Attachment 4 (RSD) - Appendix I

Detailed Flora and Vegetation Survey

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Detailed flora and vegetation survey for a Proposed Wind Farm in Scott River

Prepared for Synergy Renewable Energy Development

February 2025

Final

Detailed flora and vegetation survey for a Proposed Wind Farm in Scott River

Prepared for Synergy Renewable Energy Development

Version history

Author/s	Reviewer/s	Version	Version number	Date submitted	Submitted to
J. Alford, B. Loneragan N. Rogers, B. Arbery	J. Clark, D. Leach	Draft for client comments	0.1	18-Mar-24	Natassja Bell
N. Rogers, D. Leach, K. Crews	K. Crews, D. Leach	Draft for client comments	0.2	29-Aug-24	Natassja Bell
G. Wells, N. Rogers	G. Wells	Final, client comments addressed	1.0	27-Sep-24	Natassja Bell
N. Rogers	K. Crews	Update with additional field trip results	2.0	05-Dec-24	Natassja Bell
N. Rogers	K. Crews	Final, client comments addressed	3.0	26-Feb-25	Natassja Bell

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EXECUTIVE SUMMARY

Synergy Renewable Energy Development (SynergyRED) is investigating the feasibility of a developing a Wind Farm in Scott River, located approximately 15 km north-east of Augusta, Western Australia. Phoenix Environmental Sciences Pty Ltd was commissioned by SynergyRED to undertake a detailed flora and vegetation survey, to identify any significant flora and vegetation values present in the 3,891.56 ha study area. The survey results are to be used to inform the feasibility and design layouts for the proposed wind farm and support environmental and planning approvals.

The scope of work was to undertake a desktop assessment in preparation for the field survey, a single season detailed flora and vegetation survey within the most appropriate season, and targeted searches for Threatened flora. The methods of the detailed flora and vegetation survey were as per the Environmental Protection Authority Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment.

A total of 423 flora taxa representing 65 families and 209 genera were recorded during the survey. The assemblage included 353 native taxa, 70 introduced taxa, 340 perennial taxa, 74 annual or short-lived taxa and 9 taxa that exhibit both annual and perennial lifecycles. The most prominent families recorded were Fabaceae, Proteaceae, Poaceae and Myrtaceae.

Three Threatened flora (*Grevillea brachystylis* subsp. *australis*, *Lambertia orbifolia* subsp. *vespera* and *Verticordia plumosa* var. *vassensis*), 16 Priority flora, and one species representing a significant range extension, were recorded in the study area. The survey confirmed the presence of many desktop records as well as identifying many new records of significant flora. Other desktop significant flora records were determined to no longer be current.

Records of significant flora were assigned to populations, categorised as either new populations or confirmed desktop populations. A total of 74 unique populations of significant flora were delineated, encompassing 60 new populations (1 Threatened and 59 Priority flora populations) and 14 confirmed desktop populations (4 Threatened and 10 Priority flora populations).

The survey identified 20 vegetation types, comprising of 18 native and 2 non-native vegetation types. Native vegetation covered 20.3% (790 ha) of the study area, occurring as remnant patches mainly within farmland, and roadside vegetation corridors.

Fifteen of the 18 native vegetation types were designated to have local or regional significance. Significant vegetation within this survey was classified under 4 categories: representative of a Threatened Ecological Community (TEC) (regionally significant), restricted vegetation types (locally significant), habitat for significant flora species types (locally significant) and groundwater dependent ecosystems (GDEs; locally significant).

Four vegetation types were identified as analogous to the Scott River Ironstone TEC. Three vegetation types were identified as 'restricted'. Twelve vegetation types were identified as habitat for significant flora species. Seven vegetation types were identified as known or potential GDEs. AmBsHc was the only vegetation type to be identified as significant in all 4 categories.

In terms of vegetation condition, a very large proportion of the study area (79.4%) was classified as Completely Degraded, representing cleared areas and plantations. Native vegetation in the study area was in varying states of condition, with 279.1 ha (7.2% of the study area) containing remnant vegetation in Pristine or Excellent condition, and the rest being impacted by grazing or invasive species (with Very Good to Degraded condition ratings).

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ACRONYMS AND ABBREVIATIONS

BC Act	*Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
CD	Conservation Dependent
CR	Critically Endangered
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPIRD	Department of Primary Industries and Regional Development
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EN	Endangered
EP Act	*Environmental Protection Act 1986*
ESA	Environmentally Sensitive Area
EX	Extinct
GDE	Groundwater dependent ecosystems
GW	Groundwater
IBRA	Interim Biogeographic Regionalisation of Australia
IBSA	Index of Biodiversity Surveys for Assessment
LGA	Local Government Area
NES	National Environmental Significance
NP	National park
NR	Nature reserve
NVIS	National Vegetation Information System
P	Priority
PEC	Priority Ecological Community
RE	Range Extension
RIA	Road intersection area
SoW	Scope of Works
SW	South West
SWREL	South West Regional Ecological Linkages
T	Threatened
TEC	Threatened Ecological Community
VU	Vulnerable
WA	Western Australia
WAPC	Western Australian Planning Commission
WFA	Wind Farm area
WoNS	Weed of National Significance

1 INTRODUCTION AND BACKGROUND

Synergy Renewable Energy Development (SynergyRED) is a wholly owned subsidiary of Synergy Pty Ltd. SynergyRED is investigating the feasibility of a Proposed Wind Farm in Scott River (the Project), located approximately 15 km north-east of Augusta, Western Australia (WA; Figure 1-1).

In April 2023, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by SynergyRED to undertake a detailed flora and vegetation survey, basic and targeted fauna survey, and to determine ecological values for the Project. The purpose of the surveys was to identify flora, vegetation, significant fauna and habitats, to inform the feasibility and design layouts. This report focuses on the findings from the detailed flora and vegetation survey.

1.1 OBJECTIVES AND SCOPE OF WORK

The scope of works was prepared to identify flora and vegetation of conservation significance to inform the feasibility and design layouts. The flora and vegetation survey will be used to support environmental and planning approvals as required.

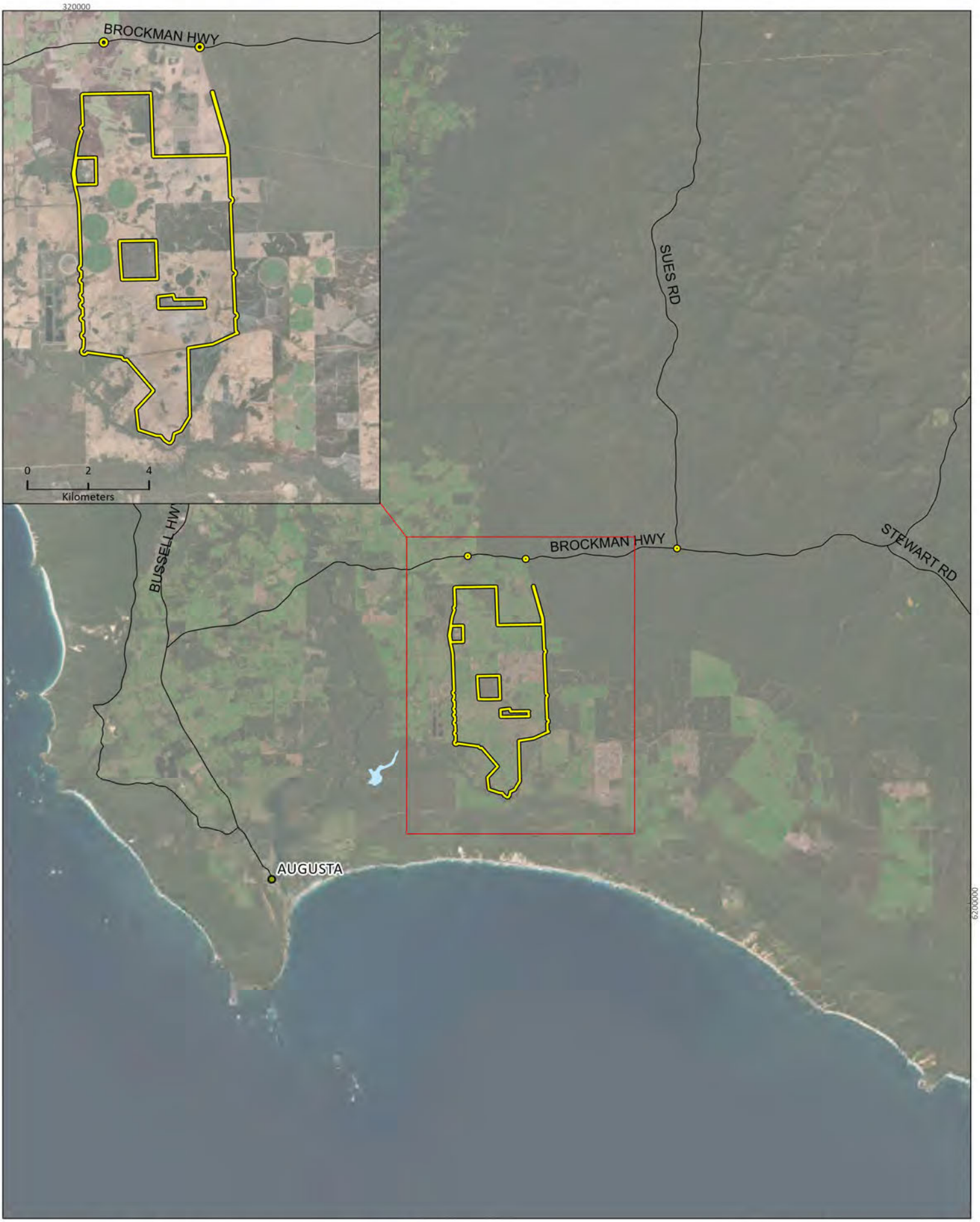
The objectives for the flora and vegetation survey were to:

a) undertake a single season detailed flora and vegetation survey with targeted searches for Threatened flora in spring 2023.
b) complete the field surveys during the most appropriate season(s) for the detection and identification of conservation significant flora that are likely or may occur within the study area, based on an initial desktop review and database searches.
c) ensure the surveys completed satisfy the following guidelines, by employing adequate survey methodology and effort by suitably qualified and experienced practitioners.

1.2 STUDY AREA

The total study area is 3,891.56 ha and comprises (Figure 1-1):

- the wind farm area (the 'WFA', 3,882.18 ha)
- 3 road intersection areas (the 'RIAs', 9.41 ha).



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 4.5 9
Kilometers

1:266,000 (at A4) GDA 1994 MGA Zone 50

Study area
Lakes
Roads

Figure 1-1
Project location and study area

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2 LEGISLATIVE CONTEXT

The protection of flora in WA is principally governed by 3 acts:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- State *Biodiversity Conservation Act 2016* (BC Act)
- State *Environmental Protection Act 1986* (EP Act).

2.1 COMMONWEALTH

The EPBC Act is administered by the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW). The EPBC Act provides for the listing of Threatened flora and Threatened Ecological Communities (TEC) as matters of National Environmental Significance (NES). Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of NES, require approval from the Australian Government Minister for the Environment through a formal referral process. Key threats and habitat critical to the survival of EPBC Act Threatened species are usually defined in the conservation advice and/or recovery plan for the species.

Conservation categories applicable to Threatened flora and fauna species under the EPBC Act are as follows:

- Extinct (EX)[1] – there is no reasonable doubt that the last individual has died
- Extinct in the Wild (EW) – taxa known to survive only in captivity
- Critically Endangered (CR) – taxa facing an extremely high risk of extinction in the wild in the immediate future
- Endangered (EN) – taxa facing a very high risk of extinction in the wild in the near future
- Vulnerable (VU) – taxa facing a high risk of extinction in the wild in the medium-term
- Conservation Dependent (CD)[1] – taxa whose survival depends upon ongoing conservation measures; without these measures, a conservation dependent taxon would be classified as Vulnerable, Endangered or Critically Endangered.

Ecological communities are defined as 'naturally occurring biological assemblages that occur in a particular type of habitat' (English & Blyth 1997). There are 3 categories under which ecological communities can be listed as TECs under the EPBC Act:

- Critically endangered (CR) – If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
- Endangered (EN) – If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
- Vulnerable (VU) – If, at that time, an ecological community is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

[1] Species listed as Extinct and Conservation Dependent are not matters of NES and therefore do not trigger the EPBC Act.

2.2 STATE

2.2.1 Threatened and Priority species

In WA, the BC Act provides for the listing of Threatened flora species (Government of Western Australia 2022) in the following categories:

- Critically Endangered (CR) – species facing an extremely high risk of extinction in the wild in the immediate future[2]
- Endangered (EN) – species facing a very high risk of extinction in the wild in the near future[2]
- Vulnerable (VU) – species facing a high risk of extinction in the wild in the medium-term future[2].

The Department of Biodiversity, Conservation and Attractions (DBCA) administers the BC Act and maintains a non-statutory list of Priority flora. Priority species are still considered to be of conservation significance – that is they may be Threatened – but cannot be considered for listing under the BC Act until there is adequate understanding of threat levels imposed on them. Species on the Priority flora list are assigned to one of 4 Priority (P) categories, P1 (highest) – P4 (lowest), based on level of knowledge/concern. The DBCA list also includes Threatened (T) flora, a consolidation of any species listed under the EPBC or BC acts.

An additional category under the BC Act is Extinct (EX) and the DBCA equivalent code is (X). This is defined as: no reasonable doubt that the last member of the species has died.

2.2.2 Critical habitat

Under the BC Act, habitat is eligible for listing as critical habitat if it is critical to the survival of a Threatened species, or a TEC and its listing is otherwise in accordance with the ministerial guidelines. This provision pertains to formal listing by the Minister, as distinct from (for example) critical habitat for a Threatened flora species referred to in a recovery plan or conservation advice.

2.2.3 Threatened and Priority Ecological Communities

The BC Act provides for the listing of TECs in the following categories:

- Critically Endangered – facing an extremely high risk of becoming eligible for listing as a collapsed ecological community in the immediate future[2]
- Endangered – facing a very high risk of becoming eligible for listing as a collapsed ecological community in the near future[2]
- Vulnerable – facing a high risk of becoming eligible for listing as a collapsed ecological community in the medium-term future[2].

An ecological community may be listed as a collapsed ecological community under the BC Act if there is no reasonable doubt that the last occurrence of the ecological community has collapsed, or the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure.

The DBCA also maintains a non-statutory list of Priority Ecological Communities (PECs), which may become TECs in the future; however, do not currently meet survey criteria or that are not adequately defined. PECs are assigned to one of 5 categories depending on their priority for survey or definition, with Priority 1 of highest concern and Priority 5 of lowest concern.

[2] As determined in accordance with criteria set out in the ministerial guidelines.

Each of the TEC/PEC known records are inclusive of a buffer. A buffer is included around each TEC or PEC to help ensure:

- that nearby developments with potential for impact are considered
- for ecological communities driven by hydrological processes, buffers are applied to ensure essential ecological functions are maintained and/or potential impact of nearby developments can be considered
- mapping inaccuracies are accounted for.

2.2.4 Other significant flora and vegetation

Under the EPA's environmental factor guidelines, flora, vegetation and fauna may be considered significant for a range of reasons other than listing as a Threatened or Priority species or ecological community.

In addition to listing as Threatened or Priority, EPA (2016a) identifies the following:

- flora may be significant for
    - local endemism or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems; GDEs)
    - new species or anomalous features that indicate a potential new species
    - representing the range of a species (particularly at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
    - being unusual species, including restricted subspecies, varieties or naturally occurring hybrids
    - having relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.
- vegetation may be significant for:
    - having restricted distribution
    - subject to a degree of historical impact from threatening processes
    - having a role as a refuge
    - providing an important function required to maintain ecological integrity of a significant ecosystem.

Provided in the guide for assessment of applications to clear native vegetation (DER 2014) is a scale for assessing the bioregional conservation status of ecological vegetation classes (Table 2-1).

Table 2-1 Bioregional conservation status of ecological vegetation classes

Conservation status	Description
Presumed extinct	Probably no longer present in the bioregion
Endangered*	Less than 10% of pre-European extent remains
Vulnerable*	10-30% of pre-European extent exists
Depleted*	More than 30% and up to 50% pre-European extent exists
Least concern	More than 50% of pre-European extent exists and subject to little or no degradation over a majority of this area

*or a combination of depletion, loss of quality, current threats and rarity gives a comparable status.

2.2.5 Environmentally Sensitive Areas

Under Section 51B of the EP Act the Minister for Environment may declare by notice either a specified area of the State or a class of areas of the State to be Environmentally Sensitive Area (ESA). ESAs are

declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, which was gazetted on 8 April 2005 (Government of Western Australia 2005).

ESAs are areas where the vegetation has high conservation value. Several types of areas are declared ESAs including:

- the area covered by vegetation within 50 metres (m) of Threatened flora, to the extent to which the vegetation is continuous with the vegetation in which the Threatened flora is located
- the area covered by a TEC
- a defined wetland (Ramsar wetlands, conservation category wetlands and nationally important wetlands) and the area within 50 m of the wetland
- Bush Forever sites.

2.2.6 Introduced flora

Introduced flora (weeds) pose threats to biodiversity and natural values by successfully out-competing native species for available nutrients, water, space and sunlight; reducing the natural structural and biological diversity by smothering native plants or preventing them from growing back after clearing, fire or other disturbance; replacing the native plants that animals use for shelter, food and nesting; and altering fire regimes, often making fires hotter and more destructive (Australian Weeds Committee 2007).

Management of some weed species is required under Commonwealth or State frameworks. Key classifications for significant introduced flora that are relevant to this report are:

- Declared Pest – the Biosecurity and Agriculture Management Act 2007, Section 22, makes provision for a plant taxon to be listed as a Declared Pest organism in parts of, or the entire State. Under the Biosecurity and Agriculture Management Regulations 2013 Declared Pests are assigned to one of 3 control categories that dictate the level of management required (DPIRD 2023).
- Weed of National Significance (WoNS) – high-impact, established introduced flora causing major economic, environmental, social and/or cultural impacts in a number of states/territories, and which have strong potential for further spread (Australian Weeds Committee 2012). Management is required in accordance with Department of Primary Industries and Regional Development (DPIRD) guidelines for particular WoNS.

Throughout this report, introduced flora species are indicated with an asterisk (*).

3 EXISTING ENVIRONMENT

3.1 INTERIM BIOGEOGRAPHIC REGIONALISATION OF AUSTRALIA

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into 89 'bioregions' and 419 'subregions' based on climate, geology, landform, native vegetation and species information (DoEE 2016). In WA there are 27 bioregions and 55 subregions. The study area is located within the Warren and Jarrah Forest IBRA bioregions, predominantly in the Warren (WAR01) subregion, with a very small area in the north within the Southern Jarrah Forest (JAF02) subregion (Figure 3-1).

The Warren bioregion (and analogous subregion) is made up of dissected undulating country of the Leeuwin Complex, Southern Perth Basin (Blackwood Plateau), south-west intrusions of the Yilgarn Craton and western parts of the Albany Orogen. The area sustains loamy soils supporting Karri forest, laterites supporting Jarrah-Marri forest, leached sandy soils in depressions and plains supporting low Jarrah woodlands and paperbark/sedge swamps, and Holocene marine dunes with *Agonis flexuosa* and *Banksia* woodlands and heaths (May & McKenzie 2003).

The Southern Jarrah Forest subregion is characterised by duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo - Marri woodlands on clayey soils. Eluvial and alluvial deposits support *Agonis* shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands. The climate is Warm Mediterranean (May & McKenzie 2003).

3.2 LAND SYSTEMS AND SURFACE GEOLOGY

DPIRD undertook land system mapping for the South West using a nested soil-landscape mapping hierarchy (Purdie *et al.* 2004). While the primary purpose of the mapping is to inform pastoral and agricultural land capability, it is also useful for informing biological assessments. Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage. The study area intersects 2 land systems (Table 3-1; Figure 3-2).

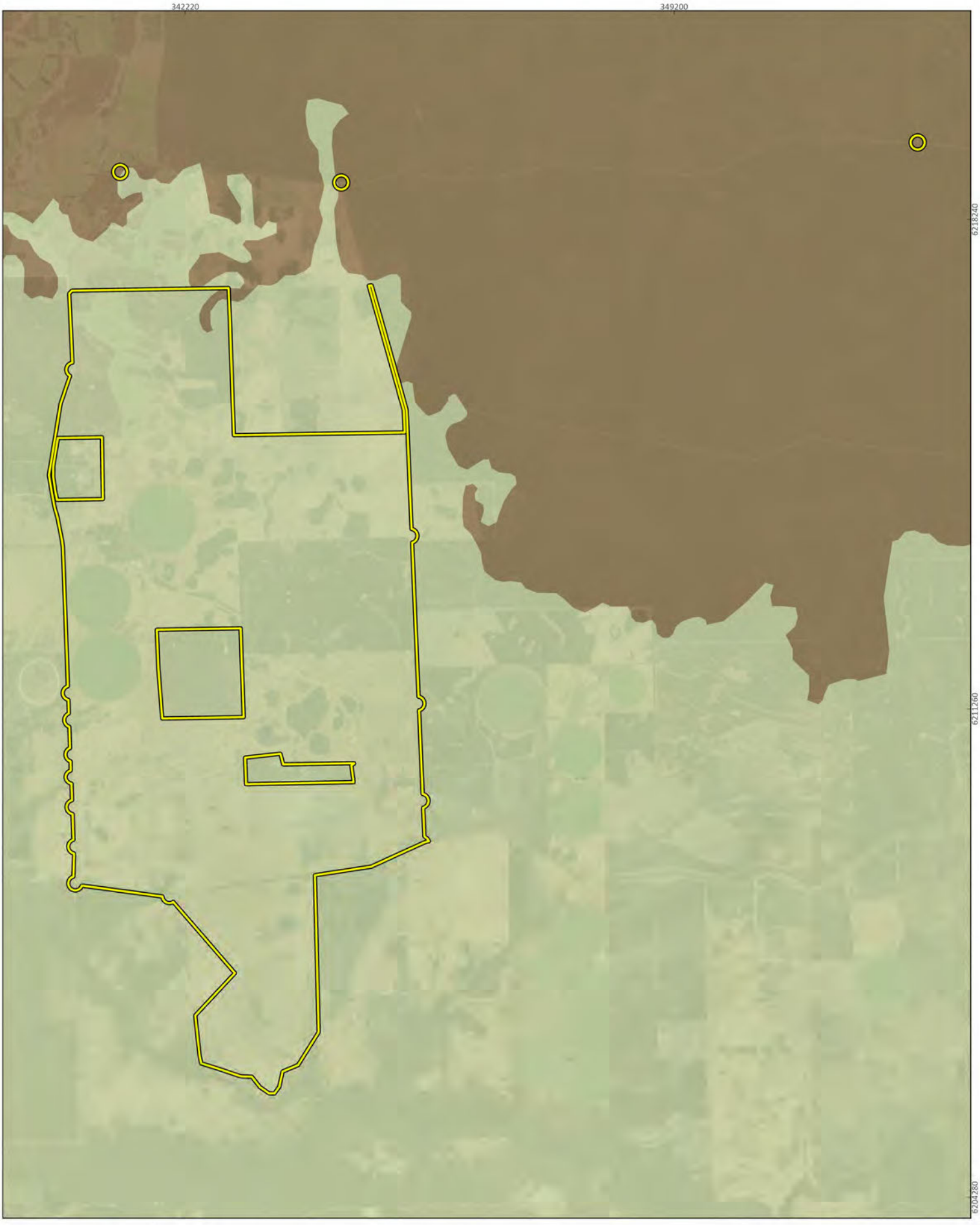
Table 3-1 Land systems and extent in study area

Land system	Description	Area (ha)	% of study area
Nillup Plain System	Poorly drained plain, in the southern Donnybrook Sunkland. Sandy gravel, non-saline wet soil, grey deep sandy duplex, loamy gravel and pale deep sands. Jarrah-Marri-paperbark woodland.	26.8	0.7
Scott River Plain System	Poorly drained coastal plain, in the southern Donnybrook Sunkland. Non-saline wet soil and pale deep sand. Heaths, sedgelands and Jarrah-Marri-paperbark woodland.	3,864.8	99.3
	Total	**3,891.6**	**100**

According to the Surface Geology of Australia 1:1,000,000 scale, WA database (Stewart *et al.* 2008), the study area intersects 3 geological formations (Table 3-2; Figure 3-2).

Table 3-2 Surface geology of the study area, extent by deposit type

Surface geology	Abbreviation	Description	Area (ha)	% of study area
Estuarine, lagoonal, and lacustrine deposits 74394	Cze	Estuarine, lagoonal, and lacustrine deposits. Numerous small lakes and swamps. Linear dunes common.	3,832.9	98.5
Bunbury basalt	Kbb	Porphyritic tholeiitic basalt.	49.3	1.3
Ferruginous duricrust 38498	Czl	Pisolitic, nodular or vuggy ferruginous laterite; some lateritic soils; ferricrete; magnesite; ferruginous and siliceous duricrusts and reworked products, calcrete, kaolinised rock, gossan; residual ferruginous saprolite.	9.4	0.2
		Total	**3,891.6**	**100**



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Map author	BA

0 1 2
Kilometers

1:69,800(at A4) GDA 1994 MGA Zone 50

Study area

Region, subregion

Jarrah Forest, Southern Jarrah Forest

Warren, Warren

Figure 3-1

Study area in relation to IBRA bioregions and subregions

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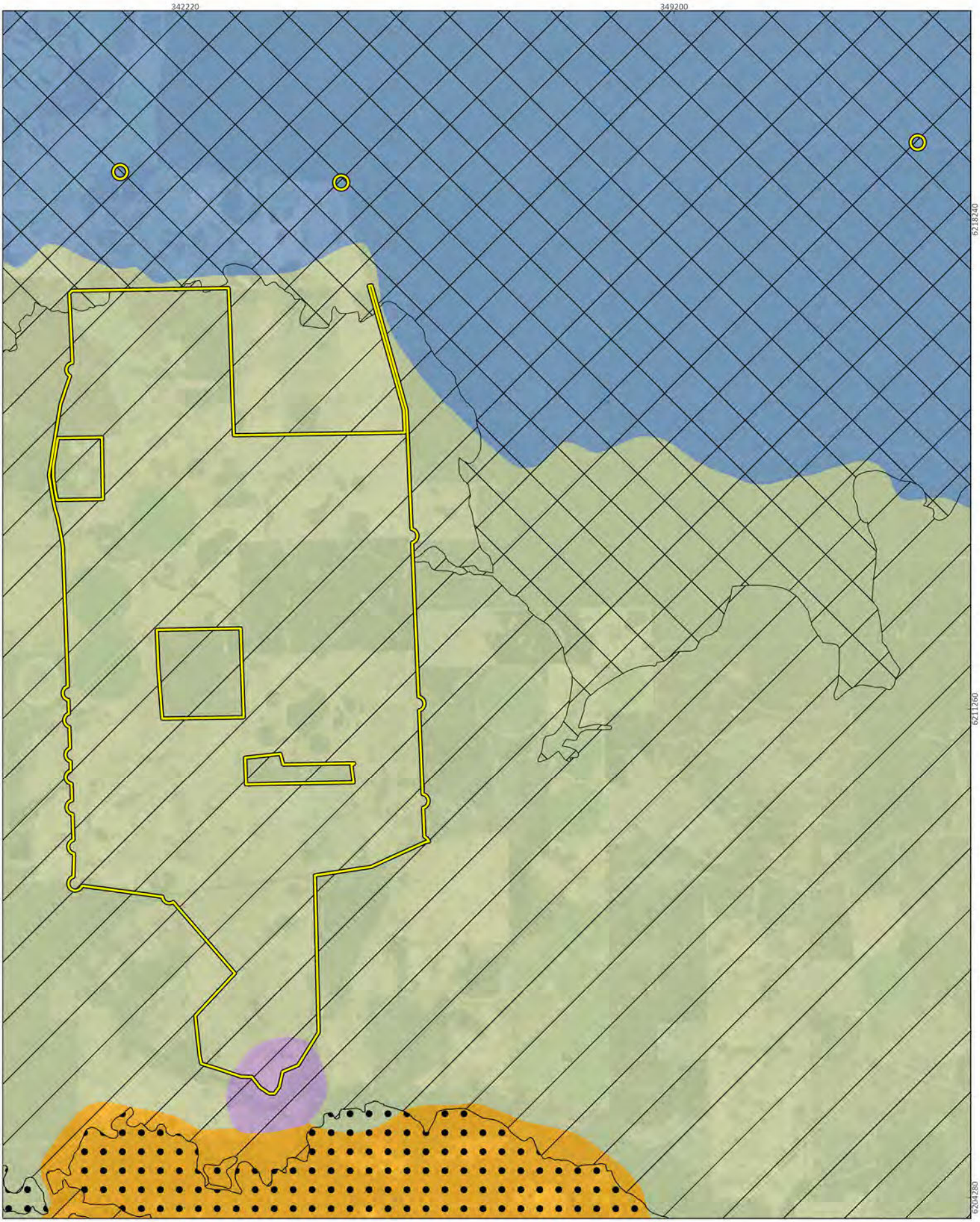

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0 1 2
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1:69,800 (at A4) GDA 1994 MGA Zone 50

Study area
Surface geology selection

Surface geology
- Cze
- Czl
- Kbb
- Qdct

Land system
- D'Entrecasteaux Dunes System
- Nillup Plain System
- Scott River Plain System

Figure 3-2
Land systems and surface geology in the study area

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3.3 CLIMATE AND WEATHER

The climate of the Warren (WAR01) subregion is described as Warm Mediterranean and moderate Mediterranean, respectively. The nearest Bureau of Meteorology (BoM) weather station with comprehensive data collection and recent historic climate data is Cape Leeuwin (no. 009518, Latitude: 34.37°S Longitude 115.14°E), located 17.76 km south-west of the study area.

Cape Leeuwin records the highest mean maximum monthly temperature (24.4°C) in February (lowest in June, 16.6°C) and the lowest minimum mean monthly temperature (11.6°C) in June (highest in February, 18.2°C) (Figure 3-3). Mean annual rainfall recorded the highest monthly means in June and April (179 and 104.2 mm respectively; Figure 3-3).

Daily mean temperatures at Cape Leeuwin preceding the surveys were relatively consistent with long-term averages, although the mean maximum temperature in October was 2.0 °C warmer than the average (Figure 3-3). The daily minimum temperatures were also generally consistent with the long-term averages, though November recorded minimum temperatures 1.7 °C above average (Figure 3-3). This shows a warming trend within the South West region.

Records from Cape Leeuwin show the highest rainfall preceding the survey was June with a total monthly rainfall of 179 mm, which was 5.3 mm higher than the long-term average (Figure 3-3). Rainfall in May can be considered an outlier due to the vast difference between the long-term average (104.7 mm less than long-term average). The 2022-2023 total annual rainfall (600.4 mm) was 352.8 mm less than the long-term average (953.2 mm; Figure 3-3).

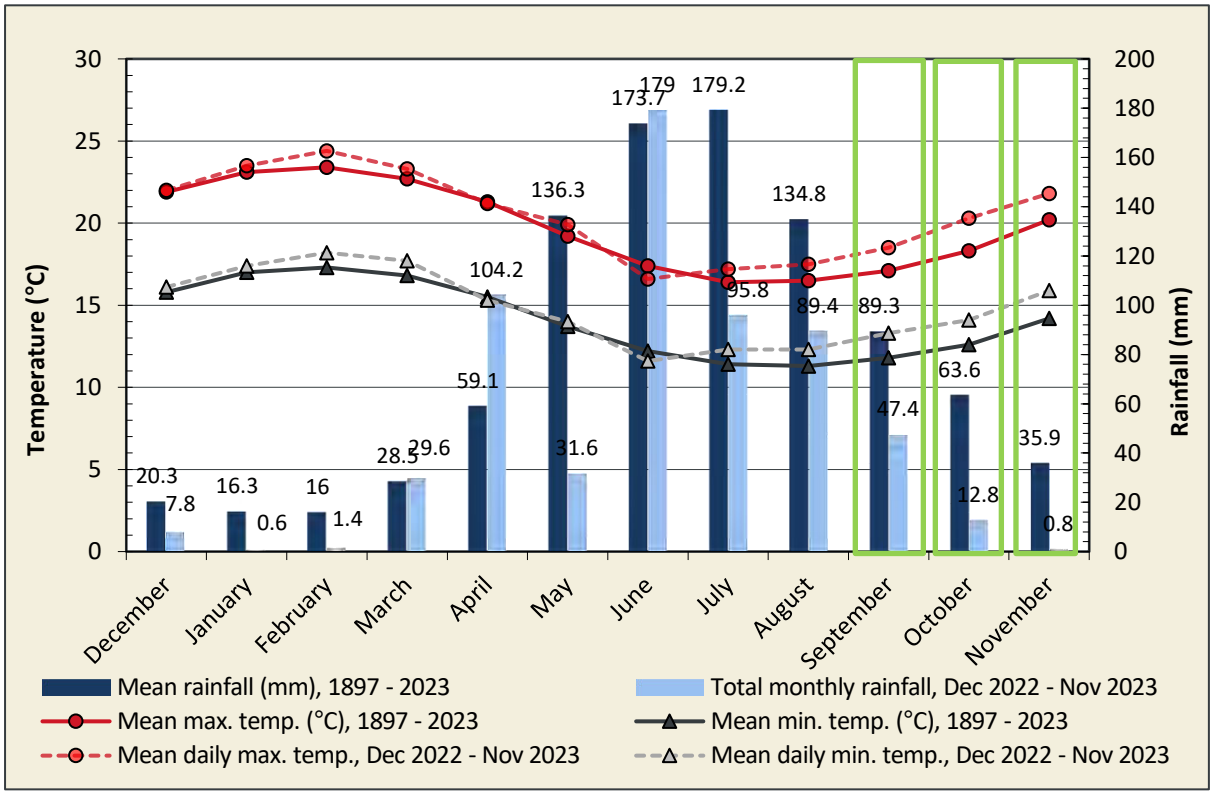


Figure 3-3 Annual climate and weather data for Cape Leeuwin (no. 009518) and mean monthly data for the 12 months preceding the survey (BoM 2024)

The 3 phases of field surveys are each marked with a green rectangle.

3.4 LAND USE

Land use within the Warren and Southern Jarrah Forest regions consists of predominantly dryland agriculture and plantations (3,739,542 ha or 36%), the majority of which is modified pastures for grazing, and cropping (Table 3-3). This is closely followed by conservation and natural environments (3,572,471 ha or 34%), the majority of which is nature conservation (Table 3-3).

Table 3-3 Land use within the Warren and Southern Jarrah Forest regions (ABARES 2018)

Land use	Area (ha)
1 Conservation and natural environments	**3,572,471**
1.1 Nature conservation	2,486,646
1.2 Managed resource protection	1,089
1.3 Other minimal use	1,084,737
2 Production from relatively natural environments	**2,649,200**
2.1 Grazing native vegetation	61,997
2.2 Production native forests	2,587,203
3 Production from dryland agriculture and plantations	**3,739,542**
3.1 Plantation forests	771,191
3.2 Grazing modified pastures	1,830,075
3.3 Cropping	1,128,405
3.4 Perennial horticulture	361
3.5 Seasonal horticulture	95
3.6 Land in transition	9,414
4 Production from irrigated agriculture and plantations	**132,365**
4.0 Production from irrigated agriculture and plantations	35
4.1 Irrigated plantation forests	598
4.2 Grazing irrigated modified pastures	56,813
4.3 Irrigated cropping	334
4.4 Irrigated perennial horticulture	62,330
4.5 Irrigated seasonal horticulture	8,406
4.6 Irrigated land in transition	3,849
5 Intensive uses	**101,356**
5.0 Intensive uses	4
5.1 Intensive horticulture	249
5.2 Intensive animal production	6,865
5.3 Manufacturing and industrial	2,008
5.4 Residential and farm infrastructure	41,183
5.5 Services	10,148
5.6 Utilities	268
5.7 Transport and communication	24,566
5.8 Mining	15,462
5.9 Waste treatment and disposal	599
6 Water	**162,785**
6.0 Water	8
6.1 Lake	51,489

Land use	Area (ha)
6.2 Reservoir/dam	32,353
6.3 River	10,755
6.4 Channel/aqueduct	63
6.5 Marsh/wetland	53,748
6.6 Estuary/coastal waters	14,369
Grand total	**10,357,716**

3.5 CONSERVATION RESERVES AND ESAS

Numerous conservation reserves, national parks and state forest occur within 10 km of the study area (Figure 3-4). Two national parks and 2 nature reserves and one state forest share a partial intersection and/or boundary with the study area:

- Blackwood River National Park – intersects part of the most eastern RIA
- Scott National Park – very small connection to the south-west (SW) boundary of the WFA
- Pagett Nature Reserve – adjoins part of the eastern boundary of the WFA
- Unnamed R42377 Nature Reserve – occurs within but excluded from the WFA
- South Blackwood State Forest – intersects part of the central RIA and adjoins part of the eastern boundary of the WFA.

Several additional reserves also occur within 10 km of the study area:

- Milyeannup National Park
- Wiltshire-Butler National Park
- Leeuwin-Naturalist National Park
- Unnamed WA46400 National Park
- Chester Nature Reserve
- Gingilup Swamps Nature Reserve
- Ngari Capes Marine Park
- Unnamed R42942 Nature Reserve
- Unnamed R15185 Nature Reserve
- Unnamed O20125 Timber Reserve
- Unnamed O12925 Timber Reserve
- Blackwood State Forest
- Milyeannup State Forest.

The gazetted ESA dataset (DWER 2023) shows 61 ESAs intersecting the study area, collectively covering 3,853.3 ha (99% of the study area; Figure 3-5). These appear to be associated with Threatened flora, TEC and wetlands. The mapped polygons encompass buffers for these values, typically 50 m for Threatened flora and between 500 m – 2,000 m for TEC, therefore the extent of actual ESAs in the study area is much lower than the mapped ESA polygons. Refer to Section 5.1.1 and 5.1.5 for the more detailed desktop results for Threatened flora and TECs. Brief comment on wetlands is provided in Section 3.6.

3.6 WETLANDS

The Augusta Estuary is located within 8 km of the study area as well as several smaller wetlands. Approximately 10 km of coastline is also present within the buffer area south of the study area. The Geomorphic Wetlands, Augusta to Walpole (DBCA-017) dataset (WRC 2017) also indicates that the study area is dominated by Palusplain (seasonally waterlogged flat) wetlands, and includes numerous Damplands (seasonally waterlogged basin) and Sumplands (seasonally inundated basin).

3.7 ECOLOGICAL LINKAGES

The importance of ecological linkages is recognised by existing environmental and planning policy documents (e.g. EPA Guidance Statement 10, EPA Guidance Statement 33 - Chapters B1, B2 and B3, EPA Bulletin 1108 Greater Bunbury Region Scheme Report and Recommendations, and the Western Australian Planning Commission Statement of Panning Policy No 2 Environment and Natural Resources Policy 2003) and is increasingly considered as part of Environmental Impact Assessment, particularly in the South West, Great Southern and Wheatbelt regions of WA due to the high degree of fragmentation in those landscapes.

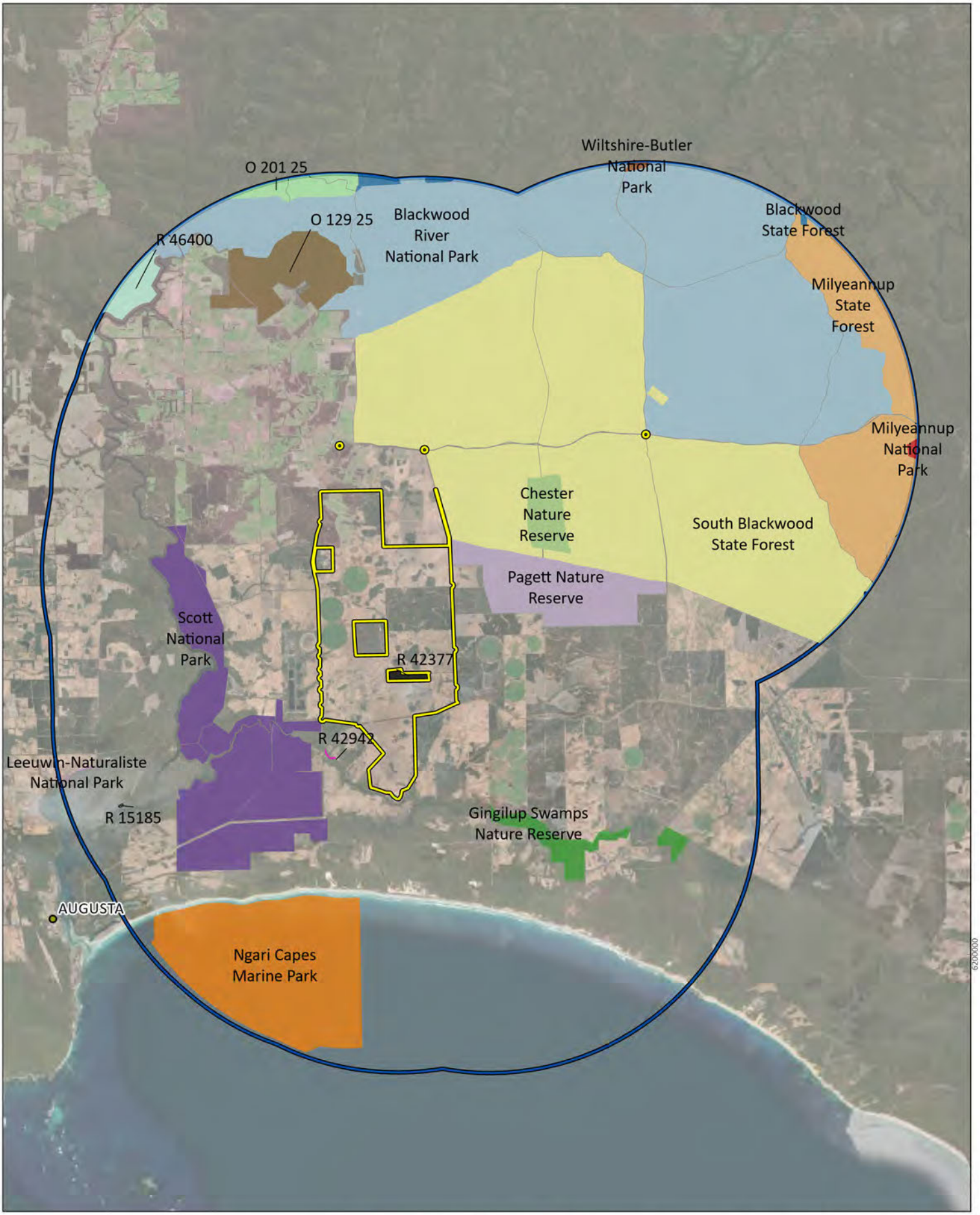
The South West Regional Ecological Linkages Project identified a network of regional-scale ecological linkages throughout the south-west of the State (Molloy *et al.* 2009). The network was subsequently extended into the eastern Jarrah Forest, Avon Wheatbelt, and Mallee (IBRA areas) and into the Serpentine-Jarrahdale Shire (Molloy & Deeley 2013).

An ecological linkage was defined by Molloy *et al.* (2009) as

> "a series of (both contiguous and non-contiguous) patches which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape."

Ecological linkages are just one measure of the biodiversity conservation value of a patch of native vegetation. The purpose of an ecological linkage therefore is to recognise a patch's additional value to biodiversity conservation and thus they allow managers and planners to achieve more effective planning and impact assessment.

As can be seen in Figure 3-5, the study area lies at the junction of several regionally important ecological linkages due to its proximity to large areas of National Park to the north and east, Scott River at its southern border, and the Blackwood River to the west.



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	26/09/2024
Drawn by	BK
Map author	BA

0 2.5 5
Kilometers

1:181,800 (at A4) GDA 1994 MGA Zone 50

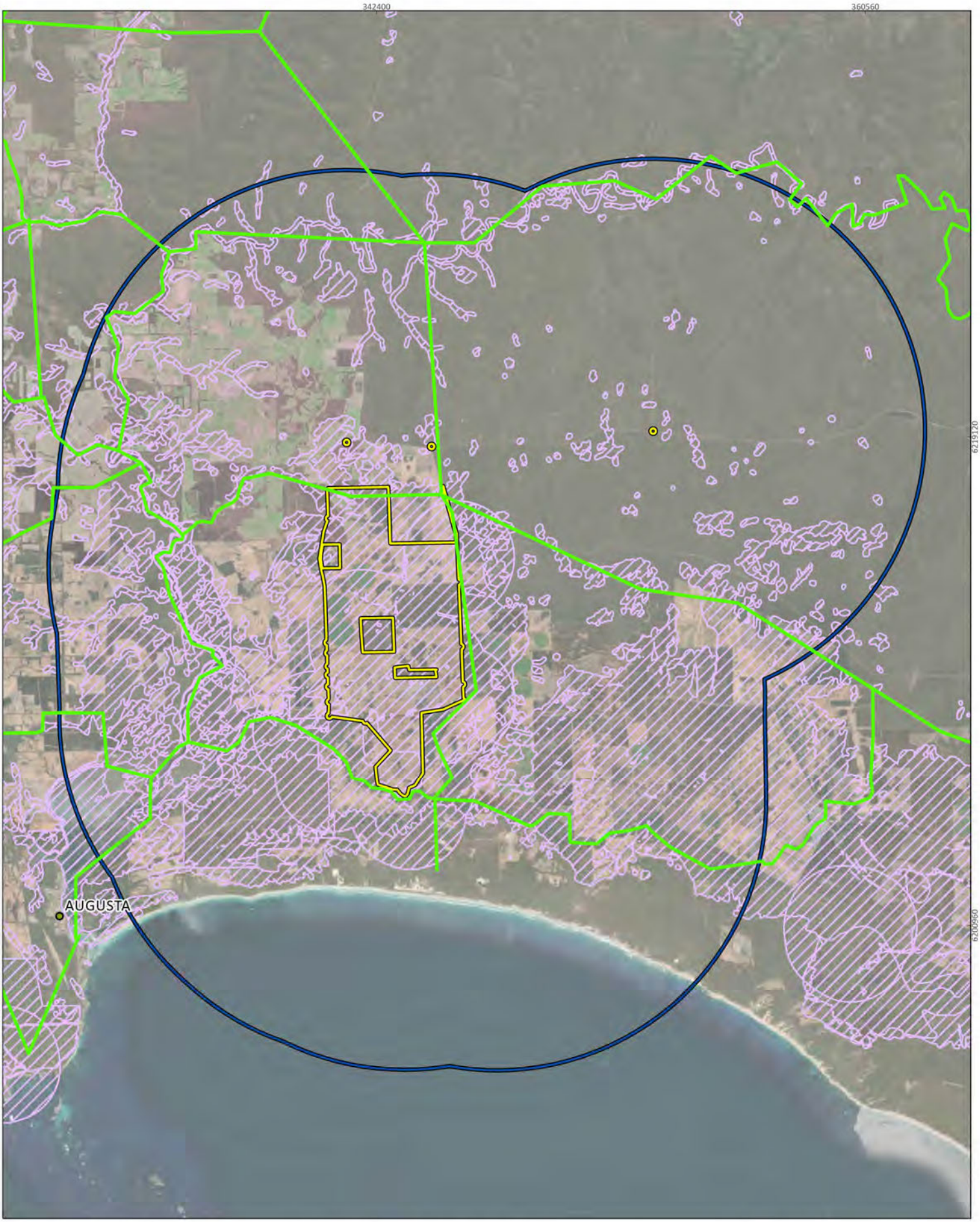
- Study area
- 10 km desktop search extent

DBCA managed land

- Blackwood River National Park
- Blackwood State Forest
- Chester Nature Reserve
- Gingilup Swamps Nature Reserve
- Leeuwin-Naturaliste National Park
- Milyeannup National Park
- Milyeannup State Forest
- Ngari Capes Marine Park
- Pagett Nature Reserve
- Scott National Park
- South Blackwood State Forest
- Wiltshire-Butler National Park
- O 129 25
- O 201 25
- R 15185
- R 42377
- R 42942
- R 46400

Figure 3-4
Conservation reserves

PHOENIX ENVIRONMENTAL SCIENCES



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 3 6
Kilometers

1:181,600 (at A4) GDA 1994 MGA Zone 50

- Study area
- 10 km desktop search extent
- Environmentally Sensitive Areas
- South West Ecological Linkages

Figure 3-5
ESAs and Ecological linkages

PHOENIX ENVIRONMENTAL SCIENCES

4 METHODS

The various surveys were conducted in accordance with the following relevant survey guidelines and guidance:

- *Environmental Factor Guideline: Flora and vegetation* (EPA 2016a)
- *Technical Guidance: Flora and vegetation surveys for Environmental Impact Assessment* (EPA 2016b)
- *Approved Conservation Advice for Scott River Ironstone Association* (SEWPaC 2013)
- *Survey Guidelines for Australia's Threatened Orchids. Guidelines for detecting orchids listed as "Threatened" under the Environment Protection and Biodiversity Conservation Act 1999* (DoE 2014).

4.1 DESKTOP REVIEW

Searches of several biological databases were undertaken to identify and prepare lists of significant flora and vegetation that may occur within the study area (Table 4-1).

A literature search was conducted for accessible reports for biological surveys conducted within 10 km of the study area to build on the lists developed from the database searches; these are listed in Table 4-2. While not a survey report, one other literature sources for this study are relevant for wider context: Lyons *et al.* (2000), who compiled a list of vascular flora of the Warren bioregion from desktop sources; and on a smaller scale, Gibson *et al.* (2001) who subsequently compiled a list for the Scott National Park and Gingilup Swamps Nature Reserve.

Table 4-1 Database searches conducted for the desktop review

Database	Target group/s	Search coordinates and extent
Protected Matters Search Tool (DCCEEW 2023)	EPBC Act Threatened flora, fauna and ecological communities	Study area plus a 10 km buffer
DBCA Threatened and Priority Flora Database (DBCA 2023g)	Threatened and Priority flora	Study area plus a 10 km buffer
DBCA Threatened and Priority Ecological Communities database (DBCA 2023f)	TECs and PECs	Study area plus a 25 km buffer[1]
NatureMap (DBCA 2023b)	Flora and fauna records	Study area plus a 10 km buffer
Index of Biodiversity Surveys for Assessment (IBSA) database (IBSA 2023), for nearby survey reports and data	Flora, vegetation and fauna survey records and data	Study area plus a 10 km buffer

[1] 25 km buffer as per the DBCA search.

Table 4-2 Survey reports included in the desktop review

Report author	Survey description	Project/area	Proximity to study area
Biota (2009)	Single season detailed flora and vegetation assessment	Proposed Milyeannup Wind Farm	Approx. 10 km SE of study area
Robinson and Keighery (1997)	Flora and vegetation surveys conducted between 1990-1991	Scott National Park	Adjacent to the SWW corner of the study area
Woodman (2019a)	Site inspection report	Site inspection report of ESA C98	Within study area
Woodman (2019b)	Site inspection report	Site inspection report of ESA C458	Within study area

4.2 FIELD SURVEY

4.2.1 Survey timing

Multiple field surveys for flora and vegetation were undertaken. The flora survey timing was based on targeting the predominant flora (particularly conservation significant flora) flowering periods to facilitate finding them in the field. Flowering in the Warren bioregion peaks between September and November. Field survey types and dates are provided in Table 4-3.

Table 4-3 Survey dates

Survey type	Season	Dates
Single season detailed flora and vegetation survey	Spring – Phase 1	1–5 September 2023
	Spring – Phase 2	23–27 October 2023
	Spring – Phase 3	13–17 November 2023
	Targeted flora searches	20 November 2024

4.2.2 Field methods

Field methods for the flora and vegetation survey included:

- surveying of quadrats and relevés (see 4.2.2.1)
- targeted flora searches (4.2.2.2)
- vegetation type and condition mapping (4.2.2.3, 4.2.2.4)
- TEC/PEC and GDE assessments (4.2.2.5, 4.2.2.6).

Prior to the commencement of the field survey, data including satellite imagery, survey boundary, and pre-selected vegetation quadrats and relevés were loaded onto electronic field devices. The field survey involved assessing and mapping vegetation boundaries, conducting quadrat and relevé sampling and collecting opportunistic flora specimens. GPS locations of vegetation and condition boundaries, survey sites and flora specimen data were recorded digitally.

4.2.2.1 Quadrats and relevés

Quadrat locations were selected to ensure that an accurate representation of vegetation types within the study area were sampled adequately, with a minimum of at least 3 quadrats per vegetation type, where practicable. Two methods were used for the selection of quadrat placement within the study area. Preliminary quadrat locations were pre-selected using aerial photography at a 1:10,000 scale, with selection based on apparent changes in the vegetation, landform, geology, elevation, slope, aspect, water and soil. Final quadrat placement was determined in the field while ground-truthing the study area on foot. Some preliminary quadrats were moved to locations which better represented vegetation types and some quadrats were changed to relevés, where only dominant vegetation was recorded. This may have been done for various reasons such as, sufficient replicates of a vegetation type, unsafe terrain (deep water), vegetation is unnatural (plantations).

In total, 72 quadrats (10m x 10m) and 30 relevés were sampled across the study area (Figure 4-1; Appendix 1). In addition, 123 mapping notes (i.e. additional vegetation descriptions, ground-truthing notes) were made to provide supplementary data to the quadrats and relevés.

Quadrat sampling dimensions were 10 m x 10 m in accordance with EPA guidance for the South West Botanical Province. The following information was recorded for each quadrat (Appendix 2):

- location – the geographic coordinates of all 4 corners of the quadrat in WGS84 projection

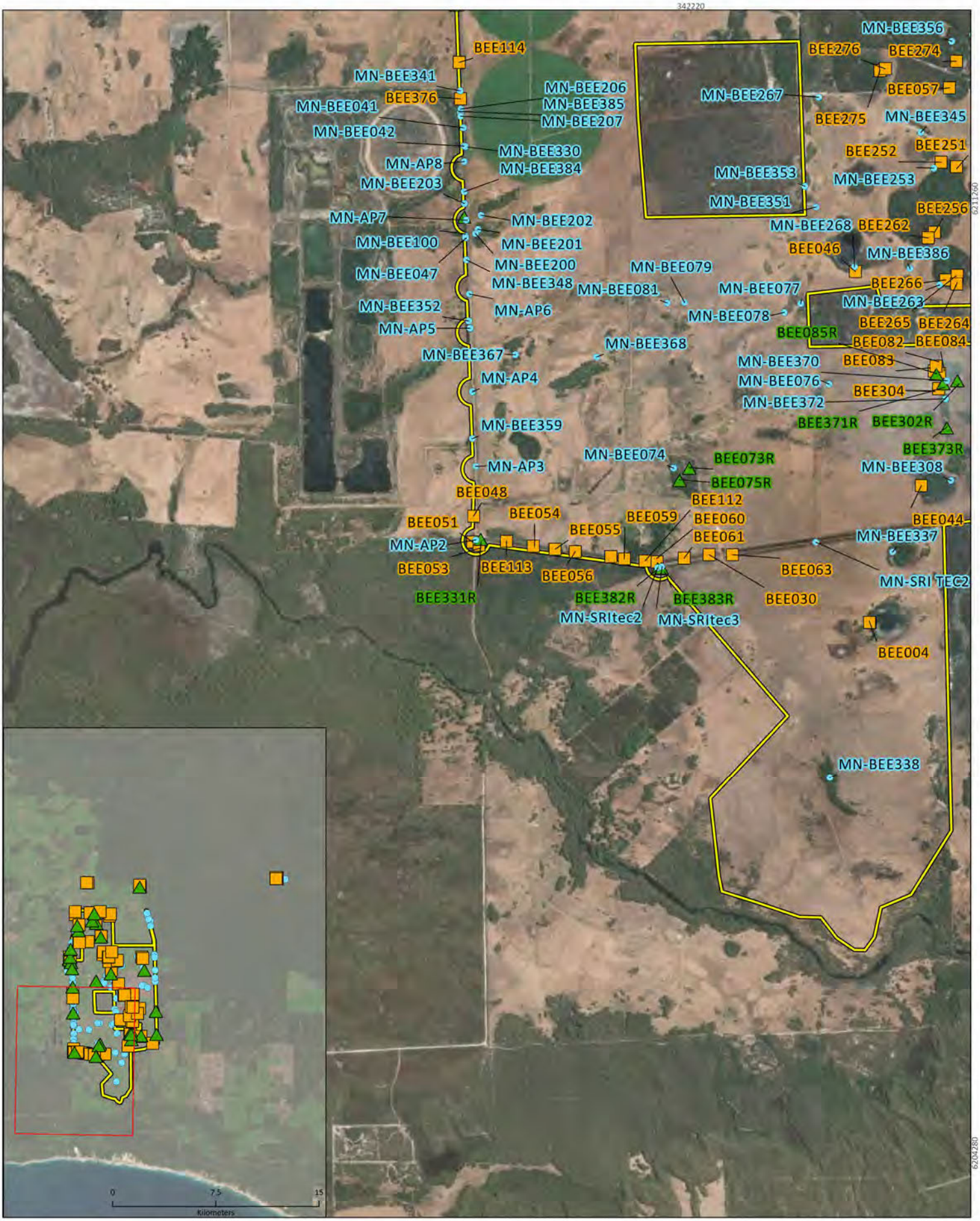
- description of vegetation – a broad description utilising the structural formation and height classes based on National Vegetation Information System (ESCAVI 2003) and in accordance with (EPA 2016b) (Appendix 3)
- habitat – a brief description of landform and habitat
- geology – a broad description of surface soil type and rock type
- disturbance history – a description of any observed disturbance including an estimate of time since last fire, weed invasions, soil disturbance, human activity, and fauna activity
- vegetation condition – using the condition scale in EPA (2016b) for the South West Botanical Province
- height and percentage foliage cover (PFC) – a visual estimate of cover of total vegetation cover, cover of shrubs and trees >2 m tall, cover of shrubs <2 m, total grass cover and total herb cover
- photograph – a colour photograph of the vegetation within each quadrat in a south-easterly direction from the north-west corner of the quadrat
- flora species list – comprehensive list of all flora species recorded within the quadrat.

To ensure accurate taxonomic identification of flora species present within the study area, collections were made of each specimen at least once and each collection was pressed and documented for identification using the WA Herbarium resources.

For each species identified, records on Florabase and the Australasian Virtual Herbarium were consulted to provide information on known ranges to determine whether the survey area represented a range extension for the species.

Relevés were sampled within vegetation units where dominant species, soils and topography were representative of vegetation surveyed in quadrats. To enable inclusion within vegetation analysis alongside relevés, Information collected in relevés was the same as for quadrats with the exception that:

- only a single geographic coordinate was recorded
- only prominent flora species were recorded.



Western Australia

PERTH

SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 0.75 1.5
Kilometers

1:35,750 (at A4) GDA 1994 MGA Zone 50

Study area

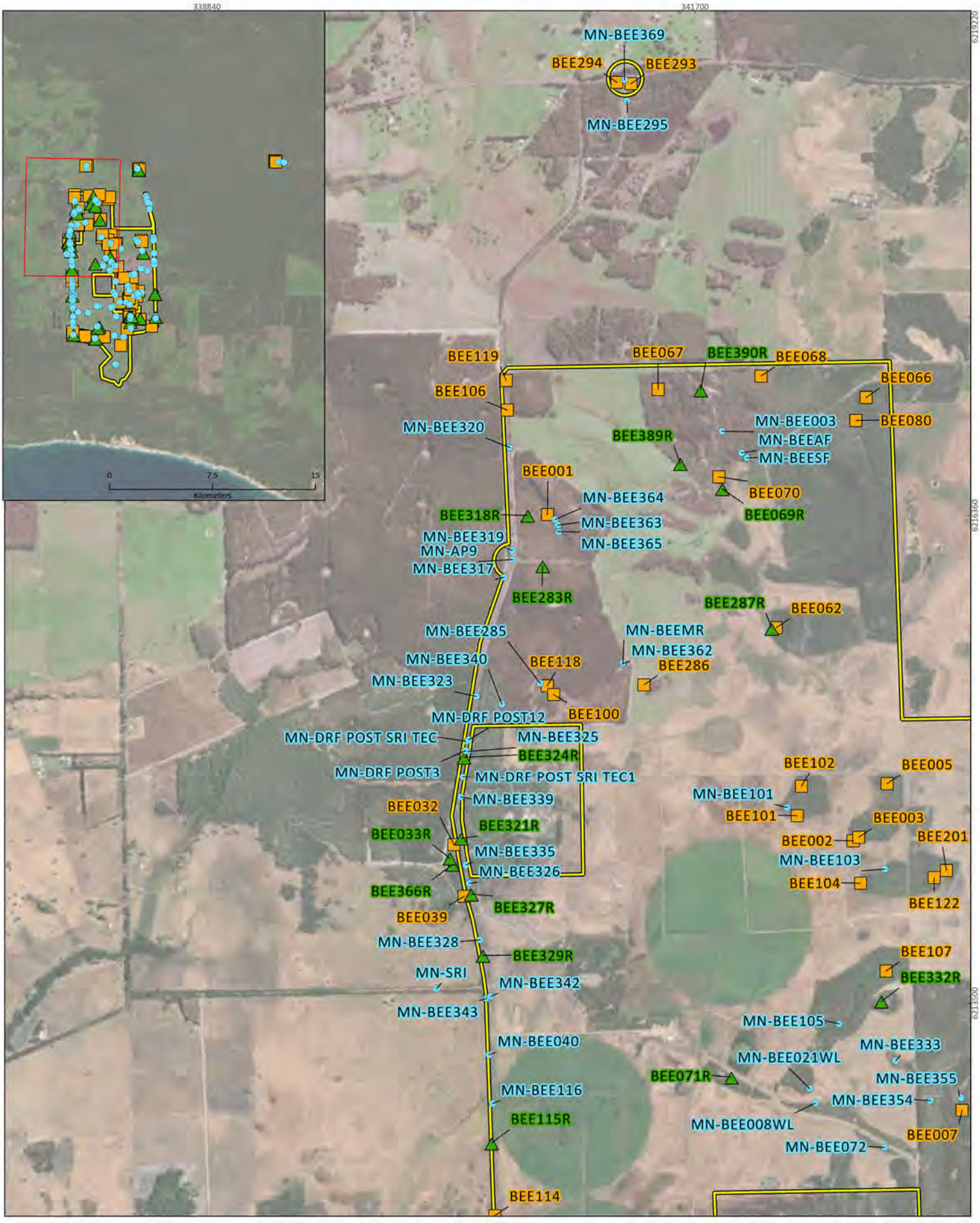
Sample method

- Relevé
- Quadrat
- Mapping note

Figure 4-1a

Survey sites

PHOENIX ENVIRONMENTAL SCIENCES



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 0.5 1
Kilometers

1:28,600 (at A4) GDA 1994 MGA Zone 50

Study area

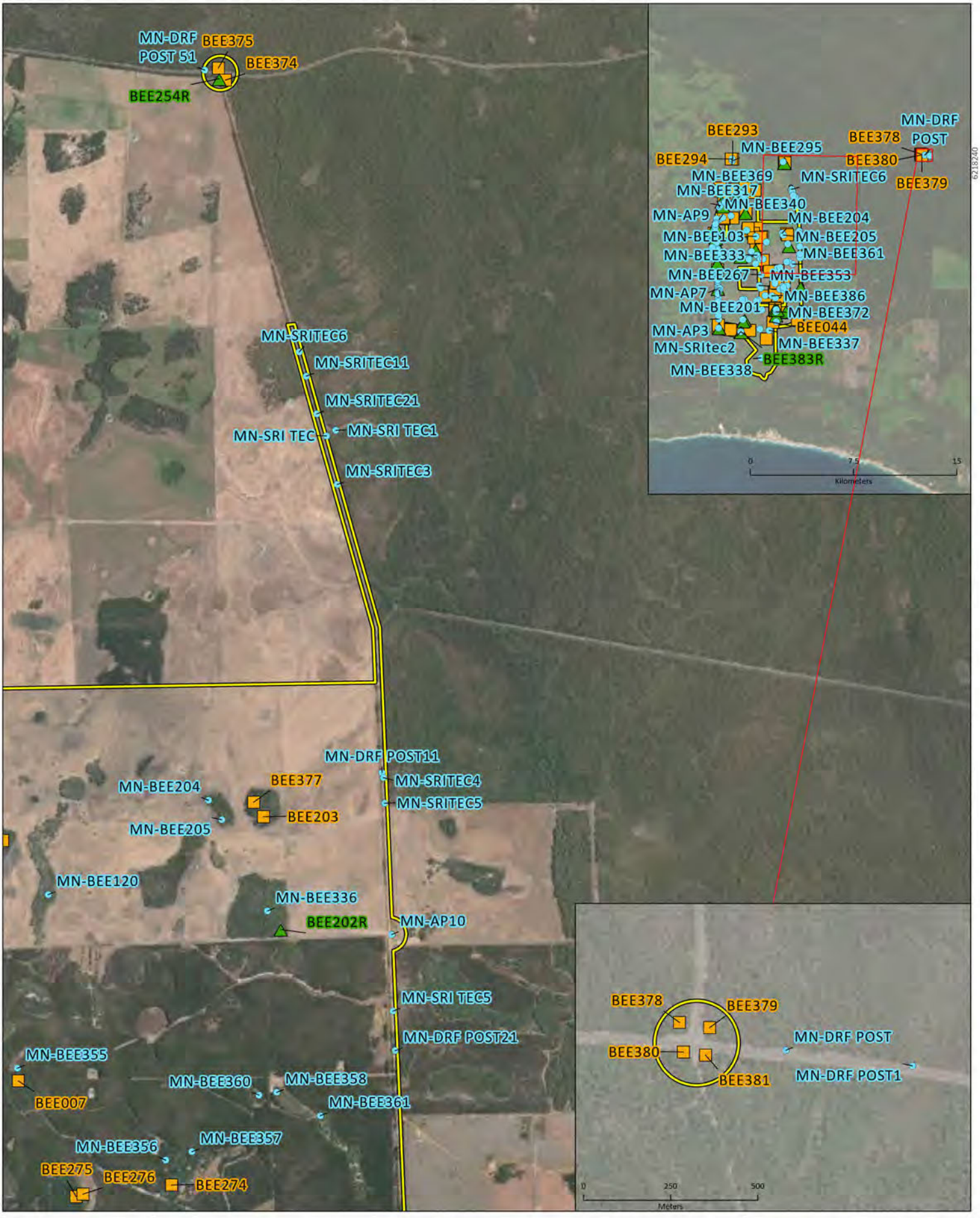
Sample method

- Relevé
- Quadrat
- Mapping note

Figure 4-1b

Survey sites

PHOENIX ENVIRONMENTAL SCIENCES



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 0.5 1
Kilometers

1:28,600 (at A4) GDA 1994 MGA Zone 50

Study area

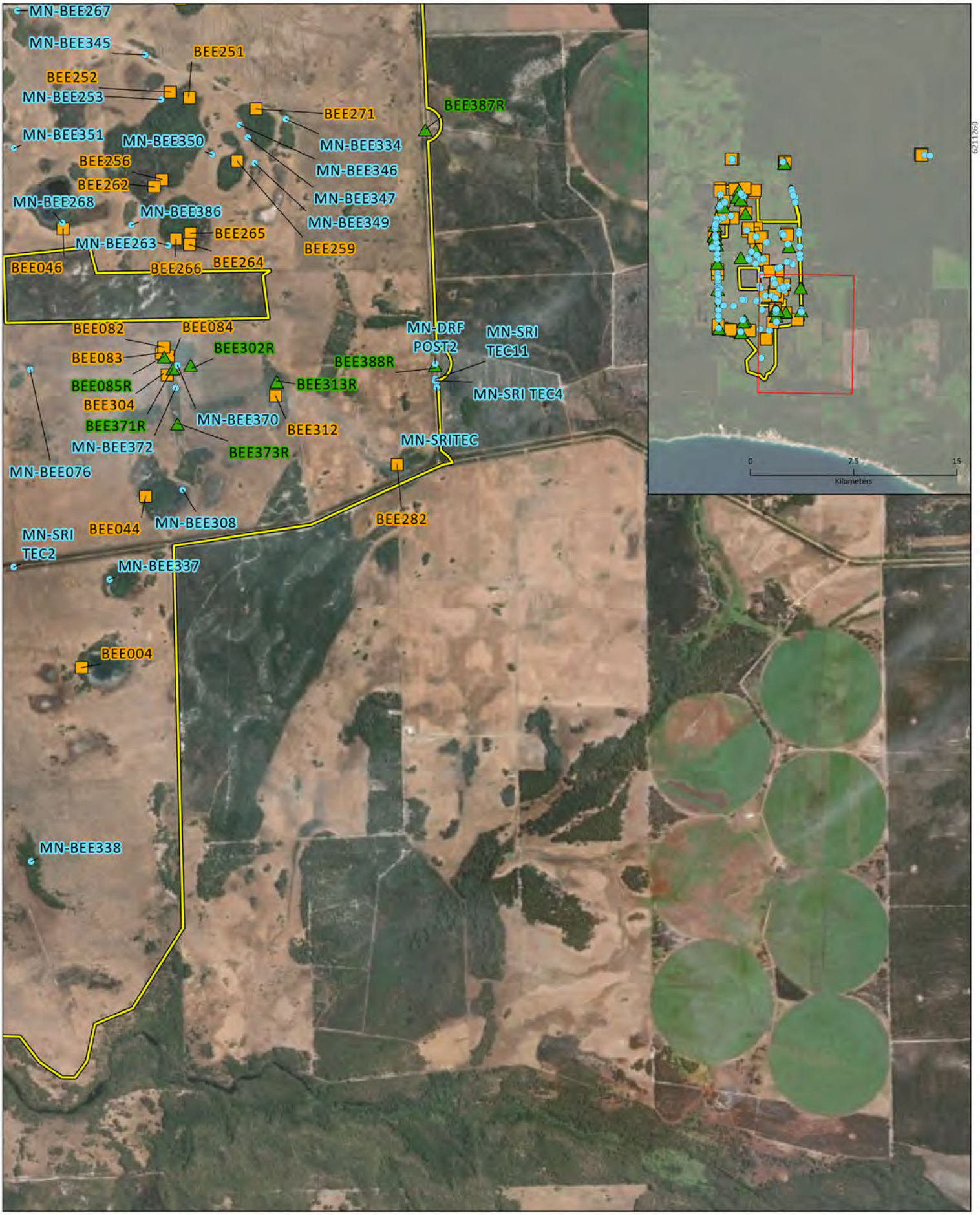
Sample method

- Relevé
- Quadrat
- Mapping note

Figure 4-1c

Survey sites

PHOENIX ENVIRONMENTAL SCIENCES



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	30/09/2024
Drawn by	BK
Map author	BA

0 0.5 1
Kilometers

1:28,600 (at A4) GDA 1994 MGA Zone 50

Study area

Sample method

- Relevé
- Quadrat
- Mapping note

Figure 4-1d

Survey sites

PHOENIX ENVIRONMENTAL SCIENCES

4.2.2.2 Targeted flora searches

Targeted searches were undertaken for significant flora (Threatened and Priority), Declared Pests and WoNS. Remnant vegetation was traversed by foot in systematic searches focused on habitats considered likely to support significant flora, in addition to previously recorded locations of significant plants or populations near the study area.

If a flora species was considered to potentially be a significant species (i.e. similar floristic characteristics and occurring within suitable habitat) the following information was collected:

- GPS coordinates, including population boundary where applicable
- description of the habitat and floristic community in which the potential significant species was located
- population size estimate (i.e. estimated number of individual plants) where applicable
- specimen collection for taxonomic identification and lodgement at the WA Herbarium
- photograph of live plant in situ and description of important details, such as flower colour, height of individual or average height of population.

Following the field survey, the likelihood of occurrence for each significant flora species identified in the desktop review was assessed and assigned to one of 3 ratings:

- Recorded – species recorded within the study area by previous or current survey.
- Possible – study area within known range of species; potential habitat within the study area, records within 5 km of study area and may not have been detectible during survey (e.g. survey conducted outside flowering period, annual plant survey conducted outside likely period of occurrence, small herbaceous plant in dense vegetation), or entire area of habitat not thoroughly searched.
- Unlikely – study area outside known range of species and/or no suitable habitat present in study area and/or suitable/potential habitat present but study area considered adequately searched for the species.

A GPS coordinate was considered a 'locality' as a point record of a potential significant species' location.

Populations of significant flora were delineated in accordance with the DBCA Threatened and Priority flora report form (DPaW 2010), as plants that are at least 500 m from another. For the purpose of population delineation, both field records and unconfirmed desktop records in the study area were included. Discounted desktop records were excluded (i.e. those found to be no longer present during the survey, old record in a now cleared location, or desktop record considered inaccurate).

4.2.2.3 Vegetation analysis and mapping

Multivariate comparative (cluster) analysis was performed to delineate vegetation types prior to vegetation type mapping. Several preliminary iterations of analysis were conducted to detect possible data errors for investigation and correction (where errors confirmed) prior to running the final analysis.

Software package PATN (Belbin 2003) was employed to conduct association (Bray and Curtis), classification (flexible UPGMA technique of agglomerative hierarchical fusion), and ordination (semi-strong hybrid) analyses parameters. Both species presence and dominance were factored within the site-species matrix (Appendix 9) through transformation of each species' percent foliage cover values into appropriately balanced cover class codes. Introduced flora species and native annual species were excluded from analysis to ensure the output produced survey site groupings based on perennial/structural native species. Singleton species (only occurring in a single site) were excluded for clarity, as they are non-contributary to site similarity/dissimilarity in analysis.

A dendrogram was produced to illustrate the similarities and/or differences amongst vegetation units identified. Local scale vegetation units were described at National Vegetation Information System (NVIS) Level V – Association (ESCAVI 2003). The term 'vegetation type' was used for local scale vegetation units in accordance with EPA technical guidance (EPA 2016b). Though often excluded in vegetation analysis, non-discriminatory (lesser importance) species were retained within final analysis due to their contribution to the finer-scale splits amongst vegetation types at an NVIS Level 5 resolution.

A small number of outlier survey sites containing limited numbers of native species skewed preliminary vegetation analysis and interrupted coherent formation of vegetation types. These sites were demoted to mapping notes to allow valid analysis output with cohesive vegetation types. These vegetation units (Psp and Aff) were described entirely from the demoted survey sites and were retained for vegetation mapping.

Non-vegetated units within the study area were excluded from analysis. These units contain no vegetation data, and therefore no speculations can be made about the potential vegetation type. These units can be categorised as:

- Cleared areas – absent or near absent of native vegetation, such as roads, tracks, pastures
- Water – standing water without observable flora species.

Vegetation mapping was also used to classify some locally significant vegetation:

- Restricted vegetation is classified in this report as <1% cover of native vegetation within the study area, excluding vegetation types that are obviously abundant outside the study area
- Habitat for significant flora is determined by the intersection of significant flora records identified during the survey and vegetation type mapping, separated into 2 categories
    - primary habitat (locally significant) is the predominant vegetation type(s) that a significant flora inhabits
    - incidental habitat is a vegetation type where a significant flora rarely or incidentally occurs.

Vegetation mapping was undertaken at a scale of 1:10,000 using the NVIS association level (L5) for structural descriptions (ESCAVI 2003). Extent and boundaries of each vegetation type were determined through locations of survey quadrats, relevés, and mapping notes (each designated with vegetation type) in conjunction with ArcGIS ESRI imagery aerial imagery. Initial versions of vegetation type mapping were further refined for more precise boundaries at a scale of up to 1:2,500 in areas of key importance to Synergy RED's potential access routes.

4.2.2.4 Vegetation condition mapping

The condition of vegetation was mapped across the study area based on the appropriate condition scale for the South West Botanical Province (Keighery 1994 in EPA 2016b) (Table 4-4). The vegetation condition ratings relate to vegetation structure, the level of disturbance and weed cover at each structural layer and the ability of the vegetation unit to regenerate. Vegetation condition ranges from Excellent being the highest rating to Completely Degraded as the lowest.

Vegetation condition was attributed within the vegetation type mapping. Completely cleared areas (e.g. roads, tracks, paddocks) were mapped as 'cleared' and assigned a vegetation condition rating of Completely Degraded

Table 4-4 Vegetation condition rating scale (EPA 2016b)

Condition rating	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching Good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	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 and shrubs.

4.2.2.5 TEC/PEC assessment

The DBCA TEC/PEC database search provided a brief description and locations of TEC/PEC within the desktop extent. From the database outputs, more extensive literature review was conducted for more detailed descriptions of each TEC/PEC (e.g. vegetation, landform, geology, land system, elevation, slope, aspect, water and soil).

Preliminary identification of the presence of any TECs/PECs in the study area was then undertaken in the field survey, whereby any sites suspected to be characteristic of a TEC or PEC were tagged and if deemed necessary, additional sites or data collected within the suspected TEC/PEC.

Further analysis of TEC/PEC presence was conducted following statistical analysis and vegetation mapping, where vegetation types identified in the survey were matched the TEC/ PEC description. Consideration was also given to additional criteria for TEC/PEC designation as defined in relevant conservation advice, such as minimum patch size and/or vegetation condition.

4.2.2.6 Groundwater dependent ecosystem assessment

A literature search was conducted to identify known groundwater dependent vegetation communities and species in the South West that may be relevant to the study area. Groundwater dependency (if known) was identified, as described below.

GDEs are so defined because they have at least some reliance on groundwater to meet their ecological water requirements (Hatton & Evans 1998; Richardson *et al.* 2011). Terrestrial vegetation that accesses groundwater via the capillary fringe and is dependent on this water source for all or part of its ecological water requirements falls within a class of GDEs defined as those dependent on sub-surface presence of groundwater (Eamus *et al.* 2006; Richardson *et al.* 2011).

The degree of groundwater dependency can differ markedly between GDEs and establishing the degree of groundwater dependency in individual plant species and vegetation communities is difficult (Eamus & Froend 2006; Eamus *et al.* 2006). Following Eamus *et al.* (2006), on a simple scale, dependence is categorised in this assessment as:

- obligate – species or vegetation community has an obligate reliance on groundwater for maintenance of all or part of its ecosystem function; obligate reliance may be continual, seasonal or infrequent
- facultative – species or community that uses groundwater facultatively when it is available, but its absence does not cause loss of this vegetation element.

Field investigations have indicated that obligate phreatophytes are more susceptible to water stress than facultative phreatophytes (e.g. Froend and Drake 2006 for Banksia species).

Species and vegetation types recorded in the field survey were reviewed against the GDEs identified in the literature review to identify groundwater dependent communities/species present in the study area. Vegetation types dominated by a GDE species from the desktop review were designated as 'GDE' vegetation types, as were vegetation types aligning with formally defined GDEs (e.g. by TEC listings). Individual vegetation polygons that contained incidental or non-dominant occurrences of a GDE species as were classified as 'Known to contain record(s) of GDE associated species'.

4.2.2.7 Analysis of survey completeness

A species accumulation curve based on accumulated species versus number of sites surveyed was used to evaluate the level of adequacy of the survey effort. The species accumulation curve was generated by inputting the site-species matrix into Phoenix's proprietary spreadsheet (Appendix 9).

4.2.3 Survey personnel

The personnel involved in the surveys are listed in Table 4-5. All survey work was carried out under relevant licences issued by DBCA under the BC Act (Table 4-5).

Table 4-5 Survey personnel

Name	Permit	Qualifications	Role/s
Jenifer Alford	FB 62000326	BSc. (Hons)	Senior Botanist, fieldwork, reporting
Julie Fielder	FB 62000476	BSc. (Hons)	Senior Botanist, fieldwork
Tim Morald	FB 62000317 TFL 093-2122	BSc. (Applied Sci.)	Botanist, fieldwork
Andrew Perkins	FB 62000560 TFL 2223-0134	BSc. (Hons), PhD (Botany)	Botanical Taxonomist, fieldwork, taxonomy
Grant Wells	FB6 2000538 TFL 2324-0016	PhD (Botany)	Senior Botanist, fieldwork, report review
Brody Loneragan	FB 62000296-2 TFL 092-2122	BSc. Hons (Env. Sci.)	Botanist, fieldwork, reporting
Natasha Rogers	FB 62000518 TFL 2223-0135	BSc. (Botany)	Botanist, fieldwork, reporting
Bethany Arbery	FB 62000639 TFL 2324-0057	BSc. (Env. Sci., Cons. & Wildlife Bio.)	Botanist, fieldwork, reporting
Jarrad Clark	BA27000943	BSc. (Env. Mgt.)	Project management, fieldwork, reporting
Calvin Williams	FB 62000525 TFL 2324-0015	BSc. (Env. Sci.)	Botanist, fieldwork
Brigitte Kovar	NA	MSc. (Geospatial Intelligence)	GIS specialist, mapping
Grant Wells	NA	PhD (Botany)	Principal Botanist, report review
David Leach	NA	BSApSc. (Hons), PhD (Plant Biology)	Senior Botanist, vegetation analysis and mapping, report review

5 RESULTS

5.1 DESKTOP REVIEW

5.1.1 Flora assemblage

The database searches and literature review identified a combined 1,116 flora taxa within the desktop search extent which extended 10 km outside of the study area boundary and comprised 1,034 native species and 82 introduced species. A total of 107 families and 357 genera were represented including the dominant families Fabaceae (115 taxa), Orchidaceae (88 taxa), Proteaceae (83 taxa), Myrtaceae (82 taxa) and Cyperaceae (70 taxa).

The broader Augusta – Margaret River Local Government Area (LGA) in which the study area occurs yielded 1,837 native taxa and 317 introduced species in Florabase (WA Herbarium 1998). The dominant families within this LGA are Fabaceae (143 native taxa), Orchidaceae (133 native taxa), Myrtaceae (106 native taxa), Cyperaceae (93 native taxa), Proteaceae (116 native taxa) and Asteraceae (59 native taxa).

The Lyons *et al.* (2000) desktop compilation of vascular flora for the Warren bioregion, which was based on based on several sources, identified 2,283 taxa for the bioregion, of which 1,853 are native. They noted Orchidaceae, Myrtaceae, Fabaceae, Proteaceae and Cyperaceae as important families for the bioregion.

Of the 4 flora and vegetation survey reports from the literature review (Table 4-2), Biota (2009) was the only detailed survey with a method statement. Biota (2009) surveyed an area of 845.8 ha on a coastal strip, approximately 7 km from the study area. This single season detailed flora and vegetation survey comprised 23 quadrats and systematic searches for significant flora. A total of 182 flora taxa were recorded, 24% (44 taxa) were introduced species. The most prominent families were Orchidaceae, Asteraceae, Fabaceae and Myrtaceae.

The Robinson and Keighery (1997) study of Scott National Park to the west of the study area (Figure 3-4) identified high species richness in the park with 681 native taxa recorded, as well as 53 introduced species. This report contains no method statement but refers to extensive field survey being undertaken between 1990 and 1991. Gibson *et al.* (2001) subsequently increased the flora assemblage for the park to 744 native and 73 introduced species. Based on these studies, the most dominant families of native species in Scott National Park are Orchidaceae, Fabaceae, Myrtaceae, Cyperaceae, Proteaceae and Restionaceae.

The Woodman (2019a, b) site inspection reports were limited to targeted searches for significant flora and TEC/PEC, and therefore were only referred to for desktop significant flora, not assemblage data

5.1.2 Significant flora

Records of 84 significant flora species were identified within the desktop search extent (inclusive of both database searches and reviewing previous reports), comprising one presumed extinct species, 9 Threatened flora and 74 Priority flora (DBCA 2023g). Six Threatened and 20 Priority flora were recorded within the study area (Table 5-1; Figure 5-1).

Biota (2009) recorded 2 flora species that have maintained a Priority status; one individual of *Caladenia abbreviata* (P3) and *Banksia sessilis* var. *cordata* (P4) individual counts were not recorded but was suggested to have a scattered to moderately dense distribution with the survey area.

Woodman (2019a) recorded 2 Threatened and 7 Priority flora species that have maintained a significant listing:

- 5 individual counts of *Conospermum quadripetalum* (CR BC Act)
- 263 individual counts of *Grevillea brachystylis* subsp. *australis* (VU EPBC Act; EN BC Act)
- 137 individual counts of *Synaphea nexosa* (P1)
- 3 individual counts of *Boronia anceps* (P3)
- 93 individual counts of *Calothamnus lateralis* var. *crassus* (P3)
- 149 individual counts of *Gastrolobium formosum* (P3)
- 244 individual counts of *Grevillea papillosa* (P3)
- 535 individual counts of *Adenanthos detmoldii* (P4)
- 9 individual counts of *Stylidium leeuwinense* (P4).

Woodman (2019b) recorded 3 Threatened and 8 Priority flora species that have maintained a significant listing:

- 90 individual counts of *Banksia nivea* subsp. *uliginosa* (EN EPBC & BC Acts)
- 18 individual counts of *Darwinia ferricola* (EN EPBC & BC Acts)
- 114 individual counts of *Verticordia plumosa* var. *vassensis* (EN EPBC & BC Acts)
- 98 individual counts of *Synaphea nexosa* (P1)
- 62 individual counts of *Boronia anceps* (P3)
- 68 individual counts of *Calothamnus lateralis* var. *crassus* (P3)
- 10 individual counts of *Dampiera heteroptera* (P3)
- 28 individual counts of *Gastrolobium formosum* (P3)
- 514 individual counts of *Grevillea manglesioides* subsp. *ferricola* (P3)
- 6 individual counts of *Grevillea papillosa* (P3)
- 942 individual counts of *Loxocarya magna* (P3).

Table 5-1 Significant flora identified in the desktop review

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Leptomeria dielsiana	X (VU EPBC Act; EX BC Act)	1.6 km W	Shrub, to 0.5 m high, known only from type collection of J. Drummond 228, locality & description unknown. Presumed extinct.	✓	✓	✓	
Conospermum quadripetalum	T (CR BC Act)	Within	Shrubs, 0.20-0.30 m high. Sandy clay, sand. Flats behind coastal hills. Peppermint and Jarrah/ paperbark woodlands over mixed shrubs and sedgelands. Flowers September to November.	✓		✓	✓
Reedia spathacea	T (CR EPBC Act; EN BC Act)	3.0 km WNW	Robust, tufted caespitose sedge with a woody trunk that forms large leafy clumps to over 1 m. Peaty sand. Swamps, river edges. Flowers November to December or January.	✓	✓	✓	
Banksia nivea subsp. *uliginosa*	T (EN EPBC & BC Acts)	Within	Shrub, 0.5-1.5 m high; branchlets hairy. Sandy clay, gravel. Flowers in September.	✓	✓	✓	✓
Boronia exilis	T (EN EPBC & BC Acts)	Within	Shrub. Seasonally wet heath. Flowers in September.	✓	✓	✓	
Darwinia ferricola	T (EN EPBC & BC Acts)	Within	Large, much branched, semi-climbing or rounded shrub, to 1.5 m high. Shallow red or brown clays over winter-wet ironstone. Flowers late winter to early summer, peak in spring.	✓	✓	✓	✓
Lambertia orbifolia subsp. *vespera* (*L. orbifolia sens. lat.* under EPBC)	T (EN EPBC & BC Acts)	Within	Shrub or small tree 2–5 m high. Sand or sandy clay in association with ironstone, around seasonally wet areas. Flowers September to May, peaking from January to February.	✓	✓	✓	
Verticordia plumosa var. *vassensis*	T (EN EPBC & BC Acts)	Within	Shrub 0.3-1m high. White/grey sand in winter-wet flats. Pink flowers from September to December or January to February.	✓	✓	✓	✓
Drakaea micrantha	T (VU EPBC Act; EN BC Act)	6.4 km NNE	White-grey sand. Flowers appear in September and October.	✓	✓	✓	
Grevillea brachystylis subsp. *australis*	T (VU EPBC Act; EN BC Act)	Within	Shrub, 0.3-1 m high. Sand, sandy clay. Swampy situations, stream banks. Flowers in July, August–November.	✓	✓	✓	✓

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Andersonia ferricola	P1	425 m S	A straggling shrub to 50 cm high. Grows in dense low heath on winter-wet ironstone flats, in skeletal white sand over massive ironstone. Flowers in October.	✓		✓	
Darwinia terricola	P1	7.2 km ESE	Erect compact perennial dwarf shrub. Green flowers from September to December.	✓		✓	
Hemigenia obovata	P1	23 m WSW	Erect shrub, to 0.5 m high. White and black wet sand, black clay. Flats. Wetland sedges and spare shrubland. Blue-purple flowers from October to November.	✓		✓	
Pericalymma megaphyllum	P1	Within	Shrub to 0.35 m high. Woodlands of Jarrah-Marri and Sheoak, and shrublands. White sand over red-brown lateritic clay. Flowers in November.	✓		✓	
Philydrella pygmaea subsp. *minima*	P1	4.2 km SW	Bulbaceous, perennial, herb, 0.02-0.2 m high. Damp sites. Flowers August to November.	✓		✓	
Platychorda rivalis	P1	8.2 km NNE	Peat, laterite. Edges of swamps, valleys. Flowers in November.	✓		✓	
Schoenus indutus	P1	4.8 km W	Perennial, grass-like or herb (sedge), 0.6 m high. Gravelly sand. Flowers in October.	✓		✓	
Stylidium sp. Scott River Plain (N.G. Marchant 74/23)	P1	2.5 km SW	Scott River Crossing. Only record is from January 1974.	✓		✓	
Synaphea macrophylla	P1	1.4 km NE	Shrub. Gravelly loam. Flowers in October.	✓		✓	
Synaphea nexosa	P1	Within	Shrub. Clay-loam. Winter-wet flats. Flowers in October or November.	✓		✓	✓
Thysanotus formosus	P1	209 m E	Caespitose, perennial herb to 0.3 m. Clayey sand, sandy loam. Habitat often inundated in winter. Jarrah-Marri forest. Flowers November to December or January.	✓		✓	
Diuris heberlei	P2	715 m SSW	Tuberous, perennial herb. Clay. Winter-wet flats between sand dunes. Flowers December or January to February.	✓		✓	
Drosera binata	P2	8.3 km NNE	Herb. Black peat. Winter-wet swamps. Flowers spring to summer.	✓		✓	
Euphrasia scabra	P2	8.6 km NNE	Erect annual herb 8.5–50 cm high. Open damp grassy situations. Flowers October to February.	✓		✓	
Hemigenia sp. Nillup (R.D. Royce 98)	P2	2.4 km NW	Perennial shrub. Grey/brown clay-loam/sand. Inundated areas. Pale mauve or lilac flowers from November to January.	✓		✓	
Leptomeria furtiva	P2	6.8 km SW	Lax, sprawling shrub, 0.2-0.45 m high. Grey-black peaty sand over clay on winter-wet flat. Amongst various grasses, sedges, herbs and shrubs. Flowers August to October.	✓		✓	
Lepyrodia extensa	P2	48 m E	Grows around 0.3 m high. Sand & sandy peat. Seasonally inundated swamps. Jarrah forests and Balga shrublands over sedges. Flowers September to October, December or February.	✓		✓	

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Leucopogon incisus	P2	1.4 km E	Grows on a winter-damp sandy flats. Flowering peaks September to October.	✓		✓	
Machaerina ascendens	P2	2.4 km NW	Sprawling sedge up to 1.8m tall. Swamp-like areas, sandy clay, floodplains.	✓		✓	
Pigea volubilis	P2	4.8 km W	Twinning herb. Sandy clay/loam. Seasonally inundated areas. Flowers from September to December.	✓		✓	
Schoenus loliaceus	P2	3.5 km SSW	Annual, grass-like or herb (sedge), 0.03-0.06 m high. Sandy soils. Winter-wet depressions. Flowers August to November.	✓		✓	
Stenanthemum sublineare	P2	4.8 km SW	Erect shrub that typically grows to ~10 cm high and 4 cm wide. Flowers from October to December.	✓		✓	
Styphelia intricata	P2	40 m SSE	Erect shrub. Seasonally wet flat plains and wetlands in *Melaleuca* woodlands/shrublands over sedgelands/rushlands. Sandy clay or sand over ironstone. Flowers mainly April to June.	✓			
Xyris maxima	P2	5.9 km N	Robust, erect, tufted perennial, herb, 0.16-0.6 m high. Black peaty sand. Drainage flats. Flowers from November to December or January.	✓		✓	
Acacia inops	P3	5.5 km W	Scrambling shrub with weak filiform branches. Grows along watercourses and in swamps in black peaty sand, clay. Flowers September to November.	✓		✓	
Acacia lateriticola glabrous variant (B.R. Maslin 6765)	P3	4.8 km W	A variant with glabrous branchlets, pinnules and pods. Lateritic soils. Flowers August to October.	✓		✓	
Actinotus repens	P3	7.7 km N	Suffrutescent, prostrate perennial, to 5 cm high. Sandy clay and mud in valleys along creek lines amongst *Eucalyptus* or *Melaleuca* dominated woodland. Flowers January to March.	✓		✓	
Andersonia auriculata	P3	8.0 km NE	Erect or spreading shrub, 0.1-0.3(-0.5) m high. Grey or peaty sand, often over laterite. Swampy areas, granite outcrops. Flowers April to October.	✓		✓	
Andersonia sp. Amabile (N. Gibson & M. Lyons 355)	P3	1.8 km W	Small perennial, erect and compact shrub grows up to 7-30 cm tall. Flowers October to December. Winter-wet areas and swamps in *Melaleuca* woodlands/shrublands, mixed shrublands and shrublands over sedgelands.	✓		✓	
Blennospora doliiformis	P3	3.7 km SSW	Annual herb 5–15 cm high. Occurs on seasonally wet clay soils, grey or red clay over ironstone. Flowers October to November. Mature fruits and seeds in late December to January.	✓		✓	
Boronia anceps	P3	Within	Shrub. White sand, gravelly laterite. Seasonally swampy heaths. Flowers in September to January.	✓		✓	✓

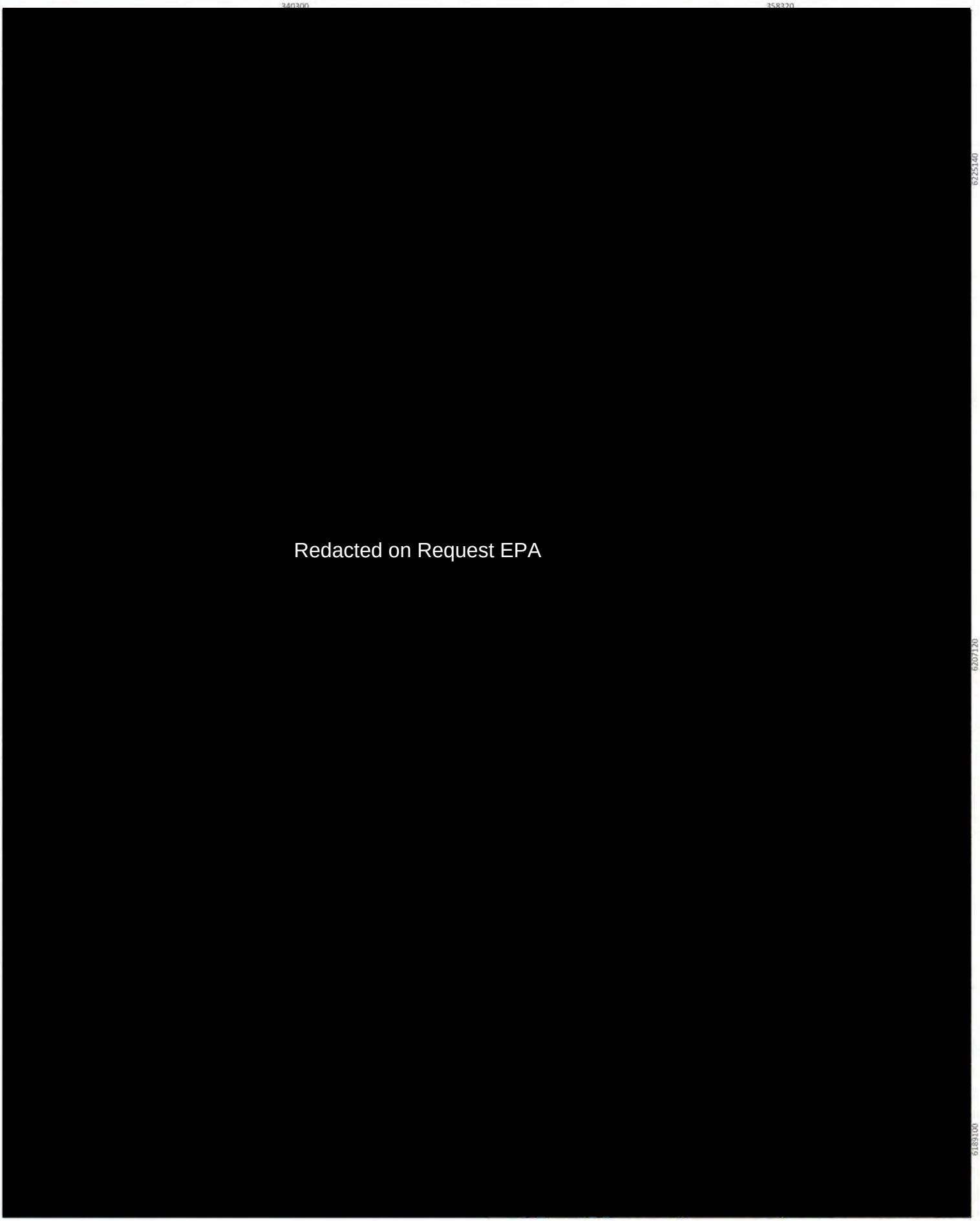
Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Caladenia abbreviata	P3	640 m SSE	Perennial, deciduous, herb with an underground tuber and single erect, hairy leaf 8–20 cm (3–8 in) long. Consolidated sand dunes and disturbed places. Flowers October to early December.	✓		✓	✓
Calothamnus lateralis var. *crassus*	P3	Within	Shrub 1 - 2 m tall, without lignotuber. Winter-wet flats, riverbanks, wet depressions, swamps. Clayey peaty sands, often amongst *Agonis flexuosa, Hakea* spp., Restionaceae spp. Flowers August to October or January or June.	✓		✓	✓
Caustis sp. Boyanup (G.S. McCutcheon 1706)	P3	5.2 km N	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.7-1 m high. Occurs on white or grey sand. Flowers October or January to February.	✓		✓	
Chordifex gracilior	P3	Within	Rhizomes spreading, hairy. Peaty sand, sand over clay. Swamps, winter-wet flats. Myrtaceae shrublands over sedgelands. Flowers September to December.	✓		✓	
Chordifex jacksonii	P3	Within	Rhizomes tufted, hairy 0.4-1 m high. Sand, loamy sand. Seasonally inundated swamps. *Melaleuca* over mixed shrubs, sedgelands. Flowers August, October, December to April.	✓		✓	
Chorizema carinatum	P3	Within	Erect, shrub, spindly shrub (broom-like). Sand, sandy clay. Flowers in October to December.	✓		✓	
Cyathochaeta stipoides	P3	148 m ENE	Tall tussock-forming perennial, grass-like or herb (sedge), (0.25-)0.35-1 m high. Grey or red-brown sand. Seasonally wet flats. Mixed shrublands, sedgelands. Flowers October to January.	✓		✓	
Cyathochaeta teretifolia	P3	1.8 km W	Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Grey sand, sandy clay. Swamps, creek edges. Flowers from September to January.	✓		✓	
Dampiera heteroptera	P3	13 m S	Erect to semi-prostrate perennial, herb or shrub, 0.3-0.6 m high. Sandy soils. Swampy areas. Flowers September to October.	✓		✓	✓
Gastrolobium formosum	P3	Within	Small, trailing shrub, with red flowers, up to 1 m high. Clay-loam soils. Along riverbanks or in swamps. Flowers in November.	✓		✓	✓
Grevillea manglesioides subsp. *ferricola*	P3	Within	Erect or spreading shrub, 1.5 m high. Red sandy clay over ironstone. Winter-wet flats. Flowers in October.	✓		✓	✓
Grevillea papillosa	P3	Within	Spreading shrub to 0.3–1.2 m high. Branchlets more or less glabrous. Brown or peaty sand, sandy clay, loam. Seasonally wet areas, swamps. Flowers April, September to October.	✓		✓	✓

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Isopogon formosus subsp. dasylepis	P3	Within	Low, bushy or slender, upright, non-lignotuberous shrub, 0.2-2 m high. Sand, sandy clay, gravelly sandy soils over laterite. Often swampy areas. Flowers June to December.	✓		✓	
Juncus meianthus	P3	9.0 km NNW	Tufted perennial, herb, 0.05-0.2 m high, to 0.4 m wide. Black sand, sandy clay. Creeks, seepage areas. Flowers November to January.	✓		✓	
Leptinella drummondii	P3	2.0 km WNW	Grows in red clay-loam on riverbanks in woodland. Flowers late November to December or January to February.	✓		✓	
Lepyrodia heleocharoides	P3	4.0 km WNW	Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps. Flowers in December.	✓		✓	
Leucopogon alternifolius	P3	15 m W	Sprawling shrub to 40 cm high, single stem at the base, young branchlets thin and glabrous. Grey/white sand. Swampy areas, seasonally wet areas. Flowers August to December.	✓		✓	
Leucopogon wheelerae	P3	Within	Restricted to heath or woodland edge on seasonally wet flats. Flowers from August to November.	✓		✓	
Loxocarya magna	P3	Within	Sand, loam, clay, ironstone. Seasonally inundated or damp habitats. Flowers in September or November.	✓		✓	✓
Netrostylis sp. Blackwood River (A.R. Annels 3043)	P3	10.0 km NNE	Sprawling sedge 30 cm–1.7 m high x 50 cm wide. Grows on drainage line/ creek beds. Flowers in November.	✓			
Pultenaea pinifolia	P3	5.1 km NNW	Erect shrub to 1–3 m high. Loam or clay. Floodplains, swampy areas. Flowers October to November.	✓		✓	
Stylidium trudgenii	P3	3.7 km SSW	Caespitose perennial, herb, 0.05-0.5 m high. Grey sand, dark grey to black sandy peat. Margins of winter-wet swamps, depressions. Flowers October to early November.	✓		✓	
Synaphea otiostigma	P3	2.6 km E	Shrub. Clayey laterite, gravelly loam, sand. Flowers in October or November.	✓		✓	
Synaphea petiolaris subsp. *simplex*	P3	378 m NNE	Shrub. Sandy soils. Flats, winter-wet areas. Flowers in September or October.	✓		✓	
Tricostularia davisii	P3	3.6 km SE	Tufted herb. Flowers brown.	✓		✓	
Acacia tayloriana	P4	3.0 km WNW	Prostrate shrub. Grey or yellow/orange sandy soils, lateritic gravel, clay-loam. Winter-wet areas. Flowers in January.	✓		✓	

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Adenanthos detmoldii	P4	Within	Shrubs, 1-4 m high. Grey or black peaty sand, wet. Swamps, roadsides. Flowers April to January.	✓		✓	✓
Adenanthos x *pamela*	P4	Within	Naturally occurring hybrid of *A. detmoldii* and *A. obovatus*. Erect, lignotuberous shrub, 0.75-1.7 m high. Grey sand, laterite. Damp flats, roadsides. Flowers May or October to December.	✓		✓	
Aotus carinata	P4	Within	Erect, slender shrub, 0.6-1.5 m high. Sandy soils. Seasonally wet flats. Flowers September to November.	✓		✓	
Astartea onycis	P4	724 m E	Shrub 0.2-1.2 m tall, spindly, often very slender, up to 1 m wide. Pale grey sand or sandy clay over clay in seasonally wet sedgelands and swamps in *Eucalyptus* and *Melaleuca* woodlands, shrublands and shrublands over sedgelands. Flowers November to March, esp. Dec. and Jan.	✓		✓	
Banksia meisneri subsp. *ascendens*	P4	Within	Shrub, 0.70-1.5 m high; branchlets hairy. Sand, sandy loam and sandy clay over laterite. Swampy flats. Jarrah low woodlands, mixed shrublands over sedgelands. Flowers April to September.	✓		✓	
Banksia sessilis var. *cordata*	P4	8.3 km ESE	Shrub, 1.5-3 m high; branchlets glabrous or hairy. White/grey sand. Coastal limestone. Flowers June to October.	✓		✓	✓
Calothamnus quadrifidus subsp. *teretifolius*	P4	4.6 km N	Erect shrub which sometimes grows to a height of 5 m. Grows in clay in winter-wet areas in shrubland. Flowers September to December and is followed by fruits.	✓		✓	
Drosera fimbriata	P4	Within	Single erect stem that grows to ~15 cm high. Mainly from heathland habitats in deep white sand. Also grows on moss pads atop granite outcrops. Flowers September to October.	✓		✓	
Gonocarpus pusillus	P4	4.8 km W	Prostrate annual, herb, 0.05-1.2 m high. Grey sandy clay. Winter-wet swamps. Flowers November to December.	✓		✓	
Gonocarpus simplex	P4	254 m WSW	Tufted perennial, herb, 0.2-0.6 m high. Peaty sand. Swamps, seasonally inundated areas. Green/red-brown flowers from November to December.	✓		✓	
Hypolaena robusta	P4	5.4 km WNW	Rhizomes spreading, glabrous, 0.5 m high. White sand. Sandplains. Flowers September or October.	✓		✓	
Melaleuca basicephala	P4	Within	Grows to ~0.9 m high with glabrous branches. Black, peaty sand and clay in winter-wet flats and swamps. Flowers November to February.	✓		✓	

Species	Status	Proximity to study area	Description and habitat	Database			LR[1]
				DBCA	PM[1]	NM[1]	
Myriophyllum trifidum	P4	51 m ENE	Prostrate, compact, perennial and aquatic, 0.5 x 30 cm. Swamp. *Astartea*, *Beaufortia*, *Taxandria*, *Melaleuca* shrublands. Flowers in December to January or March.	✓		✓	
Pultenaea skinneri	P4	6.2 km W	Slender shrub that typically grows to 1–2 m high. Sandy or clayey soils. Winter-wet depressions. Flowers July to September.	✓		✓	
Stylidium leeuwinense	P4	Within	Erect perennial, herb, 0.15-0.6 m high. Grey to black peaty sand. Winter-wet habitats and depressions. Shrubland, heath, sedgeland or low woodland. Flowers February to May.	✓		✓	✓
Tripterococcus sp. Brachylobus (A.S. George 14234)	P4	217 m ENE	Slender erect multi-stemmed herb to 0.6 m high. Moist sandy flat. Winter-wet flats, peaty sand over clay, disturbed habitats. Flowers October to November.	✓		✓	
Verticordia lehmannii	P4	Within	Slender shrub with few side-branches, grows to 30-75 cm high. Sandy clay. Winter-wet flats. Flowers December to April.	✓		✓	

[1] DBCA – DBCA Threatened and Priority Flora List; PM – Protected Matters Database; NM – NatureMap Database; LR – literature review.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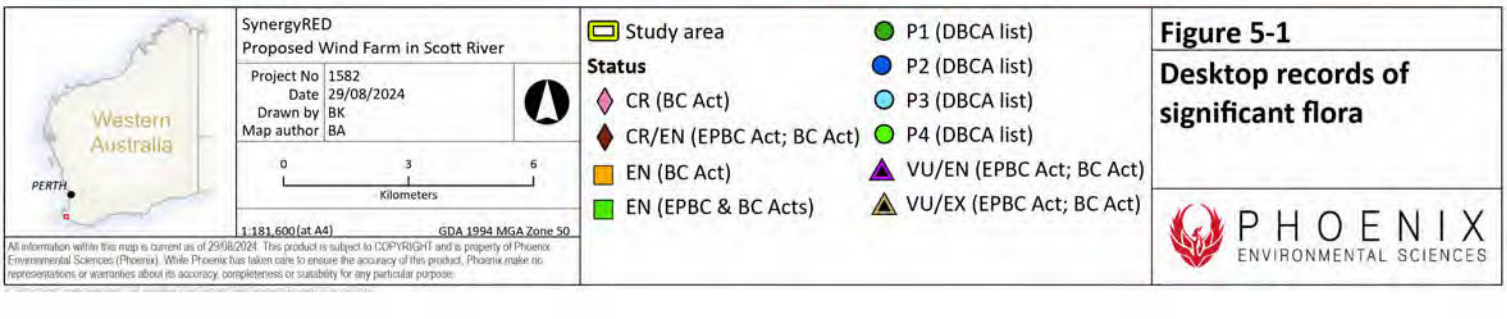
Western Australia
PERTH
SynergyRED
Proposed Wind Farm in Scott River
Project No 1582
Date 29/08/2024
Drawn by BK
Map author BA
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6
Kilometers
1:181,600 (at A4)
GDA 1994 MGA Zone 50
All information within this map is current as of 29/08/2024. This product is subject to COPYRIGHT and is property of Phoenix Environmental Sciences (Phoenix). While Phoenix has taken care to ensure the accuracy of this product, Phoenix make no representations or warranties about its accuracy, completeness or suitability for any particular purpose.
Study area
Status
CR (BC Act)
CR/EN (EPBC Act; BC Act)
EN (BC Act)
EN (EPBC & BC Acts)
P1 (DBCA list)
P2 (DBCA list)
P3 (DBCA list)
P4 (DBCA list)
VU/EN (EPBC Act; BC Act)
VU/EX (EPBC Act; BC Act)
Figure 5-1
Desktop records of significant flora
PHOENIX
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5.1.3 Introduced flora

The desktop review identified 82 introduced species within the desktop database and literature review search extent, of which one is a WoNS (**Genista monspessulana*) and 2 are Declared Pests (**Rubus anglocandicans* and **Solanum linnaeanum*) (Appendix 4). The Biota (2009) also recorded the Declared Pest, **Solanum linnaeanum* during its survey.

5.1.4 Vegetation associations

Regional-scale pre-European vegetation mapping for WA (Beard *et al.* 2013; DPIRD 2018) identifies mapped 11 vegetation associations in the study area (Table 5-2; Figure 5-2). These 11 associations were compared between 4 extents: statewide, within the Warren bioregion (equivalent to a Warren subregional extent), within the Jarrah Forrest bioregion and within the Southern Jarrah Forest (JAF02) subregion. Status for each association in each of the extents is classified using the bioregional conservation status of ecological vegetation classes table (Table 2-1).

Of the 11 vegetation associations identified, 7 were classed as being of Least concern in all 4 extents (27; 975; 3; 14; 1; 1132; 1134) (Table 5-2).

Vegetation association 1137 is only found in the Warren bioregion. Less than 350 ha (32.09%) of this association currently remains and it encompasses 17.22% (670.13 ha) of the study area. It is classed Depleted within the statewide and Warren bioregion extents; however, 78.63% (272.48 ha) of the current extent can be found on DBCA lands.

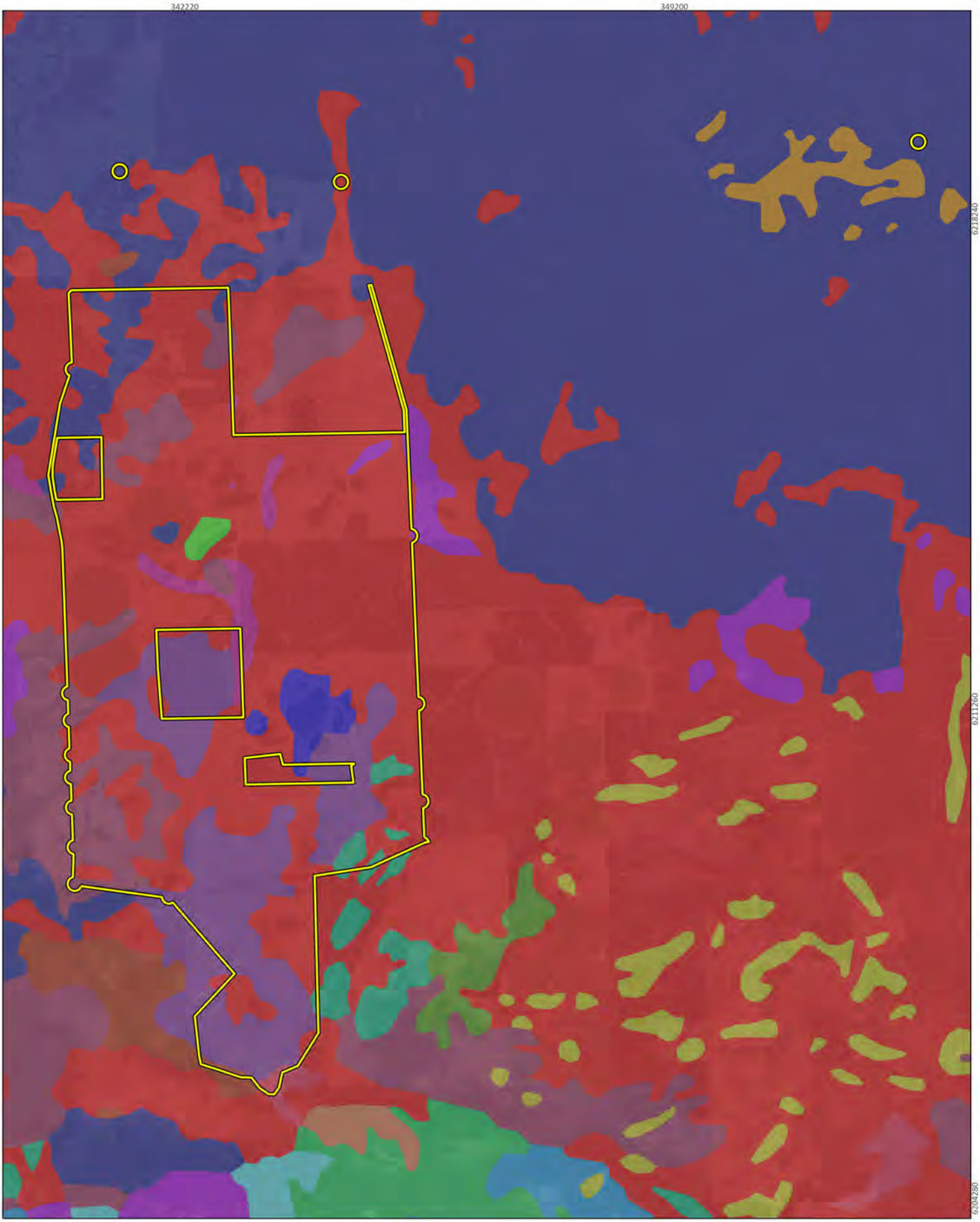
Vegetation association 51 is classed as Depleted within the Jarrah Forrest bioregional and subregional (JAF02) extents. Its current extent however, is more than 33,000 ha (55.95%) and over 68% (22,747.20 ha) is within DBCA lands. It is also of Least concern in all other extents.

Vegetation association 949 is classed as Depleted within the Jarrah Forrest bioregional and subregional (JAF02) extents but its current extent is more than 123,000 ha (56.42%), over 55% (68,765.91 ha) is within DBCA lands and encompasses less than 3% (87.95 ha) of the study area. It is of Least concern in all other extents.

Vegetation association 973 is classed as Depleted within the statewide and Warren bioregion extents. It only encompasses 0.64% (24.91 ha) of the study area and is of Least concern in all other extents.

Table 5-2 Extents of pre-European vegetation associations present in the study area (DPIRD 2018)

Vegetation association	pre-European extent (ha)	Current extent (ha)	Remaining statewide (%)	Remaining within Warren bioregion (%)	Remaining within Jarrah Forrest bioregion (%)	Remaining within JAF02 subregion (%)	Current extent in DBCA lands (%)	Current extent within the study area (ha)	Current extent within the study area (%)
27, Low woodland; paperbark (*Melaleuca* sp.)	130,385.33	92,501.98	70.95	74.44	73.65	73.65	83.50	2,408.49	61.89
1137, Shrublands; *Melaleuca incana, Hakea tuberculata, Viminaria juncea* scrub on ironstone, south coast	1,079.83	346.53	32.09	32.09	NA	NA	78.63	670.13	17.22
51, Sedgeland; reed swamps, occasionally with heath	59,085.59	33,057.98	55.95	90.63	36.01	35.81	68.81	370.87	9.53
3, Medium Forest; Jarrah-Marri	2,661,404.62	1,803,437.48	67.76	78.05	67.10	59.40	81.50	153.72	3.95
14, Low Forest; Jarrah	94,609.36	70,202.42	74.20	63.35	75.31	75.31	83.97	99.23	2.55
949, Low woodland; *Banksia*	218,193.94	123,104.02	56.42	58.12	36.32	46.81	55.86	87.95	2.26
975, Low woodland; Jarrah	17,275.64	15,563.36	90.09	78.13	88.90	88.90	93.17	43.20	1.11
973, Low Forest; paperbark (*Melaleuca rhaphiophylla*)	5,003.27	1,895.60	37.89	33.45	60.22	62.33	13.20	24.91	0.64
1134, Medium woodland; Jarrah (south coast)	37,488.91	30,358.47	80.98	86.95	77.25	77.25	89.33	17.12	0.44
1132, Medium Forest; Marri	307.42	259.5	84.41	69.77	99.42	99.42	74.52	9.00	0.23
1, Tall Forest; Karri (*Eucalyptus diversicolor*)	72,410.06	56,328.07	77.79	77.91	80.53	80.53	83.55	6.62	0.17



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 1 2
Kilometers

1:69,700 (at A4) GDA 1994 MGA Zone 50

Study area

Vegetation association

- 990, Low forest: peppermint (Agonis flexuosa)
- 14, Low forest; jarrah
- 973, Low forest; paperbark (Melaleuca rhaphiophylla)
- 22, Low woodland; Agonis flexuosa
- 949, Low woodland; banksia
- 975, Low woodland; jarrah
- 23, Low woodland; jarrah-banksia
- 27, Low woodland; paperbark (Melaleuca sp.)
- 3, Medium forest; jarrah-marri
- 1132, Medium forest; marri
- 1002, Medium open woodland; jarrah
- 1134, Medium woodland; jarrah (south coast)
- 1000, Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree (Melaleuca spp.)
- 51, Sedgeland; reed swamps, occasionally with heath
- 1108, Shrublands, Acacia decipiens
- 1137, Shrublands; Melaueca incana, Hakea tuberculata, Viminaria juncea scrub on ironstone, south coast
- 1109, Shrublands; peppermint scrub, Agonis flexuosa
- 1, Tall forest; karri (Eucalyptus diverscolor)

Figure 5-2

Vegetation associations of the study area

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5.1.5 Significant vegetation

The DBCA Threatened and Priority Ecological Communities database search identified the presence of 4 TECs and 3 PECs within the desktop search extent (Table 5-3) (DBCA 2023e). The communities, inclusive of their buffers, are shown in Figure 5-3.

An additional TEC (*Empodisma* peatlands of southwestern Australia) has been included in the desktop review at the request of the client. The TEC/PEC database search was undertaken in June 2023 and this TEC was officially listed in September 2023. Consequently, Pheonix was not able to obtain spatial data on the exact locations and extent of this TEC. However, by comparing the distribution map in the listed conservation advice, it can be deduced that it falls within the 25 km desktop extent (Department of Climate Change 2023).

The Scott River Ironstone Association is the only Threatened or Priority community that intersects the study area (Figure 5-3). The DBCA boundaries of the Scott River Ironstone TEC within the study area are centred on a series of occurrences mapped by Tille and Lantzke (1990) and subsequently Gibson *et al.* (2000). Buffers for the occurrences in the study are either 500 m or 2000 m. Gibson *et al.* (2000) determined that the original extent of this TEC was 1,780 ha and in 2000 had declined to only 325 ha because of land clearing. Of the extant TEC in 2000, 82 ha was in nature reserves, and 2 ha in State Forest and National Park and several areas within Governor Broome Road and to a lesser extent Dennis Road and Scott River Road reserves.

Numerous threatening processes have been identified for the Scott River Ironstone Association TEC vegetation Luu and English (2004) including weeds, dieback, burning, grazing (domestic stock and kangaroos), construction of drainage channels, road works, and mowing of road verges. Dieback has been recorded within some occurrences of the TEC and impacts most markedly members of the Proteaceae and Ericaceae families (Luu and English 2004).

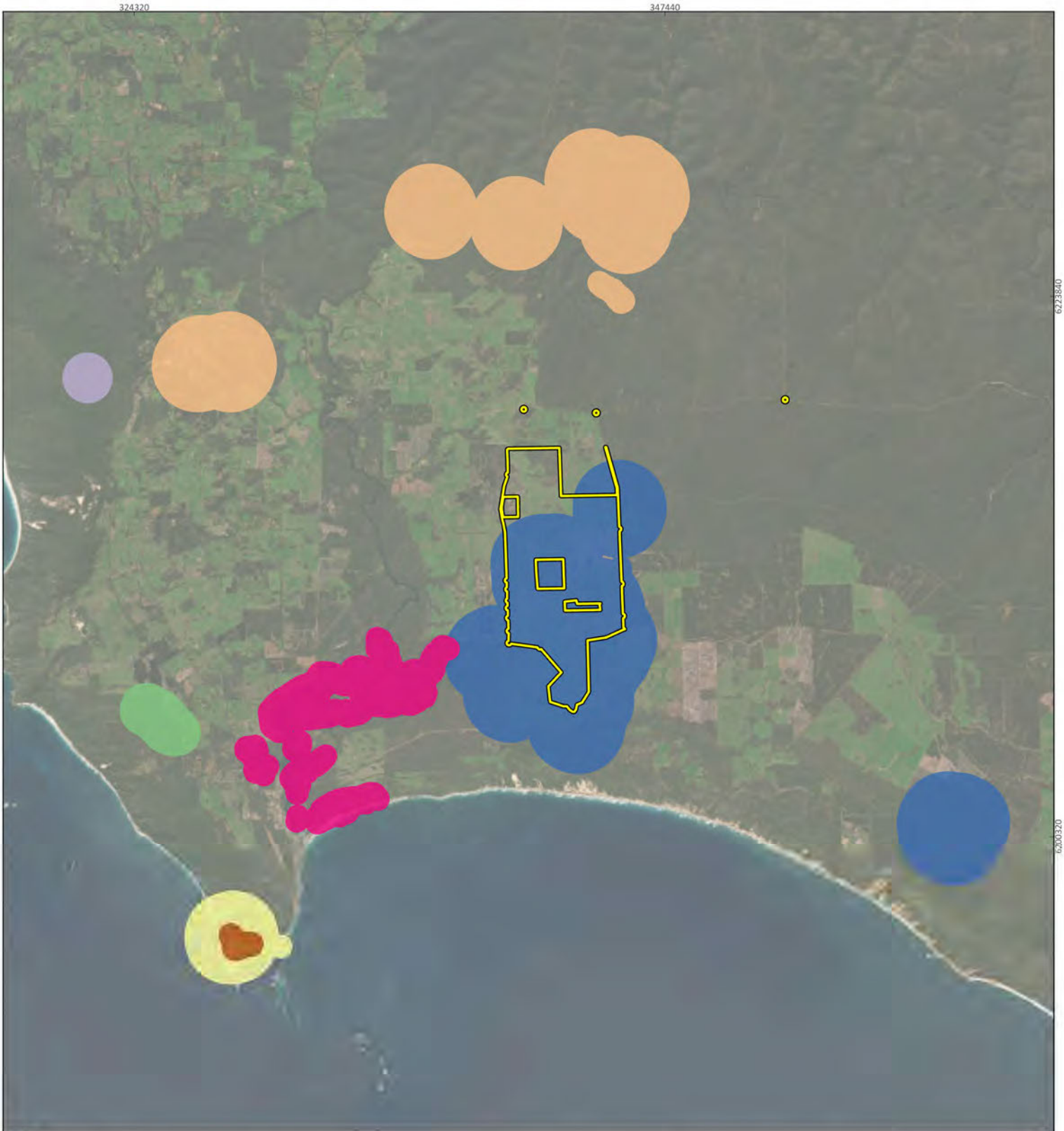
The Aquatic Root Mat Community Number 1 of Caves of the Leeuwin-Naturaliste Ridge (Easter and Jewel Caves), Rimstone Pools and Cave Structures Formed by Microbial Activity on Marine Shorelines (Augusta microbialites) and Aquatic Root Mat Community Number 4 of Caves of the Leeuwin-Naturaliste Ridge (Calgardup Cave) TEC are all characterised by their fauna composition, not their flora species. While the flora species present can be indicators of the TEC, they are not the defining characteristics for each of these TEC.

Table 5-3 TECs and PECs identified in the desktop review

Community name	Status	Proximity to study area	Description
Scott River Ironstone Association	T (EN EPBC Act; CR BC Act)	Within	The community occurs in a winter-wet habitat on red clay to clay-loam often over massive ironstone on the Scott Coastal Plain. It mainly comprises heaths, shrublands and thickets and is variously dominated by *Melaleuca preissiana* (moonah), *Hakea tuberculata*, *Kunzea micrantha* or *Melaleuca incana* subsp. Gingilup (Priority 2), depending on the degree of waterlogging. The understorey is generally dominated by *Loxocarya magna* (Priority 3). Most occurrences have very diverse annual flora of *Stylidium* spp. (trigger plants), *Centrolepis* spp., *Schoenus* spp., *Aphelia* spp. and other herbs. The community also contains a number of endemic and restricted taxa such as *Darwinia ferricola* (Endangered), *Grevillea manglesioides* subsp. *ferricola* (Priority 3), *Lambertia orbifolia* subsp. Scott River Plains (Endangered) and *Melaleuca incana* subsp. Gingilup (Priority 2) (DBCA 2023a). To be considered part of the community, the vegetation must meet the condition of Good or above.
Empodisma peatlands of southwestern Australia	T (EN EPBC Act)	<25 km	The *Empodisma* peatlands of southwestern Australia is the assemblage of native plants, animals and other organisms that comprise a type of seasonally waterlogged freshwater, peat-based wetland. The ecological community predominantly occurs in the Warren Bioregion and the Southern Jarrah Forest subregion of the Jarrah Forest Bioregion. Some occurrences may also occur in high rainfall areas of the Fitzgerald, Northern Jarrah Forest and Perth subregions where climatic, stratigraphic and topographic conditions are suitable for *Empodisma* peatlands to form. The structure of the ecological community is typically a sedgeland to shrubland vegetation complex on peaty substrates. The undisturbed ground layer of the ecological community is often dense and typically comprises a suite of native wetland graminoid and forb species. The ground layer is almost always characterised by the perennial restiad grass-like twig rush *Empodisma gracillimum* (tanglefoot). Co-dominant or otherwise often occurring Cyperaceae and Restionaceae species include: *Gahnia decomposita*, *Gymnoschoenus anceps*, *Lepidosperma striatum*, *Leptocarpus tenax* (slender twine rush), *Machaerina rubiginosa* (soft twig rush), *Schoenus multiglumis*, *Sporadanthus rivularis* and *Reedia spathacea* (reedia). Small trees/woody shrubs within the *Empodisma* peatlands vary from dense to sparse and may include *Acacia hastulata*, *Acidonia macrocarpa*, *Aotus intermedia*, *Boronia stricta*, *Callistemon glaucus* (Albany bottlebrush), *Cosmelia rubra* (spindle heath), *Dampiera leptoclada* (slender-shooted dampiera), *Homalospermum firmum, Sphaerolobium fornicatum*, *Taxandria fragrans*, *T. linearifolia* and *Tetratheca filiformis*. Trees vary from sparse to absent within the ecological community but may include *Eucalyptus megacarpa* (blue gum of Western Australia, Bullich), *Melaleuca preissiana* (moonah, modong) and *Taxandria juniperina* (watti, native cedar) as emergents or on the edge of the ecological community. The ecological community includes a diverse range of fauna species (Department of Climate Change 2023).

Community name	Status	Proximity to study area	Description
Subtropical and Temperate Coastal Saltmarsh (synonymous with the Subtropical and Temperate Coastal Saltmarsh EPBC-listed TEC)	P3 (DBCA list)	2.1 km	Consists of the assemblage of plants, animals and micro-organisms associated with saltmarsh in coastal regions of subtropical and temperate Australia (south of 23oS latitude). It occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coast in places with at least some tidal connection, including rarely inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences. The community occurs on sandy or muddy substrate and may include coastal clay pans and similar habitats. It consists of dense to patchy areas of characteristic coastal saltmarsh plant species that include salt- tolerant herbs, succulent shrubs or grasses, and may also include bare sediment as part of the mosaic. It can occur where the proportional cover by tree canopy such as mangroves, *Melaleuca*, *Casuarina* or seagrass is not greater than 50%. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community (DCCEEW 2024).
Reedia spathacea - *Empodisma gracillimum* - *Sporadanthus rivularis* dominated floodplains and paluslopes of the Blackwood Plateau.	P1 (DBCA list)	4.3 km	Diverse closed sedges and rushes to 1.5 m in height of *Reedia spathacea*/*Empodisma gracillimum*/*Sporadanthus rivularis* with open low shrubs to open scrub of *Taxandria linearifolia*. Threats: altered fire regimes, weed invasion, clearing (DBCA 2023c).
Aquatic Root Mat Community Number 1 of Caves of the Leeuwin-Naturaliste Ridge (Easter and Jewel Caves)	T (EN EPBC Act; CR BC Act)	13.9 km	The community occurs in the cave system of the Leeuwin-Naturaliste Ridge incorporating Easter and Jewel Caves. It comprises a complete food web. Rootlets and their associated microflora provide the primary food source, and root mat grazers, predators, parasites, detritivores, and scavengers complete the interactions. The root mats are produced by Eucalyptus diversicolor (Karri). Aquatic cavernicoles (cave animals) in the community include crustaceans (Amphipoda, Copepoda, Ostracoda) and worms (Oligochaeta). The ostracod *Acandona admiratio* Karanovic 2003 is specific to Jewel and Easter Caves. The community was originally described in Jasinska E.J. (1997) Faunae of aquatic root mats in caves of southwestern Australia: origins and ecology (unpublished doctoral thesis, The University of Western Australia) (DBCA 2023a).

Community name	Status	Proximity to study area	Description
Rimstone Pools and Cave Structures Formed by Microbial Activity on Marine Shorelines (Augusta microbialites)	T (EN BC Act)	14.9 km	The community occurs along the South West coast near Augusta and comprises microbialites, which are structures produced through the growth and metabolic activity of benthic microbial communities. The tufa that comprises the community are microbialite structures that have a less defined internal framework that are precipitated from freshwater springs and seeps, formed through the growth and metabolic activity of a diverse variety of microbial organisms, including cyanobacteria, diatoms, and other algal components. They form chemical sedimentary rock composed of calcium carbonate. This tufa have many forms including drapes, curtains, small cylindrical stalactites and larger campanulate (bell-shaped) masses on the sea cliffs, as well as fans or terraces consisting of a series of rimstone pools and nodular masses in small brackish pools (DBCA 2023d).
Tall closed sedgeland on shallow soils derived from granite gneiss on the Leeuwin-Naturaliste Ridge ('Sedgelands of the Cape Leeuwin Spring')	P1 (DBCA list)	15.9 km	Tall closed sedgeland of *Juncus kraussii*, *Baumea juncea*, and *Schoenoplectus validus*; tall closed sedgeland of *Typha orientalis*, over *S. validus*, *Lepidosperma gladiatum* and *Muehlenbeckia adpressa*; low closed sedgeland of *Ficinia nodosa* and *Baumea juncea* on shallow soils derived from granite gneiss on the Leeuwin-Naturaliste Ridge (DBCA 2023c).
Aquatic Root Mat Community Number 4 of Caves of the Leeuwin-Naturaliste Ridge (Calgardup Cave)	T (EN EPBC Act; CR BC Act)	17.4 km	The community occurs in the cave system of the Leeuwin-Naturaliste Ridge incorporating Calgardup Cave. It comprises a complete food web. Rootlets and their associated microflora provide the primary food source, and root mat grazers, predators, parasites, detritivores, and scavengers complete the interactions. The root mats are produced by *Corymbia calophylla* (Marri). Aquatic cavernicoles (cave animals) in the community include *Cherax preissii* (koonac), other crustaceans (*Perthia acutitelson*, Paracyclops, Harpacticoida), meiobenthic mites (*Soldanellonyx monardi* and Oribatida), non-biting midges (*Chironomus* aff. *alternans* Walker, *Polypedilum* sp.), rotifers (Rotifera) and microscopic worms (*Stenostomum* sp.). The community was originally described in Jasinska E.J. (1997) Faunae of aquatic root mats in caves of southwestern Australia: origins and ecology (unpublished doctoral thesis, The University of Western Australia) (DBCA 2023a).



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 4 8
Kilometers

1:231,200 (at A4) GDA 1994 MGA Zone 50

Study area

PECs

Reedia spathacea - Empodisma gracillimum - Sporadanthus rivularis dominated floodplains and paluslopes of the Blackwood Plateau, Priority 1

Subtropical and Temperate Coastal Saltmarsh, Priority 3

Tall closed sedgeland on shallow soils derived from granite gneiss on the Leeuwin Naturaliste Ridge ('Sedgelands of the Cape Leeuwin Spring'), Priority 1

Figure 5-3

Location of Threatened and Priority Ecological Communities in relation to study area

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5.1.6 Groundwater dependent ecosystems

The literature review on GDEs and analysis against field survey results identified several groundwater dependent communities or plant taxa that occur or may occur in the study area (Table 5-4).

The conservation advice for the Scott River Ironstone TEC (SEWPaC 2013) states that this community is dependent on groundwater for its persistence and subsequently the TEC is considered an obligate GDE.

The interpretation of obligate versus facultative groundwater dependence for the taxa in Table 5-4 was based on available scientific literature for the species. None of the studies referenced were from the locality of the study area, therefore assignation of obligate or facultative here should be treated with caution as dependency at the referenced study sites may not reflect dependency of these species within the study area.

Table 5-4 Groundwater dependent communities or taxa identified in literature review

Community or taxon	Description/comments
Scott River Ironstone TEC	Assume obligate GDE based on conservation advice and recovery plan (Luu and English 2004; SEWPaC 2013). Confirmed to be groundwater dependent. The community occurs in a winter-wet habitat on red clay to clay-loam often over massive ironstone on the Scott Coastal Plain. A defining characteristic of the ecological community is seasonal inundation or wet/damp soils from winter rainfall and groundwater (SEWPaC 2013). The major groundwater aquifer of the Scott Coastal Plain is the South West Yarragadee Formation which is recharged through rainfall infiltration on outcrop areas and through leakage from overlying aquifers (SEWPaC 2013). Superficial formations also form an unconfined aquifer about 10 m thick over the SW Yarragadee Formation (Baddock 1995, in Luu and English 2004). The hydrology of the Scott Ironstone, and therefore the persistence of the TEC is thought to depend mainly on the superficial aquifer (Luu and English 2004). Critical habitat identified for the Scott River Ironstone community includes the groundwater and groundwater catchment that maintains the hydrology of the remaining vegetation on the Scott River Ironstone (Luu and English 2004). Change in the groundwater hydrological regime is identified as a threat to the community.
Banksia species	*Banksia littoralis* has been defined as an obligate phreatophyte commonly inhabiting low-lying winter-wet areas that has been shown to decline in vigour and distribution in response to declining groundwater levels on the Gnangara Mound (Froend and Drake 2006; Groom et. al. 2001). *B. ilicifolia* has also been classified as an obligate phreatophyte with a range restricted to environments of higher water availability and shallower depth to groundwater (Froend and Drake 2006). It has continuous dependence on groundwater for its water needs (Canham *et al.* 2009; Froend and Drake 2006). *B. attenuata* has facultative groundwater dependence. It occupies a range of topographical positions in the landscape and has been shown to switch between groundwater and soil moisture use depending on groundwater level (Groom 2004; Zencich *et al.* 2002). This suggests a seasonal dependence on groundwater, using it during winter when rainfall recharges the aquifer, and then relying on soil moisture at other times of the year (Nevill *et al.* 2010).
Melaleuca species	Many *Melaleuca* species are considered to be facultative phreatophytes, including *M. preissiana*, *M. rhaphiophylla (Groom et. al. 2001; Hatton & Evans 1998).*
Eucalyptus rudis	Facultative phreatophyte (Froend & Sommer 2010; Hatton & Evans 1998; Water 2008) that mainly occurs in swamps, lake edges and along watercourses.

5.2 FIELD SURVEY

5.2.1 Flora assemblage

A total of 423 flora taxa representing 65 families, and 209 genera identified to species level (excludes unidentified flora) were recorded in the study area during the field surveys (Appendix 5). Species richness ranged from 3 to 73 species amongst quadrats (Appendix 2). The assemblage included 353 native taxa and 70 introduced taxa, including 340 perennial taxa, 74 annual or short-lived taxa, and 9 taxa that exhibit both annual and perennial lifecycles. The most prominent families recorded were Fabaceae (51 spp.), Proteaceae (39 spp.), Poaceae (31 spp.), Myrtaceae (30 spp.) Restionaceae (27 spp.) and Cyperaceae (26 spp.).

5.2.2 Assessment of survey completeness

In accordance with the Technical Guidance EPA (2016b), a species accumulation curve by site was constructed to assess that the number of sites surveyed were sufficient to adequately capture flora present within the Phoenix survey area at the time of the survey.

The species accumulation curve (Figure 5-4) compares the total species recorded against the total number of quadrat and relevé sites. The sites are ordered by date performed, which enables a true representation of curve development over time during the survey. The additional 16 species collected opportunistically outside of sites are accounted for as the first data point in the accumulation curve and are why the species accumulation curve begins at 16.

The increase to the curve at approximately site 60 demonstrates that the third phase captured many additional species. This is likely due to additional quadrats targeting so far uncaptured vegetation types. The near flattening (no new species for last 6 sites) of the species accumulation curve indicates that sufficient sites (quadrat and relevé) were surveyed to capture the diversity of flora present at the time of the Phoenix surveys. The blue trendline beneath the accumulation curve is a product of fewer species than expected being detected during the mid stage of the survey program.

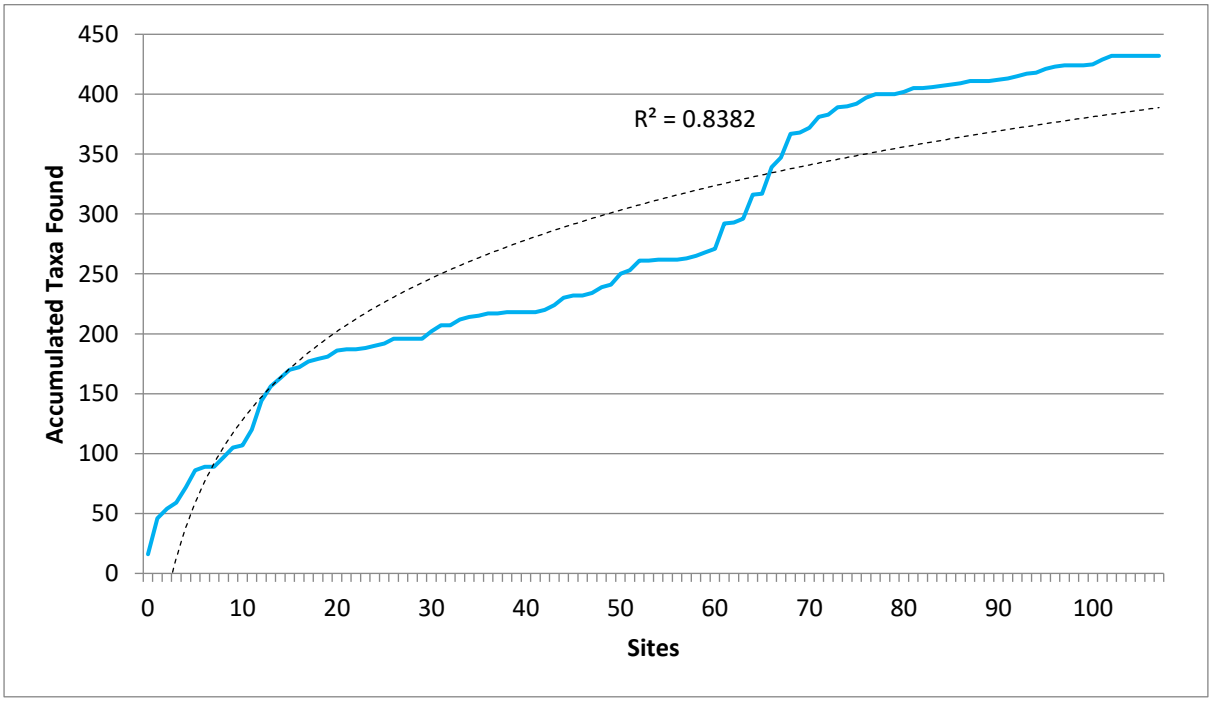


Figure 5-4 **Species accumulation curve for flora and vegetation sites (blue), and trend line (black)**

5.2.3 Significant flora

Three Threatened flora and 16 Priority flora were recorded during the field survey (Table 5-5; Figure 5-5). The Priority flora included:

- one Priority 1 species
- 11 Priority 3 species
- 4 Priority 4 species.

A significant range extension (RE) was recorded for one species, which is therefore considered locally significant (Table 5-5; Figure 5-5):

- *Centrolepis strigosa* subsp. *strigosa* was recorded approximately 215 km west-north-west of the nearest known record (WA Herbarium 1998).

Total number of plants recorded, and populations (see Section 4.2.2.2 for definition) of significant flora recorded are shown in Table 5-5. Populations were categorised into:

- new population – no confirmed desktop records associated with this population
- confirmed desktop population – populations were confirmed by visiting desktop records and potentially expanding the known plant counts and population boundaries with additional Phoenix records. Not necessarily all individual desktop records within the population were confirmed, but are considered likely to occur
- unconfirmed desktop population – no confirmed or Phoenix records associated with this population; only includes unconfirmed desktop records, excluding any desktop records that were discounted as extant, i.e. found to be no longer present, old record in a now cleared location, or desktop record considered inaccurate.

Locations of the unconfirmed significant flora within the study area are shown in Appendix 6 and unconfirmed population within the study area in Appendix 7. Desktop records were discounted as extant when the species could not be relocated at or near the point location of the record. Location data may not be accurate for old desktop records and some points may represent a general location of a dispersed population. While the immediate vicinity of the desktop record was searched, the potential for presence of a dispersed population beyond the search extent, in remnant vegetation, cannot be discounted.

Some records/populations were recorded outside the study area and have been noted in Table 5-5. All are within 400 m of the study area boundaries.

The likelihood of occurrence assessment (Section 4.2.2.2) for the remaining significant species identified in the desktop review (Section 5.1.1) determined that 48 species may possibly occur and 17 are unlikely to occur (Table 5-6).

Table 5-5 Distribution and habitats of significant flora recorded during the field survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Lambertia orbifolia subsp. *vespera* (*L. orbifolia sens. lat.* under EPBC Act)	T (EN EPBC & BC Acts)	Known only from the Scott River plain, east of Augusta and mostly in the Warren bioregion, where it is restricted to the 'Scott River Ironstone Association' TEC (Luu & English 2004). There are 24 records in Florabase indicate there are more than between 5,600-13,100 individuals however distribution seems highly restricted. Grows in sand or sandy clay in association with ironstone, around seasonally wet areas. Associated vegetation is open woodland of *Eucalyptus marginata, Corymbia calophylla* or *Agonis flexuosa* over closed shrubland, or shrubland over dense heath. It can form thickets in association with *Banksia littoralis, B. ilicifolia, B. grandis* and *Hakea prostrata* (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 confirmed desktop population. A total of 4 individual plants were recorded during the survey. Recorded growing on grey soil, on a sandy rise. Vegetation (Veg) types of confirmed records: XpAs.	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Verticordia plumosa var. *vassensis*	T (EN EPBC & BC Acts)	Occurs in the Swan Coastal Plain and Warren bioregions. There are 61 records of this species in Florabase. Population size for records in Florabase suggest at least 1,004 plants, however there are likely more as most records did not specify the frequency of plants. Habitat descriptions include brown, grey sandy loamy soils, on plains, winter-wet depressions and road verges. Usually growing amongst *Melaleuca* spp., *Viminaria* spp. and other *Verticordia* spp. (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 confirmed desktop population. A total of 71 individual plants were recorded during the survey. Recorded growing on brown soils on flat areas next to road verges. Veg types of confirmed records: XpMdLm. Veg types/ non-vegetated units of unconfirmed records (within confirmed populations): XpMdLm & cleared areas[3].	 Current survey
Grevillea brachystylis subsp. *australis*	T (VU EPBC Act; EN BC Act)	Occurs in the Jarrah Forest and Warren bioregions. There are 17 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 60 plants, however there are likely more as most records did not specify the frequency of plants. Habitat descriptions include wet depressions and swamps in grey clayey sand. Usually found growing amongst *Corymbia calophylla, Agonis flexuosa* and *Agonis parviceps* (WA Herbarium 1998).	Three recorded populations in the study area, comprising of: • 1 new population • 2 confirmed desktop populations. A total of 6 individual plants were recorded during the survey. Recorded growing on grey, brown soils, on flat areas next to road verges. Veg types/ non-vegetated units of confirmed records: EmmXpMtDb & cleared areas. Veg types/ non-vegetated units of unconfirmed records (within confirmed populations): Aff, EmmXpMtDb & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Synaphea nexosa	P1 (DBCA)	Occurs in the Warren bioregion. There are 8 records of this species in Florabase. Population sizes for records in the Florabase suggests at least 31 plants, however there are likely more as some of the records did not specify the frequency of plants. Habitat descriptions include depressions in road verges and other wet disturbed areas on brown clayey sand. Often growing amongst weeds and occasionally with *Eucalyptus marginata* and *Corymbia calophylla* (WA Herbarium 1998).	Three recorded populations in the study area, comprising of: • 1 new population • 2 confirmed desktop populations. One additional new population outside the study area. One additional unconfirmed population in the study area. A total of 36 (2 outside the study area) individual plants were recorded during the survey. Recorded growing on orange, brown, grey soils, on winter-wet depressions and flat areas next to road verges. Veg types of confirmed records: EmmXpMtDb. Veg types/ non-vegetated units of unconfirmed records (within confirmed & unconfirmed populations): EmmXpMtDb, XpMdLm & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Boronia anceps	P3 (DBCA)	Occurs in the Warren bioregion. There are 17 records of this species in Florabase generally classified as locally frequent. Habitat is described as white sand, gravelly laterite in seasonally swampy heaths. The vegetation descriptions for individual specimens included *Agonis flexuosa, Nuytsia floribunda, Eucalyptus marginata* and *Corymbia calophylla* with *Adenanthos detmoldii* (WA Herbarium 1998).	Five recorded populations in the study area, comprising of: • 4 new populations • 1 confirmed desktop population. One additional unconfirmed population in study area. A total of 160 individual plants were recorded during the survey. Recorded growing on black, grey, brown soils, on winter-wet depressions and flat areas next to road verges. Veg types of confirmed records: AmBsHc, ClcVj, EmmTpAs & EmmXpMtDb. Veg types/ non-vegetated units of unconfirmed records (within confirmed & unconfirmed populations): EmmXpMtDb & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Calothamnus lateralis var. *crassus*	P3 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 17 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 1,017 plants, however there are likely more as most records did not specify the frequency of plants. Habitat descriptions generally include winter-wet flat, swamps or depressions often amongst *Agonis flexuosa, Hakea* spp., Restionaceae spp. (WA Herbarium 1998).	Fourteen recorded populations in the study area, comprising of: • 12 new populations • 2 confirmed desktop populations. One additional unconfirmed population in study area. A total of 2,334 (2,009 outside the study area) individual plants were recorded during the survey. Recorded growing on black, brown, grey sandy loam soils, on seasonally wet areas, winter-wet depressions and drainage lines. Veg types/ non-vegetated units of confirmed records: AsLs, CcTlXpAp, ClcVj, EmmAffMtAsDb, EmmTpAs, EmmXpMtDb, MrCh, PeeLs, TiLs, XpAs & cleared areas[3]. Veg types of unconfirmed records (within confirmed & unconfirmed populations): EmmTpAs, EmmXpMtDb & XpMdLm.	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Chorizema carinatum	P3 (DBCA)	Occurs in the Fitzgerald, Katanning, Perth and Southern Jarrah Forest subregions. There are 30 records of this species in Florabase. Most records do not cite how many plants, some 'occasional' with up to 30 individuals. This indicates there are less than a few hundred individuals known The closest record to the study area describes the habitat as upland depression (slight wet) in grey sandy loam. The associated vegetation comprised *Agonis parviceps, Podocarpus drouynianus* and *Melaleuca thyoides* forest. Some of the eastern records cite Jarrah Forest as habitat (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 new population. One additional new population recorded outside study area. No desktop records of *Chorizema carinatum* were within the study area. A total of 469 (including 240 outside the study area) individual plants were recorded during the survey. Recorded growing on brown, grey soils on seasonally wet areas and flat areas next to road verges. Veg types/ non-vegetated units of confirmed records: EmmTpGoMtPu & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Dampiera heteroptera	P3 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 18 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 67 plants, however there are likely more as some of the records did not specify the frequency of plants, and others were described as locally frequent or occasional. Habitat descriptions generally describe swampy plains and seasonally wet floodplains on grey-black- brown sandy peaty clayey sand. Often growing amongst *Eucalyptus marginata, Corymbia calophylla* and *Taxandria* spp. (WA Herbarium 1998).	Four recorded populations in the study area, comprising of: • 4 new populations. No desktop records of *Dampiera heteroptera* were within the study area. A total of 10 individual plants were recorded during the survey. However, a record that only accounts for 1 plant had a cover of 1%, suggesting multiple individuals. Recorded growing on black, grey, brown soils on winter-wet depressions, sandy rises, drainage lines. Veg types of confirmed records: CcTlXpAp, CcTpCeOh, ClcVj, EmmXpMtDb & XpAs.	 (WA Herbarium 1995)

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Gastrolobium formosum	P3 (DBCA)	Occurs in the Southern Jarrah Forest and Warren subregions. There are 39 records of which at least 400 individuals are estimated but for most records there are no details of frequency. The habitat is described as riverbanks or in swamps in clay-loam (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 confirmed desktop population. One additional unconfirmed population in study area. A total of 30 individual plants were recorded during the survey. However, a record that only accounts for 1 plant had a cover of 15%, suggesting multiple individuals. Recorded growing on brown, grey soils on a flat area next to road verge. Veg types of confirmed records: EmmXpMtDb. Veg types of unconfirmed records (within confirmed & unconfirmed populations): AmBsHc & EmmXpMtDb.	 (Crisp 1988)

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA)	Occurs in the Jarrah Forest, Swan Coastal Plain and Warren bioregions. There are 20 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 161 plants, however there are likely more as some records did not specify the frequency of plants, and other records that did, said abundant or common. Habitat descriptions generally describe swampy plains and winter-wet flats on red-brown clay-loam over ironstone. Often growing in heathlands or shrublands amongst *Viminaria juncea* and *Melaleuca* spp. (WA Herbarium 1998).	Six recorded populations in the study area, comprising of: • 5 new populations • 1 confirmed desktop population. One additional unconfirmed population in study area. A total of 285 (including 1 outside the study area) individual plants were recorded during the survey. Recorded growing on brown, black, grey soils on flat areas next to road verges, winter-wet depressions & drainage lines. Veg types/ non-vegetated units of confirmed records: AmBsHc, ClcVj, EmmTpAs, XpMdLm & cleared areas. Veg types/ non-vegetated units of unconfirmed records (within confirmed & unconfirmed populations): EmmXpMtDb, XpMdLm & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Grevillea papillosa	P3 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 31 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 1,129 plants, however likely more as some records did not specify the frequency of plants, and other records that did said frequent or locally common. Habitat descriptions generally include swamps and winter-wet flat on white-grey sandy soils. Often growing amongst *Adenanthos detmoldii, Melaleuca* spp. and *Nuytsia floribunda* (WA Herbarium 1998).	Twelve recorded populations in the study area, comprising of: • 11 new populations • 1 confirmed desktop population. Two additional unconfirmed populations in study area. A total of 396 individual plants were recorded during the survey. Recorded growing on brown, grey soils on flat areas next to road verges, drainage lines & winter-wet depressions. Veg types/ non-vegetated units of confirmed records: AsLs, EmmTpAs, EmmXpMtDb & cleared areas. Veg types/ non-vegetated units of unconfirmed records (within confirmed & unconfirmed populations): Aff, AsLs, CcTpCeOh, EmmXpMtDb & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Isopogon formosus subsp. *dasylepis*	P3 (DBCA)	Occurs in the Jarrah Forest, Swan Coastal Plain and Warren bioregions. There are 47 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 152 plants, however likely more as some records did not specify the frequency of plants, and other records that did said abundant or very common. Habitat descriptions include edges of wetland and winter-wet flats on brown clayey sand. Often growing amongst *Eucalyptus marginata, Eucalyptus calophylla* and *Pericalymma elliptica* (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 new population. No desktop records of *Isopogon formosus* subsp. *dasylepis* were within the study area. A total of 14 individual plants were recorded during the survey. Recorded growing on a flat area next to a road verge. Veg types of confirmed records: EmmTpAs.	 Current survey
Leucopogon alternifolius	P3 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 17 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 1,269 plants, however likely more as some records did not specify the frequency of plants, and other records that did said frequent or locally common. Habitat descriptions generally include swamps and wetlands on grey-black peaty sand. Almost always growing amongst *Homalospermum firmum* and *Beaufortia sparsa* (WA Herbarium 1998).	Two recorded populations in the study area, comprising of: • 2 new populations. No desktop records of *Leucopogon alternifolius* were within the study area. A total of 2 individual plants were recorded during the survey; however cover was recorded at 1% & 2%, suggesting multiple individuals at both populations. Recorded growing on brown, grey soils on winter-wet depressions. Veg types of confirmed records: XpAs.	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Loxocarya magna	P3 (DBCA)	Occurs in the Fitzgerald, Northern Jarrah Forest, Perth, Southern Jarrah Forest, Warren subregions. Of 46 records in Florabase (some are duplicates) there are at least 800 individuals with descriptions of 'occasional' to more than 250. Habitat is described as sand, loam, clay, ironstone in seasonally inundated or damp habitats (WA Herbarium 1998).	Five recorded populations in the study area, comprising of: • 4 new populations • 1 confirmed desktop population. A total of 189 individual plants were recorded during the survey. Recorded growing on brown, grey, orange soils on flat areas next to road verges. Veg types/ non-vegetated units of confirmed records: EmmTpAs, XpMdLm & cleared areas. Veg types/ non-vegetated units of unconfirmed records (within the confirmed population): AmBsHc, EmmXpMtDb, MrCh, XpMdLm & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Netrostylis sp. Blackwood River (A.R. Annels 3043)	P3 (DBCA)	Occurs in the Fitzgerald, Northern Jarrah Forest, Perth, Southern Jarrah Forest, Warren subregions. Of 17 records most describe the frequency as rare and 3 as isolated plants or common. Habitat described as creekbeds, swampy areas and flats (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 new population. No desktop records of *Netrostylis* sp. Blackwood River (A.R. Annels 3043) were within the study area. A single individual plant was recorded during the survey; however, cover was recorded at 5%, suggesting multiple individuals in the population. Recorded growing on brown soil on a seasonally wet area on a road verge. Veg type of confirmed record: EmmTpGoMtPu.	 Current survey

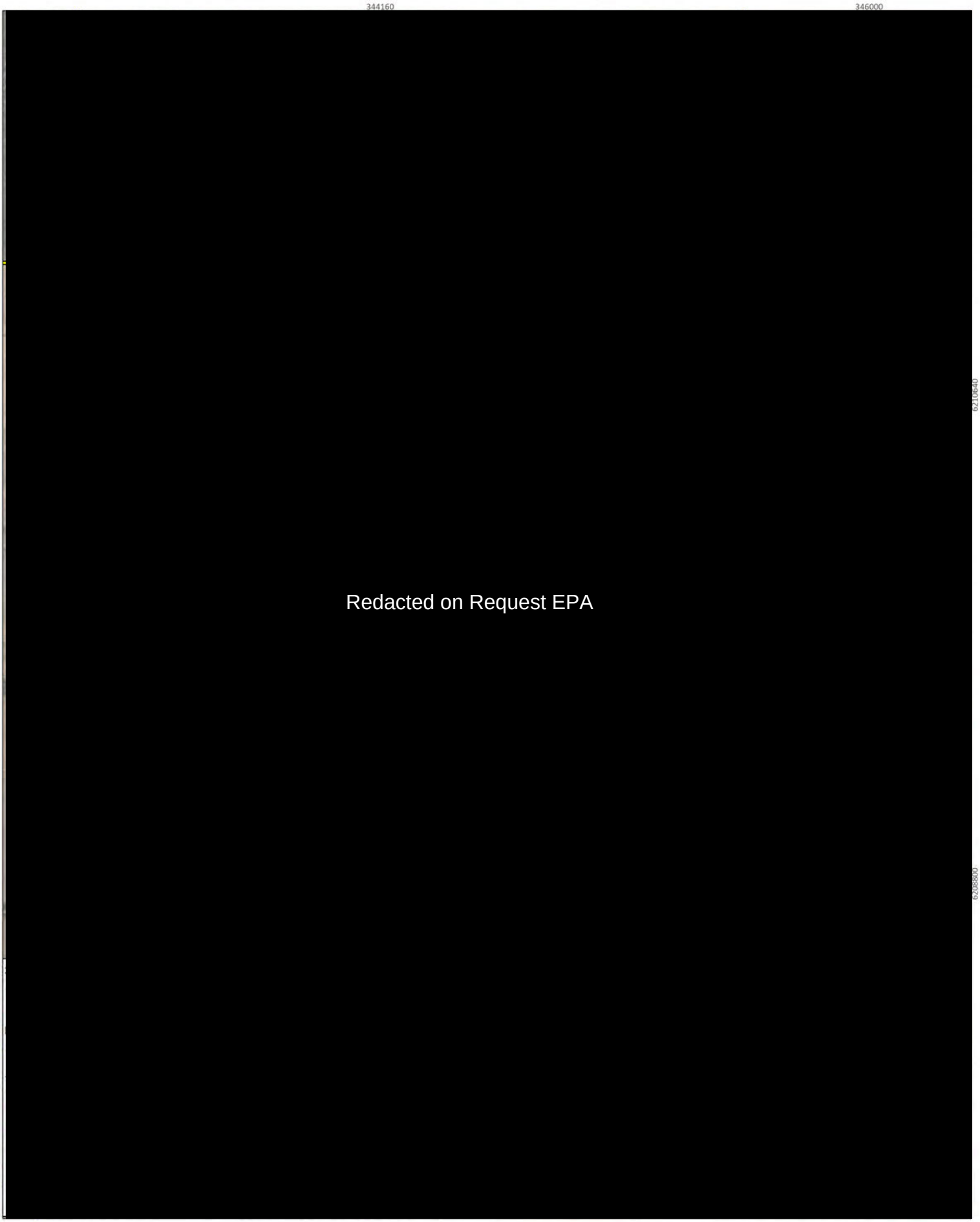
Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Adenanthos detmoldii	P4 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 43 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 1,290 plants, however likely more as some records did not specify the frequency of plants, and other records that did said frequent but localised and 1,000+ plants. Habitat descriptions describe swamy roadsides and wetland plains on white- grey clayey sand soils. Often growing amongst *Xanthorrhoea preissii, Agonis parviceps* and *Eucalyptus marginata* (WA Herbarium 1998).	Eight recorded populations in the study area comprising of: • 7 new populations • 1 confirmed desktop populations. Two additional unconfirmed populations in study area. A total of 1,779 (including 18 outside the study area) individual plants were recorded during the survey. Recorded growing on black, grey, brown sandy soils, in winter-wet depressions, plains and road verges. Veg types/ non-vegetated units of confirmed records: ClcVj, EmmAffMtAsDb, EmmTpAs, EmmXpMtDb & cleared areas. Veg types/ non-vegetated units of unconfirmed records (within confirmed & unconfirmed populations): Aff, EmmAffMtAsDb, EmmXpMtDb & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Adenanthos x *pamela*	P4 (DBCA)	Occurs only in the Warren subregion. There are 14 records on Florabase but of these there are only 10 localities with most sites having only one individual listed and one locality with 20 individuals. The habitat is described as grey sand, laterite. Damp flats, roadsides (WA Herbarium 1998).	One recorded population in the study area, comprising of: • 1 new population. No desktop records of *Adenanthos x pamela* were within the study area. A total of 2 individual plants were recorded during the survey. However, one of the records, cover was recorded at 1%, suggesting multiple individuals. Recorded growing on brown, grey soils on flat areas next to road verges. Veg types/ non-vegetated units of confirmed records: EmmXpMtDb & cleared areas[3].	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Aotus carinata	P4 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 23 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 72 plants, however likely most records did not specify the frequency of plants, and often the ones that did said several or locally frequent. Habitat descriptions include wetlands and damp plains on brown clayey loam mixed with grey sand. Often occurring with *Eucalyptus marginata, Adenanthos detmoldii* and *Beaufortia sparsa* (WA Herbarium 1998).	Three recorded populations in the study area, comprising of: • 3 new populations A total of 18 individual plants were recorded during the survey. Recorded growing on brown, grey soils on winter-wet depressions & drainage lines. Veg types of confirmed records: EmmTpAs & XpAs.	 Current survey
Melaleuca basicephala	P4 (DBCA)	Occurs in the Jarrah Forest and Warren bioregions. There are 30 records of this species in Florabase. Population sizes for records in the Florabase suggest at least 90 plants, however likely more many records did not specify the frequency of plants, and often the ones that did said locally common or frequent. Habitat descriptions include swamps and winter-wet flats often growing amongst *Agonis* spp. and *Melaleuca* spp. over Restionaceae spp (WA Herbarium 1998).	Two recorded populations in the study area, comprising of: • 2 new populations. No desktop records of *Melaleuca basicephala* were within the study area. A total of 51 (including 50 outside the study area) individual plants were recorded during the survey. Recorded growing on grey soils a seasonally wet area on a road verge. Non-vegetated units of confirmed records: in cleared areas adjacent to EmmTpGoMtPu.	 Current survey

Significant flora species	Status	Distribution and ecology	Populations recorded	Photograph
Centrolepis strigosa subsp. *strigosa*	RE approx. 215 km WNW	Occurs in the Coolgardie, Esperance Plains, Jarrah Forest, Mallee and Swan Coastal Plain bioregions. Habitat descriptions include damp road verges, hill sides and margins of creek lines on sandy soils on or near granite outcrops. Often growing amongst *Borya nitida,* Proteaceae spp. and moss spp. (WA Herbarium 1998).	One recorded population in the adjacent to the study area, comprising of: • 1 new population. A single individual plant was recorded during the survey. Recorded growing on white, brown soils on a flat area next to road verge. Veg types of confirmed records: adjacent to XpAs.	 (Archer 2013)

[3]Cleared areas are not treated as habitat for Threatened or Priority flora, to account for potential location errors and/or the possibility that the plant/s no longer exist.



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	3/12/2024
Drawn by	BK
Map author	NR

0 250 500
Meters

1:18,400(at A4) GDA 1994 MGA Zone 50

Study area

Map shows new records and confirmed desktop records

Figure 5-5a

Significant flora records from the field survey

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SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	3/12/2024
Drawn by	BK
Map author	NR

0 250 500
Meters

1:12,800(at A4) GDA 1994 MGA Zone 50

Study area

Species, status

Grevillea manglesioides subsp. *ferricola*, P3 (DBCA list)

Loxocarya magna, P3 (DBCA list)

Map shows new records and confirmed desktop records

Figure 5-5b

Significant flora records from the field survey

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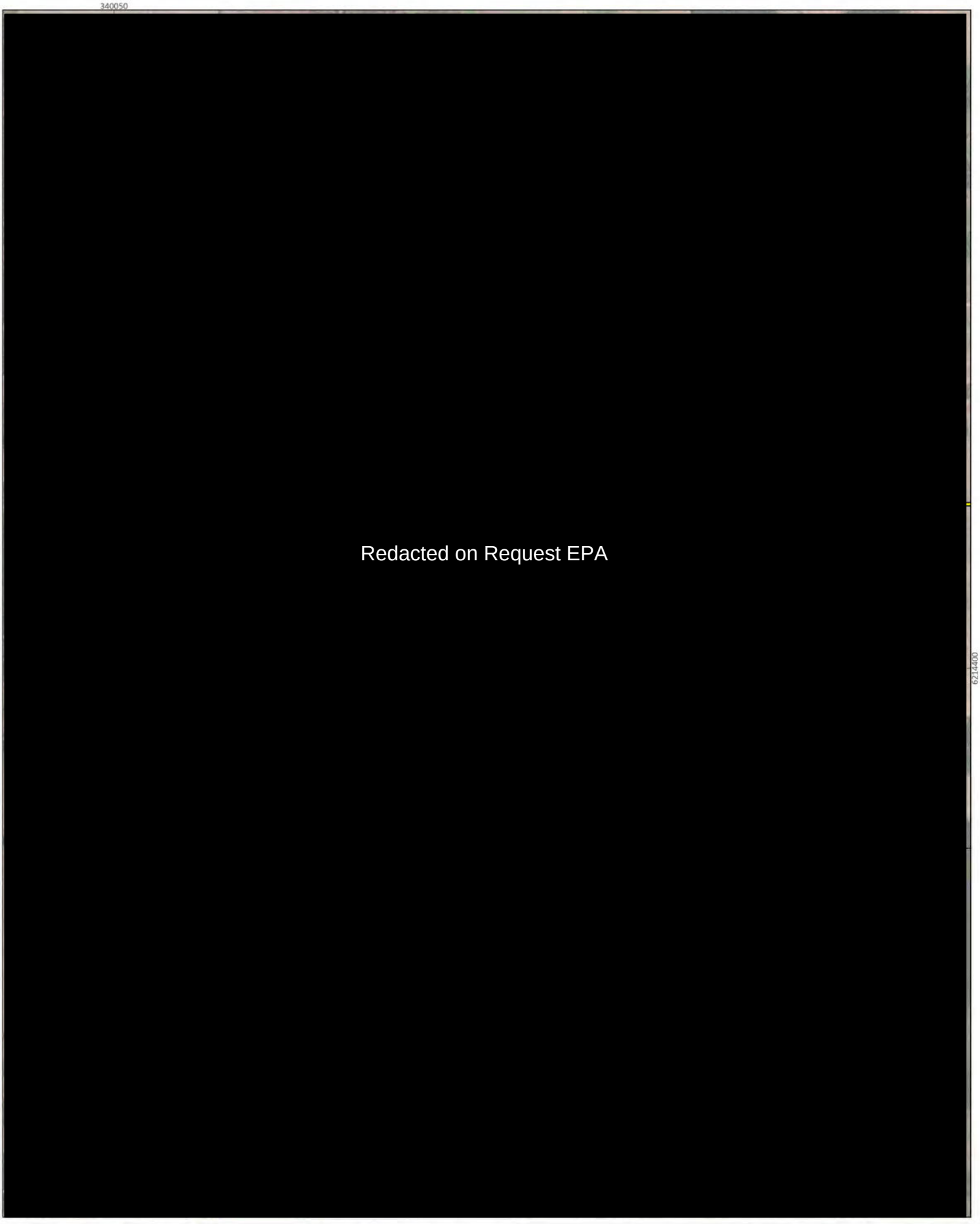
340050



6214400

SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	NR

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Kilometers

1:23,411(at A4) GDA 1994 MGA Zone 50

Study area

Species, status

★ *Adenanthos detmoldii*, P4 (DBCA list)

✱ *Gastrolobium formosum*, P3 (DBCA list)

Map shows new records and confirmed desktop records

Figure 5-5c

Significant flora records from the field survey

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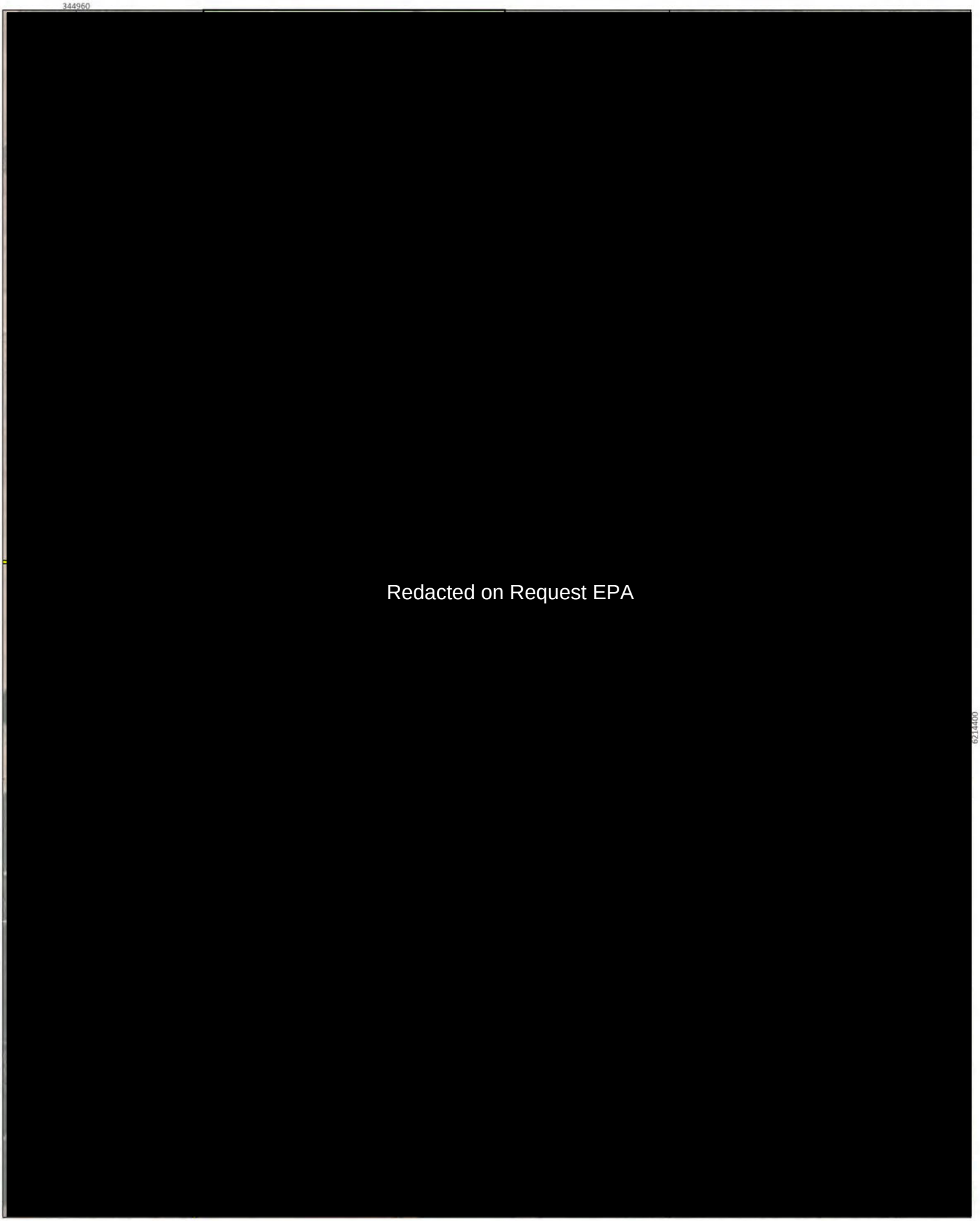

SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	NR

0 0.5 1
Kilometers

1:23,400(at A4) GDA 1994 MGA Zone 50

Study area

Species, status

- *Lambertia orbifolia* subsp. *vespera*, EN (EPBC & BC Acts)
- *Adenanthos detmoldii*, P4 (DBCA list)
- *Adenanthos x pamela*, P4 (DBCA list)
- *Aotus carinata*,P4 (DBCA list)
- *Boronia anceps*, P3 (DBCA list)
- *Calothamnus lateralis* var. *crassus*, P3 (DBCA list)
- *Chorizema carinatum*, P3 (DBCA list)
- *Dampiera heteroptera*, P3 (DBCA list)
- *Gastrolobium formosum*, P3 (DBCA list)
- *Grevillea brachystylis* subsp. *australis*, VU/EN (EPBC Act; BC Act)
- *Grevillea manglesioides* subsp. *ferricola*, P3 (DBCA list)
- *Grevillea papillosa*, P3 (DBCA list)
- *Isopogon formosus* subsp. *dasylepis*, P3 (DBCA list)
- *Leucopogon alternifolius*, P3 (DBCA list)
- *Loxocarya magna*, P3 (DBCA list)
- *Melaleuca basicephala*, P4 (DBCA list)
- *Netrostylissp. Blackwood River (A.R. Annels 3043)*, P3 (DBCA list)
- Synaphea nexosa,P1 (DBCA list)
- *Verticordia plumosa* var. *vassensis*, EN (EPBC & BC Acts)
- *Centrolepis strigosa* subsp. *strigosa*, (RE)

Map shows new records and confirmed desktop records

Figure 5-5d
Significant flora records from the field survey

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Table 5-6 Likelihood of occurrence for significant flora identified in the desktop review and not recorded during the field surveys

Species	Status	Likelihood of occurrence	Potential habitat
Leptomeria dielsiana	X (VU EPBC Act; EX BC Act)	Unlikely - It is considered extinct as there are only 4 records of this species approximately 1.6 km outside of the study area, and it was last collected in 1957	
Conospermum quadripetalum	T (CR BC Act)	Possible - previous records in study area, records visited, and plants not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, EmmTpAs, XpAs, CcTlXpAp, EmmTpGoMtPu
Reedia spathacea	T (CR EPBC Act; EN BC Act)	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Banksia nivea subsp. *uliginosa*	T (EN EPBC & BC Acts)	Possible - previous records in study area, records visited, and some plants removed by clearing, others not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Boronia exilis	T (EN EPBC & BC Acts)	Possible - previous records in study area, records visited, and plants not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj
Darwinia ferricola	T (EN EPBC & BC Acts)	Possible - previous records in study area, records visited, and some plants removed by clearing, others not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj
Drakaea micrantha	T (VU EPBC Act; EN BC Act)	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Andersonia ferricola	P1	Possible - nearby desktop records (425 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Darwinia terricola	P1	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Hemigenia obovata	P1	Possible - nearby desktop records (23 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, Mj, MrCh, MrTjLs, MpXpHfSs, ClcVj
Pericalymma megaphyllum	P1	Possible - previous records in study area, records visited, and plants not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu

Species	Status	Likelihood of occurrence	Potential habitat
Philydrella pygmaea subsp. *minima*	P1	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Platychorda rivalis	P1	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Schoenus indutus	P1	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	CcTpCeOh, CcTlXpAp
Stylidium sp. Scott River Plain (N.G. Marchant 74/23)	P1	Possible - study area is just outside of the known range of the species, but closest record is <5 km	No habitat description provided so unable to determine potential habitat types
Synaphea macrophylla	P1	Possible - nearby desktop records (1.4 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Thysanotus formosus	P1	Possible - nearby desktop records (209 m), potential habitat present, entire area of habitat not thoroughly searched	EmmTpGoMtPu, EmmXpMtDb, CcTpCeOh, CcTlXpAp
Diuris heberlei	P2	Possible - nearby desktop records (715 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj
Drosera binata	P2	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Euphrasia scabra	P2	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Hemigenia sp. Nillup (R.D. Royce 98)	P2	Possible - nearby desktop records (2.4 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Leptomeria furtiva	P2	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Lepyrodia extensa	P2	Possible - nearby desktop records (48 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Leucopogon incisus	P2	Possible - nearby desktop records (1.4 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs
Machaerina ascendens	P2	Possible - nearby desktop records (2.4 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj

Species	Status	Likelihood of occurrence	Potential habitat
Pigea volubilis	P2	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Schoenus loliaceus	P2	Possible - nearby desktop records (3.5 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Stenanthemum sublineare	P2	Possible - nearby desktop records (4.8 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Styphelia intricata	P2	Possible - nearby desktop records (40 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Xyris maxima	P2	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Acacia inops	P3	Possible - nearby desktop records (5.5 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, Mj, MrCh, MrTjLs, MpXpHfSs, ClcVj
Acacia lateriticola glabrous variant (B.R. Maslin 6765)	P3	Possible - nearby desktop records (4.8 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Actinotus repens	P3	Unlikely - nearest record >5 km from study area and study area outside of the known range for the species	
Andersonia auriculata	P3	Unlikely - nearest record >5 km from study area and study area outside of the known range for the species	
Andersonia sp. Amabile (N. Gibson & M. Lyons 355)	P3	Possible - nearby desktop records (1.8 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Blennospora doliiformis	P3	Possible - nearby desktop records (3.7 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Caladenia abbreviata	P3	Possible - nearby desktop records (640 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj
Caustis sp. Boyanup (G.S. McCutcheon 1706)	P3	Unlikely - study area is just outside of the known range of the species; closest record is >5 km	
Chordifex gracilior	P3	Possible - previous record in study area, record visited, and plants removed by clearing, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj

Species	Status	Likelihood of occurrence	Potential habitat
Chordifex jacksonii	P3	Possible - previous record in study area, record visited, and plants removed by clearing, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Cyathochaeta stipoides	P3	Possible - nearby desktop records (148 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Cyathochaeta teretifolia	P3	Possible - nearby desktop records (1.8 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Juncus meianthus	P3	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Leptinella drummondii	P3	Unlikely - no suitable habitat present in study area	
Lepyrodia heleocharoides	P3	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Leucopogon wheelerae	P3	Possible - previous records in study area, records visited, and some plants removed by clearing, others not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Pultenaea pinifolia	P3	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Stylidium trudgenii	P3	Possible - nearby desktop records (3.7 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Synaphea otiostigma	P3	Possible - nearby desktop records (2.6 km), potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Synaphea petiolaris subsp. *simplex*	P3	Possible - nearby desktop records (378 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Tricostularia davisii	P3	Possible - nearby desktop records (3.6 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Acacia tayloriana	P4	Possible - nearby desktop records (3.0 km), potential habitat present, entire area of habitat not thoroughly searched, unlikely to be in flower during survey	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Astartea onycis	P4	Possible - nearby desktop records (724 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu

Species	Status	Likelihood of occurrence	Potential habitat
Banksia meisneri subsp. *ascendens*	P4	Possible - previous records in study area, records visited, and plants removed by clearing but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Banksia sessilis var. *cordata*	P4	Unlikely - no suitable habitat present in study area	
Calothamnus quadrifidus subsp. *teretifolius*	P4	Possible - study area is just outside of the known range of the species, but closest record is <5 km, potential habitat present, entire area of habitat not thoroughly searched	EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Drosera fimbriata	P4	Possible - previous records in study area, records visited, and plants not relocated, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, AmBsHc, XpMdLm, ClcVj, XpAs
Gonocarpus pusillus	P4	Possible - nearby desktop records (4.8 km), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Gonocarpus simplex	P4	Possible - nearby desktop records (254 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Hypolaena robusta	P4	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Myriophyllum trifidum	P4	Possible - previous records in study area, records visited, and plants removed by clearing, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Pultenaea skinneri	P4	Unlikely - study area is outside of the known range of the species; closest record is >5 km	
Stylidium leeuwinense	P4	Possible - previous record in study area, record visited, and plants removed by clearing, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu
Tripterococcus sp. Brachylobus (A.S. George 14234)	P4	Possible - nearby desktop records (217 m), potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj
Verticordia lehmannii	P4	Possible - previous record in study area, record visited, and plants removed by clearing, but there is potential habitat present, entire area of habitat not thoroughly searched	AsLs, TiLs, PeeLs, MpXpHfSs, XpAs, AmBsHc, XpMdLm, ClcVj, Mj

Possible to occur: grey fill.

5.2.4 Introduced flora

Seventy introduced flora species were recorded during the survey, of which none are a WoNS/Declared Pest (Appendix 8). **Juncus oxycarpus* was a range extension, recorded approximately 120 km west-south-west of the nearest record for this species (WA Herbarium 2024). Three unidentified flora (*Abutilon* sp., **Pinus* sp. and **Rumex* sp.; Section 5.2.5) are likely to be additional introduced species.

5.2.5 Unidentified flora

Fourteen specimens encountered during the survey could not be identified to species level (Table 5-7). The primary reason for the unidentified flora was lack of sufficient taxonomic characters available; plants were sterile (lacking reproductive structures) or reproductive structures were too old/dry or damaged to be useful.

Table 5-7 Unidentified taxa recorded during the field survey

Taxon	Comments
Abutilon sp.	One specimen collected at site BEE114 in poor condition without diagnostic structures present. No native species from the *Abutilon* genus have been recorded in the Warren bioregion or Southern Jarrah Forest subregion on Florabase, nor were any identified in the desktop review. No conservation significant *Abutilon* are known from the Southwest Botanical Province. Closest record of nearest native species is >250 km north of the study area. Specimen is most likely to represent **A. theophrasti* which has also been recorded near Bridgetown in the Southern Jarrah Forest subregion.
Banksia sp.	One record at site BEE389R. Plants at site were noted in poor condition, possibly dead, and no specimen was collected due to insufficient material for a positive identification. Three significant taxa from the same genus were found in the desktop review but these are unlikely to be represented at site as the plant was a low tree lifeform instead of a mid or low shrub typical for *Banksia nivea* subsp. *uliginosa* and *B. meisneri* subsp. *ascendens*. Unsuitable habitat at site for the other species, *B. sessilis* var. *cordata* which prefers coastal limestone soils.
Billardiera sp.	One specimen collected at BEE054 with insufficient material for complete ID. No significant flora from the genus *Billardiera* were recorded in IBRA subregions that intersect the study area.
?*Billardiera variifolia*	Two sterile specimens recorded at sites BEE286 and BEE287R. As for *Billardiera sp.* above, no *Billardiera* significant flora were recorded in IBRA subregions that intersect the study area.
Boronia sp.	An opportunistic collection in roadside vegetation along Scott River Road had insufficient material for a positive identification. Fifteen Boronia species/subspecies were identified in the desktop review, including 2 significant species. The indeterminate *Boronia* specimen may be the Priority 3 *B. anceps* or one of 4 common species (*B. crenulata, B. fastigiata, B. spathulata* or *B. tenuior*). The specimen was collected in similar habitat to the *B. anceps* recorded further south on Scott River Road.
Caladenia sp.	Two sterile specimens were not collected from sites BEE067 and BEE071 due to lack of identifiable features. There were 28 species or subspecies of *Caladenia* identified in the desktop review, with the study area occurring within the known range of many of these. Only one, *C. abbreviata*, is a significant species (P3). Robinson and Keighery (1997) recorded 15 different *Caladenia* species in their survey of Scott NP, directly west of the study area. The specimens may represent one of the common taxa or *C. abbreviata*.

Taxon	Comments
Cassytha sp.	Three sterile specimens were not collected from sites BEE063, BEE112, and BEE376 due to insufficient material. Nine *Cassytha* species were recorded in the subregions, and none are significant flora.
?*Centipeda cunninghamii*	A sterile specimen at site BEE082 had no structures useful for diagnostics and was not collected. *Centipeda cunninghamii* was the only species from the genus known from the subregions and is a common species.
Drosera sp.	Sterile *Drosera* were recorded at sites BEE071, BEE114, BEE200, plus at one opportunistic location. There were 23 *Drosera* species identified in the desktop review, 2 of which are significant flora (*D. fimbriata, D. binata*). The sterile specimens may represent one of the common taxa or *D. fimbriata* (P4). *D. binata* is unlikely to occur in the study area.
Lepidosperma sp.	A sterile specimen was collected at site BEE084. None of the 17 *Lepidosperma* recorded in the subregions in which the study area is located are significant flora, including 11 that were identified within the desktop search area.
Poaceae sp.	Five sterile records at sites BEE007, BEE068, BEE075R, BEE082, BEE083. No Poaceae taxa identified in desktop review were significant flora.
**Pinus* sp.	Trees observed at BEE352-MN. Not collected as fruiting material was not available to identify to species level, so only observed from a distance.
**Rumex* sp.	One specimen lacking diagnostic features was recorded at site BEE068. All 9 *Rumex* recorded in the relevant subregions are introduced species, not significant flora.
?*Scaevola striata* var. *striata*	Sterile specimen collected at site BEE379. Desktop review identified 7 *Scaevola* species however none are significant flora, nor have any significant *Scaevola* been recorded in the subregions of interest.

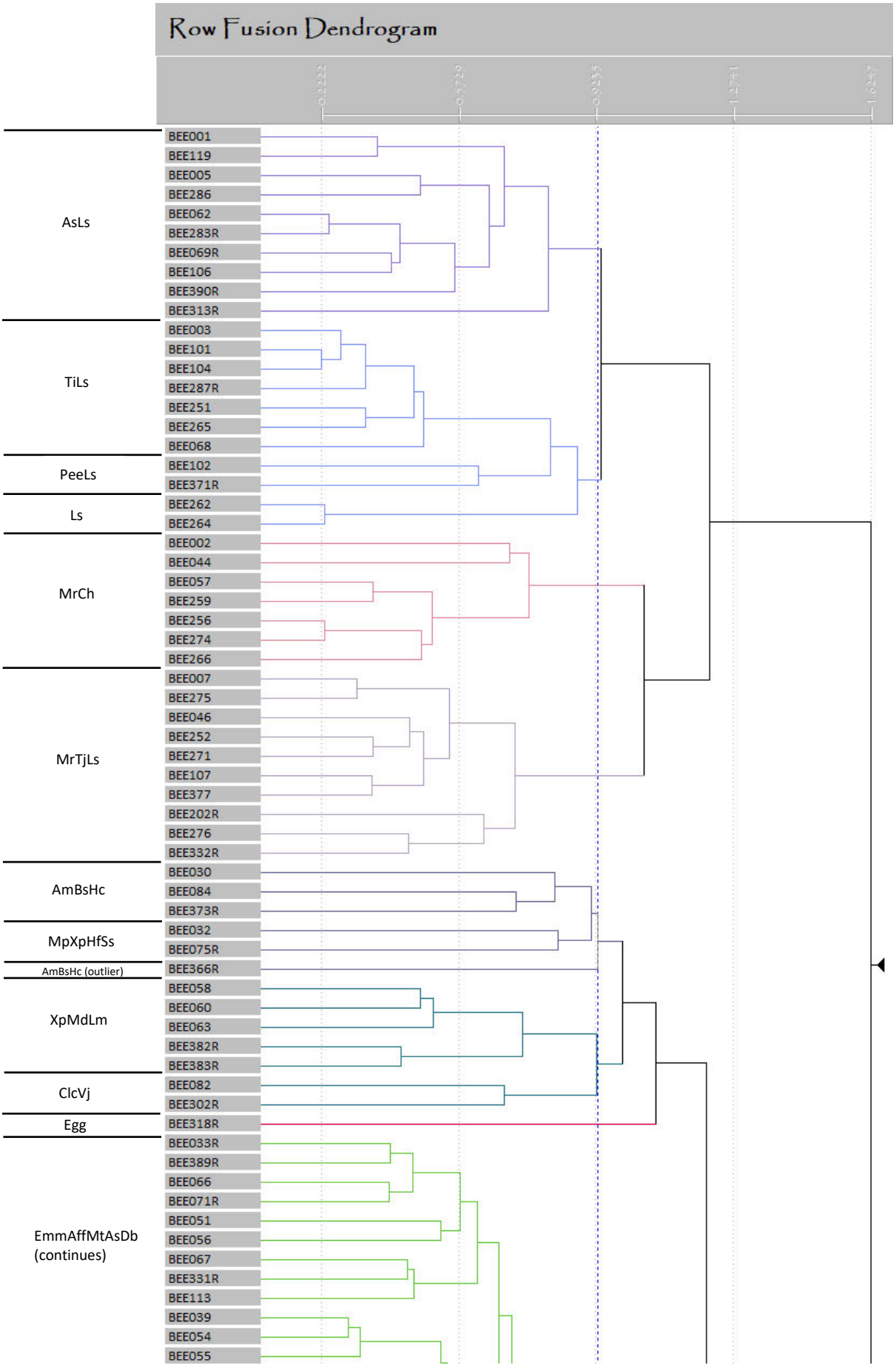
5.2.6 Vegetation types

Eighteen vegetation types were delineated in the cluster analysis, comprising 17 native and one non-native unit (Figure 5-6). One additional native unit (Aff), and 3 non-native units were excluded from the analysis (refer to Section 4.2.2.3 for reasoning), bringing the total number of mapped vegetation units in the study area to 18 native and 4 non-native/modified (Table 5-8; Figure 5-7).

The vegetation types are largely typified by 6 broad groupings:

1. Myrtaceae-dominated shrublands over sedgelands – AsLs, TiLs, PeeLs, MpXpHfSs
2. Mixed (Proteaceae/ Fabaceae/ Myrtaceae-dominated) shrublands over tall sedgelands: XpAs, AmBsHc, XpMdLm, ClcVj, Mj
3. Paperbark (*Melaleuca* spp.) woodland swamps over rushlands/ sedgelands – MrCh and MrTjLs
4. Modified landscapes, including plantations (Egg and Psp) and Peppermint over pastures (Aff)
5. Jarrah (*Eucalyptus marginata* subsp. *marginata*) woodlands and forests over mixed shrublands over tall sedgelands – EmmAffMtAsDb, EmmXpMtDb, and EmmTpAs
6. Jarrah-Marri (*Corymbia calophylla*) woodlands and forests over mixed shrublands over tall sedgelands – CcTpCeOh, CcTlXpAp, and EmmTpGoMtPu.

Cleared areas (2,671.9 ha; 68.7%%) dominate the study area (Table 5-9). Once cleared areas and water units are excluded, Blue Gum plantations (Egg) account for nearly one third of the vegetated portion of the study area (10.7%). Excluding plantations (Egg, Psp) and units (cleared areas and water) to leave vegetation types containing primarily native vegetation, the dominant remnant vegetation types include: Jarrah woodlands (EmmAffMtAsDb; 17.1%), sedgelands (Mj; 13.5%), Peppermint woodlands over pasture grasses (Aff; 12.5%), *Melaleuca* swamps (MrTjLs; 11.9%), and Jarrah-Marri woodlands (EmmXpMtDb; 10.0%) (Table 5-9).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0.5729
0.9235
1.2741
1.6247
AsLs
BEE001
BEE119
BEE005
BEE286
BEE062
BEE283R
BEE069R
BEE106
BEE390R
BEE313R
TiLs
BEE003
BEE101
BEE104
BEE287R
BEE251
BEE265
BEE068
PeeLs
BEE102
BEE371R
Ls
BEE262
BEE264
MrCh
BEE002
BEE044
BEE057
BEE259
BEE256
BEE274
BEE266
MrTjLs
BEE007
BEE275
BEE046
BEE252
BEE271
BEE107
BEE377
BEE202R
BEE276
BEE332R
AmBsHc
BEE030
BEE084
BEE373R
MpXpHfSs
BEE032
BEE075R
AmBsHc (outlier)
BEE366R
XpMdLm
BEE058
BEE060
BEE063
BEE382R
BEE383R
ClcVj
BEE082
BEE302R
Egg
BEE318R
EmmAffMtAsDb
(continues)
BEE033R
BEE389R
BEE066
BEE071R
BEE051
BEE056
BEE067
BEE331R
BEE113
BEE039
BEE054
BEE055

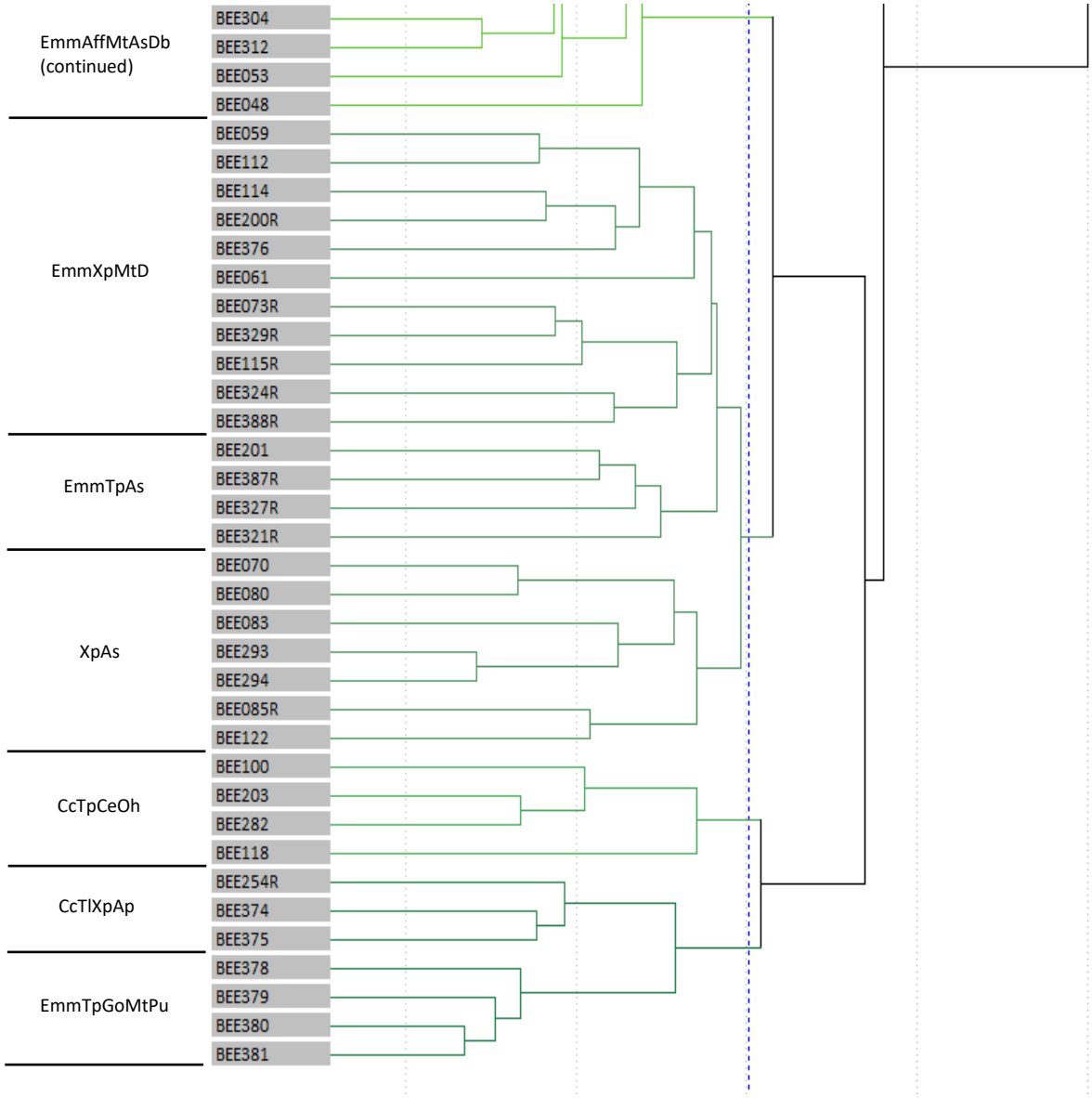


Figure 5-6 Hierarchical clustering (UPGMA) of the flora quadrats of the study area

Table 5-8 Vegetation types, description, and extent in the study area

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
AsLs	BEE001, BEE005, BEE062, BEE069R, BEE106, BEE119, BEE283R, BEE286, BEE313R, BEE390R	Occasionally present low open woodland of *Agonis flexuosa* var. *flexuosa*, over tall open to closed shrubland of *Astartea scoparia*, over tall sparse sedgeland to sedgeland of *Leptocarpus scariosus, Machaerina rubiginosa*, and *Cyathochaeta clandestina*.	24.02 ha 0.62%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
TiLs	BEE003, BEE068, BEE101, BEE104, BEE251, BEE265, BEE287R	Tall shrubland of *Taxandria inundata*, *Astartea scoparia*, and *Calothamnus lateralis* var. *crassus*, over open sedgeland to sedgeland of *Leptocarpus scariosus, Juncus pallidus*, and *Machaerina juncea*.	40.99 ha 1.05%	
PeeLs	BEE102, BEE371R	Low to mid open shrubland of *Pericalymma ellipticum* var. *ellipticum*, variously with *Grevillea papillosa* and/or *Grevillea diversifolia* subsp. *subtersericata*, over tall open sedgeland to sedgeland of *Leptocarpus scariosus, Chordifex amblycoleus*, and *Juncus pallidus*.	16.07 ha 0.41%	

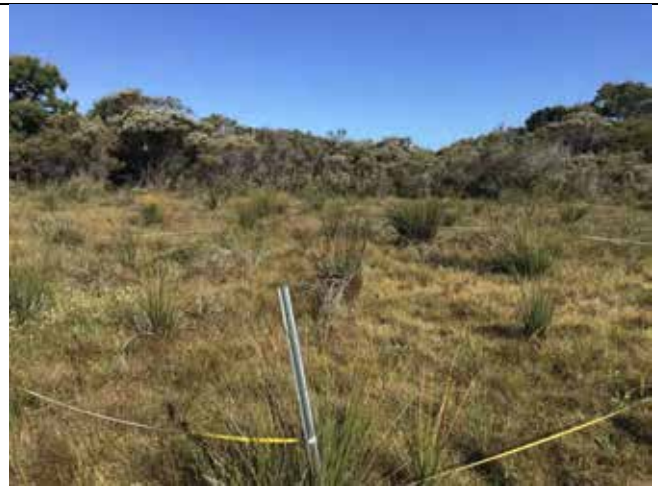
Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
Mj	BEE262, BEE264	Tall open sedgeland to sedgeland of *Machaerina juncea*, *Leptocarpus scariosus*, *Lepidosperma longitudinale*.	106.69 ha 2.74%	
MrCh	BEE002, BEE044, BEE057, BEE256, BEE259, BEE266, BEE274	Low to mid woodland of *Melaleuca rhaphiophylla* occasionally with *M. preissiana,* over irregular sparse rushland of *Cycnogeton huegelii, Lepidosperma longitudinale*, and *Juncus pallidus*.	41.39 ha 1.06%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
MrTjLs	BEE007, BEE046, BEE107, BEE202R, BEE252, BEE271, BEE275, BEE276, BEE332R, BEE377	Low open woodland to woodland of *Melaleuca rhaphiophylla* and/or *Melaleuca preissiana*, over tall open to closed shrubland of *Taxandria juniperina, Astartea scoparia*, and *occasionally Callistachys lanceolata*, over sedgeland of *Leptocarpus scariosus, Cycnogeton huegelii*, and *Aphelia cyperoides*.	93.64 ha 2.41%	
AmBsHc	BEE030, BEE073R, BEE084, BEE366R	Tall open shrubland variously composed of *Acacia myrtifolia, Banksia occidentalis*, and *Taxandria inundata*, over mid sparse shrubland variously composed *of Beaufortia sparsa, Hakea sulcata*, *and Hakea lasianthoides*, over variably present low to tall open sedgeland to sedgeland variously composed of *Hypolaena caespitosa, Machaerina rubiginosa*, and *Melanostachya ustulata*.	1.64 ha 0.04%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
MpXpHfSs	BEE032, BEE075R	Variably present low sparse woodland of *Melaleuca preissiana*, over mid to tall sparse to open shrubland of *Xanthorrhoea preissii*, variably with *Homalospermum firmum* and/or *Astartea scoparia*, over variable low to tall open sedgeland of *Sporadanthus strictus, Loxocarya cinerea*, and *Leptocarpus* spp.	3.84 ha 0.10%	
XpMdLm	BEE058, BEE060, BEE063, BEE382R, BEE383R	Mid sparse to open shrubland of *Xanthorrhoea preissii, Acacia myrtifolia*, and *Kunzea recurva*, over low sparse shrubland to shrubland of *Melaleuca densa, Pimelea rosea* subsp. *rosea*, and *Hibbertia stellaris*, over tall open sedgeland to sedgeland of *Loxocarya magna, Mesomelaena tetragona*, and *Hypolaena pubescens*.	15.05 ha 0.39%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
ClcVj	BEE082, BEE302R	Mid open to closed shrubland of *Calothamnus lateralis* var. *crassus*, *Adenanthos detmoldii*, and *Comesperma virgatum*, over tall open rushland/sedgeland variably composed of *Viminaria juncea, Leptocarpus laxus*, and *Leptocarpus scoparius*.	0.79 ha 0.02%	
Egg	BEE318R	Planted mid woodland of **Eucalyptus globulus* subsp. *globulus* over low isolated grasses to sparse grassland of **Bromus diandrus* and **Lolium perenne* with variable collection of isolated herbs.	415.43 ha 10.67%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EmmAffMtAsDb	BEE033R, BEE039, BEE048, BEE051, BEE053, BEE054, BEE055, BEE056, BEE066, BEE067, BEE071R, BEE113, BEE304, BEE312, BEE331R, BEE389R	Mid open woodland to woodland of *Eucalyptus marginata* subsp. *marginata*, over variably composed low open woodland to woodland of *Agonis flexuosa* var. *flexuosa, Nuytsia floribunda*, and *Allocasuarina fraseriana*, over mid sparse to open shrubland of *Melaleuca thymoides*, *Jacksonia horrida*, and *Xanthorrhoea preissii*, over tall sedgeland of *Anarthria scabra*, *Lyginia imberbis*, and *A. prolifera*, over low sparse forbland of *Dasypogon bromeliifolius* and *Phlebocarya ciliata*.	135.20 ha 3.47%	
EmmXpMtDb	BEE059, BEE061, BEE073R, BEE112, BEE114, BEE115R, BEE200R, BEE324R, BEE329R, BEE376, BEE388R	Low to mid open woodland to forest of *Eucalyptus marginata* subsp. *marginata* and *Agonis flexuosa* var. *flexuosa*, over mid sparse shrubland of *Xanthorrhoea preissii, Kunzea recurva*, and *Hakea ceratophylla*, over tall sparse to open sedgeland of *Mesomelaena tetragona, Hypolaena pubescens*, and *Anarthria scabra*, over low sparse forbland to forbland of *Dasypogon bromeliifolius, Conostylis aculeata* subsp. *aculeata*, and *Microtis media* subsp. *media*.	79.05 ha 2.03%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EmmTpAs	BEE201, BEE321R, BEE327R, BEE387R	Low to mid woodland to open forest of *Eucalyptus marginata* subsp. *marginata*, over tall sparse to open shrubland of *Taxandria parviceps* and *Melaleuca preissiana*, over tall sparse to open sedgeland of *Anarthria scabra, Juncus pallidus*, and *Machaerina articulata*.	28.43 ha 0.73%	
XpAs	BEE070, BEE080, BEE083, BEE085R, BEE122, BEE293, BEE294	Mid sparse to open shrubland of *Xanthorrhoea preissii, Gompholobium tomentosum*, and *Taxandria parviceps*, over tall open to closed sedgeland of *Anarthria scabra, A. prolifera*, and *Hypolaena caespitosa*.	25.38 ha 0.65%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
CcTpCeOh	BEE100, BEE118, BEE203, BEE282	Mid woodland to open forest of *Corymbia calophylla, Eucalyptus marginata* subsp. *marginata*, and occasionally *Agonis flexuosa* var. *flexuosa*, over variable mid to tall sparse shrubland to shrubland of *Taxandria parviceps, Xanthorrhoea preissii*, and *Acacia myrtifolia*, over tall sedgeland of *Cyathochaeta equitans, Anarthria scabra*, and *Hypolaena caespitosa*, over low sparse forbland of *Opercularia hispidula, Patersonia occidentalis* var. *latifolia*, and *Dasypogon bromeliifolius*.	75.04 ha 1.93%	
CcTlXpAp	BEE254R, BEE374, BEE375	Mid open woodland to open forest of *Corymbia calophylla* occasionally with *Eucalyptus marginata* subsp. *marginata*, over tall sparse shrubland to shrubland of *Taxandria linearifolia*, variably with *T. parviceps* and *Acacia myrtifolia*, over mid open shrubland of *Xanthorrhoea preissii, Grevillea manglesioides* subsp. *manglesioides*, and *Hakea lasianthoides*, over tall sparse sedgeland to sedgeland of *Anarthria prolifera, Lepidosperma* sp. Blackwood (R. Davis 7696), and *Mesomelaena tetragona*.	2.12 ha 0.05%	

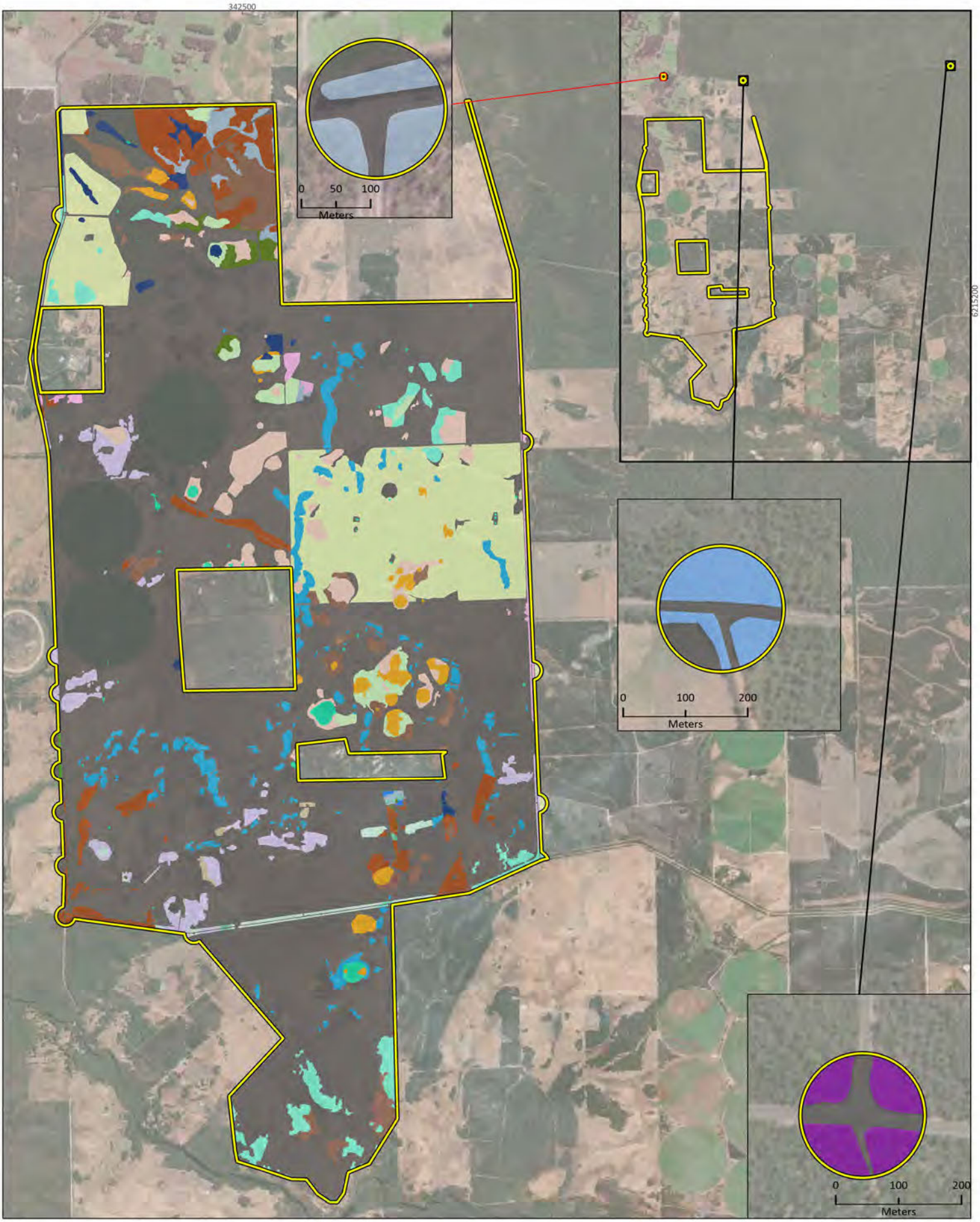
Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EmmTpGoMtPu	BEE378, BEE379, BEE380, BEE381	Mid open woodland to open forest of *Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla*, over tall sparse to open shrubland of *Taxandria parviceps*, with clumps of *Kingia australis* and/or *Dasypogon hookeri*, over low sparse to open shrubland of *Gompholobium obovatum, Acacia browniana* var. *browniana*, and *Hibbertia cunninghamii*, over tall open sedgeland of *Anarthria prolifera, Mesomelaena tetragona*, and variable dense clumps of *Lepidosperma leptostachyum*, over tall sparse to open forbland of *Patersonia umbrosa* var. *xanthina, Lomandra pauciflora, Tetrarrhena laevis*.	2.13 ha 0.05%	
Aff	Collection of 8 mapping notes	Low sparse woodland to woodland of *Agonis flexuosa* var. *flexuosa*, over variable low grassland of pasture weed species.	98.90 ha 2.54%	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
Psp	3 mapping notes	Planted mid open woodland of **Pinus* sp.	1.60 ha 0.04%	

Table 5-9 Vegetation types and extent in entire study area, and in native vegetated portion of study area

Vegetation type	Study area		Native vegetated portion of study area	
	Area (ha)	Area (%)	Area (ha)	Area (%)
AsLs	24.02	0.62%	24.02	3.04%
TiLs	40.99	1.05%	40.99	5.19%
PeeLs	16.07	0.41%	16.07	2.03%
Mj	106.69	2.74%	106.69	13.50%
MrCh	41.39	1.06%	41.39	5.24%
MrTjLs	93.64	2.41%	93.64	11.85%
AmBsHc	1.64	0.04%	1.64	0.21%
MpXpHfSs	3.84	0.10%	3.84	0.49%
XpMdLm	15.05	0.39%	15.05	1.90%
ClcVj	0.79	0.02%	0.79	0.10%
Egg	415.43	10.67%	-	-
EmmAffMtAsDb	135.20	3.47%	135.20	17.11%
EmmXpMtDb	79.05	2.03%	79.05	10.00%
EmmTpAs	28.43	0.73%	28.43	3.60%
XpAs	25.38	0.65%	25.38	3.21%
CcTpCeOh	75.04	1.93%	75.04	9.49%
CcTlXpAp	2.12	0.05%	2.12	0.27%
EmmTpGoMtPu	2.13	0.05%	2.13	0.27%
Aff	98.90	2.54%	98.90	12.51%
Psp	1.60	0.04%	-	-
Cleared	2,671.88	68.66%	-	-
Water	12.31	0.32%	-	-
Total[1]	**3,891.59**	**100**	**790.38**	**100**

[1] Percentages do not sum to exactly 100% because of truncation to 1 decimal place.



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	NR

0 1 2
Kilometers

1:51,200 (at A4) GDA 1994 MGA Zone 50

Study area

Vegetation type

- Aff
- AmBsHc
- AsLs
- CcTlXpAp
- CcTpCeOh
- ClcVj
- Cleared
- Egg
- EmmAffMtAsDb
- EmmTpAs
- EmmTpGoMtPu
- EmmXpMtDb
- Mj
- MpXpHfSs
- MrCh
- MrTjLs
- PeeLs
- Psp
- TiLs
- Water
- XpAs
- XpMdLm

Figure 5-7

Vegetation types recorded in the field survey

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5.2.7 Vegetation condition

Vegetation in the study area ranged from Completely Degraded to Pristine condition (Figure 5-8; Table 5-10), with the majority (79.4%) in Completely Degraded condition, representing the cleared areas and plantations.

Pristine condition accounted for the smallest portion of the study area (0.8%) and included native remnant patches of the highest vegetation quality within forest/ woodland, shrubland, and wetland habitats. Excellent vegetation condition, which accounted for 6.4% of the study area, was distributed throughout the study area occurring in high quality remnant vegetation patches amongst the cleared pastures, transport routes and plantations within 14 vegetation types that varied widely among wetlands, forests, woodlands, shrublands, and sedgelands.

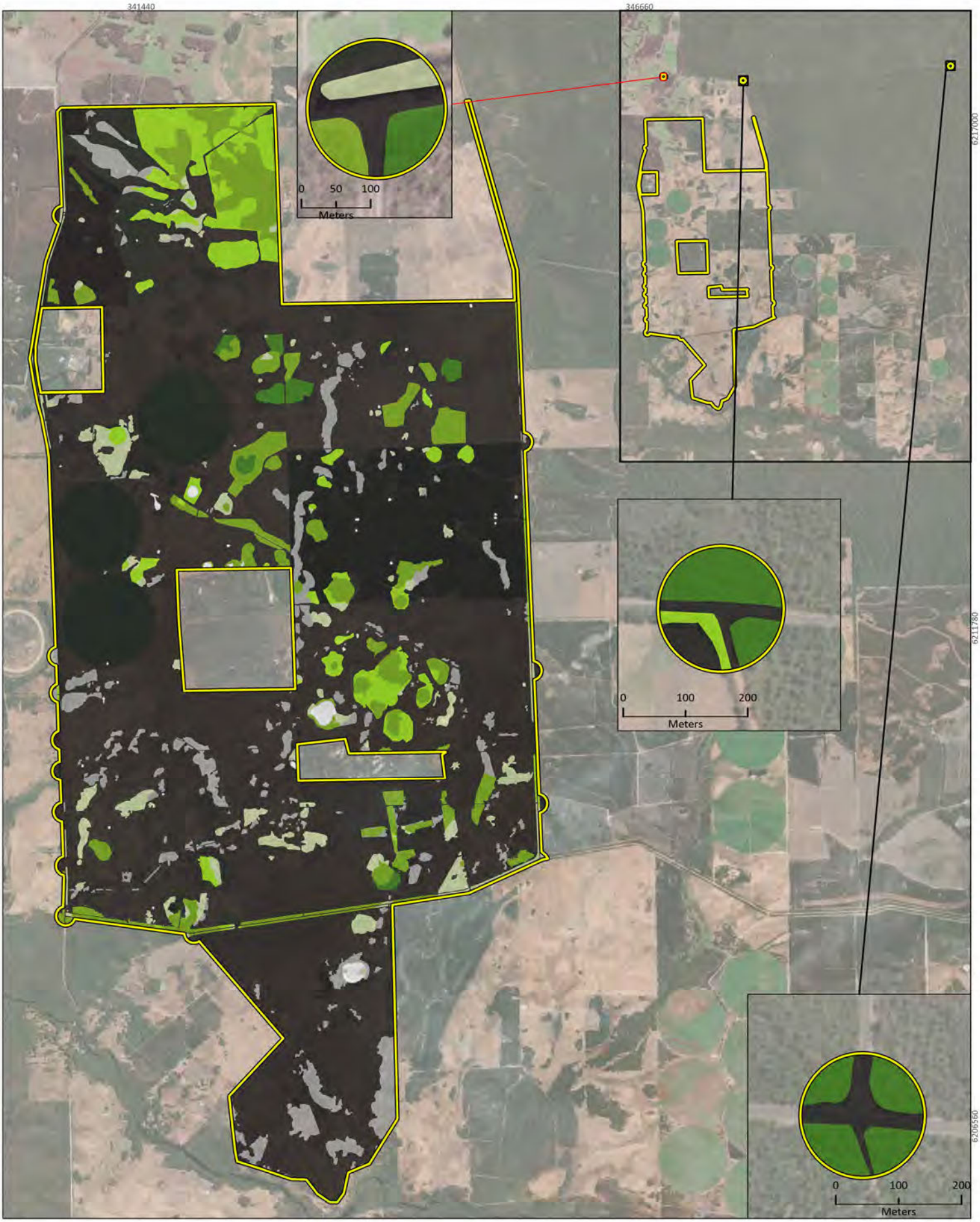
Very Good (4.6% of the study area, 14 vegetation types) and Good (3.2%, 13 vegetation types) condition ratings were designated to areas that occupied similar habitat types to the Excellent category.

Degraded condition occupied larger areas (5.3%) and fewer vegetation types (11) and was distributed similarly to areas in the categories ranging from Excellent to Good. All vegetation types were represented in higher condition categories, except Aff, at which the understorey was dominated by introduced pasture grasses. Areas mapped as Water were not assessed for condition.

In order of highest to lowest frequency, disturbances in the other condition categories included: weed infestation, historic clearing, high-level grazing, low-level grazing, evidence of feral animals, livestock tracks, large-scale clearing, vehicle tracks, current operations, medium-level grazing, litter, revegetation, and excavation. As the condition rating reduced, the trend was that more disturbances were recorded at sites, and/ or the intensity of the disturbances increased.

Table 5-10 Vegetation condition – extent of each condition rating in study area

Keighery condition rating	Vegetation types	Area (ha)	% of study area	% of native vegetated portion
Pristine	AsLs, TiLs, PeeLs, Mj, MrTjLs, EmmTpAs, XpAs, CcTpCeOh, CcTlXpAp, EmmTpGoMtPu	30.2	0.8	3.8
Excellent	AsLs, TiLs, PeeLs, Mj, MrCh, MrTjLs, AmBsHc, MpXpHfSs, XpMdLm, ClcVj, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, XpAs, CcTpCeOh	248.9	6.4	31.5
Very Good	AsLs, TiLs, PeeLs, Mj, MrCh, MrTjLs, AmBsHc, MpXpHfSs, XpMdLm, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, CcTlXpAp	178.6	4.6	22.6
Good	AsLs, TiLs, PeeLs, Mj, MrCh, MrTjLs, AmBsHc, MpXpHfSs, XpMdLm, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, XpAs, CcTpCeOh	124.9	3.2	15.8
Degraded	AsLs, Mj, MrCh, MpXpHfSs, XpMdLm, EmmAffMtAsDb, EmmXpMtDb, EmmTpAs, CcTpCeOh, Aff	207.7	5.3	26.3
Completely Degraded	Cleared, Egg, Psp	3,088.9	79.4	0
Not Assessed	Water	12.3	0.3	0
Total		**3,891.6**	**100.0**	**100.0**



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	NR

0 1 2
Kilometers

1:51,200 (at A4) GDA 1994 MGA Zone 50

- Study area

Vegetation condition

- Pristine
- Excellent
- Very good
- Good
- Degraded
- Completely degraded
- Not applicable

Figure 5-8
Vegetation condition in the study area

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5.2.8 Significant vegetation

In total, 15 native vegetation types were designated to have local and/or regional significance (Table 5-11). Four of these were considered important at both the regional and local spatial scales, with the remainder considered to have local significance.

5.2.8.1 Threatened and Priority Ecological Communities

One TEC was recorded in the WFA part of the study area, the Scott River Ironstone TEC. Four vegetation types (XpMdLm, EmmTpAs, Mj and AmBsHc) were considered representative of the TEC (described in Table 5-3) and therefore have regional significance. Occurrences of these vegetation types that were degraded (such as Mj in north-west of the study area) were not defined/ mapped as TEC because they do not meet the vegetation condition criteria listed in the conservation advice (SEWPaC 2013), i.e. Good condition or above. The total area occupied by the Scott River Ironstone TEC in the study area is 109.5 ha, 2.81% of the study area, 13.86% of the native vegetated portion (Table 5-11). This includes some occurrences that are not mapped as the community in the DBCA Threatened and Priority Ecological Communities database (Figure 5-9). It appears that other occurrences mapped as the TEC in the DBCA database do not qualify as TEC due to degraded condition.

No occurrences of the TEC were recorded in the RIAs (Figure 5-9).

Of the other TEC or PEC characterised by their flora species composition, none were deemed to occur within the study area. *Empodisma gracillimum* is a defining feature of both *Empodisma* peatlands of southwestern Australia TEC and *Reedia spathacea - Empodisma gracillimum - Sporadanthus rivularis* dominated floodplains and paluslopes of the Blackwood Plateau PEC and was recorded in the study area. However, the species was recorded in a woodland (vegetation type EmmXpMtDb), that is not representative of either the TEC or PEC. Additionally, neither the Subtropical and Temperate Coastal Saltmarsh TEC or the Tall closed sedgeland on shallow soils derived from granite gneiss on the Leeuwin-Naturaliste Ridge PEC descriptions matched any vegetation described within the study area.

5.2.8.2 Restricted vegetation types

Three vegetation types were classified as ‘restricted’ in accordance with the definition in Section 4.2.2.3 (<1% of native vegetation cover in study area) and therefore have local significance (Table 5-11). All 3 are shrublands over sedgelands (AmBsHc, MpXpHfSs, ClcVj).

Two other vegetation types with <1.0% coverage (CcTlXpAp and EmmTpGoMtPu) were not considered restricted, as they were mapped exclusively at RIAs in small polygons surrounding 2 of the 3 road intersections, disjunct from the main/ larger WFA. Their proportionate representation is an artifact of study area size and location, rather than these vegetation types truly having restricted distribution. Textures of the aerial imagery depicting CcTlXpAp and EmmTpGoMtPu were noticed to extend considerably beyond the study area boundaries into unsurveyed areas, suggesting that these vegetation types may be better represented regionally than the present survey can confirm.

5.2.8.3 Habitat for significant flora species

Eleven vegetation types are of local significance as habitat provision for significant flora recorded in the current survey (Table 5-11). Seven of these vegetation types are significant as primary habitat for more than one significant flora species; with EmmXpMtDb as primary habitat for 9 significant species, and both EmmTpAs and ClcVj as primary habitat for 5 significant species (Table 5-12). Three of the vegetation types locally significant as habitat (AmBsHc, XpMdLm, and EmmTpAs) also have regional significance as they represent the Scott River Ironstone TEC.

5.2.8.4 Groundwater dependent ecosystems

Seven vegetation types (Table 5-13; Figure 5-10) were assigned as locally significant known or potential GDEs based on either:

- being representative of the Scott River Ironstone Association TEC or analogous to it (same vegetation type as the TEC but condition of vegetation does not meet criteria for TEC status)
- being dominated by GDE species identified in the desktop review (Section 5.1.6).

Four of the GDE vegetation types were assigned as obligate GDEs due to being part of the Scott River Ironstone Association TEC. Due to the formal recognition of the TEC as being groundwater dependent, vegetation types associated with the TEC are considered 'known' GDEs.

The other 3, were assigned facultative GDEs due to the presence of *Melaleuca rhaphiophylla* and/or *M. preissiana* as dominant taxa in the community. These are considered 'potential' GDEs as no site-specific studies have been conducted to confirm groundwater dependence.

Eight other vegetation types contained incidental or non-dominant occurrences of one or more GDE species (Table 5-14). These did not qualify entire vegetation units for GDE status; however, the individual vegetation polygons of these communities that correspond with records of the GDE species are displayed in Figure 5-10.

A few occurrences of the facultative phreatophyte *Eucalyptus rudis* were identified in planted roadside vegetation by the fauna survey team (Phoenix 2024); these were considered planted species and therefore are not included as GDE here.

Table 5-11 Significant vegetation types in the study area

Vegetation type	Significance summary	Level of significance	TEC	Restricted	Habitat	GDE
AmBsHc	1.64 ha (0.21% of the native vegetated portion), represents TEC, restricted vegetation community, primary habitat for 1 significant flora species, GDE	Regional & Local	✓	✓	✓	✓
EmmTpAs	28.43 ha (3.60% of the native vegetated portion), represents TEC, primary habitat for 5 significant flora species, GDE	Regional & Local	✓		✓	✓
Mj	106.69 ha (13.50% of the native vegetated portion), represents TEC, GDE	Regional & Local	✓			✓
XpMdLm	15.05 ha (1.90% of the native vegetated portion), represents TEC, primary habitat for 3 significant flora species, GDE	Regional & Local	✓		✓	✓
AsLs	24.02 ha (3.04% of the native vegetated portion), represents primary habitat for 1 significant flora species	Local			✓	
CcTlXpAp	2.12 ha (0.27% of vegetated portion), represents primary habitat for 2 significant flora species	Local			✓	
ClcVj	0.79 ha (0.10% of the native vegetated portion), represents restricted vegetation community, primary habitat for 5 significant flora species	Local		✓	✓	
EmmAffMtAsDb	135.20 ha (17.11% of the native vegetation portion), represents primary habitat for 1 significant species	Local			✓	
EmmTpGoMtPu	2.13 ha (0.27% of the native vegetated portion), represents primary habitat for 3 significant flora species	Local			✓	
EmmXpMtDb	79.05 ha (10.00% of the native vegetated portion), represents primary habitat for 9 significant flora species	Local			✓	
MpXpHfSs	3.84 ha (0.49% of the native vegetated portion), represents restricted vegetation community, potential GDE	Local		✓		✓
MrCh	41.39 ha (5.24% of the native vegetated portion), represents potential GDE	Local				✓
MrTjLs	93.64 ha (11.85% of the native vegetated portion), represents potential GDE	Local				✓
TiLs	40.99 ha (5.19% of the native vegetated portion), represents primary habitat for 1 significant flora species	Local			✓	
XpAs	25.38 ha (3.21% of the native vegetated portion), represents primary habitat for 3 significant flora species	Local			✓	

Table 5-12 Habitats of significant flora identified in the field survey

Species	Status	TEC vegetation types				Non-TEC vegetation types																No. habitats
		XpMdLm	EmmTpAs	Mj	AmBsHc	AsLs	TiLs	PeeLs	MrCh	MrTjLs	MpXpHfSs	ClcVj	Egg	EmmAffMtAsDb	EmmXpMtDb	XpAs	CcTpCeOh	CcTlXpAp	EmmTpGoMtPu	Aff	Psp	Cleared	
Lambertia orbifolia subsp. Scott River Plains (L.W. Sage 684)	T (EN)															P							**1**
Verticordia plumosa var. *vassensis*	T (EN)	P																				I	**2**
Grevillea brachystylis subsp. *australis*	T (VU/EN)														P					I		I	**3**
Synaphea nexosa	P1	I													P							I	**2**
Boronia anceps	P3		I		I							P			P							I	**5**
Calothamnus lateralis var. *crassus*	P3	I	P			P	P	I	I			P		P	P	I		P				I	**12**
Chorizema carinatum	P3																		P			I	**2**
Dampiera heteroptera	P3											P			I	I	I	P					**5**
Gastrolobium formosum	P3				I										P								**2**
Grevillea manglesioides subsp. *ferricola*	P3	P	I		I							P			P							I	**6**
Grevillea papillosa	P3		P			I		I							P		I			I		I	**7**
Isopogon formosus subsp. *dasylepis*	P3		P																				**1**
Leucopogon alternifolius	P3															P							**1**
Loxocarya magna	P3	P	P		P				I						I							I	**6**
Netrostylis sp. Blackwood River (A.R. Annels 3043)	P3																		P				**1**
Adenanthos detmoldii	P4		P									P		I	P					I		I	**6**

Species	Status	TEC vegetation types				Non-TEC vegetation types																No. habitats
		XpMdLm	EmmTpAs	Mj	AmBsHc	AsLs	TiLs	PeeLs	MrCh	MrTjLs	MpXpHfSs	ClcVj	Egg	EmmAffMtAsDb	EmmXpMtDb	XpAs	CcTpCeOh	CcTlXpAp	EmmTpGoMtPu	Aff	Psp	Cleared	
Adenanthos x *pamela*	P4														P							I	**2**
Aotus carinata	P4		I													P							**2**
Melaleuca basicephala	P4																		P			I	**2**
No. significant flora species supported		**4**	**8**	**0**	**4**	**2**	**1**	**2**	**2**	**0**	**0**	**5**	**0**	**2**	**11**	**5**	**2**	**2**	**3**	**3**	**0**	**12**	
Locally significant as Primary habitat		**Y**	**Y**		**Y**	**Y**	**Y**					**Y**		**Y**	**Y**	**Y**		**Y**	**Y**				

P = Primary habitat, I = Incidental habitat.

342500

6415200

Redacted on Request EPA

SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	BA

0 0.75 1.5
Kilometers

1:49,310 (at A4) GDA 1994 MGA Zone 50

- Study area
- Scott River Ironstone Association (EN EPBC Act; CR BC Act) recorded in the survey
- Scott River Ironstone Association (EN EPBC Act; CR BC Act) DBCA TEC boundary (TEC + buffer)*

*buffers of DBCA TEC polygons are 500 m or 2000 m

Figure 5-9
Native vegetation recorded in the survey considered to represent Scott River Ironstone TEC

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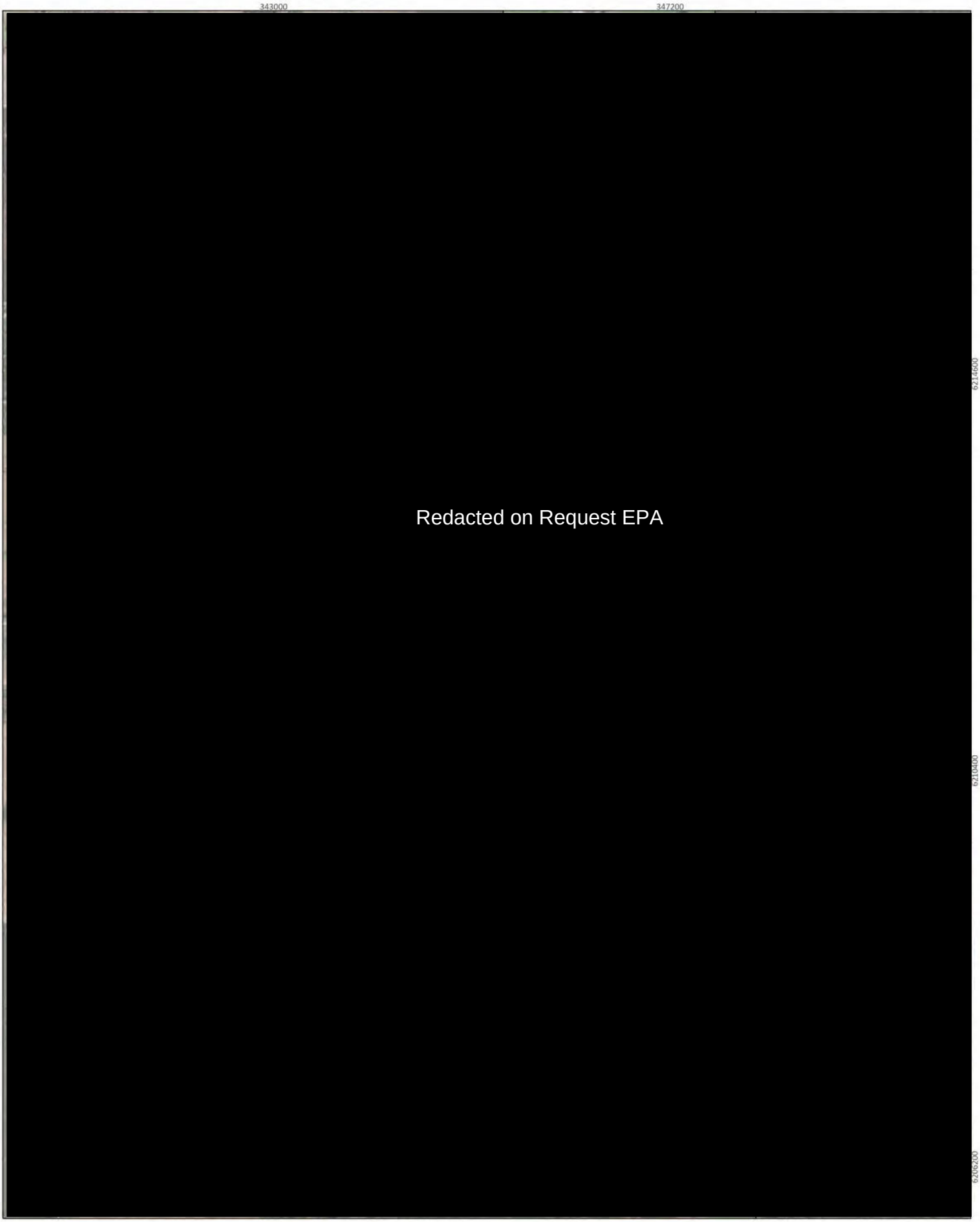
Table 5-13 Vegetation types of the study area within groundwater dependent ecosystems

Vegetation type	Basis for inclusion as GDE	Likely GW dependence[1]
AmBsHc	GDE (TEC)	Obligate
EmmTpAs	GDE (Analogous to TEC[2]); GDE (TEC)	Obligate
Mj	GDE (TEC)	Obligate
MpXpHfSs	GDE (*Melaleuca* spp. dominated - *M. preissiana*)	Facultative
MrCh	GDE (*Melaleuca* spp. dominated - *M. rhaphiophylla*, *M. preissiana*)	Facultative
MrTjLs	GDE (*Melaleuca* spp. Dominated - *M. rhaphiophylla*, *M. preissiana*)	Facultative
XpMdLm	GDE (TEC)	Obligate

[1] Based on available literature for species or community. Assignation is tentative. No site-based assessment of dependence, including assessment against site hydrogeological conditions, has been conducted.
[2]Same vegetation type as the Scott River Ironstone Association TEC but condition of vegetation does not meet criteria for TEC (i.e. is below Good condition).

Table 5-14 Vegetation types recorded with incidental or non-dominant groundwater dependent species

Vegetation type	*Banksia littoralis*	*Banksia ilicifolia*	*Banksia attenuata*	*Melaleuca preissiana*	*Melaleuca rhaphiophylla*
GDE (TEC)					
AmBsHc				✓	
EmmTpAs				✓	
XpMdLm				✓	
Not designated a GDE vegetation type					
AsLs				✓	
CcTpCeOh			✓	✓	
EmmAffMtAsDb		✓	✓		
EmmTpGoMtPu			✓		
EmmXpMtDb	✓	✓		✓	
Mj				✓	
PeeLs	✓			✓	
TiLs					✓



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	29/08/2024
Drawn by	BK
Map author	JC

0 1 2
Kilometers

1:51,800(at A4) GDA 1994 MGA Zone 50

Study area

Confirmed GDE

- Confirmed GDE (Analogous to TEC)
- Confirmed GDE (TEC)

Potential GDE

- Potential GDE (Melaleuca spp.)
- Known to contain record(s) of GDE associated species

Figure 5-10

Location of known or potential groundwater dependent ecosystems

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5.3 SURVEY LIMITATIONS

The limitations of the flora and vegetation survey have been considered in accordance with EPA (2016b) (Table 5-15).

Table 5-15 Consideration of potential survey limitations

Limitations	Comments
Availability of contextual information at a regional and local scale	Not a limitation Desktop review considered 6 floristic surveys in the 'Scott River region'. Due to the detail and extent of those surveys a sufficient amount of floristic information was available.
Competency/experience of the team carrying out the survey	Not a limitation The survey team members were adequately experienced in the methods and species being targeted to complete the required scope of works.
Scope and completeness	Minor limitation The survey was completed in accordance with the scope provided by SynergyRED. Scope of survey was for a single season detailed survey. The absence of a second season is mitigated by repeat survey visits within the single season (as permitted by technical guidance). Desktop review found a high volume of historical significant flora records, and not all were able to be visited. An additional survey targeted survey was undertaken in December 2024 to confirm a greater proportion of records identified in the desktop review. The desktop significant flora records selected to be visited during the targeted survey were chosen by SynergyRED.
Proportion of flora recorded and/or collected, any identification issues	Minor limitation The flora species accumulation curve and comparative floristic statistics for the Warren bioregion and Augusta – Margaret River LGA indicates the survey adequately captured the species present at the time of the survey visits. Fourteen specimens could not be identified to species level due to poor available material. However, only 3 of the unidentified flora have potential to be conservation significant flora. Many revisited locations of historical conservation significant flora were found to be highly degraded or cleared, making these species unlikely to be extant there.
Access within the study area	Not a limitation Wetland areas containing surface water at the times of survey could not be traversed due to practical and safety considerations, and consequently access was restricted for some wetland related areas. Access permissions were at times changeable throughout the length of the survey. Areas south Governor Broome Road were accessible during some field visits but not others. However, the 3 largest and most consolidated area of remnant native vegetation within areas south Governor Broome Road were surveyed and allowed for sufficient data collection.
Timing, rainfall, season	Not a limitation The timing of the flora survey was appropriate for the species potentially occurring. Winter and spring rainfall was less than the long-term average, but not insufficient to expect a lower detectability of most species. While the repeated single season survey conforms with the technical guidance, the addition of a secondary season to the survey may enable the

Limitations	Comments
	detection of a small proportion of flora not evident during the single season performed.
Disturbance that may have affected the results of the survey	Not a limitation The majority of the study area has been widely impacted by agricultural activities, with much of the study area comprised of cleared areas. These impacts can skew the flora and vegetation values of the native remnant patches, but did not interrupt the completion of the survey.

6 DISCUSSION

6.1 FLORA ASSEMBLAGE

The desktop results indicate the study area occurs in a region of high floral richness, and this was reflected in the species assemblage recorded for the study area. The field survey resulted in the identification of 423 flora taxa (comprising 353 native species and 70 introduced species) representing 65 families and 209 genera. While the desktop species records within the 10 km buffer are considerably higher (1,034 native species and 82 introduced species), these would encompass material collected over a wider variety of habitats, seasons, longer period and would include species that flourish after fires and subsequent succession following fires. Further, only a small proportion of the study area lies within the JAF02 subregion, while almost 25% of the desktop review area intersected JAF02, so many of the desktop taxa from this subregion would not be expected to occur in the study area. Species richness was therefore as expected taking these factors into account.

The species accumulation curve indicated that the survey was comprehensive and achieved adequate sampling effort over the sampling time frame. Species richness within and across sampling sites reflected not only vegetation types but levels of disturbance and fragmentation.

The consolidated species list for Scott National Park (Gibson *et al.* 2001) just west of the study area (Figure 3-4) provides a relative indication of flora species richness that might be expected within an intact native landscape of the Scott River Plain. This study identified more than double the native flora of the current survey (744 spp.) within an area of similar size to the study area (roughly 3,300 ha, equating to approximately 4.5 species per ha). The native flora assemblage for the study area however is relatively high in comparison to the data for the park, considering over 80% of the study area is cleared or modified landscape (approximately 3.3 species per ha of native vegetation). This is likely due to the high diversity of native vegetation remnants in the study area, reflected in the large number of vegetation types defined.

The dominant families of Fabaceae, Proteaceae, Poaceae, Myrtaceae, Restionaceae and Cyperaceae largely aligned with the statistics for the desktop search area, Augusta – Margaret River LGA, the Warren bioregion and the Gibson *et al.* (2001) study (Section 5.1.1).

6.2 SIGNIFICANT FLORA

The study area was identified as having a high number and diversity of desktop records for significant flora. Many of these records were confirmed as present in the survey while many others (often older records) were found to be no longer extant due to clearing, record being visited and not found, or the desktop record was inaccurate. New populations were also recorded for several significant species. A total of 74 unique populations of significant flora were delineated, encompassing 60 new populations (1 Threatened species and 59 Priority flora) and 14 confirmed desktop populations (4 Threatened species and 10 Priority flora).

The survey confirmed the presence of 3 Threatened flora (*Grevillea brachystylis* subsp. *australis*, *Lambertia orbifolia* subsp. *vespera* and *Verticordia plumosa* var. *vassensis*), 16 Priority flora, and one species representing a significant range extension in the study area. Comments on significance of records for each is provided in Table 6-1. An additional 3 Threatened and 4 Priority species have previously been recorded within areas of road reserve within the study area. These desktop records were not targeted for survey and confirmed as impacts to these locations were not anticipated by the proponent. These unconfirmed desktop records should be treated as present unless additional targeted surveys are conducted to confirm otherwise. Three collections of material were indeterminate due to poor condition and were considered genera that may represent common species or significant flora: 2 *Caladenia* specimens that may represent *C. abbreviata* (P3) or one of

several common species; one *Boronia* specimen that may represent *B. anceps* (P3) or one of 4 common species; and 3 specimens of sterile *Drosera* that that may represent *D. fimbriata* (P4) or one of several common species.

The persistence of a high number of significant flora records in a highly modified and fragmented landscape is noteworthy but probably not atypical for the region. While it is evident that some loss of significant flora values has occurred due to agricultural practices, this survey also identified several new populations of significant flora. The high number of extant significant flora along roadside verges highlights the value of these corridors to the persistence of these taxa within a fragmented landscape.

Table 6-1 Comments on significant flora recorded in the survey

Species Status	Comments
Lambertia orbifolia subsp. *vespera* T (EN EPBC & BC Acts) (*L. orbifolia sens. lat.* under EPBC Act)	The federal (*sens. lat.*) status for *Lambertia orbifolia* applies to all subspecies entities recognised by the State. One confirmed population in a small vegetation remnant. Plant count from the survey was 4 but corresponding desktop records have a combined count of 114; population therefore likely to be larger than the current plant count. The survey determined that all the other desktop locations in the study area have either been cleared, or GPS coordinates were erroneous/unreliable. Two desktop records in the large vegetation remnant inside (but excised from) the study area were not checked. *L. orbifolia* subsp. *vespera* has some protection in conservation estate (has been recorded in Scott NP and Gingilup Swamps NR). The subspecies however is very habitat-specific, has a highly restricted distribution and limited desktop records, some of which appear to have been lost to clearing. It is therefore likely that any extant population would be considered important to the species survival.
Verticordia plumosa var. *vassensis* T (EN EPBC & BC Acts)	One confirmed population in the study area in roadside vegetation along Governor Broome Road comprising of at least 71 plants. Most of the desktop locations in the study area have either been cleared or sufficiently searched for during a field trip, and therefore are discounted. Species distribution is very fragmented, with known subpopulations occurring in isolated pockets of remnant vegetation, and limited protection in conservation reserves (DSEWPaC 2008b). Population in study area is therefore considered an important population and the vegetation that supports it is important to survival of the species.
Grevillea brachystylis subsp. *australis* T (VU EPBC Act; EN BC Act)	Three confirmed populations (one new and 2 that include confirmed desktop records**)** in the study area. Mainly occurs along roadside vegetation therefore vulnerable to disturbance. Historical record within a cleared portion of the study area was searched and no plants found, therefore this record discounted. Previously only known from 3 populations in the Scott River area (DSEWPaC 2008a), although records and distribution since expanded. Currently 17 records on Florabase (WA Herbarium 1998). Populations appear to be geographically very restricted and in small numbers. Protection in conservation estate appears limited to Scott NP. Populations in the study area are therefore considered important for the long-term survival of the species.

Species Status	Comments
Synaphea nexosa P1 (DBCA)	Three confirmed populations (one new and 2 that include confirmed desktop records) all in narrow roadside vegetation, plus one unconfirmed population in the study area. One additional new population outside the study area. Several old records in the study area discounted due to being cleared, GPS coordinates were erroneous/unreliable or sufficiently searched for during a field trip. Populations in the study area vulnerable to threatening processes as narrow roadside vegetation. The new population outside of the study area occurs in vegetation type EmmXpMtDb, on the boundary of South Blackwood State Forest; there are highly likely to be more yet undocumented populations in the State forest. The records from the survey (38 plants) have more than doubled the known occurrences but given the limited desktop records for the species the populations inside the study area are likely to be considered important.
Boronia anceps P3 (DBCA)	One individual recorded as part of a previously known population on Scott River Road and 4 new populations comprising 159 plants were found during the survey. The 3 new populations were recorded in narrow road reserve vegetation, 2 on Dennis Road and the third in a small remnant north of Governor Broome Road. Each is therefore vulnerable to disturbance from the road. An additional unconfirmed population remains in the study area. Much of the desktop locations in the study area have either been cleared or sufficiently searched for during a field trip, and therefore are discounted. Reasonably widespread species with 17 localities known within Florabase (WA Herbarium 1998).
Calothamnus lateralis var. *crassus* P3 (DBCA)	Two populations with desktop records confirmed in study area, along with 12 new populations. One additional unconfirmed population in study area. A total of 2,334 individual plants were recorded during the survey; 2,009 of these are outside the study area boundary. Some of the desktop records could be discounted as they sufficiently searched for during a field trip. Species occurs in diverse vegetation types: AsLs, CcTlXpAp, ClcVj, Cleared, EmmAffMtAsDb, EmmTpAs, EmmXpMtDb, MrCh, PeeLs, TiLs, XpAs and XpMdLM. Florabase records (WA Herbarium 1998) indicate that *C. lateralis* var. *crassus* is relatively common within its range.
Chorizema carinatum P3 (DBCA)	Two new populations recorded, one inside study area in the RIA at the intersection of Sues Road and Brockman Highway in Blackwood River National Park, and the other outside the study area in roadside vegetation contiguous with South Blackwood State Forest. No desktop records for this species in the study area. Both populations considered significant as few historical records exist and both populations occur in conservation estate. The population at the RIA extends outside the study area. Further surveys in the vicinity of these records would also likely extend their population boundaries and it is highly likely additional populations occur elsewhere in Blackwood River National Park and South Blackwood State Forest.
Dampiera heteroptera P3 (DBCA)	Four new populations recorded in study area. Only 10 plants recorded but collected from a range of vegetation types (CcTlXpAp, CcTpCeOh, ClcVj, EmmXpMtDb and XpAs). No desktop records of the species in the study area. Appears to have a fairly wide distribution. The 18 historical records on Florabase (WA Herbarium 1998) indicate that at least 67 plants occur elsewhere but highly likely to be additional populations. Several of the Florabase records appear to be in conservation estate therefore species is relatively well protected.

Species Status	Comments
Gastrolobium formosum P3 (DBCA)	One population recorded in study area includes confirmed desktop records, with 30 individual plants recorded. One additional unconfirmed population in study area. Most of the desktop locations in the study area have either been cleared or sufficiently searched for during a field trip, and therefore are discounted. Relatively large number of records in Florabase (WA Herbarium 1998) for this species (39), supporting at least 400 individuals and several of the desktop records appear to be in conservation reserve therefore species is relatively well protected.
Grevillea manglesioides subsp. *ferricola* P3 (DBCA)	Six populations recorded in the study area, comprising 5 new populations and one population that includes confirmed desktop records. One additional unconfirmed population in study area. One historic population supporting 100 individuals was discounted as it is now cleared farmland and several additional desktop records were also discounted because they were either cleared or sufficiently searched for. A total of 90 individual plants recorded in the survey (all but one occur inside the study area). Species has a fairly wide distribution occurring across 3 bioregions. Florabase records (WA Herbarium 1998) indicate the species is often abundant where it occurs (i.e. notes of frequent, abundant and common against records in the database). However, the confirmed desktop population that runs along Governor Broome Road encompasses at least 214 plants (only includes Phoenix plant counts) which is the largest known population of this species.
Grevillea papillosa P3 (DBCA)	Twelve recorded populations in the study area, comprising 11 new, and one population that include confirmed desktop records. Two additional unconfirmed populations in study area. A total of 396 individual plants recorded during the survey Fairly narrow distribution but large number of records (31) in Florabase (WA Herbarium 1998). Notes of frequent, 100s of plants, locally abundant and common, indicate the populations in the study area are unlikely to represent a significant proportion of the total population.
Isopogon formosus subsp. *dasylepis* P3 (DBCA)	One new population of 14 plants recorded in study area along Dennis Road verge. No desktop records in the study area. Large number of records in Florabase (WA Herbarium 1998) and a wide distribution. Population in the study area is unlikely to represent a significant proportion of the total population.
Leucopogon alternifolius P3 (DBCA)	Two new populations recorded in study area. Both populations detected in quadrats at cover values 1% and 2%, suggesting multiple plants present in each. No desktop records of *Leucopogon alternifolius* within the study area. Previously recorded 14 m west of the study area, one of 17 records of the species for which an estimated 1,269 individuals are extant. Has a relatively wide distribution extending east to Albany.
Loxocarya magna P3 (DBCA)	Five recorded populations in the study area, comprising of 4 new, and one that includes confirmed desktop records. All are in remnant roadside vegetation. A total of 189 individual plants recorded and species is an understorey component of the XpMdLm. Most of the desktop locations in the study area have either been cleared or sufficiently searched for during a field trip, and therefore are discounted. Large number of Florabase records (WA Herbarium 1998), many indicating *L. magna* is abundant at the site, with plant counts including 250+, 200+ plants. Five desktop populations are known from outside the study area on Scott River Road in an unassessed remnant near to Governor Broome Road. The species has a wide, although disjunct distribution across 4 bioregions. Several Florabase records are in conservation estate, so it is relatively well protected.

Species Status	Comments
Netrostylis sp. Blackwood River (A.R. Annels 3043) P3 (DBCA)	Single plant recorded as a new population in a road verge intersection of Brockman Hwy and Sues Road. No desktop records in the study area. Very widespread but poorly known species. Florabase (WA Herbarium 1998) contains only 16 historical records with frequencies described as rare, isolated or sometimes common. This location is relatively high in the landscape and the habitat of the species is described as seasonally wet or in permanent creeklines, so it is unlikely that there are many more plants of this taxon in the area.
Adenanthos detmoldii P4 (DBCA)	Eight populations recorded in the study area comprising 7 new populations and one population that include confirmed desktop records. Two additional unconfirmed populations in the study area. A total of 1,779 (18 outside the study area) individual plants were recorded. *A. detmoldii* has been reasonably well collected, with 43 Florabase records (WA Herbarium 1998), many with notes of locally abundant, frequent, common, or 100s or 1000s of plants. The species is habitat-specific but was recorded within 4 vegetation types, in cleared land and along road verges, therefore appears to be quite resilient.
Adenanthos x *pamela* P4 (DBCA)	One new population recorded in the study are in roadside vegetation, with 2 plants recorded. No desktop records in the study area. The available records indicate that this species is sparse, habitat-specific and in low numbers at the 10 historical localities it was recorded. Thus, this small population is considered significant.
Aotus carinata P4 (DBCA)	Three new populations recorded in the study area on winter-wet depressions & drainage lines. A total of 18 individual plants recorded. The 2 desktop records within the study area (each considered a unique population) were discounted because it was either cleared or sufficiently searched for during a field trip. Fourteen records in Florabase (WA Herbarium 1998), with very limited abundance data. The distribution is disjunct with most records north of Augusta and 2 records near Walpole. The records within the study area are considered significant given the paucity of knowledge of this species.
Melaleuca basicephala P4 (DBCA)	Two new populations recorded. Fifty plants recorded at one population outside study area along Dennis Road, in road verge that is contiguous with South Blackwood State Forest. One plant in the study area at the second population at the intersection of Chester Road and Brockman Highway. No desktop records in study area. Both populations likely extent further into the adjacent remnant vegetation. Species has a distribution (from 30 records) extending from Margaret River to Windy Harbour. Several of the Florabase records (WA Herbarium 1998) have notes of common, locally abundant or frequent. Survey records therefore unlikely to represent a significant portion of the total population and the 2 plants recorded in the study area would represent a negligible proportion.
Centrolepis strigosa subsp. *strigose* RE approx. 215 km WNW	One individual of *Centrolepis strigosa* subsp. *strigosa* recorded in the study area, approximately 215 km WNW of the closest historical record. Although not of conservation significance in that this species is widespread and common, the record can be considered locally significant due to an extension of range. The one plant was recorded at one locality in a roadside drainage channel near site BEE295R in XpAs vegetation. It is possible that other individuals occur within similar habitats in the study area and beyond.

6.3 INTRODUCED FLORA

No WoNS or Declared Pest flora species were recorded in the study area.

A total of 317 introduced species have been recorded in the August – Margaret River LGA, which represents 10% of the flora known from the LGA. The NatureMap search recorded 81 introduced species or 7.3% of the total flora (1,105) for the search area.

Introduced flora comprised 16.3% (69 species) of the flora species recorded during the survey, higher than for the LGA and NatureMap search areas. This is not surprising given that 79% of the study area was classified as Completely Degraded and is highly fragmented. The families with the greatest proportions of introduced species were Asteraceae and Poaceae. Of 15 Asteraceae taxa 10 (75%) were introduced species, and of 32 Poaceae taxa in the study area 23 (72%) were introduced species. These statistics reflect the levels of disturbance throughout the study area and its primary use as dairying/grazing country.

One individual plant of **Juncus oxycarpus* in vegetation type AmBsHc represents a 120 km range extension, WSW of the closest historical record.

6.4 VEGETATION

The desktop assessment identified 11 pre-European vegetation associations (scale of 1:1,000,000) in the study area (Table 5-2). These were dominated by *Melaleuca* sp. low woodland (59.1%), *Melaleuca incana* shrublands on ironstone (14%), swampland (12.4%), Jarrah (5.4%), Jarrah-Marri (*Banksia*) (5.3%) and *Banksia* low woodland (1.8%) (DPIRD 2018). Seven of these are of Least concern. Four associations (1137, 51, 949 and 973) all have extents considered to be either Depleted or Vulnerable; however, they are not considered to be highly concerning due to mitigating factors, i.e. a substantial current extent, a substantial current extent in DBCA lands, or a small extent within study area.

The remaining vegetation association, 1137, is Depleted within the Warren bioregion and statewide extents; it has a very small current extent (346.53 ha) and encompasses over 17% (670.13 ha) of the study area. When considering all these parameters, this vegetation association is considered the most vulnerable, as a significant portion of the current remaining extent occurs within the study area, and considering it has such a small remaining extent left, any clearance may be detrimental.

The vegetation types defined by this survey align well with the pre-European categories except for the *Melaleuca incana* shrublands on ironstone. Either they were completely cleared during the development of extensive agricultural and silvicultural ventures in the study area (and region) or were an artifact of mapping extrapolation. Given they comprised a very small part of the study area, it is considered most likely they were cleared. *Melaleuca incana* was recorded in the study area but not as a dominant species in any strata.

The current survey found that the study area comprised largely cleared (68.7%) and modified landscapes (*Agonis flexuosa* var. *flexuosa* (Peppermint) over pasture, pine and *Eucalyptus* plantations (13.3%)). The native vegetated portion comprised the following broad vegetation types in order of dominance: Jarrah woodlands and forests (30.70%), Mixed (Proteaceae/ Fabaceae/ Myrtaceae-dominated) shrublands (18.92%), Paperbark woodland swamps (17.08%), Myrtaceae-dominated shrublands (10.74%) and Jarrah-Marri woodland and forests (10.03%). The Aff (Peppermint over pasture) vegetation type is considered a modified landscape due to do extensive historical clearing, however it is also included in the native vegetated portion (12.51%) due to the defining presence of *Agonis flexuosa* var. *flexuosa.*

Four native vegetation types mapped in the study area were considered regionally significant as they represent occurrences of the Scott River Ironstone Association TEC (where their condition was rated Good or above) (Table 5-11). The species suite in these vegetation types (EmmTpAs, XpMdLm, Mj and AmBsHs) and their habitat aligned them with the TEC. The area occupied by Scott River Ironstone TEC within the study area is 109.5 ha, equivalent to 2.81% of the total study area, and 13.86% of the native vegetated portion of study area. Overall, despite the significant areas of cleared and degraded vegetation within the study area, the remnants within - particularly along the Governor Broome Road, Dennis Road, and Scott River Road - are of conservation significance. Sections of these roads are

recognised as TEC and support numerous Threatened and Priority species that are reliant on highly restricted habitat. In 2000, only 18% of the TEC remained and many of the remaining occurrences of the TEC continue to be vulnerable to threatening processes, particularly as most of them are highly fragmented and/or linear areas with extensive edges (high length to wide ratio). Therefore, it would be prudent to ensure that these areas are subjected to minimal disturbance.

Fifteen of the 18 native vegetation types mapped in the study area were considered locally significant, either as primary habitat for significant flora, as a restricted vegetation type and/or representing a potential GDE (Table 5-11). Three vegetation types were designated as locally significant as their extent within the study area was less than 1% of the native vegetated portion. These vegetation types comprised shrublands over sedgelands (AmBsHc (also TEC), ClcVj, and MpXpHfSs).

Two other vegetation types (CcTlXpAp and EmmTpGoMtPu) represent less than 1% of the native vegetated cover in the study area, and are entirely within the RIA; however, they were not considered as locally significant because aerial interpretation of the vegetation beyond these intersections indicates that the vegetation types extend well beyond the boundaries of the survey.

Eleven vegetation types were considered to have local significance as they provided habitat for significant flora (Table 5-11). Two vegetation types were recognised as having high habitat value for supporting several significant species, including those that appear to rely on the assemblages for primary habitat - EmmXpMtDb is habitat for 11 significant taxa, and EmmTpAs habitat for 8 significant taxa.

Most vegetated road verges and remnant vegetation patches supported a reasonable floristic diversity and vegetation structure, despite numerous threatening processes such as weed invasion, fire, road maintenance and adjacent clearing.

The only vegetation type that identified as significant in all 4 categories (TEC, restricted, habitat for significant flora and GDE) was AmBsHc.

6.5 CONCLUSION

Over 80% of the approximately 3,891 ha study area for this survey comprised cleared areas or non-native landscapes. Despite this, a high diversity of vegetation types and high floral diversity were recorded within the approximately 790 ha of native vegetation remnants and roadside vegetation corridors. These support a suite of flora and vegetation values of both regional significance (TEC) and local significance (significant flora, restricted vegetation communities, potential GDEs).

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Appendix 1 Survey site locations

Site name	Sample type	Latitude	Longitude
BEE001	Quadrat	-34.18154	115.27290
BEE002	Quadrat	-34.19907	115.29197
BEE003	Quadrat	-34.19889	115.29234
BEE004	Quadrat	-34.25589	115.30065
BEE005	Quadrat	-34.19608	115.29420
BEE007	Quadrat	-34.21340	115.29862
BEE030	Quadrat	-34.25124	115.28795
BEE032	Quadrat	-34.19892	115.26659
BEE039	Quadrat	-34.20166	115.26718
BEE044	Quadrat	-34.24693	115.30490
BEE046	Quadrat	-34.23277	115.29994
BEE048	Quadrat	-34.24844	115.26932
BEE051	Quadrat	-34.25014	115.26921
BEE053	Quadrat	-34.25036	115.26971
BEE054	Quadrat	-34.25049	115.27402
BEE055	Quadrat	-34.25071	115.27574
BEE056	Quadrat	-34.25090	115.27734
BEE057	Quadrat	-34.22076	115.30765
BEE058	Quadrat	-34.25126	115.28015
BEE059	Quadrat	-34.25143	115.28122
BEE060	Quadrat	-34.25166	115.28382
BEE061	Quadrat	-34.25144	115.28598
BEE062	Quadrat	-34.18771	115.28733
BEE063	Quadrat	-34.25127	115.28981
BEE066	Quadrat	-34.17564	115.29328
BEE067	Quadrat	-34.17504	115.28007
BEE068	Quadrat	-34.17444	115.28662
BEE070	Quadrat	-34.17970	115.28383
BEE080	Quadrat	-34.17684	115.29260
BEE082	Quadrat	-34.23910	115.30622
BEE083	Quadrat	[redacted]	[redacted]
BEE084	Quadrat	-34.23958	115.30649
BEE100	Quadrat	-34.19105	115.27310
BEE101	Quadrat	-34.19769	115.28845
BEE102	Quadrat	-34.19614	115.28875
BEE104	Quadrat	-34.20132	115.29241
BEE106	Quadrat	-34.17598	115.27045
BEE107	Quadrat	-34.20597	115.29394
BEE112	Quadrat	-34.25159	115.28287
BEE113	Quadrat	-34.25014	115.27189
BEE114	Quadrat	[redacted]	[redacted]

Site name	Sample type	Latitude	Longitude
BEE118	Quadrat	-34.19058	115.27270
BEE119	Quadrat	-34.17444	115.27042
BEE122	Quadrat	-34.20109	115.29710
BEE201	Quadrat	-34.20072	115.29788
BEE203	Quadrat	-34.19969	115.31446
BEE251	Quadrat	-34.22597	115.30810
BEE252	Quadrat	-34.22565	115.30689
BEE256	Quadrat	-34.23026	115.30628
BEE259	Quadrat	-34.22936	115.31107
BEE262	Quadrat	-34.23063	115.30576
BEE264	Quadrat	-34.23370	115.30796
BEE265	Quadrat	-34.23312	115.30802
BEE266	Quadrat	-34.23342	115.30710
BEE271	Quadrat	-34.22661	115.31232
BEE274	Quadrat	-34.21902	115.30824
BEE275	Quadrat	-34.21955	115.30216
BEE276	Quadrat	-34.21942	115.30260
BEE282	Quadrat	-34.24547	115.32091
BEE286	Quadrat	-34.19062	115.27884
BEE293	Quadrat	-34.15887	115.27867
BEE294	Quadrat	-34.15879	115.27777
BEE304	Quadrat	-34.24057	115.30640
BEE312	Quadrat	-34.24173	115.31326
BEE374	Quadrat	-34.16081	115.31282
BEE375	Quadrat	-34.16017	115.31238
BEE376	Quadrat	-34.22095	115.26883
BEE377	Quadrat	-34.19892	115.31385
BEE378	Quadrat	-34.15604	115.40140
BEE379	Quadrat	-34.15615	115.40218
BEE380	Quadrat	-34.15667	115.40151
BEE381	Quadrat	-34.15674	115.40208
BEE033R	Relevé	-34.19963	115.26632
BEE069R	Relevé	-34.18033	115.28403
BEE071R	Relevé	-34.21145	115.28398
BEE073R	Relevé	-34.24548	115.28650
BEE075R	Relevé	-34.24627	115.28571
BEE085R	Relevé	-34.23958	115.30623
BEE115R	Relevé	-34.21471	115.26866
BEE200R	Relevé	-34.22870	115.26897
BEE202R	Relevé	-34.20565	115.31543
BEE254R	Relevé	-34.16073	115.31242

Site name	Sample type	Latitude	Longitude
BEE283R	Relevé	-34.18425	115.27253
BEE287R	Relevé	-34.18775	115.28703
BEE302R	Relevé	-34.24003	115.30789
BEE313R	Relevé	-34.24097	115.31335
BEE318R	Relevé	-34.18156	115.27164
BEE321R	Relevé	-34.19859	115.26706
BEE324R	Relevé	-34.19428	115.26732
BEE327R	Relevé	-34.20155	115.26763
BEE329R	Relevé	-34.20479	115.26831
BEE331R	Relevé	-34.24993	115.26984

Site name	Sample type	Latitude	Longitude
BEE332R	Relevé	-34.20757	115.29361
BEE366R	Relevé	-34.19996	115.26649
BEE371R	Relevé	-34.24021	115.30676
BEE373R	Relevé	-34.24310	115.30700
BEE382R	Relevé	-34.25206	115.28386
BEE383R	Relevé	-34.25203	115.28416
BEE387R	Relevé	-34.22783	115.32304
BEE388R	Relevé	-34.24027	115.32343
BEE389R	Relevé	-34.17897	115.28139
BEE390R	Relevé	-34.17510	115.28277

Appendix 2 Flora survey site descriptions

Site details			
Site	**BEE001**	**Position (WGS84)**	115.27290749374336, -34.1815379681384
Slope	gentle	**Topography**	seasonally wet area
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Agonis flexuosa* var. *flexuosa* low open woodland over *Astartea scoparia* and *Callistachys lanceolata* tall shrubland over *Leptocarpus scariosus* tall open rushland.
Habitat	shrubland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	65.0	**Grass cover (%)**	10.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Andrew Perkins

Species (8)	Status	Cover (%)	Height (m)
Astartea scoparia		35.0	4.0
Callistachys lanceolata		25.0	5.0
Leptocarpus scariosus		10.0	1.2
Agonis flexuosa var. *flexuosa*		5.0	4.0
Microtis media subsp. *media*		0.1	0.2
Thelymitra flexuosa		0.1	0.1
Aphelia cyperoides		0.1	0.1
Drosera pulchella		0.1	0.02

Site details			
Site	**BEE002**	**Position (WGS84)**	115.29199831842045, -34.19906136743356
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Loamy sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (23 Oct 2023)

Site description	*Melaleuca rhaphiophylla*, and *Callistachys lanceolata* low open forest over *Lepidosperma striatum*, and *Cyathochaeta clandestina* tall open sedgeland.
Habitat	waterhole
Disturbance	evidence of feral animals, grazing-low, large-scale clearing

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	72.0
Shrub cover (%)	0.0	**Grass cover (%)**	15.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	23 Oct 2023	10m x 10m	Brody Loneragan

Species (6)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		22.0	12.0
Callistachys lanceolata		15.0	5.0
Lepidosperma striatum		8.0	1.3
Cyathochaeta clandestina		7.0	1.3
Anigozanthos flavidus		0.1	0.8
Pteridium esculentum subsp. *esculentum*		0.1	0.8

Site details			
Site	**BEE003**	**Position (WGS84)**	115.29234220480589, -34.19888182026963
Slope	gentle	**Topography**	seasonally wet area
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (23 Oct 2023)

Site description	*Taxandria inundata, Astartea scoparia* and tall closed shrubland over *Hakea lasianthoides, Bossiaea rufa* and *Calothamnus lateralis* var. *crassus* mid sparse shrubland over *Leptocarpus scariosus* tall rushland.
Habitat	shrubland
Disturbance	large-scale clearing, grazing-low

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	95.0	**Tree cover (%)**	0.0
Shrub cover (%)	95.0	**Grass cover (%)**	0.0
Herb cover (%)			

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	23 Oct 2023	10m x 10m	Brody Loneragan

Species (6)	Status	Cover (%)	Height (m)
Taxandria inundata		70.0	3.5
Leptocarpus scariosus		60.0	2.0
Bossiaea rufa		3.0	2.0
Astartea scoparia		2.0	3.0
Hakea lasianthoides		2.0	1.2
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.5	2.0

Site details			
Site	**BEE004**	**Position (WGS84)**	115.3007, -34.2559
Slope	gentle	**Topography**	sandy rise
Soil colour	brown-grey	**Soil texture**	sandy loam
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (27 Oct 2023)

Site description	*Agonis flexuosa* mid woodland over grassland of **Lollium perenne, *Hordium leporinum* and **Ehrhartia longiflora,* over **Geranium purpureum, Gernanium solanderi* and **Trifolium repens.*
Habitat	woodland
Disturbance	evidence of feral animals, grazing-high, historic clearing, livestock tracks, weed infestation

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	50.0
Shrub cover (%)	0.0	**Grass cover (%)**	43.0
Herb cover (%)	1.5		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	27 Oct 2023	10m x 10m	Andrew Perkins

Species (10)	Status	Cover (%)	Height (m)
Agonis flexuosa var. *flexuosa*		50.0	10.0
**Lolium rigidum*	Weed	15.0	0.4
**Hordeum leporinum*	Weed	15.0	0.4
**Ehrharta longiflora*	Weed	7.0	0.4
**Bromus diandrus*	Weed	5.0	0.5
Geranium solanderi		0.5	0.3
**Geranium purpureum*	Weed	0.5	0.2
**Trifolium repens*	Weed	0.2	0.1
**Rumex crispus*	Weed	0.1	0.1
**Sonchus oleraceus*	Weed	0.1	0.1

Site details			
Site	**BEE005**	**Position (WGS84)**	115.29419970709392, -34.19608283325489
Slope	negligible	**Topography**	seasonally wet area
Soil colour	brown, black	**Soil texture**	sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Astartea scoparia, Taxandria inundata* and *Hakea linearis* tall shrubland over *Machaerina rubiginosa* and *Leptocarpus scariosus* tall open rushland over **Mentha pulegium, *Rumex conglomeratus* and **Glyceria declinata* mid forbland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	50.0	**Grass cover (%)**	15.0
Herb cover (%)	10.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Andrew Perkins

Species (12)	Status	Cover (%)	Height (m)
Astartea scoparia		28.0	3.5
Taxandria inundata		15.0	3.5
Machaerina rubiginosa		11.0	1.2
**Mentha pulegium*	Weed	8.0	0.8
Hakea linearis		5.0	0.6
**Rumex conglomeratus*	Weed	2.0	1.7
Leptocarpus scariosus		2.0	1.2
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	1.0	1.5
**Glyceria declinata*	Weed	1.0	0.2
Alternanthera nodiflora		0.2	0.4
Hakea ceratophylla		0.1	1.0
**Symphyotrichum squamatum*	Weed	0.1	0.7

Site details			
Site	**BEE007**	**Position (WGS84)**	115.29859651638694, -34.21338941371955
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina* and *Melaleuca rhaphiophylla* low open forest over *Cycnogeton huegelii, Microtis media* subsp. *media* and *Pterostylis vittata* low isolated forbs.
Habitat	waterhole
Disturbance	large-scale clearing, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	40.0	**Tree cover (%)**	0.0
Shrub cover (%)	40.0	**Grass cover (%)**	1.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (10)	Status	Cover (%)	Height (m)
Taxandria juniperina		32.0	15.0
Melaleuca rhaphiophylla		8.0	10.0
Cycnogeton huegelii		1.0	0.4
Microtis media subsp. *media*		0.1	0.4
Pterostylis vittata		0.1	0.3
**Cerastium glomeratum*	Weed	0.1	0.1
Pterostylis erubescens		0.1	0.1
Senecio picridioides		0.1	0.1
Poaceae sp.		0.1	0.1
Caladenia flava		0.1	0.1

Site details			
Site	**BEE030**	**Position (WGS84)**	115.2879436, -34.25124771
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (13 Nov 2023)

Site description	*Banksia nivea* subsp. *nivea*, *Grevillea manglesioides* subsp. *ferricola* and *Acacia myrtifolia* low shrubland over **Juncus articulatus* mid sparse rushland over *Hypolaena exsulca*, *H. pubescens* and *Dasypogon bromeliifolius* mid isolated forbs.

Habitat	shrubland		
Disturbance	weed infestation		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	70.0	**Tree cover (%)**	0.0
Shrub cover (%)	60.0	**Grass cover (%)**	10.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	13 Nov 2023	10m x 10m	Andrew Perkins

Species (9)	Status	Cover (%)	Height (m)
Banksia nivea subsp. *nivea*		15.0	0.7
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	4.0	0.7
**Juncus articulatus*	Weed	4.0	0.5
Hypolaena exsulca		3.0	0.6
Acacia myrtifolia		2.0	0.9
Hakea sulcata		2.0	0.8
Dasypogon bromeliifolius		2.0	0.7
Hypolaena pubescens		1.0	0.7
Lyginia imberbis		1.0	0.5

Site details			
Site	**BEE032**	**Position (WGS84)**	115.26658753133377, -34.1989163908561
Slope	gentle	**Topography**	drainage line
Soil colour	white	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Homalospermum firmum, Astartea scoparia* and *Beaufortia sparsa* tall open shrubland over *Leptocarpus laxus* and *L. scariosus* tall open rushland over **Hypochaeris glabra*, *Melanostachya ustulata* and *Hypolaena caespitosa* mid open forbland.

Habitat	shrubland		
Disturbance	historic clearing, weed infestation		
Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	50.0	**Tree cover (%)**	0.0
Shrub cover (%)	12.0	**Grass cover (%)**	25.0
Herb cover (%)	10.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	5 x 20 m	Brody Loneragan

Species (23)	Status	Cover (%)	Height (m)
Homalospermum firmum		8.0	2.0
Astartea scoparia		5.0	2.0
Leptocarpus laxus		5.0	1.0
Beaufortia sparsa		4.0	2.0
Leptocarpus scariosus		4.0	1.4
Melanostachya ustulata		4.0	0.8
**Hypochaeris glabra*	Weed	4.0	0.05
Sporadanthus strictus		3.0	1.0
Hypolaena caespitosa		3.0	0.8
Evandra aristata		2.0	1.0
**Vulpia myuros*	Weed	2.0	0.1
**Ursinia anthemoides* subsp. *anthemoides*	Weed	1.0	0.5
Xanthorrhoea preissii		1.0	0.4
**Briza maxima*	Weed	1.0	0.4
**Lolium perenne*	Weed	0.5	0.5
Trachymene pilosa		0.5	0.5
Rhodanthe citrina		0.5	0.2
Centrolepis aristata		0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.05
Cassytha racemosa forma *pilosa*		0.01	1.0
Levenhookia pusilla		0.01	0.03
**Cotula turbinata*	Weed	0.01	0.01
Aphelia cyperoides		0.01	0.01

Site details			
Site	**BEE039**	**Position (WGS84)**	115.2671628102489, -34.201619864719795
Slope	gentle	**Topography**	sandy rise
Soil colour	grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Agonis flexuosa* var. *flexuosa* low open forest over *Adenanthos meisneri*, *Melaleuca thymoides* and *Acacia pulchella* var. *pulchella* low sparse shrubland over *Anarthria scabra, Lyginia imberbis* and *Anarthria prolifera* mid tall closed sedgeland over *Dasypogon bromeliifolius* low sparse forbland.
Habitat	forest
Disturbance	vehicle tracks, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	35.0
Shrub cover (%)	8.0	**Grass cover (%)**	80.0
Herb cover (%)	8.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Brody Loneragan

Species (20)	Status	Cover (%)	Height (m)
Anarthria scabra		80.0	1.0
Eucalyptus marginata subsp. *marginata*		35.0	8.0
Dasypogon bromeliifolius		10.0	0.2
Agonis flexuosa var. *flexuosa*		5.0	8.0
Adenanthos meisneri		3.0	0.4
Melaleuca thymoides		2.0	0.6
Lyginia imberbis		2.0	0.6
Adenanthos obovatus		1.0	1.5
Jacksonia horrida		1.0	1.5
Acacia pulchella var. *pulchella*		1.0	1.0
Bossiaea praetermissa		0.5	0.1
Anarthria prolifera		0.1	3.0
Taxandria parviceps		0.1	0.4
Opercularia hispidula		0.1	0.4
Thysanotus manglesianus		0.1	0.3
Gompholobium scabrum		0.1	0.3
**Briza maxima*	Weed	0.1	0.2
Dampiera leptoclada		0.1	0.2
Stylidium caespitosum		0.1	0.1
Phlebocarya ciliata		0.01	0.2

Site details			
Site	**BEE044**	**Position (WGS84)**	115.3048934229792, -34.246907760421045
Slope	negligible	**Topography**	seasonally wet area
Soil colour	black, brown	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (27 Oct 2023)

Site description	*Melaleuca preissiana* and *M. rhaphiophylla* low open forest over *Astartea scoparia* tall isolated shrubs over *Lepidosperma longitudinale* tall isolated sedges over *Thelymitra mucida* low isolated forbs.
Habitat	forest
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	45.0
Shrub cover (%)	0.1	**Grass cover (%)**	5.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	27 Oct 2023	10m x 10m	Andrew Perkins

Species (5)	Status	Cover (%)	Height (m)
Melaleuca preissiana		25.0	15.0
Melaleuca rhaphiophylla		20.0	15.0
Lepidosperma longitudinale		15.0	2.2
Astartea scoparia		0.1	3.5
Thelymitra mucida		0.1	0.2

Site details			
Site	**BEE046**	**Position (WGS84)**	115.29994048117102, -34.23280101034713
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina, Callistachys lanceolata* and *Melaleuca rhaphiophylla* low closed forest over *Leptocarpus scariosus* and *Isolepis hookeriana* mid isolated sedges over **Anthoxanthum odoratum, *Rumex acetosella* and **Lolium rigidum* low isolated forbs.

Habitat	waterhole		
Disturbance	grazing-low, large-scale clearing, weed infestation		
Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	2.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	5 x 20 m	Brody Loneragan

Species (11)	Status	Cover (%)	Height (m)
Taxandria juniperina		72.0	13.0
Callistachys lanceolata		40.0	4.0
Leptocarpus scariosus		5.0	1.2
Melaleuca rhaphiophylla		4.0	8.0
**Anthoxanthum odoratum*	Weed	2.0	0.2
**Rumex acetosella*	Weed	2.0	0.2
**Solanum nigrum*	Weed	0.1	0.2
**Lolium rigidum*	Weed	0.1	0.2
**Lotus subbiflorus*	Weed	0.1	0.1
**Vulpia bromoides*	Weed	0.1	0.1
Isolepis hookeriana		0.1	0.1

Site details			
Site	**BEE048**	**Position (WGS84)**	115.269338, -34.24843006
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Taxandria juniperina* and *Agonis flexuosa* var. *flexuosa* low forest over *Jacksonia horrida, Acacia pulchella* var. *pulchella* and *Melaleuca thymoides* mid isolated shrubs over *Pteridium esculentum* subsp. *esculentum* mid open fernland over *Anarthria scabra, Lepidosperma squamatum* and *Anarthria prolifera* sedgeland.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	75.0
Shrub cover (%)	0.5	**Grass cover (%)**	35.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Andrew Perkins

Species (20)	Status	Cover (%)	Height (m)
Taxandria juniperina		60.0	16.0
Agonis flexuosa var. *flexuosa*		25.0	12.0
Anarthria scabra		20.0	0.7
Pteridium esculentum subsp. *esculentum*		10.0	1.4
Jacksonia horrida		0.5	1.6
Lepidosperma squamatum		0.5	0.8
Xanthorrhoea preissii		0.3	0.8
Anarthria prolifera		0.3	0.3
Phlebocarya ciliata		0.3	0.2
Melaleuca thymoides		0.2	1.2
Acacia pulchella var. *pulchella*		0.2	1.0
**Anthoxanthum odoratum*	Weed	0.2	0.7
Lyginia imberbis		0.2	0.6
Hypolaena viridis		0.2	0.4
Dasypogon bromeliifolius		0.2	0.2
Billardiera floribunda		0.1	0.8
**Sonchus asper*	Weed	0.1	0.8
Hypocalymma ericifolium		0.1	0.6
**Briza maxima*	Weed	0.1	0.6
**Lotus subbiflorus*	Weed	0.1	0.2

Site details			
Site	**BEE051**	**Position (WGS84)**	115.2691977, -34.25016445
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Nuytsia floribunda, Agonis flexuosa* var. *flexuosa* and *Banksia attenuata* low open forest over *Jacksonia horrida* and *Melaleuca thymoides* mid isolated shrubs over *Anarthria scabra* and *A. prolifera* mid sedgeland over *Dasypogon bromeliifolius*, *Phlebocarya ciliata* and *Melanostachya ustulata* mid isolated forbs.

Habitat	forest
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	35.0
Shrub cover (%)	5.0	**Grass cover (%)**	60.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Andrew Perkins

Species (24)	Status	Cover (%)	Height (m)
Anarthria scabra		45.0	0.6
Nuytsia floribunda		25.0	6.0
Agonis flexuosa var. *flexuosa*		10.0	14.0
Banksia attenuata		5.0	4.0
Anarthria prolifera		1.0	0.5
Dasypogon bromeliifolius		0.5	0.6
Phlebocarya ciliata		0.3	0.2
Jacksonia horrida		0.2	1.5
Melaleuca thymoides		0.2	1.2
Eucalyptus marginata subsp. *marginata*		0.2	1.1
Melanostachya ustulata		0.2	0.6
Anigozanthos flavidus		0.1	1.9
Billardiera fusiformis		0.1	1.1
**Avena barbata*	Weed	0.1	0.9
Evandra aristata		0.1	0.8
**Anthoxanthum odoratum*	Weed	0.1	0.7
**Briza maxima*	Weed	0.1	0.7
Johnsonia lupulina		0.1	0.6
**Holcus lanatus*	Weed	0.1	0.6
Adenanthos obovatus		0.1	0.5
**Sonchus oleraceus*	Weed	0.1	0.2
**Lysimachia arvensis*	Weed	0.1	0.1
**Briza minor*	Weed	0.1	0.1
Homalospermum firmum		0.0	1.6

Site details			
Site	**BEE053**	**Position (WGS84)**	115.269708, -34.2503363
Slope	gentle	**Topography**	sandy rise
Soil colour	white, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Melaleuca thymoides, Jacksonia horrida* and *Kunzea recurva* mid sparse shrubland over *Anarthria scabra* and *Evandra aristata* mid closed sedgeland over *Dasypogon bromeliifolius, Melanostachya ustulata* and *Phlebocarya ciliata* mid isolated forbs.
Habitat	shrubland
Disturbance	evidence of feral animals, weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	90.0	**Tree cover (%)**	0.0
Shrub cover (%)	7.0	**Grass cover (%)**	90.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Andrew Perkins

Species (25)	Status	Cover (%)	Height (m)
Anarthria scabra		90.0	0.9
Melaleuca thymoides		6.0	1.4
Jacksonia horrida		1.0	1.4
Evandra aristata		0.5	1.5
Kunzea recurva		0.5	1.2
Dasypogon bromeliifolius		0.5	0.5
Beaufortia sparsa		0.3	1.8
Melanostachya ustulata		0.3	1.0
Euchilopsis linearis		0.3	0.3
Phlebocarya ciliata		0.3	0.2
Acacia uliginosa		0.2	1.0
Adenanthos obovatus		0.2	0.7
Hypocalymma ericifolium		0.2	0.6
Xanthorrhoea preissii		0.2	0.6
Anarthria prolifera		0.2	0.4
Hypolaena viridis		0.2	0.4
Dampiera pedunculata		0.2	0.3
Bossiaea praetermissa		0.1	0.6
Johnsonia lupulina		0.1	0.6
Pimelea longiflora		0.1	0.6
Cassytha racemosa forma *pilosa*		0.1	0.6
Petrophile linearis		0.1	0.5
**Briza minor*	Weed	0.1	0.1
Acacia pulchella var. *pulchella*		0.0	1.3
Patersonia occidentalis		0.0	0.5

Site details			
Site	**BEE054**	**Position (WGS84)**	115.2740348, -34.25047755
Slope	gentle	**Topography**	
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Agonis flexuosa* var. *flexuosa* low open forest over *Melaleuca thymoides, Taxandria parviceps* and *Xanthorrhoea preissii* mid isolated shrubs over *Anarthria scabra* and *Lyginia imberbis* mid sedgeland.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	25.0
Shrub cover (%)	5.0	**Grass cover (%)**	65.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Andrew Perkins

Species (23)	Status	Cover (%)	Height (m)
Anarthria scabra		65.0	0.7
Eucalyptus marginata subsp. *marginata*		25.0	12.0
Agonis flexuosa var. *flexuosa*		6.0	14.0
Dasypogon bromeliifolius		5.0	0.5
Melaleuca thymoides		4.0	1.1
Phlebocarya ciliata		3.0	0.2
Taxandria parviceps		2.0	2.0
Jacksonia horrida		1.0	2.2
Xanthorrhoea preissii		1.0	0.7
Lyginia imberbis		1.0	0.6
Hypocalymma ericifolium		0.5	0.5
Anarthria prolifera		0.5	0.2
Johnsonia lupulina		0.2	0.6
Patersonia occidentalis		0.2	0.6
Billardiera sp.		0.1	0.5
Burchardia congesta		0.1	0.4
Adenanthos obovatus		0.1	0.4
Bossiaea praetermissa		0.1	0.4
Chamaescilla corymbosa var. *corymbosa*		0.1	0.2
**Briza maxima*	Weed	0.1	0.2
Lechenaultia expansa		0.1	0.2
Actinotus glomeratus		0.1	0.1
Gompholobium capitatum		0.0	0.3

Site details			
Site	**BEE055**	**Position (WGS84)**	115.2757403, -34.25071511
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* mid woodland over *Melaleuca thymoides, Agonis flexuosa* var. *flexuosa* and *Xanthorrhoea preissii* tall open shrubland over *Anarthria scabra* and *Lyginia imberbis* mid sedgeland.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	15.0
Shrub cover (%)	15.0	**Grass cover (%)**	60.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (15)	Status	Cover (%)	Height (m)
Anarthria scabra		65.0	0.7
Eucalyptus marginata subsp. *marginata*		15.0	15.0
Melaleuca thymoides		15.0	1.3
Agonis flexuosa var. *flexuosa*		2.0	2.3
Lyginia imberbis		2.0	0.6
Xanthorrhoea preissii		1.0	0.8
Jacksonia horrida		0.5	1.5
Dasypogon bromeliifolius		0.2	0.5
Opercularia hispidula		0.2	0.5
Phlebocarya ciliata		0.2	0.2
Adenanthos obovatus		0.1	0.6
Burchardia congesta		0.1	0.6
Dampiera pedunculata		0.1	0.5
**Briza maxima*	Weed	0.1	0.2
Taxandria parviceps		0.0	3.5

Site details			
Site	**BEE056**	**Position (WGS84)**	115.277328, -34.25092956
Slope	gentle	**Topography**	plain
Soil colour	brown, brown-grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Nuytsia floribunda* mid open forest over *Xanthorrhoea preissii* mid isolated shrubs over *Anarthria scabra* and *Hypolaena pubescens* mid closed sedgeland.
Habitat	forest
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	60.0
Shrub cover (%)	1.0	**Grass cover (%)**	80.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (17)	Status	Cover (%)	Height (m)
Anarthria scabra		75.0	0.5
Eucalyptus marginata subsp. *marginata*		60.0	15.0
Nuytsia floribunda		15.0	14.0
Xanthorrhoea preissii		1.0	1.1
Hypolaena pubescens		1.0	0.6
Dasypogon bromeliifolius		0.5	0.5
**Briza maxima*	Weed	0.2	0.7
**Hypochaeris glabra*	Weed	0.2	0.6
Opercularia hispidula		0.2	0.5
Phlebocarya ciliata		0.2	0.2
Anigozanthos flavidus		0.1	1.2
Leucopogon australis		0.1	1.0
Johnsonia lupulina		0.1	0.7
**Bromus diandrus*	Weed	0.1	0.7
Hypolaena viridis		0.1	0.6
**Holcus lanatus*	Weed	0.1	0.6
**Briza minor*	Weed	0.1	0.1

Site details			
Site	**BEE057**	**Position (WGS84)**	115.30765367115198, -34.22076744766934
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Melaleuca rhaphiophylla* and *Taxandria juniperina* low closed forest over *Juncus pallidus* tall isolated sedges over *Lemna disperma, Cycnogeton huegelii* and *Senecio picridioides* closed aquatic forbland.
Habitat	waterhole
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	2.0
Herb cover (%)	75.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (6)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		75.0	10.0
Lemna disperma		75.0	0.05
Taxandria juniperina		5.0	15.0
Juncus pallidus		2.0	1.2
Cycnogeton huegelii		1.0	0.3
Senecio picridioides		0.1	0.1

Site details			
Site	**BEE058**	**Position (WGS84)**	115.2801255, -34.25127965
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Melaleuca preissiana* tall sparse shrubland over *Xanthorrhoea preissii, Hakea varia* and *Acacia myrtifolia* mid sparse shrubland over *Chordifex isomorphus, Loxocarya magna* and *Platychorda applanata* tall closed grassland.
Habitat	shrubland
Disturbance	weed infestation, excavation

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	0.0
Shrub cover (%)	8.0	**Grass cover (%)**	80.0
Herb cover (%)	10.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (34)	Status	Cover (%)	Height (m)
Loxocarya magna	P3 (DBCA list)	30.0	1.1
Chordifex isomorphus		30.0	0.7
Xanthorrhoea preissii		4.0	1.2
Melaleuca preissiana		3.0	3.5
Platychorda applanata		3.0	0.7
Hakea varia		2.0	2.2
Hypolaena pubescens		2.0	0.7
Acacia myrtifolia		1.0	2.1
**Holcus lanatus*	Weed	0.3	0.6
Pimelea rosea subsp. *rosea*		0.2	0.6
**Sonchus oleraceus*	Weed	0.2	0.5
**Lotus subbiflorus*	Weed	0.2	0.5
**Geranium purpureum*	Weed	0.2	0.5
**Anthoxanthum odoratum*	Weed	0.2	0.5
Microtis media subsp. *media*		0.2	0.4
**Juncus articulatus*	Weed	0.2	0.4
Lyginia barbata		0.2	0.4
**Hypochaeris glabra*	Weed	0.2	0.4
**Bellardia viscosa*	Weed	0.2	0.3
**Sonchus asper*	Weed	0.1	0.9
Sphaerolobium vimineum		0.1	0.9
**Polypogon monspeliensis*	Weed	0.1	0.8
Dampiera pedunculata		0.1	0.7
**Lolium perenne*	Weed	0.1	0.6
Mesomelaena tetragona		0.1	0.6
Dasypogon bromeliifolius		0.1	0.5
Patersonia occidentalis		0.1	0.5
Lachnagrostis filiformis		0.1	0.5
**Briza maxima*	Weed	0.1	0.4
**Briza minor*	Weed	0.1	0.4
Thysanotus multiflorus		0.1	0.4
Conostylis aculeata subsp. *aculeata*		0.1	0.2
**Aira caryophyllea*	Weed	0.1	0.1
**Mentha pulegium*	Weed	0.1	0.1

Site details			
Site	**BEE059**	**Position (WGS84)**	115.2812201, -34.2514313
Slope	gentle	**Topography**	plain
Soil colour	brown, brown, grey	**Soil texture**	Clay loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Agonis flexuosa* var. *flexuosa, Melaleuca preissiana* and *Eucalyptus marginata* subsp. *marginata* mid open forest over *Taxandria linearifolia, T. parviceps* and *Acacia myrtifolia* tall open shrubland over *Machaerina juncea, Lepidosperma* sp. Blackwood (R. Davis 7696) and *Empodisma gracillimum* tall sedgeland.
Habitat	forest
Disturbance	Excavation, weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	40.0
Shrub cover (%)	15.0	**Grass cover (%)**	60.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (29)	Status	Cover (%)	Height (m)
Machaerina juncea		50.0	1.1
Melaleuca preissiana		15.0	12.0
Agonis flexuosa var. *flexuosa*		15.0	10.0
Taxandria parviceps		10.0	12.0
Taxandria linearifolia		10.0	3.5
Eucalyptus marginata subsp. *marginata*		5.0	10.0
Acacia myrtifolia		4.0	2.4
Dasypogon bromeliifolius		3.0	0.7
Lepidosperma sp. Blackwood (R. Davis 7696)		2.0	0.8
Empodisma gracillimum		2.0	0.6
Xanthorrhoea preissii		1.0	0.8
Hypolaena pubescens		1.0	0.7
Astartea scoparia		0.5	2.5
Anigozanthos flavidus		0.4	2.1
**Briza maxima*	Weed	0.4	0.4
Banksia littoralis		0.3	1.0
Hakea linearis		0.2	1.0
Hakea ceratophylla		0.2	0.7
Beaufortia sparsa		0.1	0.8
Hakea varia		0.1	0.6
Leucopogon australis		0.1	0.6
Mesomelaena tetragona		0.1	0.6
**Sonchus asper*	Weed	0.1	0.5
Hibbertia amplexicaulis		0.1	0.5
**Lolium perenne*	Weed	0.1	0.4
Opercularia vaginata		0.1	0.4
Billardiera laxiflora		0.1	0.3
**Briza minor*	Weed	0.1	0.3
Conostylis aculeata subsp. *aculeata*		0.1	0.2

Site details			
Site	**BEE060**	**Position (WGS84)**	115.283822, -34.25165957
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Xanthorrhoea preissii, Hakea varia* and *Acacia myrtifolia* mid sparse shrubland over *Loxocarya magna, Leptocarpus scoparius* and *Mesomelaena tetragona* tall closed sedgeland over **Briza maxima*, **B. minor* and **Bromus hordeaceus* low sparse grassland.
Habitat	shrubland
Disturbance	weed infestation, excavation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	90.0	**Tree cover (%)**	0.0
Shrub cover (%)	8.0	**Grass cover (%)**	90.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (27)	Status	Cover (%)	Height (m)
Loxocarya magna	P3 (DBCA list)	50.0	1.4
Xanthorrhoea preissii		5.0	1.2
Leptocarpus scoparius		5.0	0.6
Hakea varia		3.0	1.6
Hypolaena pubescens		3.0	0.7
Lyginia barbata		1.0	0.7
Acacia myrtifolia		0.5	1.4
Kunzea recurva		0.5	0.8
Mesomelaena tetragona		0.2	0.8
Pimelea rosea subsp. *rosea*		0.2	0.7
Synaphea petiolaris subsp. *triloba*		0.2	0.5
Cyathochaeta avenacea		0.1	0.8
**Sonchus asper*	Weed	0.1	0.7
Lepidosperma pubisquameum		0.1	0.7
Acacia browniana var. *browniana*		0.1	0.7
Hibbertia amplexicaulis		0.1	0.5
Desmocladus fasciculatus		0.1	0.5
**Bromus hordeaceus*	Weed	0.1	0.3
**Juncus articulatus*	Weed	0.1	0.3
**Briza maxima*	Weed	0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.2
Hibbertia stellaris		0.1	0.2
**Lysimachia arvensis*	Weed	0.1	0.1
**Briza minor*	Weed	0.1	0.1
**Cyperus tenellus*	Weed	0.1	0.1
Centrolepis aristata		0.1	0.1
**Lotus subbiflorus*	Weed	0.1	0.1

Site details			
Site	**BEE061**	**Position (WGS84)**	115.2859762, -34.25143899
Slope	negligible	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Nuytsia floribunda* (outside) isolated tall shrubs over *Kunzea recurva, Hakea sulcata* and *Xanthorrhoea preissii* mid open shrubland over *Platychorda applanata* mid sedgeland.
Habitat	shrubland
Disturbance	weed infestation, excavation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	10.0	**Grass cover (%)**	70.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (38)	Status	Cover (%)	Height (m)
Platychorda applanata		55.0	0.7
Kunzea recurva		5.0	1.5
Hakea sulcata		3.0	1.2
Xanthorrhoea preissii		3.0	1.2
Johnsonia lupulina		1.0	1.2
Synaphea petiolaris subsp. *triloba*		1.0	0.5
Stackhousia monogyna		0.5	0.6
Agrostocrinum scabrum subsp. *scabrum*		0.3	0.6
Conostylis aculeata subsp. *gracilis*		0.3	0.1
Cyathochaeta avenacea		0.2	0.8
Acacia browniana var. *browniana*		0.2	0.6
Banksia nivea subsp. *nivea*		0.2	0.5
Conostylis aculeata subsp. *aculeata*		0.2	0.4
Hypolaena pubescens		0.2	0.4
Patersonia occidentalis		0.2	0.2
Deyeuxia quadriseta		0.1	0.7
Haemodorum laxum		0.1	0.7
Cassytha racemosa forma *pilosa*		0.1	0.7
Prasophyllum brownii		0.1	0.6
Anigozanthos flavidus		0.1	0.6
**Briza maxima*	Weed	0.1	0.6
Anigozanthos flavidus		0.1	0.5
Mesomelaena tetragona		0.1	0.5
Microtis media subsp. *media*		0.1	0.4
Hibbertia amplexicaulis		0.1	0.3
Pimelea longiflora		0.1	0.3
Anarthria prolifera		0.1	0.2
**Briza minor*	Weed	0.1	0.2
Amphipogon laguroides subsp. *laguroides*		0.1	0.2
Desmocladus fasciculatus		0.1	0.2
**Lotus subbiflorus*	Weed	0.1	0.1
**Hypochaeris glabra*	Weed	0.1	0.1
Actinotus glomeratus		0.1	0.1
**Aira caryophyllea*	Weed	0.1	0.1
Chamaescilla corymbosa var. *corymbosa*		0.1	0.1
Stylidium megacarpum		0.1	0.1
Centrolepis aristata		0.1	0.1
Nuytsia floribunda		0.0	3.0

Site details			
Site	**BEE062**	**Position (WGS84)**	115.28733987148243, -34.18770505499435
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Astartea scoparia* tall closed shrubland over *Leptocarpus scariosus* tall open rushland and *Cycnogeton huegelii* sparse aquatic herbland.
Habitat	waterhole
Disturbance	grazing-high

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	28.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Brody Loneragan

Species (4)	Status	Cover (%)	Height (m)
Astartea scoparia		75.0	6.0
Leptocarpus scariosus		28.0	2.0
Cycnogeton huegelii		5.0	0.3
Cyathochaeta clandestina		1.0	2.0

Site details			
Site	**BEE063**	**Position (WGS84)**	115.2898234880402, -34.25129132457724
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (13 Nov 2023)

Site description	*Melaleuca densa, Grevillea manglesioides* subsp. *ferricola* and *Acacia myrtifolia* tall shrubland over *Leptocarpus scoparius, Loxocarya magna* and *Hypolaena pubescens* tall sparse grassland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	60.0	**Tree cover (%)**	0.0
Shrub cover (%)	55.0	**Grass cover (%)**	6.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	13 Nov 2023	10m x 10m	Andrew Perkins

Species (29)	Status	Cover (%)	Height (m)
Melaleuca densa		50.0	2.5
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	7.0	1.6
Loxocarya magna	P3 (DBCA list)	5.0	1.1
Leptocarpus scoparius		5.0	0.8
Xanthorrhoea preissii		4.0	2.1
Acacia myrtifolia		2.0	1.5
Hypolaena pubescens		2.0	1.0
Hakea varia		1.0	1.0
Hibbertia perfoliata		0.3	1.1
Opercularia vaginata		0.3	0.7
Cassytha sp.		0.2	1.2
**Briza maxima*	Weed	0.2	0.3
**Briza minor*	Weed	0.2	0.2
Pimelea rosea subsp. *rosea*		0.1	0.8
Sphaerolobium vimineum		0.1	0.6
**Hypochaeris glabra*	Weed	0.1	0.6
Lepidosperma pubisquameum		0.1	0.6
**Sonchus asper*	Weed	0.1	0.5
**Bromus hordeaceus*	Weed	0.1	0.5
**Juncus microcephalus*	Weed	0.1	0.5
**Lolium perenne*	Weed	0.1	0.4
**Bellardia viscosa*	Weed	0.1	0.4
**Anthoxanthum odoratum*	Weed	0.1	0.3
**Sonchus oleraceus*	Weed	0.1	0.2
Patersonia occidentalis		0.1	0.2
**Polypogon monspeliensis*	Weed	0.1	0.2
**Lysimachia arvensis*	Weed	0.1	0.1
**Romulea rosea* var. *australis*	Weed	0.1	0.1
Stylidium megacarpum		0.0	0.15

Site details			
Site	**BEE066**	**Position (WGS84)**	115.293236, -34.17559671
Slope	gentle	**Topography**	plain
Soil colour	grey, brown	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Allocasuarina fraseriana* and *Agonis flexuosa* var. *flexuosa* mid open forest over *Banksia ilicifolia* and *Xanthorrhoea preissii* isolated shrubs over *Anarthria scabra* and *A. prolifera* sedgeland.
Habitat	woodland
Disturbance	grazing-low

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	60.0
Shrub cover (%)	0.1	**Grass cover (%)**	40.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	02 Sep 2023	10m x 10m	Tim Morald

Species (17)	Status	Cover (%)	Height (m)
Anarthria scabra		40.0	1.0
Eucalyptus marginata subsp. *marginata*		25.0	15.0
Allocasuarina fraseriana		20.0	15.0
Agonis flexuosa var. *flexuosa*		10.0	10.0
Banksia ilicifolia		7.0	10.0
Xanthorrhoea preissii		1.0	1.0
Anarthria prolifera		0.3	0.4
Thysanotus patersonii		0.2	0.5
Drosera pallida		0.1	0.8
Lyginia imberbis		0.1	0.6
Bossiaea praetermissa		0.1	0.5
Hibbertia racemosa		0.1	0.3
Dasypogon bromeliifolius		0.1	0.2
Hydrocotyle callicarpa		0.1	0.1
Drosera erythrorhiza		0.1	0.1
Chamaescilla corymbosa var. *corymbosa*		0.1	0.1
Persoonia longifolia		0.0	5.0

Site details			
Site	**BEE067**	**Position (WGS84)**	115.2800938, -34.17503863
Slope	gentle	**Topography**	dune
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Allocasuarina fraseriana, Eucalyptus marginata* subsp. *marginata* and *Banksia ilicifolia* low woodland over *Taxandria parviceps* tall sparse shrubland over *Anarthria scabra* sedgeland.
Habitat	woodland
Disturbance	weed infestation, grazing-high, livestock tracks

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	20.0
Shrub cover (%)	5.0	**Grass cover (%)**	45.0
Herb cover (%)	3.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	02 Sep 2023	10m x 10m	Brody Loneragan

Species (30)	Status	Cover (%)	Height (m)
Anarthria scabra		35.0	0.8
Allocasuarina fraseriana		20.0	8.0
Taxandria parviceps		8.0	3.0
Eucalyptus marginata subsp. *marginata*		6.0	7.0
Xanthorrhoea preissii		6.0	1.0
Dasypogon bromeliifolius		5.0	0.3
Phlebocarya ciliata		5.0	0.1
Banksia ilicifolia		2.0	4.0
**Cerastium glomeratum*	Weed	1.1	0.4
Banksia attenuata		1.0	6.0
Pultenaea reticulata		1.0	1.5
Jacksonia horrida		1.0	1.5
**Cotula turbinata*	Weed	1.0	0.1
Chamaescilla corymbosa var. *corymbosa*		0.5	0.2
Melaleuca thymoides		0.2	1.0
Drosera menziesii		0.1	0.3
Acacia uliginosa		0.1	0.3
Hypocalymma strictum		0.1	0.3
Bossiaea praetermissa		0.1	0.2
Eragrostis brownii		0.1	0.2
Pterostylis vittata		0.1	0.2
Caladenia sp.		0.1	0.1
**Hypochaeris glabra*	Weed	0.1	0.1
Opercularia hispidula		0.1	0.1
**Trifolium repens* var. *repens*	Weed	0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.1
**Arctotheca calendula*	Weed	0.1	0.1
Actinodium cunninghamii		0.1	0.1
Drosera erythrorhiza		0.1	0.1
**Vulpia myuros*	Weed	0.1	0.1

Site details			
Site	**BEE068**	**Position (WGS84)**	115.2865872, -34.17443363
Slope	gentle	**Topography**	seasonally wet area
Soil colour	brown	**Soil texture**	
Rock cover (%)	0	**Rock type**	

Observation details - visit 1 (02 Sep 2023)

Site description	*Taxandria inundata* and *Petrophile squamata* subsp. *squamata* tall shrubland over *Leptocarpus scariosus* and *Juncus pallidus* tall rushland.
Habitat	shrubland
Disturbance	livestock tracks, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	65.0	**Tree cover (%)**	0.0
Shrub cover (%)	60.0	**Grass cover (%)**	50.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	02 Sep 2023	10m x 10m	Brody Loneragan

Species (15)	Status	Cover (%)	Height (m)
Taxandria inundata		60.0	4.0
Leptocarpus scariosus		20.0	1.5
Juncus pallidus		4.0	1.6
Petrophile squamata subsp. *squamata*		1.0	1.5
Machaerina articulata		0.1	1.8
Pimelea lanata		0.1	1.6
Cyathochaeta clandestina		0.1	1.4
Poaceae sp.		0.1	0.3
Indeterminate		0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.1
**Rumex* sp.		0.1	0.1
**Sonchus asper*	Weed	0.1	0.1
Geranium retrorsum		0.1	0.1
**Mentha pulegium*	Weed	0.1	0.1

Site details			
Site	**BEE070**	**Position (WGS84)**	115.2838322, -34.17970822
Slope	gentle	**Topography**	depression
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Nuytsia floribunda* low isolated trees over *Taxandria parviceps* and *Beaufortia sparsa* tall open shrubland over *Anarthria scabra, Dasypogon bromeliifolius* and *Xanthorrhoea preissii* low sedgeland.
Habitat	shrubland
Disturbance	livestock tracks, grazing-low, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	70.0	**Tree cover (%)**	1.0
Shrub cover (%)	11.0	**Grass cover (%)**	65.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	02 Sep 2023	10m x 10m	Brody Loneragan

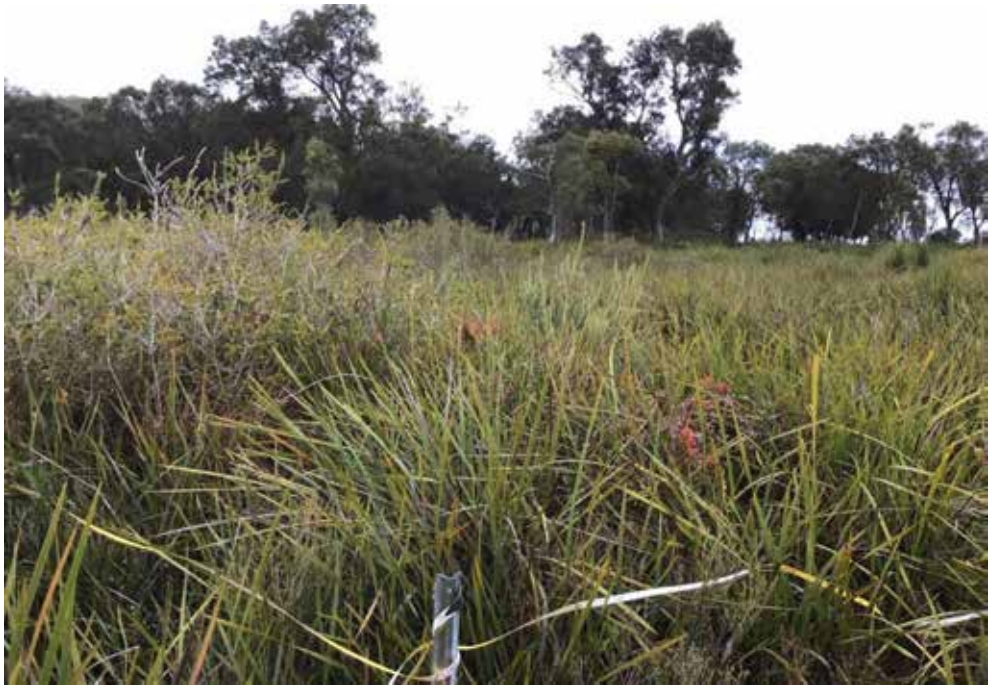
Species (24)	Status	Cover (%)	Height (m)
Anarthria scabra		65.0	1.0
Beaufortia sparsa		10.0	3.0
Nuytsia floribunda		5.0	5.0
Taxandria parviceps		5.0	3.0
Xanthorrhoea gracilis		3.0	1.5
Xanthorrhoea preissii		2.0	1.2
Dasypogon bromeliifolius		2.0	0.4
Acacia uliginosa		1.0	0.8
**Cotula turbinata*	Weed	0.2	0.2
**Ornithopus pinnatus*	Weed	0.2	0.1
Evandra aristata		0.1	1.8
Homalospermum firmum		0.1	1.6
Aotus carinata	P4 (DBCA list)	0.1	0.8
Johnsonia lupulina		0.1	0.6
Hypocalymma ericifolium		0.1	0.6
Adenanthos obovatus		0.1	0.4
Dampiera linearis		0.1	0.2
Dasypogon bromeliifolius		0.1	0.2
**Rumex acetosella*	Weed	0.1	0.1
**Monopsis debilis* var. *depressa*	Weed	0.1	0.1
Juncus planifolius		0.1	0.1
Centrolepis aristata		0.1	0.1
Hypolaena caespitosa		0.1	0.1
**Hypochaeris glabra*	Weed	0.1	0.1

Site details			
Site	**BEE080**	**Position (WGS84)**	115.2926024, -34.17685676
Slope	gentle	**Topography**	depression
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Beaufortia sparsa, Leucopogon alternifolius* and *Adenanthos obovatus* mid shrubland over isolated *Xanthorrhoea preissii* over *Anarthria scabra* and *Dasypogon bromeliifolius* closed sedgeland.
Habitat	heathland
Disturbance	grazing-low

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	0.0
Shrub cover (%)	10.0	**Grass cover (%)**	75.0
Herb cover (%)	0.1		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	02 Sep 2023	10m x 10m	Tim Morald

Species (17)	Status	Cover (%)	Height (m)
Anarthria scabra		75.0	1.2
Beaufortia sparsa		10.0	1.8
Leucopogon alternifolius	P3 (DBCA list)	2.0	1.2
Dasypogon bromeliifolius		2.0	0.3
Adenanthos obovatus		1.0	1.1
Sphaerolobium grandiflorum		0.5	1.5
Aotus carinata	P4 (DBCA list)	0.3	1.9
Hypocalymma ericifolium		0.3	0.6
Evandra aristata		0.2	1.7
Schoenus efoliatus		0.2	1.1
Sphenotoma gracilis		0.2	0.8
Leucopogon tenuicaulis		0.2	0.5
Xanthorrhoea preissii		0.2	0.4
Pimelea longiflora		0.1	0.6
Dampiera leptoclada		0.1	0.6
Euchilopsis linearis		0.1	0.4
Hypolaena exsulca		0.1	0.2

Site details			
Site	**BEE082**	**Position (WGS84)**	115.3061636, -34.2390811
Slope	gentle	**Topography**	depression
Soil colour	black, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (04 Sep 2023)

Site description	*Calothamnus lateralis* var. *crassus, Adenanthos detmoldii* and *Grevillea manglesioides* subsp. *ferricola* tall shrubland over *Leptocarpus laxus* and *L. scoparius* tall rushland.
Habitat	shrubland
Disturbance	grazing-low, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	70.0	**Tree cover (%)**	0.0
Shrub cover (%)	35.0	**Grass cover (%)**	30.0
Herb cover (%)	4.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04 Sep 2023	10m x 10m	Brody Loneragan

Species (36)	Status	Cover (%)	Height (m)
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	20.0	1.8
Adenanthos detmoldii	P4 (DBCA list)	12.0	2.5
Leptocarpus laxus		10.0	2.0
Leptocarpus scoparius		5.0	0.7
Poaceae sp.		3.0	0.1
Dasypogon bromeliifolius		2.0	0.3
Hakea varia		1.0	2.2
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	1.0	2.0
Melanostachya ustulata		1.0	1.1
Dampiera heteroptera	P3 (DBCA list)	1.0	0.6
Conostylis laxiflora		1.0	0.4
**Ornithopus pinnatus*	Weed	1.0	0.1
Sporadanthus strictus		0.5	1.3
Mesomelaena tetragona		0.5	0.8
Xanthorrhoea preissii		0.5	0.7
Platychorda applanata		0.5	0.7
Pericalymma ellipticum var. *ellipticum*		0.5	0.6
Kunzea recurva		0.5	0.6
Hypolaena caespitosa		0.5	0.3
**Hypochaeris glabra*	Weed	0.25	0.1
Desmocladus flexuosus		0.2	0.6
Adenanthos obovatus		0.2	0.3
Comesperma virgatum		0.1	1.2
Pericalymma crassipes		0.1	0.4
Hibbertia stellaris		0.1	0.3
Lepidosperma pubisquameum		0.1	0.3
Machaerina articulata		0.1	0.2
Boronia anceps	P3 (DBCA list)	0.1	0.2
Lindsaea linearis		0.1	0.2
Stylidium scandens		0.1	0.2
**Arctotheca calendula*	Weed	0.1	0.1
**Cotula turbinata*	Weed	0.1	0.1
?*Centipeda cunninghamii*		0.1	0.1
Patersonia occidentalis var. *occidentalis*		0.1	0.1
**Trifolium campestre* var. *campestre*	Weed	0.1	0.1
**Sparaxis pillansii*	Weed	0.1	0.1

Site details			
Site	**BEE083**	**Position (WGS84)**	[redacted]
Slope	gentle	**Topography**	sandy rise
Soil colour	grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (04 Sep 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* low woodland over *Xanthorrhoea preissii*, *Taxandria parviceps* and *Acacia browniana* var. *browniana* mid open shrubland over *Anarthria scabra* and *Melanostachya ustulata* tall rushland.
Habitat	woodland
Disturbance	grazing-low, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	25.0
Shrub cover (%)	20.0	**Grass cover (%)**	30.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04 Sep 2023	10m x 10m	Brody Loneragan

Species (36)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		15.0	6.0
Xanthorrhoea preissii		5.0	1.5
Anarthria scabra		5.0	1.5
Melanostachya ustulata		4.0	0.7
Taxandria parviceps		2.0	2.0
[redacted]	[redacted]	[redacted]	[redacted]
Nuytsia floribunda		1.0	3.0
Hakea ceratophylla		1.0	0.8
Gompholobium tomentosum		1.0	0.6
Acacia browniana var. *browniana*		1.0	0.6
Dasypogon bromeliifolius		1.0	0.2
Anarthria prolifera		1.0	0.1
Comesperma virgatum		0.5	1.0
Mesomelaena tetragona		0.5	0.7
Dampiera heteroptera	P3 (DBCA list)	0.5	0.6
Desmocladus castaneus		0.5	0.2
Leptocarpus trisepalus		0.5	0.2
**Hypochaeris glabra*	Weed	0.5	0.1
**Ornithopus pinnatus*	Weed	0.5	0.1
Poaceae sp.		0.5	0.1
Drosera pallida		0.1	1.6
Evandra aristata		0.1	1.2
Pimelea longiflora		0.1	1.2
Sphaerolobium grandiflorum		0.1	1.0
Johnsonia lupulina		0.1	0.7
Schoenus efoliatus		0.1	0.3
Lechenaultia expansa		0.1	0.3
Lindsaea linearis		0.1	0.2
Leptomeria cunninghamii		0.1	0.2
Desmocladus flexuosus		0.1	0.2
Xanthosia huegelii		0.1	0.2
Conostylis laxiflora		0.1	0.1
**Trifolium campestre* var. *campestre*	Weed	0.1	0.1
Banksia dallanneyi subsp. *dallanneyi*		0.1	0.1
Stylidium amoenum		0.1	0.1
Conostylis aculeata subsp. *gracilis*		0.1	0.1

Site details			
Site	**BEE084**	**Position (WGS84)**	115.3065487, -34.23956992
Slope	negligible	**Topography**	depression
Soil colour	grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (04 Sep 2023)

Site description	*Acacia myrtifolia, Banksia occidentalis* and *Hakea sulcata* tall closed shrubland over low closed mixed rushland.
Habitat	shrubland
Disturbance	grazing-low

Vegetation condition	Excellent	**Fire age**	moderate (>5 years)
Total veg. cover (%)	98.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	95.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04 Sep 2023	10m x 10m	Brody Loneragan

Species (17)	Status	Cover (%)	Height (m)
Acacia myrtifolia		40.0	2.5
Hypolaena caespitosa		40.0	0.3
Banksia occidentalis		30.0	2.5
Melanostachya ustulata		10.0	0.8
Lepidosperma sp.		10.0	0.5
Hakea sulcata		3.0	1.4
Melaleuca incana subsp. *incana*		3.0	1.1
Juncus kraussii subsp. *australiensis*		2.0	1.5
Boronia anceps	P3 (DBCA list)	2.0	0.5
Cytogonidium leptocarpoides		2.0	0.3
Beaufortia sparsa		1.0	1.2
Sphenotoma gracilis		1.0	0.3
Hakea ceratophylla		0.5	0.6
Sphaerolobium vimineum		0.1	0.5
Banksia dallanneyi subsp. *dallanneyi*		0.1	0.3
Philotheca spicata		0.1	0.3
Actinodium cunninghamii		0.1	0.2

Site details			
Site	**BEE100**	**Position (WGS84)**	115.2731196485559, -34.191066729142214
Slope	negligible	**Topography**	sandy rise
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Corymbia calophylla* and *Eucalyptus marginata* subsp. *marginata* mid open forest over *Persoonia longifolia, Podocarpus drouynianus* and *Xanthorrhoea preissii* tall open shrubland over *Anarthria scabra* closed sedgeland.
Habitat	forest
Disturbance	livestock tracks

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	45.0
Shrub cover (%)	12.0	**Grass cover (%)**	73.0
Herb cover (%)	3.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Brody Loneragan

Species (15)	Status	Cover (%)	Height (m)
Anarthria scabra		72.0	1.5
Corymbia calophylla		25.0	13.0
Eucalyptus marginata subsp. *marginata*		20.0	10.0
Xanthorrhoea preissii		11.0	3.0
Podocarpus drouynianus		8.0	1.5
Persoonia longifolia		3.0	2.0
Pteridium esculentum subsp. *esculentum*		2.0	1.0
Banksia attenuata		1.0	8.0
Opercularia hispidula		1.0	0.4
Acacia myrtifolia		0.1	1.5
Patersonia occidentalis var. *latifolia*		0.1	1.0
Taxandria parviceps		0.1	0.5
Dasypogon bromeliifolius		0.1	0.3
Lindsaea linearis		0.1	0.2
Corysanthes recurva		0.1	0.01

Site details			
Site	**BEE101**	**Position (WGS84)**	115.28844720694728, -34.19767501767184
Slope	negligible	**Topography**	seasonally wet area
Soil colour	black, brown	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Taxandria inundata, Astartea scoparia* and *Calothamnus lateralis* var. *crassus* tall shrubland over *Leptocarpus scariosus* tall open rushland over *Alternanthera nodiflora* low isolated forbs.
Habitat	shrubland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	0.0
Shrub cover (%)	58.0	**Grass cover (%)**	20.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Andrew Perkins

Species (7)	Status	Cover (%)	Height (m)
Taxandria inundata		50.0	3.5
Leptocarpus scariosus		20.0	2.2
Astartea scoparia		5.0	2.5
Alternanthera nodiflora		5.0	0.3
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	2.0	3.0
Grevillea diversifolia subsp. *subtersericata*		1.0	1.6
Bossiaea rufa		0.2	2.5

Site details			
Site	**BEE102**	**Position (WGS84)**	115.28872548613258, -34.19613132256474
Slope	negligible	**Topography**	seasonally wet area
Soil colour	Brown, grey, light-brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Grevillea diversifolia* subsp. *subtersericata, Pimelea lanata* and *Pericalymma ellipticum* var. *ellipticum* mid open shrubland over *Leptocarpus scariosus, Chordifex amblycoleus* and *Xyris roycei* mid rushland.
Habitat	tussock grassland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	50.0	**Tree cover (%)**	0.0
Shrub cover (%)	15.0	**Grass cover (%)**	35.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Andrew Perkins

Species (8)	Status	Cover (%)	Height (m)
Leptocarpus scariosus		25.0	1.3
Chordifex amblycoleus		10.0	1.5
Pericalymma ellipticum var. *ellipticum*		10.0	1.2
Grevillea diversifolia subsp. *subtersericata*		5.0	1.1
Xyris roycei		1.0	0.8
Pimelea lanata		0.2	1.5
Hakea linearis		0.1	1.3
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.1	1.0

Site details			
Site	**BEE104**	**Position (WGS84)**	115.29238452214308, -34.2013547988927
Slope	gentle	**Topography**	seasonally wet area
Soil colour	black, brown	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (23 Oct 2023)

Site description	*Taxandria inundata, Astartea scoparia* and *Hakea linearis* tall closed shrubland over *Leptocarpus scariosus* tall open sedgeland.
Habitat	shrubland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	90.0	**Tree cover (%)**	0.0
Shrub cover (%)	70.0	**Grass cover (%)**	20.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	23 Oct 2023	10m x 10m	Andrew Perkins

Species (6)	Status	Cover (%)	Height (m)
Taxandria inundata		70.0	4.5
Leptocarpus scariosus		20.0	1.6
Astartea scoparia		1.0	1.9
Hakea linearis		0.5	2.5
Grevillea diversifolia subsp. *subtersericata*		0.2	3.0
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.1	2.5

Site details			
Site	**BEE106**	**Position (WGS84)**	115.27044036436385, -34.17597879658842
Slope	gentle	**Topography**	drainage line
Soil colour	brown	**Soil texture**	Loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Astartea scoparia* and *Taxandria parviceps* tall closed shrubland over *Leptocarpus scariosus* tall open rushland over **Holcus lanatus* and **Anthoxanthum odoratum* tall open grassland over isolated herbs of **Rumex acetosella*.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	95.0	**Tree cover (%)**	0.0
Shrub cover (%)	85.0	**Grass cover (%)**	10.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Andrew Perkins

Species (9)	Status	Cover (%)	Height (m)
Astartea scoparia		80.0	4.5
Taxandria parviceps		5.0	2.8
**Holcus lanatus*	Weed	5.0	1.5
**Anthoxanthum odoratum*	Weed	5.0	1.0
Leptocarpus scariosus		2.0	1.3
**Rumex acetosella*	Weed	2.0	0.3
**Briza maxima*	Weed	0.4	0.5
Homalospermum firmum		0.1	2.0
Microtis media subsp. *media*		0.1	0.3

Site details			
Site	**BEE107**	**Position (WGS84)**	115.29394028719076, -34.20597410764005
Slope	gentle	**Topography**	seasonally wet area
Soil colour	black, brown, grey	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Melaleuca preissiana* and *Taxandria juniperina* mid open forest over *Astartea scoparia* and *Melaleuca rhaphiophylla* tall isolated shrubs over *Leptocarpus scariosus* tall rushland.
Habitat	forest
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	55.0
Shrub cover (%)	5.0	**Grass cover (%)**	15.0
Herb cover (%)	0.2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	NR

Species (8)	Status	Cover (%)	Height (m)
Taxandria juniperina		25.0	18.0
Melaleuca preissiana		25.0	12.0
Leptocarpus scariosus		15.0	1.3
Melaleuca rhaphiophylla		5.0	15.0
Astartea scoparia		5.0	4.5
Cycnogeton huegelii		0.2	0.2
Callistachys lanceolata		0.1	5.0
Microtis media subsp. *media*		0.1	0.3

Site details			
Site	**BEE112**	**Position (WGS84)**	115.2828315, -34.25157663
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* mid closed forest over *Taxandria parviceps, Xanthorrhoea preissii* and *Taxandria linearifolia* tall open shrubland over *Anarthria scabra* tall sedgeland.
Habitat	forest
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	75.0
Shrub cover (%)	10.0	**Grass cover (%)**	60.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Andrew Perkins

Species (41)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		65.0	14.0
Corymbia calophylla		15.0	14.0
Taxandria parviceps		10.0	3.0
Anarthria scabra		8.0	1.1
Xanthorrhoea preissii		6.0	1.3
Taxandria linearifolia		5.0	3.0
Acacia myrtifolia		4.0	1.7
Lepidosperma sp. Blackwood (R. Davis 7696)		3.0	0.5
Hypolaena pubescens		2.0	0.7
Petrophile squamata subsp. *squamata*		1.0	1.3
Dasypogon bromeliifolius		1.0	1.1
Leptocarpus laxus		1.0	0.7
Empodisma gracillimum		1.0	0.6
Anarthria prolifera		1.0	0.6
Opercularia hispidula		0.5	0.6
Agrostocrinum scabrum subsp. *scabrum*		0.3	0.6
Desmocladus fasciculatus		0.3	0.6
Johnsonia lupulina		0.2	0.9
Conospermum flexuosum subsp. *laevigatum*		0.2	0.6
Pimelea rosea subsp. *rosea*		0.2	0.6
Hypolaena caespitosa		0.2	0.6
Anigozanthos flavidus		0.1	1.5
Mesomelaena tetragona		0.1	1.2
Lomandra purpurea		0.1	1.0
Acacia browniana var. *browniana*		0.1	0.9
Cassytha sp.		0.1	0.7
Billardiera laxiflora		0.1	0.7
**Briza maxima*	Weed	0.1	0.7
Hibbertia amplexicaulis		0.1	0.7
Synaphea petiolaris subsp. *triloba*		0.1	0.7
Amphipogon setaceus		0.1	0.6
Sphenotoma gracilis		0.1	0.6
Hakea ruscifolia		0.1	0.6
Leucopogon australis		0.1	0.6
Dampiera heteroptera	P3 (DBCA list)	0.1	0.6
**Holcus lanatus*	Weed	0.1	0.6
Amphipogon setaceus		0.1	0.5
Conostylis aculeata subsp. *aculeata*		0.1	0.4
Stylidium scandens		0.1	0.3
Phlebocarya ciliata		0.1	0.3
**Hypochaeris glabra*	Weed	0.1	0.2

Site details			
Site	**BEE113**	**Position (WGS84)**	115.2719058, -34.25012833
Slope	gentle	**Topography**	sandy rise
Soil colour	light-brown, brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Agonis flexuosa* var. *flexuosa*, *Banksia attenuata* and *Allocasuarina fraseriana* low open forest over *Melaleuca thymoides* and *Banksia ilicifolia* isolated tall shrubs over *Anarthria scabra* mid sedgeland.
Habitat	forest
Disturbance	weed infestation

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	65.0	**Tree cover (%)**	50.0
Shrub cover (%)	4.0	**Grass cover (%)**	45.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Andrew Perkins

Species (18)	Status	Cover (%)	Height (m)
Anarthria scabra		45.0	0.7
Agonis flexuosa var. *flexuosa*		15.0	7.0
Banksia attenuata		15.0	6.0
Allocasuarina fraseriana		10.0	5.0
Phlebocarya ciliata		5.0	0.4
Melaleuca thymoides		2.0	1.1
Lyginia imberbis		2.0	0.6
Dasypogon bromeliifolius		2.0	0.5
Banksia ilicifolia		1.0	3.0
Nuytsia floribunda		0.5	3.0
Patersonia occidentalis		0.5	0.5
Acacia pulchella var. *pulchella*		0.3	1.1
Hypocalymma ericifolium		0.2	0.4
Burchardia congesta		0.1	0.8
Bossiaea praetermissa		0.1	0.2
**Briza maxima*	Weed	0.1	0.2
Gompholobium scabrum		0.0	1.4
Hibbertia cuneiformis		0.0	1.1

Site details			
Site	**BEE114**	**Position (WGS84)**	[redacted]
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Allocasuarina fraseriana, Agonis flexuosa* var. *flexuosa* and *Eucalyptus marginata* subsp. *marginata* low open forest over *Xanthorrhoea preissii, Gastrolobium formosum* and *Acacia browniana* var. *browniana* mid isolated shrubs over *Anarthria scabra* mixed mid sedgeland.

Habitat	forest
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	50.0
Shrub cover (%)	2.0	**Grass cover (%)**	45.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	16 Nov 2023	10m x 10m	Andrew Perkins

Species (31)	Status	Cover (%)	Height (m)
Anarthria scabra		40.0	0.8
Eucalyptus marginata subsp. *marginata*		15.0	15.0
Allocasuarina fraseriana		15.0	12.0
Gastrolobium formosum	P3 (DBCA list)	15.0	1.8
Agonis flexuosa var. *flexuosa*		7.0	9.0
Xanthorrhoea preissii		2.0	1.1
Acacia browniana var. *browniana*		0.4	0.7
Hakea ruscifolia		0.3	2.1
**Anthoxanthum odoratum*	Weed	0.2	0.6
Hypolaena caespitosa		0.2	0.5
Hypolaena pubescens		0.2	0.5
Dasypogon bromeliifolius		0.2	0.5
Cytogonidium leptocarpoides		0.2	0.4
[redacted]	[redacted]	[redacted]	[redacted]
Conostylis aculeata subsp. *aculeata*		0.2	0.4
Desmocladus fasciculatus		0.2	0.3
Phlebocarya ciliata		0.2	0.2
Abutilon sp.		0.1	1.3
Lomandra purpurea		0.1	0.7
Drosera sp.		0.1	0.6
Microtis media subsp. *media*		0.1	0.5
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.5
Burchardia congesta		0.1	0.5
Mesomelaena tetragona		0.1	0.5
Gompholobium scabrum		0.1	0.4
Gompholobium polymorphum		0.1	0.4
**Briza maxima*	Weed	0.1	0.2
Banksia nivea subsp. *nivea*		0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.1
Tricoryne humilis		0.1	0.1
Grevillea papillosa	P3 (DBCA list)	0.0	0.8

Site details			
Site	**BEE118**	**Position (WGS84)**	115.27271009501136, -34.19061042004739
Slope	gentle	**Topography**	drainage line
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Taxandria parviceps, Acacia myrtifolia* and *Xanthorrhoea preissii* tall shrubland over *Cyathochaeta equitans, Mesomelaena tetragona* and *Patersonia occidentalis* tall open sedgeland/rushland.
Habitat	shrubland
Disturbance	historic clearing, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	60.0	**Tree cover (%)**	0.0
Shrub cover (%)	35.0	**Grass cover (%)**	32.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Brody Loneragan

Species (30)	Status	Cover (%)	Height (m)
Taxandria parviceps		32.0	8.0
Cyathochaeta equitans		20.0	0.8
Acacia myrtifolia		4.0	1.5
Xanthorrhoea preissii		4.0	1.4
Patersonia occidentalis var. *latifolia*		3.0	1.0
Mesomelaena tetragona		3.0	1.0
Opercularia hispidula		2.0	0.4
Callistachys lanceolata		1.0	4.0
Leucopogon verticillatus		1.0	2.0
Acacia extensa		1.0	1.5
Beaufortia sparsa		1.0	1.0
**Briza maxima*	Weed	1.0	0.4
**Anthoxanthum odoratum*	Weed	1.0	0.3
**Hypochaeris glabra*	Weed	1.0	0.1
Acacia hastulata		0.5	1.0
Comesperma virgatum		0.5	0.5
Taxandria linearifolia		0.5	0.5
Scaevola calliptera		0.2	0.4
Viminaria juncea		0.1	2.0
Prasophyllum brownii		0.1	1.0
Billardiera floribunda		0.1	0.8
Johnsonia lupulina		0.1	0.8
Pterostylis vittata		0.1	0.4
Hypolaena caespitosa		0.1	0.4
Dampiera trigona		0.1	0.3
Dampiera heteroptera	P3 (DBCA list)	0.1	0.3
Drosera menziesii		0.1	0.3
**Holcus lanatus*	Weed	0.1	0.3
**Lotus subbiflorus*	Weed	0.1	0.1
Xanthosia tasmanica		0.1	0.1

Site details			
Site	**BEE119**	**Position (WGS84)**	115.2704136260927, -34.174440046804186
Slope	gentle	**Topography**	sandy rise
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Agonis flexuosa* var. *flexuosa* low open forest over *Astartea scoparia* tall sparse shrubland over *Leptocarpus scariosus, Astartea scoparia* and *Xyris lanata* tall rushland over **Briza maxima* and **B. minor* low grassland.
Habitat	woodland
Disturbance	weed infestation, historic clearing

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	55.0	**Tree cover (%)**	40.0
Shrub cover (%)	7.0	**Grass cover (%)**	15.0
Herb cover (%)	0.2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Andrew Perkins

Species (25)	Status	Cover (%)	Height (m)
Agonis flexuosa var. *flexuosa*		40.0	6.0
Leptocarpus scariosus		10.0	1.5
Astartea scoparia		7.0	2.5
Evandra aristata		3.0	1.4
**Briza maxima*	Weed	2.5	0.5
Xyris lanata		0.5	0.8
Xanthorrhoea preissii		0.2	2.0
Caladenia attingens subsp. *attingens*		0.2	0.4
**Hypochaeris glabra*	Weed	0.2	0.1
Adenanthos obovatus		0.1	0.9
**Anthoxanthum odoratum*	Weed	0.1	0.5
Thelymitra flexuosa		0.1	0.3
**Disa bracteata*	Weed	0.1	0.3
Microtis media subsp. *media*		0.1	0.3
**Juncus articulatus*	Weed	0.1	0.3
**Rumex acetosella*	Weed	0.1	0.3
**Trifolium subterraneum*	Weed	0.1	0.2
**Lagurus ovatus*	Weed	0.1	0.2
**Briza minor*	Weed	0.1	0.1
**Geranium dissectum*	Weed	0.1	0.1
**Lotus subbiflorus*	Weed	0.1	0.1
Aphelia cyperoides		0.1	0.1
**Romulea rosea* var. *australis*	Weed	0.1	0.1
**Trifolium campestre* var. *campestre*	Weed	0.1	0.1
**Lysimachia arvensis*	Weed	0.1	0.02

Site details			
Site	**BEE122**	**Position (WGS84)**	115.2970974986583, -34.201085739800895
Slope	negligible	**Topography**	seasonally wet area
Soil colour	brown, black	**Soil texture**	loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Xanthorrhoea preissii* and *Dasypogon bromeliifolius* mid sparse grassland over *Hypolaena caespitosa, Anarthria scabra* and *A. prolifera* low closed rushland/ grassland over **Hypochaeris glabra* and *Microtis media* subsp. *media* low isolated forbs.
Habitat	grassland
Disturbance	weed infestation

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	99.0	**Tree cover (%)**	0.0
Shrub cover (%)	0.0	**Grass cover (%)**	90.0
Herb cover (%)	10.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	NLR

Species (22)	Status	Cover (%)	Height (m)
Hypolaena caespitosa		75.0	0.3
Xanthorrhoea preissii		10.0	1.5
Dasypogon bromeliifolius		5.0	0.6
Anarthria scabra		1.0	0.5
Anarthria prolifera		1.0	0.3
**Hypochaeris glabra*	Weed	0.5	0.5
**Briza maxima*	Weed	0.5	0.4
Melanostachya ustulata		0.5	0.3
Microtis media subsp. *media*		0.3	0.4
Thelymitra graminea		0.2	0.8
Dampiera leptoclada		0.2	0.2
Boronia crenulata subsp. *crenulata*		0.1	1.1
Acacia pulchella var. *pulchella*		0.1	0.5
Drosera menziesii		0.1	0.15
Sphaerolobium drummondii		0.1	0.15
**Briza minor*	Weed	0.1	0.1
Chamaescilla corymbosa var. *corymbosa*		0.1	0.1
Stylidium megacarpum		0.1	0.1
**Romulea rosea* var. *australis*	Weed	0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.1
Philydrella pygmaea subsp. *pygmaea*		0.1	0.05
Burchardia multiflora		0.0	0.2

Site details			
Site	**BEE201**	**Position (WGS84)**	115.29788045223364, -34.20071668460425
Slope	negligible	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Melaleuca preissiana* tall forest over *Taxandria parviceps* and *Xanthorrhoea preissii* tall open shrubland over *Anarthria scabra, A. prolifera* and *Hypolaena caespitosa* mid sparse grassland over *Lindsaea linearis* low isolated forbs.
Habitat	forest
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	60.0	**Tree cover (%)**	55.0
Shrub cover (%)	10.0	**Grass cover (%)**	5.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Andrew Perkins

Species (9)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		50.0	15.0
Taxandria parviceps		5.0	3.5
Melaleuca preissiana		2.5	6.0
Anarthria scabra		2.0	1.5
Hypolaena caespitosa		1.0	0.3
Opercularia hispidula		0.5	0.5
Xanthorrhoea preissii		0.1	3.5
Anarthria prolifera		0.1	0.4
Lindsaea linearis		0.1	0.1

Site details			
Site	**BEE203**	**Position (WGS84)**	115.3144557495744, -34.199694218145865
Slope	gentle	**Topography**	sandy rise
Soil colour	brown	**Soil texture**	Loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Corymbia calophylla* and *Eucalyptus marginata* subsp. *marginata* tall woodland over *Taxandria parviceps* and *Acacia pulchella* var. *pulchella* mid isolated shrubs over *Pteridium esculentum* subsp. *esculentum, Patersonia occidentalis* var. *latifolia* and *Cyathochaeta equitans* mid grassland over *Hibbertia cunninghamii*, *Opercularia hispidula* and *Cryptostylis ovata* low isolated forbs.
Habitat	woodland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	70.0	**Tree cover (%)**	50.0
Shrub cover (%)	0.2	**Grass cover (%)**	17.0
Herb cover (%)	4.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Andrew Perkins

Species (14)	Status	Cover (%)	Height (m)
Corymbia calophylla		35.0	28.0
Eucalyptus marginata subsp. *marginata*		15.0	25.0
Cyathochaeta equitans		10.0	0.5
Patersonia occidentalis var. *latifolia*		5.0	0.8
Opercularia hispidula		3.0	0.5
Pteridium esculentum subsp. *esculentum*		2.0	1.5
Hibbertia cunninghamii		1.0	0.3
Hypolaena caespitosa		0.2	0.4
Macrozamia riedlei		0.1	1.0
Taxandria parviceps		0.1	1.0
Hovea elliptica		0.1	1.0
Acacia pulchella var. *pulchella*		0.1	0.9
Cryptostylis ovata		0.1	0.4
Amphipogon amphipogonoides		0.1	0.1

Site details			
Site	**BEE251**	**Position (WGS84)**	115.3080925845444, -34.225968822035085
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Taxandria inundata* and *Astartea scoparia* tall closed shrubland over *Calothamnus lateralis* var. *crassus* scattered shrubs over *Leptocarpus scariosus, Machaerina juncea* and *Juncus pallidus* tall rushland.
Habitat	shrubland
Disturbance	grazing-medium, evidence of feral animals, large-scale clearing, weed infestation

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	50.0
Herb cover (%)	3.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (10)	Status	Cover (%)	Height (m)
Taxandria inundata		75.0	3.0
Leptocarpus scariosus		35.0	1.2
Machaerina juncea		10.0	0.4
Juncus pallidus		5.0	1.0
**Epilobium ciliatum*	Weed	3.0	0.2
Astartea scoparia		2.0	2.5
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.5	2.0
Machaerina articulata		0.5	0.6
Hakea linearis		0.1	1.0
Liparophyllum lasiospermum		0.1	0.1

Site details			
Site	**BEE252**	**Position (WGS84)**	115.3068829561135, -34.225670513167465
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Taxandria juniperina* low forest over *Leptocarpus scariosus, Machaerina juncea* and *Juncus pallidus* tall rushland.
Habitat	shrubland
Disturbance	evidence of feral animals, grazing-low, historic clearing

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (4)	Status	Cover (%)	Height (m)
Taxandria juniperina		75.0	15.0
Leptocarpus scariosus		40.0	1.4
Juncus pallidus		10.0	2.0
Machaerina juncea		5.0	0.8

Site details			
Site	**BEE256**	**Position (WGS84)**	115.30627809933044, -34.23026361048598
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Melaleuca rhaphiophylla* low forest.
Habitat	waterhole
Disturbance	

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	75.0
Shrub cover (%)	0.0	**Grass cover (%)**	0.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (3)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		70.0	12.0
Leptocarpus scariosus		1.0	1.2
Cycnogeton huegelii		1.0	0.3

Site details			
Site	**BEE259**	**Position (WGS84)**	115.31106641135545, -34.22935558603347
Slope	gentle	**Topography**	seasonally wet area
Soil colour	black, whitish	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Melaleuca rhaphiophylla* low closed forest over *Lemna disperma* aquatic forbland.
Habitat	waterhole
Disturbance	grazing-medium, livestock tracks

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	75.0
Shrub cover (%)	0.0	**Grass cover (%)**	0.0
Herb cover (%)	40.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (3)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		75.0	12.0
Lemna disperma		20.0	0.01
Microtis media subsp. *media*		0.1	0.2

Site details			
Site	**BEE262**	**Position (WGS84)**	115.30576319776839, -34.23063834624285
Slope	gentle	**Topography**	depression
Soil colour	black, whitish	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Machaerina juncea* and *Leptocarpus scariosus* tall sedgeland over *Myriophyllum salsugineum* and *Ornduffia albiflora* sparse aquatic forbland.
Habitat	waterhole
Disturbance	grazing-low, evidence of feral animals, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	55.0	**Tree cover (%)**	0.0
Shrub cover (%)	0.0	**Grass cover (%)**	50.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (9)	Status	Cover (%)	Height (m)
Machaerina juncea		30.0	0.6
Leptocarpus scariosus		20.0	1.4
Myriophyllum salsugineum		4.0	0.2
Lepidosperma longitudinale		3.0	0.3
Ornduffia albiflora		2.0	0.3
Juncus pallidus		1.0	1.2
Alternanthera denticulata var. *denticulata*		1.0	0.3
**Epilobium ciliatum*	Weed	1.0	0.2
Cycnogeton huegelii		0.5	0.3

Site details			
Site	**BEE264**	**Position (WGS84)**	115.30796000471834, -34.23370220944731
Slope	gentle	**Topography**	depression
Soil colour	black, whitish	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (24 Oct 2023)

Site description	*Lepidosperma longitudinale, Machaerina juncea* and *Leptocarpus scariosus* tall sedgeland.
Habitat	waterhole
Disturbance	grazing-high, evidence of feral animals, historic clearing

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	0.0
Shrub cover (%)	2.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (7)	Status	Cover (%)	Height (m)
Lepidosperma longitudinale		20.0	0.6
Machaerina juncea		15.0	0.8
Leptocarpus scariosus		10.0	2.0
Hakea linearis		2.0	2.0
Juncus pallidus		1.0	1.5
Myriophyllum salsugineum		1.0	0.3
Alternanthera denticulata var. *denticulata*		0.1	0.2

Site details			
Site	**BEE265**	**Position (WGS84)**	115.30801796072063, -34.23311700200854
Slope	negligible	**Topography**	depression
Soil colour	white, black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Astartea scoparia, Taxandria inundata* and *Melaleuca rhaphiophylla* tall closed shrubland over *Machaerina juncea* and *Leptocarpus scariosus* tall rushland.
Habitat	waterhole
Disturbance	grazing-low

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	90.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	40.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (7)	Status	Cover (%)	Height (m)
Taxandria inundata		30.0	3.0
Astartea scoparia		30.0	3.0
Machaerina juncea		25.0	1.0
Leptocarpus scariosus		15.0	2.0
Melaleuca rhaphiophylla		10.0	4.0
Hakea linearis		1.0	1.0
Juncus pallidus		0.1	1.0

Site details			
Site	**BEE266**	**Position (WGS84)**	115.3070876388045, -34.233437624612435
Slope	gentle	**Topography**	depression
Soil colour	black, white	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (24 Oct 2023)

Site description	*Melaleuca rhaphiophylla* low closed forest over *Lepidosperma longitudinale* and *Machaerina rubiginosa* mid sparse sedgeland.
Habitat	forest
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	80.0
Shrub cover (%)	0.1	**Grass cover (%)**	5.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	24 Oct 2023	10m x 10m	Brody Loneragan

Species (3)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		80.0	8.0
Lepidosperma longitudinale		3.0	1.2
Machaerina rubiginosa		2.0	1.5

Site details			
Site	**BEE271**	**Position (WGS84)**	115.31233154839157, -34.22661362245133
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina* low woodland over *Leptocarpus scariosus* and *Isolepis hookeriana* tall open rushland over **Briza minor* scattered mixed grasses.
Habitat	waterhole
Disturbance	evidence of feral animals, grazing-low, large-scale clearing, weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	55.0	**Tree cover (%)**	0.0
Shrub cover (%)	50.0	**Grass cover (%)**	28.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (11)	Status	Cover (%)	Height (m)
Taxandria juniperina		50.0	12.0
Leptocarpus scariosus		28.0	1.4
Isolepis hookeriana		0.2	0.1
**Solanum nigrum*	Weed	0.1	0.5
**Ehrharta longiflora*	Weed	0.1	0.5
**Holcus lanatus*	Weed	0.1	0.2
Cycnogeton huegelii		0.1	0.2
Microtis media subsp. *media*		0.1	0.2
**Briza minor*	Weed	0.1	0.2
Pterostylis erubescens		0.1	0.1
**Lotus subbiflorus*	Weed	0.1	0.1

Site details			
Site	**BEE274**	**Position (WGS84)**	115.3082427242041, -34.219017793375414
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Melaleuca rhaphiophylla* low closed forest over *Astartea scoparia* isolated tall shrubs over *Juncus pallidus* isolated clumps of rushes.
Habitat	waterhole
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	75.0	**Grass cover (%)**	5.0
Herb cover (%)	0.0		

Sample and effort summary

Sample method	Visit	Sample date	Dimensions	Observer
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (5)	Status	Cover (%)	Height (m)
Melaleuca rhaphiophylla		75.0	10.0
Juncus pallidus		5.0	1.4
Astartea scoparia		2.0	3.0
Leptocarpus scariosus		1.0	1.2
Cycnogeton huegelii		1.0	0.3

Site details			
Site	**BEE275**	**Position (WGS84)**	115.3022438301996, -34.219559482365646
Slope	negligible	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina* and *Melaleuca rhaphiophylla* low woodland over *Cycnogeton huegelii* and *Leptocarpus scariosus* open aquatic herbland.
Habitat	waterhole
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	45.0	**Tree cover (%)**	0.0
Shrub cover (%)	45.0	**Grass cover (%)**	5.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (5)	Status	Cover (%)	Height (m)
Taxandria juniperina		30.0	15.0
Melaleuca rhaphiophylla		25.0	12.0
Leptocarpus scariosus		5.0	14.0
Cycnogeton huegelii		5.0	0.4
Microtis media subsp. *media*		0.1	0.2

Site details			
Site	**BEE276**	**Position (WGS84)**	115.30260397981489, -34.21942475167927
Slope	negligible	**Topography**	depression
Soil colour	brown	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina* and *Melaleuca preissiana* low woodland over *Kunzea spathulata* sparse tall shrubland over *Hibbertia cuneiformis* isolated low shrubs.
Habitat	waterhole
Disturbance	grazing-medium, historic clearing, weed infestation

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	60.0	**Tree cover (%)**	0.0
Shrub cover (%)	60.0	**Grass cover (%)**	1.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (14)	Status	Cover (%)	Height (m)
Taxandria juniperina		50.0	15.0
Kunzea spathulata		5.0	4.0
Melaleuca preissiana		4.0	10.0
Hibbertia cuneiformis		3.0	2.2
Astartea scoparia		1.0	1.0
**Hypochaeris glabra*	Weed	0.1	0.05
Senecio picridioides		0.1	0.2
**Anthoxanthum odoratum*	Weed	0.1	0.2
**Vulpia bromoides*	Weed	0.1	0.2
**Aira caryophyllea*	Weed	0.1	0.1
Phyllangium divergens		0.1	0.1
Rhodanthe citrina		0.01	0.1
**Solanum nigrum*	Weed	0.01	0.1
Microtis media subsp. *media*		0.0	0.2

Site details			
Site	**BEE282**	**Position (WGS84)**	115.32094641465565, -34.24552530477984
Slope	gentle	**Topography**	creek
Soil colour	orange, brown	**Soil texture**	Loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Corymbia calophylla* and *Agonis flexuosa* var. *flexuosa* open forest over *Cyathochaeta equitans* closed sedgeland and *Opercularia hispidula* sparse herbland.
Habitat	forest
Disturbance	grazing-low, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	71.0
Shrub cover (%)	0.0	**Grass cover (%)**	80.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	Brody Loneragan

Species (15)	Status	Cover (%)	Height (m)
Cyathochaeta equitans		80.0	0.4
Corymbia calophylla		25.0	14.0
Eucalyptus marginata subsp. *marginata*		25.0	14.0
Agonis flexuosa var. *flexuosa*		20.0	12.0
Opercularia hispidula		5.0	0.4
Machaerina articulata		2.0	0.4
Hypolaena pubescens		1.0	0.3
**Holcus lanatus*	Weed	1.0	0.2
**Hypochaeris glabra*	Weed	1.0	0.2
**Geranium purpureum*	Weed	1.0	0.1
Melaleuca preissiana		0.2	10.0
Hibbertia cunninghamii		0.1	0.5
Dasypogon bromeliifolius		0.1	0.4
Caesia micrantha		0.1	0.3
**Briza maxima*	Weed	0.1	0.3

Site details			
Site	**BEE286**	**Position (WGS84)**	115.2788294041181, -34.19061556349582
Slope	gentle	**Topography**	depression
Soil colour	black, white	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Astartea scoparia* tall open shrubland over *Machaerina rubiginosa* and *Leptocarpus scariosus* tall rushland over **Mentha pulegium* and *Cyathochaeta clandestina* open forbland.
Habitat	waterhole
Disturbance	grazing-high, large-scale clearing, weed infestation

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	68.0	**Tree cover (%)**	0.0
Shrub cover (%)	20.0	**Grass cover (%)**	32.0
Herb cover (%)	25.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	26 Oct 2023	10m x 10m	Brody Loneragan

Species (9)	Status	Cover (%)	Height (m)
Astartea scoparia		15.0	4.0
Machaerina rubiginosa		10.0	1.5
Leptocarpus scariosus		6.0	2.0
**Mentha pulegium*	Weed	5.0	0.2
Cyathochaeta clandestina		4.0	1.8
Alternanthera denticulata var. *denticulata*		1.0	0.2
?*Billardiera variifolia*		0.1	1.0
**Rumex crispus*	Weed	0.1	0.2
Xyris lacera		0.0	1.8

Site details			
Site	**BEE293**	**Position (WGS84)**	115.2786783582500, -34.158882636646126
Slope	gentle	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (27 Oct 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* woodland over *Xanthorrhoea preissii, Hibbertia hypericoides* subsp. *hypericoides* and *Acacia extensa* low open shrubland over *Anarthria scabra, A. prolifera* and *Mesomelaena tetragona* mid sedgeland.
Habitat	woodland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	85.0	**Tree cover (%)**	25.0
Shrub cover (%)	8.0	**Grass cover (%)**	65.0
Herb cover (%)	4.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	27 Oct 2023	10m x 10m	Brody Loneragan

Species (47)	Status	Cover (%)	Height (m)
Anarthria scabra		63.0	1.0
Eucalyptus marginata subsp. *marginata*		23.0	14.0
Hibbertia hypericoides subsp. *hypericoides*		8.0	0.5
Corymbia calophylla		4.0	10.0
Xanthorrhoea preissii		3.0	2.0
Mesomelaena tetragona		3.0	0.5
Anarthria prolifera		3.0	0.4
Allocasuarina fraseriana		2.0	3.0
Banksia grandis		1.0	3.0
Acacia extensa		1.0	1.2
Schoenus efoliatus		1.0	1.0
Leucopogon australis		1.0	1.0
Morelotia octandra		1.0	0.5
Dasypogon bromeliifolius		1.0	0.5
Andersonia sprengelioides		1.0	0.2
Gompholobium ovatum		1.0	0.2
Orianthera serpyllifolia		1.0	0.2
Gompholobium tomentosum		0.5	3.0
Patersonia occidentalis var. *latifolia*		0.5	0.5
Grevillea manglesioides subsp. *manglesioides*		0.1	1.5
Patersonia umbrosa var. *xanthina*		0.1	0.9
Adenanthos obovatus		0.1	0.5
Stylidium scandens		0.1	0.3
Macrozamia riedlei		0.1	0.3
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.3
Styphelia sp. Nannup (R.D. Royce 3978)		0.1	0.3
Thelymitra graminea		0.1	0.3
Dampiera leptoclada		0.1	0.2
Scaevola calliptera		0.1	0.2
Hovea trisperma var. *trisperma*		0.1	0.2
Actinotus glomeratus		0.1	0.1
Gompholobium knightianum		0.1	0.1
Acacia uliginosa		0.1	0.1
Kunzea spathulata		0.01	2.0
Platysace filiformis		0.01	0.5
Drosera pallida		0.01	0.5
Burchardia congesta		0.01	0.4
Lomandra preissii		0.01	0.3
Lomandra caespitosa		0.01	0.3
Philotheca spicata		0.01	0.3
Stackhousia monogyna		0.01	0.3
Billardiera laxiflora		0.01	0.2
Thelymitra crinita		0.01	0.2
Lyperanthus serratus		0.01	0.2
Lindsaea linearis		0.01	0.1
Hypolaena caespitosa		0.01	0.1

Pentapeltis peltigera	0.01	0.1

Site details			
Site	**BEE294**	**Position (WGS84)**	115.2777696684146, -34.158794465829516
Slope	gentle	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (27 Oct 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* mid woodland over *Taxandria parviceps, Agonis flexuosa* var. *flexuosa* and *Xanthorrhoea preissii* tall sparse shrubland over *Anarthria scabra, A. prolifera* and *Dasypogon bromeliifolius* mid sedgeland.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	60.0	**Tree cover (%)**	20.0
Shrub cover (%)	3.0	**Grass cover (%)**	50.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	27 Oct 2023	10m x 10m	Brody Loneragan

Species (39)	Status	Cover (%)	Height (m)
Anarthria scabra		55.0	1.0
Eucalyptus marginata subsp. *marginata*		15.0	14.0
Corymbia calophylla		8.0	12.0
Xanthorrhoea preissii		7.0	2.0
Anarthria prolifera		5.0	0.4
Taxandria parviceps		2.0	2.0
Hibbertia hypericoides subsp. *hypericoides*		2.0	0.2
Agonis flexuosa var. *flexuosa*		1.0	2.0
Mirbelia dilatata		1.0	1.3
Xanthorrhoea gracilis		1.0	0.8
Dasypogon bromeliifolius		1.0	0.5
Hypolaena viridis		0.5	0.5
Acacia myrtifolia		0.1	1.5
Acacia extensa		0.1	1.0
Schoenus efoliatus		0.1	0.6
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.5
Stackhousia monogyna		0.1	0.4
Styphelia sp. Nannup (R.D. Royce 3978)		0.1	0.4
Platysace filiformis		0.1	0.3
Pericalymma ellipticum var. *ellipticum*		0.1	0.3
Philotheca spicata		0.1	0.3
Gompholobium tomentosum		0.1	0.2
Acacia uliginosa		0.1	0.2
Gompholobium scabrum		0.1	0.2
Hovea trisperma var. *trisperma*		0.1	0.2
Dampiera leptoclada		0.1	0.2
**Disa bracteata*	Weed	0.1	0.2
Siloxerus humifusus		0.1	0.1
Actinotus glomeratus		0.1	0.1
Bossiaea praetermissa		0.1	0.1
Scaevola calliptera		0.1	0.1
Philotheca spicata		0.02	0.2
Bossiaea rufa		0.01	0.5
Burchardia congesta		0.01	0.3
Drosera pallida		0.01	0.3
**Briza maxima*	Weed	0.01	0.2
Stylidium scandens		0.01	0.2
Billardiera laxiflora		0.01	0.2
Lindsaea linearis		0.01	0.1

Site details			
Site	**BEE304**	**Position (WGS84)**	115.3063727366052, -34.24056066109263
Slope	gentle	**Topography**	sandy rise
Soil colour	grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Agonis flexuosa* var. *flexuosa* low open woodland over *Melaleuca thymoides* and *Jacksonia horrida* open shrubland over *Phlebocarya ciliata* open herbland and *Anarthria scabra* sparse grassland.
Habitat	woodland
Disturbance	grazing-medium, weed infestation

Vegetation condition	Excellent	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	35.0	**Tree cover (%)**	5.0
Shrub cover (%)	15.0	**Grass cover (%)**	12.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Beth Arbery

Species (18)	Status	Cover (%)	Height (m)
Melaleuca thymoides		10.0	1.1
Phlebocarya ciliata		8.0	0.3
Anarthria scabra		5.0	0.8
Agonis flexuosa var. *flexuosa*		4.0	4.0
Dasypogon bromeliifolius		4.0	0.5
**Anthoxanthum odoratum*	Weed	3.0	0.5
Eucalyptus marginata subsp. *marginata*		2.0	5.0
Nuytsia floribunda		2.0	5.0
Jacksonia horrida		2.0	2.0
**Briza maxima*	Weed	1.0	5.0
Lyginia imberbis		1.0	0.5
Adenanthos obovatus		0.5	0.6
Lechenaultia expansa		0.5	0.3
Dampiera pedunculata		0.1	0.5
Burchardia congesta		0.1	0.5
Bossiaea praetermissa		0.1	0.5
Scaevola calliptera		0.1	0.3
Stylidium repens		0.01	0.1

Site details			
Site	**BEE312**	**Position (WGS84)**	115.3132601322184, -34.241734516050386
Slope	gentle	**Topography**	sandy rise
Soil colour	grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Melaleuca thymoides* and *Jacksonia horrida* open shrubland over *Phlebocarya ciliata* open herbland and *Anarthria scabra* and *A. prolifera* open grassland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	31.0	**Grass cover (%)**	12.0
Herb cover (%)	15.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	16 Nov 2023	10m x 10m	Beth Arbery

Species (15)	Status	Cover (%)	Height (m)
Melaleuca thymoides		15.0	1.2
Phlebocarya ciliata		10.0	0.5
Anarthria scabra		5.0	1.0
Anarthria prolifera		5.0	0.4
Jacksonia horrida		3.0	2.0
Lyginia imberbis		2.0	0.5
Sphenotoma gracilis		1.0	1.0
Adenanthos obovatus		1.0	1.0
Johnsonia lupulina		1.0	1.0
**Briza maxima*	Weed	1.0	0.5
Hypocalymma ericifolium		0.5	0.4
Dampiera pedunculata		0.5	0.3
Pimelea longiflora		0.1	1.2
Stylidium repens		0.1	0.2
Lechenaultia expansa		0.1	0.1

Site details			
Site	**BEE374**	**Position (WGS84)**	115.31278860124927, -34.16083027118758
Slope	gentle	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* open forest over *Acacia myrtifolia, A. divergens* and *Taxandria linearifolia* tall shrubland over *Anarthria prolifera* tall rushland.
Habitat	forest
Disturbance	vehicle tracks

Vegetation condition	Pristine	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	85.0	**Tree cover (%)**	45.0
Shrub cover (%)	66.0	**Grass cover (%)**	45.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Beth Arbery

Species (38)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		32.0	25.0
Anarthria prolifera		25.0	5.0
Corymbia calophylla		18.0	25.0
Lindsaea linearis		15.0	0.2
Acacia myrtifolia		10.0	2.5
Xanthorrhoea preissii		10.0	2.0
Acacia divergens		10.0	1.2
Taxandria linearifolia		8.0	2.2
Mesomelaena tetragona		5.0	1.0
Dampiera leptoclada		5.0	0.5
Mirbelia dilatata		4.0	2.1
Lepidosperma sp. Blackwood (R. Davis 7696)		2.0	1.0
Tyrbastes glaucescens		2.0	0.4
Amphipogon laguroides subsp. *laguroides*		1.0	6.0
Comesperma virgatum		1.0	1.5
Petrophile diversifolia		1.0	1.0
Sphaerolobium medium		1.0	1.0
Boronia fastigiata		1.0	0.7
Styphelia sp. Nannup (R.D. Royce 3978)		1.0	0.5
Lomandra pauciflora		1.0	0.5
Stylidium scandens		0.5	1.0
Viminaria juncea		0.5	1.0
Grevillea manglesioides subsp. *manglesioides*		0.5	1.0
Pimelea rosea subsp. *rosea*		0.5	0.5
Hovea trisperma var. *trisperma*		0.5	0.4
Thysanotus arenarius		0.1	1.0
Johnsonia lupulina		0.1	1.0
Thysanotus dichotomus		0.1	1.0
Stylidium amoenum		0.1	0.7
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.7
Adenanthos obovatus		0.1	0.5
Poranthera huegelii		0.1	0.4
Hibbertia cunninghamii		0.1	0.2
Hypocalymma minus		0.1	0.2
Kennedia carinata		0.1	0.1
Scaevola calliptera		0.1	0.1
Billardiera variifolia		0.01	0.7
Cassytha racemosa forma *pilosa*		0.01	0.5

Site details			
Site	**BEE375**	**Position (WGS84)**	115.3124305828615, -34.16015811518499
Slope	gentle	**Topography**	drainage line
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Corymbia calophylla* mid woodland over *Taxandria parviceps, Xanthorrhoea preissii* and *Hakea lasianthoides* tall closed shrubland over *Anarthria prolifera, Lepidosperma* sp. Blackwood (R. Davis 7696) and *Lomandra pauciflora* tall closed rushland.
Habitat	shrubland
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	95.0	**Tree cover (%)**	20.0
Shrub cover (%)	75.0	**Grass cover (%)**	95.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	15 Nov 2023	10m x 10m	Beth Arbery

Species (29)	Status	Cover (%)	Height (m)
Anarthria prolifera		45.0	0.5
Corymbia calophylla		20.0	25.0
Taxandria parviceps		12.0	3.0
Lepidosperma sp. Blackwood (R. Davis 7696)		10.0	1.0
Xanthorrhoea preissii		7.0	2.0
Lomandra pauciflora		5.0	5.0
Hakea lasianthoides		5.0	4.0
Mesomelaena tetragona		3.0	0.5
Aotus gracillima		2.0	3.0
Hypocalymma minus		2.0	0.4
Hakea tuberculata		1.0	1.5
Taxandria linearifolia		1.0	1.3
Conospermum flexuosum subsp. *laevigatum*		1.0	1.0
Pimelea rosea subsp. *rosea*		1.0	1.0
Boronia fastigiata		1.0	1.0
Amphipogon laguroides subsp. *laguroides*		1.0	0.8
Hypolaena grandiuscula		1.0	0.7
Adenanthos obovatus		1.0	0.5
Cassytha racemosa forma *pilosa*		0.1	2.0
Petrophile diversifolia		0.1	1.5
Sporadanthus strictus		0.1	1.2
Dampiera heteroptera	P3 (DBCA list)	0.1	1.0
Scaevola calliptera		0.1	0.1
Stylidium squamosotuberosum		0.1	0.1
Grevillea manglesioides subsp. *manglesioides*		0.0	2.1
Indeterminate		0.0	1.5
Patersonia occidentalis		0.0	1.2
Tyrbastes glaucescens		0.0	0.4
Liparophyllum lasiospermum		0.0	0.2

Site details			
Site	**BEE376**	**Position (WGS84)**	115.26882255628013, -34.22094754018116
Slope	gentle	**Topography**	depression
Soil colour	grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Taxandria juniperina* low woodland over *Astartea scoparia, Hakea ceratophylla* and *Grevillea papillosa* mid closed shrubland over *Hypolaena pubescens* and *Melanostachya ustulata* mid sparse rushland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	90.0	**Tree cover (%)**	15.0
Shrub cover (%)	85.0	**Grass cover (%)**	10.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	16 Nov 2023	10m x 10m	Jenifer Alford

Species (38)	Status	Cover (%)	Height (m)
Taxandria juniperina		35.0	4.0
Astartea scoparia		35.0	1.8
Hypolaena pubescens		5.0	0.6
Hakea ceratophylla		4.0	1.1
Melanostachya ustulata		3.0	1.1
Grevillea papillosa	P3 (DBCA list)	3.0	1.0
Acacia myrtifolia		2.0	2.3
Xanthorrhoea preissii		2.0	0.6
Kunzea recurva		0.5	2.1
Dasypogon bromeliifolius		0.5	0.6
Desmocladus fasciculatus		0.5	0.5
Chaetanthus leptocarpoides		0.4	0.6
Mirbelia dilatata		0.2	2.4
Leptocarpus tenax		0.2	0.7
Platychorda applanata		0.2	0.7
Synaphea nexosa	P1 (DBCA list)	0.2	0.5
Dampiera pedunculata		0.2	0.5
Hypolaena caespitosa		0.2	0.5
Cytogonidium leptocarpoides		0.2	0.5
Phlebocarya ciliata		0.2	0.3
Eutaxia virgata		0.1	1.2
Xyris roycei		0.1	1.1
Cassytha sp.		0.1	1.1
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.1	1.0
Acacia browniana var. *browniana*		0.1	0.8
Mesomelaena tetragona		0.1	0.7
Leptocarpus coangustatus		0.1	0.6
Hibbertia amplexicaulis		0.1	0.6
Chordifex amblycoleus		0.1	0.5
Boronia spathulata		0.1	0.4
Microtis media subsp. *media*		0.1	0.3
**Juncus microcephalus*	Weed	0.1	0.3
**Hypochaeris glabra*	Weed	0.1	0.2
Conostylis aculeata subsp. *aculeata*		0.1	0.2
Stylidium scandens		0.1	0.2
Actinotus glomeratus		0.1	0.1
**Briza maxima*	Weed	0.1	0.1
Callistachys lanceolata		0.0	3.0

Site details			
Site	**BEE377**	**Position (WGS84)**	115.3138493188799, -34.198926100539225
Slope	gentle	**Topography**	seasonally wet area
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Taxandria juniperina* mid open forest over *Astartea scoparia* tall sparse shrubland over *Leptocarpus scoparius* tall rushland.
Habitat	forest
Disturbance	weed infestation

Vegetation condition	Pristine	**Fire age**	not evident
Total veg. cover (%)	65.0	**Tree cover (%)**	40.0
Shrub cover (%)	5.0	**Grass cover (%)**	20.0
Herb cover (%)	0.2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	25 Oct 2023	10m x 10m	NLR

Species (10)	Status	Cover (%)	Height (m)
Taxandria juniperina		40.0	20.0
Leptocarpus scariosus		20.0	1.5
Astartea scoparia		5.0	5.0
Isolepis cyperoides		0.2	0.2
**Poa annua*	Weed	0.1	0.2
**Briza minor*	Weed	0.1	0.1
**Cotula turbinata*	Weed	0.1	0.1
Aphelia cyperoides		0.1	0.1
Isolepis congrua		0.1	0.1
**Lotus subbiflorus*	Weed	0.1	0.1

Site details			
Site	**BEE378**	**Position (WGS84)**	115.401441769331, -34.15599651330463
Slope	negligible	**Topography**	seasonally wet area
Soil colour	brown	**Soil texture**	Loam
Rock cover (%)	0	**Rock type**	laterite

Observation details - visit 1 (13 Nov 2023)

Site description	*Corymbia calophylla* and *Eucalyptus marginata* subsp. *marginata* tall open forest over *Podocarpus drouynianus, Hovea elliptica* and *Gompholobium ovatum* tall open shrubland over *Lepidosperma leptostachyum* and *Netrostylis* sp. Blackwood River (A.R. Annels 3043) mid sedgeland.
Habitat	forest
Disturbance	none evident

Vegetation condition	Pristine	**Fire age**	moderate (>5 years)
Total veg. cover (%)	70.0	**Tree cover (%)**	32.0
Shrub cover (%)	15.0	**Grass cover (%)**	45.0
Herb cover (%)	6.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	13 Nov 2023	10m x 10m	Beth Arbery

Species (57)	Status	Cover (%)	Height (m)
Lepidosperma leptostachyum		50.0	1.0
Corymbia calophylla		18.0	32.0
Eucalyptus marginata subsp. *marginata*		15.0	32.0
Podocarpus drouynianus		10.0	2.0
Netrostylis sp. Blackwood River (A.R. Annels 3043)	P3 (DBCA list)	5.0	1.0
Opercularia hispidula		3.0	0.5
Hovea elliptica		2.0	1.2
Gompholobium ovatum		2.0	0.3
Orianthera serpyllifolia		2.0	0.1
Patersonia umbrosa var. *xanthina*		1.0	1.0
Hibbertia cunninghamii		1.0	1.0
Leucopogon verticillatus		1.0	1.0
Acacia browniana var. *browniana*		1.0	0.8
Mesomelaena tetragona		1.0	0.3
Pentapeltis peltigera		1.0	0.1
Taxandria parviceps		0.5	1.0
Hibbertia hypericoides subsp. *hypericoides*		0.5	0.7
Xanthorrhoea gracilis		0.2	1.0
Johnsonia lupulina		0.1	5.0
Boronia tenuior		0.1	4.0
Grevillea manglesioides subsp. *manglesioides*		0.1	3.0
Anarthria prolifera		0.1	2.0
Hakea falcata		0.1	2.0
Comesperma virgatum		0.1	1.3
Bossiaea eriocarpa		0.1	1.0
Pimelea rosea subsp. *rosea*		0.1	1.0
Austrostipa semibarbata		0.1	1.0
Gompholobium polymorphum		0.1	0.5
Hakea lissocarpha		0.1	0.3
Thysanotus arenarius		0.1	0.3
Chorizema carinatum	(P3 DBCA list)	0.1	0.3
Dampiera leptoclada		0.1	0.3
Adenanthos obovatus		0.1	0.3
Petrophile diversifolia		0.1	0.2
Leucopogon interstans		0.1	0.2
Leucopogon capitellatus		0.1	0.2
Styphelia sp. Nannup (R.D. Royce 3978)		0.1	0.2
Acacia alata		0.1	0.2
Lomandra pauciflora		0.1	0.2
Billardiera variifolia		0.1	0.2
Bossiaea praetermissa		0.1	0.1
Scaevola calliptera		0.1	0.1
Lindsaea linearis		0.1	0.1
Tetrarrhena laevis		0.1	0.1
Goodenia eatoniana		0.1	0.05
Cassytha racemosa forma *pilosa*		0.01	1.0

Caesia micrantha	0.01	1.0
Thelymitra crinita	0.01	0.5
Stylidium amoenum var. *caulescens*	0.01	0.3
Stackhousia huegelii	0.01	0.3
Drosera huegelii	0.01	0.2
Lomandra integra	0.01	0.2
Hypolaena viridis	0.01	0.2
Centrolepis aristata	0.01	0.1
Goodenia micrantha	0.01	0.01
Levenhookia pusilla	0.01	0.01
Siloxerus humifusus	0.01	0.01

Site details			
Site	**BEE379**	**Position (WGS84)**	115.40218823289692, -34.15618188365698
Slope	gentle	**Topography**	seasonally wet area
Soil colour	grey	**Soil texture**	Clay loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (13 Nov 2023)

Site description	*Corymbia calophylla* and *Eucalyptus marginata* subsp. *marginata* mid woodland over *Kingia australis, Taxandria parviceps* and *Acacia extensa* tall open shrubland over *Mesomelaena tetragona* and *Anarthria prolifera* mid rushland/herbland.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Pristine	**Fire age**	moderate (>5 years)
Total veg. cover (%)	68.0	**Tree cover (%)**	15.0
Shrub cover (%)	25.0	**Grass cover (%)**	40.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	13 Nov 2023	10m x 10m	Beth Arbery

Species (73)	Status	Cover (%)	Height (m)
Kingia australis		15.0	3.5
Corymbia calophylla		14.0	25.0
Eucalyptus marginata subsp. *marginata*		10.0	25.0
Taxandria parviceps		8.0	3.0
Mesomelaena tetragona		8.0	1.0
Xanthorrhoea preissii		5.0	1.9
Patersonia umbrosa var. *xanthina*		5.0	0.7
Anarthria prolifera		5.0	0.3
Lindsaea linearis		3.0	0.1
Acacia extensa		2.0	2.0
Hakea ceratophylla		1.0	1.0
Bossiaea eriocarpa		1.0	1.0
Hibbertia cunninghamii		1.0	1.0
Grevillea quercifolia		1.0	0.3
Styphelia sp. Nannup (R.D. Royce 3978)		0.6	0.3
Gompholobium ovatum		0.5	0.7
Lomandra pauciflora		0.5	0.4
Chorizema carinatum	(P3 DBCA list)	0.2	0.2
Lysiandra calycina		0.1	5.0
Viminaria juncea		0.1	2.0
Hovea elliptica		0.1	1.4
Grevillea manglesioides subsp. *manglesioides*		0.1	1.0
Leucopogon verticillatus		0.1	1.0
Cyathochaeta avenacea		0.1	0.6
Tetrarrhena laevis		0.1	0.5
Gompholobium scabrum		0.1	0.3
Pimelea rosea subsp. *rosea*		0.1	0.3
Leucopogon interstans		0.1	0.3
Sphenotoma capitata		0.1	0.3
Boronia tenuior		0.1	0.3
Tyrbastes glaucescens		0.1	0.3
Pericalymma ellipticum var. *ellipticum*		0.1	0.2
Synaphea obtusata		0.1	0.2
Hakea lissocarpha		0.1	0.2
Pentapeltis peltigera		0.1	0.1
Lepidosperma leptostachyum		0.01	1.0
Xyris roycei		0.01	0.6
Stylidium amoenum var. *caulescens*		0.01	0.5
Amphipogon laguroides subsp. *laguroides*		0.01	0.5
Billardiera variifolia		0.01	0.5
Thysanotus arenarius		0.01	0.3
Lomandra nigricans		0.01	0.3
Johnsonia lupulina		0.01	0.3
Petrophile diversifolia		0.01	0.2
Stackhousia huegelii		0.01	0.2
Banksia dallanneyi subsp. *dallanneyi*		0.01	0.2

Dampiera leptoclada		0.01	0.2
Acacia browniana var. *browniana*		0.01	0.2
?*Scaevola striata* var. *striata*		0.01	0.2
Scaevola calliptera		0.01	0.1
Lechenaultia expansa		0.01	0.1
Indeterminate		0.01	0.05
**Juncus microcephalus*	Weed	0.0	3.0
Calothamnus lehmannii		0.0	1.2
Agrostocrinum scabrum subsp. *scabrum*		0.0	0.6
Sphaerolobium racemulosum		0.0	0.4
Acacia pulchella var. *pulchella*		0.0	0.4
Haemodorum laxum		0.0	0.4
**Briza minor*	Weed	0.0	0.3
Lyperanthus serratus		0.0	0.3
Acacia mooreana		0.0	0.3
Goodenia eatoniana		0.0	0.2
Hypocalymma angustifolium		0.0	0.2
Conostylis aculeata subsp. *aculeata*		0.0	0.2
Eutaxia myrtifolia		0.0	0.2
Hypolaena viridis		0.0	0.2
Xanthosia tasmanica		0.0	0.1
Poranthera huegelii		0.0	0.1
Stylidium androsaceum		0.0	0.1
Actinotus glomeratus		0.0	0.1
**Aira cupaniana*	Weed	0.0	0.05
Drosera nitidula		0.0	0.01
Levenhookia pusilla		0.0	0.01

Site details			
Site	**BEE380**	**Position (WGS84)**	115.4015289452098, -34.156682660363444
Slope	gentle	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* tall open forest over *Kingia australis, Taxandria parviceps* and *Gompholobium ovatum* tall shrubland over *Anarthria prolifera* mid open rushland.

Habitat	forest
Disturbance	vehicle tracks

Vegetation condition	Pristine	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	95.0	**Tree cover (%)**	31.0
Shrub cover (%)	65.0	**Grass cover (%)**	15.0
Herb cover (%)	3.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Beth Arbery

Species (52)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		20.0	25.0
Gompholobium ovatum		15.0	1.1
Corymbia calophylla		11.0	25.0
Kingia australis		8.0	3.5
Taxandria parviceps		8.0	1.8
Dasypogon hookeri		5.0	2.0
Lomandra pauciflora		5.0	0.3
Mesomelaena graciliceps		3.0	0.5
Lindsaea linearis		3.0	0.1
Banksia attenuata		2.0	2.5
Gompholobium scabrum		2.0	0.8
Anarthria prolifera		2.0	0.5
Chorizema carinatum	(P3 DBCA list)	2.0	0.4
Patersonia umbrosa var. *xanthina*		1.0	1.0
Grevillea manglesioides subsp. *manglesioides*		1.0	1.0
Hakea ceratophylla		1.0	1.0
Leptomeria squarrulosa		1.0	0.5
Dampiera leptoclada		1.0	0.5
Netrostylis sp. Jarrah Forest (R. Davis 7391)		1.0	0.5
Eutaxia myrtifolia		1.0	0.5
Sphaerolobium racemulosum		1.0	0.4
Hypolaena grandiuscula		1.0	0.4
Hibbertia cunninghamii		1.0	0.2
Pentapeltis peltigera		1.0	0.1
Stackhousia huegelii		0.5	4.0
Persoonia longifolia		0.5	1.3
Daviesia inflata		0.5	0.9
Acacia browniana var. *browniana*		0.5	0.8
Grevillea quercifolia		0.5	0.4
Styphelia sp. Nannup (R.D. Royce 3978)		0.5	0.3
Adenanthos obovatus		0.5	0.3
Thysanotus arenarius		0.2	0.25
Drosera huegelii		0.1	3.0
Leucopogon verticillatus		0.1	1.4
Comesperma virgatum		0.1	1.0
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.6
Johnsonia lupulina		0.1	0.5
Boronia tenuior		0.1	0.4
Billardiera variifolia		0.1	0.4
Leucopogon interstans		0.1	0.4
Pimelea rosea subsp. *rosea*		0.1	0.4
Acacia mooreana		0.1	0.3
Hovea trisperma var. *trisperma*		0.1	0.3
Stylidium amoenum var. *caulescens*		0.1	0.3
Scaevola calliptera		0.1	0.2
Sphenotoma capitata		0.1	0.2

Amphipogon laguroides subsp. *laguroides*	0.1	0.2
Orianthera serpyllifolia	0.1	0.1
Acanthocarpus preissii	0.1	0.1
Kennedia carinata	0.1	0.1
Petrophile diversifolia	0.0	0.2
Goodenia pulchella	0.0	0.1

Site details			
Site	**BEE381**	**Position (WGS84)**	115.40207537220304, -34.15673628682006
Slope	gentle	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	laterite

Observation details - visit 1 (14 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* mid open forest over *Hovea elliptica, Acacia browniana* var. *browniana* and *Xanthorrhoea preissii* tall shrubland over *Gompholobium ovatum, G. scabrum* and *Boronia tenuior* low shrubland.

Habitat	forest		
Disturbance	none evident		
Vegetation condition	Pristine	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	90.0	**Tree cover (%)**	40.0
Shrub cover (%)	65.0	**Grass cover (%)**	11.0
Herb cover (%)	6.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	14 Nov 2023	10m x 10m	Beth Arbery

Species (53)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		31.0	25.0
Corymbia calophylla		30.0	25.0
Gompholobium ovatum		18.0	0.85
Hovea elliptica		6.0	3.0
Gompholobium scabrum		4.0	1.0
Acacia browniana var. *browniana*		3.0	2.0
Patersonia umbrosa var. *xanthina*		3.0	0.6
Tetrarrhena laevis		3.0	0.5
Hibbertia hypericoides subsp. *hypericoides*		3.0	0.5
Xanthorrhoea preissii		2.0	3.0
Hakea lissocarpha		2.0	1.2
Mesomelaena tetragona		2.0	0.7
Grevillea quercifolia		2.0	0.5
Lomandra pauciflora		2.0	0.4
Boronia tenuior		2.0	0.4
Lindsaea linearis		2.0	0.1
Hibbertia cunninghamii		1.5	1.0
Dasypogon hookeri		1.0	3.5
Leucopogon verticillatus		1.0	1.0
Taxandria parviceps		1.0	0.8
Acacia mooreana		1.0	0.5
Styphelia sp. Nannup (R.D. Royce 3978)		1.0	0.4
Pimelea rosea subsp. *rosea*		1.0	0.4
Anarthria prolifera		1.0	0.4
Leptomeria squarrulosa		1.0	0.3
Acacia extensa		0.5	1.0
Comesperma virgatum		0.5	1.0
Morelotia octandra		0.5	0.5
Thelymitra crinita		0.5	0.5
Amphipogon laguroides subsp. *laguroides*		0.5	0.5
Goodenia eatoniana		0.5	0.5
Hypocalymma angustifolium		0.5	0.5
Dampiera leptoclada		0.5	0.4
Pentapeltis peltigera		0.5	0.2
Sphaerolobium racemulosum		0.5	0.2
Leucopogon interstans		0.5	0.2
Scaevola calliptera		0.5	0.1
Thysanotus arenarius		0.2	0.5
Drosera huegelii		0.2	0.3
Billardiera variifolia		0.1	2.0
Cassytha racemosa forma *pilosa*		0.1	1.0
Petrophile diversifolia		0.1	0.8
Acacia alata		0.1	0.8
Johnsonia lupulina		0.1	0.6
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.5
Chorizema carinatum	(P3 DBCA list)	0.1	0.5

Lomandra purpurea	0.1	0.5
Stylidium amoenum	0.1	0.4
Hovea chorizemifolia	0.1	0.3
Sphenotoma capitata	0.1	0.3
Adenanthos obovatus	0.1	0.2
Netrostylis sp. Jarrah Forest (R. Davis 7391)	0.1	0.1
Orianthera serpyllifolia	0.1	0.1

Site details			
Site	**BEE033R**	**Position (WGS84)**	115.26634365727195, -34.19963680775423
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Allocasuarina fraseriana* and *Nuytsia floribunda* mid open forest over *Adenanthos obovata, Acacia pulchella* var. *pulchella* and *Dasypogon bromeliifolius* low isolated shrubs over *Anarthria scabra*, *A. prolifera* and *Hypolaena exsulca* tall sedgeland/rushland.
Habitat	forest
Disturbance	None evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	60.0	**Tree cover (%)**	35.0
Shrub cover (%)	2.0	**Grass cover (%)**	45.0
Herb cover (%)	12.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (13)	Status	Cover (%)	Height (m)
Anarthria scabra		45.0	1.0
Eucalyptus marginata subsp. *marginata*		40.0	14.0
Phlebocarya ciliata		10.0	0.4
Agonis flexuosa var. *flexuosa*		5.0	10.0
Nuytsia floribunda		5.0	6.0
Allocasuarina fraseriana		2.0	14.0
Acacia pulchella var. *pulchella*		1.0	1.5
Dasypogon bromeliifolius		1.0	0.5
Adenanthos obovatus		1.0	0.5
Adenanthos meisneri		1.0	0.2
Hypolaena exsulca		0.5	0.4
Anarthria prolifera		0.2	0.4
Bossiaea praetermissa		0.1	0.3

Site details			
Site	**BEE069R**	**Position (WGS84)**	115.2840372, -34.18034836
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Astartea scoparia* tall shrubland.
Habitat	shrubland
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	65.0	**Tree cover (%)**	0.0
Shrub cover (%)	65.0	**Grass cover (%)**	0.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	02 Sep 2023	unbounded	Brody Loneragan

Species (1)	Status	Cover (%)	Height (m)
Astartea scoparia		65.0	2.5

Site details			
Site	**BEE071R**	**Position (WGS84)**	115.2839577, -34.2114733
Slope	gentle	**Topography**	sandy rise
Soil colour	whitish, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Agonis flexuosa* var. *flexuosa* and *Banksia attenuata* low woodland over *Adenanthos meisneri, Melaleuca thymoides* and *Banksia ilicifolia* mid sparse shrubland over *Anarthria scabra, Dasypogon bromeliifolius* and *Lyginia imberbis* mid sedgeland.
Habitat	woodland
Disturbance	livestock tracks, weed infestation

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	20.0
Shrub cover (%)	5.0	**Grass cover (%)**	35.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	02 Sep 2023	unbounded	Brody Loneragan

Species (27)	Status	Cover (%)	Height (m)
Anarthria scabra		40.0	1.0
Agonis flexuosa var. *flexuosa*		14.0	6.0
Eucalyptus marginata subsp. *marginata*		9.0	5.0
Adenanthos meisneri		3.0	0.5
Banksia attenuata		2.0	6.0
Nuytsia floribunda		1.0	5.0
Dasypogon bromeliifolius		0.5	0.3
Banksia ilicifolia		0.2	1.6
Hibbertia racemosa		0.2	0.3
Lyginia imberbis		0.2	0.3
Melaleuca thymoides		0.1	1.8
Jacksonia horrida		0.1	1.2
Drosera pallida		0.1	1.0
Leucopogon glabellus		0.1	0.4
Boronia crenulata subsp. *crenulata*		0.1	0.3
Philotheca spicata		0.1	0.2
Thysanotus patersonii		0.1	0.1
**Briza maxima*	Weed	0.1	0.1
Caladenia flava		0.1	0.1
Chamaescilla corymbosa var. *corymbosa*		0.1	0.1
Phlebocarya ciliata		0.1	0.1
Dampiera linearis		0.1	0.1
Caladenia sp.		0.1	0.1
Drosera sp.		0.1	0.1
Isotropis cuneifolia subsp. *cuneifolia*		0.1	0.1
Bossiaea praetermissa		0.1	0.1
Phyllangium paradoxum		0.1	0.1

Site details			
Site	**BEE073R**	**Position (WGS84)**	115.2864969, -34.24547208
Slope	gentle	**Topography**	sandy rise
Soil colour	grey, black, whitish	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (03 Sep 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Agonis flexuosa* var. *flexuosa*, and *Banksia ilicifolia* low open woodland over *Xanthorrhoea preissii, Melaleuca thymoides*, and *Adenanthos obovatus* mid sparse shrubland over **Anthoxanthum odoratum*, **Cotula turbinata* and **Arctotheca calendula* low grassland.
Habitat	open woodland
Disturbance	livestock tracks, grazing-high, weed infestation

Vegetation condition	Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	55.0	**Tree cover (%)**	12.0
Shrub cover (%)	1.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	03 Sep 2023	unbounded	Brody Loneragan

Species (15)	Status	Cover (%)	Height (m)
**Anthoxanthum odoratum*	Weed	45.0	0.2
Agonis flexuosa var. *flexuosa*		5.0	6.0
Eucalyptus marginata subsp. *marginata*		5.0	4.0
**Cotula turbinata*	Weed	5.0	0.1
Quinetia urvillei		5.0	0.1
Nuytsia floribunda		3.0	6.0
Dasypogon bromeliifolius		3.0	0.4
**Arctotheca calendula*	Weed	3.0	0.2
Banksia ilicifolia		2.0	5.0
Xanthorrhoea preissii		2.0	2.0
Melaleuca thymoides		2.0	1.2
Adenanthos obovatus		1.0	0.5
Anarthria scabra		0.1	0.6
**Briza maxima*	Weed	0.1	0.3
Crassula decumbens var. *decumbens*		0.1	0.1

Site details			
Site	**BEE075R**	**Position (WGS84)**	115.2857062, -34.24627062
Slope	gentle	**Topography**	depression
Soil colour	black, grey	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (03 Sep 2023)

Site description	*Melaleuca preissiana* low woodland over *Xanthorrhoea preissii* and *Acacia myrtifolia* mid sparse shrubland over *Haemodorum sparsiflorum, Loxocarya cinerea* and *Morelotia octandra* tall low open rushland and **Anthoxanthum odoratum* and sterile Poaceae sp. low open grassland.
Habitat	waterhole
Disturbance	grazing-low, weed infestation

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	10.0	**Tree cover (%)**	10.0
Shrub cover (%)	5.0	**Grass cover (%)**	45.0
Herb cover (%)	15.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	03 Sep 2023	unbounded	Brody Loneragan

Species (22)	Status	Cover (%)	Height (m)
Loxocarya cinerea		11.0	0.3
Melaleuca preissiana		5.0	5.0
Xanthorrhoea preissii		5.0	1.7
**Anthoxanthum odoratum*	Weed	5.0	0.1
Morelotia octandra		4.0	0.6
Acacia myrtifolia		1.0	1.8
Sporadanthus strictus		1.0	0.3
Goodenia trinervis		1.0	0.2
Liparophyllum lasiospermum		0.5	0.2
**Hypochaeris glabra*	Weed	0.4	0.1
Haemodorum sparsiflorum		0.2	1.5
Burchardia multiflora		0.2	0.2
Patersonia occidentalis var. *occidentalis*		0.1	0.4
Chamaescilla corymbosa var. *corymbosa*		0.1	0.2
Drosera pallida		0.1	0.2
Tribonanthes variabilis		0.1	0.2
Pauridia occidentalis		0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.1
Poaceae sp.		0.1	0.1
**Cotula turbinata*	Weed	0.1	0.1
**Sonchus oleraceus*	Weed	0.1	0.1
Drosera glanduligera		0.1	0.1

Site details			
Site	**BEE085R**	**Position (WGS84)**	115.3062326, -34.23958134
Slope	negligible	**Topography**	depression
Soil colour	grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (04 Sep 2023)

Site description	*Hypocalymma ericifolium, Dasypogon bromeliifolius* and *Pericalymma crassipes* mid open shrubland over *Hypolaena caespitosa, Melanostachya ustulata* and *Leptocarpus denmarkicus* low closed forbland.
Habitat	shrubland
Disturbance	grazing-low, evidence of feral animals, weed infestation

Vegetation condition	Excellent	**Fire age**	moderate (>5 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	30.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	04 Sep 2023	unbounded	Brody Loneragan

Species (35)	Status	Cover (%)	Height (m)
Hypolaena caespitosa		40.0	0.2
Hypocalymma ericifolium		10.0	0.6
Melanostachya ustulata		10.0	0.5
Dasypogon bromeliifolius		5.0	0.3
Leptocarpus denmarkicus		5.0	0.1
Pericalymma crassipes		4.0	0.4
Actinodium cunninghamii		3.0	0.1
Xanthorrhoea preissii		2.0	1.2
Leucopogon cordatus		2.0	0.9
Leptocarpus tenax		2.0	0.6
Kunzea recurva		1.0	1.4
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	1.0	1.2
Anarthria scabra		1.0	1.2
Hakea ceratophylla		1.0	0.8
Leucopogon alternifolius	P3 (DBCA list)	1.0	0.7
Anarthria prolifera		1.0	0.4
Leptocarpus trisepalus		1.0	0.3
Sphenotoma gracilis		1.0	0.2
Adenanthos obovatus		0.5	0.7
Gompholobium tomentosum		0.5	0.6
Jacksonia horrida		0.1	1.1
Philotheca spicata		0.1	0.3
Sphaerolobium vimineum		0.1	0.3
Burchardia congesta		0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.1
**Arctotheca calendula*	Weed	0.1	0.1
Centrolepis aristata		0.1	0.1
Chamaescilla corymbosa var. *corymbosa*		0.1	0.1
**Romulea rosea* var. *australis*	Weed	0.1	0.1
**Cotula turbinata*	Weed	0.1	0.1
**Ornithopus pinnatus*	Weed	0.1	0.1
Isolepis congrua		0.1	0.1
Drosera enodes		0.1	0.1
Drosera glanduligera		0.1	0.1
Drosera erythrorhiza		0.1	0.1

Site details			
Site	**BEE115R**	**Position (WGS84)**	115.26867095605833, -34.21471469749967
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* mid isolated trees over *Agonis flexuosa* var. *flexuosa* low woodland over *Xanthorrhoea preissii, Adenanthos detmoldii* and *Hakea ceratophylla* mid sparse shrubland over *Dasypogon bromeliifolius*, *Banksia nivea* subsp. *nivea* and *Adenanthos obovatus* low shrubland over *Mesomelaena tetragona* mid isolated sedges.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	50.0
Shrub cover (%)	15.0	**Grass cover (%)**	50.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Andrew Perkins

Species (13)	Status	Cover (%)	Height (m)
Dasypogon bromeliifolius		35.0	0.4
Agonis flexuosa var. *flexuosa*		15.0	7.0
Eucalyptus marginata subsp. *marginata*		5.0	15.0
Xanthorrhoea preissii		5.0	1.5
Banksia nivea subsp. *nivea*		2.0	0.3
Adenanthos detmoldii	P4 (DBCA list)	1.0	1.2
Grevillea papillosa	P3 (DBCA list)	1.0	1.0
Hakea ceratophylla		1.0	1.0
Mesomelaena tetragona		0.5	0.6
Adenanthos obovatus		0.1	0.6
Philotheca spicata		0.1	0.3
Boronia anceps	P3 (DBCA list)	0.1	0.2
Hypocalymma minus		0.1	0.1

Site details			
Site	**BEE200R**	**Position (WGS84)**	115.26897564900156, -34.22870459823085
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (16 Nov 2023)

Site description	*Allocasuarina fraseriana, Eucalyptus marginata* subsp. *marginata* and *Melaleuca preissiana* mid open forest over *Astartea scoparia, Hakea ceratophylla* and *Acacia myrtifolia* tall open shrubland over *Anarthria scabra, Melanostachya ustulata* and *Hypolaena caespitosa* mid sedgeland.
Habitat	woodland
Disturbance	weed infestation, historic clearing

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	75.0	**Tree cover (%)**	50.0
Shrub cover (%)	15.0	**Grass cover (%)**	30.0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Andrew Perkins

Species (32)	Status	Cover (%)	Height (m)
Allocasuarina fraseriana		25.0	12.0
Eucalyptus marginata subsp. *marginata*		15.0	12.0
Melaleuca preissiana		10.0	10.0
Astartea scoparia		7.0	2.2
Hakea ceratophylla		5.0	2.0
Anarthria scabra		5.0	0.6
Melanostachya ustulata		5.0	0.6
Hypolaena caespitosa		4.0	0.4
Leptocarpus scariosus		2.0	1.2
Acacia myrtifolia		1.0	2.5
Xanthorrhoea preissii		1.0	0.7
Mesomelaena tetragona		1.0	0.6
Hypolaena pubescens		1.0	0.5
Evandra aristata		0.2	1.8
Xyris roycei		0.2	0.7
Dasypogon bromeliifolius		0.2	0.6
Johnsonia lupulina		0.1	0.7
**Anthoxanthum odoratum*	Weed	0.1	0.7
Pimelea rosea subsp. *rosea*		0.1	0.6
Gompholobium confertum		0.1	0.6
Acacia browniana var. *browniana*		0.1	0.6
Lepidosperma squamatum		0.1	0.5
Drosera sp.		0.1	0.5
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.5
Thysanotus multiflorus		0.1	0.3
Anarthria prolifera		0.1	0.3
**Briza maxima*	Weed	0.1	0.2
Microtis media subsp. *media*		0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.2
**Juncus microcephalus*	Weed	0.1	0.1
Agonis flexuosa var. *flexuosa*		0.0	6.0
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.0	2.1

Site details			
Site	**BEE202R**	**Position (WGS84)**	115.31542109336267, -34.20562671966311
Slope	gentle	**Topography**	seasonally wet area
Soil colour	Brown, grey	**Soil texture**	Clay loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Melaleuca preissiana, Taxandria juniperina* and *T. linearifolia* low open forest over *Taxandria parviceps, Melaleuca rhaphiophylla* and *Astartea scoparia* mid open shrubland over *Leptocarpus scariosus*, *Juncus microcephalus* and *Anthoxanthum odoratum* mid open tussock grassland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	10.0
Shrub cover (%)	30.0	**Grass cover (%)**	20.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	25 Oct 2023	unbounded	Andrew Perkins

Species (16)	Status	Cover (%)	Height (m)
Taxandria inundata		20.0	3.0
**Anthoxanthum odoratum*	Weed	10.0	0.3
Taxandria juniperina		5.0	5.0
Taxandria parviceps		5.0	3.5
Taxandria linearifolia		4.0	7.0
Melaleuca preissiana		3.0	7.0
Aphelia cyperoides		3.0	0.04
**Lotus subbiflorus*	Weed	3.0	0.02
Melaleuca rhaphiophylla		2.0	5.0
Astartea scoparia		1.0	2.5
Leptocarpus scariosus		1.0	1.0
Drosera enodes		0.5	0.02
**Juncus articulatus*	Weed	0.3	1.0
**Briza minor*	Weed	0.2	0.3
Microtis media subsp. *media*		0.1	0.2
Stylidium perpusillum		0.1	0.05

Site details			
Site	**BEE254R**	**Position (WGS84)**	115.31242079032512, -34.16073494449275
Slope	gentle	**Topography**	drainage line
Soil colour	grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Corymbia calophylla* mid open forest over *Xanthorrhoea preissii, Taxandria linearifolia* and *Viminaria juncea* mid open shrubland over *Ficinia nodosa, Mesomelaena tetragona* and *Chordifex amblycoleus* mid isolated rushes/sedges.

Habitat	woodland
Disturbance	grazing-low, vehicle tracks

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	40.0	**Tree cover (%)**	40.0
Shrub cover (%)	15.0	**Grass cover (%)**	5.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Brody Loneragan

Species (25)	Status	Cover (%)	Height (m)
Corymbia calophylla		65.0	20.0
Xanthorrhoea preissii		7.0	3.0
Taxandria linearifolia		4.0	2.0
Ornduffia albiflora		2.0	0.8
Ficinia nodosa		2.0	0.8
Tyrbastes glaucescens		2.0	0.3
Thysanotus dichotomus		1.0	5.0
Viminaria juncea		1.0	4.0
Grevillea manglesioides subsp. *manglesioides*		1.0	2.0
Chordifex amblycoleus		1.0	1.0
Lepidosperma sp. Blackwood (R. Davis 7696)		1.0	1.0
Hakea lasianthoides		1.0	1.0
Patersonia occidentalis		1.0	0.7
Mesomelaena tetragona		1.0	0.6
Hypocalymma minus		1.0	0.5
Leucopogon verticillatus		1.0	0.5
Lomandra pauciflora		1.0	0.4
Billardiera floribunda		0.5	0.6
Billardiera variifolia		0.5	0.5
Hibbertia cunninghamii		0.1	1.0
Agrostocrinum scabrum subsp. *scabrum*		0.1	0.6
Hypolaena grandiuscula		0.1	0.4
Leucopogon interstans		0.1	0.4
Adenanthos obovatus		0.1	0.3
Dampiera leptoclada		0.1	0.3

Site details			
Site	**BEE283R**	**Position (WGS84)**	115.2725257479597, -34.184248102232345
Slope	gentle	**Topography**	depression
Soil colour	black, white	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Astartea scoparia* tall closed shrubland over *Leptocarpus scariosus* tall rushland
Habitat	shrubland
Disturbance	historic clearing, current operations

Vegetation condition	Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	80.0	**Tree cover (%)**	0.0
Shrub cover (%)	72.0	**Grass cover (%)**	50.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	26 Oct 2023	unbounded	Brody Loneragan

Species (2)	Status	Cover (%)	Height (m)
Astartea scoparia		72.0	3.0
Leptocarpus scariosus		50.0	1.2

Site details			
Site	**BEE287R**	**Position (WGS84)**	115.2870206647754, -34.187752142810766
Slope	gentle	**Topography**	depression
Soil colour	black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Taxandria inundata, Astartea scoparia* and *Calothamnus lateralis* var. *crassus* tall closed shrubland over *Leptocarpus scariosus, Cyathochaeta clandestina* and *Juncus pallidus* open rushland over *Alternanthera denticulata* var. *denticulata* mid isolated forbs.

Habitat	waterhole
Disturbance	grazing-high

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	75.0	**Tree cover (%)**	0.0
Shrub cover (%)	71.0	**Grass cover (%)**	28.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	26 Oct 2023	unbounded	Brody Loneragan

Species (9)	Status	Cover (%)	Height (m)
Taxandria inundata		60.0	4.0
Leptocarpus scariosus		28.0	1.5
Astartea scoparia		15.0	5.0
Cyathochaeta clandestina		2.0	1.2
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	1.0	1.2
Alternanthera denticulata var. *denticulata*		1.0	0.3
Juncus pallidus		0.2	1.5
?*Billardiera variifolia*		0.1	1.8
Juncus pauciflorus		0.1	0.5

Site details			
Site	**BEE302R**	**Position (WGS84)**	115.30789464732206, -34.24002541908988
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (15 Nov 2023)

Site description	*Acacia myrtifolia, Viminaria juncea* and *Grevillea manglesioides* subsp. *ferricola* tall closed shrubland over *Calothamnus lateralis* var. *crassus, Comesperma virgatum* and *Boronia anceps* mid closed shrubland over *Tyrbastes glaucescens, Dampiera leptoclada* and *Cassytha racemosa* forma *pilosa* mid isolated forbs.
Habitat	shrubland
Disturbance	grazing-low

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	95.0	**Tree cover (%)**	0.0
Shrub cover (%)	95.0	**Grass cover (%)**	0.0
Herb cover (%)	0.5		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Beth Arbery

Species (13)	Status	Cover (%)	Height (m)
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	95.0	1.4
Acacia myrtifolia		25.0	2.5
Viminaria juncea		11.0	5.0
Adenanthos detmoldii	P4 (DBCA list)	5.0	2.5
Comesperma virgatum		4.0	2.0
Taxandria parviceps		3.0	2.4
Boronia anceps	P3 (DBCA list)	3.0	1.0
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	2.0	3.0
Eutaxia virgata		0.5	1.3
Stylidium scandens		0.1	1.3
Tyrbastes glaucescens		0.1	0.7
Dampiera leptoclada		0.1	0.5
Cassytha racemosa forma *pilosa*		0.1	0.4

Site details			
Site	**BEE313R**	**Position (WGS84)**	115.3133696710878, -34.240988952810525
Slope	gentle	**Topography**	drainage line
Soil colour	brown	**Soil texture**	Clay loam
Rock cover (%)	0	**Rock type**	

Observation details - visit 1 (16 Nov 2023)

Site description	*Melaleuca preissiana* low scattered trees over *Taxandria linearifolia*, *Acacia myrtifolia* and *Melaleuca incana* subsp. *incana* tall open shrubland over *Machaerina articulata, Leptocarpus scariosus* and *Lyginia imberbis* tall sedge/rushland.

Habitat	riparian zone
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	50.0	**Tree cover (%)**	3.0
Shrub cover (%)	25.0	**Grass cover (%)**	32.0
Herb cover (%)	9.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (14)	Status	Cover (%)	Height (m)
Lyginia imberbis		15.0	1.0
Astartea scoparia		10.0	1.5
Machaerina articulata		5.0	2.0
Melaleuca preissiana		3.0	4.0
Leptocarpus scariosus		3.0	2.0
Grevillea papillosa	P3 (DBCA list)	3.0	1.1
Anigozanthos flavidus		2.0	3.0
Taxandria linearifolia		2.0	3.0
Melaleuca incana subsp. *incana*		2.0	2.0
**Mentha pulegium*	Weed	2.0	0.2
Acacia myrtifolia		1.0	2.5
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	1.0	1.0
Ornduffia parnassifolia		1.0	0.2
Comesperma virgatum		0.5	2.0

Site details			
Site	**BEE318R**	**Position (WGS84)**	115.27164082053608, -34.18156076691503
Slope	gentle	**Topography**	sandy rise
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	**Eucalyptus globulus* subsp. *globulus* tall open woodland over **Lolium perenne* and **Bromus diandrus* low isolated grasses over **Disa bracteata*, *Caladenia attingens* subsp. *attingens* and *Microtis media* subsp. *media* low isolated herbs.
Habitat	woodland
Disturbance	historic clearing, weed infestation, large-scale clearing, revegetation

Vegetation condition	Completely Degraded	**Fire age**	not evident
Total veg. cover (%)	40.0	**Tree cover (%)**	40.0
Shrub cover (%)	0.0	**Grass cover (%)**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	26 Oct 2023	unbounded	Brody Loneragan

Species (8)	Status	Cover (%)	Height (m)
**Eucalyptus globulus* subsp. *globulus*	Weed	40.0	15.0
Caladenia attingens subsp. *attingens*		0.1	0.4
Microtis media subsp. *media*		0.1	0.3
**Disa bracteata*	Weed	0.1	0.2
**Bromus diandrus*	Weed	0.1	0.2
**Lolium perenne*	Weed	0.1	0.2
**Cotula turbinata*	Weed	0.1	0.1
**Trifolium campestre* var. *campestre*	Weed	0.1	0.1

Site details			
Site	**BEE321R**	**Position (WGS84)**	115.26706044973318, -34.19858137549602
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Agonis flexuosa* var. *flexuosa* low woodland over *Acacia pulchella* var. *pulchella*, *Taxandria parviceps* and *Jacksonia horrida* mid open shrubland over *Anarthria scabra, Johnsonia lupulina* and *Juncus pallidus* mid open rushland.
Habitat	woodland
Disturbance	historic clearing

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	30.0	**Tree cover (%)**	12.0
Shrub cover (%)	5.0	**Grass cover (%)**	10.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (13)	Status	Cover (%)	Height (m)
Agonis flexuosa var. *flexuosa*		12.0	4.0
Juncus pallidus		10.0	0.9
Anarthria scabra		2.0	1.0
Acacia pulchella var. *pulchella*		2.0	1.0
Jacksonia horrida		1.0	1.5
Taxandria parviceps		1.0	1.0
Billardiera fusiformis		1.0	1.0
Johnsonia lupulina		1.0	1.0
Hypolaena exsulca		1.0	0.7
Dampiera leptoclada		1.0	0.3
Adenanthos meisneri		1.0	0.2
Melanostachya ustulata		0.5	0.9
Stylidium repens		0.1	0.1

Site details			
Site	**BEE324R**	**Position (WGS84)**	115.2673144855271, -34.194292246015024
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (16 Nov 2023)

Site description	*Agonis flexuosa* var. *flexuosa* low woodland over *Xanthorrhoea preissii*, *Kunzea recurva* and *Adenanthos meisneri* mid open shrubland over *Mesomelaena tetragona* mid sparse rushland over *Melanostachya ustulata, Chaetanthus leptocarpoides* and *Xyris roycei* mid sparse forbland.
Habitat	woodland
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	45.0	**Tree cover (%)**	15.0
Shrub cover (%)	15.0	**Grass cover (%)**	10.0
Herb cover (%)	10.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (21)	Status	Cover (%)	Height (m)
Agonis flexuosa var. *flexuosa*		15.0	6.0
Mesomelaena tetragona		8.0	1.0
Xanthorrhoea preissii		5.0	2.0
Melanostachya ustulata		5.0	0.7
Kunzea recurva		4.0	2.0
Chaetanthus leptocarpoides		2.0	0.5
Adenanthos meisneri		2.0	0.3
Homalospermum firmum		1.0	2.0
Adenanthos x pamela	P4 (DBCA list)	1.0	0.6
Banksia littoralis		0.2	2.0
Adenanthos detmoldii	P4 (DBCA list)	0.1	1.2
Grevillea papillosa	P3 (DBCA list)	0.1	1.2
Xyris roycei		0.1	0.8
Pimelea rosea subsp. *rosea*		0.1	0.6
Eutaxia virgata		0.1	0.4
Conostylis aculeata subsp. *aculeata*		0.1	0.3
Hodgsoniola junciformis		0.1	0.3
Boronia anceps	P3 (DBCA list)	0.1	0.2
Xanthosia huegelii		0.1	0.2
Stylidium scandens		0.1	0.1
Stylidium squamosotuberosum		0.1	0.1

Site details			
Site	**BEE327R**	**Position (WGS84)**	115.26762847148335, -34.20154273465379
Slope	gentle	**Topography**	drainage line
Soil colour	Brown, grey	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Agonis flexuosa* var. *flexuosa* and *Melaleuca preissiana* low woodland over *Taxandria parviceps, Adenanthos detmoldii and Calothamnus lateralis* var. *crassus* tall shrubland over *Machaerina articulata, Anarthria scabra* and *Evandra aristata* tall open rushland.

Habitat	woodland		
Disturbance	evidence of feral animals, grazing-medium, litter		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	60.0	**Tree cover (%)**	15.0
Shrub cover (%)	25.0	**Grass cover (%)**	20.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (10)	Status	Cover (%)	Height (m)
Taxandria parviceps		20.0	4.0
Agonis flexuosa var. *flexuosa*		12.0	5.0
Machaerina articulata		10.0	1.1
Adenanthos detmoldii	P4 (DBCA list)	5.0	1.2
Anarthria scabra		5.0	1.0
Melaleuca preissiana		2.0	4.0
Evandra aristata		2.0	1.3
Leptocarpus scariosus		1.0	1.5
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	0.1	1.0
Desmocladus fasciculatus		0.1	0.3

Site details			
Site	**BEE329R**	**Position (WGS84)**	115.2683062933908, -34.20479669081314
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Melaleuca preissiana* and *Agonis flexuosa* var. *flexuosa* mid woodland over *Kunzea recurva* and *Xanthorrhoea preissii* tall open shrubland over **Anthoxanthum odoratum, *Avena fatua* and *Briza maxima* mid closed grassland.
Habitat	open woodland
Disturbance	weed infestation, grazing-medium

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	55.0	**Tree cover (%)**	20.0
Shrub cover (%)	17.0	**Grass cover (%)**	90.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (9)	Status	Cover (%)	Height (m)
Melaleuca preissiana		10.0	8.0
Eucalyptus marginata subsp. *marginata*		5.0	12.0
Agonis flexuosa var. *flexuosa*		5.0	8.0
**Anthoxanthum odoratum*	Weed	5.0	0.4
Xanthorrhoea preissii		2.0	2.0
Kunzea recurva		2.0	2.0
**Avena fatua*	Weed	0.2	0.8
**Briza maxima*	Weed	0.1	0.2
**Vulpia bromoides*	Weed	0.1	0.1

Site details			
Site	**BEE331R**	**Position (WGS84)**	115.2698299, -34.24992753
Slope	gentle	**Topography**	sandy rise
Soil colour	whitish	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata*, *Banksia attenuata* and *Allocasuarina fraseriana* low-mid woodland over *Melaleuca thymoides, Jacksonia horrida* and *Gompholobium scabrum* mid open shrubland over *Anarthria scabra, Dasypogon bromeliifolius* and *Patersonia occidentalis* low open forbland.

Habitat	woodland
Disturbance	grazing-high

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	60.0	**Tree cover (%)**	30.0
Shrub cover (%)	30.0	**Grass cover (%)**	0.0
Herb cover (%)	20.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Jenifer Alford

Species (9)	Status	Cover (%)	Height (m)
Banksia attenuata		15.0	6.0
Allocasuarina fraseriana		15.0	5.0
Melaleuca thymoides		15.0	1.3
Anarthria scabra		15.0	0.5
Eucalyptus marginata subsp. *marginata*		10.0	12.0
Dasypogon bromeliifolius		10.0	0.4
Jacksonia horrida		2.0	1.4
Gompholobium scabrum		1.0	1.2
Patersonia occidentalis		0.4	0.4

Site details			
Site	**BEE332R**	**Position (WGS84)**	115.2936055139781, -34.20756914190408
Slope	gentle	**Topography**	seasonally wet area
Soil colour	black, brown	**Soil texture**	Silt
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (25 Oct 2023)

Site description	*Melaleuca preissiana, Taxandria juniperina* and *Callistachys lanceolata* tall woodland over *Astartea scoparia* tall isolated shrubs over *Machaerina rubiginosa* tall isolated rushes over **Solanum nigrum, Microtis media* subsp. *media* and *Rhodanthe citrina* low isolated forbs.
Habitat	woodland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	50.0	**Tree cover (%)**	45.0
Shrub cover (%)	3.0	**Grass cover (%)**	2.0
Herb cover (%)	0.5		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	25 Oct 2023	unbounded	Natasha Rogers

Species (10)	Status	Cover (%)	Height (m)
Taxandria juniperina		20.0	18.0
Melaleuca preissiana		20.0	15.0
Callistachys lanceolata		5.0	8.0
Astartea scoparia		3.0	4.5
Machaerina rubiginosa		2.0	1.5
Thelymitra graminea		0.1	0.3
**Rumex conglomeratus*	Weed	0.1	0.3
Microtis media subsp. *media*		0.1	0.2
**Solanum nigrum*	Weed	0.1	0.1
Rhodanthe citrina		0.1	0.08

Site details			
Site	**BEE366R**	**Position (WGS84)**	115.2664817920990, -34.199977572313706
Slope	gentle	**Topography**	plain
Soil colour	Brown	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (26 Oct 2023)

Site description	*Taxandria inundata, Hakea lasianthoides* and *Beaufortia sparsa* mid closed shrubland over *Cyathochaeta clandestina* and *Juncus pallidus* tall open rushland over **Hypochaeris glabra, *Briza maxima* and **Briza minor* low isolated forbs.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	80.0	**Tree cover (%)**	0.0
Shrub cover (%)	70.0	**Grass cover (%)**	25.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	26 Oct 2023	unbounded	Brody Loneragan

Species (10)	Status	Cover (%)	Height (m)
Cyathochaeta clandestina		30.0	0.4
Taxandria inundata		20.0	2.0
Hakea lasianthoides		15.0	1.0
Juncus pallidus		10.0	1.2
Beaufortia sparsa		5.0	1.5
Homalospermum firmum		0.1	2.5
**Briza maxima*	Weed	0.1	0.2
**Briza minor*	Weed	0.1	0.2
Liparophyllum lasiospermum		0.1	0.2
**Hypochaeris glabra*	Weed	0.1	0.1

Site details			
Site	**BEE371R**	**Position (WGS84)**	115.30676132590433, -34.24017790403157
Slope	gentle	**Topography**	depression
Soil colour	Brown, grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (15 Nov 2023)

Site description	*Grevillea papillosa, Pericalymma ellipticum* var. *ellipticum* and *Taxandria inundata* mid open shrubland over *Leptocarpus scariosus* and *Juncus planifolius* open sedgeland over *Stylidium guttatum* and *Microtis media* subsp. *media* low isolated forbs.

Habitat	shrubland		
Disturbance	none evident		
Vegetation condition	Excellent	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	60.0	**Tree cover (%)**	0.0
Shrub cover (%)	40.0	**Grass cover (%)**	15.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Beth Arbery

Species (7)	Status	Cover (%)	Height (m)
Leptocarpus scariosus		35.0	1.8
Grevillea papillosa	P3 (DBCA list)	15.0	0.8
Stylidium guttatum		5.0	0.2
Taxandria inundata		3.0	1.0
Pericalymma ellipticum var. *ellipticum*		3.0	0.8
Juncus planifolius		1.0	0.1
Microtis media subsp. *media*		0.1	0.3

Site details			
Site	**BEE373R**	**Position (WGS84)**	115.30701350520462, -34.24309948338292
Slope	negligible	**Topography**	depression
Soil colour	brown	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (15 Nov 2023)

Site description	*Melaleuca preissiana, M. incana* subsp. *incana* and *Astartea scoparia* tall sparse shrubland over *Juncus pallidus* sparse rushland over **Anthoxanthum odoratum* and **Briza maxima* low sparse grassland over *Dasypogon bromeliifolius, *Hypochaeris glabra* and **Juncus oxycarpus* mid forbland.
Habitat	shrubland
Disturbance	historic clearing, revegetation, weed infestation

Vegetation condition	Good	**Fire age**	relatively recent (1-5 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	0.0
Shrub cover (%)	15.0	**Grass cover (%)**	10.0
Herb cover (%)	35.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Beth Arbery

Species (15)	Status	Cover (%)	Height (m)
**Anthoxanthum odoratum*	Weed	6.0	0.3
Melaleuca incana subsp. *incana*		5.0	2.3
**Briza maxima*	Weed	5.0	0.5
Astartea scoparia		3.0	2.0
Juncus pallidus		3.0	1.2
Melaleuca preissiana		2.0	7.0
Beaufortia sparsa		2.0	2.5
Hakea ceratophylla		2.0	1.5
Dasypogon bromeliifolius		2.0	0.8
**Hypochaeris glabra*	Weed	2.0	0.3
Hakea sulcata		1.0	1.0
**Juncus oxycarpus*	Weed	1.0	0.6
Patersonia occidentalis		0.5	0.4
**Rumex acetosella*	Weed	0.5	0.2
Agonis flexuosa var. *flexuosa*		0.1	0.5

Site details			
Site	**BEE382R**	**Position (WGS84)**	115.2838570010053, -34.25205531855935
Slope	negligible	**Topography**	plain
Soil colour	grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (16 Nov 2023)

Site description	*Melaleuca densa, Astartea scoparia*, and *Kunzea recurva* tall shrubland over *Loxocarya magna, Mesomelaena tetragona* tall open rushland over *Grevillea manglesioides* subsp. *ferricola*, and *Dasypogon bromeliifolius* low isolated shrubs.

Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	95.0	**Tree cover (%)**	1.0
Shrub cover (%)	45.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (18)	Status	Cover (%)	Height (m)
Melaleuca densa		25.0	4.0
Loxocarya magna	P3 (DBCA list)	20.0	2.5
Kunzea recurva		12.0	3.5
Astartea scoparia		6.0	3.5
Agonis flexuosa var. *flexuosa*		3.0	4.0
Mesomelaena tetragona		3.0	1.0
Acacia myrtifolia		2.0	3.0
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	1.0	1.5
Desmocladus fasciculatus		1.0	0.8
Dasypogon bromeliifolius		1.0	0.6
**Mentha pulegium*	Weed	1.0	0.5
**Briza maxima*	Weed	1.0	0.1
Cytogonidium leptocarpoides		0.5	0.5
**Avena fatua*	Weed	0.1	1.5
**Holcus lanatus*	Weed	0.1	0.6
Machaerina articulata		0.1	0.5
**Briza minor*	Weed	0.1	0.3
**Hypochaeris glabra*	Weed	0.1	0.1

Site details			
Site	**BEE383R**	**Position (WGS84)**	115.28410722439804, -34.25211199561292
Slope	gentle	**Topography**	plain
Soil colour	Brown, grey	**Soil texture**	Sandy clay
Rock cover (%)	0	**Rock type**	ferrous - ironstone

Observation details - visit 1 (16 Nov 2023)

Site description	*Melaleuca densa, Kunzea recurva*, and *Acacia myrtifolia* tall shrubland over *Loxocarya magna, Mesomelaena tetragona*, and *Lepidosperma* sp. Blackwood (R. Davis 7696) tall rushland over *Desmocladus fasciculatus, Cytogonidium leptocarpoides*, and *Machaerina articulata* mid sparse rushland.
Habitat	shrubland
Disturbance	weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	95.0	**Tree cover (%)**	1.0
Shrub cover (%)	45.0	**Grass cover (%)**	50.0
Herb cover (%)	1.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (19)	Status	Cover (%)	Height (m)
Loxocarya magna	P3 (DBCA list)	20.0	1.5
Melaleuca densa		10.0	3.0
Xanthorrhoea preissii		5.0	2.0
Mesomelaena tetragona		4.0	1.0
Anigozanthos flavidus		3.0	3.0
Kunzea recurva		3.0	2.0
Lepidosperma sp. Blackwood (R. Davis 7696)		3.0	1.0
Acacia myrtifolia		2.0	2.0
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA list)	2.0	1.5
Tyrbastes glaucescens		2.0	1.0
Hakea sulcata		2.0	1.0
Viminaria juncea		1.0	4.0
Agonis flexuosa var. *flexuosa*		1.0	4.0
Hibbertia cunninghamii		1.0	0.4
Comesperma virgatum		0.1	1.5
**Avena fatua*	Weed	0.1	1.0
Machaerina articulata		0.1	0.5
**Briza maxima*	Weed	0.1	0.4
Hibbertia stellaris		0.1	0.3

Site details			
Site	**BEE387R**	**Position (WGS84)**	115.3229264405101, -34.22737341608674
Slope	gentle	**Topography**	plain
Soil colour	Orange, brown	**Soil texture**	Sandy loam
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (16 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata, Agonis flexuosa* var. *flexuosa* and *Nuytsia floribunda* open forest over *Taxandria parviceps, Xanthorrhoea preissii* and *Hakea ruscifolia* mid isolated shrubs over *Hypolaena caespitosa, Anarthria scabra* and *Juncus pallidus* sparse rushland.
Habitat	forest
Disturbance	evidence of feral animals, grazing-low

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	85.0	**Tree cover (%)**	15.0
Shrub cover (%)	5.0	**Grass cover (%)**	80.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	16 Nov 2023	unbounded	Beth Arbery

Species (31)	Status	Cover (%)	Height (m)
Eucalyptus marginata subsp. *marginata*		20.0	6.0
Agonis flexuosa var. *flexuosa*		10.0	4.0
Nuytsia floribunda		2.0	6.0
Taxandria parviceps		1.0	1.8
Xanthorrhoea preissii		1.0	1.6
Hypolaena caespitosa		1.0	1.1
Juncus pallidus		1.0	1.0
Anarthria scabra		1.0	1.0
Leptocarpus coangustatus		1.0	0.7
Lyginia imberbis		1.0	0.6
Ficinia nodosa		1.0	0.5
Dasypogon bromeliifolius		0.2	0.4
Hakea ruscifolia		0.1	2.1
Isopogon axillaris		0.1	2.1
Hakea varia		0.1	1.8
Hakea ceratophylla		0.1	1.5
Jacksonia horrida		0.1	1.5
Hakea sulcata		0.1	1.5
Loxocarya magna	P3 (DBCA list)	0.1	1.5
Cyathochaeta avenacea		0.1	1.3
Anigozanthos flavidus		0.1	1.2
Beaufortia sparsa		0.1	1.2
Acacia pulchella var. *pulchella*		0.1	1.1
Gymnoschoenus anceps		0.1	0.9
Machaerina articulata		0.1	0.7
Patersonia occidentalis		0.1	0.6
Netrostylis sp. Jarrah Forest (R. Davis 7391)		0.1	0.5
Adenanthos obovatus		0.1	0.5
Melaleuca preissiana		0.1	0.4
Desmocladus fasciculatus		0.1	0.2
Indeterminate		0.0	0.8

Site details			
Site	**BEE388R**	**Position (WGS84)**	115.32342356655647, -34.24026708672999
Slope	gentle	**Topography**	plain
Soil colour	brown	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (15 Nov 2023)

Site description	*Eucalyptus marginata* subsp. *marginata* mid woodland over *Adenanthos detmoldii, Xanthorrhoea preissii* and *Kunzea recurva* mid shrubland over *Chaetanthus leptocarpoides, Melanostachya ustulata* and *Boronia anceps* mid isolated forbs.
Habitat	woodland
Disturbance	vehicle tracks, weed infestation

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	90.0	**Tree cover (%)**	10.0
Shrub cover (%)	65.0	**Grass cover (%)**	40.0
Herb cover (%)	5.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	15 Nov 2023	unbounded	Beth Arbery

Species (20)	Status	Cover (%)	Height (m)
Adenanthos detmoldii	P4 (DBCA list)	20.0	4.0
Chaetanthus leptocarpoides		10.0	0.5
Melanostachya ustulata		5.0	0.7
Xanthorrhoea preissii		3.0	2.0
Kunzea recurva		2.0	1.8
Calothamnus lateralis var. *crassus*	P3 (DBCA list)	2.0	1.0
Boronia anceps	P3 (DBCA list)	2.0	0.9
Hakea ceratophylla		1.5	1.4
Eucalyptus marginata subsp. *marginata*		1.0	14.0
Hakea sulcata		1.0	2.1
Evandra aristata		1.0	0.8
Acacia myrtifolia		0.5	2.1
Schoenus efoliatus		0.1	1.1
**Briza maxima*	Weed	0.1	0.5
Microtis media subsp. *media*		0.1	0.4
**Briza minor*	Weed	0.1	0.3
Muehlenbeckia adpressa		0.1	0.3
Machaerina articulata		0.1	0.3
**Mentha pulegium*	Weed	0.1	0.2
**Lotus subbiflorus*	Weed	0.1	0.05

Site details			
Site	**BEE389R**	**Position (WGS84)**	115.2814025, -34.17896451
Slope	gentle	**Topography**	dune
Soil colour	Brown, grey	**Soil texture**	Sand
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Allocasuarina fraseriana, Eucalyptus marginata* subsp. *marginata*, and *Agonis flexuosa* var. *flexuosa* low open woodland over *Anarthria scabra* mid open sedgeland over **Rumex acetosella, Caladenia flava* and **Ornithopus pinnatus* low isolated forbs.
Habitat	woodland
Disturbance	livestock tracks, grazing-high, weed infestation

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50.0	**Tree cover (%)**	28.0
Shrub cover (%)	2.0	**Grass cover (%)**	35.0
Herb cover (%)	2.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	02 Sep 2023	unbounded	Brody Loneragan

Species (10)	Status	Cover (%)	Height (m)
Anarthria scabra		25.0	1.0
Allocasuarina fraseriana		20.0	10.0
Eucalyptus marginata subsp. *marginata*		12.5	15.0
Agonis flexuosa var. *flexuosa*		7.5	8.0
Nuytsia floribunda		1.0	4.0
**Rumex acetosella*	Weed	0.2	0.1
Caladenia flava		0.1	0.2
**Ornithopus pinnatus*	Weed	0.1	0.1
Crassula decumbens var. *decumbens*		0.1	0.1
Banksia sp.		0.0	3.0

Site details			
Site	**BEE390R**	**Position (WGS84)**	115.2828602, -34.17505535
Slope	gentle	**Topography**	depression
Soil colour	Brown, black	**Soil texture**	Peat
Rock cover (%)	0	**Rock type**	none

Observation details - visit 1 (02 Sep 2023)

Site description	*Melaleuca preissiana* low isolated trees over *Astartea scoparia, Kunzea spathulata* and *Beaufortia sparsa* tall shrubland over *Leptocarpus scariosus* mid open rushland.
Habitat	waterhole
Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	35.0	**Tree cover (%)**	2.0
Shrub cover (%)	20.0	**Grass cover (%)**	10.0
Herb cover (%)	0.0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	02 Sep 2023	unbounded	Brody Loneragan

Species (5)	Status	Cover (%)	Height (m)
Astartea scoparia		15.0	1.8
Leptocarpus scariosus		10.0	1.2
Kunzea spathulata		5.0	2.0
Melaleuca preissiana		2.0	3.5
Beaufortia sparsa		2.0	1.8

Appendix 3 NVIS hierarchy

Western Australia current practice			National standard		
Hierarchy of terms	**Brief description in WA**	**Indicative scale**	**NVIS Level**	**Description**	**NVIS structural/floristic components required**
Vegetation formation	Structure and growth form – e.g. Forest, Woodland.	1:5 000 000	I	Class	Dominant growth form for the ecologically or structurally dominant stratum.
Vegetation sub-formation	Structural and dominant vegetation layer - Eucalypt Forest, Banksia Woodland.	1:2 500 000 I	II	Structural Formation	Dominant growth form, cover and height for the ecologically or structurally dominant stratum.
Vegetation association	Structural form and dominant species – e.g. Medium woodland; York gum (*Eucalyptus loxophleba*) & Wandoo.	1:1 000 000 to 1:250 000	III	Broad Floristic Formation	Dominant growth form, cover, height and dominant land cover genus for the uppermost or dominant stratum.
Vegetation complex	Structural and floristic description linked to geomorphology – e.g. Quindalup Complex.	1:250 000 to 1:100 000	IV	Sub-Formation	Dominant growth form, cover, height and dominant genus and Family for the 3 traditional strata. (i.e. Upper, Mid and Ground).
Vegetation type	Floristic definition by strata with structural detail. Often represented with a code and floristic description.	1:100 000 to 1:10 000	V	Association	Dominant growth form, height, cover and up to 3 species for the 3 traditional strata. (i.e. Upper, Mid and Ground).
Plant community	Basic unit of vegetation classification, site-specific and highly localised with detailed floristics for each stratum.	1:10 000	VI	Sub-Association	Dominant growth form, height, cover and up to 5 species for all layers/ strata.
Floristic Community Type	Floristic composition definition; e.g. Northern Banksia woodlands over herb rich shrublands on the Swan Coastal Plain.	No absolute scale			

Appendix 4 Introduced flora identified in the desktop review

Family	Species
Asteraceae	**Senecio elegans*
Asteraceae	**Carduus pycnocephalus*
Asteraceae	**Cotula turbinata*
Asteraceae	**Leontodon saxatilis*
Asteraceae	**Logfia gallica*
Asteraceae	**Pseudognaphalium luteoalbum*
Asteraceae	**Sigesbeckia orientalis*
Asteraceae	**Sonchus oleraceus*
Asteraceae	**Symphyotrichum squamatum*
Asteraceae	**Vellereophyton dealbatum*
Brassicaceae	**Cakile maritima*
Brassicaceae	**Heliophila pusilla*
Brassicaceae	**Lepidium didymum*
Campanulaceae	**Grammatotheca bergiana* var. *bergiana*
Campanulaceae	**Monopsis debilis* var. *depressa*
Caryophyllaceae	**Cerastium glomeratum*
Caryophyllaceae	**Cerastium pumilum*
Caryophyllaceae	**Corrigiola litoralis*
Caryophyllaceae	**Silene gallica* var. *gallica*
Chenopodiaceae	**Chenopodium glaucum*
Chenopodiaceae	**Dysphania multifida*
Cyperaceae	**Cyperus congestus*
Cyperaceae	**Cyperus tenellus*
Cyperaceae	**Cyperus tenuiflorus*
Cyperaceae	**Isolepis prolifera*
Dicranaceae	**Campylopus introflexus*
Dilleniaceae	**Hibbertia cuneiformis*
Fabaceae	**Genista monspessulana* (WoNS)
Fabaceae	**Lotus angustissimus*
Fabaceae	**Lotus subbiflorus*
Fabaceae	**Lotus uliginosus*
Fabaceae	**Ornithopus compressus*
Fabaceae	**Ornithopus pinnatus*
Fabaceae	**Podalyria sericea*
Fabaceae	**Trifolium campestre*
Fabaceae	**Trifolium campestre* var. *campestre*
Fabaceae	**Trifolium cernuum*
Fabaceae	**Trifolium dubium*
Fabaceae	**Trifolium hirtum*

Family	Species
Fabaceae	**Trifolium repens*
Fabaceae	**Trifolium resupinatum* var. *resupinatum*
Gentianaceae	**Centaurium tenuiflorum*
Gentianaceae	**Cicendia filiformis*
Geraniaceae	**Geranium purpureum*
Goodeniaceae	**Lechenaultia biloba*
Hypericaceae	**Hypericum perforatum*
Juncaceae	**Juncus articulatus*
Juncaceae	**Juncus bufonius*
Juncaceae	**Juncus capitatus*
Juncaceae	**Juncus microcephalus*
Lamiaceae	**Mentha pulegium*
Lythraceae	**Lythrum hyssopifolia*
Myrtaceae	**Leptospermum laevigatum*
Orchidaceae	**Disa bracteata*
Oxalidaceae	**Oxalis pes-caprae*
Passifloraceae	**Passiflora filamentosa*
Poaceae	**Aira cupaniana*
Poaceae	**Aira praecox*
Poaceae	**Briza maxima*
Poaceae	**Briza minor*
Poaceae	**Catapodium rigidum*
Poaceae	**Dactylis glomerata*
Poaceae	**Glyceria declinata*
Poaceae	**Holcus lanatus*
Poaceae	**Hyparrhenia hirta*
Poaceae	**Lolium rigidum*
Poaceae	**Poa annua*
Poaceae	**Polypogon monspeliensis*
Polygonaceae	**Rumex conglomeratus*
Polygonaceae	**Rumex crispus*
Polygonaceae	**Rumex x muretii*
Polygonaceae	**Rumex x pseudopulcher*
Polygonaceae	**Rumex x schultzei*
Primulaceae	**Lysimachia arvensis*
Primulaceae	**Samolus valerandi*
Rosaceae	**Rubus anglocandicans* (Declared Pest)
Rubiaceae	**Sherardia arvensis*
Sapindaceae	**Dodonaea viscosa*
Scrophulariaceae	**Dischisma arenarium*

Family	Species
Solanaceae	**Solanum linnaeanum* (Declared Pest)
Tropaeolaceae	**Tropaeolum majus*
Vitaceae	**Vitis vinifera*

Appendix 5 Flora species inventory from the survey

Family	Species	Status
Amaranthaceae	*Alternanthera denticulata* var. *denticulata*	
Amaranthaceae	*Alternanthera nodiflora*	
Anarthriaceae	*Anarthria gracilis*	
Anarthriaceae	*Anarthria prolifera*	
Anarthriaceae	*Anarthria scabra*	
Anarthriaceae	*Lyginia barbata*	
Anarthriaceae	*Lyginia imberbis*	
Apiaceae	*Actinotus glomeratus*	
Apiaceae	*Pentapeltis peltigera*	
Apiaceae	*Platysace filiformis*	
Apiaceae	*Xanthosia candida*	
Apiaceae	*Xanthosia huegelii*	
Apiaceae	*Xanthosia tasmanica*	
Araceae	*Lemna disperma*	
Araliaceae	*Hydrocotyle callicarpa*	
Araliaceae	*Trachymene pilosa*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Chamaescilla corymbosa* var. *corymbosa*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Lomandra integra*	
Asparagaceae	*Lomandra nigricans*	
Asparagaceae	*Lomandra pauciflora*	
Asparagaceae	*Lomandra preissii*	
Asparagaceae	*Lomandra purpurea*	
Asparagaceae	*Thysanotus arenarius*	
Asparagaceae	*Thysanotus dichotomus*	
Asparagaceae	*Thysanotus manglesianus*	
Asparagaceae	*Thysanotus multiflorus*	
Asparagaceae	*Thysanotus patersonii*	
Asteraceae	**Arctotheca calendula*	Weed
Asteraceae	**Cotula coronopifolia*	Weed
Asteraceae	**Cotula turbinata*	Weed
Asteraceae	**Hypochaeris glabra*	Weed
Asteraceae	**Hypochaeris radicata*	Weed
Asteraceae	**Sonchus asper*	Weed
Asteraceae	**Sonchus oleraceus*	Weed
Asteraceae	**Symphyotrichum squamatum*	Weed
Asteraceae	**Ursinia anthemoides* subsp. *anthemoides*	Weed
Asteraceae	**Vellereophyton dealbatum*	Weed
Asteraceae	?*Centipeda cunninghamii*	
Asteraceae	*Quinetia urvillei*	

Family	Species	Status
Asteraceae	*Rhodanthe citrina*	
Asteraceae	*Senecio picridioides*	
Asteraceae	*Siloxerus humifusus*	
Campanulaceae	**Monopsis debilis* var. *depressa*	Weed
Caryophyllaceae	**Cerastium glomeratum*	Weed
Caryophyllaceae	**Silene gallica* var. *gallica*	Weed
Casuarinaceae	*Allocasuarina fraseriana*	
Celastraceae	*Stackhousia huegelii*	
Celastraceae	*Stackhousia monogyna*	
Centrolepidaceae	*Aphelia cyperoides*	
Centrolepidaceae	*Centrolepis aristata*	
Centrolepidaceae	*Centrolepis pilosa*	
Centrolepidaceae	*Centrolepis polygyna*	
Centrolepidaceae	*Centrolepis strigosa* subsp. *strigosa*	RE
Colchicaceae	*Burchardia congesta*	
Colchicaceae	*Burchardia multiflora*	
Colchicaceae	*Caladenia sp.*	
Crassulaceae	*Crassula decumbens* var. *decumbens*	
Cyperaceae	**Cyperus tenellus*	Weed
Cyperaceae	*Cyathochaeta avenacea*	
Cyperaceae	*Cyathochaeta clandestina*	
Cyperaceae	*Cyathochaeta equitans*	
Cyperaceae	*Evandra aristata*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Gymnoschoenus anceps*	
Cyperaceae	*Isolepis congrua*	
Cyperaceae	*Isolepis cyperoides*	
Cyperaceae	*Isolepis hookeriana*	
Cyperaceae	*Lepidosperma leptostachyum*	
Cyperaceae	*Lepidosperma longitudinale*	
Cyperaceae	*Lepidosperma pubisquameum*	
Cyperaceae	*Lepidosperma sp.*	
Cyperaceae	*Lepidosperma sp. Blackwood (R. Davis 7696)*	
Cyperaceae	*Lepidosperma squamatum*	
Cyperaceae	*Lepidosperma striatum*	
Cyperaceae	*Machaerina articulata*	
Cyperaceae	*Machaerina juncea*	
Cyperaceae	*Machaerina rubiginosa*	
Cyperaceae	*Mesomelaena graciliceps*	
Cyperaceae	*Mesomelaena tetragona*	
Cyperaceae	*Morelotia octandra*	
Cyperaceae	*Netrostylis sp. Blackwood River (A.R. Annels 3043)*	P3 (DBCA list)
Cyperaceae	*Netrostylis sp. Jarrah Forest (R. Davis 7391)*	

Family	Species	Status
Cyperaceae	*Schoenus efoliatus*	
Dasypogonaceae	*Dasypogon bromeliifolius*	
Dasypogonaceae	*Dasypogon hookeri*	
Dasypogonaceae	*Kingia australis*	
Dennstaedtiaceae	*Pteridium esculentum* subsp. *esculentum*	
Dilleniaceae	*Hibbertia amplexicaulis*	
Dilleniaceae	*Hibbertia cuneiformis*	
Dilleniaceae	*Hibbertia cunninghamii*	
Dilleniaceae	*Hibbertia hypericoides* subsp. *hypericoides*	
Dilleniaceae	*Hibbertia perfoliata*	
Dilleniaceae	*Hibbertia racemosa*	
Dilleniaceae	*Hibbertia stellaris*	
Dilleniaceae	*Hibbertia trichocalyx*	
Droseraceae	*Drosera enodes*	
Droseraceae	*Drosera erythrorhiza*	
Droseraceae	*Drosera glanduligera*	
Droseraceae	*Drosera huegelii*	
Droseraceae	*Drosera menziesii*	
Droseraceae	*Drosera nitidula*	
Droseraceae	*Drosera pallida*	
Droseraceae	*Drosera pulchella*	
Droseraceae	*Drosera sp.*	
Ericaceae	*Andersonia sprengelioides*	
Ericaceae	*Leucopogon alternifolius*	P3 (DBCA list)
Ericaceae	*Leucopogon australis*	
Ericaceae	*Leucopogon capitellatus*	
Ericaceae	*Leucopogon cordatus*	
Ericaceae	*Leucopogon glabellus*	
Ericaceae	*Leucopogon interstans*	
Ericaceae	*Leucopogon tenuicaulis*	
Ericaceae	*Leucopogon verticillatus*	
Ericaceae	*Sphenotoma capitata*	
Ericaceae	*Sphenotoma gracilis*	
Ericaceae	*Styphelia sp. Nannup (R.D. Royce 3978)*	
Fabaceae	**Lotus subbiflorus*	Weed
Fabaceae	**Ornithopus pinnatus*	Weed
Fabaceae	**Trifolium campestre* var. *campestre*	Weed
Fabaceae	**Trifolium dubium*	Weed
Fabaceae	**Trifolium repens*	Weed
Fabaceae	**Trifolium repens* var. *repens*	Weed
Fabaceae	**Trifolium subterraneum*	Weed
Fabaceae	*Acacia alata*	
Fabaceae	*Acacia browniana* var. *browniana*	

Family	Species	Status
Fabaceae	*Acacia divergens*	
Fabaceae	*Acacia extensa*	
Fabaceae	*Acacia hastulata*	
Fabaceae	*Acacia mooreana*	
Fabaceae	*Acacia myrtifolia*	
Fabaceae	*Acacia pulchella* var. *pulchella*	
Fabaceae	*Acacia uliginosa*	
Fabaceae	*Aotus carinata*	P4 (DBCA list)
Fabaceae	*Aotus gracillima*	
Fabaceae	*Bossiaea eriocarpa*	
Fabaceae	*Bossiaea praetermissa*	
Fabaceae	*Bossiaea rufa*	
Fabaceae	*Callistachys lanceolata*	
Fabaceae	*Chorizema carinatum*	P3 (DBCA list)
Fabaceae	*Daviesia flexuosa*	
Fabaceae	*Daviesia inflata*	
Fabaceae	*Euchilopsis linearis*	
Fabaceae	*Eutaxia myrtifolia*	
Fabaceae	*Eutaxia virgata*	
Fabaceae	*Gastrolobium formosum*	P3 (DBCA list)
Fabaceae	*Gompholobium capitatum*	
Fabaceae	*Gompholobium confertum*	
Fabaceae	*Gompholobium knightianum*	
Fabaceae	*Gompholobium ovatum*	
Fabaceae	*Gompholobium polymorphum*	
Fabaceae	*Gompholobium scabrum*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hovea chorizemifolia*	
Fabaceae	*Hovea elliptica*	
Fabaceae	*Hovea trisperma* var. *trisperma*	
Fabaceae	*Isotropis cuneifolia* subsp. *cuneifolia*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Jacksonia horrida*	
Fabaceae	*Kennedia carinata*	
Fabaceae	*Mirbelia dilatata*	
Fabaceae	*Pultenaea reticulata*	
Fabaceae	*Sphaerolobium drummondii*	
Fabaceae	*Sphaerolobium grandiflorum*	
Fabaceae	*Sphaerolobium medium*	
Fabaceae	*Sphaerolobium racemulosum*	
Fabaceae	*Sphaerolobium vimineum*	
Fabaceae	*Viminaria juncea*	
Geraniaceae	**Geranium dissectum*	Weed

Family	Species	Status
Geraniaceae	**Geranium purpureum*	Weed
Geraniaceae	*Geranium retrorsum*	
Geraniaceae	*Geranium solanderi*	
Goodeniaceae	?*Scaevola striata* var. *striata*	
Goodeniaceae	*Dampiera heteroptera*	P3 (DBCA list)
Goodeniaceae	*Dampiera leptoclada*	
Goodeniaceae	*Dampiera linearis*	
Goodeniaceae	*Dampiera pedunculata*	
Goodeniaceae	*Dampiera trigona*	
Goodeniaceae	*Goodenia eatoniana*	
Goodeniaceae	*Goodenia micrantha*	
Goodeniaceae	*Goodenia pulchella*	
Goodeniaceae	*Goodenia trinervis*	
Goodeniaceae	*Lechenaultia expansa*	
Goodeniaceae	*Scaevola calliptera*	
Haemodoraceae	*Anigozanthos flavidus*	
Haemodoraceae	*Conostylis aculeata* subsp. *aculeata*	
Haemodoraceae	*Conostylis aculeata* subsp. *gracilis*	
Haemodoraceae	*Conostylis laxiflora*	
Haemodoraceae	*Haemodorum laxum*	
Haemodoraceae	*Haemodorum sparsiflorum*	
Haemodoraceae	*Phlebocarya ciliata*	
Haemodoraceae	*Tribonanthes variabilis*	
Haloragaceae	*Myriophyllum salsugineum*	
Hemerocallidaceae	*Agrostocrinum scabrum* subsp. *scabrum*	
Hemerocallidaceae	*Caesia micrantha*	
Hemerocallidaceae	*Hodgsoniola junciformis*	
Hemerocallidaceae	*Johnsonia lupulina*	
Hemerocallidaceae	*Tricoryne humilis*	
Hypoxidaceae	*Pauridia occidentalis*	
Iridaceae	**Romulea rosea* var. *australis*	Weed
Iridaceae	**Sparaxis pillansii*	Weed
Iridaceae	*Patersonia occidentalis*	
Iridaceae	*Patersonia occidentalis* var. *latifolia*	
Iridaceae	*Patersonia occidentalis* var. *occidentalis*	
Iridaceae	*Patersonia umbrosa* var. *xanthina*	
Juncaceae	**Juncus articulatus*	Weed
Juncaceae	**Juncus capitatus*	Weed
Juncaceae	**Juncus microcephalus*	Weed
Juncaceae	**Juncus oxycarpus*	Weed
Juncaceae	*Juncus kraussii* subsp. *australiensis*	
Juncaceae	*Juncus pallidus*	
Juncaceae	*Juncus pauciflorus*	

Family	Species	Status
Juncaceae	*Juncus planifolius*	
Juncaginaceae	*Cycnogeton huegelii*	
Lamiaceae	**Mentha pulegium*	Weed
Lauraceae	*Cassytha racemosa* forma *pilosa*	
Lauraceae	*Cassytha sp.*	
Linaceae	**Linum trigynum*	Weed
Lindsaeaceae	*Lindsaea linearis*	
Loganiaceae	*Orianthera serpyllifolia*	
Loganiaceae	*Phyllangium divergens*	
Loganiaceae	*Phyllangium paradoxum*	
Loranthaceae	*Nuytsia floribunda*	
Malvaceae	**Malva parviflora*	Weed
Malvaceae	*Abutilon sp.*	
Menyanthaceae	*Liparophyllum lasiospermum*	
Menyanthaceae	*Ornduffia albiflora*	
Menyanthaceae	*Ornduffia parnassifolia*	
Myrtaceae	**Eucalyptus globulus* subsp. *globulus*	Weed
Myrtaceae	**Gaudium laevigatum*	Weed
Myrtaceae	*Actinodium cunninghamii*	
Myrtaceae	*Agonis flexuosa* var. *flexuosa*	
Myrtaceae	*Astartea scoparia*	
Myrtaceae	*Beaufortia sparsa*	
Myrtaceae	*Calothamnus lateralis* var. *crassus*	P3 (DBCA list)
Myrtaceae	*Calothamnus lehmannii*	
Myrtaceae	*Corymbia calophylla*	
Myrtaceae	*Eucalyptus marginata* subsp. *marginata*	
Myrtaceae	*Homalospermum firmum*	
Myrtaceae	*Hypocalymma angustifolium*	
Myrtaceae	*Hypocalymma ericifolium*	
Myrtaceae	*Hypocalymma minus*	
Myrtaceae	*Hypocalymma strictum*	
Myrtaceae	*Kunzea recurva*	
Myrtaceae	*Kunzea spathulata*	
Myrtaceae	*Melaleuca basicephala*	P4 (DBCA list)
Myrtaceae	*Melaleuca densa*	
Myrtaceae	*Melaleuca incana* subsp. *incana*	
Myrtaceae	*Melaleuca preissiana*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca thymoides*	
Myrtaceae	*Pericalymma crassipes*	
Myrtaceae	*Pericalymma ellipticum* var. *ellipticum*	
Myrtaceae	*Taxandria inundata*	
Myrtaceae	*Taxandria juniperina*	

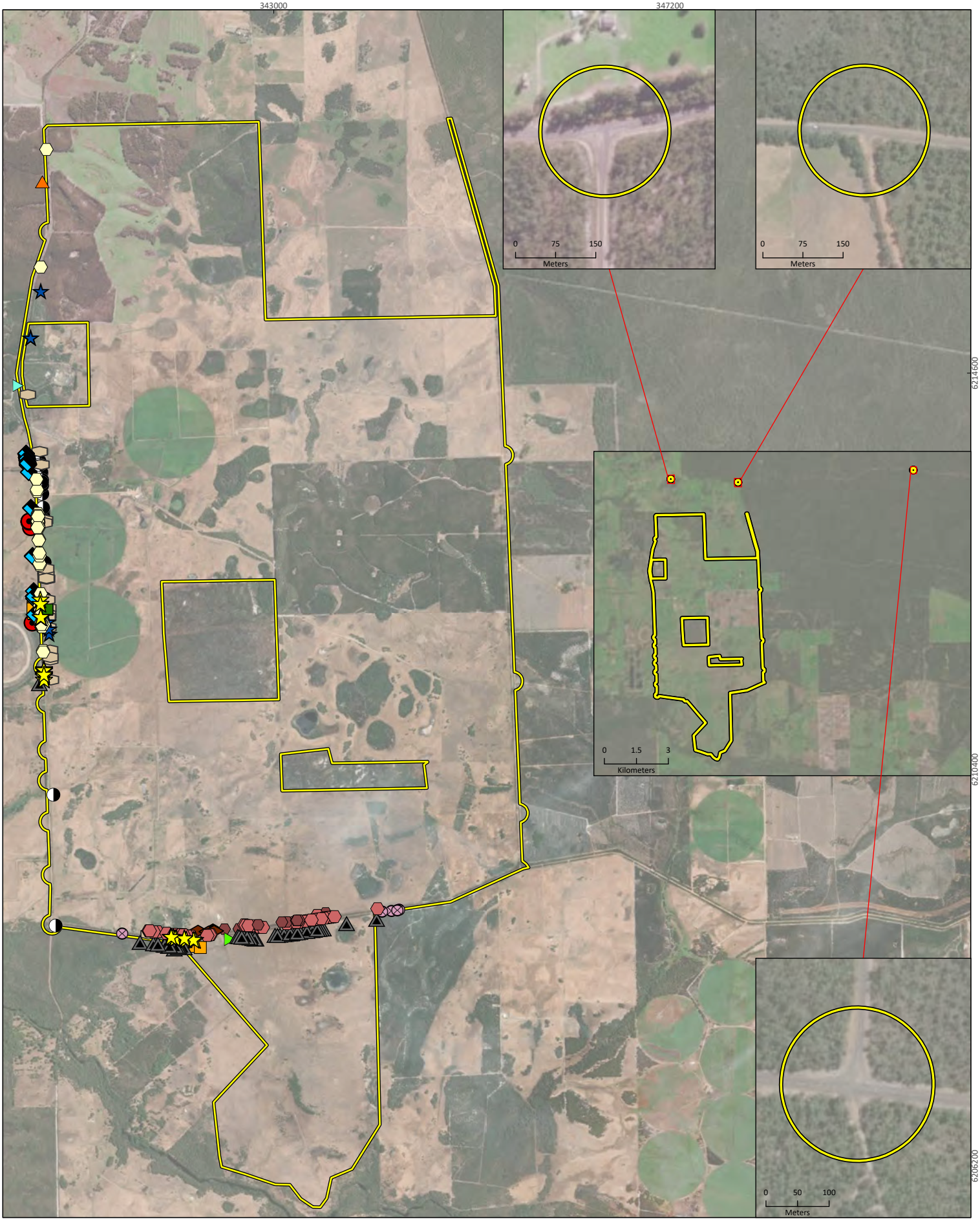
Family	Species	Status
Myrtaceae	*Taxandria linearifolia*	
Myrtaceae	*Taxandria parviceps*	
Myrtaceae	*Verticordia plumosa* var. *vassensis*	EN (EPBC & BC Acts)
Onagraceae	**Epilobium ciliatum*	Weed
Onagraceae	**Oenothera stricta* subsp. *stricta*	Weed
Orchidaceae	**Disa bracteata*	Weed
Orchidaceae	*Caladenia attingens* subsp. *attingens*	
Orchidaceae	*Caladenia brownii*	
Orchidaceae	*Caladenia flava*	
Orchidaceae	*Corysanthes recurva*	
Orchidaceae	*Cryptostylis ovata*	
Orchidaceae	*Lyperanthus serratus*	
Orchidaceae	*Microtis media* subsp. *media*	
Orchidaceae	*Prasophyllum brownii*	
Orchidaceae	*Pterostylis ectypha*	
Orchidaceae	*Pterostylis erubescens*	
Orchidaceae	*Pterostylis vittata*	
Orchidaceae	*Pyrorchis nigricans*	
Orchidaceae	*Thelymitra crinita*	
Orchidaceae	*Thelymitra flexuosa*	
Orchidaceae	*Thelymitra graminea*	
Orchidaceae	*Thelymitra mucida*	
Philydraceae	*Philydrella pygmaea* subsp. *pygmaea*	
Phyllanthaceae	*Lysiandra calycina*	
Phyllanthaceae	*Poranthera huegelii*	
Pinaceae	**Pinus sp.*	Weed
Pittosporaceae	?*Billardiera variifolia*	
Pittosporaceae	*Billardiera floribunda*	
Pittosporaceae	*Billardiera fusiformis*	
Pittosporaceae	*Billardiera laxiflora*	
Pittosporaceae	*Billardiera sp.*	
Pittosporaceae	*Billardiera variifolia*	
Plantaginaceae	**Callitriche stagnalis*	Weed
Plantaginaceae	**Plantago lanceolata*	Weed
Poaceae	**Aira caryophyllea*	Weed
Poaceae	**Aira cupaniana*	Weed
Poaceae	**Aira praecox*	Weed
Poaceae	**Anthoxanthum odoratum*	Weed
Poaceae	**Avena barbata*	Weed
Poaceae	**Avena fatua*	Weed
Poaceae	**Avena sativa*	Weed
Poaceae	**Briza maxima*	Weed
Poaceae	**Briza minor*	Weed

Family	Species	Status
Poaceae	**Bromus diandrus*	Weed
Poaceae	**Bromus hordeaceus*	Weed
Poaceae	**Ehrharta longiflora*	Weed
Poaceae	**Eragrostis curvula*	Weed
Poaceae	**Glyceria declinata*	Weed
Poaceae	**Holcus lanatus*	Weed
Poaceae	**Hordeum leporinum*	Weed
Poaceae	**Lagurus ovatus*	Weed
Poaceae	**Lolium perenne*	Weed
Poaceae	**Lolium rigidum*	Weed
Poaceae	**Poa annua*	Weed
Poaceae	**Polypogon monspeliensis*	Weed
Poaceae	**Vulpia bromoides*	Weed
Poaceae	**Vulpia myuros*	Weed
Poaceae	*Amphipogon amphipogonoides*	
Poaceae	*Amphipogon laguroides* subsp. *laguroides*	
Poaceae	*Amphipogon setaceus*	
Poaceae	*Austrostipa semibarbata*	
Poaceae	*Deyeuxia quadriseta*	
Poaceae	*Eragrostis brownii*	
Poaceae	*Lachnagrostis filiformis*	
Poaceae	*Poaceae sp.*	
Poaceae	*Tetrarrhena laevis*	
Podocarpaceae	*Podocarpus drouynianus*	
Polygalaceae	*Comesperma virgatum*	
Polygonaceae	**Rumex acetosella*	Weed
Polygonaceae	**Rumex conglomeratus*	Weed
Polygonaceae	**Rumex crispus*	Weed
Polygonaceae	**Rumex sp.*	Weed
Polygonaceae	*Muehlenbeckia adpressa*	
Primulaceae	**Lysimachia arvensis*	Weed
Proteaceae	*Adenanthos detmoldii*	P4 (DBCA list)
Proteaceae	*Adenanthos meisneri*	
Proteaceae	*Adenanthos obovatus*	
Proteaceae	*Adenanthos x pamela*	P4 (DBCA list)
Proteaceae	*Banksia attenuata*	
Proteaceae	*Banksia dallanneyi* subsp. *dallanneyi*	
Proteaceae	*Banksia grandis*	
Proteaceae	*Banksia ilicifolia*	
Proteaceae	*Banksia littoralis*	
Proteaceae	*Banksia nivea* subsp. *nivea*	
Proteaceae	*Banksia occidentalis*	
Proteaceae	*Banksia sp.*	

Family	Species	Status
Proteaceae	*Conospermum flexuosum* subsp. *laevigatum*	
Proteaceae	*Grevillea brachystylis* subsp. *australis*	VU/EN (EPBC Act; BC Act)
Proteaceae	*Grevillea diversifolia* subsp. *subtersericata*	
Proteaceae	*Grevillea manglesioides* subsp. *ferricola*	P3 (DBCA list)
Proteaceae	*Grevillea manglesioides* subsp. *manglesioides*	
Proteaceae	*Grevillea papillosa*	P3 (DBCA list)
Proteaceae	*Grevillea quercifolia*	
Proteaceae	*Hakea ceratophylla*	
Proteaceae	*Hakea falcata*	
Proteaceae	*Hakea lasianthoides*	
Proteaceae	*Hakea linearis*	
Proteaceae	*Hakea lissocarpha*	
Proteaceae	*Hakea ruscifolia*	
Proteaceae	*Hakea sulcata*	
Proteaceae	*Hakea tuberculata*	
Proteaceae	*Hakea varia*	
Proteaceae	*Isopogon axillaris*	
Proteaceae	*Isopogon formosus* subsp. *dasylepis*	P3 (DBCA list)
Proteaceae	*Lambertia orbifolia* subsp. *vespera*	EN (BC Act)
Proteaceae	*Persoonia graminea*	
Proteaceae	*Persoonia longifolia*	
Proteaceae	*Petrophile diversifolia*	
Proteaceae	*Petrophile linearis*	
Proteaceae	*Petrophile squamata* subsp. *squamata*	
Proteaceae	*Synaphea nexosa*	P1 (DBCA list)
Proteaceae	*Synaphea obtusata*	
Proteaceae	*Synaphea petiolaris* subsp. *triloba*	
Proteaceae	*Xylomelum occidentale*	
Ranunculaceae	**Ranunculus muricatus*	Weed
Restionaceae	*Chaetanthus leptocarpoides*	
Restionaceae	*Chordifex amblycoleus*	
Restionaceae	*Chordifex isomorphus*	
Restionaceae	*Cytogonidium leptocarpoides*	
Restionaceae	*Desmocladus castaneus*	
Restionaceae	*Desmocladus fasciculatus*	
Restionaceae	*Desmocladus flexuosus*	
Restionaceae	*Empodisma gracillimum*	
Restionaceae	*Hypolaena caespitosa*	
Restionaceae	*Hypolaena exsulca*	
Restionaceae	*Hypolaena grandiuscula*	
Restionaceae	*Hypolaena pubescens*	
Restionaceae	*Hypolaena viridis*	

Family	Species	Status
Restionaceae	*Leptocarpus coangustatus*	
Restionaceae	*Leptocarpus denmarkicus*	
Restionaceae	*Leptocarpus laxus*	
Restionaceae	*Leptocarpus roycei*	
Restionaceae	*Leptocarpus scariosus*	
Restionaceae	*Leptocarpus scoparius*	
Restionaceae	*Leptocarpus tenax*	
Restionaceae	*Leptocarpus trisepalus*	
Restionaceae	*Loxocarya cinerea*	
Restionaceae	*Loxocarya magna*	P3 (DBCA list)
Restionaceae	*Melanostachya ustulata*	
Restionaceae	*Platychorda applanata*	
Restionaceae	*Sporadanthus strictus*	
Restionaceae	*Tyrbastes glaucescens*	
Rhamnaceae	*Trymalium odoratissimum* subsp. *trifidum*	
Rubiaceae	*Opercularia hispidula*	
Rubiaceae	*Opercularia vaginata*	
Rutaceae	*Boronia anceps*	P3 (DBCA list)
Rutaceae	*Boronia crenulata* subsp. *crenulata*	
Rutaceae	*Boronia fastigiata*	
Rutaceae	*Boronia sp.*	
Rutaceae	*Boronia spathulata*	
Rutaceae	*Boronia tenuior*	
Rutaceae	*Philotheca spicata*	
Santalaceae	*Leptomeria cunninghamii*	
Santalaceae	*Leptomeria squarrulosa*	
Scrophulariaceae	**Bellardia viscosa*	Weed
Scrophulariaceae	**Verbascum virgatum*	Weed
Solanaceae	**Solanum nigrum*	Weed
Stylidiaceae	*Levenhookia pusilla*	
Stylidiaceae	*Stylidium amoenum*	
Stylidiaceae	*Stylidium amoenum* var. *caulescens*	
Stylidiaceae	*Stylidium androsaceum*	
Stylidiaceae	*Stylidium caespitosum*	
Stylidiaceae	*Stylidium guttatum*	
Stylidiaceae	*Stylidium inundatum*	
Stylidiaceae	*Stylidium megacarpum*	
Stylidiaceae	*Stylidium perpusillum*	
Stylidiaceae	*Stylidium repens*	
Stylidiaceae	*Stylidium scandens*	
Stylidiaceae	*Stylidium squamosotuberosum*	
Thymelaeaceae	*Pimelea ciliata*	
Thymelaeaceae	*Pimelea hispida*	

Family	Species	Status
Thymelaeaceae	*Pimelea lanata*	
Thymelaeaceae	*Pimelea longiflora*	
Thymelaeaceae	*Pimelea rosea* subsp. *rosea*	
Xanthorrhoeaceae	*Xanthorrhoea gracilis*	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	
Xyridaceae	*Xyris lacera*	
Xyridaceae	*Xyris lanata*	
Xyridaceae	*Xyris laxiflora*	
Xyridaceae	*Xyris roycei*	
Zamiaceae	*Macrozamia riedlei*	



SynergyRED
Proposed Wind Farm in Scott River

Project No	1582
Date	11/02/2025
Drawn by	BK
Map author	NR

0 1 2
Kilometers

1:51,800(at A4) GDA 1994 MGA Zone 50

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Study area

Species, status

- *Adenanthos detmoldii*, P4 (DBCA list)
- *Banksia meisneri* subsp. *ascendens*, P4 (DBCA list)
- *Banksia nivea* subsp. *uliginosa*,EN (EPBC and BC Acts)
- *Boronia anceps*, P3 (DBCA list)
- *Calothamnus lateralis* var. *crassus*, P3 (DBCA list)
- *Conospermum quadripetalum*, CR (BC Act)
- *Darwinia ferricola*, EN (EPBC and BC Acts)
- *Drosera fimbriata*, P4 (DBCA list)
- *Gastrolobium formosum*, P3 (DBCA list)
- *Grevillea brachystylis* subsp. *australis*, VU/EN (EPBC Act; BC Act)
- *Grevillea manglesioides* subsp. *ferricola*, P3 (DBCA list)
- *Grevillea papillosa*, P3 (DBCA list)
- *Leucopogon wheelerae*, P3 (DBCA list)
- *Loxocarya magna*, P3 (DBCA list)
- *Stylidium leeuwinense*, P4 (DBCA list)
- *Synaphea nexosa*, P1 (DBCA list)
- *Verticordia plumosa* var. *vassensis*, EN (EPBC and BC Acts)

Appendix 6
Unconfirmed desktop significant flora

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Appendix 7 Unconfirmed desktop significant flora populations within study area

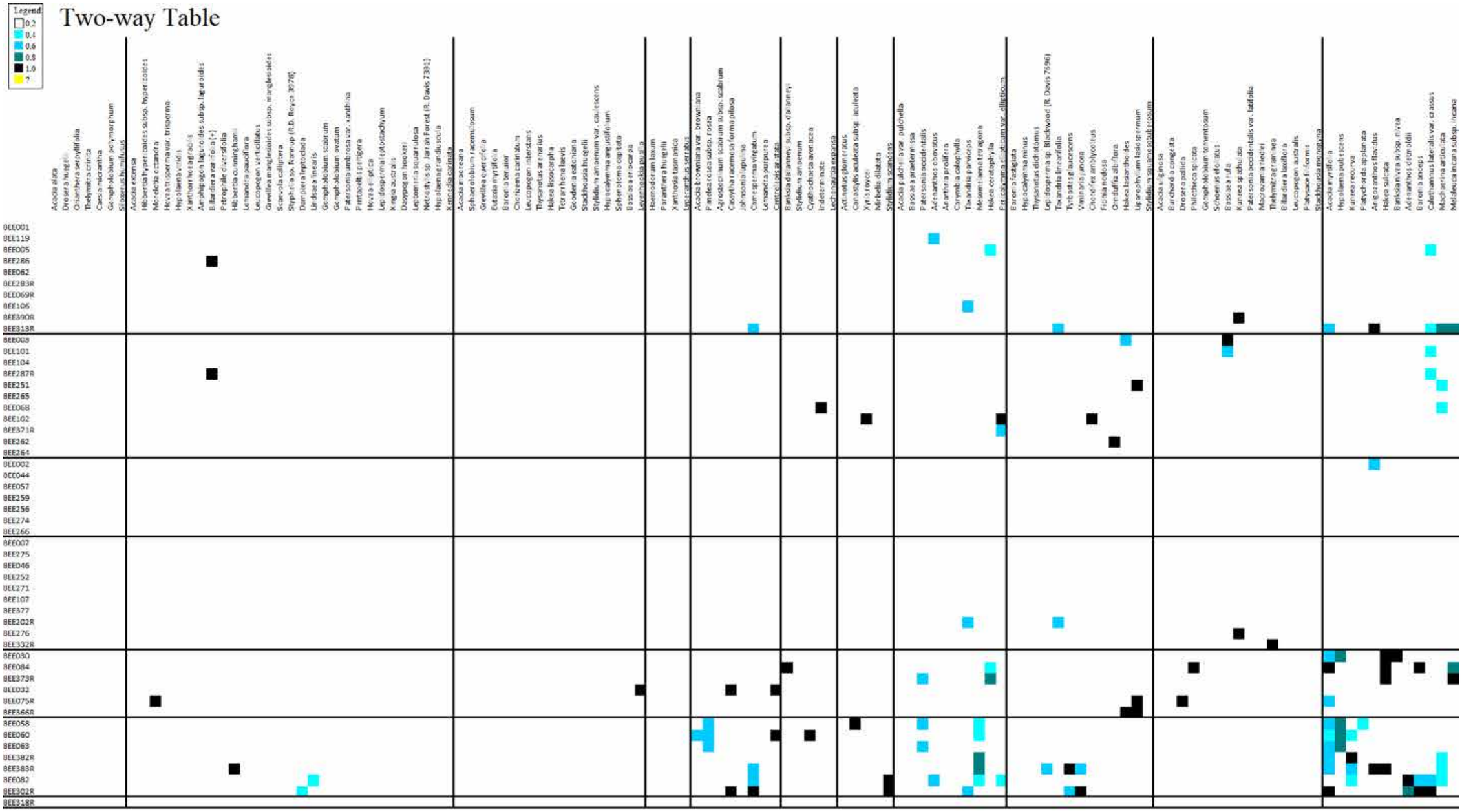
Species	Status	Unconfirmed desktop populations
Darwinia ferricola	T (EN EPBC & BC Acts)	3
Banksia nivea subsp. *uliginosa*	T (EN EPBC & BC Acts)	1
Conospermum quadripetalum	T (CR BC Act)	3
Synaphea nexosa	P1 (DBCA)	1
Leucopogon wheelerae	P3 (DBCA)	1
Gastrolobium formosum	P3 (DBCA)	1
Boronia anceps	P3 (DBCA)	1
Grevillea manglesioides subsp. *ferricola*	P3 (DBCA)	1
Grevillea papillosa	P3 (DBCA)	2
Calothamnus lateralis var. *crassus*	P3 (DBCA)	1
Adenanthos detmoldii	P4 (DBCA)	2
Banksia meisneri subsp. *ascendens*	P4 (DBCA)	1
Stylidium leeuwinense	P4 (DBCA)	1
Drosera fimbriata	P4 (DBCA)	1

Appendix 8 Introduced flora recorded in the field survey

Family	Species	Declared Pest	WoNS
Asteraceae	**Arctotheca calendula*	-	-
Asteraceae	**Cotula coronopifolia*	-	-
Asteraceae	**Cotula turbinata*	-	-
Asteraceae	**Hypochaeris glabra*	-	-
Asteraceae	**Hypochaeris radicata*	-	-
Asteraceae	**Sonchus asper*	-	-
Asteraceae	**Sonchus oleraceus*	-	-
Asteraceae	**Symphyotrichum squamatum*	-	-
Asteraceae	**Ursinia anthemoides* subsp. *anthemoides*	-	-
Asteraceae	**Vellereophyton dealbatum*	-	-
Campanulaceae	**Monopsis debilis* var. *depressa*	-	-
Caryophyllaceae	**Cerastium glomeratum*	-	-
Caryophyllaceae	**Silene gallica* var. *gallica*	-	-
Cyperaceae	**Cyperus tenellus*	-	-
Fabaceae	**Lotus subbiflorus*	-	-
Fabaceae	**Ornithopus pinnatus*	-	-
Fabaceae	**Trifolium campestre* var. *campestre*	-	-
Fabaceae	**Trifolium dubium*	-	-
Fabaceae	**Trifolium repens*	-	-
Fabaceae	**Trifolium repens* var. *repens*	-	-
Fabaceae	**Trifolium subterraneum*	-	-
Geraniaceae	**Geranium dissectum*	-	-
Geraniaceae	**Geranium purpureum*		-
Iridaceae	**Romulea rosea* var. *australis*	-	-
Iridaceae	**Sparaxis pillansii*	-	-
Juncaceae	**Juncus articulatus*	-	-
Juncaceae	**Juncus capitatus*	-	-
Juncaceae	**Juncus microcephalus*	-	-
Juncaceae	**Juncus oxycarpus*	-	-
Lamiaceae	**Mentha pulegium*	-	-
Linaceae	**Linum trigynum*	-	-
Malvaceae	**Malva parviflora*	-	-
Myrtaceae	**Eucalyptus globulus* subsp. *globulus*	-	-
Myrtaceae	*Gaudium laevigatum*		
Onagraceae	**Epilobium ciliatum*	-	-
Onagraceae	**Oenothera stricta* subsp. *stricta*	-	-
Orchidaceae	**Disa bracteata*	-	-
Plantaginaceae	**Callitriche stagnalis*	-	-
Plantaginaceae	**Plantago lanceolata*	-	-
Poaceae	**Aira caryophyllea*	-	-
Poaceae	**Aira cupaniana*	-	-
Poaceae	**Aira praecox*	-	-

Family	Species	Declared Pest	WoNS
Poaceae	**Anthoxanthum odoratum*	-	-
Poaceae	**Avena barbata*	-	-
Poaceae	**Avena fatua*	-	-
Poaceae	**Avena sativa*	-	-
Poaceae	**Briza maxima*	-	-
Poaceae	**Briza minor*	-	-
Poaceae	**Bromus diandrus*	-	-
Poaceae	**Bromus hordeaceus*	-	-
Poaceae	**Ehrharta longiflora*	-	-
Poaceae	**Eragrostis curvula*	-	-
Poaceae	**Glyceria declinata*	-	-
Poaceae	**Holcus lanatus*	-	-
Poaceae	**Hordeum leporinum*	-	-
Poaceae	**Lagurus ovatus*	-	-
Poaceae	**Lolium perenne*	-	-
Poaceae	**Lolium rigidum*	-	-
Poaceae	**Poa annua*	-	-
Poaceae	**Polypogon monspeliensis*	-	-
Poaceae	**Vulpia bromoides*	-	-
Poaceae	**Vulpia myuros*	-	-
Polygonaceae	**Rumex acetosella*	-	-
Polygonaceae	**Rumex conglomeratus*	-	-
Polygonaceae	**Rumex crispus*	-	-
Primulaceae	**Lysimachia arvensis*	-	-
Ranunculaceae	**Ranunculus muricatus*	-	-
Scrophulariaceae	**Bellardia viscosa*	Not listed (DPIRD 2023)	-
Scrophulariaceae	**Verbascum virgatum*	-	-
Solanaceae	**Solanum nigrum*	-	-

Appendix 9 Flora species by site matrix



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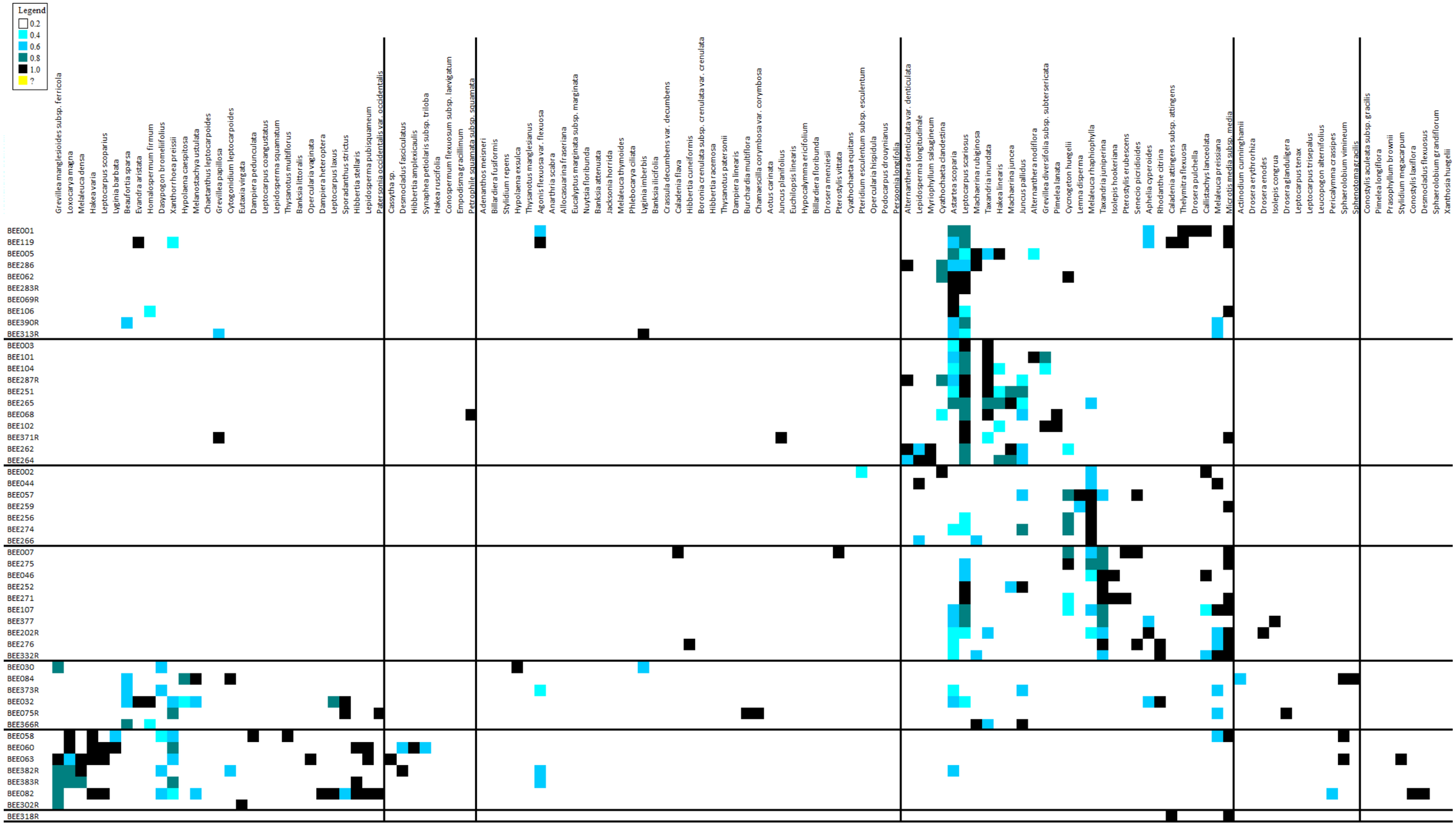

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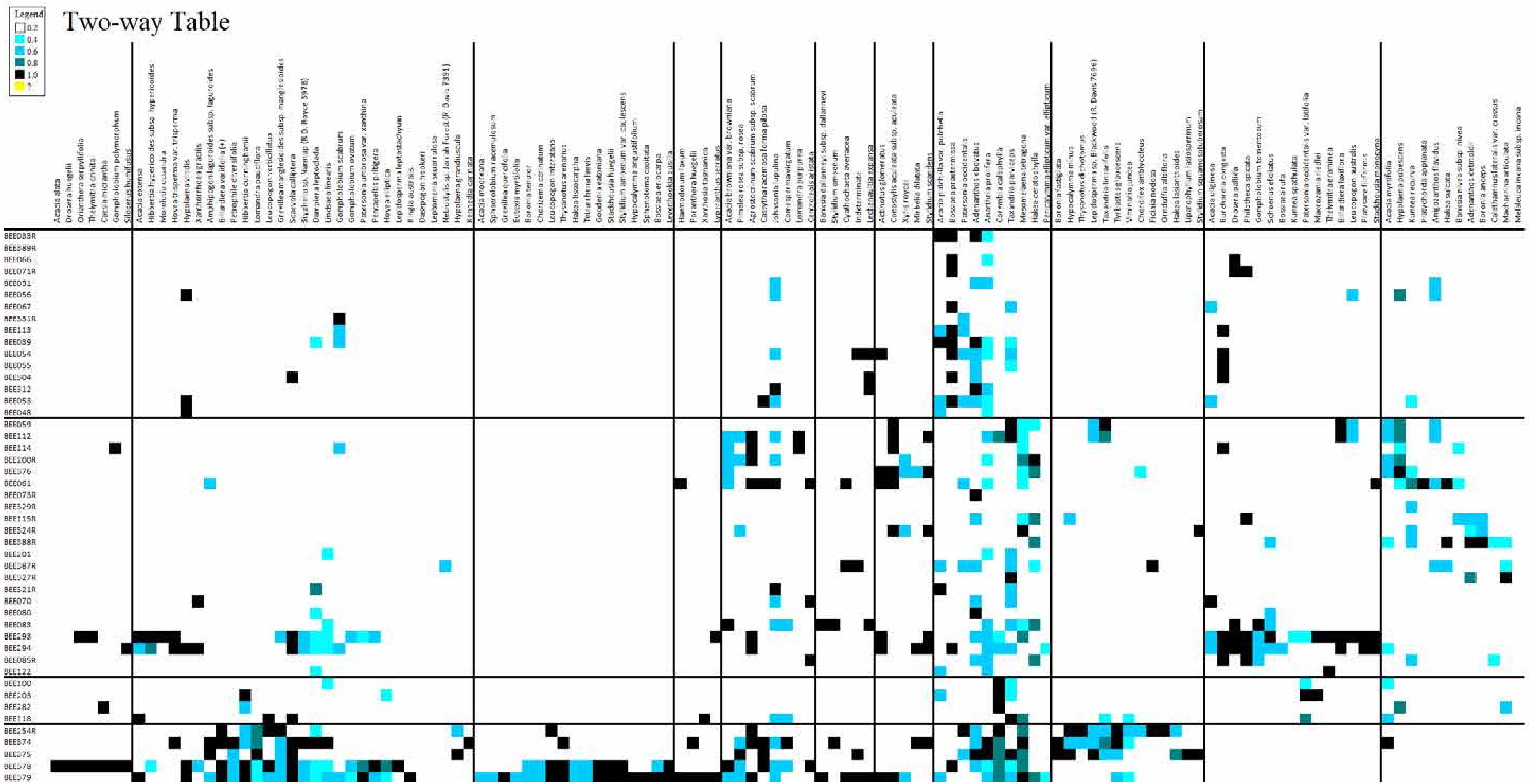
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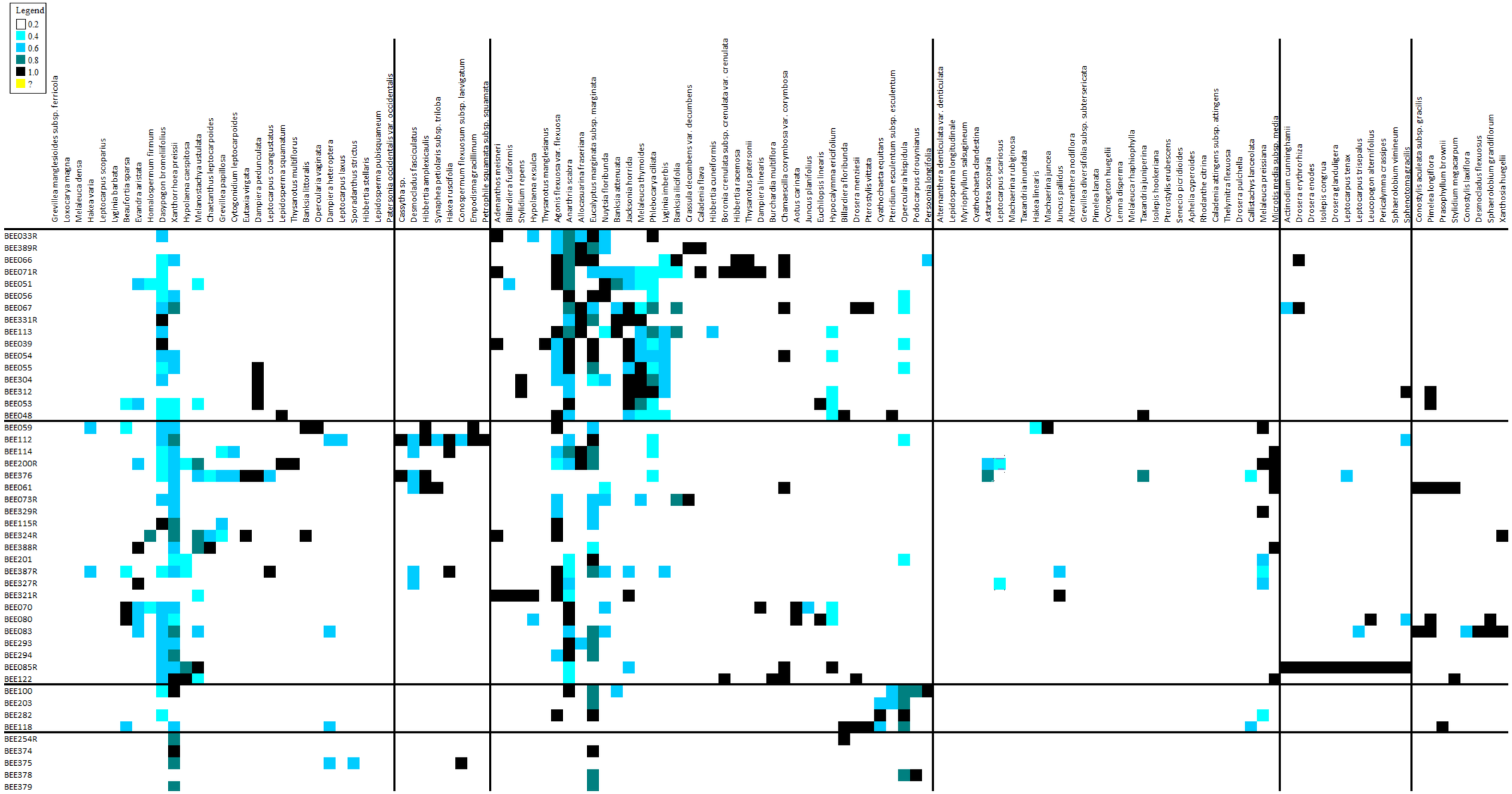

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