakes and valleys	No
<i>Aotus lanea</i>	P1	Variety of associated habitat - Upslope from salt lake, sandplain, limestone, recent disturbance. *Looks very similar to NT <i>Aotus</i> sp. Southern Wheatbelt	Possible
<i>Aotus sp. Dundas</i>	P2	Recorded in Salmon Gums region – grows after fire in soil over gravel or deep sands Mostly recorded to the west in north-grass patch area and Bremer Ranges	Possible
<i>Bossiaea flexuosa</i>	P3	Vast majority of records to the west - Gravelly sandy soils, undulating plains.	Unlikely
<i>Bossiaea spinosa</i>	P3	Vast majority of records to the west - Gravelly sandy soils, undulating plains.	Unlikely
<i>Caladenia voigtii</i>	P4	Salmon Gums area - Yellow sand. Margins of salt lakes, granite outcrops.	No
<i>Conostephium marchantiorum</i>	P3	Various habitats – plains, creeklines, edge of salt lakes	Possible

<i>Conostephium uncinatum</i>	P2	Various habits - Deep sandy soils, edge of salt lakes, undulating plains, claypans. Most records associated with salt lakes.	Unlikely
<i>Cyathostemon sp. Dowak</i>	P1	Only two records – north-west area on Lake King road. Margin of salt lakes	No
<i>Cyathostemon sp. Esperance</i>	P1	Only two records – salt lake and sandy gravel. One record collected in 2019 very close to site	Unlikely
<i>Cyathostemon sp. Salmon Gums</i>	P3	Various soils - orange sand, white sandy, sandy clay over granite, light brown clay, saline soils. Various habitats – flats, dry river beds, claypans	Yes
<i>Drosera salina</i>	P2	Peak Charles National Park, Frank Hann National Park, North of Salmon Gums. Salt-free white sand. Margins of salt lakes.	No
<i>Eremophila chamaeophila</i>	P3	Open mallee woodland with limestone	Yes
<i>Eremophila compressa</i>	P3	Grass Patch area, open woodland with red brown clay, clay loam, sandy lam on undulating plains	Yes
<i>Eremophila serpens</i>	P4	Wide distribution, including north to Salmon Gums. Favours saline area or sandy rises. Associated with Eucalyptus woodland and Melaleuca shrubland	Yes
<i>Eremophila racemosa</i>	P4	Single record North of Salmon Gums. Sandy or stony loam, clay loam. Undulating plains, roadsides.	Unlikely
<i>Eucalyptus creta</i>	P3	Mallee country preferring heavy brown clay loam. Normally dominant.	Yes
<i>Eucalyptus dolichorhyncha</i>	P4	Mostly distributed towards the western area of Grass Patch	Unlikely
<i>Eucalyptus merrickiae</i>	T	Associated with margin of salt lakes	No
<i>Eucalyptus histophylla</i>	P3	Salmon Gums area. Sandy loam on granite or laterite. Granite outcrops.	No
<i>Eutaxia actinophylla</i>	P3	Single record North of Salmon gums. Red-brown clay loam, red clay loam over granite, gravel. Small depressions.	Possible
<i>Frankenia drummondii</i>	P3	North of Salmon Gums. White Sand. Lake edges.	No
<i>Frankenia brachyphylla</i>	P2	North of Salmon Gums, North Cascade area, Salt lake margins.	No
<i>Frankenia glomerata</i>	P4	Woodland with Melaleuca shrubland. Prefers limestone or white clay loam. Associated with disturbance	Yes
<i>Goodenia laevis subsp. laevis</i>	P3	Scattered distribution all over Australia. Semi-arid areas	Possible
<i>Hydrocotyle decorata syn. Hydrocotyle sp. Hexaptera</i>	P2	Cascade, Salmon Gums area. Raised embankment around a salt lake	No
<i>Hydrocotyle perforata syn. Hydrocotyle sp. Coraginaensis</i>	P2	North of Salmon gums, North of Nuytsland Nature Reserve. Salt lakes Fringes, Fringes of Granite pools.	No

<i>Lepidium fasciculatum</i>	P1	Open Mallee with mid-dense heath. Undulating sandplains. Wide and scattered distribution. Mostly recorded south	Unlikely
<i>Micromyrtus elobata</i> subsp. <i>scopula</i>	P3	Deep aeolian sand, grey or white sand, white sandy clay. Undulating plains, dunes, hill crests. Associated with salt lakes	No
<i>Pimelea halophila</i>	P2	North of Salmon gums. White/grey sand. Associated with Salt lakes.	No
<i>Pimelea pelinos</i>	P1	Scaddan area, North West of Salmon gums. Flat ground around salt lake. Sandy Loam.	No
<i>Stylidium pulviniforme</i>	P3	North of Scaddan. White sand. Winter-wet areas. Margins of salt lakes, saline drainage lines.	No
<i>Thysanotus brachyantherus</i>	P2	Associated with margin of salt lakes	No

The targeted flora survey identified three PF species; *Eutaxia andocada* (P1) *Acacia amyctica* (P2) and *Goodenia laevis* subsp. *laevis* (P3) were confirmed to be within the proposed clearing permit footprint. Queries of spatial datasets were requested specifically for these species, to interrogate impact of proposed works on species sustainability (DBCA 2021a; DBCA 2021d; DBCA 2021f; 2021g). DBCA do not actively manage or monitor the majority of low priority species, due to their prevalence in the landscape relative to TF. There are 136 species recorded as priority three or four conservation status within the Shire of Esperance boundaries (DBCA 2020c). It was noted that additional information on *Acacia amyctica* and *Goodenia laevis* subsp. *laevis* were located on file.

*Acacia erinacea* (Accession #9133; KSW1921) was also collected and sent to the Western Australian Herbarium due to its similarity to *Acacia diminuta*.

### 5.5.1 *Eutaxia andocada*, Priority 1

A specimen of *Eutaxia andocada* was sent to the WA Herbarium for identification confirmation (KSW4821; Accession #9306 with specimen retained). It was confirmed by Michael Hislop on 30/12/21. The specimen was collected on the 7/09/2021, the plants specific location was not noted in the field when it was collected, and the specimen could be anywhere between SLK 9.1-11.61 based on the date it was collected.

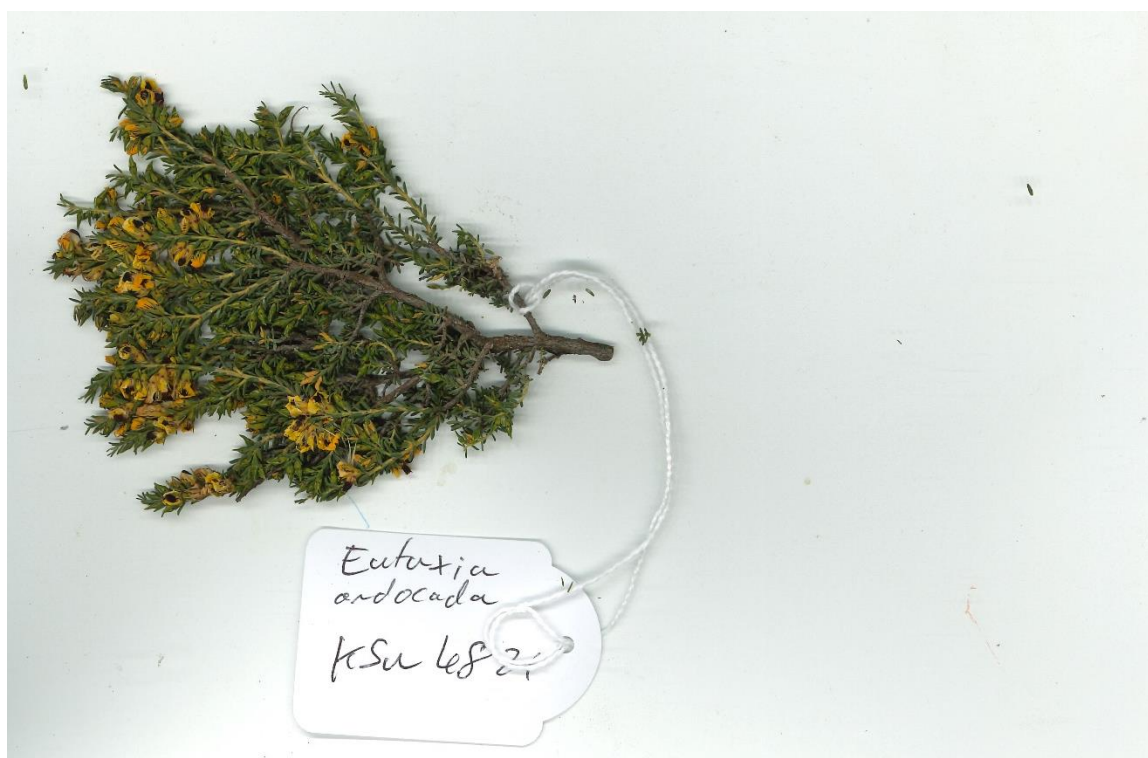
An additional survey of *Eutaxia andocada* was performed on the 05/01/2022, the entire length of the project area was walked during this supplementary survey. No *Eutaxia andocada* plants were able to be located during this survey. The failure to locate *Eutaxia andocada* is most likely the result of surveying outside of the flowering time, death of the specimen or the specimen being located within dense shrubbery. *Eutaxia andocada* was in full bloom during the spring survey which likely aided in finding the species. All other Herbarium records of *Eutaxia andocada* have collection dates of August - September. The Shire of Esperance will resurvey and attempt to locate the plant in August-September 2022. If any *Eutaxia andocada* are located they will be flagged out and avoided if possible.

An extract of data from the WA Herbarium and TPFL spatial datasets was received from DBCA 01/01/2022 (04-0222FL). Prior to this collection there had only been three herbarium specimens attributed to this species. These records were limited to near Peak Charles & Peak Eleanor, with the most recent specimen being collected in 2000 north of Peak Charles. There were two specimens collected 1km apart north of Peak Charles and likely represent only a single population, another

specimen was collected 17km south of Peak Eleanor with a 28km distance between the two populations, the recently discovered specimen is at least 45km from the Peak Charles populations. The Peak Charles populations are within Peak Charles National Park, the Peak Eleanor population is located on Unallocated Crown Land. None of these populations have a count so there is no known total population size.

**Table 3.** Population details from Department of Biodiversity Conservation and Attraction's Threatened and priority species database (DBCA, 2020G).

Locality	Tenure	Date	Frequency
7 km ENE of Peak Charles	National Park	1995	Occasional
7 km NE of Peak Charles camping ground on road	National Park	2000	
17 km SSE of Peak Eleanor, intersection of Rolland and Cups Roads	UCL	1984	



**Figure 7.** Scan of *Eutaxia andocada* specimen (KSW4821 ACC #9190) found at 'Site C – Holt road SLK 6.4-11.61'

### 5.5.2 *Acacia amyctica*, Priority 2

A specimen of *Acacia amyctica* was sent to the WA Herbarium for identification confirmation (KSW01821; Accession #9133 with specimen not retained). It was confirmed by Michael Hislop on 6/10/21. A Threatened and Priority Reporting Form (TPFL) was completed and sent to Department of Biodiversity, Conservation and Attractions (DBCA) District Flora Conservation Officer and Species and Communities Branch on 12/11/21 (Appendix 8.2.1). This is the second population of *Acacia amyctica* discovered on Holt Rd by the Shire of Esperance, with a previous population discovered in 2020. If proposed works occur, 23 plants will be impacted upon, from a population total of 37.



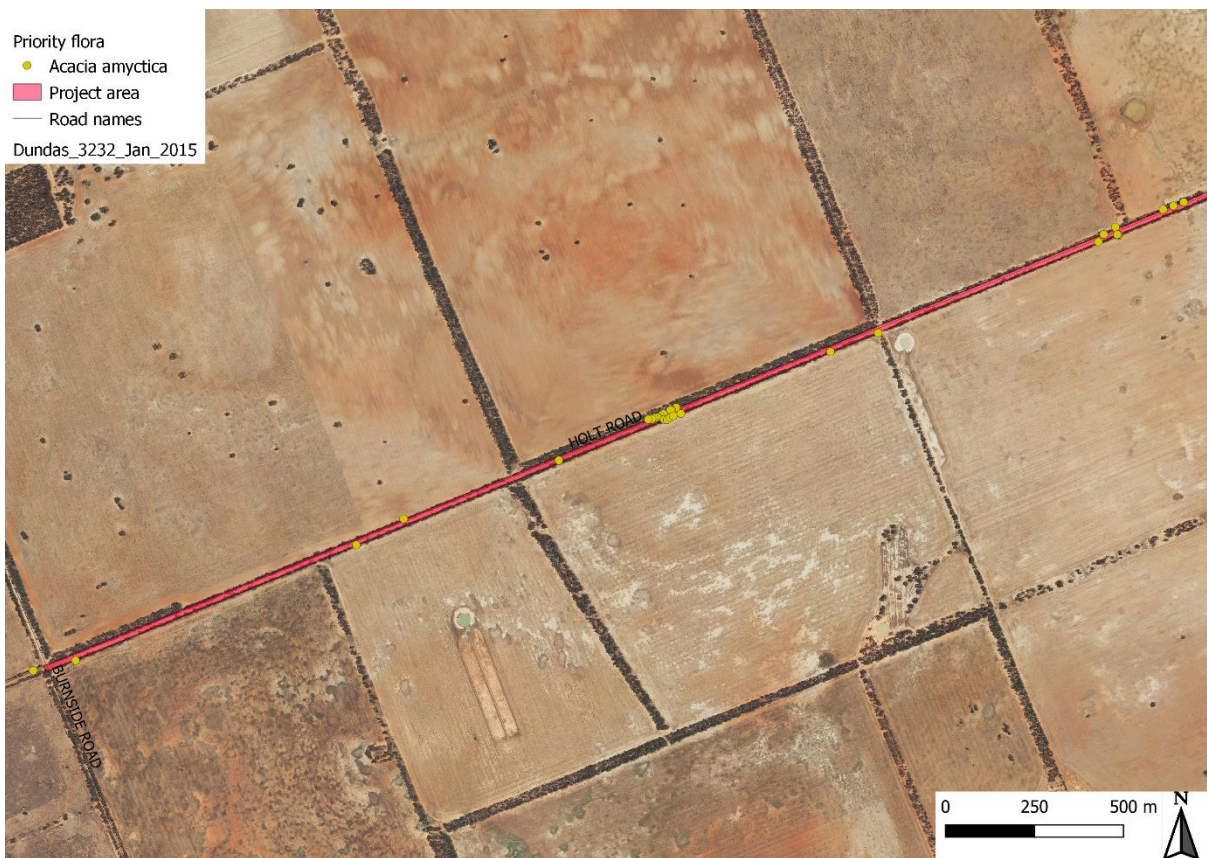
**Figure 8.** *Acacia amyctica* found in 'Site C – Holt road SLK 6.4-11.61', Photo taken by Katherine Walkerden on the 06/09/2021

*Acacia amyctica* occurs in the Salmon Gums–Grass Patch area (between Norseman and Esperance) and also Peak Charles National Park (about 50 km due W of Salmon Gums) and near Dunn Swamp (approximately 80 km due NE of Ravensthorpe). It grows in loam and on sandy clay plains in low woodland and open shrubland. According to DBCA’s database searches there are 14 populations over a range of 2000km<sup>2</sup>. The area of occupancy includes largely unsurveyed and uncleared southern parts of the Great Western Woodlands, so the species is probably more common than recorded. Most records are over 20 years old so an accurate assessment of these populations is required. The previous Holt Road population had not yet been added to the TPFL database.

**Table 4.** Population details from Department of Biodiversity, Conservation and Attraction’s Threatened and priority species database (DBCA, 2020g).

Locality	Date	Frequency
Magagnotti Road, c. 11.8 km W of intersection with Coolgardie - Esperance Highway, 118 km NW of Esperance	2020	2 plants
C. 2 km along firebreak track from Fields Road, W of Lort River, c. 6 km N of Rollond Road	2013	30+ plants.
C. 6 km SW of Pyramid Lake, along firebreak track that heads N of Rollond Road	2013	100+ plants.
Lot 353, Machens Road, Salmon Gums	2009	2-5 plants.
N of Rollands Road on Fields Road, E side of road, Peak Charles	2005	21-50 plants.
Oldfield 1343, 17 km NE of Ravensthorpe [This location is 28 km NW of Cascade as advised by collector 23/8/2001]	1994	

8.2 km S of Peak Charles Rd on Peak Eleanora Rd (= Fields Rd). Peak Charles National Park.	1993	
8.0 km E of Neds Corner road (north) on Rollands road (1.9 km W of Fields road)	1992	10 plants
1 km N of Salmon Gums on Coolgardie - Esperance Highway	1983	
24.75 km W of Grass Patch, 23.4 km W of Norseman - Esperance Highway on Grass Patch Road	1983	
15 km E of Dunn Swamp, ca 80 km NE of Ravensthorpe	1980	frequent.
4 km S of Peak Eleanora, Peak Charles National Park, ca 45 km W of Salmon Gums	1979	frequent.
95 km S of Norseman	1978	
11.5 km N of Salmon Gums towards Norseman	1971	



**Figure 9.** Map of *Acacia amyctica* found within 'Site C – Holt road SLK 6.4-11.61'



### 5.5.3 *Goodenia laevis* subsp. *laevis*, Priority 3

A specimen of *Goodenia laevis* subsp. *laevis* was sent to the WA Herbarium for identification confirmation (KSW4821; Accession #9133 with specimen not retained). It was confirmed by Michael Hislop on 6/10/21. A Threatened and Priority Reporting Form (TPFL) was completed and sent to Department of Biodiversity, Conservation and Attractions (DBCA) District Flora Conservation Officer and Species and Communities Branch on 6/10/21 (Appendix 8.2.2).

An additional population count of *Goodenia laevis* subsp. *laevis* was conducted on the 22/11/2021, the entire length of the project area was walked during this supplementary survey. Shire of Esperance counted a total of 283 *Goodenia laevis* ssp. *laevis* plants at the site. Plants were scattered throughout the entire site. They were not just restricted to disturbance area, but in the intact bush that not been disturbed. A total count was not undertaken and total population number may be higher than 283 plants. It was noted that most plants looked quite old and very few (<5%) were flowering. If the project went ahead up to 209 plants from a population of at least 283 would be taken.

An extract of data from the WA Herbarium and TPFL spatial datasets was received from DBCA 20/12/2021 (20-0221FL).

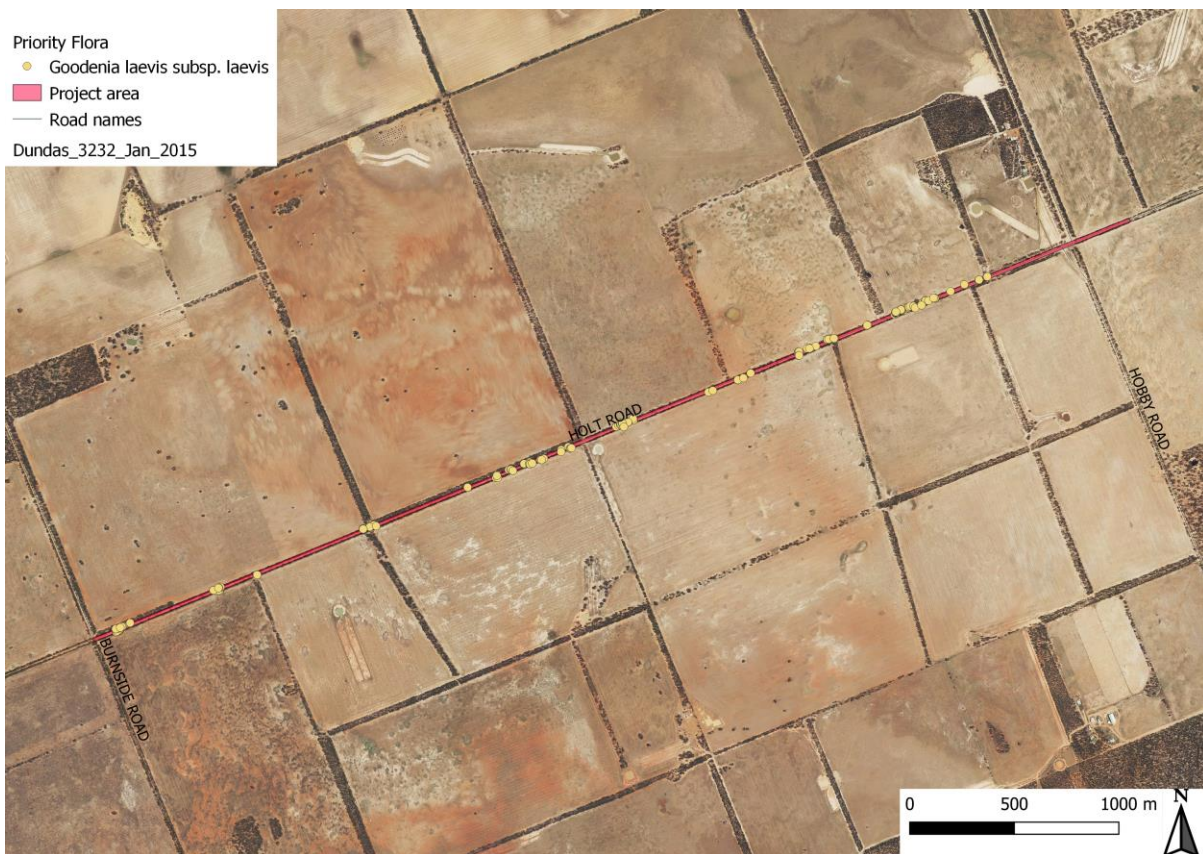
The Shire of Esperance has discovered numerous new populations of *Goodenia laevis* ssp. *laevis* in since 2019, Herbarium specimens and Threatened and Priority Reporting Forms (TPFL) have been completed for confirmed populations. Only one of these had been entered into TPFL on 19/2/2021.

At all sites, the plants were present in the road active footprint that is regularly graded or in dam catchments – all sites with a high level of disturbance. These are specifically outlined below. It can be inferred that the abundance of *Goodenia laevis* ssp. *laevis* at the site is partially due to the disturbance cause by mechanical grading of the road shoulders.

- On the intersection of Norwood and Dempster Rd, located within an old road that was ripped when the intersection was realigned. 100 to 150 plants present. No proposed impacts.
- In the Cascade town-site on Wilhaust St, in the back-slopes of the road that are regularly maintained with heavy machinery. 15+ plants present.
- On Neds Corner Rd, approximately 2.4 to 3.5 km north of Cascade Rd. All plants were present in the back-slopes of the road that are regularly maintained with heavy machinery. 82 plants present.
- Grass Patch Rd, 2.2 km west of Bishops Rd. All plants were present in the back-slopes of the road that are regularly maintained with heavy machinery. 50+ plants present.
- An old government dam on the intersection of Dalyup and Rasyk Rd, which had historically been ripped, hard-standed and cleared to form a catchment for a Dam. 200 to 250 plants were present.
- Grass Patch townsite at R19624 totaling 94 *Goodenia laevis* subsp. *laevis*. R19624 has had historical understory clearance.
- Neds Corner rd SLK 36.85-51. Plants were present in the back-slopes, shoulders, intersections and crossovers of the road which are regularly maintained with heavy machinery. 200+ plants present.
- West Point rd SLK 0.49-0.78. Plants were present in the back-slopes, shoulders and intersections of the road which are regularly maintained with heavy machinery. 200+ plants present.
- Cascade historical landfill site (R37505, Lot: 34 on Plan: 184799). Plants were growing in both the landfill capping and the intact vegetation. ~100 plants
- Parmango rd SLK 21.89-22.7. Plants were locally common with 100+ plants growing in intact

vegetation. Mass germination was beginning after recent road grading. Using the WA Herbarium spatial data, the below inferences can be discussed:

- *G. laevis* subsp. *laevis* is geographically restricted to the Esperance mallee area, extending from Scaddan to Norseman, and the Cascade region to the edge of Cape Arid. In total this covers 18,000 km<sup>2</sup>.
- Almost all associated vegetation is described as a variation of mixed *Melaleuca* shrubland with *Eucalyptus* woodland over-storey. Extensive areas of this vegetation type remain, providing likely habitat, with similar soil type and associated vegetation.
- 20 records of populations are recorded on DBCA databases, with 10 records collected prior to 2000. 10 new populations discovered by Shire of Esperance in recent years have not added to DBCA data.
- Of the 20 recorded specimens, six records are directly described as being within a previously disturbed site, such as old limestone pits or along firebreaks.
- 11 sites are described as along a road and may have been impacted upon during road widening or maintenance. 5 sites are within reserves and likely remain intact. 5 sites cannot be determined tenure status, and is unknown of potential impacts.



**Figure 10.** Map of *Goodenia laevis* subsp. *laevis* found within 'Site C – Holt road SLK 6.4-11.61'

## 5.6 Fauna

Within a 20 km radius of the 'Site C – Holt road SLK 6.4-11.61', 92 fauna species have previously been recorded. Of these, 3 species are threatened fauna, priority fauna and fauna protected under international agreement have been recorded (Table 5). Three species have potentially suitable habitat within the proposed clearing permit area, including the Chudich (*Dasyurus geoffroii*).

The lack of dense understory shrubs of all vegetation types within 'Site O – Holt Road', and lack of immediately surrounding, intact remnant vegetation means that malleefowl are unlikely to persist in this area due to lack of protection from predators. No evidence of Chudich or Peregrine Falcon was noted, despite a recorded Chudich in the Salmon Gums area just over a decade ago. Both of these species have large ranges and are not specific to this habitat type.

**Table 5.** Potential threatened, priority and protected under international agreement fauna recorded within a 20 km radius of the proposed 'Site C – Holt road SLK 6.4-11.61'.

Nt. Acronyms used include priority (P), threatened (T), and protected under international agreement (IA).

Scientific Name	Common Name	Conservation Status	Likelihood of occurring	Associated habitat
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	T	Possible	Forest and woodland habitats
<i>Falco peregrinus</i>	Peregrine Falcon	S	Possible	Broad habitat range, but prefer woodlands or tall trees for nesting
<i>Leipoa ocellata</i>	Maleefowl	T	Possible	Semi-arid shrublands and low woodlands dominated by mallee and/or acacia

During the field survey several bird species were observed by sight. Identified Fauna species are listed in Table 6. Several birds' nests were also found in tall Mallee's, pictured in Figure 11.

**Table 6.** Fauna observed within 'Site C – Holt road SLK 6.4-11.61'.

Scientific Name	Common Name	Type of Observation	Invasive
<i>Anthochaera lunulata</i> or <i>A. caranunculata</i>	Western or Red Wattlebird	Visual	
<i>Cracticus torquatus</i>	Grey Butcher Bird	Visual	
<i>Gymnorhina tibicen</i>	Australian Magpie	Visual	
<i>Manorina flavigula</i>	Yellow Throated Miner	Visual	
<i>Ocyphaps lophotes</i>	Crested Pigeon	Visual	
<i>Oryctolagus cuniculus</i>	European Rabbit	Scat & digging	x
<i>Purpureicephalus spurius</i>	Red-capped Parrot	Visual	
<i>Rhipidura leucophrys</i>	Willy Wagtail	Visual	



**Figure 11.** Birds nest in 'Site C – Holt road SLK 6.4-11.61' project. Photo taken by Katherine Walkerden on 7.09.2021

## 6 Conclusion; assessment of Department of Water and Environmental Regulations clearing principles

The 'Site C – Holt Road SLK 6.4-11.61' project may be at variance to some of the clearing principles that the Department of Water and Environmental Regulations (DWER) assess applications, as listed under Schedule 5 of the Environmental Protection Act 1986 (DWER 2019).

**Table 7.** Shire of Esperance Assessment against Clearing Principles of the proposed 'Site C – Holt road SLK 6.4-11.61'.

Assessment against Clearing Principles	Conclusion
Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Biodiversity at this site is moderate with 89 native species recorded over one vegetation communities
Principle (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	No evidence of use by Threatened fauna was seen during the survey, and the habitat is not specific to any Threatened fauna species identified in the desktop survey. Several bird species were seen to be utilising the vegetation, various other fauna was likely utilising the site.
Principle (c) Native vegetation should not be	Three priority species was observed in the area.

cleared if it includes, or is necessary for the continued existence of, rare flora.	<i>Goodenia laevis</i> subsp. <i>laevis</i> has a wide distribution and is adapted to disturbance. <i>Acacia amyctica</i> has a distribution centred on the Salmon Gums Grass Patch area with 14 known populations. <i>Eutaxia andocada</i> is poorly understood with only two previously known populations, a third known population is potentially significant for the conservation of the species.
Principle (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.	No TEC's or PEC's were identified in the desktop study, this was confirmed in the site inspection.
Principle (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	The immediate surroundings of the site were highly cleared agricultural land, with the intact vegetation within the site likely playing contributing to ecological linkages in the area. A majority of native vegetation may be cleared at some narrow points within the road reserve, providing significant damage to ecological linkages.
Principle (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	Vegetation in this area was not growing in association with watercourses or wetlands. The nearest watercourse or wetland was 1.8km from the site.
Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	A majority of native vegetation may be cleared at some narrow points within the road reserve, and given that vegetation within this area will be providing limited function as windbreaks and erosion control for the agricultural areas surrounding it, the project poses a risk of land degradation.
Principle (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The project is 8 Kilometres away from Nature Reserve 33501. The significant distance between the project area and the closest conservation reserves ensure that the clearing will have no impact on their environmental values.
Principle (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	Unlikely to have any significant impacts.
Principle (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Unlikely to have any significant impacts.

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## 8 Appendix

### 8.1 Incidental species list

**Table 8:** Species collected within 'Site C – Holt Road SLK 6.4-11.61' project area

Family	Genus	Species	Common Name	Weed	Cons Stat
Aizoaceae	<i>Carpobrotus</i>	<i>modestus</i>	Inland Pigface		
Aizoaceae	<i>Mesembryanthemum</i>	<i>nodiflorum</i>	Slender Ice plant	x	
Amaranthaceae	<i>Ptilotus</i>	<i>holosericeus</i>			
Apocynaceae	<i>Alyxia</i>	<i>buxifolia</i>	Sea box		
Asparagaceae	<i>Thysanotus</i>	<i>manglesianus</i>	Twining Fringed Lily		
Asparagaceae	<i>Thysanotus</i>	<i>patersonii</i>	Twining fringe-lily		
Asphodelaceae	<i>Trachyandra</i>	<i>divaricata</i>	Dune Onion Weed	x	
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>	Capeweed	x	
Asteraceae	<i>Asteridea</i>	<i>athrixioides</i>	Wirewort		
Asteraceae	<i>Brachyscome</i>	<i>ciliaris</i>			
Asteraceae	<i>Cratystylis</i>	<i>conocephala</i>	Bluebush Daisy		
Asteraceae	<i>Erigeron</i>	<i>bonariensis</i>	Fleabane	x	
Asteraceae	<i>Gazania</i>	<i>linearis</i>	Treasure Flower	x	
Asteraceae	<i>Hypochaeris</i>	<i>radicata</i>	Flatweed	x	
Asteraceae	<i>Monoculus</i>	<i>monstrosus</i>	Stinking Roger		
Asteraceae	<i>Olearia</i>	<i>muelleri</i>	Goldfields Daisy		
Asteraceae	<i>Onopordum</i>	<i>acaulon</i>	Stemless Thistle		
Asteraceae	<i>Rhodanthe</i>	<i>pygmaea</i>			
Asteraceae	<i>Senecio</i>	<i>spanomerus</i>			
Asteraceae	<i>Sonchus</i>	<i>asper</i>	Spiny Sowthistle	x	
Asteraceae	<i>Sonchus</i>	<i>oleraceus</i>	Common Sowthistle	x	
Asteraceae	<i>Vittadinia</i>	<i>australasica</i>			
Asteraceae	<i>Vittadinia</i>	<i>gracilis</i>	Woolly New-Holland daisy		
Boraginaceae	<i>Halgania</i>	<i>andromedifolia</i>	Lavender Halgania		
Brassicaceae	<i>Brassica</i>	<i>tournefortii</i>	Asian mustard	x	
Brassicaceae	<i>Carrichtera</i>	<i>annua</i>	Wards Weed	x	
Brassicaceae	<i>Raphanus</i>	<i>raphanistrum</i>	Wild radish	x	
Chenopodiaceae	<i>Atriplex</i>	<i>lindleyi</i>	Lindley's saltbush		
Chenopodiaceae	<i>Atriplex</i>	<i>sp.</i>			
Chenopodiaceae	<i>Atriplex</i>	<i>sp.</i>			
Chenopodiaceae	<i>Atriplex</i>	<i>vesicaria</i>	Bladder saltbush		
Chenopodiaceae	<i>Chenopod</i>	<i>sp.</i>			
Chenopodiaceae	<i>Chenopod</i>	<i>sp.</i>			
Chenopodiaceae	<i>Chenopodium</i>	<i>desertorum</i>	Frosted Goosefoot		
Chenopodiaceae	<i>Enchylaena</i>	<i>tomentosa</i>	barrier saltbush		
Chenopodiaceae	<i>Eriochiton</i>	<i>sclerolaenoides</i>	Woolly Bindii		
Chenopodiaceae	<i>Maireana</i>	<i>eriodclada</i>	Rosy Bluebush		



Chenopodiaceae	<i>Maireana</i>	<i>radiata</i>	Grey Bluebush		
Chenopodiaceae	<i>Maireana</i>	<i>suaedifolia</i>	Lax Bluebush		
Chenopodiaceae	<i>Maireana</i>	<i>trichoptera</i>	Downy Bluebush		
Chenopodiaceae	<i>Rhagodia</i>	<i>preissii</i>	Soft Salt Bush		
Chenopodiaceae	<i>Sclerolaena</i>	<i>obliquicuspis</i>	Limestone Bindii		
Fabaceae	<i>Acacia</i>	<i>amyctica</i>			P3
Fabaceae	<i>Acacia</i>	<i>crassuloides</i>			
Fabaceae	<i>Acacia</i>	<i>deficiens</i>			
Fabaceae	<i>Acacia</i>	<i>erinacea</i>	Prickly Wattle		
Fabaceae	<i>Acacia</i>	<i>evenulosa</i>			
Fabaceae	<i>Acacia</i>	<i>lachnophylla</i>			
Fabaceae	<i>Acacia</i>	<i>nyssophylla</i>	pin bush		
Fabaceae	<i>Acacia</i>	<i>pritzeliana</i>			
Fabaceae	<i>Acacia</i>	<i>profusa</i>			
Fabaceae	<i>Daviesia</i>	<i>aphylla</i>			
Fabaceae	<i>Daviesia</i>	<i>argillacea</i>			
Fabaceae	<i>Eutaxia</i>	<i>andocada</i>			P1
Fabaceae	<i>Lotus</i>	<i>angustissimus</i>	Narrowleaf Trefoil	x	
Fabaceae	<i>Pultenaea</i>	<i>arida</i>			
Fabaceae	<i>Senna</i>	<i>Cardiosperma</i>			
Goodeniaceae	<i>Goodenia</i>	<i>laevis</i> ssp. <i>laevis</i>			P3
Goodeniaceae	<i>Goodenia</i>	<i>Scapigera</i>	White Goodenia		
Goodeniaceae	<i>Scaevola</i>	<i>spinescens</i>	Currant Bush		
Lamiaceae	<i>Westringia</i>	<i>rigida</i>	Stiff Westringia		
Lauraceae	<i>Cassythia</i>	<i>melantha</i>	Coarse Dodder-laurel		
Loganiaceae	<i>Logania</i>	<i>buxifolia</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>calycogona</i> subsp. <i>calycogona</i>	Square-Fruited Mallee		
Myrtaceae	<i>Eucalyptus</i>	<i>cylindriflora</i>	White Mallee		
Myrtaceae	<i>Eucalyptus</i>	<i>densa</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>diptera</i>	Two-winged Gimlet		
Myrtaceae	<i>Eucalyptus</i>	<i>eremophila</i>	Tall Sand Mallee		
Myrtaceae	<i>Eucalyptus</i>	<i>extensa</i>	Yellow Mallet		
Myrtaceae	<i>Eucalyptus</i>	<i>kumarlensis</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>Phenax</i> subsp. <i>phenax</i>	Green Dumosa Mallee		
Myrtaceae	<i>Eucalyptus</i>	<i>prolixa</i>	Square-fruited mallet		
Myrtaceae	<i>Eucalyptus</i>	<i>sp.</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>urna</i>	Merrit		
Myrtaceae	<i>Melaleuca</i>	<i>acuminata</i>	Mallee Honeymyrtle		
Myrtaceae	<i>Melaleuca</i>	<i>brevifolia</i>	Mallee Honeymyrtle		
Myrtaceae	<i>Melaleuca</i>	<i>lateriflora</i>	Gorada		
Myrtaceae	<i>Melaleuca</i>	<i>pauperiflora</i> subsp. <i>pauperiflora</i>	Boree		
Myrtaceae	<i>Melaleuca</i>	<i>podocarpa</i>			
Orchidaceae	<i>Pterostylis</i>	<i>mutica</i>	Midget Greenhood		
Poaceae	<i>Aristida</i>	<i>contorta</i>	Bunched Kerosene Grass		
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>			

Poaceae	<i>Austrostipa</i>	<i>scabra</i>			
Poaceae	<i>Austrostipa</i>	<i>drummondii</i>	Cottony Speargrass		
Poaceae	<i>Bromus</i>	<i>rubens</i>		x	
Poaceae	<i>Eragrostis</i>	<i>curvula</i>	African lovegrass		
Poaceae	<i>Lolium</i>	<i>perenne</i>	Perennial Ryegrass	x	
Poaceae	<i>Lolium</i>	<i>rigidum</i>	Italian Ryegrass	x	
Poaceae	<i>Poaceae</i>	<i>sp.</i>			
Poaceae	<i>Rytidosperma</i>	<i>caespitosum</i>	Common Wallaby-grass		
Poaceae	<i>Secale</i>	<i>cereale</i>	Rye	x	
Primulaceae	<i>Lysimachia</i>	<i>arvensis</i>	Scarlet pimpernel	x	
Proteaceae	<i>Grevillea</i>	<i>acuaria</i>			
Proteaceae	<i>Grevillea</i>	<i>huegelii</i>			
Rhamnaceae	<i>Spyridium</i>	<i>minutum</i>			
Rhamnaceae	<i>Trymalium</i>	<i>myrtillus</i>			
Rutaceae	<i>Boronia</i>	<i>inornata</i> subsp. <i>Inornata</i>	Desert Boronia		
Rutaceae	<i>Microcybe</i>	<i>multiflora</i>			
Rutaceae	<i>Microcybe</i>	<i>pauciflora</i>			
Santalaceae	<i>Santalum</i>	<i>acuminatum</i>	Quandong		
Sapindaceae	<i>Dodonaea</i>	<i>stenozyga</i>			
Sapindaceae	<i>Leptomeria</i>	<i>aphylla</i>	Leafless Currant-bush		
Scrophulariaceae	<i>Eremophila</i>	<i>decipiens</i> subsp. <i>decipiens</i>	Slender Fuchsia		
Scrophulariaceae	<i>Eremophila</i>	<i>dichroantha</i>	Bale-hook Eremophila		
Scrophulariaceae	<i>Eremophila</i>	<i>ionantha</i>	Violet-flowered Eremophila		
Scrophulariaceae	<i>Eremophila</i>	<i>violacea</i>			
Solanaceae	<i>Solanum</i>	<i>nigrum</i>	Black Nightshade	x	
Thymelaeaceae	<i>Pimelea</i>	<i>microcephala</i>	Shrubby Riceflower		

## 8.2 TPFL Forms

### 8.2.1 *Acacia amyctica*



Department of Biodiversity,  
Conservation and Attractions

## Threatened and Priority Flora Report Form

Version 1.4 March 2021

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dbca.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dbca.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

TAXON: <u>Acacia amyctica</u>	TPFL Pop. No: _____
OBSERVATION DATE: <u>06/09/2021</u>	CONSERVATION STATUS: <u>P2</u> New population <input checked="" type="checkbox"/>
OBSERVER/S: <u>Katherine Walkerden, Julie Waters</u>	PHONE <u>0418558774</u>
ROLE: <u>Enviromnnetal officers</u>	ORGANISATION: <u>Shire of Esperance</u>
EMAIL: <u>Katherine.Walkerden@esperance.wa.gov.au</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):  
Growing along both side of Holt Rd Between SLK 6.4-11.61

DBC DISTRICT: <u>Esperance</u>	LGA: <u>Esperance</u>	Reserve No: _____	Land manager present: <input type="checkbox"/>
DATUM: GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	COORDINATES: (if UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input type="checkbox"/> Lat / Northing: <u>376089</u> Long / Easting: <u>6364487</u> ZONE: <u>51</u>	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE: Nature reserve <input type="checkbox"/> Timber reserve <input type="checkbox"/> Private property <input type="checkbox"/> Rail reserve <input type="checkbox"/> Shire road reserve <input checked="" type="checkbox"/> National park <input type="checkbox"/> State forest <input type="checkbox"/> Pastoral lease <input type="checkbox"/> MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/> Conservation park <input type="checkbox"/> Water reserve <input type="checkbox"/> UCL <input type="checkbox"/> SLK/Pole _____ to _____ Specify other: _____			

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/> Area observed (m <sup>2</sup> ): <u>10000</u>																
EFFORT: Time spent surveying (minutes): <u>8 Hours</u> No. of minutes spent / 100 m <sup>2</sup> : _____																
POP'N COUNT ACCURACY: Actual <input checked="" type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input type="checkbox"/> Count method: _____ (Refer to field manual for list)																
WHAT COUNTED: Plants <input checked="" type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>																
TOTAL POP'N STRUCTURE:	Area of pop (m <sup>2</sup> ): _____															
<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td><u>37</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive	<u>37</u>				Dead					Note: Pls record count as numbers (not percentages) for database.
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive	<u>37</u>															
Dead																
QUADRATS PRESENT: No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m <sup>2</sup> ): _____																
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/> Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %																

CONDITION OF PLANTS: Healthy  Moderate  Poor  Senescent

COMMENT: \_\_\_\_\_

THREATS - type, agent and supporting information: <small>Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats &amp; agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (&lt;12mths), M=Medium (&lt;5yrs), L=Long (5yrs+)</small>	Current Impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
• Road widening	<u>N</u>	<u>H</u>	<u>6-12 months</u>
•	_____	_____	_____

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)  
RECORDS: Please forward to Flora Administrative Officer, Species and Communities Program.  
Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered In Database



## Threatened and Priority Flora Report Form

Version 1.4 March 2021

**HABITAT INFORMATION:**

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>		Loam <input checked="" type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	30-50% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____	50-100% <input type="checkbox"/>	Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>	Specific Landform Element: (Refer to field manual for additional values)				
<b>CONDITION OF SOIL:</b>	Dry <input type="checkbox"/>	Molst <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

**VEGETATION  
CLASSIFICATION\*:**

1. Open Mallee woodland over Melaleuca dominated understorey

Eg. 1. Banksia woodland (B. attenuata, B. ilicifolia);  
2. Open shrubland (Hibbertia sp., Acacia spp.);  
3. Isolated clumps of sedges (M.tetragona)

2.

3.

4.

**ASSOCIATED  
SPECIES:**

Acacia evenulosa, Eucalyptus eremophila, Eucalyptus diptera, Eucalyptus extans, Melaleuca podiocarpa, Melaleuca leriflora

Other (non-dominant) spp

\* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 Australian Soil and Land Survey Field Handbook guidelines – refer to field manual for further information and structural formation table.

**CONDITION OF HABITAT:** Pristine  Excellent  Very good  Good  Degraded  Completely degraded

**COMMENT:** Most of the site was in excellent condition, small parts had a high weed burden and historical clearing from private landholders

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

**OTHER COMMENTS:** (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

Plants were scattered throughout survey area

**FLORA AUTHORISATION / LICENCE No:** FT1000787 (JW) & FT1000788 (KW) Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: \_\_\_\_\_  
KSW01821 ACC9133 WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGE:** WA Herb  
Lodgement No: \_\_\_\_\_

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katherine Walkerden Role: Environmental officer Signed: [Signature] Date:  / /

Please return completed form to **Species And Communities Program DBCA,**  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

**RECORDS:** Please forward to Flora Administrative Officer, Species and Communities Program.

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered In Database

8.2.2 *Goodenia laevis* subsp. *laevis*



Department of Biodiversity,  
Conservation and Attractions

## Threatened and Priority Flora Report Form

Version 1.4 March 2021

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dbca.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dbca.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

TAXON: <u>Goodenia laevis subsp. laevis</u>		TPFL Pop. No: _____
OBSERVATION DATE: <u>06/09/2021</u>	CONSERVATION STATUS: <u>P2</u>	New population <input checked="" type="checkbox"/>
OBSERVER/S: <u>Katherine Walkerden, Julie Waters</u>		PHONE <u>0416558774</u>
ROLE: <u>Enviommnetal officers</u>	ORGANISATION: <u>Shire of Esperance</u>	
EMAIL: <u>Katherine.Walkerden@esperance.wa.gov.au</u>		

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):  
Growing along both side of Holt Rd Between SLK 8.52-10.75

Reserve No: _____	
DBC DISTRICT: <u>Esperance</u>	LGA: <u>Esperance</u> Land manager present: <input type="checkbox"/>
DATUM: <input checked="" type="checkbox"/> GDA94 / MGA94 <input type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input type="checkbox"/> Lat / Northing: <u>376448</u> Long / Easting: <u>8364638</u> ZONE: <u>51</u>
METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE: Nature reserve <input type="checkbox"/> Timber reserve <input type="checkbox"/> Private property <input type="checkbox"/> Rail reserve <input type="checkbox"/> Shire road reserve <input checked="" type="checkbox"/> National park <input type="checkbox"/> State forest <input type="checkbox"/> Pastoral lease <input type="checkbox"/> MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/> Conservation park <input type="checkbox"/> Water reserve <input type="checkbox"/> UCL <input type="checkbox"/> SLK/Pole _____ to _____ Specify other: _____	

AREA ASSESSMENT: <input checked="" type="checkbox"/> Edge survey <input type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>	Area observed (m <sup>2</sup> ): <u>10000</u>												
EFFORT: Time spent surveying (minutes): <u>8 Hours</u>	No. of minutes spent / 100 m <sup>2</sup> : _____												
POP'N COUNT ACCURACY: <input type="checkbox"/> Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>	Count method: _____ <small>(Refer to field manual for list)</small>												
WHAT COUNTED: <input checked="" type="checkbox"/> Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>													
TOTAL POP'N STRUCTURE:	Area of pop (m <sup>2</sup> ): _____												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> <tr> <td>~24</td> <td></td> <td></td> <td></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Mature:	Juveniles:	Seedlings:	Totals:	~24								Note: Pls record count as numbers (not percentages) for database.
Mature:	Juveniles:	Seedlings:	Totals:										
~24													
QUADRATS PRESENT: No. _____ Size _____ Data attached <input type="checkbox"/>	Total area of quadrats (m <sup>2</sup> ): _____												
Summary Quad. Totals: Alive _____													
REPRODUCTIVE STATE: <input type="checkbox"/> Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input checked="" type="checkbox"/> <input type="checkbox"/> Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/>	Percentage in flower: <u>20%</u>												

CONDITION OF PLANTS:  Healthy  Moderate  Poor  Senescent

COMMENT: \_\_\_\_\_

THREATS - type, agent and supporting information: <small>Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats &amp; agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (&lt;12mths), M=Medium (&lt;5yrs), L=Long (5yrs+)</small>	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Road widening	<u>N</u>	<u>H</u>	<u>6-12 months</u>
•	_____	_____	_____

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Program.

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered In Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Loam <input checked="" type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	<b>Specific Landform Element:</b>				
	(Refer to field manual for additional values)				
<b>CONDITION OF SOIL:</b>	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

## VEGETATION CLASSIFICATION\*:

Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);  
 2. Open shrubland (Hibbertia sp., Acacia spp.);  
 3. Isolated clumps of sedges (M.tetragona)

1. Open Mallee woodland over Melaleuca dominated understorey
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

## ASSOCIATED SPECIES:

Acacia evenulosa, Eucalyptus eremophila, Eucalyptus diptera, Eucalyptus extans, Melaleuca podiocarpa, Melaleuca leriflora

Other (non-dominant) spp \_\_\_\_\_

\* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 Australian Soil and Land Survey Field Handbook guidelines – refer to field manual for further information and structural formation table.

**CONDITION OF HABITAT:** Pristine  Excellent  Very good  Good  Degraded  Completely degraded

**COMMENT:** Most of the site was in excellent condition, small parts had a high weed burden and historical clearing from private landholders

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

**OTHER COMMENTS:** (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**FLORA AUTHORISATION / LICENCE No:** FT1000787 (JW) & FT1000788 (KW) Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licensing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: \_\_\_\_\_ WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: \_\_\_\_\_

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katherine Walkerden Role: Environmental officer Signed: [Signature] Date: 12/11/2021

Please return completed form to **Species And Communities Program DBCA,**  
 Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

RECORDS: Please forward to **Flora Administrative Officer, Species and Communities Program.**

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered In Database