

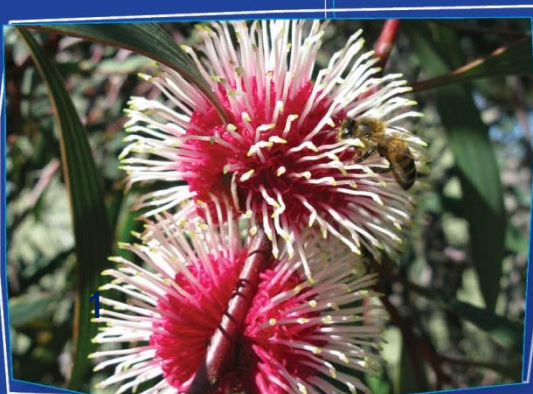
Vegetation, Flora, Fauna and Environmental Considerations Report

Shire of Esperance 2022-23 Strategic Purpose Permit
Site D – Farmers Road (SLK 0 - 2.54)



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Acknowledgement of country

The Shire of Esperance acknowledges the Kepa Kurl Wudjari people of the Nyungar nation and Ngadju people who are the traditional custodians of this land and their continuing connection to land, waters and community. We pay our respect to their Elders past, present and emerging and we extend that respect to other Aboriginal Australians today.

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LIST OF ABBREVIATIONS

BAM Act: Biosecurity and Agriculture Management Act 2007 (WA)
BC Act: Biodiversity Conservation Act 2016 (WA)
BOM: Bureau of Meteorology
DBCA: Department of Biodiversity, Conservation and Attractions
EP Act: Environmental Protection Act 1986 (WA)
EPA: Environmental Protection Authority
EPBC Act: Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
IBRA: Interim Biogeographical Regionalisation for Australia
IUCN: International Union of Conservation Nature
LGA: Local Government Area
NVIS: National Vegetation Information System
PEC: Priority Ecological Community
PF: Priority Flora (Under BC Act)
SOE: Shire of Esperance
SLK: Straight Line Kilometres (Main Roads WA)
TEC: Threatened Ecological Community
TF: Threatened Flora (Under BC Act)
TPFL: Threatened and Priority Flora Database (DBCA)
VA: Vegetation Association
WAH: Western Australian Herbarium (PERTH)
WAOL: Western Australian Organism List

1 Executive Summary

The Shire of Esperance Environmental Team was commissioned by the Shire of Esperance Asset Management department to undertake a review of the flora, vegetation and fauna values on the proposed Farmers Road project in 2022-23 as part of their Strategic Purpose Permit application.

The proposed development involves the clearing of 1.006 ha of native vegetation for the purpose of road widening during a road reconstruction.

Farmers Road is particularly narrow resulting in safety issues during harvest season. Farmers Road requires widening to maintain the safety of road users during harvest. This road is classified as an Access Road on the Shire road network providing a vital link to properties and industries west of Esperance. Traffic counts showing significant impact of heavy vehicle occupied during harvesting season and it is an approved RAV route.

To complete these works, native vegetation up to 2m from the current road footprint on both sides of the road is required to be cleared, increasing the active road footprint to 17m. This requires clearing of 1.006 ha of native vegetation. To mitigate impact of clearing vegetation, where feasible clearing will not occur to the full permitted width, conserving vegetation.

The Shire of Esperance's two Environmental Scientists completed the site assessment on Farmers Road between the 29 of September to 24 October 2022.

A total of 175 vascular plant taxa from 113 plant genera and 42 plant families were recorded within the Farmers Road survey area during the 2022 survey. The majority of taxa was recorded within the Myrtaceae (27 taxa), Proteaceae (20 taxa), Fabaceae (15 taxa), Asteraceae (12 taxa), Poaceae (11 taxa), Restionaceae (10 taxa), and Cyperaceae (9 taxa) families (Appendix 1). This total included 143 native species and 32 introduced (weed) species.

No threatened and one priority flora species pursuant to the Biodiversity Conservation Act (2016) and as listed by the Department of Biodiversity, Conservation and Attractions (DBCA, 2022c: DBCA, 2022d) were recorded within the Farmers Road survey area. No plant taxa listed as Threatened pursuant to Schedule 1 of the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 were recorded during the survey within the proposed "Site D - Farmers Road (SLK 0 – 2.54)' survey area.

Table 1: Summary of Priority flora species recorded in 'Site D – Farmers Road (SLK 0 – 2.54)' project area.

Species	Conservation Code	Total Locations	Total Plants	Total plants taking
<i>Dampiera sericantha</i>	P3	1	34	0

A total of 0.693ha of the EBPC listed 'Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongan)' Threatened Ecological Community (TEC) was present within 'Site D - Farmers Road (SLK 0 – 2.54)'. No other TECs or PECs were located within

'Site D - Farmers Road (SLK 0 – 2.54)'.

The site contains suitable foraging habitat for the EPBC listed Carnaby's cockatoo. No other threatened fauna species under either the BC Act or EPBC Act are likely to be significantly impacted upon by this proposal.

Overall, the vegetation communities mapped and species recorded in the Farmers Road survey area were consistent with the historical mapping of Beard (1976). Beard Vegetation Association 47 has had almost two thirds of its' pre-European extent cleared and what remains is poorly represented in IUCN system.

Should the development of 'Site D - Farmers Road (SLK 0 – 2.54)' go ahead the following recommendations are made as a means of minimizing the impacts of infrastructure activities on the flora, vegetation and fauna values in the area:

- Minimise clearing to minimum amount required
- Maintain existing drainage systems, spoon drains and ensuring tracks and other infrastructure areas do not disrupt or divert historic water flow patterns;
- Minimise soil disturbance during clearing and practice standard vehicle hygiene to ensure introduced (exotic) species do not become established within the Farmers Road survey area;
- Implement a management plan to prevent the spread of *Acacia pycnantha*, a priority environmental weed species; and
- Minimize all threatening processes to native vegetation.

These have been addressed in the attached Weed and Dieback plan, and provided these measures are implemented, there should be no impediments to the widening of Farmers Road.

1 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 'Farmers Road' project as Site D under the '2022-23 Strategic Purpose Permit' (Figure 1), for the purpose of road reconstruction.

1.1 Location and Scope of Project

The proposed works are located ~100 km west of Esperance townsite (6km east of Munglingup townsite), within the Shire of Esperance managed road reserve of Farmers Rd. Specifically, it is located from 0 to 2.54 km north of South Coast Highway, at straight line kilometre (SLK) 0 - 2.54 (Main Roads 2022). A point within the proposed clearing permit area is 6267166.48m N, 307956.14m E (UTM Zone 51 H, GDA94).

To complete these works, native vegetation up to 2 m from the current road footprint on both sides of the road is required to be cleared, increasing the active road footprint to 17 m. This equates to the clearing of 1.006 ha of native vegetation. To mitigate impact of clearing vegetation, where feasible clearing will not occur to the full permitted width, conserving vegetation.



Figure 1. Location of clearing permit.

1.2 Environmental Legislation and Guidelines

The Commonwealth (federal) legislation relevant to this survey is the:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The following Western Australian (state) legislation relevant to this survey include the:

- Biodiversity Conservation Act 2016 (BC Act);
- Biodiversity Conservation Act 2016 Biodiversity Conservation (Listing of Native Species) (Flora) Order 2022
- Biodiversity Conservation Act 2016 Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2022
- Biosecurity and Agriculture Management Act 2007 (BAM Act);
- Environmental Protection Act 1986 (EP Act);

Western Australian guidelines relevant to this survey are the:

- Environmental Factor Guideline: Flora and Vegetation (Environmental Protection Authority [EPA] 2016);
- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016);
- A guide to the assessment of applications to clear native vegetation, Under Part V Division 2 of the Environmental Protection Act 1986 (DWER, 2014)
- Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA, 2020)

International Agreements relevant to this survey are the:

- Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment 1974 (Japan-Australia Migratory Bird Agreement – JAMBA)
- Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 (China-Australia Migratory Bird Agreement – CAMBA)
- Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds 2007 (Republic of Korea-Australia Migratory Bird Agreement – ROKAMBA)
- Convention on Wetlands of International Importance 1971 (Ramsar Convention)

2 OBJECTIVES

The objective of this survey was to undertake a flora, fauna and vegetation assessment of the Farmers Road survey area including:

- Undertake a desktop study of the flora, fauna and vegetation of the Farmers Road survey area, with an emphasis on threatened and priority flora, threatened and priority ecological communities (TECs and PECs) and Threatened and Priority fauna;

- Review the historical literature of the Farmers Road survey area;
- Undertake a detailed survey of the Farmers Road survey area, and collect and identify the vascular plant species present;
- Review the conservation status of the vascular plant species recorded by reference to current literature and listings by the Department of Biodiversity, Conservation and Attractions and plant collections held at the Western Australian State Herbarium (WAH), and listed by the Department of Climate Change, Energy, the Environment and Water under the EPBC Act;
- Define and map the vegetation communities in the Farmers Road survey area;
- Define and map the location of any threatened and priority flora located within the Farmers Road survey area;
- Define any management issues related to flora, fauna and vegetation values;
- Provide recommendations on the local and regional significance of the vegetation communities; and
- Prepare a report summarising the findings.

3 METHODS

3.1 Desktop Assessment

A desktop assessment with a 20km buffer zone was conducted using DBCA datasets sourced under agreement for:

- WA Herbarium data (WAH), (DBCA, 2022d)
- Threatened and Priority Flora Database (TPFL) (DBCA, 2022c)
- DBCA's Esperance District Threatened Flora spatial dataset (DBCA, 2021a)
- Threatened and Priority Ecological Communities (DBCA, 2021b)
- Threatened, specially protected and priority fauna (DBCA, 2022e)
- Black cockatoo roost and breeding sites (DBCA, 2022e)

In addition, the EPBC Act Protected Matters Search Tool, was also checked to identify the possible occurrence of threatened and priority flora, fauna and threatened and priority ecological communities within the Farmers Road area. Search parameters were 'by polygon' and a 20 km buffer was applied to the search area; standard used in this IBRA subregion.

In addition, historical documentation and state datasets including:

- Vegetation mapping of the region, principally that of Beard (1976)
- 2020 Vegetation Extent by Statewide Pre-European mapping statistics
- Soil landscape mapping (DAFWA)
- Dieback Information Data Management System (DIDMS) (Gaia Resources)
- Shire of Esperance Weed Mapping Data

- Existing site digital orthophotos (Oldfield 2018)
- Atlas of Living Australia database
- Hydrographic Catchments (DWER)
- Crown Reserves (Landgate)

3.2 Field Survey

The site was inspected on 29/9/2022, by Julie Waters and Katherine Walkerden the SOE's Environmental Coordinator and Environmental Officer. A general assessment of possible ecological impacts included historical clearing, impact of fire regimes, regeneration from disturbance, waterlogging, senescence, weeds, erosion, sedimentation, invasive fauna, *Phytophthora* Dieback, and illegal dumping of rubbish.

A detailed field assessment of the flora and vegetation of the Farmers Road survey area was undertaken by Shire of Esperance botanists from 29th September and 24 October 2022 in accordance with methods outlined in Technical Guidance – Flora and vegetation surveys for environmental impact assessment (EPA 2016). All botanists held valid collection licences to collect flora for scientific purposes, issued under the BC Act.

The methodology for assessing threatened and priority flora consisted of traversing by foot the entire Farmers Road survey area. The road was used as a continuous transect. Vegetation up to 3 meters from the edge of the existing road's back-slope was assessed to accurately cover the up to 2 metre widening proposed by the clearing permit. Botanists used handheld Garmin GPS, recording all species, and collecting all but the very common, well known species.

For PF or TF species identified in the desktop survey as possible to occur, scans of pressed specimens from either the WAH or local Esperance District Herbarium were taken into the field. Suitable associated habitat for TF or PF identified in the desktop study were particularly focused on, and extensively searched. If suspected or known conservation significant flora species were encountered, a specimen was collected for subsequent identification with GPS coordinates and plant numbers recorded for the population. During the survey, a field herbarium for Farmers Road was also constructed.

All species unknown in the field were collected, pressed and dress in accordance with WAH instructions, and later identified by SOE's three Botanists, using keys, WA Herbarium's Florabase, literature and Esperance District Herbarium. Any species that were unable to be identified were submitted to the WAH for identification. Nomenclature of the species recorded is in accordance with the WAH.

The vegetation communities of 'Site D – Farmers Road (SLK 0 – 2.54)' was assessed for the presence a TEC or PEC (DBCA 2018, 2022b) 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 33 (DBCA 2022b)' definitions.

As Site D – Farmers Road is a long linear site, quadrant-based data was not used to determine if the site meet the TEC definitions, this was due to the inability to site an appropriately sized quadrant (As per Table 1, Technical Guidance – Flora and vegetation surveys for Environmental Impact Assessment (EPA 2016) within the narrow road verge area.

Only a basic fauna survey was conducted as per EPA (2020) guidelines. Observations of fauna presence, such as call sounds, footprints and scats were noted, and the area assessed for suitability of habitat within 'Site D – Farmers Road' for fauna species identified in the desktop survey. Carnaby's Black Cockatoo (*Calyptrorhynchus latirostris*) feeding, roosting and nesting habitat was also assessed using EPBC Act referral guidelines (2022).

3.3 Survey Timing

According to Table 3 in the Technical Guidance – Flora and vegetation surveys for Environmental Impact Assessment (EPA 2016), the primary survey timing for the South-west and Interzone Botanical Province is Spring (September-November). As all surveys at Farmers Road were conducted in September and October, it falls within this period. The surveys were timed, where possible, to align with peak flowering periods of conservation significant flora with the potential to occur in the Farmers Road survey area.

The 2022 spring rainfall was above average, and hence spring flowering continued for an extended period in 2022.

3.4 Vegetation Descriptions

Vegetation community was assessed during the field survey. Broad vegetation types defined by structure and composition were recorded and described using the National Vegetation Information System (NVIS) (ESCAVI 2003) classification system.

Condition of vegetation was assessed using Table 2 of the Technical Guidance – Flora and vegetation surveys for Environmental Impact Assessment (EPA 2016) categories, as 'Excellent', 'Very Good', 'Good', 'Degraded' or 'Completely Degraded'. This illustrates how healthy vegetation is, determined by

vegetation structure, weed cover, presence of dieback, historical clearing, grazing and other signs of disturbance.

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.

3.5 Survey Limitations

A general assessment was made of the survey against a range of factors that may have limited the outcomes and conclusions of this report (Table 2). Based on this assessment, the present survey has not been subject to constraints which would affect the thoroughness of the survey, and the conclusions which have been formed.

Table 2: Potential limitations affecting the conclusions made in this report.

Potential Survey Limitation	Impact on Current Survey
Availability of contextual information at a regional and local scale	Not a limitation: Reference resources such as Beard's mapping, together with online flora and vegetation information, have provided an appropriate level of information for the current survey. The vegetation of the Esperance shire has previously been mapped by Beard (1976).
Resources (i.e. were there adequate resources to complete the survey to the required standard).	Not a constraint: Adequate resources were made available by Shire of Esperance to complete the surveys.
Competency/experience of team carrying out survey; experience in the bioregion surveyed	Not a limitation: Botanists had extensive experience working within the Shire of Esperance and wider areas. Two of the botanists have consistently worked within this bioregion for more than 15 years. Botanists were familiar with flora in the area. Any unknown or potential threatened or priority flora species were collected and identified, utilising resources available at the Western Australian Herbarium and consultation with expert taxonomists.
Proportion of flora collected and identification issues	Potential limitation: While many plants were in flower during the survey, a proportion of plants encountered during the survey were sterile and may impact the chance of identification of some specimens to species level. This was the case with all of the Chenopods collected. Orchid species may not emerge each year if conditions are not favourable. Although these may affect the completeness of the species list, it is not expected to have a significant effect on mapping reliability, nor on the identification of threatened and priority species in the area as the majority were perennial species. Surveys were only undertaken in one year.

Effort and extent of survey	Potential limitation: The survey area was thoroughly covered. The threatened and priority flora search undertaken by botanists by means of foot-traverse along the edge of the road and into roadside vegetation ensured thorough coverage of the survey area. Flora that was unknown or resembled threatened or priority flora were collected, the location and habitat noted, and the number of plants estimated.
Mapping reliability	Not a constraint. Handheld GPS units were used for the survey, which for a majority of field conditions have an accuracy level of ± 5 m.
Survey timing, rainfall, season of survey	Not a limitation: The EPA (2016a) recommends that flora and vegetation surveys in the South – West Botanical Province be conducted in Spring (September-November). All surveys have been conducted in October and November which falls within this period. Rainfall in 2022 was above average, and continued well into December.
Disturbances (fire/flood/clearing)	Not a limitation: The Farmers Road survey area exhibits minimal levels of disturbance, mainly from past fire events.

4 DESKTOP ASSESSMENT RESULTS

4.1 Climate

The Munglinup climate is described as Mediterranean, characterised by cool wet winters and dry warm summers (BoM 2022). The area receives an average annual rainfall of 524mm. The Shire of Esperance received an unusually high level of rainfall in 2022 resulting in an extended flowering period.

4.2 Catchment

Site D – Farmers Road is present within the Munglinup River (Southern part of project area) and Young River (northern part of project area) catchment area. It is located approximately 25km from the coast.

4.3 Geology, Soils and Topography

Two geological unit was identified within 'Site D – Farmers Road, by Schoknecht et al. (2004). It is described as "thin Tertiary sediments over Proterozoic granite and gneiss, some small areas of Quaternary deposits, and "Tertiary marine sediments of the Pallinup formation and small outcrops of Archean granite". Within the area, there has been two soil types recorded. These include:

- Duplex sandy gravels and associated grey deep sandy (gravelly) duplex soils and minor pale deep sands.
- Grey deep and shallow sandy duplex soils (gravelly) with minor pale deep sands and gravelly duplex soils and deep sandy gravels.

During the field survey, topography was observed to be dominated by gentle rising plain in upper catchment. Using Schnoknect et al. (2004), the project topography is mapped at a fine scale, traversing two topographic areas. These include:

- Externally drained plains and rises with gently inclined slopes some small level plains on upper slopes and catchment divides
- Gently sloping rises consisting of broad crests in upper landscape positions

4.4 Regional Vegetation

The site is located within the Interim Biogeographic Regionalisation for Australia (IBRA; Thackway & Cresswell 1995) Esperance Plains region (Esp2) and Recherche sub-region. The Esp2 region is described as “Proteaceae Scrub and Mallee heaths on sandplain overlying Eocene sediments, rich in endemics. Herbfields and heaths (rich in endemics) on abrupt granite and quartzite ranges that rise from the plan. Eucalyptus woodlands occur in gullies and alluvial foot-slopes”.

Beard (1973) mapped a single vegetation association (VA) within the ‘Site D – Farmers Road’ area. VA47 Described as “Shrublands; tallerack mallee-heath” (Table 3). Almost two thirds of the pre-European extent of this VA has been cleared and what remains is poorly represented in IUCN system.

Table 3. Vegetation associations mapped by Beard (1973) within the ‘Site D – Farmers Road’, and statistics on pre-European remaining areas.

Vegetation Association	
Name	VA 47
Description	Shrublands; tallerack mallee-heath
Area mapped within site (ha)	1.53
Pre-European extent in ESP2 IBRA subregion (%)	15.06
Pre-European extent in LGA (%)	13.43
Current extent conserved in IUCN area (%)	17.68

4.5 Surrounding Land Use

The area directly included in the clearing permit application ‘Site D – Farmers Road’ is currently intact and vegetated 100 m wide road reserve (that is up to 690m wide over the southern 400m), managed by the Shire of Esperance. The current road footprint occupies 13m. The surrounding land use is agricultural. The area is within rural zoning.

The site was 2.4 km from Reserves 26410 and 35808, the closest conservation reserves. No other conservation vested reserves were within 5km of the site.

4.6 Potential Threatened and Priority Flora

Two threatened flora (TF) and 26 priority flora (PF) were recorded within a 20 km radius of the proposed impact site (Appendix 3)). Of these, 1 TF species and 16 PF species had suitable known associated habitat that corresponded with vegetation communities and soil type of 'Site D – Farmers Road' project. No confirmed records, indicating known populations, of any species were directly located within the clearing permit area.

4.7 Potential 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 Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongan)' within 'Site D – Farmers Road (SLK 0 – 2.54)' project area. No other TEC's or priority ecological communities (PEC) were identified by the desktop study as being within 'Site D – Farmers Road (SLK 0 – 2.54)' or within a 20 km buffer of the site.

4.8 Potential Threatened and Priority Fauna

31 conservation listed fauna were listed within a 20 km radius of the proposed impact site (Appendix 4), an additional 39 species were listed as by the EPBC Protected matters tool. Of these, 16 species were listed as migratory.

4.9 *Phytophthora* Dieback

Dieback Information Delivery and Management System (DIDMS; GAIA Resources, SCNRM & State NRM 2022) data shows a positive *Phytophthora cinnamomi* (PC) sample approximately 1km from the north of the 'Site D - Farmers Road' project area. No dieback mapping has occurred on this road in the past however there are numerous other positive PC and one *P. indundata* samples within 10km of the site.

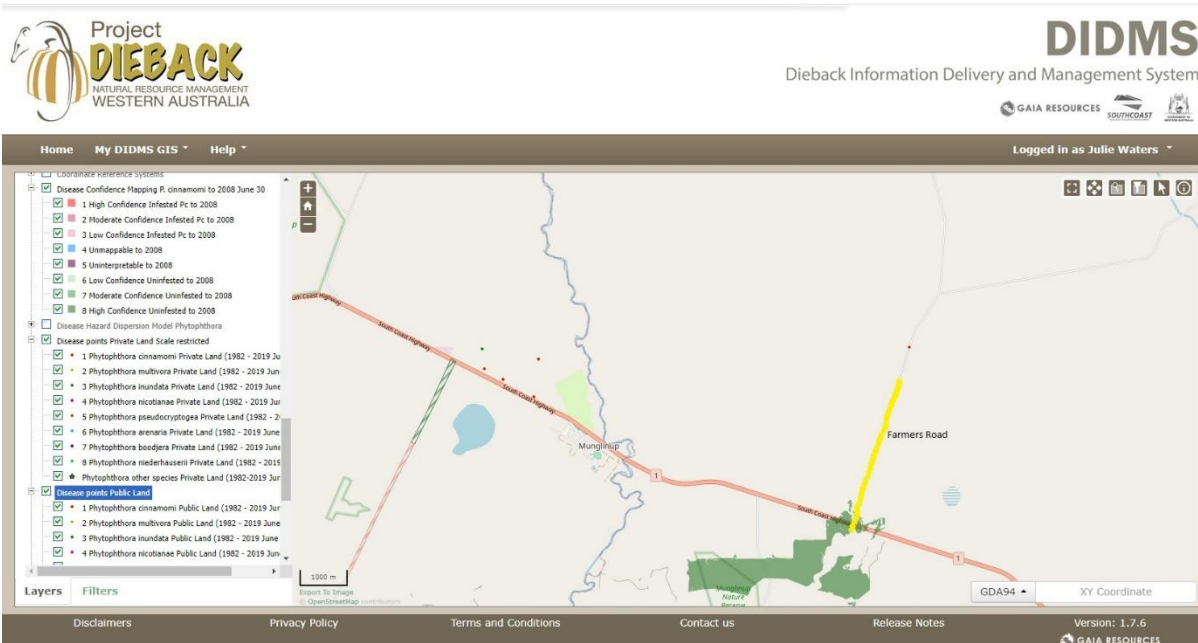


Figure 2: Screenshot of DIDMS data (taken 13/2/2023), showing approximate Site D – Farmers Road project area in yellow and positive *Phytophthora* samples near the Project Area.

5 FIELD SURVEY RESULTS AND DISCUSSION

5.1 Flora

A total of 175 vascular plant taxa from 113 plant genera and 42 plant families were recorded within the Farmers Road survey area during the 2022 survey. The majority of taxa was recorded within the Myrtaceae (27 taxa), Proteaceae (20 taxa), Fabaceae (15 taxa), Asteraceae (12 taxa), Poaceae (11 taxa), Restionaceae (10 taxa), and Cyperaceae (9 taxa) families (Appendix 1). This total included 143 native species and 32 introduced (weed) species.

Numerous specimen's unknown to surveyors were collected and verified at the WAH as non-threatened species, such as *Thelymitra vulgaris* (Accession 10048; KSW22622, Specimen retained).

A number of plant specimens collected could not be identified accurately to species level due to the absence of sufficient taxonomic characters to enable accurate identification. The principal reasons for not being able to fully identify some of the collected specimens to species level were:

- Plant material was sterile or lacked sufficient taxonomic features to permit accurate identification to species level. In these cases, the species is identified as, for example, *Tecticornia* sp. and *Atriplex* sp.
- Some of the invasive grasses were not identified down to species level due to time constraints e.g. *Lolium* sp. and *Vulpia* sp.

5.2 Threatened and Priority Flora

The targeted flora survey identified one PF species, *Dampiera sericantha*, P3, within the proposed clearing permit footprint (Section 5.2.1). Queries of spatial datasets were requested specifically for these species, to interrogate impact of proposed works on species sustainability (DBCA 2022c; DBCA 2022d). *Dampiera sericantha* is not recorded on the TPFL database. DBCA do not actively manage or monitor the majority of low priority species, due to their prevalence in the landscape relative to TF. There are 136 species recorded as priority three or four conservation status within the Shire of Esperance boundaries (DBCA 2022a).

5.2.1 *Dampiera sericantha*, Priority 3

A specimen of *Dampiera sericantha* was sent to the WA Herbarium for identification confirmation (KSW15722; Accession #9841 with specimen retained). It was confirmed as *Dampiera sericantha* by Michael Hislop on 28/12/2022. 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 14/2/2023 (Appendix 2). If proposed works occur, none of the 34 plants will be impacted upon. The plants were in vegetation type A growing between 100-250m north of South Coast Highway on both sides of the road. The road reserve in this section is considerably wider than the rest of Farmers road and the population counts did not extend into the 16ha of bushland adjacent to the road, and it is possible that the population is much larger and extends into surrounding bushland.

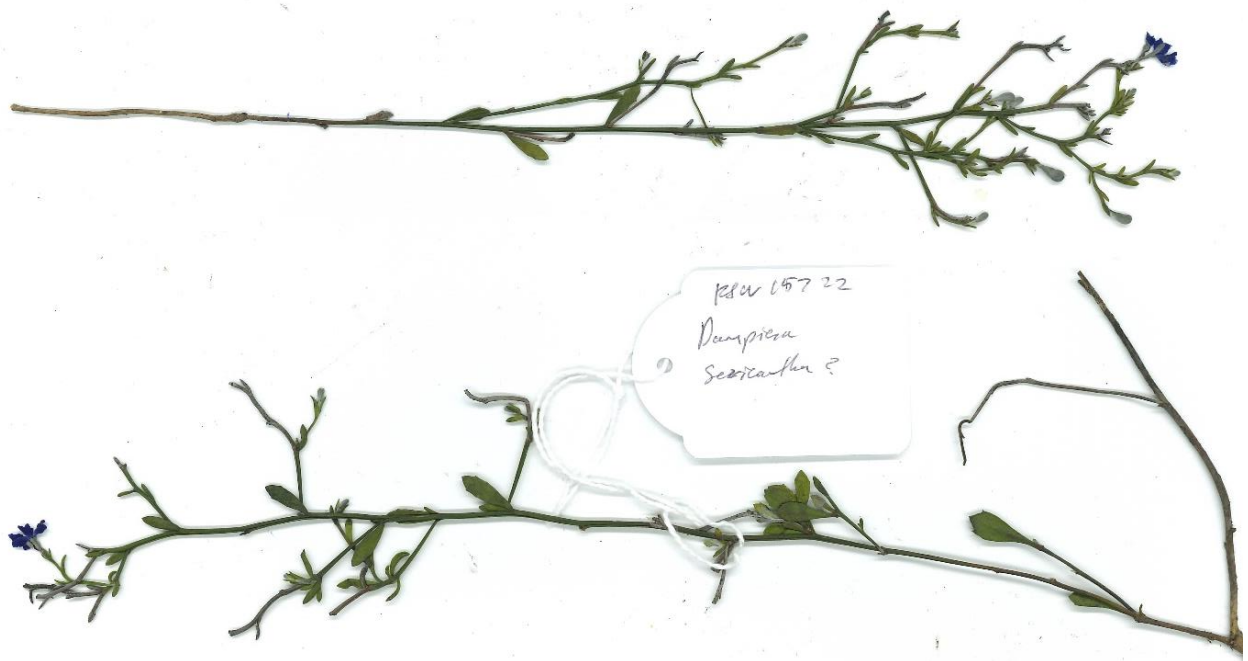


Figure 3. Specimen of Priority 3, *Dampiera sericantha* growing just outside 'Site D – Farmers Road' project area.

D. sericantha has a distribution range over 250km. It is only identifiable during spring and summer when it is flowering. 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.

Only a single record was available on *D. sericantha* from the TPFL database, so all records refer to the WA Herbarium database. *D. sericantha* has been recorded 31 times across 23 different locations. Tenure is poorly described with five locations having uninterpretable conservation security. Three recorded locations are described as being in mining tenements and have possibly been lost. Three locations are present in nature reserves and are likely to still be intact populations. The remaining 15 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. The Shire of Esperance also collected *D. sericantha* on Fuss Road in spring 2022. This confirmed new population of 40 plants (KSW15122 – Acc # 9784) has yet to be databased. Katherine Walkerden had also collected *D. sericantha* in Speddingup Nature Reserve, with 30 plants in total, this new population (KSW171-p – Acc # 9784) is also yet to be databased.

5.3 Flora Range Extensions

Specimen's that resulted in a range extension were also sent to WAH. A specimen of the non-threatened *Leucopogon canaliculatus* (KSW15622, Accession #9841, Specimen retained) was collected that resulted in a minor southern range extension.

5.4 Weeds

There was moderate weed invasion across the entirety of the proposed 'Site D – Farmers Road (SLK 0 – 2.54)' area. In most parts, just the edge of the road is highly weedy and the weeds did not spread far into the roadside vegetation. Overall, 33 invasive species were identified within the project area (Appendix 1). Of these, the most extensive and of serious concern were African Love Grass (*Eragrostis curvula*) which is present along the whole site. *Acacia pycnantha* was also planted around the private property driveway at SLK 2.49 and spreading from here. *Acacia pycnantha* is a priority environmental weed in the Shire of Esperance's Environmental Weed Strategy 2009-2018.

Weed management strategies are currently being discussed operationally, such as spraying material stockpiles in agricultural private property prior to use and periodic spraying of road verges for a 12-month period after road construction.

Several non-native species had been planted by neighboring landowners, these include Tagasaste (*Chamaecytisus palmensis*), Swamp Sheoak (*Casurina obesa*) and River Red Gum (*Eucalyptus camaldulensis*). However, these species did not appear to be naturalizing.

5.5 *Phytophthora* Dieback

Despite the very close positive *P. cinnamomi* records on the Dieback Information Delivery and Management System, the Site D – Farmers Road area does not appear to be infested with *P. cinnamomi*. All *Xanthorrhoea platyphylla* and *Lambertia inermis* plants appear very healthy and these are frequently first species to show signs of dieback if present. 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, this area is likely to be at high risk from infestation from neighboring areas by accidental spread by road users.

5.6 Vegetation Communities

Three vegetation communities were identified within the 'Site D – Farmers Road (SLK 0 – 2.54)', as defined by structure and composition (Table 4). It is believed that the Beard (1973) vegetation associations identified in Section 4.4 are an appropriate match for Vegetation type A. The scale of Beard vegetation mapping did not map this small wetland area (Vegetation type B). Vegetation type C is a previously disturbed area where the structure and composition of species has changed due to previous gravel extraction.

Table 4. Vegetation communities identified within proposed 'Site D – Farmers Road' project area.

Type	Description	Figure	Closest Matching Beard Vegetation Association	Area (ha)
A	Open <i>Nuytsia floribunda</i> , <i>Lambertia inermis</i> , and <i>Eucalyptus tetraptera</i> over mixed Proteaceae dominated scrub heath	5	VA47 "Shrublands; tallerack mallee-heath"	0.824
B	<i>Melaleuca cuticularis</i> wetland over <i>Gahnia trifida</i> and samphire	6	VA41 "Shrublands; teatree scrub"	0.159
C	Open mixed heath dominated by <i>Lepidosperma</i> (may be previously disturbed)	7		0.023
-	Completely degraded and unable to be assigned to a vegetation type			<0.001

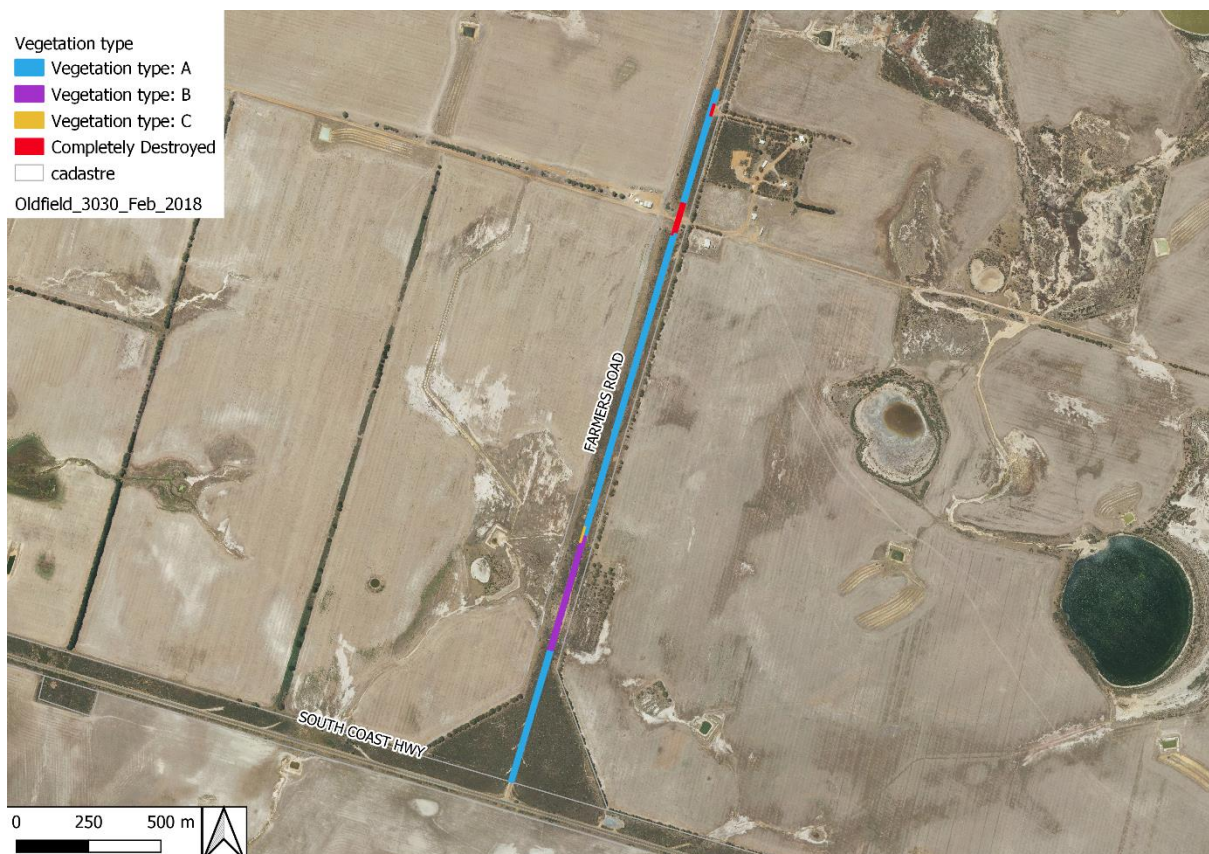


Figure 4. Vegetation types within the 'Site D – Farmers Road (SLK 0 – 2.54)' area.



Figure 5. Vegetation type A identified in 'Site D – Farmers Road (SLK 0 – 2.54)' project, described as "Open *Nuytsia floribunda*, *Lambertia inermis*, and *Eucalyptus tetraptera* over mixed Proteaceae dominated scrub heath".



Figure 6. Vegetation type B identified in 'Site D – Farmers Road (SLK 0 – 2.54)' project, described as “*Melaleuca cuticularis* wetland over *Gahnia trifida* and samphire”



Figure 7. Vegetation type C identified in 'Site D – Farmers Road' project, described as “Open mixed heath dominated by *Lepidosperma*”.

5.7 Vegetation Condition

Vegetation condition varied from Very good and excellent in the south of the project area to degraded at the north, this was mostly to do with wider buffering vegetation in the south of the project area, and higher levels of disturbance in the northern parts from agricultural operations. Some historical gravel extraction was evident along the road verge, in most cases these had rehabilitated well.

Table 5. Quantifying vegetation to be cleared by vegetation type and condition.

Vegetation Type	Excellent	Very good	Good	Degraded	Completely degraded	Total
A	-	0.352	0.341	0.131	-	0.824
B	0.146	0.014	-	-	-	0.159
C	0.023	-	-	-	-	0.023
-	-	-	-	-	<0.001	<0.001
Total	0.168	0.366	0.341	0.131	<0.001	1.006



Figure 8. Vegetation condition across 'Site D – Farmers Road (SLK 0 -2.54)' project.

5.8 Threatened Ecological Communities

One vegetation community (Vegetation type A), described as 'Open *Nuytsia floribunda*, *Lambertia inermis*, and *Eucalyptus tetraptera* over mixed Proteaceae dominated scrub heath' met criteria to be considered as the EPBC listed 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)' Threatened ecological Community. However, due to degrading factors, only areas within these vegetation communities in good condition or better were considered as Kwongkan TEC (Figure 9). In total, 0.693ha of vegetation was considered as Kwongkan TEC present within 'Site D – Farmers Road' area.

Table 6. Kwongkan TEC vegetation condition.

Vegetation Type	Excellent	Very Good	Good	Total
A	-	0.352	0.341	0.693

No other state or federally listed TECs or PEC's were present at 'Site D – Farmers Road'.

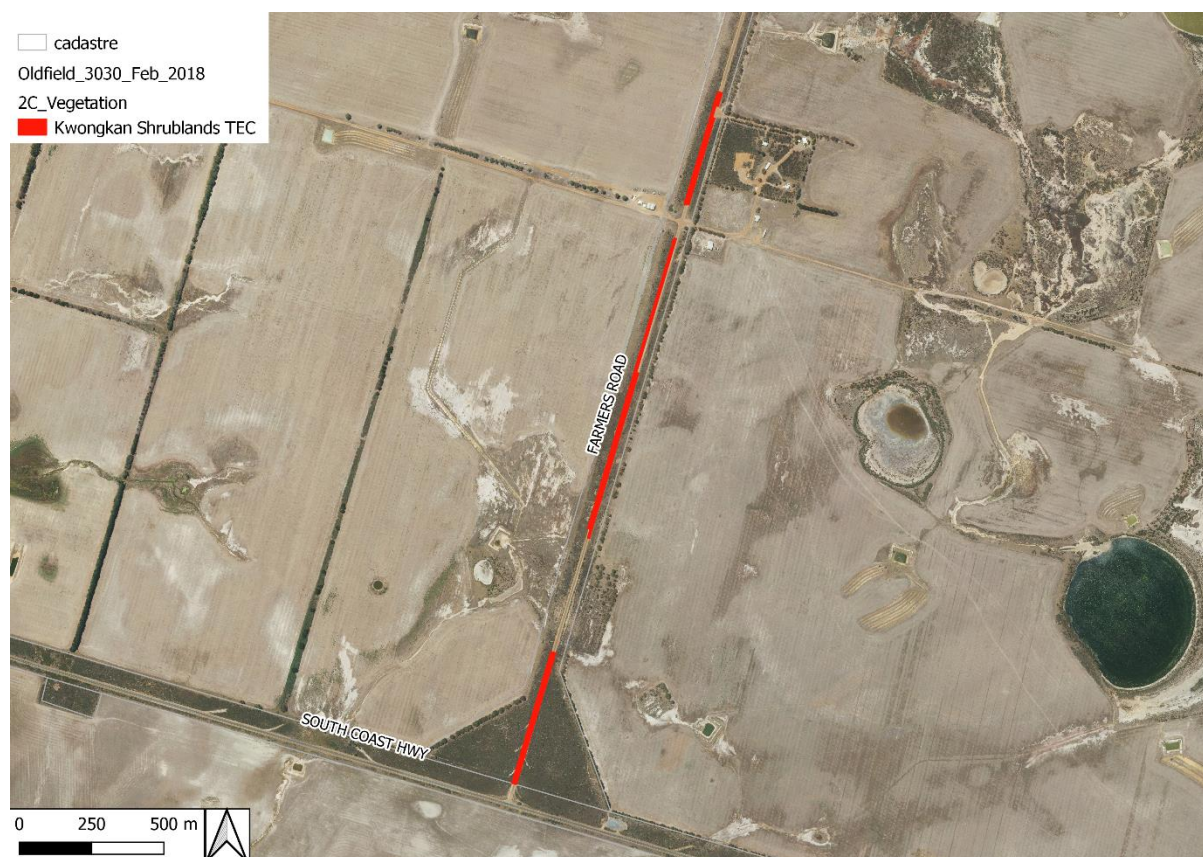


Figure 9. Vegetation communities of vegetation type A in good or better condition met threatened ecological community (TEC) 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)' within 'Site D – Farmers Road (SLK 0 - 2.54)' project.

5.9 Fauna

Of the species identified within the Desktop survey, only eight of these have suitable habitat within the proposed clearing permit area.

5.9.1 Malleefowl, *Leipoa ocellata*, VU

Three separate occurrence records of Malleefowl occur within 10km of the site.

Malleefowl habitat is described as “Semi-arid shrublands and low woodlands dominated by mallee and/or acacia”. Within ‘Site D – Farmers Road (SLK 0 - 2.54)’ project, vegetation type A, described as “Open *Nuytsia floribunda*, *Lambertia inermis*, and *Eucalyptus tetraptera* over mixed Proteaceae dominated scrub heath”, would be suitable habitat for the species. The fact that the wider road reserve at the south of the project area contains a 17-ha remnant and this connects via 30km of South Coast highway to the remnant vegetation west of the site along the Munglingup River Corridor, a 47km corridor identified in the South Coast Macro Corridor Network. No evidence of Malleefowl (such as mounds or scratchings) was observed during the field survey.

5.9.2 Chuditch, *Dasyurus geoffroii*, VU

The Chuditch's habitat is described as mostly in Jarrah (*Eucalyptus marginata*) forests and woodlands, Mallee shrublands and heathlands. Within ‘Site D – Farmers Road (SLK 0 - 2.54)’ project, vegetation type A is suitable for the species.

No evidence of the Chuditch was observed during the field survey, however these nocturnal predators would be unlikely to be observed during daylight hours.

5.9.3 Quenda, *Isodon fusciventer*, P4

Numerous Quenda records exist along the Munglingup River Corridor, 7km west of the site.

Quenda habitat is described as “Scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover”. Within ‘Site D – Farmers Road (SLK 0 - 2.54)’ project, vegetation types A and B may provide suitable habitat for this species. No evidence of Quendas (such as nests or holes) was observed during the field survey.

5.9.4 Western whipbird, *Psophodes nigrogularis*, EN

Western whipbirds inhabit dense heath-like shrubby thickets on coastal dunes, and mallee woodland or shrubland with an open upperstorey above a dense shrubby understorey. Preferred habitat is usually 2–3 metres tall and dominated by shrubs, usually with a dense shrubby understorey, and sometimes intermixed with stunted eucalypts such as Marri and Jarrah. It is unlikely that the vegetation within ‘Site

D – Farmers Road (SLK 0 - 2.54)' project is tall enough to be preferred habitat and the single record of this species identified in the desktop survey was from a sighting in 1984.

5.9.5 Heath Mouse, *Pseudomys shortridgei*, EN

The Heath mouse was listed in the EPBC protected matters tool, the species was listed 'species or species habitat may occur' in the Species Profile and Threats Database (DCCEEW). Whilst there are no records of this species with the Esperance Shire (+20km buffer), the species has been recorded in several localities in the Ravensthorpe and Lake Grace Shires, including Dragon Rocks Nature Reserve, Lake Magenta Nature Reserve, Fitzgerald River National Park and the Ravensthorpe Range area.

The species inhabits species-rich and structurally complex heathland, mixed scrub and mallee, and open woodland and forest habitats with a heath understorey. Within 'Site D – Farmers Road (SLK 0 - 2.54)' project, vegetation type A may be considered suitable habitat for the species. In WA, Heath mice have not been located in vegetation less than 10 years after fire, and the highest densities of the species have been recorded in vegetation 30 years after fire. There was no evidence of recent fires within 'Site D – Farmers Road (SLK 0 – 2.54)'. No evidence of the heath mouse (such as runways or surface nests or burrows) was observed during the field survey.

5.9.6 Western Brush Wallaby, *Notamacropus irma*, P4

The closest occurrence record of the Western Brush Wallaby was 14km from the project area, two occurrences within the 20km buffer are from 1983 and 1988, and both recorded from sightings in surveys in large >1000ha reserves.

The habitat for the species is described as "areas of Mallee and heathland and are uncommon in wet sclerophyll forests. They prefer tall open forests that supply good grazing. They particularly favour open, seasonally damp flat areas with low grasses and open scrubby bushes." Some of Vegetation type A may have be suitable habitat, especially in the southern part of the project area where the remnant vegetation is in a larger block.

5.9.7 Tammar wallaby, *Notamacropus eugenii derbianus*, P4

A vouchered museum specimen from the Ravensthorpe-Esperance Road from 1899 was the only record within the buffer zone of the site.

The Tammar Wallaby is currently known to inhabit three islands in the Houtman Abrolhos group, Garden Island near Perth, Middle and North Twin Peak Islands in the Recherche Archipelago. It is also found at several sites on the mainland - including, Dryandra, Boyagin, Tutanning, Batalling (reintroduced), Perup, private property near Pingelly, Jaloran Road timber reserve near Wagin, Hopetoun, Stirling Range National Park, and Fitzgerald River National Park.

Tamar Wallabies require dense, low vegetation for daytime shelter and open grassy areas for feeding.

The species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland. Vegetation type A may be suitable habitat for the species.

5.9.8 Peregrine falcon, *Falco peregrinus*, OS

The Peregrine Falcon is listed as occurring in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water. It is likely that the entire project area has potentially suitable hunting grounds.

The Peregrine Falcon is listed as nesting in recesses of cliff faces, tree hollows or in the large abandoned nests of other birds. 'Site D – Farmers Road (SLK 0 – 2.54)' does not provide any suitable nesting habitat.

5.9.9 Carnaby's Black Cockatoo, *Calyptorhynchus latirostris*, EN

The Shire of Esperance Black Cockatoo assessment was conducted in accordance with the EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo *Calyptorhynchus latirostris* (Endangered), Baudin's Cockatoo *Calyptorhynchus baudinii* (Endangered) and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* (Vulnerable) (Department of Agriculture, Water and the Environment, 2022). Vegetation types A provided potentially suitable foraging habitat for Carnaby's Black Cockatoo due to the presence of proteaceous species.

Table 7: Carnaby's Cockatoo Habitat Assessment.

Attribute	Context adjustor	Rationale	Score
Starting Score	Start at a score of 10 if your site is native shrubland, kwongkan heathland or woodland, dominated by proteaceous plant species	Veg A and C contain proteaceous species	10
Foraging potential	Subtract 2 from your score if there is no evidence of feeding debris on your site.	There was no evidence of feeding debris at site	-2
Connectivity	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 1 km of your site.	There are good paddock trees and other Kwongkan vegetation within 1km	-
Proximity to breeding	Subtract 2 if you have evidence to conclude that your site is more than 12km from breeding habitat.	Breeding habitat is >12km way	-2
Proximity to roosting	Subtract 1 if you have evidence to conclude that your site is more than 20km from a known night roosting habitat.	5km to Munglingup River corridor which is likely to be a night roost given large trees	-
Impact from significant plant disease	Subtract 1 if your site has disease present (e.g. <i>Phytophthora</i> spp. or Marri canker) and the disease is effecting preferred food plants present.	Known <i>Phytophthora</i> within 1km of the site.	-1

Total			5
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As per Table 5 (Section 5.8), there was only 0.352 ha in Very Good condition; and 0.341 ha in Good condition proposed to be cleared under 'Site D – Farmers Road (SLK 0 – 2.54)'.

Given that the site did not:

- contain any nesting sites or large trees with hollows;
- contain night roosting areas;

a referral for assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is unlikely to be required.

6 REVIEW OF 10 CLEARING PRINCIPLES FOR NATIVE VEGETATION

The 'Site D – Farmers Road (SLK 0 -2.54)' 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).

6.1 Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Biodiversity at this site is high with 140 native species recorded over three vegetation communities.

6.2 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 vegetation contains foraging habitat for Carnaby's Black Cockatoo due to the presence of vegetation high in Proteaceous species. It may contain suitable habitat for malleefowl, chuditch, Quenda, Heath mice, Western Brush and Tammar wallabies. None of this would be considered significant habitat for these species.

6.3 Principle (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

One priority species *Dampiera sericantha* was observed just outside the project area, no *Dampiera sericantha* plants are likely to be impacted upon.

6.4 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.

0.693 hectares of vegetation met the definition of the EPBC listed Kwongkan TEC, no other TEC's or PEC's were relevant to the study area.

6.5 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 contributing to ecological linkages in the area. However, the amount of vegetation being cleared and the fact that this is a 100m wide road reserve which will still exist as a wildlife corridor after road widening does not constitute being a significant impact.

6.6 Principle (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Vegetation type B '*Melaleuca cuticularis* wetland over *Gahnia trifida* and samphire' was considered wetland vegetation. 0.159 hectares of this vegetation type is proposed to be cleared.

6.7 Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Vegetation within the road reserve will still provide function as windbreaks and erosion control for the agricultural areas surrounding it after the small area of vegetation is cleared.

6.8 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 2.4 kilometres away from Reserves 26410 and 35808. The relatively low amount of native vegetation cleared will have little effect on the ecological linkages to these reserves.

6.9 Principle (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Unlikely to have any significant impacts.

6.10 Principle (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Unlikely to have any significant impacts.

7 RECOMMENDATIONS

As Shire Environmental Coordinator signs off on project work packs the following recommendations will be included within the internal SOE approval process for the road project.

- All vehicles and construction equipment to be cleaned prior to start of the project

- Removal and disposal of *Acacia pycnantha* trees around SLK 2.49 will be carried out prior to the start of the project to ensure these are not spread.
- Works to be carried out in the dry(summer) months to minimise spread of dieback.

8 LIST OF PERSONNEL

The following Shire of Esperance Staff were involved in this project.

Name	Julie Waters
Position	Environmental Coordinator
Project Involvement	Desktop and Field Survey, Specimen Identification, GIS Mapping Data Interpretation and Report writing
Qualifications	BEnvSc (Hons)
Experience	20 years working in environmental field including Flora Conservation Officer for previous DBCA, and 15 years' experience as a botanist in the region
Scientific Licence	FT61000787

Name	Katherine Walkerden
Position	Environmental Officer
Project Involvement	Desktop and Field Survey, Specimen Identification, GIS Mapping, Data Interpretation and Report writing
Qualifications	BSc, MEnvSc
Experience	Two years' experience as a Botanist in the region (as of April 2023)
Scientific Licence	FT61000788

Name	Rosamund Mary Hoggart
Position	Environmental Assistant
Project Involvement	Specimen Identification
Qualifications and Experience	BSc (Hons)Ag
	15 years' experience as a botanist in the region and is highly regarded by Esperance Wildflower Society and her peers in Esperance as one of the best botanists in Esperance.
Scientific Licence	N/A

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10 APPENDICES

Appendix 1: Incidental species list

Family	Genus	Species	Weed	WA Conservation Status	Herbarium Reference
Anarthraceae	<i>Anarthria</i>	<i>scabra</i>			
Apiaceae	<i>Xanthosia</i>	<i>huegelii</i>			
Araliaceae	<i>Trachymene</i>	<i>pilosa</i>			
Asparagaceae	<i>Asparagus</i>	<i>asparagoides</i>	x		
Asparagaceae	<i>Laxmannia</i>	<i>minor</i>			
Asparagaceae	<i>Thysanotus</i>	<i>patersonia</i>			
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>	x		
Asteraceae	<i>Blennospora</i>	<i>drummondii</i>			
Asteraceae	<i>Cirsium</i>	<i>vulgare</i>	X		
Asteraceae	<i>Cotula</i>	<i>coronopifolia</i>	X		
Asteraceae	<i>Erigeron</i>	<i>bonariensis</i>	x		
Asteraceae	<i>Hyalosperma</i>	<i>demissum</i>			
Asteraceae	<i>Hypochaeris</i>	<i>radicata</i>	x		
Asteraceae	<i>Podotheca</i>	<i>angustifolia</i>			
Asteraceae	<i>Pseudognaphalium</i>	<i>luteoalbum</i>			
Asteraceae	<i>Senecio</i>	<i>quadridentatus</i>			
Asteraceae	<i>Sonchus</i>	<i>oleraceus</i>	x		
Asteraceae	<i>Ursinia</i>	<i>anthemoides</i>	x		
Brassicaceae	<i>Raphanus</i>	<i>raphanistrum</i>	x		
Campanulaceae	<i>Monopsis</i>	<i>debilis</i>	x		
Campanulaceae	<i>Wahlenbergia</i>	<i>capensis</i>	x		
Campanulaceae	<i>Wahlenbergia</i>	<i>gracilentia</i>			
Caryophyllaceae	<i>Petrorhagia</i>	<i>dubia</i>	x		
Caryophyllaceae	<i>Polycarpon</i>	<i>tetraphyllum</i>	x		
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>			
Casuarinaceae	<i>Allocasuarina</i>	<i>lehmanniana</i> ssp. <i>ecarinata</i>			
Casuarinaceae	<i>Allocasuarina</i>	<i>thuyoides</i>			
Casuarinaceae	<i>Casuarina</i>	<i>obesa</i>	X		
Centrolepidaceae	<i>Aphelia</i>	<i>sp. Albany</i>			
Centrolepidaceae	<i>Centrolepis</i>	<i>aristata</i>			
Centrolepidaceae	<i>Centrolepis</i>	<i>polygyna</i>			
Chenopodiaceae	<i>Atriplex</i>	<i>sp.</i>			
Chenopodiaceae	<i>Tecticornia</i>	<i>sp.</i>			

Chenopodiaceae	<i>Tecticornia</i>	<i>sp.</i>			
Cyperaceae	<i>Caustis</i>	<i>dioica</i>			
Cyperaceae	<i>Ficinia</i>	<i>nodosa</i>			
Cyperaceae	<i>Gahnia</i>	<i>trifida</i>			
Cyperaceae	<i>Isolepis</i>	<i>marginata</i>			
Cyperaceae	<i>Lepidosperma</i>	<i>squamatum</i>			
Cyperaceae	<i>Schoenus</i>	<i>breviculmis</i>			
Cyperaceae	<i>Schoenus</i>	<i>laevigatus</i>			
Cyperaceae	<i>Tricostularia</i>	<i>neesii</i>			
Dilleniaceae	<i>Hibbertia</i>	<i>acerosa</i>			
Dilleniaceae	<i>Hibbertia</i>	<i>gracilipes</i>			
Droseraceae	<i>Drosera</i>	<i>drummondii</i>			
Droseraceae	<i>Drosera</i>	<i>glanduligera</i>			
Droseraceae	<i>Drosera</i>	<i>moorei</i>			
Ericaceae	<i>Andersonia</i>	<i>parvifolia</i>			
Ericaceae	<i>Conostephium</i>	<i>drummondii</i>			
Ericaceae	<i>Leucopogon</i>	<i>canaliculatus</i>			KSW15622 ACC9841
Ericaceae	<i>Lysinema</i>	<i>ciliatum</i>			
Ericaceae	<i>Styphelia</i>	<i>sp. Newdegate</i>			
Fabaceae	<i>Acacia</i>	<i>crispula</i>			
Fabaceae	<i>Acacia</i>	<i>cyclops</i>			
Fabaceae	<i>Acacia</i>	<i>gonophylla</i>			
Fabaceae	<i>Acacia</i>	<i>pycnantha</i>	x		
Fabaceae	<i>Acacia</i>	<i>saligna</i>			
Fabaceae	<i>Aotus</i>	<i>sp. Esperance</i>			
Fabaceae	<i>Chamaecytisus</i>	<i>palmensis</i>	x		
Fabaceae	<i>Daviesia</i>	<i>incrassata</i>			
Fabaceae	<i>Daviesia</i>	<i>teretifolia</i>			
Fabaceae	<i>Gastrolobium</i>	<i>spinosum</i>			
Fabaceae	<i>Gompholobium</i>	<i>knightianum</i>			
Fabaceae	<i>Jacksonia</i>	<i>viscosa</i>			
Fabaceae	<i>Ornithopus</i>	<i>compressus</i>	x		
Fabaceae	<i>Pultenaea</i>	<i>barbata</i>			
Fabaceae	<i>Pultenaea</i>	<i>indira ssp. indira</i>			
Goodeniaceae	<i>Dampiera</i>	<i>lavandulacea</i>			
Goodeniaceae	<i>Dampiera</i>	<i>sacculata</i>			
Goodeniaceae	<i>Dampiera</i>	<i>sericantha</i>		P3	KSW15722 ACC9841
Goodeniaceae	<i>Goodenia</i>	<i>pterigosperma</i>			

Goodeniaceae	<i>Lechenaultia</i>	<i>formosa</i>			
		<i>seorsifolia</i> ssp. <i>seorsifolia</i>			
Haemodoraceae	<i>Conostylis</i>	<i>vaginata</i>			
Haemodoraceae	<i>Conostylis</i>	<i>scabrum</i>			
Hemerocallidaceae	<i>Chamaescilla</i>	<i>corymbosa</i>			
Iridaceae	<i>Patersonia</i>	<i>lanata</i>			
Iridaceae	<i>Patersonia</i>	<i>occidentalis</i>			
Iridaceae	<i>Patersonia</i>	<i>occidentalis</i>			
Iridaceae	<i>Romulea</i>	<i>rosea</i>	x		
Juncaceae	<i>Juncus</i>	<i>bufonius</i>	x		
Loranthaceae	<i>Nuytsia</i>	<i>floribunda</i>			
Lythraceae	<i>Lythrum</i>	<i>hyssopifolia</i>	X		
Malvaceae	<i>Lasiopetalum</i>	<i>rosmarinifolium</i>			
Malvaceae	<i>Malva</i>	<i>parviflora</i>	x		
Myrtaceae	<i>Beaufortia</i>	<i>empetrifolia</i>			
Myrtaceae	<i>Beaufortia</i>	<i>schaueri</i>			
Myrtaceae	<i>Calothamnus</i>	<i>gracilis</i>			
Myrtaceae	<i>Calytrix</i>	<i>lechenaultii</i>			
Myrtaceae	<i>Chamelaucium</i>	<i>ciliatum</i>			
Myrtaceae	<i>Conothamnus</i>	<i>aureus</i>			
Myrtaceae	<i>Darwinia</i>	<i>vestita</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>camaldulensis</i>	x		
Myrtaceae	<i>Eucalyptus</i>	<i>incrassata</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>perangusta</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>tetraptera</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>uncinata</i>			
Myrtaceae	<i>Eucalyptus</i>	<i>pleurocarpa</i>			
Myrtaceae	<i>Kunzea</i>	<i>baxteri</i>			
Myrtaceae	<i>Leptospermum</i>	<i>erubescens</i>			
Myrtaceae	<i>Leptospermum</i>	<i>laevigatum</i>	x		
Myrtaceae	<i>Leptospermum</i>	<i>maxwellii</i>			
Myrtaceae	<i>Melaleuca</i>	<i>brevifolia</i>			
Myrtaceae	<i>Melaleuca</i>	<i>cuticularis</i>			
Myrtaceae	<i>Melaleuca</i>	<i>scabra</i>			
Myrtaceae	<i>Melaleuca</i>	<i>striata</i>			
Myrtaceae	<i>Melaleuca</i>	<i>viminea</i> ssp. <i>viminea</i>			
Myrtaceae	<i>Micromyrtus</i>	<i>elobata</i> ssp. <i>elobata</i>			
Myrtaceae	<i>Phymatocarpus</i>	<i>maxwellii</i>			
Myrtaceae	<i>Taxandria</i>	<i>spathulata</i>			

Myrtaceae	<i>Verticordia</i>	<i>chrysanthella</i>			
Myrtaceae	<i>Verticordia</i>	<i>inclusa</i>			
Onagraceae	<i>Oenothera</i>	<i>stricta</i>	x		
Orchidaceae	<i>Caladenia</i>	<i>cairnsiana</i>			
Orchidaceae	<i>Diuris</i>	<i>concinna</i>			
Orchidaceae	<i>Microtis</i>	<i>media</i>			
Orchidaceae	<i>Thelymitra</i>	<i>antennifera</i>			
Orchidaceae	<i>Thelymitra</i>	<i>vulgaris</i>			KSW22622 ACC10048
Orobanchaceae	<i>Orobanche</i>	<i>minor</i>	x		
Pittosporaceae	<i>Billardiera</i>	<i>fusiformis</i>			
Pittosporaceae	<i>Billardiera</i>	<i>lehmanniana</i>			
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>			
Poaceae	<i>Austrostipa</i>	<i>hemipogon</i>			
Poaceae	<i>Austrostipa</i>	<i>scabra</i>			
Poaceae	<i>Briza</i>	<i>maxima</i>	x		
Poaceae	<i>Briza</i>	<i>minor</i>	x		
Poaceae	<i>Ehrharta</i>	<i>calycina</i>	x		
Poaceae	<i>Eragrostis</i>	<i>curvula</i>	x		
Poaceae	<i>Lolium</i>	<i>sp.</i>	x		
Poaceae	<i>Neurachne</i>	<i>alopecuroidea</i>			
Poaceae	<i>Polypogon</i>	<i>monspeliensis</i>			
Poaceae	<i>Vulpia</i>	<i>sp.</i>	x		
Polygonaceae	<i>Comesperma</i>	<i>calymega</i>			
Primulaceae	<i>Lysimachia</i>	<i>arvensis</i>	x		
Proteaceae	<i>Adenanthos</i>	<i>cuneatus</i>			
Proteaceae	<i>Banksia</i>	<i>armata</i>			
Proteaceae	<i>Banksia</i>	<i>obovata</i>			
Proteaceae	<i>Banksia</i>	<i>pilostylis</i>			
Proteaceae	<i>Banksia</i>	<i>violacea</i>			
Proteaceae	<i>Banksia</i>	<i>repens</i>			
Proteaceae	<i>Grevillea</i>	<i>concinna</i>			
Proteaceae	<i>Grevillea</i>	<i>nudiflora</i>			
Proteaceae	<i>Hakea</i>	<i>denticulata</i>			
Proteaceae	<i>Hakea</i>	<i>ferruginea</i>			
Proteaceae	<i>Hakea</i>	<i>obliqua</i>			
Proteaceae	<i>Hakea</i>	<i>pandanicaarpa ssp. pandanicaarpa</i>			
Proteaceae	<i>Hakea</i>	<i>trifurcata</i>			
Proteaceae	<i>Hakea</i>	<i>varia</i>			

Proteaceae	<i>Isopogon</i>	<i>polycephalus</i>			
Proteaceae	<i>Isopogon</i>	<i>trilobus</i>			
Proteaceae	<i>Lambertia</i>	<i>inermis</i> var. <i>drummondii</i>			
Proteaceae	<i>Lambertia</i>	<i>inermis</i> var. <i>inermis</i>			
Proteaceae	<i>Petrophile</i>	<i>squamata</i> ssp. <i>Ravensthorpe</i>			
Proteaceae	<i>Synaphea</i>	<i>oligantha</i>			
Proteaceae	<i>Synaphea</i>	<i>petiolaris</i>			
Pteridaceae	<i>Cheilanthes</i>	<i>sieberi</i>			
Restionaceae	<i>Chordifex</i>	<i>crispatus</i>			
Restionaceae	<i>Chordifex</i>	<i>laxus</i>			
Restionaceae	<i>Desmocladus</i>	<i>biformis</i>			
Restionaceae	<i>Desmocladus</i>	<i>myriocladus</i>			
Restionaceae	<i>Hypolaena</i>	<i>humilis</i>			
Restionaceae	<i>Hypolaena</i>	<i>exsulca</i>			
Restionaceae	<i>Hypolaena</i>	<i>fastigiata</i>			
Restionaceae	<i>Lepidobolus</i>	<i>chaetocephalus</i>			
Restionaceae	<i>Leptocarpus</i>	<i>crebriculmis</i>			
Restionaceae	<i>Lyginia</i>	<i>imberbis</i>			
Rhamnaceae	<i>Cryptandra</i>	<i>pungens</i>			
Rubiaceae	<i>Opercularia</i>	<i>vaginata</i>			
Rutaceae	<i>Boronia</i>	<i>spathulata</i>			
Scrophulariaceae	<i>Zaluzianskya</i>	<i>divaricata</i>			
Solanaceae	<i>Solanum</i>	<i>nigricans</i>	x		
Stylidiaceae	<i>Stylidium</i>	<i>rupestre</i>			
Xanthorrhoeaceae	<i>Xanthorrhoea</i>	<i>platyphylla</i>			

Appendix 2: Threatened and Priority Flora Report Forms



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 (TPFR) manual on the DBCA website at www.dbca.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-species-and-communities

TAXON: <i>Dampiera sericantha</i>		TPFL Pop. No.: 	
OBSERVATION DATE: 29/9/2022		CONSERVATION STATUS: P3 New population ☒	
OBSERVER/S: Katherine Walkerden, Julie Waters		PHONE: 0416558774	
ROLE: Environmental Officers		ORGANISATION: Shire of Esperance	
EMAIL: Katherine.Walkerden@esperance.wa.gov.au			

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

Farmers road 100-250m north of South Coast Highway on both sides of the road

Reserve No.:

DBCA DISTRICT: Esperance		LGA: Esperance		Land manager present: ☒	
DATUM: COORDINATE 8: (If UTM coords provided, Zone is also required) METHOD USED:					
GDA94 / MGA94 ☒		DecDegrees ☒ DegMinSec ☒ UTM ☒		GPS ☒ Differential GPS ☒ Map ☒	
AGDB4 / AMGB4 ☒		Let / Northing: 307852		No. satellites: Map used: 	
WGS84 ☒		Long / Easting: 6266817		Boundary polygon captured: ☒ Map scale: 	
Unknown ☒		ZONE: 51			

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): 30 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	34	 	 	
Dead	 	 	 	

Area of pop (m²):

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

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: 70%

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 widening	N	N	S
Based on designs submitted none of the plants will be impacted upon			
• 			
• 			



Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite ☐	(on soil surface; eg gravel, quartz fields)	Sand ☒	Red ☐	Well drained ☒
Hill ☐	Dolerite ☐		Sandy loam ☐	Brown ☐	Seasonally inundated ☐
Ridge ☐	Laterite ☒		Loam ☐	Yellow ☐	Permanently inundated ☐
Outcrop ☐	Ironstone ☐	0-10% ☐	Clay loam ☐	White ☐	Tidal ☐
Slope ☒	Limestone ☐	10-30% ☐	Light clay ☐	Grey ☒	
Flat ☐	Quartz ☐	30-50% ☐	Peat ☐	Black ☐	
Open depression ☐	Specify other: _____	50-100% ☐	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. atkinsiana, B. icterica);
2. Open shrubland (Hibbertia sp., Acacia spp.);
3. Isolated clumps of sedges (M. tetragona)

1. Open Nuytsia floribunda and Lambertia inermis scrub heath

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:

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 COMMENT 8: (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

FLORA AUTHORIZATION / LICENCE No: ET61000788 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 authorisation/licence should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. ☒ Regional Herb. ☐ District Herb. ☐ Other: _____

LODGE: WA Herb Lodgement No: K5W15722 ACC9841

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

COPY SENT TO: Regional Office ☐ District Office ☒ Other: _____

Submitter of Record: Julie Waters

Role: Environmental Coordinator

Signed: _____

Date: 14/2/2023

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

RECORD 8: Please forward to Flora Administrative Officer, Species and Communities Program.

Record entered by:

Sheet No.:

Record entered in Database:

Appendix 3: Description of Threatened and Priority Flora Species with the Potential to occur within the Farmers Road Survey Area

Threatened or priority flora identified by the desktop study to be present within a 20 km radius of 'Site D – Farmers Road (SLK 0 – 2.54)' project area, using Threatened and Priority Flora Reporting (TPFL; DBCA 2022c), WA Herbarium (DBCA 2022d) 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 (CR) and endangered (EN).

Species	Conservation Status	Associated Habitat	Likely to occur	Distance from site (km)
<i>Allocasuarina hystricosa</i>	P4	Restricted to damp areas/seasonal wetlands – including road gutters	Possible	13.11
<i>Amanita inculta</i>	P2	Damp, clayey soil.	Possible	18.81
<i>Astartea reticulata</i>	P3	Restricted to damp areas/seasonal wetlands – including road gutters	Possible	12.46
<i>Austrobaeckea uncinella</i>	P3	Yellow or white sand, clay loam. Edges of salt lakes, salt creeks, sandplains.	Possible	18.36
<i>Boronia oxyantha</i> var <i>brevicalyx</i>	P3	Mallee Heath	Possible	12.95
<i>Bossiaea flexuosa</i>	P3	Grows after fire in soil over gravel or deep sands, often near salt lakes		18.88
<i>Caladenia arrecta</i>	P4	Grows on loam, gravel, and laterite. Associated with moist conditions.	Possible	4.88
<i>Commersonia rotundifolia</i>	P3	Woodland, often after fire	Unlikely	7.59
<i>Conostylis lepidospermoides</i>	TF - EN	Grey or yellow-brown sand over laterite. Low Mallee woodland, Kwongkan	Possible	3.98
<i>Dampiera sericantha</i>	P3	Sand sometimes with gravel. Associated with plains.	Possible	0.37
<i>Dampiera</i> sp. <i>Ravensthorpe</i> (G.F. Craig 8277)	P3	Rocky outcrops or rocky soil	No	5.39
<i>Daviesia pauciflora</i>	P3	Deep yellow sands	Possible	0.46
<i>Eucalyptus missilis</i> x	P4	Sand over limestone or granite. Coastal sites.	Possible	13.43
<i>Eucalyptus preissiana</i> subsp. <i>lobata</i>	P4	Coastal limestone rises and sand dunes	Unlikely	14.64
<i>Grevillea fastigiata</i>	P4	Red clay, granite. Munglinup record geographically inaccurate.	No	3.46
<i>Hopkinsia adscendens</i>	P3	Sand. Dry or seasonally damp habitats along streams.	Possible	19.04

<i>Lepidium pseudotasmanicum</i>	P4	Loam, sand. Edge of creek.	Possible	17.45
<i>Lepidosperma</i> sp. Mt Chester (S. Kern et al. LCH 16596)	P1	Eucalypt woodland on rocky slopes	No	7.04
<i>Styphelia blepharolepis</i>	P4	Grey sand. Kwongkan often in lower parts	Possible	16.18
<i>Leucopogon</i> sp. Cascades (M. Hislop 3693)	P1	Mallee woodland, brown sandy loam	Possible	8.35
<i>Persoonia brevirhachis</i>	P3	White or yellow sand, gravelly sandy soils. Scrub Heath with <i>Allocasuarina</i>	Possible	12.98
<i>Pultenaea calycina</i> subsp. <i>proxena</i>	P4	Sand, clay, sandy clay or loam, with gravel, over magnesite. Moderate slopes, adjacent to creek beds.	Possible	8.18
<i>Rhizanthella johnstonii</i>	TF - CR	Growing under <i>Melaleuca uncinata</i> in dense shrubland.	No	7.13
<i>Stachystemon vinosus</i>	P4	Fine loamy sand, stony soils. Sandplains, rock crevices on breakaways.	Possible	7.44

Appendix 4: Description of Threatened and Priority Fauna species with the potential to occur within the Farmers road survey area

Threatened or priority Fauna identified by the desktop study to be present within a 20 km radius of 'Site D – Farmers Road (SLK 0 - 2.54)' project area using the DBCA Threatened and Priority Fauna dataset (DBCA, 2022e) and using the EPBC Act Protected Matters Report.

Nt. Acronyms used in the table include critically endangered (CR) and endangered (EN), Vulnerable (VU), other specially protected (OS), Priority (P), Migratory (MI), and Conservation Dependent (CD).

Scientific Name	Common Name	WA cons. status	EPBC status	Dist (km)	EPBC protected matters tool	Habitat	Likely to occur
<i>Balaenoptera musculus</i>	Blue Whale		EN		x	Marine	No
<i>Dasyurus geoffroii</i>	Chuditch, western quoll	VU	VU	14741	x	Open forest, low open forest, woodland, and open shrub	Potentially
<i>Eubalaena australis</i>	Southern Right Whale		EN		x	Marine	No
<i>Isodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4		7327		Scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover	Potentially
<i>Neophoca cinerea</i>	Australian Sea-lion		EN		x	Marine	No
<i>Notamacropus eugenii derbianus</i>	Tammar wallaby	P4		16173		Dense, low vegetation for daytime shelter and open grassy areas for feeding. This species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland.	Potentially

<i>Notamacropus irma</i>	Western brush wallaby	P4		14136		Found in some areas of Mallee and heathland and are uncommon in wet sclerophyll forests. They prefer tall open forests that supply good grazing. They particularly favour open, seasonally damp flat areas with low grasses and open scrubby bushes.	Potentially
<i>Pseudomys shortridgei</i>	Heath Mouse, Dayang, Heath Rat		EN		x	Species-rich dry heathland, mixed scrub, mallee, open woodland and forest habitats with a heath understorey. The species has not been located in vegetation less than 10 years post-fire and it has been known to attain high densities in heath 30 years post-fire.	Potentially
<i>Actitis hypoleucos</i>	Common Sandpiper	MI	MI	13643		Coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats	No
<i>Apus pacificus</i>	Fork-tailed swift	MI	MI	17519		Mostly occur over inland plains but sometimes above foothills or in coastal areas. Also over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh.	No
<i>Ardenna tenuirostris</i>	Short-tailed shearwater	MI	MI	18438		Marine	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern		EN		x	Shallow vegetated freshwater or brackish swamps	No
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	MI	1562		Grassy edges of shallow inland freshwater wetlands. They are also found around sewage farms, flooded fields, mudflats, mangroves, rocky	No

						shores and beaches.	
<i>Calidris canutus</i>	Red Knot, Knot		EN		x	On the coast in sandy estuaries with tidal mudflats.	No
<i>Calidris ferruginea</i>	Curlew sandpiper	CR	MI	13643	x	Intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters.	No
<i>Calidris melanotos</i>	Pectoral sandpiper	MI	MI	14917		Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire.	No
<i>Calidris ruficollis</i>	Red-necked stint	MI	MI	12580		Coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores.	No
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	EN	6220		Southern eucalypt forests of mainly Jarrah, Marri and Karri.	No
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	EN	746		Kwongkan shrub or heathland. Presence of Hakea, Banksia and Pine species indicate potential feeding habitat.	Potentially
<i>Cereopsis novaehollandiae grisea</i>	Cape Barren Goose		VU		x	Offshore islands, usually granite, in areas of pasture, tussock grass or low heathy scrub. During the summer, the non-breeding geese generally leave the islands for the mainland where they feed on improved pasture.	No
<i>Charadrius</i>	Greater Sand Plover,		VU		x	Coastal locations favouring sheltered sandy,	No

<i>leschenaultii</i>	Large Sand Plover					shelly or muddy beaches, large intertidal mudflats and sandbanks, estuaries, tidal lagoons, rocky islands and coral reefs. Inland saline wetlands close to the coast are also used occasionally.	
<i>Diomedea antipodensis</i>	Antipodean Albatross		VU		x	Marine	No
<i>Diomedea dabbenena</i>	Tristan Albatross		EN		x	Marine	No
<i>Diomedea epomophora</i>	Southern Royal Albatross		VU		x	Marine	No
<i>Diomedea exulans</i>	Wandering Albatross		VU		x	Marine	No
<i>Diomedea sanfordi</i>	Northern Royal Albatross		EN		x	Marine	No
<i>Falco hypoleucos</i>	Grey Falcon		VU		x	Arid and semi-arid zones where rainfall is less than 500mm. Timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses	No
<i>Falco peregrinus</i>	Peregrine falcon	OS		1627		Most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water	Potentially
<i>Halobaena caerulea</i>	Blue Petrel		VU		x	Marine	No
<i>Hydroprogne caspia</i>	Caspian Tern	MI	MI	14917		Usually forages in open wetlands, including lakes and rivers.	No
<i>Leipoa ocellata</i>	Malleefowl	VU	VU	1398	x	Semi-arid shrublands and low woodlands dominated by mallee and/or acacia.	Potentially
<i>Limosa lapponica</i>	Bar-tailed godwit	MI	MI	14917		Coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets,	No

						harbours, coastal lagoons and bays	
<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit		CR		x	Rarely far from the coast. They forage on intertidal mudflats or in shallow water, feeding on worms, molluscs and crustaceans	No
<i>Macronectes giganteus</i>	Southern Giant-Petrel		EN		x	Marine	No
<i>Macronectes halli</i>	Northern Giant Petrel		VU		x	Marine	No
<i>Numenius madagascariensis</i>	Eastern curlew	CR	CR	14917	x	Marshy and swampy wetlands and lakeshores.	No
<i>Numenius phaeopus</i>	Whimbrel	MI	MI	15715		Found mainly on the coast, on tidal and estuarine mudflats, especially near mangroves.	No
<i>Oxyura australis</i>	Blue-billed duck	P4		13090		Prefers freshwater swamps, with dense vegetation including Typha; although it has appeared in lignum swamps in more coastal areas	No
<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)		VU		x	Marine	No
<i>Pandion haliaetus</i>	Osprey	MI	MI	14917		Inhabits areas around shallow waters	No
<i>Pezoporus occidentalis</i>	Night Parrot		EN		x	Spinifex grasslands in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans. Suitable habitat is characterized by the presence of large and dense clumps of Spinifex, and it may prefer mature spinifex that is long and unburnt.	No
<i>Phoebastria fusca</i>	Sooty Albatross		VU		x	Marine	No
<i>Pluvialis fulva</i>	Pacific golden plover	MI	MI	15715		Beaches, mudflats and sandflats and in sheltered areas including harbours, estuaries and lagoons.	No
<i>Pluvialis squatarola</i>	Grey plover	MI	MI	14917		Inhabit sheltered embayment's, estuaries and	No

						lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons.	
<i>Psophodes nigrogularis</i>	Western whipbird	EN		15848		Dense heath-like shrubby thickets on coastal dunes, and mallee woodland or shrubland with an open upperstorey above a dense shrubby understorey. Preferred habitat is usually 2–3 metres tall and dominated by shrubs, usually with a dense shrubby understorey, and sometimes intermixed with stunted eucalypts such as Marri and Jarrah.	Possibly
<i>Pterodroma mollis</i>	Soft-plumaged Petrel		VU		x	Marine	No
<i>Sternula nereis nereis</i>	Australian Fairy Tern		VU		x	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline. The bird roosts on beaches at night.	No
<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross		VU		x	Marine	No
<i>Thalassarche cauta</i>	Shy Albatross		EN		x	Marine	No
<i>Thalassarche impavida</i>	Campbell Black-browed Albatross		VU		x	Marine	No
<i>Thalassarche melanophrys</i>	Black-browed albatross	EN	MI	18438		Marine	No
<i>Thalassarche</i>	Black-browed Albatross		VU		x	Marine	No

<i>melanophris</i>							
<i>Thalassarche steadi</i>	White-capped Albatross		VU		x	Marine	No
<i>Thalasseus bergii</i>	Crested tern	MI	MI	14917		Marine	No
<i>Thinornis rubricollis</i>	Hooded plover, hooded dotterel	P4		746		Inhabits ocean beaches and the edges of near-coastal and inland salt-lakes.	No
<i>Tringa glareola</i>	Wood sandpiper	MI	MI	14917		Inland shallow freshwater wetlands	No
<i>Tringa nebularia</i>	Common greenshank	MI	MI	870		Coastal and inland, in estuaries and mudflats, mangrove swamps and lagoons, and in billabongs, swamps, sewage farms and flooded crops.	No
<i>Tringa stagnatilis</i>	Marsh sandpiper	MI	MI	14691		Commonly seen singly, or in small to large flocks in fresh or brackish (slightly salty) wetlands.	No
<i>Daphnia jollyi</i>	a water flea (inland south west)	P1		3622		Shallow freshwater pools over granite bedrock	No
<i>Caretta caretta</i>	Loggerhead Turtle		EN		X	Marine	No
<i>Chelonia mydas</i>	Green Turtle		VU		x	Marine	No
<i>Dermochelys coriacea</i>	Leatherback Turtle		EN		x	Marine	No
<i>Carcharias taurus</i>	Grey Nurse Shark		VU		x	Marine	No
<i>Carcharodon carcharias</i>	Great White Shark		VU		x	Marine	No
<i>Galeorhinus galeus</i>	Eastern School Shark, Snapper Shark, Tope, Soupfin Shark		CD		x	Marine	No
<i>Rhincodon typus</i>	Whale Shark		VU		x	Marine	No
<i>Thunnus maccoyii</i>	Southern Bluefin Tuna		CD		x	Marine	No

Appendix 5: State Threatened and Priority Flora and Fauna Definitions

Category	Definition
T – Threatened	Taxa that have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such (Schedules 1 to 4 of the Wildlife Conservation (Rare Flora) Notice under the WC Act). Threatened flora are further ranked by the DBCA to align with IUCN Red List categories and criteria: CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild (Schedule 1); EN: Endangered – considered to be facing a very high risk of extinction in the wild (Schedule 2); or VU: Vulnerable – considered to be facing a high risk of extinction in the wild (Schedule 3). EX: Presumed Extinct – taxa that have been adequately searched for and there is no reasonable doubt that the last individual has died (Schedule 4)
P1 – Priority 1 (Poorly known taxa)	Taxa that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
P2 – Priority 2 (Poorly known taxa)	Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
P3 – Priority 3 (Poorly known taxa)	Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Taxa may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.
P4 – Priority 4 (Rare, Near Threatened and other taxa in need of monitoring)	1. Rare - Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. 2. Near Threatened - Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. 3. Taxa that have been removed from the list of threatened species during the past five years for reasons other than taxonomy

Appendix 6: Commonwealth Definitions of Threatened Flora and Fauna Species (Environment Protection and Biodiversity Conservation, EPBC Act 1999)

Category Code	Category
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Appendix 7: State Definition of Threatened Ecological Communities

Category Code	Category
PTD	Presumed Totally Destroyed An ecological community will be listed as Presumed Totally Destroyed if there are no recent records of the community being extant and either of the following applies: (i) records within the last 50 years have not been confirmed despite thorough searches or known likely habitats or; (ii) all occurrences recorded within the last 50 years have since been destroyed.
CE	Critically Endangered An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future, meeting any one of the following criteria: (i) The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the immediate future.
E	Endangered An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. The ecological community must meet any one of the following criteria: (i) The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short term future, or is unlikely to be substantially rehabilitated in the short term future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the short term future.
V	Vulnerable An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet any one of the following criteria: (i) The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated; (ii) The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution; (iii) The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.

Appendix 8: State Definition of Priority Ecological Communities

Category Code	Category
P1	Poorly-known ecological communities Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist.
P2	Poorly-known ecological communities Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.
P3	Poorly known ecological communities (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) Communities known from a few widespread occurrences, which are either large or within Significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; (iii) Communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing and inappropriate fire regimes.
P4	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.
P5	Conservation Dependent ecological communities Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Appendix 9: Commonwealth Definition of Threatened Ecological Communities

Three categories exist for listing threatened ecological communities under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

Listing Category Code	Explanation of Category
Critically endangered	If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future.
Vulnerable	If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium term future.

Appendix 10: Categories and Control of Declared (Plant) Pests in Western Australia

Control Category	Control Measures
C1 (Exclusion) ‘(a) Category 1 (C1) — Exclusion: if in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented’ Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.	In relation to a category 1 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C2 (Eradication) ‘(b) Category 2 (C2) — Eradication: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible’. Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.	In relation to a category 2 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C3 (Management) ‘(c) Category 3 (C3) — Management: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to — (i) alleviate the harmful impact of the declared pest in the area; or (ii) reduce the number or distribution of the declared pest in the area; or (iii) prevent or contain the spread of the declared pest in the area.’ Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.	In relation to a category 3 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to — (a) alleviate the harmful impact of the declared pest in the area for which it is declared; or (b) reduce the number or distribution of the declared pest in the area for which it is declared; or (c) prevent or contain the spread of the declared pest in the area for which it is declared.

Appendix 11: Definition of Vegetation Condition Scale

For the south west and interzone botanical provinces

Condition Rating	Description
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance
Excellent (2)	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species.
Very Good (3)	Vegetation structure altered; obvious signs of disturbance For example, disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging; & grazing.
Good (4)	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback; & grazing
Degraded (5)	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires; the presence of very aggressive weeds; partial clearing; dieback; & grazing.
Completely Degraded (6)	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix 12: Carnaby's Cockatoo foraging habitat scoring template

Adapted from Tables A1 and A2 of Department of Agriculture, Water and the Environment (2022)

Starting score	Carnaby's Cockatoo	
10	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as <i>Banksia</i> spp. (including <i>Dryandra</i> spp.), <i>Hakea</i> spp. and <i>Grevillea</i> spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. *This tool only applies to sites equal to or larger than 1 hectare in size.	
Attribute	Subtractions	Context adjustor (attributes reducing functionality of foraging habitat)
Foraging potential	-2	Subtract 2 from your score if there is no evidence of feeding debris on your site.
Connectivity	-2	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 1km of your site.
Proximity to breeding	-2	Subtract 2 if you have evidence to conclude that your site is more than 12km from breeding habitat.
Proximity to roosting	-1	Subtract 1 if you have evidence to conclude that your site is more than 20km from a known night roosting habitat.
Impact from significant plant disease	-1	Subtract 1 if your site has disease present (e.g. <i>Phytophthora</i> spp. or Marri canker) and the disease is preferred food plants present.
Total score	Enter score	
Other considerations for assessment of foraging habitat	- The presence, extent and density (including foliage cover and flowering density) of all plant species that provide foraging, including non-native food sources used - The distribution and size of foraging habitat in proximity (e.g. up to 12 km) to the impact site. - Site degradation (such as cleared, disturbed or degraded areas). - The fire history of the impact site. - Landscape characteristics around the impact site, including details of roosting and breeding habitat in proximity (e.g. up to 20km for roosting and 12km for breeding); and - The location and details of watering points that could support the use of the foraging habitat.	
Appraisal	To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.	

Appendix 13: EPBC Act Protected Matters Report

Listed Threatened Ecological Communities

				Presence
Community Name	Threatened Category	Rank	Text	Buffer Status
Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongan)	Endangered	Likely	Community likely to occur within area	In feature area

Listed Threatened Species

Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status
<i>Balaenoptera musculus</i>	Blue Whale	Mammal	May	Species or species habitat may occur within area	Endangered	Migratory
<i>Neophoca cinerea</i>	Australian Sea-lion, Australian Sea Lion	Mammal	Likely	Species or species habitat likely to occur within area	Endangered	
<i>Eubalaena australis</i>	Southern Right Whale	Mammal	Known	Breeding known to occur within area	Endangered	Migratory (as <i>Balaena glacialis australis</i>)
<i>Pseudomys shortridgei</i>	Heath Mouse, Dayang, Heath Rat	Mammal	May	Species or species habitat may occur within area	Endangered	
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable	
<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	Bird	May	Species or species habitat may occur within area	Critically Endangered	
<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Bird	Likely	Species or species habitat likely to occur within area	Critically Endangered	Migratory
<i>Diomedea sanfordi</i>	Northern Royal Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory
<i>Macronectes giganteus</i>	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within area	Endangered	Migratory

<i>Diomedea dabbenena</i>	Tristan Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory
<i>Thalassarche cauta</i>	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory
<i>Pezoporus occidentalis</i>	Night Parrot	Bird	May	Species or species habitat may occur within area	Endangered	
<i>Calidris canutus</i>	Red Knot, Knot	Bird	May	Species or species habitat may occur within area	Endangered	Migratory
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Bird	May	Species or species habitat may occur within area	Endangered	
<i>Zanda latirostris</i>	Carnaby's Black Cockatoo, Short-billed Black-cockatoo	Bird	Known	Breeding known to occur within area	Endangered (listed as <i>Calyptorhynchus latirostris</i>)	
<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Diomedea antipodensis</i>	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory
<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)	Bird	May	Species or species habitat may occur within area	Vulnerable	
<i>Phoebastria fusca</i>	Sooty Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Falco hypoleucos</i>	Grey Falcon	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	
<i>Macronectes halli</i>	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory
<i>Thalassarche melanophrys</i>	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory
<i>Halobaena caerulea</i>	Blue Petrel	Bird	May	Species or species habitat may occur within area	Vulnerable	
<i>Leipoa ocellata</i>	Malleefowl	Bird	Known	Species or species habitat known to occur within area	Vulnerable	
<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory

<i>Thalassarche steadi</i>	White-capped Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory
<i>Diomedea exulans</i>	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory
<i>Diomedea epomophora</i>	Southern Royal Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Cereopsis novaehollandiae grisea</i>	Cape Barren Goose (south-western), Recherche Cape Barren Goose	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	
<i>Pterodroma mollis</i>	Soft-plumaged Petrel	Bird	May	Species or species habitat may occur within area	Vulnerable	
<i>Sternula nereis nereis</i>	Australian Fairy Tern	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	
<i>Thunnus maccoyii</i>	Southern Bluefin Tuna	Fish	Likely	Species or species habitat likely to occur within area	Conservation Dependent	
<i>Galeorhinus galeus</i>	School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark	Shark	May	Species or species habitat may occur within area	Conservation Dependent	
<i>Caretta caretta</i>	Loggerhead Turtle	Reptile	Likely	Breeding likely to occur within area	Endangered	Migratory
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Likely	Breeding likely to occur within area	Endangered	Migratory
<i>Carcharodon carcharias</i>	White Shark, Great White Shark	Shark	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory
<i>Chelonia mydas</i>	Green Turtle	Reptile	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Rhincodon typus</i>	Whale Shark	Shark	May	Species or species habitat may occur within area	Vulnerable	Migratory
<i>Carcharias taurus (west coast population)</i>	Grey Nurse Shark (west coast population)	Shark	Likely	Species or species habitat likely to occur within area	Vulnerable	

<i>Rhizanthella johnstonii</i>	South Coast Underground Orchid	Plant	Known	Species or species habitat known to occur within area	Critically Endangered	
<i>Conostylis lepidospermoides</i>	Sedge Conostylis	Plant	Known	Species or species habitat known to occur within area	Endangered	
<i>Anigozanthos bicolor subsp. minor</i>	Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw	Plant	Likely	Species or species habitat likely to occur within area	Endangered	
<i>Ricinocarpus trichophorus</i>	Barrens Wedding Bush	Plant	May	Species or species habitat may occur within area	Endangered	

Appendix 14: Traffic Count Data – Farmers Road

MetroCount Traffic Executive Daily Classes

DailyClass-176 -- English (ENA)

Datasets:

Site: [604_000322_000200] FarmersRoad
Attribute: Rural
Direction: 7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration: 0:00 Thursday, 17 December 2020 => 14:17 Friday, 29 January 2021,
File: 604_000322_000200 0 2021-01-29 1416.EC0 (Plus)
Identifier: HJ27RVC7 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Thursday, 17 December 2020 => 14:17 Friday, 29 January 2021
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 1771 / 1772 (99.94%)

Daily Classes

DailyClass-176

Site: 604_000322_000200.0.1NS
Description: FarmersRoad
Filter time: 0:00 Thursday, 17 December 2020 => 14:17 Friday, 29 January 2021
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(NESW) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

Monday, 28 December 2020

	1	2	3	4	5	6	7	8	9	10	11	12
Total												
Mon 75	61	8	5	0	0	1	0	0	0	0	0	0
(%)	81.3	10.7	6.7	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Tue 72	44	9	19	0	0	0	0	0	0	0	0	0
(%)	61.1	12.5	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wed 89	69	6	13	0	0	1	0	0	0	0	0	0
(%)	77.5	6.7	14.6	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Thu 70	53	5	10	0	0	2	0	0	0	0	0	0
(%)	75.7	7.1	14.3	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0
Fri 58	44	8	4	0	0	2	0	0	0	0	0	0
(%)	75.9	13.8	6.9	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Sat 66	51	6	8	0	0	1	0	0	0	0	0	0
(%)	77.3	9.1	12.1	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Sun 43	37	2	4	0	0	0	0	0	0	0	0	0
(%)	86.0	4.7	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Average daily volume

Entire week	51	6	9	0	0	1	0	0	0	0	0	0
68												
(%)	75.9	9.3	13.3	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Weekdays	54	7	10	0	0	1	0	0	0	0	0	0
73												
(%)	74.5	9.9	14.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Weekend	44	4	6	0	0	1	0	0	0	0	0	0
55												
(%)	80.7	7.3	11.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0

* - Incomplete