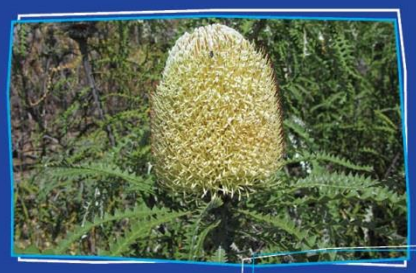
Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report

Shire of Esperance Strategic Purpose Permit 2021/22
Site G - Neds Corner Rd SLK 36.85 - 51



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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 7.09ha of native vegetation for the purpose of road widening and resheeting to meet modern safety standards.

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 'Neds Corner Road SLK 36.85 – 51' project as Site G under the '2021/2022 Strategic Purpose Permit' (Figure 1), for the purpose of road widening and resheeting.

The proposed works are located approximately 87 km north west of Esperance, within the Shire of Esperance managed road reserve of Neds Corner Road. Specifically, it is located from 3.9km to 17.6km north of Cascade Rd, at straight line kilometre (SLK) 36.85 - 51 (Main Roads 2021). A point within the proposed clearing permit area is 6302657m N, 325299mE (UTM Zone 51 H, GDA94).

This project involves both the reconstruction and widening of existing narrow seal sections and the widening/sheeting of a currently unsealed section. This road is classified as a Regional Distributor road giving access to properties north of Cascade, and traffic composition is up to 21% heavy vehicles during peak periods. To complete these works, native vegetation up to 4.5m from the current road footprint on both sides of the road is required to be cleared, increasing the active road footprint to 22 m. To mitigate impact of clearing vegetation, where feasible clearing will not occur to the full permitted width, conserving vegetation.

Figure 1. Project area for Site G – 'Neds Corner Road SLK 36.85 – 51'

3 Environmental Background

3.1 Scope

The removal of native vegetation to a 22 metre 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 G - 'Neds Corner Road SLK 36.85 – 51' is present within the Stokes Inlet: Lort/Young Catchment area. It is located approximately 44km from the coast.

3.3 Climate

The Cascade climate is described as Mediterranean, characterised by cool wet winters and dry warm summers (BoM 2022). The closest weather station is Salmon Gums which receives an average annual rainfall of 347 mm.

3.4 Geology

A single geological unit was identified within Site G - 'Neds Corner Road SLK 36.85 – 51' by Schoknecht et al. (2004). It is described as "Tertiary marine sediments with aeolian carbonate rich deposits in places".

3.5 Soils

The soils of Site G - 'Neds Corner Road SLK 36.85 – 51' is defined by Schnoknecht et al. 2004 as;

- 'Alkaline grey shallow sandy duplex soils with associated pale deep sands and minor deep sandy duplexes, ironstone gravel soils and non-cracking clays' and
- 'Alkaline grey shallow sandy duplex soils associated calcareous loamy earths and grey non-cracking clays and minor deep sands and ironstone gravel'

3.6 Topography

During the field survey, topography was observed to be dominated by Level plain or plateau of low relief and poor drainage Gilgia microrelief is common. Using Schnoknect et al. (2004), the project topography is mapped at a fine scale, traversing two topographic areas. The second topographic area defined by Schnoknect et al. (2004) which was not observed in the area surveyed was 'Shallow incised river valley with gently inclined slopes'.

3.7 Vegetation

The site is located within the Eastern Mallee (Mal01) Interim Biogeographic Regionalisation of Australia (Thackway & Cresswell 1995) region. The Eastern Mallee biogeographic region 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 two vegetation associations (VA) within the 'Site G - Neds Corner Road SLK 36.85 – 51' (Table 1). Both of these Vegetation association had low levels of remaining vegetation with both below 30% of their pre-European extent, VA47 had a particularly reduced extent with only 13.43% of its original extent remaining within the Shire of Esperance. Both vegetation units are poorly representing within the IUCN reserve system.

Table 1. Vegetation associations mapped by Beard (1973) within the 'Site G - 'Neds Corner Road SLK 36.85 – 51' 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	Lort VA512:	Lort VA47:
Description	Shrublands; mallee scrub, *Eucalyptus eremophila* & Forrest's marlock (E. forrestianna)	Shrublands; tallerack mallee-heath
Pre-European extent in IBRA region MaL01 (%)	26.41%	36.64%
Pre-European extent in LGA (%)	20.14%	13.43%
Current extent conserved in IUCN area (%)	2.53%	0.94%

3.8 Land use

The area directly included in the clearing permit application 'Site G - Neds Corner Road SLK 36.85 – 51' is currently intact and vegetated 100m & 200m wide road reserve, managed by the Shire of Esperance. The current road footprint occupies an average of 18m. 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 (Lort 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 2021e).
    - 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 (325646M E, 6304093M N GDA94 zone51);
    - 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 Birdata datasets
    - Department of Agriculture, Water and the Environment Protected Matters Search Tool
    - Atlas of Living Australia database
    - Index of Biodiversity Surveys for Assessment (IBSA).

4.2 Field investigation: possible ecological impacts

The site was initially inspected on 13/09/2021, 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 G - Neds Corner Road SLK 36.85 – 51' identified in the desktop 20 km radius search were assessed, including *Leipoa ocellata* (Malleefowl).

4.3 Field investigation: Assessing Threatened and Priority Ecological Communities

The vegetation community of 'Site G - Neds Corner Road SLK 36.85 – 51' was assessed for the presence a TEC or PEC (DBCA 2018, 2021b) comparing that to descriptions in approved conservation advice for these communities.

Specifically, the site was assessed for the Environmental Protection and Biodiversity Conservation Act 1999 listed 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)' TEC. The presence of Kwongkan was identified using diagnostic characteristics defined in the 'Approved Conservation Advice for Kwongkan (Commonwealth of Australia, 2014)' as;

> 2a) Characterised by Proteaceae species having 30% or greater cover of Proteaceae species across all layers where these shrubs occur (crowns measured as if they are opaque).

And/or
2b) Two or more diagnostic Proteaceae species are present that are likely to form a significant vegetative component when regenerated.

PEC's do not have published approved conservation advice. Comparison of the vegetation community occurred using 'Priority Ecological Communities for Western Australia Version 32 (DBCA 2021b)' definitions.

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, on the 13/09-15/09 and 28/09-29/09 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. Vegetation up to 5 meters from the edge of the existing road's back-slope was assessed to accurately cover the 4.5m widening of the road footprint. Suitable associated habitat for TF or PF identified in the desktop study were particularly focused on, and extensively searched. A follow up survey was conducted on 13/12/2021 by Katherine Walkerden and Julie Waters to specifically target the identification and counting of the priority 1 species, *Scaevola archeriana* which doesn't flower until December, no members of this species were found during the supplementary survey.

Due to the high diversity and complexity of Esperance's flora, all species were recorded to compile an incidental species list (Appendix 8.1, Table 6). 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 Licenses 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 species such as *Acacia amyctica.* 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

Five vegetation communities were identified within the 'Site G - Neds Corner Road SLK 36.85 – 51', as defined by structure and composition (Table 2). The incidental flora list identified a total of 201 native species across all vegetation communities, an additional 19 non-native species were found. It is believed that the Beard (1973) vegetation associations (VA) identified in Section 3.7 are an appropriate match for three of the vegetation types observed. Vegetation type B did not match the Bead VA's but

matched VA931 Medium woodland – Yate. Vegetation type E somewhat matched VA552 having similar species present but topology and soils did not match at all, with VA552 being on Greenstone hills where Veg E was present in flats with larger clay concentrations that the rest of the site.

Table 2. Vegetation communities identified within proposed 'Site G - 'Neds Corner Road SLK 36.85 – 51' project area.

Type	Description	Figure	Closest Matching Beard Vegetation Association	Vegetation to be cleared (ha)	Diversity (native species)
A	*Banksia media* dominated mixed shrubland with *Eucalyptus pleurocarpa* and *Hakea cinerea*	5	VA47 - Shrublands; tallerack mallee-heath	0.103	45
B	*Eucalyptus occidentalis* woodlands over a depressed clay basin	6	VA931 - Medium woodland; yate	0.184	33
C	Mixed Mallee over mixed Melaleuca shrubland	7	VA512 - Shrublands; mallee scrub, *Eucalyptus eremophila* & Forrest's marlock (E. forrestianna)	6.409	146
D	*Banksia media* and Mallee over Melaleuca shrubland	8	VA512 - Shrublands; mallee scrub, *Eucalyptus eremophila* & Forrest's marlock (E. forrestianna)	0.126	44
E	Dense Melaleuca shrubland over Allocasuarina, Hakea and *Calothamnus quadrifidus* with lepidosperma understorey	9	VA552 - Shrublands; *Casuarina acutivalvus* & calothamnus (also Melaleuca) thicket on greenstone hills	0.267	41

Figure 2. Vegetation types within the 'Site G - 'Neds Corner Road SLK 36.85 – 51' area, from SLK 36.85km to 51km along Neds Corner Rd.

Figure 3. Vegetation types within the 'Site G - 'Neds Corner Road SLK 36.85 – 51' area, from SLK 36.85km to 41.4km along Neds Corner Rd. These include vegetation types A, B, C and D.

Figure 4. Vegetation types within the 'Site G - 'Neds Corner Road SLK 36.85 – 51' area, from SLK 44.31 km to 48.19 along Neds Corner Rd. These include vegetation types C and E.

Figure 5. Vegetation Type A identified in 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, described as *Banksia media* dominated mixed shrubland with *Eucalyptus pleurocarpa* and *Hakea cinerea.*

Figure 6. Vegetation Type B identified in 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, described as *Eucalyptus occidentalis* woodlands over a depressed clay basin.

Figure 7. Vegetation Type C identified in 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, described as Mixed Mallee over mixed Melaleuca shrubland.

Figure 8. Vegetation Type D identified in 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, described as *Banksia media* and Mallee over Melaleuca shrubland

Figure 9. Vegetation Type E identified in 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, described as Dense Melaleuca shrubland over Allocasuarina, Hakea and *Calothamnus quadrifidus with* lepidosperma understorey.

5.2 Vegetation Condition

Vegetation was primarily in an excellent condition with little to no weed burden and disturbance (Figure 11). Areas that were degraded were typically around farm access crossovers with weed invasion and historic clearing having taken place.

There was variable weed invasion across the proposed 'Site G - 'Neds Corner Road SLK 36.85 – 51' area. A majority of the site had little to no weed burden however small sections had significant weed burden. Overall, 19 invasive species were identified within the project area (Appendix 8.1). Of these, the most extensive and of serious concern was African Lovegrass (*Eragrostis curvula*) and other non-native grasses. Evidence of dumping of garden waste and sheep carcasses within the road reserve by local landowners was evident (Figure 10) this has been referred to the Shire of Esperance's Compliance Officer and Rangers.

It is highly likely that proposed works will 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

The Yate Swamp areas (Vegetation Type B) was in a much poorer condition than the rest of the area with an understorey that had been invaded by weeds, Yate swamp areas are typically much more susceptible to weed invasion than other areas so this is expected.

Table 3. Quantifying vegetation to be cleared by vegetation type and condition

Vegetation Type	Excellent	Very Good	Good	Degraded	Completely Degraded
A		0.088	0.154		
B		0.171		0.012	
C	5.975	0.262		0.140	0.032
D	0.126				
E	0.267				
Total	**6.368**	**0.521**	**0.154**	**0.152**	**0.032**

Figure 10. Photo of dumping area found along Neds Corner Rd. Dumping site is found at 325843M S, 6305028M N GDA95 Zone 51. Photo was taken by Katherine Walkerden on 29.09.2021.

Figure 11. Vegetation condition across 'Site G - 'Neds Corner Road SLK 36.85 – 51' project, ranging from Excellent to a Completely Degraded condition.

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 Cascades area. There was no sign of dieback seen throughout the site during the inspection. 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 the disease, including clearing in dry conditions and clean down of vehicles and machinery before entering the site. However, there is always a possibility that proposed works will spread *P. cinnamomi* dieback along Neds Corner Rd Road due to proposed works.

5.4 Threatened and Priority Ecological Communities

The desktop study identified the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 listed threatened ecological community (TEC) 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)' within 'Site G - 'Neds Corner Road SLK 36.85 – 51' project area. No other TEC's or priority ecological communities (PEC) were identified by the desktop study as being within 'Site G - 'Neds Corner Road SLK 36.85 – 51' or within a 20 km buffer of the site.

A small 80m section in the southern area of the site was listed in the desktop survey as being part of the Kwongkan TEC, however this area did not meet the diagnostic guidelines defined in the 'Approved Conservation Advice for Kwongkan (Commonwealth of Australia, 2014). The mapped area covered Vegetation Type B described as '*Eucalyptus occidentalis* woodlands over a depressed clay basin' and Vegetation Type C described as 'Mixed Mallee over mixed Melaleuca shrubland'. These vegetation types did not meet the Kwongkan TEC guidelines and had little coverage of proteaceous species. Vegetation type A described as '*Banksia media* dominated mixed shrubland *with Eucalyptus pleurocarpa and Hakea cinerea'* did however meet the guidelines for the Kwongkan TEC, having a large percentage of proteaceous cover. The project constitutes clearing 0.154ha of Good condition Kwongkan TEC and 0.088ha of Very Good Condition Kwongkan TEC.

The vegetation community described as 'Swamp Yate, *Eucalyptus occidentalis*, woodlands in seasonally inundated clay basins in the South Coast of Western Australia' is listed as a PEC (DBCA 2021b). Within the 'Site G - 'Neds Corner Road SLK 36.85 – 51' project area, vegetation type B was described as a Yate Woodlands over a clay basin. *E. occidentalis* was present continuously within the two mapped areas, the southern section of vegetation type B 'Yate Woodland' (located between SLK 37.15-37.2) was in a degraded condition having experienced historic clearing and weed invasion. The northern area of vegetion type B 'Yate Woodland' (located between SLK 37.29-37.44) was in a Very Good condition with a low weed burden. Priority Ecological Communities for Western Australia Version 32 (DBCA, 2021b) defines the PEC as "Yate woodlands with intact understorey and fringing vegetation", the southern area of vegetation type B had a disturbed understorey that had been heavily invaded by weeds, not meeting the definition provided by DBCA (20201b), the northern area of this vegetation type was in excellent condition and meets the definition provided by DBCA (2021b). This project constitutes clearing of 0.171ha *of Eucalyptus occidentalis* woodlands in a very good condition which may meet the definition of 'Swamp Yate, *Eucalyptus occidentalis*, woodlands in seasonally inundated clay basins in the South Coast of Western Australia' PEC.

Figure 12. Location of TECs and PECs at southern portion of 'Site G - Neds Corner Road SLK 36.85 – 51' project area. Vegetation type 'A' in Good or Very Good condition met threatened ecological community (TEC) 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic

Province of Western Australia (Kwongkan)' and Vegetation type 'B' in Very Good condition met priority ecological community (PEC) 'Swamp Yate, *Eucalyptus occidentalis*, woodlands in seasonally inundated clay basins in the South Coast of Western Australia'.

5.5 Threatened and Priority Flora

Four threatened flora (TF) and 48 priority flora (PF) were recorded within a 20 km radius of the proposed impact site (Table 4; DBCA 2021a, DBCA 2021d, DBCA 2021f). Of these, 16 PF and 1 TF species had suitable known associated habitat that corresponded with vegetation communities and soil type of 'Site G - Neds Corner Road SLK 36.85 – 51' project. No confirmed records, indicating known populations, were directly located within the clearing permit area.

Table 4. Threatened or priority flora identified by the desktop study to be present within a 20 km radius of 'Site G - Neds Corner Road SLK 36.85 – 51' 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
Acacia amyctica	P2	Salmon Gums area on well-drained loams and sandy clay plains with *Eucalyptus floctoniae* low woodland	No
Acacia improcera	P3	Salmon Gums area on Sand, loamy clay, clay soils. Undulating plains, flats	No
Acacia singula	P3	Lake King area single population in Cascade area, Gravelly sand over laterite, white or yellow sand. Rises, hilltops.	No
Acacia bartlei	P3	Salmon Gums area, waterlogged depressions in brown/grey sandy clay. Tolerates low level salinity	No
Acacia diminuta	P1	Scattered populations from Jerramungup to Scaddan. Grows in sandy clay.	Possible
Acacia glaucissima	P3	Salmon Gums on open low/Mallee woodland with dwarf scrub or low heath *Difference to NT species is long curly pods	Possible
Baeckea uncinella syn. Austrobaeckea uncinella	P3	Yellow or white sand, clay loam. Edges of salt lakes, salt creeks, sandplains.	Possible
Bentleya diminuta	P2	Cascade area, Sandy clay or loam with calcareous nodules	Yes
Bossiaea flexuosa	P3	Vast majority of records to the west - Gravelly sandy soils, undulating plains.	No
Brachyloma nguba	P1	Cascade area, White to brown sandy clay, shallow sandy loam. Open mallee woodland, mallee scrub, flat plains.	Yes
Caladenia longifimbriata	P1	Jerramungup area, Seasonal Creeks.	No

Comesperma calcicola	P3	Calcareous or semi-saline clay loams, limestone. Areas around saline water	No
Conostylis lepidospermoides	T	Grey or yellow-brown sand over laterite.	No
Convolvulus sp. Cascades	P1	Cascade area, sandy-clay loam, sandy Loam. Low-lying flats, inundated depressions.	No
Cryptandra polyclada subsp. polyclada	P3	Cascade area, Sand, Sandplains	Possible
Daviesia pauciflora	P3	White or grey sand over laterite or limestone. Flats.	No
Eremophila chamaephila	P3	Open mallee woodland with limestone	No
Eremophila lactea	T	Grass Patch area. White sandy clay loam. Open disturbed road verge. Mass germination after fire	No
Eremophila serpens	P4	Wide distribution, including north to Salmon Gums. Favours saline area or sandy rises. Associated with Eucalyptus woodland and Melaleuca shrubland	No
Eucalyptus dolichorhyncha	P4	Mostly distributed towards the western area of Grass Patch	Yes
Eucalyptus litorea	P3	Calcareous sand, sandy clay loam & stones. Leeward of primary dunes, around salt lakes.	No
Eucalyptus misella	P1	North Cascade, White, yellow or grey sand. Low-lying sandplains.	Yes
Eucalyptus stoatei	P4	Gravelly sand or clay, sandy loam. Flats, rises.	Yes
Frankenia brachyphylla	P2	North of Salmon Gums, North Cascade area, Salt lake margins.	No
Frankenia glomerata	P4	Woodland with Melaleuca shrubland. Prefers limestone or white clay loam. Associated with disturbance	No
Frankenia sp. Southern gypsum	P3	North Cascade, samphire flat, sandy gypsum over hard gypsum	No
Goodenia laevis subsp. laevis	P3	Scattered distribution all over Australia. Semi-arid areas. Disturbed areas, common on road shoulders.	Yes
Grevillea aneura	P4	Sand, sandy clay, gravel.	Yes
*Guichenotia asteriskos * Found in 2020 and 2021 spring surveys on nearby projects, specimens collected are not yet on TPFL and WA herbarium databases*	P2	Cascade area. Sandy clay or loam with gravel.	No
Gyrostemon ditrigynus	P4	Sand, sandy clay, loam. Plains, low ironstone ridges.	No
Halgania sp. Peak Eleanora	P2	Salmon Gums area. Loamy sand. Undulating plains.	No
Hydrocotyle decorata	P2	Cascade, Salmon Gums area. Raised embankment around a salt lake	No
Hydrocotyle papilionella	P2	Cascade area, Margins of salt lakes.	No

Hypocalymma sp. Cascade	T	Cascade area, Sandy loam.	Yes
Leucopogon sp. Cascades	P1	South of Cascade, Slopes. Dry, brown, sandy loam.	Possible
Levenhookia pulcherrima	P3	Cascade area, Sand	Yes
Marianthus aquilonaris	T	Near Lake Hope & Johnston.	No
Melaleuca similis	P1	Cascade area, Grey sand. Margins of saline drainage lines.	No
Melaleuca dempta	P3	Scaddan area, single specimen near Cascade area. Salt lake periphery.	No
Opercularia nubicola (syn. rubioides)	P2	Cascade area, brown loam	Yes
Opercularia acolytantha	P3	Cascade area, Sandplain, Sand, Sandy loam, Sandy Loam with gravel.	No
Persoonia cymbifolia	P3	Grass Patch, Salmon Gums and Cascade area. Sandy soils. On flats or in rock crevices.	Yes
Philotheca gardneri subsp. globosa	P1	Cascade area, Sandy soils. Heathland.	Yes
Pityrodia chrysocalyx	P3	Grass Patch, Salmon Gums, Cascade area. Mallee woodlands. Sandy soils. Sandplain	Yes
Pultenaea calycina subsp. proxena	P4	Cascade area, Sandy clay or loam, with gravel, over magnesite. Moderate slopes, adjacent to creek beds.	No
Scaevola archeriana	P1	Known population 600 metres from project. Sandy and sandy-clay loam soils. Sandplains, road verges.	Yes
Stachystemon vinosus	P4	South of Cascade, Fine loamy sand, stony soils. Sandplains, rock crevices on breakaways.	Possible
Stenanthera localis	P1	Cascade townsite, yellow-brown sandy loam, Mallee Woodland.	Yes
Streptoglossa sp. South Coast	P2	Cascade area, red loam, Sandy loam. Mallee Woodlands, recently burnt areas.	Possible
Thomasia pygmaea	P3	South of Cascade, Stony sandy loam, clayey sand. Marine plains.	No
Thysanotus brachiatus	P2	South of Cascade. Grey sand. Sand Plain	Possible

Guichenotia asteriskos was not found during the desktop search, but specimens were found by the Shire of Esperance in its 2020 and 2021 flora surveys north of the Cascade Townsite, and these specimens had not yet been added to the WA Herbarium specimen list.

In addition, the targeted flora survey identified two PF species, *Goodenia laevis subsp. laevis* and *Melaleuca similis,* within the proposed clearing permit footprint (Figure 14, Figure 15).
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, DBCA 2021g). It was noted that additional information on *Melaleuca similis* and *Goodenia laevis subsp. laevis* was located on file.

Numerous specimen's unknown to surveyors were collected and verified at the WA Herbarium as non-threatened species, such as *Pultenaea indira subsp. indira* (Accession #9240; KSW3821).

5.5.1 *Scaevola archeriana*, Priority 1

A population of priority one species, *Scaevola archeriana* occurred in an earlier section of Neds Corner Rd this section was covered in CPS 8884 'Site E - Neds Corner Rd Reconstruction, north of Cascades Rd' (DBCA 2021a, DBCA 2021d, DBCA 2021f, DBCA 2021g) It is listed as population one on TPFL. The population is located 2.1 km north of Cascade Rd intersection, at SLK 35.01 (Main Roads 2020), -33.461220 S, 121.09036 E (GDA94).

The species is known for being summer flowering and a supplementary survey was conducted on 13/12/2021 by Julie Waters and Katherine Walkerden after first visiting the pre-existing Neds Corner Rd population. Areas with similar sandy soils to the preexisting population was searched with no *Scaevola archeriana* found during the survey. In addition another survey was conducted by Katherine Walkerden on the 10/01/2021 to perform an accurate population count of *Melaleuca similis* and *Goodenia laevis subsp. laevis*, no *Scaevola archeriana* was found during this survey.

5.5.2 *Melaleuca similis*, Priority 1

A previously known population of priority one species, *Melaleuca similis*, was present within 'CPS 8608, Site E – Neds Corner Rd Reconstruction, north of Cascade Rd' (DBCA 2019b, DBCA 2019i, DBCA 2019k; Figure 9), described as population two on TPFL database (DBCA 2019i). Three specimens of *M. similis* were sent to the WA Herbarium for identification confirmation (KSW5521, KSW5621 and KSW5721; Accession #9361 with specimens not retained). They were confirmed by Michael Hislop on 3/11/21. 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 28/1/2022 (Appendix 8.2.1).

An additional targeted flora survey was conducted on the 10/01/2021 to record an accurate population count of *M. similis* from SLK 36.85 – 42.51 and ensure there were no additional populations within the clearing area. Vegetation type D was given particular scrutiny due to the presence of *Banksia media* in both Veg type A & D, with *B. media* used as an indicator for sandy soil. The population found in the previous clearing permit continued into 'Site G - Neds Corner Road SLK 36.85 – 51' with 39 plants counted, the *M. similis* was centered around the proteaceous vegetation, within Vegetaion type A with a single specimen just outside the Vegetation A in Vegetation type B.

Figure 13. *Melaleuca similis*, within the Site G - Neds Corner Road SLK 36.85 – 51 ' project area

PERTH 06766137

Melaleuca similis
Myrtaceae

Plant Description, Notes: Shrub to ca 50 cm. Filaments bright deep magenta-pink.
Vegetation: Tall Proteaceae - Myrtaceae shrubland with emergent mallee Eucalypts.
Site Description: Grey-brown sandy loam.
Frequency: locally frequent.
Nearest Named Place: not available
State: WA
Collector: Lepschi, B.J.; Craven, L.A. **Coll No:** 4449
Collection Date: 30 October 2000
Conservation Code: 1

Determinavit: B.J. Lepschi **Date:** *2000*
Origin: CANB
Record Basis: PreservedSpecimen

Figure 14. Previous record of priority one species, *Melaleuca similis*, within the 'CPS 8608, Site E – Neds Corner Rd Reconstruction, north of Cascade Rd' area.

Figure 15. Location of priority one species, *Melaleuca similis*, within and immediately outside 'Site G - Neds Corner Road SLK 36.85 – 51' project area.

To evaluate impact of proposed works on the sustainability of *M. similis*, spatial data bases were interrogated (DBCA 2019e; Table 6). *M. similis* is restricted geographically to an area in the vicinity of Cascades, and is known from six populations over a range 110 km (north-south) by 60 km (east-west) (DBCA 2019e). Spatial queries have poor description on population dynamics or tenure, so for the vast majority of these locations have unknown population sizes. The vast majority of populations have been revisited recently. Given its similarity to other widespread and common species within the Ravensthorpe-Esperance region, notably *Melaleuca plumea* and *Melaleuca stramentosa*, it may be under collected as perceived to be similar non-threatened species.

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 (KSW2821; Accession #9193 with specimen not retained). It was confirmed by Michael Hislop on 3/11/21. 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 targeted flora survey was conducted on the 10/01/2021to record an accurate population count from SLK 36.85 – 42.51 due to an accurate population count not being conducted on the first set of surveys due to low flowering rates, several hundred additional specimens were found during this count.

Shire of Esperance counted a total of 786 *Goodenia laevis ssp. laevis* plants along 'Site G - Neds Corner Road SLK 36.85 – 51 ' project area. Plants were scattered throughout the site, found along the road shoulders spoon drains, crossovers and intersections. Their distribution was heaviest near the intersection of Grass Patch Rd where unauthorised clearing had taken place by a private landholder for

the construction of a crossover. About a dozen *G. laevis subsp. laevis* were also found in undisturbed bushland. If works take place up to 319 plants will be impacted from a population of at least 786. *Goodenia laevis subsp. laevis* has been observed by the Shire of Esperance to mas germinate after mechanical disturbance, as evidence by this survey and numerous previous populations.
An extract of data from the WA Herbarium and TPFL spatial datasets was received from DBCA 22/12/2021 (05-1221FL).

The Shire of Esperance has discovered numerous new populations of *Goodenia laevis subsp. laevis* since the 2019 flora surveys. Only one of these had been entered into TPFL on 17/01/2021.

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 subsp. 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 Wilaust 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.
- Holt Rd SLK 4-11.61. Plants were present in the road shoulders, on the running surface of the road and in intact bushland. 400+ plants
- Cascade rd SLK 73.59-75.89. 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^2.
- 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 16. Map of *Goodenia laevis subsp. laevis* found throughout 'Site G - Neds Corner Road SLK 36.85 – 51'

5.6 Fauna

Within a 20 km radius of the 'Site G - Neds Corner Road SLK 36.85 – 51', 124 fauna have previously been recorded. Of these, two species of threatened fauna have been recorded (Table 5). Both species have suitable habitat within the proposed clearing permit area.

Table 5. Potential threatened, priority and protected under international agreement fauna recorded within a 20 km radius of the proposed 'Site G - Neds Corner Rd SLK 36.85 - 51'.
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
Calyptorhynchus latirostris	Carnaby's Cockatoo	T	Yes	Foraging and feeding areas associated with high levels of Proteacous cover
Leipoa ocellata	Malleefowl	T	Yes	Semi-arid shrublands and low woodlands dominated by mallee and/or acacia. Sandy areas with large amounts of leaf litter required for breeding.

Table 6. Fauna observed in 'Site G - Neds Corner Road SLK 36.85 – 51'

Scientific Name	Common Name	Conservation Status	Invasive	Observation type
Dromaius novaehollandiae	Emu	NT		Carcass
Gymnorhina tibicen	Australian Magpie	NT		Sight
Manorina flavigula	Yellow-throated Miner	NT		Sight
Oryctolagus cuniculus	European rabbit	NT	X	Sight
Ovis aries	Domestic Sheep	NT	X	Carcasses (dumped)
Pseudonaja affinis	Dugite	NT		Sight
Rhipidura leucophrys	Willie Wagtail	NT		Sight
Tiliqua rugosa	Bobtail Lizard	NT		Sight
Vulpes vulpes	Red Fox	NT	X	Sight

5.6.1 *Malleefowl, Leipoa ocellata,* threatened fauna

Malleefowl are known to require thick Mallee shrubland and woodlands dominated by Melaleuca or Acacia understorey. Sandy area with large amounts of leaf litter are required for breeding. The Malleefowl is unlikely to breed in recently burned (<30 years) areas. Vegetation type C and D likely provide suitable habitat for the Malleefowl. These area are unburned and would provide suitable organic material for Malleefowl breeding mounds. However no evidence of use by Malleefowl were seen (i.e. breeding mounds) and foxes which have contributed to the decline of the Mallee fowl were present at the site, leaving the project less suitable for use.

5.6.2 Carnaby's Black Cockatoo, *Calyptorhynchus latirostris*, threatened fauna

The only large trees present within the site potentially capable of producing large hollows were the *Eucalyptus occidentalis* present between SLK 37.29-37.44 in Vegetation type B. However no hollows were observed, there is also no listed roosting site within the Cascade locality. Carnaby's Black Cockatoos forage on Proteaceae species nuts, such as Hakea or Banksia species. Vegetation type A, described as '*Banksia media* dominated mixed shrubland with *Eucalyptus pleurocarpa and Hakea cinerea*' would likely provide foraging grounds. The extent of clearing within vegetation type A will be severely limited with a maximum of 0.242ha to be cleared. Due to the extremely small size of clearing on potential habitat there is unlikely to be any significant impacts on Carnaby's Cockatoo habitat.

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

The 'Site G - Neds Corner Road SLK 36.85 – 51 ' 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 G - Neds Corner Rd SLK 36.85 - 51'.

Assessment against Clearing Principles	**Conclusion**
Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	This site had a high biological diversity with 201 native species across five vegetation types recorded during the flora survey. The area was highly diverse with variability in the soil and landscape boosting the range of vegetation communities seen.
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.	The area is not close to any listed Carnabys Cockatoo roosting habitat, there is a small number of large *Eucalyptus occidentalis* trees that could potentially provide hollows though none were observed. The southern section of the project area contained a high proportion of proteaceous species which could potentially provide feeding habitat. Due to the extremely small size of clearing on potential habitat there is unlikely to be any significant impacts on Carnaby's Cockatoo habitat.
Principle (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	Two priority species was observed in the area. *Goodenia laevis* ssp *laevis* (P3) is common within the Shire of Esperance with at least 30 populations. *Melaleuca similis* (P1) is significantly less common with 6 known populations over a range 110 km (north-south) by 60 km (east-west). Populations dynamics of this species are poorly understood.
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.	0.242ha of vegetation met the definition of Kwongkan TEC. 0.362ha of vegetation met the Swamp Yate PEC. All other areas within the project area did not meet the definitions of any PEC or TEC.

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 providing a majority of ecological linkages in the area. However the amount of vegetation being cleared and the fact that this is a 100m to 200m wide road reserve which will still exist as a wildlife corridor after road widening does not constitute being a significant impact. Both the mapped Beard Vegetation Associations within 'Site G - Neds Corner Rd SLK 36.85 - 51' (Lort VA512, Lort VA47) are under represented in the IUCN reserve system.
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.	Two sections of the clearing area fringe upon *Eucalyptus occidentalis* Yate woodlands, these areas are seasonally inundated, a listed watercourse also cuts through the Yate Woodland. No other wetland or watercourse areas were present within the clearing area.
Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Vegetation within this area will be providing function as windbreaks and erosion control for the highly cleared agricultural areas surrounding it. There was no listed risk of acid sulphate soils for the area.
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 3km metres away from Reserve 31744 an A Class reserve for the conservation of Flora & Fauna. The relatively low amount of native vegetation cleared will have little effect on the ecological linkages to this reserve.
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.	The project is listed as being part of a high salinity area but lacked any visible surface water or any evidence of waterlogged soils.
Principle (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	The project area is 6km away from the nearest listed floodway and the watercourse listed for the area was dry when the September flora survey occurred, flooding is unlikely to occur this far inland.

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8 Appendix

8.1 Incidental species list

Family	Genus	Species	Common Name	Weed	Cons Stat	Vegetation Type				
						A	B	C	D	E
Aizoaceae	*Carpobrotus*	*modesta*	Inland Pigface					x	x	
Amaranthaceae	*Ptilotus*	*polystachyus*	Prince of Wales Feather					x		
Apiaceae	*Platysace*	*deflexa*	Youlk			x				
Apiaceae	*Platysace*	*effusa*								x
Asparagaceae	*Lomandra*	*micrantha ssp. teretifolia*							x	x
Asparagaceae	*Thysanotus*	*patersonii*	Twining Fringe Lily			x	x			
Asphodelus	*Trachyandra*	*divaricata*	Dune Onion Weed	x				x		x
Asteraceae	*Arctotheca*	*calendula*	Cape Dandelion	x				x	x	
Asteraceae	*Brachyscome*	*ciliaris*	Variable Daisy			x		x		
Asteraceae	*Cirsium*	*vulgare*	Spear Thistle	x		x				
Asteraceae	*Dittrichia*	*graveolens*	StinkWort	x		x				
Asteraceae	*Olearia*	*muelleri*	Goldfields Daisy					x		
Asteraceae	*Olearia*	*muricata*	Rough-leaved Daisy Bush					x		
Asteraceae	*Pogonolepis*	*muelleriana*						x		x
Asteraceae	*Rhodanthe*	*pygmaea*	Pigmy Sunray					x		
Asteraceae	*Senecio*	*glossanthus*	Belcher Slender Groundsel					x		
Asteraceae	*Sonchus*	*oleraceus*	Common Sowthistle	x		x		x	x	
Asteraceae	*Symphyotrichum*	*squamatum*	Bushy Starwort					x		
Asteraceae	*Vittadinia*	*gracilis*	New Holland Daisy				x			x
Boraginaceae	*Halgania*	*andromedifolia*						x		
Brassicaceae	*Brassica*	*napus*	Rapeseed	x				x		
Brassicaceae	*Brassica*	*tournefortii*	Mediterranean Turnip	x		x		x	x	

Brassicaceae	*Carrichtera*	*annua*	Ward's Weed							x
Brassicaceae	*Lepidium*	*africanum*	Common Peppercress							
Brassicaceae	*Raphanus*	*raphanistrum*	Wild Radish	x						
Casuarinaceae	*Allocasuarina*	*corniculata*	Tamma Sheoak					x		x
Casuarinaceae	*Allocasuarina*	*huegeliana*	Rock Sheoak					x		x
Casuarinaceae	*Allocasuarina*	*sp.*						x		x
Chenopodiaceae	*Atriplex*	*semibaccata*	Australian Saltbush					x		
Chenopodiaceae	*chenopod*	*sp.*						x		
Chenopodiaceae	*Enchylaena*	*tomentosa*	Barrier Saltbush				x	x	x	
Chenopodiaceae	*Rhagodia*	*baccata*	Berry Saltbush					x		
Chenopodiaceae	*Rhagodia*	*crassifolia*	Fleshy Saltbush			x				x
Chenopodiaceae	*Rhagodia*	*preissii*	Soft Salt Bush					x		
Convolvulaceae	*Wilsonia*	*humilis*	Silky Wilsonia					x		
Crassulaceae	*Crassula*	*exserta*				x			x	
Cyperaceae	*Gahnia*	*aristata*						x		
Cyperaceae	*Gahnia*	*ancistrophylla*	Hooked-leaf Saw Sedge					x	x	x
Cyperaceae	*Gahnia*	*drummondii*						x		
Cyperaceae	*Lepidosperma*	*sp.*						x		
Cyperaceae	*lepidosperma*	*squamata*					x		x	
Cyperaceae	*Schoenus*	*obtusifolius*						x		
Cyperaceae	*Schoenus*	*pleiostemoneus*						x	x	
Dilleniaceae	*Hibbertia*	*andrewsiana*				x				
Dilleniaceae	*Hibbertia*	*exasperata*								
Dilleniaceae	*Hibbertia*	*pungens*				x		x	x	x
Dilleniaceae	*Hibbertia*	*psilocarpa*						x	x	
Ericaceae	*Lissanthe*	*rubicunda*						x		
Ericaceae	*Styphelia*	*exserta*						x		
Ericaceae	*Styphelia*	*intertexta*				x				
Euphorbiaceae	*Beyeria*	*sulcata var. gracilis*						x	x	x

Fabaceae	*Acacia*	*assimilis ssp. atroviridis*						x		
Fabaceae	*Acacia*	*brachyclada*						x		
Fabaceae	*Acacia*	*dermatophylla*						x	x	
Fabaceae	*Acacia*	*erinacea*	Prickly Wattle					x		
Fabaceae	*Acacia*	*hadrophylla*						x		x
Fabaceae	*Acacia*	*lasiocalyx*	Silver Wattle				x			x
Fabaceae	*Acacia*	*latipes ssp. latipes*					x		x	
Fabaceae	*Acacia*	*mutabilis ssp. angustifolia*				x		x	x	
Fabaceae	*Acacia*	*mutabilis ssp. mutabilis*						x		
Fabaceae	*Acacia*	*nivea*								
Fabaceae	*Acacia*	*patagiata*	Salt Gully Wattle				x	x	x	
Fabaceae	*Acacia*	*pravifolia*	Coil-Pod Wattle					x		
Fabaceae	*Acacia*	*pritzeliana*						x	x	
Fabaceae	*Acacia*	*Profusa*						x		
Fabaceae	*Acacia*	*lasiocarpa var. bracteolata*	Panjang			x				
Fabaceae	*Acacia*	*flavipila var. flavipila*						x		
Fabaceae	*Acacia*	*gonophylla*				x	x	x		
Fabaceae	*Acacia*	*mutabilis subsp. angustifolia*					x			
Fabaceae	*Aotus*	*sp. Esperance*				x				
Fabaceae	*Aotus*	*sp. Southern Wheatbelt*						x		
Fabaceae	*Bossiaea*	*leptacantha*						x		
Fabaceae	*Chorizema*	*aciculare*	Needle-leaved Chorizema			x				
Fabaceae	*Daviesia*	*aphylla*						x		
Fabaceae	*Daviesia*	*articulata*				x				
Fabaceae	*Daviesia*	*campephylla*						x		x
Fabaceae	*Daviesia*	*lancifolia*	Bitter Pea			x		x	x	
Fabaceae	*Dillwynia*	*acerosa*								
Fabaceae	*Eutaxia*	*neurocalyx ssp. papillosa*							x	
Fabaceae	*Gastrolobium*	*melanocarpum*						x		

Fabaceae	*Kennedia*	*prostrata*	Running Postman				x			
Fabaceae	*Leptosema*	*daviesioides*	Upside-down Pea-bush					x		
Fabaceae	*Medicago*	*polymorpha*	Burr Medic	x		x				x
Fabaceae	*Ornithopus*	*compressus*	Yellow Serradella	x		x				x
Fabaceae	*Ornithopus*	*pinnatus*	Orange Birdsfoot	x		x				
Fabaceae	*Pultenaea*	*indira ssp. indira*				x		x	x	
Fabaceae	*Pultenaea*	*purpurea*						x		
Fabaceae	*Pultenaea*	*spinulosa*						x		
Fabaceae	*Senna*	*cardiosperma*					x	x		
Fabaceae	*Templetonia*	*sulcata*	Flat Mallee Pea			x		x	x	
Fabaceae	*Vicia*	*sativa ssp. sativa*	Common Vetch	x				x		x
Goodeniaceae	*Coopernookia*	*polygalacea*						x		
Goodeniaceae	*Coopernookia*	*strophiolata*						x		
Goodeniaceae	*Dampiera*	*lavandulacea*				x			x	
Goodeniaceae	*Goodenia*	*concinna*	Elegant Goodenia					x		x
Goodeniaceae	*Goodenia*	*laevis ssp. laevis*			P3			x		
Goodeniaceae	*Goodenia*	*scapigera*	White Goodenia			x		x		x
Goodeniaceae	*Goodenia*	*affinis*	Silver Goodenia					x		
Goodeniaceae	*Goodenia*	*trinervis*					x			
Goodeniaceae	*Scaevola*	*bursariifolia*	West Coast Fan-flower					x		x
Haloragaceae	*Glischrocaryon*	*roei*	Globular Pop-flower			x		x		
Juncaceae	*Juncus*	*aridicola*	Tussock Rush				x	x		x
Lamiaceae	*Microcorys*	*obovata*						x		
Lamiaceae	*Westringia*	*rigida*	Stiff Westringia					x		
Lauraceae	*Cassytha*	*glabella*	Slender Devil's Twine				x			
Lauraceae	*Cassytha*	*melantha*	Coarse Dodder-laurel					x	x	
Loganiaceae	*Logania*	*stenophylla*						x	x	
Malvaceae	*Alyogyne*	*hakeifolia*	Native Hibiscus					x		
Montiaceae	*Calandrinia*	*calyptrata*	Pink Purslane					x		x

Myrtaceae	*Baeckea*	*latens*				x		x	x	
Myrtaceae	*Calothamnus*	*gibbosus*	Corky Net-bush					x		
Myrtaceae	*Calothamnus*	*quadrifidus*	One-sided Bottlebrush							
Myrtaceae	*Cyathostemon*	*ambiguus*				x		x	x	
Myrtaceae	*Darwinia*	*diosmoides*					x			x
Myrtaceae	*Eucalyptus*	*astringens ssp. astringens*					x			
Myrtaceae	*Eucalyptus*	*conglobata ssp. conglobata*						x		
Myrtaceae	*Eucalyptus*	*discreta*	Mount Ragged Mallee					x		
Myrtaceae	*Eucalyptus*	*eremophila*	Tall Sand Mallee					x		
Myrtaceae	*Eucalyptus*	*extensa*	Yellow Mallet							
Myrtaceae	*Eucalyptus*	*flocktoniae*	Merrit					x		
Myrtaceae	*Eucalyptus*	*forrestiana*	Fuchsia Mallee			x		x	x	
Myrtaceae	*Eucalyptus*	*Kessellii*	Ribbed Mallee					x		
Myrtaceae	*Eucalyptus*	*leptocalyx*	Hopetoun Mallee					x		
Myrtaceae	*Eucalyptus*	*occidentalis*	Flat Topped Yate			x	x			x
Myrtaceae	*Eucalyptus*	*perangusta*	Fine-leaved Mallee					x		
Myrtaceae	*Eucalyptus*	*pileata*	Blackley Capped Mallee					x		
Myrtaceae	*Eucalyptus*	*platycorys*	Boorabin Mallee					x		
Myrtaceae	*Eucalyptus*	*platypus ssp. platypus*	Moort							
Myrtaceae	*Eucalyptus*	*redunca*	Black Marlock					x		
Myrtaceae	*Eucalyptus*	*sp.*					x	x		x
Myrtaceae	*Eucalyptus*	*sp.*				x				
Myrtaceae	*Eucalyptus*	*suggrandis ssp. suggrandis*	Kundip Mallee			x				
Myrtaceae	*Eucalyptus*	*tumida*					x	x	x	x
Myrtaceae	*Eucalyptus*	*urna*	Merrit					x		
Myrtaceae	*Eucalyptus*	*pleurocarpa*	Tallerack			x				
Myrtaceae	*Melaleuca*	*accuminata*	Mallee Honeymyrtle				x	x		x
Myrtaceae	*Melaleuca*	*calycina*					x	x		
Myrtaceae	*Melaleuca*	*cucullata*						x		

Myrtaceae	*Melaleuca*	*glaberrima*	Mauve Honey-myrtle			x	x	x		
Myrtaceae	*Melaleuca*	*podiocarpa*						x		
Myrtaceae	*Melaleuca*	*pulchella*				x		x	x	
Myrtaceae	*Melaleuca*	*rigidifolia*					x	x	x	
Myrtaceae	*Melaleuca*	*sapientes*					x	x	x	
Myrtaceae	*Melaleuca*	*scabra*								
Myrtaceae	*Melaleuca*	*sp.*						x		
Myrtaceae	*Melaleuca*	*teuthidoides*						x		x
Myrtaceae	*Melaleuca*	*similis*			P1		x	x	x	x
Myrtaceae	*Melaleuca*	*uncinata*	Broom Bush				x	x		
Myrtaceae	*Melaleuca*	*brophyi*						x		
Myrtaceae	*Melaleuca*	*eleuterostachya*	Hummock Honey-Myrtle					x		
Myrtaceae	*Melaleuca*	*lateriflora*	Gorada					x	x	x
Myrtaceae	*Melaleuca*	*pauperiflora ssp. pauperiflora*	Boree					x		
Myrtaceae	*Melaleuca*	*phoidophylla*								x
Myrtaceae	*Melaleuca*	*societatis*						x		
Myrtaceae	*Melaleuca*	*thapsina*				x				
Myrtaceae	*Melaleuca*	*torquata*						x		
Myrtaceae	*Micromyrtus*	*imbricata*								
Myrtaceae	*Phymatocarpus*	*maxwellii*								
Myrtaceae	*Rinzia*	*icosandra*	Recherche Mainland Rinzia					x		x
Myrtaceae	*Tetrapora*	*preissiana*					x	x		
Myrtaceae	*Verticordia*	*chrysantha*	Yellow Feather Flower Verticordia					x		
Onagraceae	*Oenothera*	*stricta*	Common Evening Primrose	x		x				
Orchidaceae	*Prasophyllum*	*sp.*						x		
Pittosporaceae	*Cheiranthera*	*filifolia*						x		
Poaceae	*Austrostipa*	*elegantissima*	Tall Feather Grass			x		x	x	
Poaceae	*Austrostipa*	*hemipogon*	Spear Grass							x

Poaceae	*Austrostipa*	*mollis*	Soft Spear Grass					x		
Poaceae	*Austrostipa*	*trichophylla*						x		
Poaceae	*Avena*	*fatua*	Common Wild Oat	x				x		
Poaceae	*Bromus*	*sp.*	Brome grasses	x				x	x	
Poaceae	*Eragrostis*	*curvula*	African Lovegrass	x		x	x			
Poaceae	*Lolium*	*multiflorum*	Italian Ryegrass	x			x	x	x	x
Poaceae	*Lolium*	*rigidum*	Rigid Ryegrass			x				x
Poaceae	*Neurachne*	*alopecuroidea*	Foxtail Mulga Grass			x		x	x	
Poaceae	*Parapholis*	*incurva*	Coast Barbgrass	x						
Poaceae	*Rytidosperma*	*acerosum*							x	
Poaceae	*Rytidosperma*	*caespitosum*	Wallaby-grass					x		
Poaceae	*Rytidosperma*	*setaceum*	Small-flowered Wallaby-grass			x		x		
Polygalaceae	*Comesperma*	*spinosum*	Spiny Milkwort					x	x	
Polygalaceae	*Gompholobium*	*confertum*	Glory Pea			x				x
Primulaceae	*Lysimachia*	*arvensis*	Scarlet Pimpernel	x						
Proteaceae	*Banksia*	*media*	Southern Plains Banksia			x	x		x	
Proteaceae	*Grevillea*	*acuaria*								x
Proteaceae	*Grevillea*	*huegelii*	Comb Grevillea			x		x	x	
Proteaceae	*Grevillea*	*oligantha*	Few-flowered Grevillea			x		x	x	
Proteaceae	*Grevillea*	*pectinata*	Comb-leaf Grevillea							
Proteaceae	*Hakea*	*cinerea*	Ashy Hakea			x	x			
Proteaceae	*Hakea*	*commutata*					x	x		
Proteaceae	*Hakea*	*laurina*	Pincushion Hakea			x	x			
Proteaceae	*Hakea*	*newbeyana*						x	x	x
Proteaceae	*Hakea*	*nitida*	Frog Hakea			x				
Proteaceae	*Hakea*	*scoparia*						x		x
Proteaceae	*Persoonia*	*teretifolia*						x	x	x
Rhamnaceae	*Cryptandra*	*minutifolia ssp. brevistyla*						x		

Rhamnaceae	*Pomaderris*	*rotundifolia*						x		
Rhamnaceae	*Spyridium*	*microcephalum*	Small-headed Spyridium							x
Rhamnaceae	*Spyridium*	*minutum*						x		
Rhamnaceae	*Spyridium*	*mucronatum ssp. mucronatum*				x		x	x	
Rhamnaceae	*Trymalium*	*elachophyllum*					x	x		
Rhamnaceae	*Trymalium*	*myrtillus ssp. myrtillus*								
Rubiaceae	*Opercularia*	*vaginata*	Dogweed			x				
Rutaceae	*Boronia*	*inornata*	Desert Boronia					x	x	
Rutaceae	*Boronia*	*Baeckea ssp. baeckeoides*						x		
Rutaceae	*Microcybe*	*pauciflora*	Yellow Microcybe			x		x	x	
Rutaceae	*Phebalium*	*lepidotum*						x	x	
Rutaceae	*Phebalium*	*obovatum*						x		x
Santalaceae	*Exocarpos*	*aphyllus*						x		
Santalaceae	*Exocarpos*	*sparteus*	Broom Ballart					x		
Santalaceae	*Leptomeria*	*pachyclada*						x		
Santalaceae	*Santalum*	*acuminatum*	Quandong			x	x	x		
Sapindaceae	*Dodonaea*	*bursariifolia*						x		
Sapindaceae	*Dodonaea*	*concinna*						x		
Sapindaceae	*Dodonaea*	*sp.*								
Scrophulariaceae	*Eremophila*	*dichroantha*	Bae-hook Eremophila					x		
Scrophulariaceae	*Prostanthera*	*serpyllifolia*	Small-leved Mint-bush					x		
Solanaceae	*Solanum*	*hoplopetalum*	Thorny Solanum					x		x
Stylidiaceae	*Stylidium*	*turleyae*	Turley's Stylidium					x		
Thymelaeaceae	*Pimelea*	*aeruginosa*						x		
Thymelaeaceae	*Pimelea*	*angustifolia*	Narrow-leaved Pimelea					x		x
Thymelaeaceae	*Pimelea*	*erecta*						x		

8.2 TPFL Forms

8.2.1 Melaleuca similis

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.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Melaleuca similis **TPFL Pop. No:** 4

OBSERVATION DATE: 13/12/2021 **CONSERVATION STATUS:** P1 **New population** ☐

OBSERVER/S: Katherine Walkerden **PHONE** 0416558774

ROLE: Environmental Officer **ORGANISATION:** Shire of Esperance

EMAIL:

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):

Neds Corner Rd SLK 37.1 to 37.29

Reserve No:

DBCA DISTRICT: Esperance **LGA:** Esperance Land manager present: ☒

DATUM: GDA94 / MGA94 ☒ AGD84 / AMG84 ☐ WGS84 ☐ Unknown ☐

COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☐

Lat / Northing: 6297675

Long / Easting: 323423

ZONE: 51

METHOD USED: GPS ☒ Differential GPS ☐ Map ☐

No. satellites: ___ Map used: ___

Boundary polygon captured: ☐ Map scale: ___

LAND TENURE:

Nature reserve ☐ Timber reserve ☐ Private property ☐ Rail reserve ☐ Shire road reserve ☒

National park ☐ State forest ☐ Pastoral lease ☐ MRWA road reserve ☐ Other Crown reserve ☐

Conservation park ☐ Water reserve ☐ UCL ☐ SLK/Pole ___ to ___ Specify other: ___

AREA ASSESSMENT: Edge survey ☒ Partial survey ☐ Full survey ☐ Area observed (m²): ___

EFFORT: Time spent surveying (minutes): 4 Hours No. of minutes spent / 100 m²: ___

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: ___ (Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:
Alive	39			
Dead				

Area of pop (m²): ___

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. ___ Size ___ Data attached ☐ Total area of quadrats (m²): ___

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: Clonal ☐ Vegetative ☐ Flowerbud ☐ Flower ☒ (spent)

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ Percentage in flower: 100%

CONDITION OF PLANTS: Healthy ☐ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: Neds Corner rd SLK 37.1– 42.5 was surveyed

THREATS - type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & 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 (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current Impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
• Road widening	N	L	6-18 months
•			

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

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

Record entered by: ___ **Sheet No.:** ___ **Record Entered in Database** ❑

Department of Biodiversity, Conservation and Attractions

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK: (on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☐
Sandy loam ☐
Loam ☒
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☐
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

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. Mallee & Banksia media over mixed proteacous & Fabaceae shrubland
2.
3.
4.

ASSOCIATED SPECIES:
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: Majority of vegetation was in excellent condition, however Goodenia laevis subs. laevis were primarily growing in recently graded road reserve and a recently cleared crossover

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.)

Extension of population #

FLORA AUTHORISATION / LICENCE No: _____ 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: KSW5221 ACC 9361 not retained — 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: _____ 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

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.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Goodenia laevis subsp. laevis **TPFL Pop. No:**

OBSERVATION DATE: 29/09/2021 **CONSERVATION STATUS:** P3 **New population** ☒

OBSERVER/S: Katherine Walkerden, Julie Waters **PHONE** 0416558774

ROLE: Environmental Officers **ORGANISATION:** Shire of Esperance

EMAIL:

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):

Neds Corner Rd SLK 49.3-51

Reserve No:

DBCA DISTRICT: Esperance **LGA:** Esperance Land manager present: ☒

DATUM: GDA94 / MGA94 ☒ AGD84 / AMG84 ☐ WGS84 ☐ Unknown ☐

COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☐

Lat / Northing: 327244

Long / Easting: 6310788

ZONE: 51

METHOD USED: GPS ☒ Differential GPS ☐ Map ☐

No. satellites: ____ Map used: ____

Boundary polygon captured: ☐ Map scale: ____

LAND TENURE:

Nature reserve ☐ National park ☐ Conservation park ☐ Timber reserve ☐ State forest ☐ Water reserve ☐ Private property ☐ Pastoral lease ☐ UCL ☐ Rail reserve ☐ MRWA road reserve ☐ SLK/Pole ____ to ____ Shire road reserve ☒ Other Crown reserve ☐ Specify other: ____

AREA ASSESSMENT: Edge survey ☒ Partial survey ☐ Full survey ☐ Area observed (m²): ____

EFFORT: Time spent surveying (minutes): 10 Hours No. of minutes spent / 100 m²: ____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: ____ (Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:
Alive	387+			
Dead				

Area of pop (m²): ____

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. ____ Size ____ Data attached ☐ Total area of quadrats (m²): ____

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: Clonal ☐ Vegetative ☐ Flowerbud ☐ Flower ☒ Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ Percentage in flower: 40%

CONDITION OF PLANTS: Healthy ☐ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: Plants within survey area were counted hundreds more were present just north of survey area

THREATS - type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & 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 (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current Impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
• Road widening	N	L	6-18 months
•			

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

RECORDS: Please forward to **Flora Administrative Officer,** Species and Communities Program.
Record entered by: ____ **Sheet No.:** ____ **Record Entered in Database** ❑

Department of Biodiversity, Conservation and Attractions

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK: (on soil surface; eg gravel, quartz fields)	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite ☐	0-10% ☒	Sand ☐	Red ☐	Well drained ☒
Hill ☐	Dolerite ☐	10-30% ☐	Sandy loam ☐	Brown ☒	Seasonally inundated ☐
Ridge ☐	Laterite ☐	30-50% ☐	Loam ☒	Yellow ☐	Permanently inundated ☐
Outcrop ☐	Ironstone ☐	50-100% ☐	Clay loam ☐	White ☐	Tidal ☐
Slope ☐	Limestone ☐		Light clay ☐	Grey ☐	
Flat ☒	Quartz ☐		Peat ☐	Black ☐	
Open depression ☐	Specify other:		Specify other:	Specify other:	
Drainage line ☐					
Closed depression ☐					
Wetland ☐					

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

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. Mixed Mallee over closed Melaleuca and Acacia shrubland
2.
3.
4.

ASSOCIATED SPECIES:
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: Majority of vegetation was in excellent condition, however Goodenia laevis subs. laevis were primarily growing in recently graded road reserve and a recently cleared crossover

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: _____ 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 licening 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: KSW2821 ACC 9190 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: _____ Date: 15 / 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

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Program.
Record entered by: _____ **Sheet No.:** _____ **Record Entered In Database** ☐