

Targeted Flora Report



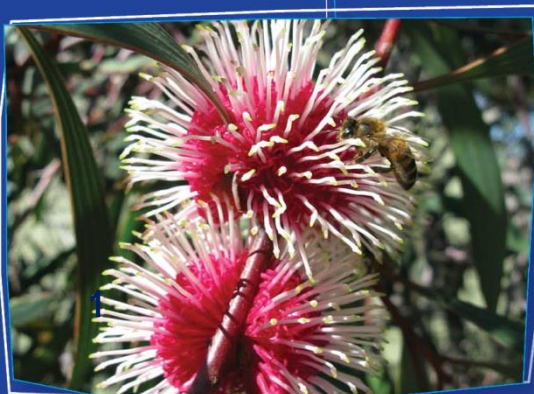
CPS 8400/1, Neds Corner Rd Reconstruction, from South
Coast Hwy to Yerritup Rd

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Reviewed by:

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1 Executive Summary

A targeted flora survey 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 CPS 8400/1 application to clear 5.4 ha of native vegetation within a 15.23 ha area. Vegetation is required to be cleared for the purpose of road reconstruction, involving road widening. A thorough spring survey was conducted to ensure that no known or unknown populations of priority or threatened flora would be impacted. The proposed road widening is located along Neds Corner Road, from South Coast Highway to Yerritup Rd. It is located approximately 77 km north-north-west of Esperance town-site, and 31 km south of Cascade town-site.

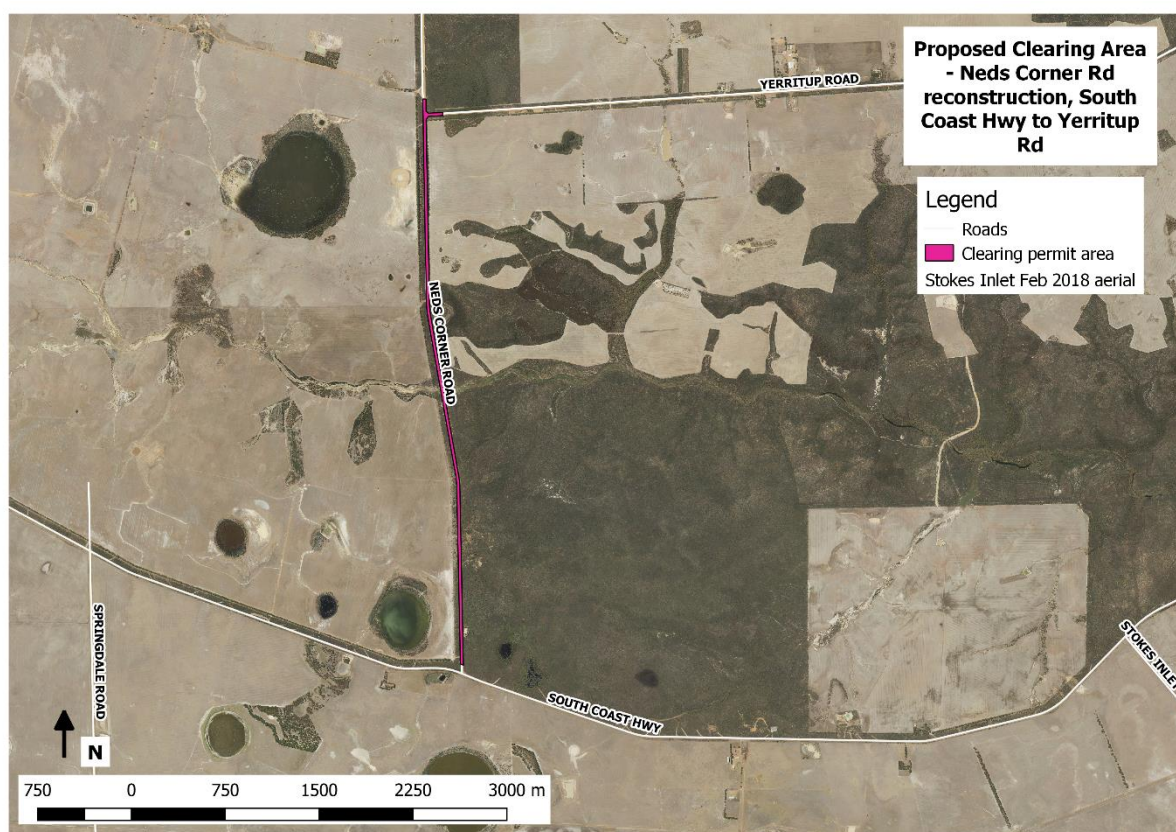


Figure 1. Location of CPS 8400/1, Neds Corner Rd widening project, from South Coast Hwy to Yerritup Rd.

2 Introduction

The Shire of Esperance has a strategic road construction program that prioritizes widening roads from single-width roads to double. Neds Corner Rd experiences high pressure as a major transport route from the Cascade region onto South Coast Hwy. It does not meet the safety standards the Shire of Esperance strives for, being single width bitumen with large road trains and trucks using it regularly, combined with the local light vehicle traffic in the area. This 'Targeted Flora Survey', along with the previously submitted 'Vegetation, Flora, Fauna and Environmental Considerations' report, are a compliance requirement by the Department of Water and Environmental Regulations (DWER), for CPS 8400/1 application, for the purpose of clearing vegetation during road widening.

The Shire of Esperance is applying for a clearing permit to clear 5.4 ha of vegetation within a 15.23 ha footprint, including 2.04 ha of 'Proteaceae dominated Kwongkan Shrubland' Threatened Ecological Community (Figure 1).

The previously submitted 'Vegetation, Flora, Fauna and Environmental Considerations' report covered:

- Environmental Scope; Catchment, Climate, Geology, Soils and Topography, and Land Use.
- Aboriginal heritage considerations, including native title and registered or lodged heritage sites.
- Hydrological regimes.
- Dieback considerations.
- Definition and mapping of vegetation communities, including presence, condition and impact on 'Proteaceae Dominated Kwongkan Shrubland' (Appendix 9.3).
- Potential feeding and roosting habitat of Carnaby's Black Cockatoo, *Calyptorhynchus latirostris*.

3 Environmental Background

3.1 Scope

The clearing of native vegetation for the purpose of road widening has the potential to affect environmental factors.

Impacts discussed in this report include;

- Threatened Flora (TF) and Priority Flora (PF).

Assessing impact to TF or PF was completed via a desktop study and field survey. The desktop study gathered background information on the target area, identifying likely PF and TF to focus the field survey. The field survey confirms if any TF or PF are present within the clearing permit application area, and extent of impact.

4 Methodology

4.1 Desktop study

A desktop study was completed prior to the physical targeted flora survey. Geographical Information System (GIS) databases were reviewed, including recently obtained extracts specific to the Esperance Shire of 'WA Herbarium', 'Esperance Threatened Flora' and 'Threatened Flora and Priority Reporting' (TPFL) databases (DBCA 2019, 67-1019FL). Threatened (TF) or priority (PF) flora within a 20 km buffer of CPS 8400/1 Neds Corner Rd reconstruction area were identified, providing focus for the targeted flora survey.

4.2 Field investigation: possible ecological impacts

In the previously submitted 'Vegetation, Flora, Fauna and Environmental Considerations' report vegetation communities defined by species complexes were identified, with differences in environmental condition highlighted (Appendix 9.3). This information, in conjunction with liaising with the Esperance District's Department of Biodiversity, Conservation and Attractions (DBCA) Conservation Officer, was used to identify suitable habitat for TF or PF within the CPS 8400/1 proposed road widening project.

4.3 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, using the road as a continuous transect. Vegetation up to four meters from the edge of the existing road's back-slope was assessed. Possible habitat for TF or PF identified in the desktop 20 km radius survey and the vegetation community mapping from previously submitted 'Vegetation, Flora, Fauna and Environmental Considerations' report were particularly focused on and extensively searched. Due to the high diversity and complexity of Esperance's flora, all unknown species were collected and identified insitu, using keys, WA Herbarium's Florabase, manuals and Esperance District Herbarium, to ensure no TF or PF were missed. Material was collected under Katie White's Regulation 61, Biodiversity Conservation Regulations 2018 licence for flora taking, FT6100029. Any species that were unable to be identified were submitted to the WA Herbarium for identification, included in Accession #8178 and #8218. An incidental species list was compiled (Appendix 9.2).

Where TF or PF were identified, surveys specific to these species were conducted to extensively map, count population numbers and determine extent of proposed impact. Mapping was completed using a Panasonic FZ-G1 toughpad on mapping program 'ROAM', and further developed in spatial software QGIS. TPFL forms were completed and submitted to Esperance's district Conservation Officer at DBCA. An extract on populations dynamics for identified TF or PF from 'TPFL' and 'WA Herbarium' databases were requested from DBCA in November 2019, and used to determine impact across all known populations of those species (23-1119FL).

Known populations of *Conostylis lepidospermoides* (Vu), *Daviesia pauciflora* (P3), *Eucalyptus stoatei* (P4), *Scaevola archeriana* (P1), *Persoonia flexifolia* (P1), *Conostephium* sp. Cascade (P1; nominated as TF) and *Eremophila lactea* (Cr) were visited over the course of the 2019 flora survey season, to re-familiarise surveyors with key identifying features of species. For all other TF or PF identified in the 20 km radius survey, field manuals or scans of pressed specimens from the Esperance District Herbarium were taken into the field as reference material.

The targeted flora survey was completed from 13/09/2019 to 24/09/2019 (13/09/2019, 17/09/2019, 18/09/2019 and 24/09/2019) by the Shire of Esperance's Environmental Officers Julie Waters and Katie White. As flora surveys were conducted mid-spring the vast majority of species were flowering, decreasing the likelihood of overlooking species. A follow up flora survey occurred on 20/11/2019 with members of the Esperance Wildflower Society, to re-survey identified PF populations and identify summer flowering species. All PF species re-surveyed on the 20/11/2019 were still flowering, remaining easily identifiable.

5 Results

5.1 Desktop Study

21 species of threatened flora (TF) or priority flora (PF) were recorded within a 20 km radius of the proposed impact site (Table 1). Six species are likely to occur, including *Astartea reticulata* (P3), *Conostylis lepidospermoides* (Vu), *Daviesia pauciflora* (P3), *Hopkinsia adscendens* ms (P3), *Leucopogon* sp. Cascades (P3), and *Thomasia pygmaea* (P3). An additional four species will possibly occur, and three species had too little information available to determine if they're likely to be present.

Table 1. Threatened or priority flora identified to be present within a 20 km radius of CPS 8400/1, Neds Corner Rd widening, area. Spatial data assessed included Threatened and Priority Flora, WA Herbarium and local Esperance Threatened Flora.

Species	Conservation Status	Flowering period	Possible to occur	Comment
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<i>Anigozanthos bicolor</i> subsp. <i>minor</i>	EN	Aug to Oct	No	Associated with seasonally damp springs on granite outcrops. No habitat suitable within clearing permit area.
<i>Astartea reticulata</i>	P3	Summer	Yes	Associated Kwongkan Shrubland, <i>Lambertia</i> and <i>Nuytsia</i> . Previously recorded in disturbed road reserve.
<i>Banksia prolata</i> subsp. <i>calcicola</i>	P4	Spring	No	Coastal limestone communities
<i>Bossiaea flexuosa</i>	P3	Sep to Nov	Possible	Mixed associated vegetation type – salt lakes, Kwongkan, deep sands, swamps. Distribution further north.
<i>Conostylis lepidospermoides</i>	VU	Sep to Oct	Yes	Suitable vegetation associated with other populations. Only identifiable in September, when it flowers.
<i>Convolvulus</i> sp. Cascades	P1	Spring	Unknown; little information available	Recorded close by in burnt area, with associated vegetation type.
<i>Cyathostemon</i> sp. Esperance	P1	Unknown	Unknown; little information available	
<i>Dampiera sericantha</i>	P3	May or Aug to Dec	Possible	Recorded in Kwongkan shrubland/disturbed areas.
<i>Daviesia pauciflora</i>	P3	Oct to Dec or Jan	Yes	Matching associated vegetation
<i>Eucalyptus missilis</i> x	P4	Jan to Apr	Unlikely	Mostly associated with coastal sandplains.
<i>Eucalyptus preissianna</i> subsp. <i>lobata</i>	P4	Nov	No	Located only within coastal limestone vegetation.
<i>Eucalyptus semiglobosa</i>	P3	May or Oct to Dec or Jan	Unlikely	Associated with hillslopes, granite, cliffs, gullies.
<i>Grevillea fastigiata</i>	P4	January	Unlikely	Mixed soil types. Distribution further west.
<i>Hopkinsia adscendens</i> <i>ms</i>	P3	Oct	Yes	Associated with seasonally damp streams. Small perennial creek crossing present within clearing permit area.
<i>Lepidosperma</i> sp. Hopetoun Rd	P1	Unknown	No	Ravensthorpe Range
<i>Leucopogon</i>	P3	Aug to Dec	Possible	Associated vegetation

<i>blepharolepis</i>				appropriate, but Esperance only been recorded coastally.
<i>Leucopogon</i> sp. Cascades	P1	Late summer to Autumn	Yes	Record in clearing permit area.
<i>Persoonia flexifolia</i>	P1	Summer	Possible	Only recorded on the Lort River periphery, in thick broom bush on granite.
<i>Thomasia pygmaea</i>	P3	Aug to Oct	Yes	Matching vegetation/soil type and in surrounding area. Identified in adjacent creekline.
<i>Thysanotus brachiatus</i>	P2	Nov to Dec	Unknown; little information available	
<i>Velleia exigua</i>	P2	Oct	No	Associated with salt lakes.

5.2 Rare and priority Flora

In total 300 species of flora were identified within the clearing permit area, as present in attached incidental species list (Appendix 9.2). Of these, three species have a priority conservation ranking, including *Thomasia pygmaea* (Priority Three), *Dampiera sericantha* (Priority Three), and *Leucopogon* sp. Cascades (Priority One) (Figure 2). *L. sp. Cascades* has been recorded in the proposed clearing permit area previously, and is therefore a known population. However, there is no records within the CPS 8400/1 Neds Corner Rd reconstruction area on spatial data interrogated of *D. sericantha* or *T. pygmaea*. It is therefore new populations discovered of *T. pygmaea* and *D. sericantha*. Additionally, a range extension was discovered for the non-threatened *Xanthosia singuliflora*, which has not been recorded in the Esperance district before.



Figure 2. Location of priority flora *Dampiera sericantha*, *Thomasia pygmaea* and *Leucopogon* sp. Cascades along the proposed road widening project area of CPS 8400/1, Neds Corner Rd.

5.2.1 *Thomasia pygmaea*, priority three.

Two populations of *T. pygmaea* were discovered, with extensive number of plants present (Figure 2; Figure 3). Populations are located from 1.9 km to 2.9 km, and 3 to 3.8 km north of South Coast Hwy, on Neds Corner Rd. A total estimate of 100 to 200 plants was observable from walking along Neds Corner Rd. It is estimated ~50 plants are present in CPS 8400/1 impact area and will likely be cleared. Due to the high prevalence of this plant, surveying the surrounding habitat to determine extent of population and true population number in surrounding intact vegetation did not occur.

A specimen was collected from both populations (KW021 and KW024), and identification was confirmed by the WA Herbarium 13/11/2019, accession #8178. A Threatened and Priority Form (TPFL) was completed and submitted to district Department of Biodiversity, Conservation and Attractions (DBCA) Conservation Officer, Emma Massenbauer on 14/11/2019 (Appendix 9.1).



Figure 3. *Thomasia pygmaea*, priority three species present in the Neds Corner Rd reconstruction project, CPS 8400/1, impact area.

5.2.2 *Dampiera sericantha*, priority three.

Two populations of *D. sericantha* were discovered in the CPS 8400/1 reconstruction area along Neds Corner Rd, between South Coast Hwy and Yerritup Rd (Figure 2; Figure 4). The distribution and presence of plants was closely related to the presence of the Threatened Ecological Community 'Proteaceae Dominated Kwongan Shrubland'. Populations are located from the intersection of South Coast Hwy to 500 m north, and at 1.6 km north, on Neds Corner Rd. A specimen was collected from the population adjacent to the intersection of South Coast Hwy (KW025), and identification was confirmed by the WA Herbarium on 13/11/2019, accession #8178. A TPFL form was completed and submitted to district DBCA Conservation Officer, Emma Massenbauer on 14/11/2019 (Appendix 9.1).

Across both populations, an estimate of 350 to 450 species are present. Approximately 112 plants will

be impacted upon during proposed CPS 8400/1 road reconstruction activities. A few 'case study' sites outside of the CPS 8400/1 active road area were surveyed, that will not be impacted upon, demonstrating the prevalence of this plant in the local landscape and the minimal effect of road construction project (Figure 5). More than 50 plants were present in a historical sand extraction site, regenerating after disturbance. Approximately 150 plants were present in 0.15 ha of vegetated intact and undisturbed road reserve. Numerous plants were located in the spoon drains of the adjacent reserve. Plants were present in intact bushland, and extensively along the back-slopes of roads. It is evident that *D. sericantha* is a disturbance opportunist, with large numbers monopolizing areas in the graded road area (Figure 6).



Figure 4. *Dampiera sericantha*, priority three species located in the CPS 8400/1, Neds Corner Rd reconstruction project area.



Figure 5. Number of *Dampiera sericantha* plants outside of the Neds Corner Rd reconstruction, CPS 8400/1 area that will not be impacted upon.



Figure 6. Large numbers of *Dampiera sericantha* plants regenerating after disturbance in the road active footprint of spoon drains and back slopes.

5.2.3 *Leucopogon* sp. Cascades, priority one.

Scattered *Leucopogon* sp. Cascades was identified along 1.3 km transect, within the CPS 8400/1 Neds Corner Rd reconstruction area (Figure 2; Figure 7). A central population is located 1.7 km north of South Coast Hwy, on Neds Corner Rd. Five plants are present, with two plants present in the back-slope active footprint of the road. The two plants within the backslope will likely be impacted during routine road maintenance operations prior to the proposed road reconstruction in CPS 8400/1. The other three plants will not be impacted upon and are outside the area of the proposed CPS 8400/1 Neds Corner Rd reconstruction. A specimen was collected (KW026), and identification was confirmed by the Western Australian Herbarium on 13/11/2019, accession #8178.

L. sp. Cascades is also present 2.4 km and three km north of South Coast Hwy, on Neds Corner Rd. Three plants are present, and will all be impacted upon during proposed activities. All plants are currently located outside the road active footprint, and are part of the intact vegetation proposed to be cleared. A second specimen was collected at 2.4 km north of South Coast Hwy (KW032), and identification was confirmed by the Western Australian Herbarium on 17/12/2019, accession #8218.

A previous record of *L. sp. Cascades* from April 2007 was present immediately north of the creek crossing, 2.8 km north of South Coast Hwy, on Neds Corner Rd (Figure 8). This area was searched extensively, but no plant was found at this location. It is possible the plant was growing in the road active area, and has now been cleared and lost. Whilst the spatial record indicates north of the river, the associated vegetation description doesn't match the location and it's possible this GPS record is not entirely accurate. The associated vegetation is very similar to the single plant located 2.4 km north of South Coast Hwy, and is possibly is the population previously recorded.

A TPFL form was completed and submitted to Esperance district DBCA Conservation Officer, Emma Massenbauer on 14/11/2019 (Appendix 9.1).

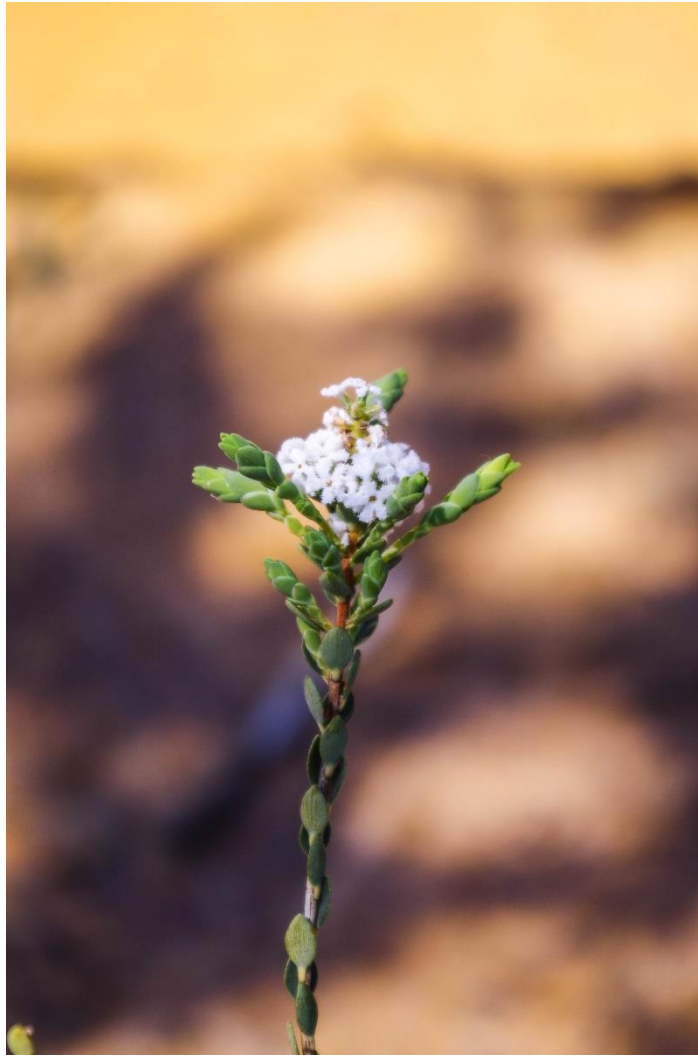


Figure 7. *Leucopogon* sp. Cascades, priority one species, in Neds Corner Rd reconstruction footprint of CPS 8400/1.

PERTH 07703902

Leucopogon sp. Cascades (M. Hislop 3693)

Ericaceae

Plant Description, Notes: Erect shrub 70 cm high x 50 cm wide. Flowers white.

Vegetation: Mallee woodland with associated vegetation: *Eucalyptus pleurocarpa*,
Taxandria spathulata, *Beaufortia schaueri*.

Site Description: Lower slopes. Dry, brown, sandy loam.

Frequency: occasional.

Locality: Neds corner road, 2.7 km N of South Coast Highway, close to Yerritup
creek crossing, E of Munglinup

Location: -33.744°, 121.067° (GDA94)

Location (DMS): 33° 44' 39.4" S 121° 4' 1.4" E (GDA94)

State: WA

Collector: Hislop, M. **Coll No:** 3692

Collection Date: 26 April 2007

Conservation Code: 1

ID by: M. Hislop **Date:** 8 February 2019

Origin: PERTH

Record Basis: PreservedSpecimen

Figure 8. Florabase record of *Leucopogon* sp. Cascades specimen previously collected along Neds Corner Rd, within the proposed impact area of CPS 8400/1, Neds Corner Rd reconstruction.

6 Discussion: Rare and priority flora

The three species identified with a conservation ranking are priority species, and not protected under the Biodiversity Conservation (BC) Act 2016 or Environmental Protection and Biodiversity Conservation (EPBC) Act 1999. Discussions on extent of impact specifically for these species is outlined in section 6.1 for *Thomasia pygmaea*, 6.2 for *Dampiera sericantha* and 6.3 for *Leucopogon* sp. Cascades.

The Department of Biodiversity, Conservation and Attractions (DBCA) do not actively manage or monitor the majority of low priority species, due to their prevalence in the landscape relative to threatened flora (TF) or priority one or two ranking species. There are 145 species recorded as priority three or four within the Shire of Esperance boundaries. No records were present of *T. pygmaea* or *D. sericantha* in the Threatened and Priority Flora (TPFL) database. It was noted during correspondence with DBCA that there is additional information on file about these species, but has not been entered, due to being a low priority task. It's therefore highly likely information presented during this discussion is under-representative and not comprehensive.

Numerous non-threatened species were identified that are extremely similar to TF or priority flora (PF). Below are explanations on identifying features, and why specimens were identified as the non-threatened species.

- The non-threatened *Conostylis breviscarpa* was identified. This was confirmed as not being the Vulnerable (TF) *Conostylis lepidospermoides*, due to having thicker leaves, lighter coloured leaves, much shorter flower head peduncles and significantly higher number of flowers in the inflorescence.
- The non-threatened *Caladenia attingens* subsp. *gracillima* was identified. It was confirmed as not being the priority one *Caladenia longifimbriatus*, due to the teeth on the lip fringe on all specimens being <3-4 mm. *C. longifimbriatus* teeth on the lip fringe are >10 mm in length.
- The non-threatened *Eucalyptus suggrandis* was identified. It was distinguished from the similar

priority three *Eucalyptus famelica* due to have slightly pointed bud caps and ridges along the nut. This was further verified at the Esperance District Herbarium.

- The non-threatened *Eucalyptus olivina* was identified. It was distinguished from the similar priority three species *Eucalyptus foliosa*, as had bud caps that were the same size as the nut at the operculum scar. *E. foliosa* bud caps are smaller width than the nut at the operculum scar. This was verified at the Esperance District Herbarium.

6.1 *Thomasia pygmaea*, priority three.

As with the majority of low priority species, *T. pygmaea* is locally well known to be extensive across the local landscape. Neds Corner Rd is on the eastern periphery of the species range, extending west towards Manypeaks and Wellstead region, over 260 km away. Whilst it is estimated proposed works under CPS 8400/1 will only impact on a third of the population observable along Neds Corner Rd, the surrounding intact vegetation was not comprehensively mapped. *T. pygmaea* was closely associated with the mixed dense Eucalyptus mallee along the river corridor. Given that directly adjacent to the populations is a ~1 000 ha reserve, with river tributaries extending through, it is highly likely that there are larger population numbers present than the estimated 100 - 200 plants. The associated vegetation is mapped in Beard's pre-European mapping as vegetation type 516, Black Marlock and Mallee Scrub Shrubland, and recorded on Western Australian Local Government Authority's (WALGA) Environmental Planning Tool (EPT), as being >40% remaining the IBRA region.

No data was available on *T. pygmaea* from the TPFL database, so all records refer to the WA Herbarium database. There are 10 records of *T. pygmaea* from 10 different locations. Tenure is poorly described, with two records being uninterpretable. Of the remainder, four records are from secure tenure of National Parks and four records are from road reserves with populations possible impacted upon by road activities. Seven records are prior to 2000, with no follow up surveys since. There is no description of population numbers on any records.

6.2 *Dampiera sericantha*, priority three.

As with the majority of low priority species, *D. sericantha* is locally well known to be extensive across the local landscape. It is only identifiable during Spring and early Summer when it is flowering, resulting in a short time period it can be recorded. The remainder of the time it is a non-descript herb similar to many other non-threatened species. This has likely contributed to lack of records, being a small window to identify, and the low priority to collect during a time frame when the majority of the south-west is flowering.

It is closely associated with the Threatened Ecological Community (TEC), 'Proteaceae Dominated Kwongkan Shrubland (Kwongkan)', which is evident in the locations it has been recorded in CPS 8400/1. As described in the Conservation Advice for Kwongkan (EPBC Act 1999), it has been estimated that a remaining 1 185 188 ha of Kwongkan persist. Additionally, records of *D. sericantha* span over 270 km, from central Esperance to the Bremer Bay region. Within this distribution, there is a large amount of potential Kwongkan remaining that will likely support many un-recorded populations.

It is evident from local observations that *D. sericantha* is a disturbance opportunist and colonizer. It was observed growing in thickets along the active road footprint that had recently been cleared and in an adjacent historical sand pit. It is therefore highly likely that after the road reconstruction, it will persist in the newly disturbed back-slope and spoon drains following completion of road works. This is supported by 12 of the 21 locations in the WA Herbarium database record *D. sericantha* being located on road reserves, fence lines, pipe lines or coastal 4WD'ing tracks where disturbance has occurred.

No data was available on *D. sericantha* from the TPFL database, so all records refer to the WA Herbarium database. *D. sericantha* has been recorded 27 times across 21 different locations. Tenure is poorly described with five locations being uninterpretable of conservation security. Three recorded locations are described as being in mining tenements are possibly been lost. Three locations are present in nature reserves and are likely to still be intact populations. The remaining 12 populations are present in road reserves, fence lines, pipe lines or coastal 4WDing tracks, and are therefore possible lost via road developments or maintenance. Nine records of *D. sericantha* were prior to 2000, with two locations in nature reserves been verified as existing since then.

6.3 *Leucopogon* sp. Cascades, priority one.

Little is known about the true distribution, rarity and ecological requirements of *Leucopogon* sp. Cascades. It was very recently nominated as a priority one species, as discussed at the Esperance District Threatened Flora and Ecological Communities Recovery Team meeting (26/11/2019), so has not been actively monitored or managed. There is therefore no records within the TPFL spatial data base. It is likely this plant will now become of interest to DBCA. Observations from populations discovered along Neds Corner Rd reconstruction area within CPS 8400/1 indicate that this species is associated with Eucalyptus mixed mallee shrubland along river corridors. Whilst this plant may be naturally rare in its preferred habitat, there is extensive associated vegetation in the adjacent 1000 ha reserve and 80 m wide road reserve along Neds Corner Rd.

Due to the recent nomination of *L. sp. Cascades* as a priority one species, there is no records within the TPFL spatial database. All records are therefore obtained from the WA Herbarium spatial data. There are four records of this species, all located within a 17 km radius. Three other records are present on Neds Corner Rd at different locations. All collections occurred in 2006 or 2007, and has not been known to be monitored or recorded since. They are recorded as being locally common or occasional, which is of higher frequencies than recorded in the CPS 8400/1 Neds Corner Rd reconstruction area.

At the population of *L. sp. Cascades* present 1.7 km north of South Coast Hwy on Neds Corner Rd, all plants are within the grading maintenance zone. As this species has a conservation ranking of priority one, there is no requirements under the BC Act 2016 or EPBC Act 1999 to protect this species by prohibiting road maintenance works. These plants will therefore be inevitably impacted outside of the proposed works in CPS 8400/1. The two plants present three km north of South Coast Hwy on Neds Corner Rd are outside of the grading zone. If required by DBCA, these plants can be flagged and plants can be avoided to mitigate impact.

7 Conclusion; assessment of DWER clearing permits

The vegetation communities and associated flora is highly diverse within the CPS 8400/1, Neds Corner Rd reconstruction footprint. Three priority species were identified along the transect. Two species, *Dampiera sericantha* and *Thomasia pygmaea* are relatively common in the landscape and it is believed proposed works will not have a significant effect on the conservation status of the species. *Leucopogon* sp. Cascades has recently been nominated as a priority one species, with minimal records and little known on its distribution, population numbers and ecological requirements.

8 References

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<https://florabase.dpaw.wa.gov.au/search/advanced>.>

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9 Appendix

9.1 TPFL Forms



Threatened and Priority Flora Report Form

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 <http://dggaw.wa.gov.au/> under Standard Report Forms

TAXON: <u>Thomasia pygmaea</u>	TPFL Pop. No: _____
OBSERVATION DATE: <u>10/19/09</u>	CONSERVATION STATUS: <u>P3</u>
OBSERVER/S: <u>Julie Waters + Kane White</u>	PHONE: <u>90831518</u>
ROLE: <u>Environmental officer</u>	ORGANISATION: <u>Shire of Esperance</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place): ~73 km W of Esperance township. ~20 km E of Mungilup satellite town. Located on 2 lanes, both N+S side of Rd. 1.9 km to 2.9 km N of Neds Corner Rd. South Coast Hwy.

Reserve No: _____

DBC DISTRICT: South Coast LGA: Esperance Land manager present:

DATUM: COORDINATES: (If UTM coords provided, Zone is also required) METHOD USED:

DecDegrees DegMinSec UTM GPS Differential GPS Map

GDA84 / MGA84 Lat / Northing: 32 1054.6 Y | 32 0821.1 X No. satellites: _____ Map used: QGIS

AGD84 / AMG84 Long / Easting: 62 63908.8 Y | 62 68629.8 Y Boundary polygon captured: Map scale: _____

WGS84 ZONE: 51H

Unknown

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): _____ No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual Extrapolation Estimate Count method: _____

WHAT COUNTED: Plants Clumps Clonal stems

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m ²): _____ Note: Pls record count as numbers (not percentages) for database.
Alive	<u>~50</u>				
Dead					

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: 95 %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
<p>eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.</p> <p>Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme</p> <p>Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)</p> <p>• <u>clearing - road widening. Likely to take ~50.</u></p>	<u>N</u>	<u>M-H</u>	<u>S</u>
• _____	_____	_____	_____
• _____	_____	_____	_____



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
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 type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input checked="" type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input 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: <u>Gravel</u>	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)				
CONDITION OF SOIL:	Dry <input checked="" type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION CLASSIFICATION:

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

1. Dense mixed Eucalyptus mallee woodland w scattered
2. Shrubland midstorey + dense, thick understorey.
- 3.
- 4.

ASSOCIATED SPECIES:

Other (non-dominant) spp

Hibbertia gracilipes, Eucalyptus falcata, Chorizanthe acicularis, Calothamnus gracilis, Hakea trifurcata.

* 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:

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.)

Did not extensively survey - only what was within clearing footprint. Likely many, many more plants, as extensive suitable habitat in road reserve / adjacent reserve.

Confirmed by Michael Hslop 13/11/19.

DRF PERMIT/ LICENCE No: FT6100029 Note: If only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licensing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: KW024 and KW021 WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: _____

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Kate White Role: Environmental Officer Signed: [Signature] Date: 4/11/19

Please return completed form to **Species and Communities Branch** 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 Branch.

Record entered by: _____

Sheet No: _____

Record Entered in Database



Threatened and Priority Flora Report Form

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 <http://dpgov.wa.gov.au/> under Standard Report Forms

TAXON: Dampiera sericantha TPFL Pop. No: _____
 OBSERVATION DATE: 17/09/2019 CONSERVATION STATUS: P3 New population
 OBSERVER/S: Kate White + Julie Waters PHONE: 90831518
 ROLE: Environmental Officer ORGANISATION: Shire of Esperance

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place): ~73km W of Esperance townsite. ~20km E of Mungahup townsite. Located from intersection of Neds Corner Rd + South Coast Hwy to ~1.6km N on Neds Corner Rd

Reserve No: _____ Land manager present:
 DBCA DISTRICT: South Coast LGA: Esperance
 DATUM: COORDINATES: (if UTM coords provided, Zone is also required) METHOD USED:
 DecDegrees DegMinSec UTM GPS Differential GPS Map
 GDA94 / MGA94 Lat / Northing: 321122 No. satellites: _____ Map used: QMS
 AGD84 / AMG84 Long / Easting: 62635414 Boundary polygon captured: Map scale: 1:6903
 WGS84 Unknown ZONE: 51H

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): _____ No. of minutes spent / 100 m²: _____
 POP'N COUNT ACCURACY: Actual Extrapolation Estimate Count method: _____
 (Refer to field manual for ISQ)

WHAT COUNTED: Plants Clumps Clonal stems
 TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	<u>220 + 350</u>	<u>1450</u>		
Dead				

Area of pop (m²): roadside
 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 Dehiscent fruit Percentage in flower: 90%

CONDITION OF PLANTS: Healthy Moderate Poor Senescent
 COMMENT: _____

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
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+) • <u>Clearing - road widening of Neds Corner Road. Taking ~112 plants</u>	<u>N</u>	<u>M</u>	<u>S</u>
• _____	_____	_____	_____
• _____	_____	_____	_____

Please return completed form to **Species And Communities Branch DBCA**,
 Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbcwa.gov.au
 RECORDS: Please forward to Flora Administrative Officer, Species and Communities Branch.
 Record entered by: _____ Sheet No: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input checked="" type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" 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"/>					

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 (Mesomelaena tetragona)

1. Multiple Veg types - Diverse sub-coastal Proteaceae
 2. heathland and Banksia speciosa shrubland & mixed
 3. Melaleuca's
 4. Nuyticia floribunda, Dampiera sacculata, Eucalyptus pleurocarpa, Banksia speciosa, Melaleuca striata, Adenanthos cuneatus.

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:

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.)

Only surveyor road edge - not surrounding road reserve or an extended nature reserve. Access

Confirmed by Michael Haslop at WA Herbarium 13/11/19. Accession # 8178

DRF PERMIT/ LICENCE No: FL100028. Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licensing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: KW 025 WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: _____

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Kate White Role: Environmental officer Signed: [Signature] Date: 4/10/2019

Please return completed form to **Species And Communities Branch** 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 Branch.



Department of Biodiversity,
Conservation and Attractions

Threatened and Priority Flora Report Form

Previously recorded on
an Herb Strip, but no pop'n
recorded - listed.
Version 1.3 August 2017

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 <http://doaw.wa.gov.au> under Standard Report Forms

TAXON: Leucopogon sp. Cascades TPFL Pop. No: 13/109/19
OBSERVATION DATE: 13/09/19 CONSERVATION STATUS: P1 New population
OBSERVERS: Katie White + Julie Waters PHONE: 90831518
ROLE: Environmental Officers ORGANISATION: Shire of Esperance

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place): ~1.7km 76 NW of Esperance towards 200m E of Mangrove. 2 populations on Neds Corner Rd - 1.7km N + 3km N of South Coast Hwy
Reserve No: _____

DBC DISTRICT: South Coast LGA: Esperance Land manager present:
DATUM: COORDINATES: (If UTM coords provided, Zone is also required) METHOD USED:
DecDegrees DegMinSec UTM GPS Differential GPS Map
GDA94 / MGA94 Lat / Northing: 321107.6x No. satellites: _____ Map used: _____
AGD84 / AMG84 Long / Easting: 6263606.6 Boundary polygon captured: Map scale: _____
WGS84 Zone: 51H
Unknown

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): 3hr 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: _____
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 Dehiscent fruit Percentage in flower: 75%

CONDITION OF PLANTS: Healthy Moderate Poor Senescent
COMMENT: _____

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
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+)			
• Road reconstruction/widening. Taking 2 plants at 1.7km W + 2 plants at 3km N.	<u>M</u>	<u>H</u>	<u>S</u>
•	---	---	---
•	---	---	---



Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
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 checked="" type="checkbox"/>		Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	0-10% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input checked="" type="checkbox"/>	Limestone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input 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: <u>Gravel.</u>	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>	Specify Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	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. ictifolia);
2. Open shrubland (Hibbertia sp., Acacia spp.);
3. Isolated clumps of sedges (Mesomelaena tetragona)

1. Dense Eucalyptus mallee w diverse + dense
2. Mixed Shrubland
3. _____
4. _____

ASSOCIATED SPECIES:

Other (non-dominant) spp Euc. tumida, Euc. uncinata, Acacia gaeophylla, Gastrolobium latifolium, Banksia armata, Coto quadrifidus

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formatters 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: _____

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.)

Confirmed at WA Herbarium Michael Hislop 13/11/19 Accession # 8178

DRF PERMIT/ LICENCE No: PTB 10002 (Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licensing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under licence/permit should be recorded above in the OTHER COMMENTS section.)

SPECIMEN: Collectors No: KW 026 WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: _____

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Kate White Role: Environment officer Signed: [Signature] Date: 14/11/19

Please return completed form to **Species And Communities Branch 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 Branch.

9.2 Incidental Species List

Family	Genus	Species	Common Name	Invasive	Priority	1	2	5	6	7	9	12	Comments
Aizoaceae	<i>Carpobortus</i>	<i>modestus</i>	Inland Pigface							X			
Amaryllidaceae	<i>Ipheion</i>	<i>uniflorum</i>	Spring Star	X		X		X	X	X	X		
Anarthriaceae	<i>Anarthria</i>	<i>gracilis</i>				X							
Anarthriaceae	<i>Anarthria</i>	<i>scabra</i>					X						
Anarthriaceae	<i>Lyginia</i>	<i>imberbis</i>					X						
Apiaceae	<i>Foeniculum</i>	<i>vulgare</i>	Fennel	X						X			
Apiaceae	<i>Xanthosia</i>	<i>huegelii</i>							X				
Apiaceae	<i>Xanthosia</i>	<i>singuliflora</i>							X				Confirmed by WA Herbarium. KW027, #8178.
Asparagaceae	<i>Asparagus</i>	<i>asparagoides</i>	Bridal Creeper	X		X	X		X		X	X	
Asparagaceae	<i>Laxmannia</i>	<i>grandiflora</i>						X					
Asparagaceae	<i>Lomandra</i>	<i>hastilis</i>					X						
Asparagaceae	<i>Thysanotus</i>	<i>patersonii</i>	Twining Thysanotus				X	X	X		X	X	
Asphodelaceae	<i>Asphodelus</i>	<i>fistulosus</i>	Onion Weed	X						X			
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>	Cape Weed	X			X	X	X	X	X	X	
Asteraceae	<i>Argentipallium</i>	<i>niveum</i>							X				
Asteraceae	<i>Cirsium</i>	<i>vulgare</i>	Spear Thistle	X						X			
Asteraceae	<i>Conyza</i>	sp.	Fleabane	X			X			X			
Asteraceae	<i>Cotula</i>	<i>coronopifolia</i>	Water Button	X						X			
Asteraceae	<i>Gazania</i>	<i>linearis</i>	Treasure Flower	X						X			
Asteraceae	<i>Helianthus</i>	<i>annuus</i>	Common Sun Flower	X						X			
Asteraceae	<i>Hyalosperma</i>	<i>demissum</i>					X						
Asteraceae	<i>Hypochaeris</i>	sp.	Common Daisy	X							X		
Asteraceae	<i>Olearia</i>	<i>ciliata</i>	Fringed Daisy Bush						X				
Asteraceae	<i>Olearia</i>	<i>imbricata</i>	Imbricate Daisy Bush						X				

Asteraceae	<i>Pseudognaphalium</i>	<i>leutoalbum</i>	Jersey Cudweed	X			X			X		X
Asteraceae	<i>Senecio</i>	<i>quadridentatus</i>					X					
Asteraceae	<i>Sonchus</i>	<i>oleraceus</i>	Common Thistle	X						X		
Asteraceae	<i>Ursinia</i>	<i>anthemoides</i>	Ursinia	X		X	X	X	X			X
Brassicaceae	<i>Brassica</i>	<i>juncea</i>	Canola	X						X		
Brassicaceae	<i>Raphanus</i>	<i>raphanistrum</i>	Wild Radish	X		X			X	X		
Casuarinaceae	<i>Allocasuarina</i>	<i>helmsii</i>					X					
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>	Dwarf Sheok			X		X	X		X	
Casuarinaceae	<i>Allocasuarina</i>	<i>lehmanniana</i>						X	X		X	
Casuarinaceae	<i>Allocasuarina</i>	<i>thuyoides</i>	Horned Sheoak			X	X	X	X			X
Celastraceae	<i>Stackhousia</i>	<i>monogyna</i>	Creamy Candle					X				
Chenopodiaceae	<i>Atriplex</i>	sp.	Salt Bush							X		
Chenopodiaceae	<i>Tecticornia</i>	sp.	Samphire							X		
Convolvulaceae	<i>Wilsonia</i>	<i>humilis</i>	Silky Wilsonia						X			
Cupressaceae	<i>Callitris</i>	<i>roei</i>	Roe's Cypress Pine						X			
Cyperaceae	<i>Baumea</i>	<i>articulata</i>	Jointed Rush			X				X		
Cyperaceae	<i>Caustis</i>	<i>dioica</i>	Puzzle Grass			X	X	X	X		X	X
Cyperaceae	<i>Chorizandra</i>	sp.					X	X				
Cyperaceae	<i>Ficinia</i>	<i>nodosa</i>	Knotted Club Rush			X			X			
Cyperaceae	<i>Gahnia</i>	<i>drummondii</i>							X			
Cyperaceae	<i>Gahnia</i>	<i>trifida</i>	Coast Saw Sedge			X						
Cyperaceae	<i>Lepidosperma</i>	<i>carphoides</i>	Black Rapier Sedge			X			X			
Cyperaceae	<i>Lepidosperma</i>	sp.							X			
Cyperaceae	<i>Lepidosperma</i>	<i>squamatum</i>				X	X	X	X		X	
Cyperaceae	<i>Mesomelaena</i>	<i>stygia</i>	Small Semaphore Sedge			X		X	X			X
Cyperaceae	<i>Mesomelaena</i>	<i>tetragona</i>	Semaphore Sedge			X		X			X	
Cyperaceae	<i>Schoenus</i>	<i>curvifolius</i>				X						
Cyperaceae	<i>Schoenus</i>	<i>nanus</i>				X						X

Cyperaceae	<i>Schoenus</i>	sp.				X	X						
Cyperaceae	sp.								X	X			
Cyperaceae	<i>Tricostularia</i>	<i>aphylla</i>						X					
Dilleniaceae	<i>Hibbertia</i>	<i>gracilipes</i>				X	X	X	X		X		
Dilleniaceae	<i>Hibbertia</i>	<i>ulicifolia</i>				X	X	X	X		X	X	
Droseraceae	<i>Drosera</i>	<i>glanduligera</i>	Pimpernel Sundew			X							
Droseraceae	<i>Drosera</i>	<i>huegelii</i>	Bold Sundew									X	Possibly <i>D. macrantha</i> , disputed in Esp
Droseraceae	<i>Drosera</i>	<i>menziesii</i>	Pink Rainbow			X							
Droseraceae	<i>Drosera</i>	<i>moorei</i>										X	
Droseraceae	<i>Drosera</i>	<i>subhirtella</i>	Sunny Rainbow			X							
Ericaceae	<i>Astroloma</i>	<i>prostratum</i>	Cranberry Heath						X				
Ericaceae	<i>Conostephium</i>	<i>drummondii</i>							X				
Ericaceae	<i>Leucopogon</i>	<i>fimbriatus</i>										X	
Ericaceae	<i>Leucopogon</i>	<i>obovatus</i>										X	
Ericaceae	<i>Leucopogon</i>	sp. Cascades			1			X	X				Confirmed WA Herbarium. KW026, #8178. KW032, Accession #8218 confirmed 17/12/2019
Ericaceae	<i>Leucopogon</i>	sp. Coujinup				X	X						
Ericaceae	<i>Lysinema</i>	<i>ciliatum</i>	Curry Flower			X	X	X	X				
Ericaceae	<i>Lysinema</i>	<i>pentapetalum</i>	Curry Flower									X	
Ericaceae	<i>Styphelia</i>	<i>intertexta</i>							X				
Euphorbiaceae	<i>Euphorbia</i>	<i>terraccina</i>	Geraldton Carnation Weed	X						X			
Euphorbiaceae	<i>Monotaxis</i>	<i>paxii</i>							X				
Euphorbiaceae	<i>Stachystemon</i>	<i>virgatus</i>						X				X	

Fabaceae	<i>Acacia</i>	<i>aemula</i> subsp. <i>aemula</i>				X	X	X					
Fabaceae	<i>Acacia</i>	<i>baileyana</i>	Cootamundra Wattle	X				X					
Fabaceae	<i>Acacia</i>	<i>brachyclada</i>							X				
Fabaceae	<i>Acacia</i>	<i>chrysocephala</i>						X			X		
Fabaceae	<i>Acacia</i>	<i>cochlearis</i>	Rigid Wattle							X			
Fabaceae	<i>Acacia</i>	<i>crispula</i>						X					
Fabaceae	<i>Acacia</i>	<i>cyclops</i>	Coastal Wattle			X	X	X	X	X	X	X	
Fabaceae	<i>Acacia</i>	<i>glaucoptera</i>	Flat Wattle			X			X	X			
Fabaceae	<i>Acacia</i>	<i>gonophylla</i>				X	X	X	X	X	X	X	
Fabaceae	<i>Acacia</i>	<i>ingrata</i>							X				
Fabaceae	<i>Acacia</i>	<i>octonervia</i>							X				
Fabaceae	<i>Acacia</i>	P176							X				
Fabaceae	<i>Acacia</i>	<i>pulchella</i> var. <i>goadbyi</i>	Prickly Moses			X	X						
Fabaceae	<i>Acacia</i>	<i>saligna</i>	Orange Wattle			X							
Fabaceae	<i>Acacia</i>	<i>sphacelata</i> subsp. <i>recurva</i>									X		
Fabaceae	<i>Acacia</i>	<i>subcaerulea</i>					X		X				
Fabaceae	<i>Acacia</i>	<i>tritycha</i>							X	X			
Fabaceae	<i>Chorizema</i>	<i>aciculare</i>	Needle leaved Chorizema			X		X	X		X	X	
Fabaceae	<i>Chorizema</i>	<i>nervosum</i>							X				
Fabaceae	<i>Daviesia</i>	<i>aphylla</i>							X				
Fabaceae	<i>Daviesia</i>	<i>incrassata</i> subsp. <i>incrassata</i>				X	X	X				X	
Fabaceae	<i>Daviesia</i>	<i>lancifolia</i>				X			X		X		
Fabaceae	<i>Daviesia</i>	<i>major</i>					X						
Fabaceae	<i>Daviesia</i>	<i>teretifolia</i>							X			X	
Fabaceae	<i>Dillwynia</i>	affin. <i>divaricata</i>						X					Too poor to send to WA Herbarium.
Fabaceae	<i>Eutaxia</i>	<i>cuneata</i>						X	X				

Fabaceae	<i>Eutaxia</i>	<i>parvifolia</i>							X				Confirmation at WA Herbarium. KW035, #8218, 17/12/2019
Fabaceae	<i>Gastrolobium</i>	<i>heterophyllum</i>							X				
Fabaceae	<i>Gastrolobium</i>	<i>latifolium</i>						X	X		X		
Fabaceae	<i>Gastrolobium</i>	<i>melanocarpum</i>	Poison Bush						X				
Fabaceae	<i>Gastrolobium</i>	<i>spinosum</i>	Prickly Poison				X	X	X		X	X	
Fabaceae	<i>Gompholobium</i>	<i>knightianum</i>					X	X	X		X	X	
Fabaceae	<i>Hovea</i>	<i>trisperma</i>	Common Hovea						X		X		
Fabaceae	<i>Isotropis</i>	<i>cuneifolia</i>	Granny Bonnet									X	
Fabaceae	<i>Jacksonia</i>	<i>condensata</i>					X						
Fabaceae	<i>Jacksonia</i>	<i>spinosa</i>						X					
Fabaceae	<i>Jacksonia</i>	<i>viscosa</i>					X	X			X	X	
Fabaceae	<i>Kennedia</i>	<i>microphylla</i>							X				
Fabaceae	<i>Pultenaea</i>	<i>indira</i> subsp. <i>indira</i>							X				
Fabaceae	<i>Templetonia</i>	<i>neglecta</i>							X				Confirmation at WA Herbarium. KW033, #8218, 17/12/2019.
Fabaceae	<i>Trifolium</i>	sp.	Clover	X				X		X	X	X	
Fabaceae	<i>Vicia</i>	sp.	Vetch	X				X	X			X	
Geraniaceae	<i>Pelargonium</i>	<i>capitatum</i>	Rose Pelargonium	X						X			
Goodeniaceae	<i>Anthotium</i>	<i>humile</i>	Dwarf Anthotium					X	X				
Goodeniaceae	<i>Cooperhooikia</i>	<i>polygalacea</i>							X				
Goodeniaceae	<i>Cooperhooikia</i>	<i>strophiolata</i>							X				
Goodeniaceae	<i>Dampiera</i>	<i>angulata</i>							X				
Goodeniaceae	<i>Dampiera</i>	<i>fasciculata</i>	Bundled-Leaf Dampiera					X				X	
Goodeniaceae	<i>Dampiera</i>	<i>lavandulacea</i>						X	X			X	

Goodeniaceae	<i>Dampiera</i>	<i>sericantha</i>			3		X						Confirmed WA Herbarium. KW025, #8178
Goodeniaceae	<i>Dampiera</i>	<i>sacculata</i>				X	X	X	X			X	
Goodeniaceae	<i>Goodenia</i>	<i>concinna</i>	Elegant goodenia			X			X				
Goodeniaceae	<i>Goodenia</i>	<i>incana</i>	Hoary Goodenia				X						
Goodeniaceae	<i>Goodenia</i>	<i>scapigera</i>	White Goodenia						X				
Goodeniaceae	<i>Lechenaultia</i>	<i>formosa</i>						X	X				
Goodeniaceae	<i>Lechenaultia</i>	<i>tubiflora</i>					X						
Goodeniaceae	<i>Velleia</i>	<i>trinervis</i>				X	X	X	X		X		
Haemodoraceae	<i>Anigozanthos</i>	<i>rufus</i>					X	X					
Haemodoraceae	<i>Conostylis</i>	<i>phathyrantha</i>					X						
Haemodoraceae	<i>Conostylis</i>	<i>seorsiflora</i>						X					
Haemodoraceae	<i>Conostylis</i>	<i>vaginata</i>	Sheath Conostylis			X	X						
Haemodoraceae	<i>Dianella</i>	<i>revoluta</i>	Blue Berry Lilly								X		
Halgoraceae	<i>Glischrocaryon</i>	sp.	Popflower					X	X		X	X	
Hemerocallidaceae	<i>Agrostocrinum</i>	<i>scabrum</i> subsp. <i>scabrum</i>	Blue Grass Lilly			X	X	X	X		X	X	
Hemerocallidaceae	<i>Dianella</i>	sp.	Blueberry Lilly					X	X		X	X	
Hemerocallidaceae	<i>Johnsonia</i>	<i>acaulis</i>	Hooded Lilly			X	X				X		
Hemerocallidaceae	<i>Tricoryne</i>	<i>elatior</i>	Yellow Autumn Lilly			X		X			X		
Iridaceae	<i>Crocoshmia</i>	sp.	Montbretia	X					X				
Iridaceae	<i>Moraea</i>	<i>flaccida</i>	Cape Tulip	X		X							
Iridaceae	<i>Patersoia</i>	<i>occidentalis</i>	Smooth Purple Flag					X					
Iridaceae	<i>Patersonia</i>	<i>juncea</i>	Rush leaved Patersonia			X	X						
Iridaceae	<i>Patersonia</i>	<i>lanata</i>	Wooly Patersonia				X						
Iridaceae	sp.			X					X				
Juncaceae	<i>Juncus</i>	<i>kraussii</i>	Sea Rush			X							
Lamiaceae	<i>Microcorys</i>	<i>glabra</i>							X				

Lamiaceae	<i>Microcorys</i>	<i>subcanescens</i>						X					
Lauraceae	<i>Cassytha</i>	sp.						X	X		X	X	
Loganiaceae	<i>Logania</i>	<i>buxifolia</i>							X				
Loganiaceae	<i>Logania</i>	<i>micrantha</i>					X		X				
Loranthaceae	<i>Nuytsia</i>	<i>floribunda</i>	Christmas Tree; Monji				X	X	X	X		X	
Malvaceae	<i>Alyogyne</i>	<i>hakeifolia</i>							X	X			
Malvaceae	<i>Malva</i>	<i>parvifolia</i>	Mallow Plant	X						X			
Malvaceae	<i>Thomasia</i>	<i>angustifolia</i>	Narrow Leaved Thomasia						X				
Malvaceae	<i>Thomasia</i>	<i>pygmaea</i>	Tiny Thomasia		3					X			Confirmed WA Herbarium. KW021 and KW024, #8178.
Myrtaceae	<i>Beaufortia</i>	<i>empetrifolia</i>	South Coast Beaufortia				X	X					
Myrtaceae	<i>Beaufortia</i>	<i>schaueri</i>	Pink Beaufortia						X	X			
Myrtaceae	<i>Calothamnus</i>	<i>gracilis</i>	One-sided Bottle Brush				X	X	X	X		X	X
Myrtaceae	<i>Calothamnus</i>	<i>quadrifidus</i>	One-sided Bottle Brush				X			X		X	
Myrtaceae	<i>Calytrix</i>	<i>decandra</i>	Pink Starflower					X					
Myrtaceae	<i>Chamelaucium</i>	<i>ciliatum</i>								X		X	X
Myrtaceae	<i>Conothamnus</i>	<i>aureus</i>					X	X	X			X	
Myrtaceae	<i>Cyathostemon</i>	<i>ambiguus</i>								X		X	
Myrtaceae	<i>Darwinia</i>	<i>vestita</i>	Pom-pom Darwinia				X		X				
Myrtaceae	<i>Eucalyptus</i>	<i>angulosa</i>							X	X		X	
Myrtaceae	<i>Eucalyptus</i>	<i>eremophila</i>	Tall Sand Mallee							X			
Myrtaceae	<i>Eucalyptus</i>	<i>falcata</i>	Silver Mallet							X		X	
Myrtaceae	<i>Eucalyptus</i>	<i>gomphocephala</i>	Tuart	X			X	X				X	
Myrtaceae	<i>Eucalyptus</i>	<i>lehmannii</i>	Bushy Yate									X	X
Myrtaceae	<i>Eucalyptus</i>	<i>leptocalyx</i>								X			
Myrtaceae	<i>Eucalyptus</i>	<i>micranthera</i>	Milkshake Mallee						X			X	
Myrtaceae	<i>Eucalyptus</i>	<i>occidentalis</i>	Swamp Yate									X	

Myrtaceae	<i>Melaleuca</i>	<i>uncinata</i>	Broom Bush						X				
Myrtaceae	<i>Melaleuca</i>	<i>undulata</i>	Hidden Honey Myrtle						X				
Myrtaceae	<i>Micromyrtus</i>	<i>elobata</i> subsp. <i>elobata</i>				X		X					
Myrtaceae	<i>Phymatocarpus</i>	<i>maxwelli</i>				X		X	X		X		
Myrtaceae	<i>Taxandria</i>	<i>spathulata</i>				X	X	X	X		X	X	
Myrtaceae	<i>Tetrapora</i>	<i>preissiana</i>							X				
Myrtaceae	<i>Thryptomene</i>	<i>australis</i>										X	
Myrtaceae	<i>Verticordia</i>	<i>chrysantha</i>				X		X	X		X	X	
Myrtaceae	<i>Verticordia</i>	<i>inclusa</i>										X	
Orchidaceae	<i>Caladenia</i>	<i>attingens</i> subsp. <i>gracillima</i>	Mantis Orchid					X			X	X	
Orchidaceae	<i>Caladenia</i>	<i>cruscula</i>	Reclining Spider Orchid					X	X				
Orchidaceae	<i>Caladenia</i>	<i>flava</i>	Cowslip Orchid				X	X			X	X	
Orchidaceae	<i>Caladenia</i>	<i>longicauda</i> subsp. <i>eminens</i>	Stark White Spider									X	
Orchidaceae	<i>Diuris</i>	<i>laxiflora</i>	Bee Orchid			X			X			X	
Orchidaceae	<i>Elythranthera</i>	<i>brunonis</i>	Purple Enamel Orchid			X			X				
Orchidaceae	<i>Lyperanthus</i>	<i>serratus</i>	Rattle Beak Orchid			X							
Orchidaceae	<i>Pterostylis</i>	sp	Jug or Greenhood Orchid						X				
Orchidaceae	<i>Thelymitra</i>	<i>antennifera</i>	Lemon Scented Orchid, Vanilla Orchid						X			X	
Orchidaceae	<i>Thelymitra</i>	<i>macrophylla</i>	Scented Sun Orchid					X	X		X	X	
Oxalidaceae	<i>Oxalis</i>	<i>pes-caprae</i>	Sour Sop	X						X			
Pittosporaceae	<i>Billardiera</i>	<i>coriacea</i>							X				
Pittosporaceae	<i>Billardiera</i>	<i>fusiformis</i>	Australian Blue Bell			X	X	X	X	X	X	X	
Pittosporaceae	<i>Billardiera</i>	<i>heterophylla</i>	Australian Blue Bell					X			X	X	
Pittosporaceae	<i>Billardiera</i>	<i>venusta</i>							X		X	X	Confirmed WA Herbarium. KW023, #8178.
Poaceae	<i>Austrostipa</i>	<i>drummondii</i>										X	
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>							X		X	X	

Poaceae	<i>Avena</i>	<i> barbata</i>	Bearded Oat	X							X	
Poaceae	<i>Briza</i>	<i> maxima</i>	Blow Fly Grass	X		X					X	
Poaceae	<i>Ehrharta</i>	<i> longiflora</i>	Annual Veld Grass	X								X
Poaceae	<i>Eragrostis</i>	<i> curvula</i>	African Lovegrass	X		X	X	X	X		X	X
Poaceae	<i>Neurachne</i>	<i> alopecuroidea</i>	Foxtail Mulga Grass			X		X	X			X
Poaceae	<i>Pennisetum</i>	<i> clandestinum</i>	Kikuyu Grass	X						X		
Poaceae	sp.										X	Specimen too poor for ID.
Poaceae	<i>Vulpia</i>	<i> bromoides</i>	Fescue grass	X								X
Polygalaceae	<i>Comesperma</i>	<i> polygaloides</i>	Small Milkwort						X			
Polygalaceae	<i>Compesperma</i>	<i> volubile</i>	Love Creeper						X			
Polygalaceae	<i>Rumex</i>	<i> vesicarius</i>	Ruby Dock	X						X		
Primulaceae	<i>Lysimachia</i>	<i> arvensis</i> var. <i> caerulea</i>	Purple Pimpernel weed	X		X	X	X	X		X	
Proteaceae	<i>Adenanthos</i>	<i> cuneatus</i>	Coral Flower			X	X	X		X		
Proteaceae	<i>Banksia</i>	<i> armata</i>	Prickly Dryandra			X		X	X		X	X
Proteaceae	<i>Banksia</i>	<i> obovata</i>	Wedge-leaved Dryandra			X	X	X	X			
Proteaceae	<i>Banksia</i>	<i> pteridifolia</i> subsp. <i> pteridifolia</i>	Tangled Honeypot			X			X			
Proteaceae	<i>Banksia</i>	<i> pulchella</i>	Teasel Banksia				X		X			
Proteaceae	<i>Banksia</i>	<i> repens</i>	Creeping Banksia			X						
Proteaceae	<i>Banksia</i>	<i> speciosa</i>	Showy Banksia				X					
Proteaceae	<i>Banksia</i>	<i> violacea</i>										X
Proteaceae	<i>Conospermum</i>	<i> teretifolium</i>	Spider Smokebush				X					
Proteaceae	<i>Franklandia</i>	<i> fucifolia</i>	Lanoline				X					
Proteaceae	<i>Grevillea</i>	<i> cagiana</i>				X		X	X			
Proteaceae	<i>Grevillea</i>	<i> concinna</i> subsp. <i> lehamnniana</i>	Red Comb								X	X
Proteaceae	<i>Grevillea</i>	<i> nudiflora</i>				X		X	X		X	X
Proteaceae	<i>Grevillea</i>	<i> oligantha</i>						X	X		X	
Proteaceae	<i>Hakea</i>	<i> corymbosa</i>	Cauliflower Hakea			X		X			X	X

Proteaceae	<i>Hakea</i>	<i>denticulata</i>	Stinking Roger			X			X		X		
Proteaceae	<i>Hakea</i>	<i>ferruginea</i>						X	X				
Proteaceae	<i>Hakea</i>	<i>laurina</i>	Pin cushion Hakea						X	X			
Proteaceae	<i>Hakea</i>	<i>lissocarpa</i>							X		X		
Proteaceae	<i>Hakea</i>	<i>marginata</i>						X	X				
Proteaceae	<i>Hakea</i>	<i>nitida</i>	Frog Hakea					X			X		
Proteaceae	<i>Hakea</i>	<i>padanicarpa</i>	Donkey Nuts Hakea						X				
Proteaceae	<i>Hakea</i>	<i>sulcata</i>	Furrowed Hakea			X							
Proteaceae	<i>Hakea</i>	<i>trifurcata</i>	Two-leaf Hakea			X		X	X	X	X	X	
Proteaceae	<i>Isopogon</i>	affin. <i>attenuata</i>							X				Sample too poor for WA Herbarium ID.
Proteaceae	<i>Isopogon</i>	<i>polycephalus</i>	Clustered Cone Flower			X	X		X		X	X	
Proteaceae	<i>Lambertia</i>	<i>inermis</i>	Chiddick			X	X	X	X		X		
Proteaceae	<i>Persoonia</i>	<i>teretifolia</i>									X		
Proteaceae	<i>Petrophile</i>	<i>fastigiata</i>				X			X			X	
Proteaceae	<i>Petrophile</i>	<i>linearis</i>	Pixie mops				X						
Proteaceae	<i>Petrophile</i>	<i>squamata</i> subsp. <i>Northern</i>						X					
Proteaceae	<i>Petrophile</i>	<i>squamata</i> subsp. <i>Ravensthorpe</i>				X			X				
Proteaceae	<i>Stirlingia</i>	<i>anethifolia</i>					X						
Proteaceae	<i>Synaphea</i>	<i>favosa</i>				X							
Proteaceae	<i>Synaphea</i>	<i>media</i>						X	X			X	
Proteaceae	<i>Synaphea</i>	<i>oligantha</i>				X	X						
Proteaceae	<i>Synaphea</i>	<i>petiolaris</i>				X	X	X			X	X	
Pteridaceae	<i>Cheilanthes</i>	<i>austrotenuifolia</i>				X					X		
Restionaceae	<i>Chordifex</i>	<i>sphacelatus</i>				X							
Restionaceae	<i>Desmocladus</i>	<i>flexuosus</i>					X						
Restionaceae	<i>Hypolaena</i>	<i>fastigiata</i>				X		X			X		

Restionaceae	<i>Hypolaena</i>	<i>humilis</i>					X		X		X		
Restionaceae	<i>Lepyrodia</i>	<i>macra</i>	Large Scale Rush			X							
Restionaceae	<i>Loxocarya</i>	<i>striata</i>					X		X				
Rhamnaceae	<i>Cryptandra</i>	<i>pungens</i>						X	X			X	
Rhamnaceae	<i>Spyridium</i>	<i>globulosum</i>	Basket Bush						X				
Rhamnaceae	<i>Spyridium</i>	<i>microcephalum</i>	Small-headed Spyridium						X	X			
Rubiaceae	<i>Opercularia</i>	<i>vaginata</i>	Dog Weed			X		X	X		X	X	
Rutaceae	<i>Boronia</i>	<i>crassifolia</i>							X				
Rutaceae	<i>Boronia</i>	<i>inconspicua</i>							X				
Rutaceae	<i>Boronia</i>	<i>inornata</i>	Desert Boronia						X				
Rutaceae	<i>Boronia</i>	<i>ramosa</i> subsp. <i>anethifolia</i>				X		X					
Rutaceae	<i>Boronia</i>	<i>spathulata</i>				X							
Santalaceae	<i>Exocarpus</i>	<i>sparteus</i>	Broom Ballart						X				
Santalaceae	<i>Leptomeria</i>	<i>pachyclada</i>							X				
Solanaceae	<i>Solanum</i>	<i>nigrum</i>	Black berry Nightshade	X					X	X			
Thymelaeaceae	<i>Pimelea</i>	<i>brachyphylla</i>	Rice Flower						X				
Violaceae	<i>Hybanthus</i>	<i>floribundus</i> subsp. <i>floribundus</i>							X				
Xanthorrhoeaceae	<i>Chaemaescilla</i>	<i>corymbosa</i>	Blue squill			X					X	X	
Xanthorrhoeaceae	<i>Xanthorrhoea</i>	<i>platyphylla</i>	Grass Tree			X	X	X	X		X	X	

9.3 Vegetation communities, as identified in the previously submitted ‘Vegetation, Flora, Fauna and Environmental Considerations’ report.

Vegetation Number	Distance from South Coast Hwy (km)	Kwongkan TEC	Vegetation Condition	Disturbance	Vegetation structure and composition
1	0.08 to 0.25	Yes	Very good	Rubbish along periphery. Scattered African Lovegrass.	Scattered <i>Nuytsia floribunda</i> and <i>Eucalyptus pleurocarpa</i> overstorey with dense heathland midstorey. Overstorey <i>Callitris</i> sp., <i>Eucalyptus pleurocarpa</i> , <i>Nuytsia floribunda</i> , <i>Hakea trifurcata</i> and <i>Lambertia inermis</i> . Midstorey dominant <i>Calothamnus quadrifidus</i> with <i>Melaleuca</i> sp., <i>Acacia cyclops</i> and <i>Xanthorrhoea platyphylla</i> . Understorey <i>Caustis diocia</i> , <i>Lepidosperma</i> sp. and <i>Synaphea</i> sp.
2	0.25 to 0.8	Yes	Very good	Historical sandpit surrounded by Victorian Tea Tree. No lovegrass present. Less rubbish.	Scattered <i>Banksia speciosa</i> and <i>Eucalyptus</i> overstorey with dense <i>Melaleuca</i> midstorey and dense sedgeland understorey. Overstorey dominant of <i>Banksia speciosa</i> . Midstorey dominant of <i>Melaleuca striata</i> , <i>Conospermum</i> sp., <i>Adenanthos cuneatus</i> , <i>Lambertia inermis</i> . Understorey of <i>Caustis diocia</i> and <i>Anarthria scabra</i>
2A	0.8 to 1.01	Yes	Poor	High weed burden of African Lovegrass and Tuarts	Same as 2
3	1.01 to 1.65	Yes	Poor	Highly degraded. Bare areas. Highly weedy with dominant understorey species African Lovegrass and Overstorey Tuart trees. Occasional infestation of Victorian Tea Tree	Same as 1
4	1.65 to 1.74	Yes	Very good	Limited disturbance	Same as 1
5	1.74 to 1.86	Yes	Very good	Limited disturbance	Scattered <i>Eucalyptus pleurocarpa</i> dominant overstorey w dense dominant <i>Banksia armata</i> . Interspersed between dense <i>Banksia armata</i> is <i>Hakea marginata</i> , <i>Acacia chrysocephala</i> , <i>Cassytha</i> sp., <i>Gastrolobium spinosum</i> , <i>Hakea corymbosa</i> .

6	1.86 to 2.64	No	Good	Scattered weeds, eg. Thistles. African Lovegrass and Tuarts scattered throughout. Areas disturbed from previous gravel extraction.	Dense Eucalyptus overstorey, with scattered shrubland midstorey. Observed species in midstorey include <i>Acacia cyclops</i> , <i>Calothamnus quadrifidus</i> , <i>Banksia armata</i> , <i>Hakea trifurcata</i> , <i>Acacia gonophylla</i> , <i>Kennedia</i> sp.
7	2.64 to 2.7	No	Degraded	Entirely consisting of weeds.	Creekline crossing
8	2.7 to 3.91	No	Good	Same as 6	Same as 6
9	3.91 to 4.19	No	Very good	Vegetation only present on western. Eastern side is highly cleared, with only tuarts remaining	Dense Eucalyptus woodland overstorey. Different to 6 with more diversity in midstorey. Species in midstorey include <i>Kennedia</i> sp., <i>Melaleuca</i> sp., <i>Xanthorrhoea platyphylla</i> , <i>Acacia glaucoptera</i> , <i>Hakea corymboasa</i> , <i>Acacia cyclops</i>
10	4.19 to 4.93	No	Poor	Highly disturbed area. Sparse vegetation. Highly weedy with African Lovegrass and Tuarts. Large areas of Victorian Tea Tree	Same as 9
11	4.93 to 5.12	Yes	Poor	High amounts of Victorian Tea Tree on roadside edge.	Same as 5. Vegetation only on western road reserve, eastern highly cleared and degraded.
12	5.12 to 5.38	No	Poor	Weed invasion and previous clearing	Scattered <i>Eucalyptus pleurocarpa</i> overstorey, with dominant <i>Allocasuarina</i> sp. and Myrtaceae midstorey.
13	Along Yerritup Rd	Yes	Good	Victorian Tea Tree Scattered along edge of roadside.	Same as 5.