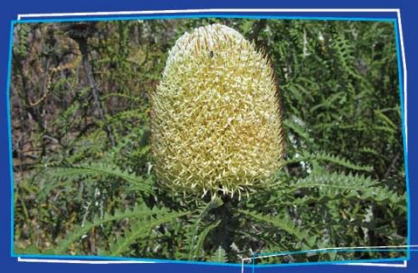
Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report

Shire of Esperance Strategic Purpose Permit 2021/22
Site V – Scaddan Road Resheet, Yates Rd to Styles Rd



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1 Executive Summary

This 'Vegetation, Flora, Fauna and Environmental Considerations and Targeted Flora Report' has been undertaken in accordance with the 'Environmental Protection Authority (EPA) Technical Guidance, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (2016)' as part of the application to the Department of Water and Environmental Regulations (DWER) to clear 6.69 ha of native vegetation within a 12.19 ha footprint for the purpose of widening the road running width to 8 m.

2 Introduction

The Shire of Esperance endeavors to maintain a high level of road safety, being proactive in identifying high risk road designs and progressively upgrading them. The Shire of Esperance manages the largest road network of any local government in Western Australia, encompassing a total of 4 593 km of road. The Shire of Esperance is submitting 'Scaddan Road Resheet, Yates Rd to Styles Rd' project as Site V under the '2021 Strategic Purpose Permit' (Figure 1), for the purpose of widening the road running surface to 8 m.

The proposed works are located approximately 40 km north of Esperance, within the Shire of Esperance managed road reserve of Scaddan Rd. Specifically, it is located from the intersection of Yates Rd and Scaddan Rd to the intersection of Styles Rd and Scaddan Rd, at straight line kilometre (SLK) 14.68 to 18.94 (Main Roads 2020). A point within the proposed clearing permit area is -33.4774 S, 121.9077 E (UTM Zone 51 H, GDA94).

To complete these works, native vegetation up to 6 m from the current road footprint on both sides of the road is required to be cleared, increasing the active road footprint to 28 m. To mitigate impact of clearing vegetation, where feasible clearing will not occur to the full permitted width, conserving vegetation.

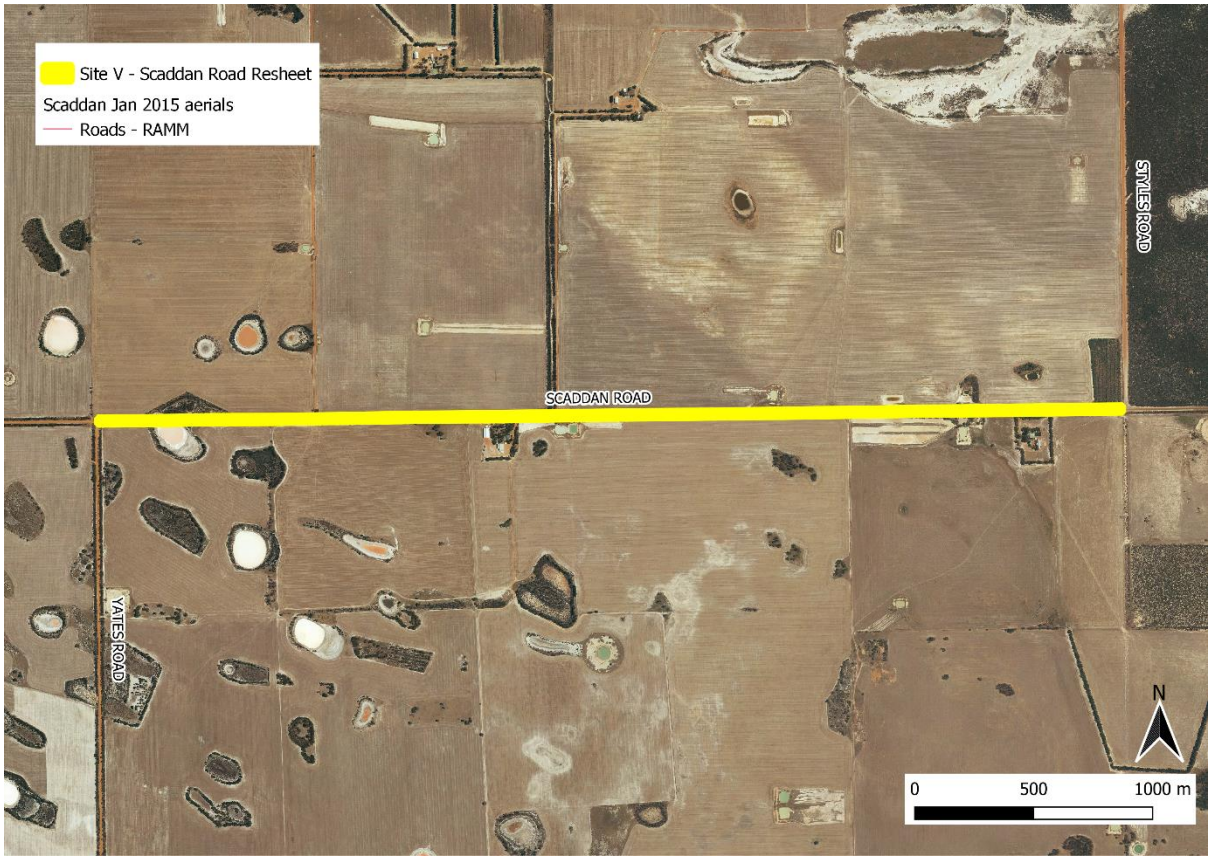

Figure 1. Location of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' clearing permit application, submitted under the Shire of Esperance's '21/22 Strategic Purpose Permit'.

3 Environmental Background

3.1 Scope

The removal of native vegetation to resheet the road has the potential to affect a multiple environmental factors.

Possible impacts include;

- Threatened Flora (TF) and Priority Flora (PF).
- Threatened fauna, specifically, potential feeding, nesting and roosting habitat of endangered Carnaby's Black Cockatoo, *Calyptorhynchus latirostris.*
- Threatened Ecological communities (TEC) and Priority Ecological Communities (PEC), specifically the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 listed 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' (Kwongkan) TEC.

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

3.2 Catchment

'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' is present at the top of the Bandy Creek catchment area. It is located approximately 40km inland.

3.3 Climate
The Esperance climate is described as Mediterranean, characterised by cool wet winters and dry warm summers (BoM 2020). The area receives an average annual rainfall of 618 mm.

3.4 Geology
Three geological unit was identified within 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd', by Schoknecht et al. (2004). They are described as:

- Sand or gravel plains,
- Quartz sand sheets with pebbles and minor clay, and
- Local calcrete, laterite, silcrete, silt, clay, alluvium, colluvium and Aeolian sand.

3.5 Soils
The soil of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' is primarily alkaline duplex soils (Schnoknecht et al. 2004). Within the area, there has been one other soil type recorded: alkaline grey deep and shallow sandy duplex and associated salt lake soils, pale deep sands and calcareous loamy earth.

3.6 Topography
During the field survey, topography was observed to be dominated by gentle to undulating plains, which is the same as mapped by Schnoknect et al. (2004).

3.7 Vegetation
The site is located within the Eastern Mallee (Mal01) Interim Biogeographic Regionalisation of Australia (Thackway & Cresswell 1995) region. The MaL01 is described as "the south-eastern of Yilgarn Craton is gently undulating, with partially occluded drainage. Mainly Mallee over Myrtaceous-Proteaceous heaths on duplex (sand over clay) soils. Melaleuca shrublands characterize alluvia, and Halosarcia low shrublands occur on saline alluvium. A mosaic of mixed Eucalypt woodlands and Mallee occur on calcareous earth plans, and sandplains overlying the Eocene Limestone strata in the East. Semi-arid (dry) and warm Mediterranean".

Beard (1973) mapped one vegetation associations (VA) within the 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' area – VA 1516 (Table 1). VA 1516 is described as: shrublands; mallee scrub, black marlock & Forrest's marlock'. 47.34% of VA 1516's pre-European extent remains in the Mal01 IBRA region, and 47.15% remains within the Shire of Esperance area. 40.05% of VA 1516's current extent is currently formally conserved within International Union for Conservation of Nature (IUCN) reserves across Western Australia, however only 19.92% of its pre-European extent is conserved under this system.

3.8 Land use
The area directly included in the clearing permit application 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd' is currently intact and vegetated 40 m wide road reserve, managed by the Shire of Esperance. The current road footprint occupies 16 m. The surrounding land use is agricultural properties and there is a 5000 ha remnant vegetation on Crown Land directly adjacent the eastern end of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd'. The area is within rural zoning.

4 Methodology

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

- Existing site digital orthophotos, as sourced from LandGate (Scaddan 2015).
- Western Australian Local Government Association's (WALGA) 'Local Government Mapping (LGMap 2020)' program was used to assess spatial information of geology, topography, soil profiles, native and planted vegetation, water bodies and Interim Biogeographical Regionalisation for Australia (IBRA; Thackway & Cresswell 1995) classification system.
- Data provided by Department of Biodiversity, Conservation and Attractions (DBCA) and Western Australian Herbarium in July/August 2020 was used to assess threatened flora (TF), priority flora (PF), and threatened (TEC) and priority (PEC) ecological communities within 20 km radius of the site. Specifically, spatial data included;
    - WAHerb extract (DBCA 2020f).
    - Threatened and Priority Reporting (TPFL; DBCA 2020d).
    - Esperance District Threatened Flora (DBCA 2020b).
    - TEC and PEC 'Likely to Occur' buffer and boundary areas (DBCA 2020e).
    - Department of Agriculture, Water and the Environment Protected Matters Search Tool
    - Index of Biodiversity Surveys for Assessment (IBSA).
- To assess fauna, the following databases were searched with a 20km buffer from the center of the site (-33.4774 S, 121.9077 E);
    - Department of Biodiversity, Conservation and Attractions (DBCA) and Western Australian Museum (WAM) NatureMap data portal
    - DBCA Threatened and Priority Fauna database
    - BirdLife Australia's Atlas and Birdata datasets
    - Department of Agriculture, Water and the Environment Protected Matters Search Tool
    - Atlas of Living Australia database
    - Index of Biodiversity Surveys for Assessment (IBSA).

4.2 Field investigation: possible ecological impacts

The site was initially inspected on 03/09/2020, by the Shire of Esperance's Environmental Coordinator and Field Assistant, Julie Waters and Sophie Willsher. An assessment of possible ecological impacts included historical clearing, artificial water way constructions, impact of fire regimes, regeneration from disturbance, waterlogging, senescence, weeds, erosion, sedimentation, invasive fauna, *Phytophthora cinnamomi* Dieback, and illegal dumping of rubbish.

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

Only a very basic fauna survey was conducted as per EPA (2020) guidelines. Observations of fauna presence, such as call sounds, footprints and scats were also noted, and the area assessed for suitability of endangered Carnaby's Black Cockatoo (*Calyptorhynchus latirostris)* feeding, roosting and nesting habitat. Additionally, species that corresponded with suitable habitat within 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' identified in the desktop 20 km radius search were assessed, including Hooded Plover, Malleefowl and Mallee Black-headed snake.

4.3 Field investigation: Assessing Threatened and Priority Ecological Communities

The vegetation community of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' was assessed for the presence a TEC or PEC, specifically 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 30 (DBCA 2020a)' definitions.

4.4 Field Investigation: Targeted flora survey

The targeted flora survey was undertaken following the Environmental Protection Authority's (EPA) 'Technical Guidance, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (2016)'. The entirety of the proposed impact area was surveyed on foot in mid-spring, between 25/09/2020 and 12/10/2020 by Sophie Willsher, Danika Penson and Rhaquelle Meiklejohn. Shire of Esperance's Environmental Assistants. Due to the timing, the majority of species were flowering, decreasing the likelihood of missing species. The road was used as a continuous transect. Vegetation up to 6 meters from the edge of the existing road's back-slope was assessed to accurately cover the 28 m width proposed clearing permit area. Suitable associated habitat for TF or PF identified in the desktop study were particularly focused on, and extensively searched. A follow up survey was conducted on 13/5/2021 by Julie Waters and Katherine Walkerden to specifically target the identification and counting of priority 3 flora *Melaleuca dempta*.

Due to the high diversity and complexity of Esperance's flora, all species were recorded to compile an incidental species list (Appendix 8.1, Table 6). All species unknown in the field were collected and identified exsitu, using keys, WA Herbarium's Florabase (DBCA 2020c), manuals and Esperance District Herbarium, to ensure no TF or PF were missed. Material was collected under several Regulation 61, Biodiversity Conservation Regulations 2018 Licence for Flora Taking: including Sophie Willsher's; FB2000278, Rhaquelle Meiklejohn's; FB26000277, and Danika Penson's; FB62000277. Any species that were unable to be identified were submitted to the WA Herbarium for identification.

Over the course of the 2019 wildflower season, surveyors re-familiarised themselves with key taxonomic indicators and associated habitat, by visiting verified populations of *Acacia bartlei, Darwinia* sp. Gibson, *Hydrocotyle asterocarpa, Kunzea salina* and *Stachystemon vinosus.* For other PF or TF species identified in the desktop survey as possible to occur, scans of pressed specimens from the local Esperance District Herbarium were taken into the field. Any flora thought to be TF or PF was formally collected, counted and mapped using a Panasonic FS-G1 Toughpad with the program ROAM or a GPS Garmin GPS64. Specimens were then lodged with the WA Herbarium for formal verification. When PF were confirmed, TPFL forms were completed and submitted to the DBCA's district Conservation Officer, and Species and Communities Branch.

5 Results and Discussion

5.1 Ecological Impact

5.1.1 Vegetation Communities

Five vegetation communities were identified within the 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd', as defined by structure and composition (Table 1). The incidental flora list identified a total of 126 native species across all vegetation communities (Table 6(). It is believed that the Beard (1973) vegetation association identified in Section 3.7 is an appropriate match for vegetation types B and C. However, vegetation type A was more similar to VA 4048 Shrublands; scrub-heath in the Esperence Plains including Mt Ragged scrub-heath; Vegetation type D more similar to VA 519 Shrublands; mallee scrub, *Eucalyptus eremophila*; and Vegetation E was most similar to VA 41 Shrublands; teatree scrub.

Table 1. Vegetation communities identified within proposed 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project area.

Type	Description	Figure	Closest Matching Beard Vegetation Associations	Area (ha)
A	Highly disturbed mixed acacia and proteaceae shrubland	6	4048 - Shrublands; scrub-heath in the Esperence Plains including Mt Ragged scrub-heath	1.40
B	Open *Eucalyptus kesselli* subsp. *kesselli* woodland over Acacia cyclops shrubland	7	1516 - Shrublands; mallee scrub, black marlock & Forrest's marlock	0.35
C	Regenerating Eucalyptus Mallee over Acacia cyclops shrubland	8	1516 - Shrublands; mallee scrub, black marlock & Forrest's marlock	2.83
D	Eucalyptus Mallee over Melaleuca shrubland	9	519 - Shrublands; mallee scrub, *Eucalyptus eremophila*	7.15
E	Scattered *Melaleuca cuticularis* and Samphire community on salt lake periphery	10	41 - Shrublands; teatree scrub	0.49

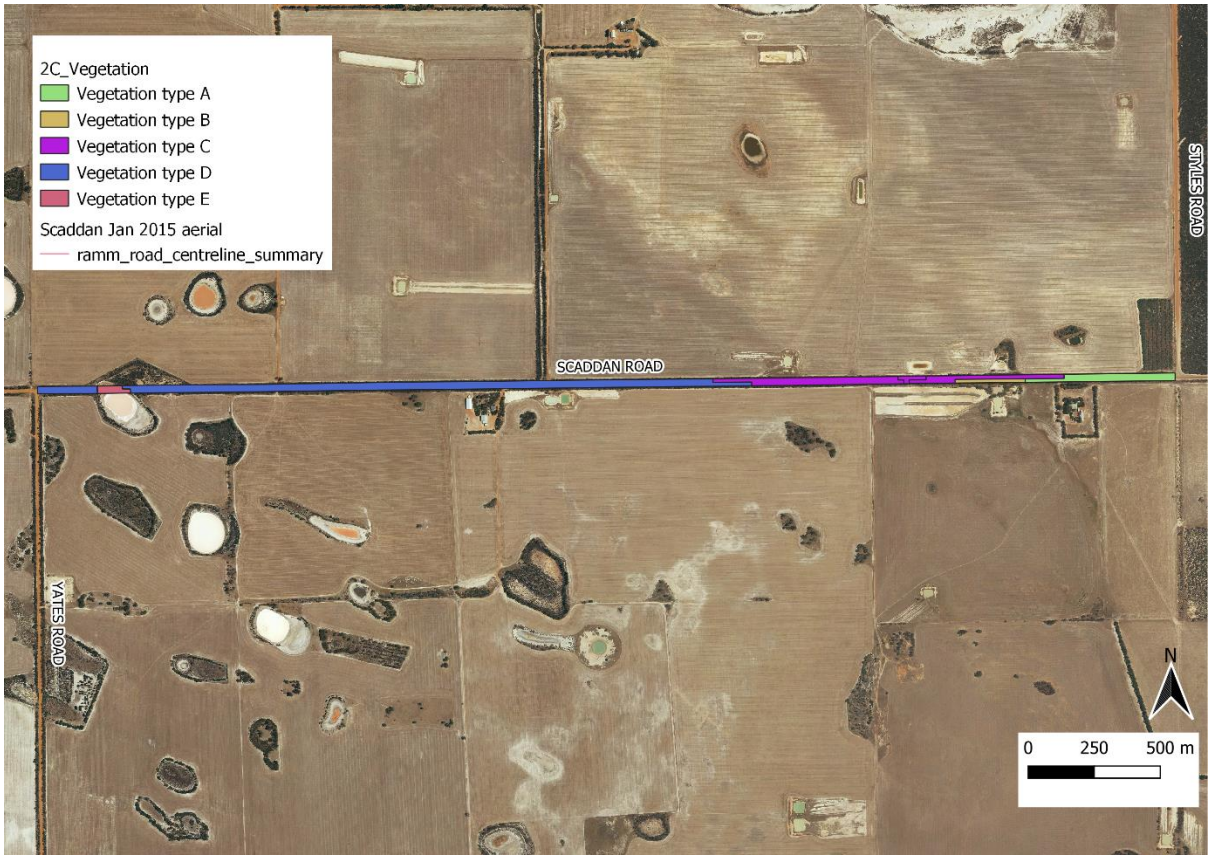

Figure 2. Vegetation types within the 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd' area, from SLK 14.68 km to 18.94 along Scaddan Rd.

5.2 Vegetation Condition

The vegetation condition varies significantly across 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd', with condition ranging from very good condition to completely degraded. The proposed clearing area has been extensively disturbed historically and was partially burnt during fires in 2015.

Table 2. Vegetation conditions within proposed 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project area, and the proposed amount of vegetation to be cleared (ha), footprint of each vegetation condition (ha) and proportion that each vegetation condition occupies within the entire footprint (%).

Vegetation Condition	Amount of vegetation to be cleared (ha)	Proportion of entire footprint (%)
Very good	0.081	2.6
Good	4.3	57.9
Degraded	2.31	35.6
Completely degraded	0.49	4.0

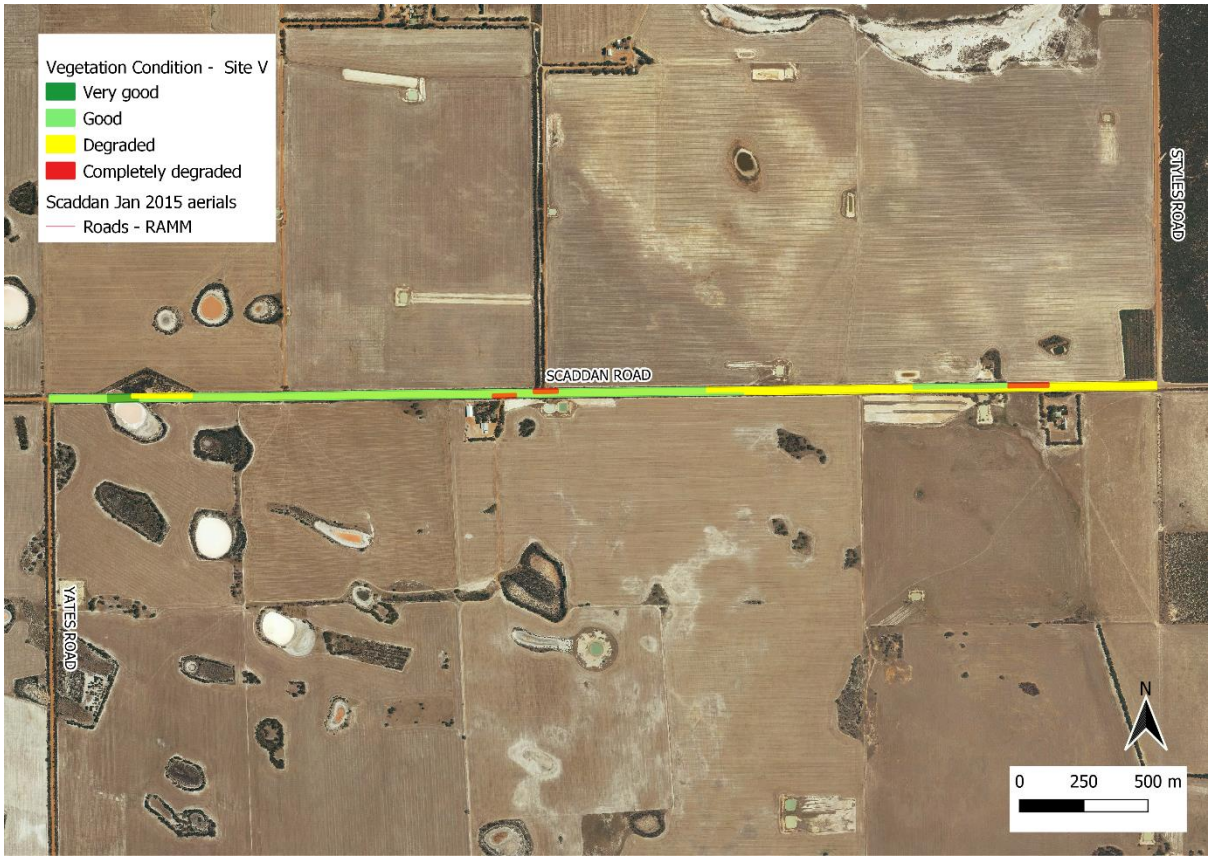

Figure 3. Vegetation condition across 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, ranging from very good to completely degraded condition, due to primarily to degradation from historical disturbance and fires.

5.3 Other Environmental Impacts

The proposed clearing area runs through a salt lake at SLK 14.98 km. It is unlikely proposed works will impact natural hydrological regimes of the area. It is also highly unlikely acid sulphate soils will develop, being the incorrect soil type present.

No evidence of invasive fauna, such as scats or digging, were observed. However, it is highly likely that foxes, rabbits and feral cats are extensive throughout the area.

There was a significant amount of weed invasion across the entirety of the proposed 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd' area. Overall, 18 invasive species were identified within the project area (Appendix 8.1). Of these, the most extensive and of serious concern were African Love Grass (*Eragrostis curvula*) and Bridal Creeper (*Asparagus asparagoides*), with African Love Grass being present in all sections and Bridal Creeper present in all but one. It is highly likely that proposed works will increase the distribution of weeds and degrade vegetation along the entire road reserve where works occur. Ideally, regular wash downs during the course of works to remove weed seeds or follow up herbicide control of invasive species needs to occur. However, this will be extremely expensive to employ contractors and mobilise equipment, which may not be feasible with given budgets.

Dieback Information Delivery and Management System (DIDMS; GAIA Resources, SCNRM & State NRM 2020) data shows no positive or negative *Phytophthora cinnamomi* or other *Phytophthora* sp. Dieback sample results in the immediate area. However, there were several positive *Phytophthora*

cinnamomi Dieback samples nearby on Wittenoom Rd, approximately 20 km south-west of the survey area. Proposed works will be conducted using appropriate hygiene measures to limit spreading of the disease, including clearing in dry conditions and clean down of vehicles and machinery before entering the site. However, there is always a possibility that proposed works will extensively spread *P. cinnamomi* dieback along Scaddan Rd due to proposed works.

Due to the fire it was difficult to detect any signs of *Phytopthora cinnamomi* dieback disease within the clearing permit area. It is known to take at least five years for visual markers of Dieback to become apparent due to the tolerance of juveniles to the adverse effects of *P. cinnamomi,* a qualified dieback interpreter also cannot determine dieback presence for at least five years after a bushfire.

5.4 Threatened and Priority Ecological Communities

The desktop study did not identify the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 listed threatened ecological community (TEC) 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)' within 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project area. However, there were several areas of Kwongkan TEC within a 500 m buffer of 'Site V – Scaddan Road Resheet, Yates Rd to Scaddan Rd'. No other TEC's or priority ecological communities (PEC) were identified by the desktop study as being within 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' or within a 20 km buffer of the site.

Due to the site recently being burnt, using the 'Approved Conservation Advice for Kwongkan (Commonwealth of Australia 2014)' for assessing the presence of Kwongkan, assessment relied on determining if two or more Proteaceae species were diagnostic, and will form a significant vegetative component when mature. No vegetation within 'Site V – Scaddan Road Resheet, Yates Rd to Scaddan Rd' met criteria to be considered as Kwongkan TEC.

5.5 Threatened and Priority Flora

Three threatened flora (TF) and 44 priority flora (PF) were recorded within a 20 km radius of the proposed impact site (Table 3; DBCA 2020f, DBCA 2020d, DBCA 2020b). Of these, 31 PF and 1TF species had suitable known associated habitat that corresponded with vegetation communities and soil type of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project. No confirmed records of known populations were directly located within the clearing permit area.

Table 3. Threatened or priority flora identified by the desktop study to be present within a 20 km radius of 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd' project area, using Threatened and Priority Flora Reporting (TPFL; DBCA 2020d), WA Herbarium (DBCA 2020f) and Esperance District Threatened Flora (DBCA 2020b).
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, vulnerable (V), critically endangered (CN) and endangered (EN).

Species	Conservation Status	Associated Habitat	Likely to occur
Acacia bartlei	P2	Flat or gently undulating landscape, often in water logged depressions in brown or grey sandy loam or clay loam. May tolerate low levels of salinity. Associated with *Eucalyptus occidentalis*.	Yes

Acacia euthyphylla	P3	Margins of salt lakes and marshes, seasonal swamps. Grey/white sand or clay loam. Associated with Myrtaceous shrubland and Mallee woodland.	Yes
Anigozanthos bicolor subsp. *minor*	EN	Moist sandy soil in heath communities. Has been found in shallow soils near granite outcrops.	No
Astroloma sp. Grass Patch	P2	Grey-white fine sand over clay on the margins of salt lakes, associated with Myrtaceous shrubs and halophytes.	Yes
Baeckea sp. Gibson	P1	Brown sandy loam over laterite & granite. Moderately exposed hills, cleared bushland. Associated species: *Callitris tuberculata, Eucalyptus grossa, Melaleuca uncinata, Hakea bicornata* and *Acacia lasiocalyx.*	No
Beyeria physaphylla	P1	Eucalyptus Mallee woodland.	Yes
Brachyloma mogin	P3	Grey clayey sand. Swamp flat.	No
Conostephium marchantiorum	P3	Grey or light yellow sandy soil. Open Mallee and shrub heath communities, plains, creeklines or edges of salt lakes.	Yes
Conostephium uncinatum	P2	Deep sandy soils. Edges of salt lakes, undulating plains and clay pans.	Yes
Dampiera sericantha	P3	Sand sometimes with gravel. Associated with plains.	Yes
Darwinia polycephala	P4	Flats, near salt lakes. Sand and clay soils.	Yes
Darwinia sp. Gibson	P1	Margins of salt lakes and road verges on grey-brown sandy loam and white sand.	Yes
Daviesia pauciflora	P3	White or grey sand over laterite or limestone. Flats.	Yes
Desmocladus biformis	P3	Sand, sandy clay or lateritic soils. Dry sites. Heath or shrubland often with Mallee Eucalyptus.	Possible
Eremophila chamaephila	P3	White sand, clay sandplains and disturbed road verges.	Possible
Eremophila glabra subsp. Scaddan	CN	Open Mallee woodland on grey brown clayey sand.	Possible
Eucalyptus dolichorhyncha	P4	Common on flats or slightly rising ground with whitish to yellowish sandy clay soil.	Unlikely
Eucalyptus foliosa	P3	Grey white sandy clay. Flat adjacent to salt lakes.	Yes
Eucalyptus merrickiae	V	Sandy clay, grey sand. Near salt lakes.	Yes
Eucalyptus misella	P1	White, yellow or grey sand. Low-lying sandplains.	Possible

Eucalyptus sweedmaniana	P2	Restricted to Cape Arid.	No
Eucalyptus litorea	P2	Sand dunes around coastal salt lakes.	No
Goodenia laevis subsp. *laevis*	P3	Sandy loam or laterite.	Yes
Goodenia turleyae	P1	White or grey-brown sand over clay, yellow-brown gravelly clay and granite. Moist sheltered areas, near salt lakes.	Possible
Grevillea baxteri	P4	Sand, sandy loam and granitic loam in low heath to tall open shrubland and open Mallee.	Possible
Haegiela tatei	P4	Saline habitats on clay, sandy loam and gypsum.	Yes
Hibbertia turleyana	P2	Sandy soil which may be seasonally inundated in Banksia heath or Mallee shrubland. Flats.	Unlikely
Hydrocotyle asterocarpa	P2	Sandy loam soils surrounding the margins of inland salt lakes, in low open shrubland. Often in sheltered positions around mature plants of Tecticornia and Frankenia spp. within the Mal01 IBRA region.	Yes
Hydrocotyle sp. Truslove	P1	Associated with salt lakes and found on white sand.	Yes
Hydrocotyle tuberculata	P2	This species grows in damp sandy loam soils associated with winter-moist creeklines and drainage areas associated with inland saline lake Damp sandy loam soils associated with winter-moist creeklines and drainage areas associated with inland salt lakes.	Yes
Isopogon alcicornis	P3	Grey/brown sandy loams in mallee shrubland.	Possible
Kunzea salina	P3	White sand over clay at the margins of salt lakes. Typically found at the bottom of sand dune rises gently from lake floor between a community of Tecticornia and Melaleuca /Eucalyptus shrubland.	Possible
Leucopogon rotundifolius	P3	Skeletal soils around granite outcrops.	No
Leucopogon corymbiformis	P2	No knowledge available.	-
Leucopogon remotus	P1	Sandy-loam soils in Mallee woodland communities.	Possible
Melaleuca dempta	P3	Open eucalypt woodland with a dense shrub understorey, clay pans, near salt lakes, and on sandy soils.	Yes

Melaleuca fissurata	P4	Mallee shrubland or woodland on sand or sandy loam usually over clay or clay loam.	Unlikely
Microseris scapigera	P3	Does not occur in WA.	No
Microseris walteri	P3	Wide range of habitats.	Possible
Persoonia cymbifolia	P3	Sandy soils. On flats or in rock crevices.	Possible
Persoonia scabra	P3	White sand or sandy loam, granite or limestone. Shrubland.	Possible
Pimelea pelinos	P1	Grey sandy clay. Shrubland, flat ground above/beside salt lakes.	Possible
Scaevola archeriana	P1	Sandy and sandy-clay loam soils. Sand plains, road verges.	Unlikely
Spyridium mucronatum subsp. *Multiflorum*	P2	Gravelly loam or clay.	No
Stachystemon vinosus	P4	Beige sandy loams or in laterite gravel soils surrounded by thick Allocasuarina scrub.	No
Tecticornia indefessa	P2	White to brown grey sand near the edge of a salt lake.	Yes
Trachymene anisocarpa var. *trichocarpa*	P3	Fine windblown clay, mixed with windblown sand or larger alluvial grains eroded from granite outcrops.	No

No TF species, were identified within the clearing footprint. However, the targeted flora survey identified one PF species, *Melaleuca dempta* (P3), within the proposed clearing permit footprint (Section 5.5.1). Queries of spatial datasets were requested specifically for this species, to interrogate impact of proposed works on species sustainability (DBCA 2020f; DBCA 2020d; DBCA 2020b). 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 2020d).

Numerous specimen's unknown to surveyors were collected and verified at the WA Herbarium as non-threatened species, such as *Lepidosperma* sp. 1 (unable to be identified) and *Gastrolobium discolor* (Accession 8974/E; JW02321).

5.5.1 *Melaleuca dempta,* Priority 3

A specimen of *Melaleuca dempta* was sent to the WA Herbarium for identification confirmation (KW0127; Accession #8774 with specimen retained). It was confirmed as *Melaleuca dempta* by Mike Hislop on 24/2/21. A Threatened and Priority Reporting Form (TPFL) for this new population was completed and sent to Department of Biodiversity, Conservation and Attractions (DBCA) District Flora Conservation Officer and Species and Communities Branch on 14/5/2021 (Appendix 8.3).

During the follow up survey on 13/5/2021 the entire remnant vegetation on the perimeter of the salt lake in which this new population was recorded from was surveyed. *Melaleuca dempta* plants were only present on the north east side of the lake. Plants were healthy and all were mature plants, although some plants were older than others. If proposed works occur, 26 plants will be impacted upon, from a population total of 34.

Figure 4. New population of the Priority three species *Melaleuca dempta* from 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd'

Figure 5. Distribution of new population of the Priority three species *Melaleuca dempta* from 'Site V - Scaddan Road Resheet'

Melaleuca dempta grows over 140km range to the north and east of Esperance. It is always found within close proximity to salt lakes and wet depressions. There are 17 records (including this one) on Florabase and TPFL (DBCA 2020c, 2021). Only one of these is within conservation estate. It is possible that there are more populations of this species due to the abundance of salt lakes with good quality vegetation surrounding them within is range. Given the large size of some of these populations the taking of 26 plants is unlikely to impact the survival of the species. It is also worth noting that that in the specimen notes for PERTH 04277325 there a question whether this species may be a disturbance opportunist. The Shire of Esperance has collected some seed from *Melaleuca dempta* from this site and can grow seedlings or distribute seeds at the completion of the project.

Table 4. Known distribution and abundance of the Priority three species *Melaleuca dempta* (DBCA, 2021)

Locality	Date	Notes
4.7 km E of Scaddan road	4/10/1995	Abundant
Vacant Crown Land	7/09/1995	Abundance: patchy.
Scaddan/Speddingup area [Between Scaddan and Speddingup]	/02/1988	
10 km N of Gibson	12/12/1985	Scattered in patches.
S side of Brownings Road, c. 3 km E of Cascades - Browning Road junction. Coolbidge Creek catchment c. 40 km W of Esperance	23/06/1990	
Scaddan Road, 7.8 km from junction with Norseman to Esperance Highway	28/09/1988	Locally common.
100-300 metres E of Liebeck Rd on Scaddan East Rd; SE of Scaddan.	24/09/1992	Ca. 50 plants; mainly beside gutter of N road verge.
6 km W from Dalyup road on Brownings road on slight bend,	9/09/1995	Abundance: frequent
4 km N of Fleming Grove road on N side of railway line,	9/09/1995	Abundance: frequent around lake.
ca 11 km N of Gibson in gravel reserve	5/09/1995	Quite common over area.
Lagoon road, 1.8 km N of Kendall road, c. 25 km N of Esperance	7/09/1995	Abundance: locally frequent.
8 km E of Scaddan on Scaddan Road	20/08/1982	
7.8 km E of Esperance - Coolgardie Highway on Scaddan Road, population located around salt pan and on both sides of road,	3/03/2001	1000+ plants.
Bebenorin Road, Beaumont Reserve 32784, Condingup	3/10/2008	21-50 plants.
W side of Esperance - Coolgardie Highway, 800 m S from Scaddan road intersection	5/09/1995	Abundance: dominant species on E side of small salt lake.
7.8 km E of Esperance-Norseman Highway on Scaddan East Road; SE of Scaddan	24/09/1992	Abundance: dominant. 1,000+ plants.
17 km E of Scaddan townsite, intersection of Yates and Scaddan Road, towards the E on Scaddan Road	25/09/2020	

5.6 Fauna

Within a 20 km radius of the 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd', 216 fauna have previously been recorded. Of these, 6 species are threatened fauna, priority fauna and fauna protected under international agreement have been recorded (Table 5). Four species have suitable habitat within the proposed clearing permit area, including Carnaby's Cockatoo, Mallee Black-headed snake, Malleefowl and Hooded Plover.

Table 5. Potential threatened, priority and protected under international agreement fauna recorded within a 20 km radius of the proposed 'Site V - Scaddan Road Resheet, Yates Rd to Styles Rd'. Nt. Acronyms used include priority (P), threatened (T), and protected under international agreement (IA).

Scientific Name	Common Name	Conservation Status	Likelihood of occurring	Associated habitat
Calyptorhynchus latirostris	Carnaby's Cockatoo	T	Yes	Kwongkan shrub or heathland. Presence of Hakea, Banksia and Pine species indicate potential feeding habitat.
Parasuta spectabilis subsp. *bushi*	Mallee Black-headed snake	P1	Yes	Grasslands and shrublands.
Leipoa ocellata	Malleefowl	T	Yes	Semi-arid shrublands and low woodlands dominated by mallee and/or acacia.
Pezoporus flaviventris	Western Ground Parrot	T	No	Associated with low heathland. Local knowledge is that only surviving populations are located in Cape Arid.
Tringa nebularia	Common Greenshank	IA	No	Estuaries, mudflats, mangrove swamps, lagoons and flooded crops.
Thinornis rubricollis	Hooded Plover	P4	Possible	Mainly inhabits ocean beaches, occasionally inhabits inland lakes.

5.6.1 Malleefowl, *Leipoa ocellata,* threatened fauna

Malleefowls are predominantly found in the semi-arid to arid zone in shrublands and low woodlands dominated by Mallee and are associated with Broombush, *Melaleuca uncinata,* and Acacias. Vegetation types A, B, C and D, woodland and shrubland communities, in the proposed 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' suitable habitat for Malleefowls. Vegetation type D would likely be the most suitable habitat within the site due to the presence of Broombush and several species of Acacias. The proximity of the proposed clearing site to an approximately 500 ha parcel of remnant vegetation suggests it may be suitable feeding habitat for the species. It is unlikely that Malleefowls would use any of the proposed clearing permit area for nesting due to vulnerability to predation in the narrow road reserve. No Malleefowls or evidence of Malleefowl activity was encountered during the flora survey.

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

Carnaby's Black Cockatoo's are unlikely to nest within the 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project area, as no large trees are present with hollows. However tall Eucalypts within the proposed clearing area and surrounds are likely utilised by Carnaby's Cockatoos for roosting. Carnaby's Black Cockatoos forage on Proteaceae species nuts, such as Hakea or Banksia species. Vegetation type A, described 'Highly disturbed mixed acacia and proteaceae shrubland' would likely have once provided foraging grounds for Carnaby's Cockatoos. However, this area is relatively smalland highly disturbed and would not be providing significant amounts of foraging material currently.

5.6.3 Mallee Black-headed snake, *Parasuta spectabilis subsp. bushi*, priority one fauna

The Mallee Black-headed snake is a priority one fauna, meaning it is a poorly known species. Its associated habitat is broadly defined as grasslands and shrublands, and they are cryptic nocturnal lizard-eating snakes. The subspecies occupies a disjunct range, with majority of its distribution area being spread across the Nullabor Plain and extending eastward into Victoria, however there has been records of this subspecies in Gibson. It is possible that this species inhabits areas of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd', in vegetation types A, B C and D due to the suitability of vegetation and proximity to previous sightings.

5.6.4 Hooded Plover, *Thinornis rubricollis*, priority four fauna

The western subspecies of the Hooded Plover breeds on the shores of inland salt lakes and in coastal habitats. On salt lakes, Hooded Plovers mainly feed on sand and shell banks, open mud, salt-covered mud and areas covered in shallow water. It is possible that Hooded Plovers inhabits the salt lake at the western end, in vegetation type E, of 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' and the salt lakes on adjacent agricultural properties. If there were breeding populations of Hooded Plovers within the salt lake at SLK 14.98 km, the clearing proposed for the area would likely significantly affect them. No shorebirds or evidence of shorebirds were noted during either the spring 2020 survey or followup survey in May 2021.

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

The 'Site V – Scaddan Road Widening, Yates Rd to Styles Rd' project may be at variance to some of the clearing principles that the Department of Water and Environmental Regulations (DWER) assess applications, as listed under Schedule 5 of the Environmental Protection Act 1986 (DWER 2019).

Table 6. Shire of Esperance Assessment against Clearing Principles of the proposed 'Site V – Scaddan Road Widening, Yates Rd to Styles Rd'.

Assessment against Clearing Principles	Conclusion
Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Biodiversity at this site is high with 126 species recorded over 5 vegetation communities
Principle (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	None of the application area would be considered as significant habitat for fauna
Principle (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	One priority species Meleleuca dempta (P3) was recorded from the area. This species whilst poorly surveyed and poorly conserved within formal conservation estate is likely to be more common and the removal of 3/4 of plants that make up this population is unlikely to effect the existence of these species.
Principle (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.	No threatened or priority ecological communities were recorded from the application area as vegetation did not meet the condition thresholds to be considered as Kwongkan TEC
Principle (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	There is large areas of uncleared vegetation immediately adjacent to the application area
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.	Some wetland vegetation is growing in the salt lake at the western part of this application area.
Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Soil types in the area are unlikely to erode or become degraded due to this road widening.
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.	Clearing of the vegetation is unlikely to have an impact on the environmental values of any adjacent or nearby conservation area all over 8km away.
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 impacts.
Principle (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Unlikely to have any impacts.

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8 Appendix

8.1 Vegetation types

Figure 6. Vegetation type A identified in 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, described as 'Highly disturbed mixed acacia and proteaceae shrubland'.

Figure 7. Vegetation type B identified in 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, described as 'Open Yate *Eucalyptus occidentalis* woodland over *Acacia cyclops* shrubland'.

Figure 8. Vegetation type C identified in 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, described as 'Regenerating Eucalyptus Mallee over *Acacia cyclops* shrubland'.

Figure 9. Vegetation type D identified in 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, described as 'Eucalyptus Mallee over Melaleuca shrubland'.

Figure 10. Vegetation type E identified in 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd' project, described as 'Scattered *Melaleuca cuticularis* and Samphire community on salt lake periphery'.

8.2 Incidental species list

Table 6. Species identified from flora survey 'Site V – Scaddan Road Resheet, Yates Rd to Styles Rd'

Family	Genus	Species	Common Name	Weed	Cons Stat
Aizoaceae	*Carpobrotus*	*virescens*	Inland Pigface		
Aizoaceae	*Mesembryanthemum*	*nodiflorum*		x	
Anarthriaceae	*Anarthria*	*laevis*			
Araliaceae	*Trachymene*	*pilosa*			
Asparagaceae	*Asparagus*	*asparagoides*	Bridal Creeper	X	
Asparagaceae	*Lomandra*	*micrantha ssp.teretifolia*			
Asparagaceae	*Thysanotus*	*patersonii*	Twining Fringe Lilly		
Asphodelaceae	*Asphodelus*	*fistulosus*	Onion weed	X	
Asteraceae	*Arctotheca*	*calendula*	Cape Weed, Cape Dandelion	X	
Asteraceae	*Osteospermum*	*ecklonis*	Veldt Daisy	x	
Asteraceae	*Sonchus*	*asper*	Prickly sowthistle	X	
Asteraceae	*Ursinia*	*anethemoides*		X	
Asteraceae	*Vittadinia*	*gracilis*			
Asteraceae	*Pseudognaphalium*	*luteoalbum*			
Asteraceae	*Sonchus*	*sp.*	Sow thistle	X	
Brassicaceae	*Raphnus*	*raphanistrum*	Wild Radish	X	
Casuarinaceae	*Allocasuarina*	*acutivalvis*			
Casuarinaceae	*Allocasuarina*	*humilis*			
Chenopodiaceae	*Atriplex*	*semibaccata*			
Chenopodiaceae	*Chenopodiaceae*	*sp. 1*			
Chenopodiaceae	*Chenopodiaceae*	*sp. 3*			
Chenopodiaceae	*Chenopodiaceae*	*sp. 6*			
Chenopodiaceae	*Enchylaena*	*tomentosa ssp. tomentosa*			
Chenopodiaceae	*Maireana*	*sp.*			
Chenopodiaceae	*Tecticornia*	*sp. 1*			
Chenopodiaceae	*Tecticornia*	*sp. 2*			
Chenopodiaceae	*Tecticornia*	*sp. 3*			
Convolvulaceae	*Wilsonia*	*humilis*	Silky Wilsonia		
Cupressaceae	*Callitris*	*roei*			
Cyperaceae	*Caustis*	*dioica*	Puzzle Grass		
Cyperaceae	*Gahnia*	*sp. South West*			
Cyperaceae	*Lepidosperma*	*sp.*			
Cyperaceae	*Schoenus*	*caespititius*			
Cyperaceae	*Schoenus*	*subfascicularis*			
Dilleniaceae	*Hibbertia*	*gracilipes*			
Dilleniaceae	*Hibbertia*	*oligantha*			
Dilleniaceae	*Hibbertia*	*psilocarpa*			

Ericaceae	*Lissanthe*	*rubicunda*			
Fabaceae	*Acacia*	*assimilis ssp. atroviridis*			
Fabaceae	*Acacia*	*bidentata*			
Fabaceae	*Acacia*	*crispula*			
Fabaceae	*Acacia*	*cyclops*	Coastal Wattle		
Fabaceae	*Acacia*	*gonophylla*			
Fabaceae	*Acacia*	*lasiocarpa ssp. bracteolata*			
Fabaceae	*Acacia*	*latipes ssp. latipes*			
Fabaceae	*Acacia*	*maxwellii*			
Fabaceae	*Acacia*	*mutabilis ssp. mutabilis*			
Fabaceae	*Acacia*	*pinguiculosa ssp. teretifolia*			
Fabaceae	*Acacia*	*pritzeliana*			
Fabaceae	*Acacia*	*saligna*	Orange Wattle		
Fabaceae	*Aotus*	*sp. Esperance*			
Fabaceae	*Chamaecytisus*	*palmensis*		x	
Fabaceae	*Davesia*	*lancifolia*			
Fabaceae	*Daviesia*	*aphylla*			
Fabaceae	*Gastrolobium*	*discolour*			
Fabaceae	*Gastrolobium*	*parviflorum*			
Fabaceae	*Pultenaea*	*adunca*			
Fabaceae	*Pultenaea*	*elachista*			
Fabaceae	*Templetonia*	*sulcata*	Centipede bush		
Fabaceae	*Vicia*	*benghalensis*	Purple vetch	x	
Geraniaceae	*Erodium*	*cicutarium*	Storksbill Pelargonium	x	
Goodeniaceae	*Coopernookia*	*strophiolata*			
Goodeniaceae	*Dampiera*	*lavandulacea*			
Goodeniaceae	*Goodenia*	*affinis*	Silver Goodenia		
Goodeniaceae	*Goodenia*	*concinna*			
Goodeniaceae	*Leschenaultia*	*formosa*	Red Lechenaultia		
Haloragaceae	*Glischrocaryon*	*angustifolium*	Pop Flower		
Hemerocallidaceae	*Dianella*	*brevicaulis*	Flax Lilly		
Hemerocallidaceae	*Dianella*	*revoluta*	Flax Lilly		
Iridaceae	*Patersonia*	*occidentalis*			
Iridaceae	*Romulea*	*rosea*	Guildford Grass	X	
Lamiaceae	*Westringia*	*dampieri*			
Lauraceae	*Cassytha*	*melantha*	Dodder Laurel		
Malvaceae	*Alyogyne*	*hakeifolia*			
Malvaceae	*Lasiopetalum*	*rosmarinifolium*			
Malvaceae	*Malva*	*parviflora*	Marshmellow	X	
Myrtaceae	*Calothamnus*	*quadrifidus*			

Myrtaceae	*Chamelaucium*	*megalopetalum*			
Myrtaceae	*Cyathostemon*	*ambiguua*			
Myrtaceae	*Cyathostemon*	*blackettii*			
Myrtaceae	*Eucalyptus*	*conglobata ssp. conglobata*			
Myrtaceae	*Eucalyptus*	*eremophila*			
Myrtaceae	*Eucalyptus*	*forrestiana*	Fuschia gum		
Myrtaceae	*Eucalyptus*	*halophila*			
Myrtaceae	*Eucalyptus*	*kessellii ssp. kessellii*			
Myrtaceae	*Eucalyptus*	*leptocalyx*	Hopetoun mallee		
Myrtaceae	*Eucalyptus*	*oleosa ssp. oleosa*	Red morrell		
Myrtaceae	*Eucalyptus*	*pleurocarpa*	Tallerack		
Myrtaceae	*Eucalyptus*	*Sp.3*			
Myrtaceae	*Eucalyptus*	*Sp.4*			
Myrtaceae	*Eucalyptus*	*Sp.7*			
Myrtaceae	*Eucalyptus*	*tumida*			
Myrtaceae	*Eucalyptus*	*uncinata*			
Myrtaceae	*Melaleuca*	*acuminata*			
Myrtaceae	*Melaleuca*	*brevifolia*			
Myrtaceae	*Melaleuca*	*calycina*			
Myrtaceae	*Melaleuca*	*carrii*			
Myrtaceae	*Melaleuca*	*cuticularis*	Salt Water Paperbark		
Myrtaceae	*Melaleuca*	*dempta*			P3
Myrtaceae	*Melaleuca*	*glaberrima*			
Myrtaceae	*Melaleuca*	*linguiformis*			
Myrtaceae	*Melaleuca*	*plumea*			
Myrtaceae	*Melaleuca*	*pulchella*	Crab Claw Melaleuca		
Myrtaceae	*Melaleuca*	*rigidifolia*			
Myrtaceae	*Melaleuca*	*societatis*			
Myrtaceae	*Melaleuca*	*thyoides*			
Myrtaceae	*Melaleuca*	*uncinata*			
Onagraceae	*Oenothera*	*stricta*	Evening Primrose	x	
Orchidaceae	*Disa*	*bracteata*			
Orchidaceae	*Microtis*	*media*	Mignonette Orchid		
Orchidaceae	*Thelymitra*	*graminea*			
Pittosporaceae	*Billardiera*	*coriacea*	Kurrup		
Pittosporaceae	*Marianthus*	*bicolor*			
Poaceae	*Austrostipa*	*elegantissima*			
Poaceae	*Austrostipa*	*scabra*			
Poaceae	*Austrostipa*	*semibarbata*			
Poaceae	*Austrostipa*	*variabilis*			
Poaceae	*Avena*	*sativa*	Oat grass	x	
Poaceae	*Briza*	*maxima*	Blowfly grass	x	

Poaceae	*Bromus*	*catharticus*	Prairie Grass	x	
Poaceae	*Bromus*	*diandrus*	Great Brome	x	
Poaceae	*Bromus*	*hordaceus*		x	
Poaceae	*Ehrharta*	*calyina*		x	
Poaceae	*Ehrharta*	*longiflora*		x	
Poaceae	*Eragrostis*	*curvula*	Love grass	x	
Poaceae	*Hordeum*	*leporinum*		x	
Poaceae	*Lolium*	*perenne*		x	
Poaceae	*Parapholis*	*incurva*			
Poaceae	*Vulpia*	*myuros*		x	
Polygalaceae	*Comesperma*	*spinosum*	Spiny Milkwort		
Primulaceae	*Lysimachia*	*arvensis*	Scarlet Pimpernel	x	
Proteaceae	*Adenanthos*	*cuneatus*	Coastal jug Flower		
Proteaceae	*Banksia*	*petiolaris*			
Proteaceae	*Grevillea*	*oligantha*			
Proteaceae	*Grevillea*	*plurijuga ssp. superba*			
Proteaceae	*Hakea*	*cinerea*	Ashy Hakea		
Proteaceae	*Hakea*	*commutata*			
Proteaceae	*Hakea*	*laurina*	Pin Cushion Hakea		
Proteaceae	*Hakea*	*nitida*	Frog Hakea		
Proteaceae	*Hakea*	*varia*			
Restionaceae	*Hypolaena*	*humilis*			
Rhamnaceae	*Pomaderris*	*rotundifolia*			
Rhamnaceae	*Spyridium*	*microcephalum*			
Rhamnaceae	*Spyridium*	*mucronatum ssp. mucronatum*			
Rubiacaea	*Opercularia*	*vaginata*	Dog weed		
Rutaceae	*Boronia*	*crassifolia*			
Rutaceae	*Boronia*	*inornata*	Desert Boronia		
Rutaceae	*Cyanothamnus*	*baeckeaceus ssp. beackeacus*			
Rutaceae	*Cyanothamnus*	*inconspicuus*			
Rutaceae	*Microcybe*	*pauciflora ssp. pauciflora*			
Rutaceae	*Phebalium*	*lepidotum*			
Santalaceae	*Exocarpus*	*aphyllus*			
Santalaceae	*Exocarpus*	*sparteus*	Native Cherry		

8.3 TPFL 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 (TPRF) manual on the DBCA website at www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Melaleuca dempta **TPFL Pop. No:**

OBSERVATION DATE: 13/05/2021 / 3/9/2020 **CONSERVATION STATUS:** P3 **New population** ☐

OBSERVER/S: Julie Waters, Katherine Walkerden, Sophie Willsher, Danika Penson **PHONE** 0416558774

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

EMAIL: Katherine.Walkerden@esperance.wa.gov.au

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

Scaddan rd 300 Metres East of Scaddan rd yates rd t junction

Reserve No: na

DBCA DISTRICT: South Coast **LGA:** Esperance Land manager present: ☐

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

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

Lat / Northing: 396729.2

Long / Easting: 6295219.8

ZONE: 51H

METHOD USED: GPS ☒ Differential GPS ☐ Map ☐

No. satellites: ___ Map used: ___

Boundary polygon captured: ☐ Map scale: ___

LAND TENURE:

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

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

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

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

EFFORT: Time spent surveying (minutes): ___ 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	5			

Area of pop (m²): ___

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

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

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: Clonal ☐ Vegetative ☐ Flowerbud ☐ Flower ☐

Immature fruit ☐ Fruit ☒ Dehisced fruit ☐ Percentage in flower: ___%

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

COMMENT: Most plants were very healthy 3-4 were in poor health

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

Please return completed form to **Species And Communities Program** DBCA,

Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

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

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

Department of Biodiversity, Conservation and Attractions

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

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

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

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

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

1. Scattered Melaleuca cuticularis and Samphire community on salt lake periphery
2. Eucalyptus Mallee over Melaleuca shrubland
3.
4.

ASSOCIATED SPECIES:
Other (non-dominant) spp

Melaleuca brevifolia, Melaleuca thyoides
Samphire

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

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

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: ____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: ____

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

FLORA AUTHORISATION / LICENCE No: FT61000788 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

SPECIMEN: KW127 Collectors No: WA Herb. ☒ Regional Herb. ☐ District Herb. ☐ Other: _____

LODGEMENT: WA Herb Lodgement No:

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

COPY SENT TO: Regional Office 396729.2 District Office ☒ Other: _____

Submitter of Record: Katherine Walkerden Role: Environmental officer Signed KSW : Date: 14/05/2021

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Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

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