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ENVIRONMENTAL SCIENCES

Detailed Flora and Vegetation Report for the Kalgoorlie Regional Renewable Energy Project

Prepared for Northern Star Resources Ltd

September 2025

Final

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Version history

Author/s	Reviewer/s	Version	Version number	Date submitted	Submitted to
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EXECUTIVE SUMMARY

Northern Star Resources Ltd (Northern Star) is seeking to develop the Kalgoorlie Regional Renewable Energy Project (KRRE), located in the Eastern Goldfield and Eastern Murchison subregions of the Coolgardie and Murchison bioregions, approximately 12 km to the north-east of Kalgoorlie, Western Australia. In November 2024, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by Northern Star to undertake a Detailed flora and vegetation survey for the KRRE. The study area is located in the Shire of Kalgoorlie-Boulder and the Coolgardie and Murchison Botanical Provinces as defined by the Environmental Protection Authority (EPA).

The field survey was conducted from 6 to 12 March 2025 by Dr Grant Wells and Calvin Williams. Regional targeted searches were conducted from 29 April to 4 May 2025 by Luis Buchan and Etienne Rousseau.

A total of 131 flora taxa representing 27 families and 62 genera were recorded within the study area during the field survey, with only one of those species not able to be identified to species level. Species richness ranged from 7 - 30 species between quadrats. The assemblage included 124 native species, 6 introduced species and one of unknown status, including 106 perennial species, 16 annual or short-lived species, 5 species considered to be either annual or perennial and 4 having unknown status. The most prominent families recorded were Chenopodiaceae (24 spp.), Scrophulariaceae (18 spp.), Poaceae (15 spp.), Fabaceae (13 spp.), Asteraceae (11 spp.) and Myrtaceae (10 spp.).

No Threatened flora were recorded during the field survey. One Priority flora was recorded during the field survey, *Eremophila praecox* (P2).

A significant (80 km direction) range extension was recorded for *Streptoglossa cylindriceps* and therefore this record is considered significant for the species.

The likelihood of occurrence assessment for significant species identified in the desktop review determined one had been previously recorded in the study area, 8 may possibly occur, and 15 are unlikely to occur.

Six introduced flora species were recorded during the survey: **Mesembryanthemum nodiflorum*, **Centaurea melitensis*, **Carrichtera annua*, **Salvia verbenaca*, **Pentameris airoides* subsp. *airoides* and **Lysimachia arvensis*. None of these species are considered to be a Weed of National Significance (WoNS) or Declared Pest.

A total of 14 vegetation types were defined for the study area. No TECs or PECs were present within the study area. In total, 5 vegetation types may be considered to have local significance, one as a restricted vegetation type which made up less than 1% of the study area (0.80%). The remining 4 providing refuge for *Eremophila praecox* (P2).

Remnant vegetation in the study area was recorded to be in Degraded to Excellent condition with the majority (93.93%) in Very Good to Excellent condition. Disturbances present at sites consisted of evidence of feral animals, vehicle tracks, livestock tracks, exploration (drill pads and access tracks), historic clearing, litter, vehicle tracks, erosion channels, weed infestation, large-scale clearing and grazing. Vegetation in Excellent condition is considered to be of higher value than the remaining vegetation in study area as it contains fewer disturbances in an area subject to a high level of anthropogenic disturbances.

The botanical values in the study area comprise 2 significant flora; *Eremophila praecox* P2 and *Streptoglossa cylindriceps*. Five vegetation types that may be considered locally significant, 4 as suitable habitat for *Eremophila praecox* (CpSafMs, CpSsAe, ElSsMt and ErEpMt) and therefore perform a role as a refuge for this significant species and another and due to restricted distribution (MsMsEpa). A total of 6 introduced flora species were identified during the survey, none of which require mandatory weed management actions as they are not a WoNS or Declared Pest.

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ACRONYMS AND ABBREVIATIONS

BoM	Bureau of Meteorology
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EPA	Environmental Protection Authority
ESA	Environmentally Sensitive Areas
IBRA	Interim Biogeographic Regionalisation of Australia
KCGM	Kalgoorlie Consolidated Gold Mines
NES	National Environmental Significance
Northern Star	Northern Star Resources Ltd
NVIS	National Vegetation Information System
PEC	Priority Ecological Communities
TEC	Threatened Ecological Communities
WA	Western Australia
WoNS	Weed of National Significance

1 INTRODUCTION

Northern Star Resources Ltd (Northern Star) is seeking to develop the Kalgoorlie Regional Renewable Energy Project (KRRE), located in the Eastern Goldfield and Eastern Murchison subregions of the Coolgardie and Murchison bioregions, approximately 12 km to the north-east of Kalgoorlie, Western Australia (WA; Figure 1-1).

In November 2024, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by Northern Star to undertake a flora and vegetation survey for the KRRE.

The study area is located in the Shire of Kalgoorlie-Boulder and the Coolgardie and Murchison Botanical Provinces as defined by EPA (2016b).

1.1 BACKGROUND

The KRRE is anticipated to be assessed by the Environmental Protection Authority (EPA) under part IV, and a Detailed flora and vegetation survey was requested.

Phoenix have previously conducted Reconnaissance surveys for the KRRE (Phoenix 2023, 2024). Both surveys established that the key botanical value of the study area is the presence of Priority flora and potential for further Priority flora to occur. There was no listed significant vegetation present in the areas surveyed and the areas did not represent highly diverse vegetation types.

Subsequently, a single season Detailed survey accompanied with targeted searches was conducted in the Primary survey period (March) for the region.

1.2 OBJECTIVES AND SCOPE OF WORK

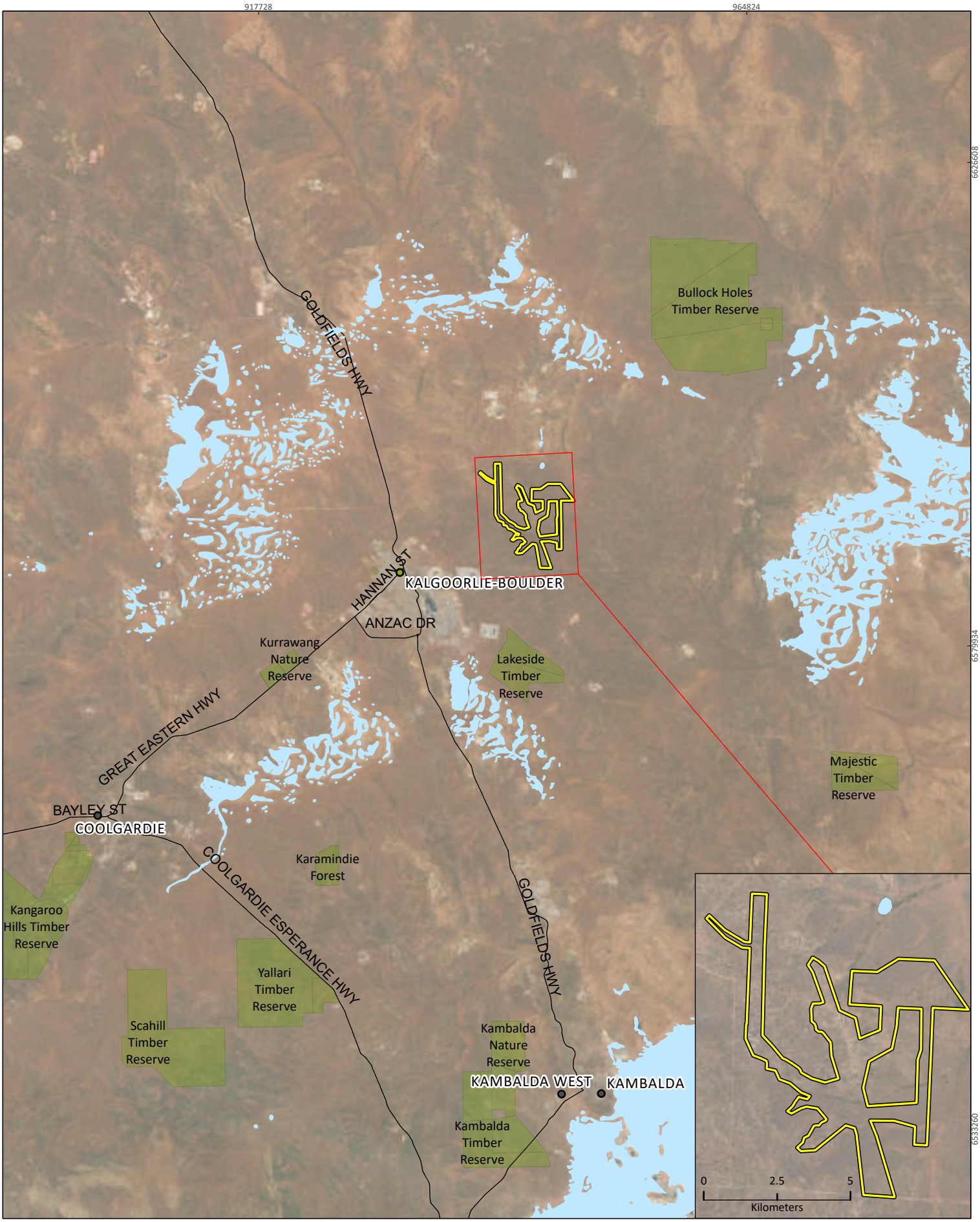
The scope of work for the flora and vegetation survey was as follows:

- desktop study –
    - to gather contextual information of the potential flora and vegetation of the study area
    - to identify field survey requirements
- detailed survey –
    - to provide adequate local and regional context relative to the values of the flora and vegetation within the study area
    - to inform an environmental impact assessment for the KRRE (typically for a higher-level environmental approval, e.g. for an EP Act Part IV assessment (EPA assessment on proponent information or public environmental review), EPBC Act assessment)
- targeted survey –
    - to gather information on significant flora and/or vegetation
    - to inform an environmental impact assessment for the KRRE (may be for any assessment level).
    - conduct regional searches for *Eremophila praecox* with an emphasis on determining the presence of the species in conservation reserves and increasing the known number of populations and individuals.

1.3 STUDY AREA

The study area for the Detailed survey was approximately 2,295.8 ha and comprised a series of interconnected corridors (Figure 1-1).

Figure 1-1 KRRE location and study area



Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	21/08/2025
Drawn by	BK
Map author	CW

0 7.5 15
Kilometers

1:471,400 (at A4) GDA 1994 MGA Zone 51

P:\Data\Projects\Kalgoorlie Operations\1701-KO-NSR-BOT\GIS\Mapping\MapDocuments\Figures\1701maps\1701maps.aprx

- Study area
- Lakes
- DBCA managed land
- Roads

Figure 1-1

KRRE 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 (TECs) 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 species under the EPBC Act are as follows:

- Extinct[1] – there is no reasonable doubt that the last individual has died
- Extinct in the Wild – taxa known to survive only in captivity
- Critically Endangered – taxa facing an extremely high risk of extinction in the wild in the immediate future
- Endangered – taxa facing a very high risk of extinction in the wild in the near future
- Vulnerable – taxa facing a high risk of extinction in the wild in the medium term
- Conservation Dependent[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 of TECs under the EPBC Act: Critically Endangered, Endangered and Vulnerable.

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 2018a, b) in the following categories:

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

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

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

The Department of Biodiversity, Conservation and Attractions (DBCA) administers the BC Act and also 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.

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.

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.

2.2.4 Other significant flora and vegetation

Under the EPA's environmental factor guideline (EPA 2016a), flora and vegetation may be considered significant for a range of reasons other than listing as Threatened or Priority. Specifically:

- flora may be significant for
    - local endemism or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems)
    - 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 to be Environmentally Sensitive Areas (ESAs). ESAs are declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* (Government of Western Australia 2005). ESAs are areas where the vegetation has high conservation value and include:

- the area covered by vegetation within 50 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 (AWC 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 2019).
- 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 (AUT University Library) (AUT University Library) classifies Australia's landscapes into large 'bioregions' and 'subregions' based on climate, geology, landform, native vegetation and species information (DoEE 2016). The study area crosses over 2 subregions; the Eastern Goldfield and Eastern Murchison subregions (COO03 and MUR01, respectively) of the Coolgardie and Murchison bioregions (Figure 3-1).

The Eastern Goldfields is characterised by gently rolling plains, with low hills and ridges of Archaean greenstones in the west and a Proterozoic basic granulite horst in the east. The underlying geology consists of eroded gneisses and granites, covered by tertiary soils and scattered bedrock exposures. Dominant calcareous earth soils cover much of the region, with large playa lakes in the west marking an ancient drainage line. Vegetation includes mallee, *Acacia* thickets, and shrub heaths on sandplains, *Eucalyptus* woodlands around salt lakes, and samphire shrublands on salt lakes. The region is rich in endemic *Acacias*. The climate is arid to semi-arid, with 200 - 300 mm of rainfall, mostly in winter, and the subregional area spans 5,102,428 hectares.

The Eastern Murchison is characterised by extensive elevated red-brown desert sandplains, featuring breakaway complexes and minimal dune development. The region's hydrology is shaped by internal, occluded Paleodrainage, which forms extensive salt lake systems replenished by winter rainfall (200 mm), typical of the arid climate. Vegetation in the Eastern Murchison primarily consists of mulga woodlands with low-lying ephemerals, along with hummock grasslands, saltbush shrublands, and *Tecticornia* shrublands. The subregional area for MUR01 spans 7,847,996 hectares.

3.2 LAND SYSTEMS AND SURFACE GEOLOGY

DPIRD undertakes land system mapping for WA using a nesting soil-landscape mapping hierarchy (Payne & Schoknecht 2011). Whilst 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 (Payne & Leighton 2004). The study area intersects 5 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
Mx43	Gently undulating valley plains and pediments; some outcrop of basic rock.	1096.7	47.8
Gumland System	Extensive pedeplains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys.	948.8	41.3
Zed System	Low hills, rises and gently undulating stony plains based on metasedimentary rocks supporting *Acacia* shrublands.	203.5	15.0
Moriarty System	Low greenstone rises and stony plains supporting chenopod shrublands with patchy *Eucalyptus* overstoreys.	43.8	1.9
Graves System	Basalt and greenstone rises and low hills supporting *Eucalyptus* woodlands with prominent saltbush and bluebush understoreys.	3	0.1

According to the Surface Geology of Australia 1:1,000,000 scale, WA database (Stewart *et al.* 2008), the study area intersects 5 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
sedimentary rocks 74322	Ase	Phyllitic schist, siltstone, sandstone, greywacke, pelite, conglomerate, quartzite, phyllite, shale, slate, claystone, chert, minor felsic volcanic and volcaniclastic rocks; arkose, para- and orthoamphibolites; rare banded iron formation	1010.3	44.0
colluvium 38491	Qrc	Colluvium, sheetwash, talus; gravel piedmonts and aprons over and around bedrock; clay-silt-sand with sheet and nodular kankar; alluvial and aeolian sand-silt-gravel in depressions and broad valleys in Canning Basin; local calcrete, reworked laterite	1092.8	47.6
felsic volcanic and volcaniclastic rocks 74288	Afe	Quartz-feldspar (meta-) porphyry, porphyritic microgranite; rhyolite, dacite, rhyodacite, andesite; agglomerate, breccia tuff; felsic schist; felsic volcanic and volcaniclastic rocks; dacite and rhyodacite tuff; dacite porphyry;	155.8	6.8
alluvium 38485	Qa	Channel and flood plain alluvium; gravel, sand, silt, clay, locally calcreted	20.6	0.9
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	16.3	0.7

Figure 3-1 Study area in relation to IBRA bioregions and subregions

Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	28/05/2025
Drawn by	BK
Map author	CW

0 0.85 1.7
Kilometers

1:50,600 (at A4) GDA 1994 MGA Zone 51

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Study area

Region, subregion

Coolgardie,Eastern Goldfield

Murchison,Eastern Murchison

Figure 3-1

Study Area in Relation to IBRA Bioregions and Subregions

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Figure 3-2 Land systems in the study area

Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	28/05/2025
Drawn by	BK
Map author	CW

0 1 2
Kilometers

1:50,600 (at A4) GDA 1994 MGA Zone 51

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Study area

Land system

- Bunyip System
- Graves System
- Gumland System
- Kanowna System
- Moriarty System
- Mx43
- Zed System

Figure 3-2

Land Systems in the Study Area

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Figure 3-3 Surface geology in the study area

Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	28/05/2025
Drawn by	BK
Map author	CW

0 1 2
Kilometers

1:50,600 (at A4) GDA 1994 MGA Zone 51

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Study area

Surface geology

- Ade
- Afe
- Ase
- Aue
- Czl
- Qa
- Qrc

Figure 3-3

Surface Geology in the Study Area

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3.3 CLIMATE AND WEATHER

The climate of the Eastern Murchison and Eastern Goldfield subregions is described as arid to semi-arid, with approximately 200 – 300 mm of rainfall per year, sometimes in summer but mainly in winter (Cowan 2001a, b). The nearest Bureau of Meteorology (BoM) weather station with comprehensive data collection and recent historic climate data is Kalgoorlie-Boulder Airport (no. 012038, Latitude: 30.78°S, Longitude 121.45°E), located approximately 16.2 km south-west of the study area.

Kalgoorlie-Boulder Airport recorded the highest mean maximum monthly temperature during the period between 1939 and 2025 in January (33.7°C), and the lowest in July (16.9°C). The lowest minimum mean monthly temperature recorded during the same period was recorded in July (5.1°C), the highest was in January (18.4°C) (Figure 3-4). Daily mean temperatures at Kalgoorlie-Boulder Airport preceding the surveys show that the mean annual daily minimum temperature between April 2024 and March 2025 was 13.4°C, whilst the mean annual daily maximum temperature during the same period was 27.2°C. The highest mean daily minimum temperature was recorded in January (21.3°C), whilst the lowest was recorded in July (6.2°C). The highest mean daily maximum temperature was recorded in January (37.5°C), whilst the lowest mean daily maximum temperature was recorded in July (17.5°C).

Total annual rainfall for the period between 1939 and 2025 was 265.7 mm, with February recording the highest monthly mean and September recording the lowest monthly mean (31.8 mm and 13.4 mm respectively; Figure 3-4). The mean annual rainfall across all months during this period was 22.1 mm. Records from between April 2024 and March 2025 at Kalgoorlie-Boulder Airport show that the highest total monthly rainfall amount occurred in June (86.2 mm), whilst the lowest total monthly rainfall amount was observed in January (4.4 mm). During the 3 months preceding the survey, mostly well-below average rainfall was observed in the months of December and January, whilst February had a slightly higher than average total monthly rainfall amount.

3.4 LAND USE

The dominant land use in the East Murchison subregion is grazing native pastures (Cowan 2001b). The study area occurs within one pastoral lease; id 368.

3.5 CONSERVATION RESERVES AND ESAS

There are no lands of interest or ESAs that intersect the study area. The closest land of interest is 67.92 km north-west of the study area. The closest ESA is approximately 55.53 km north of the study area (Figure 1-1).

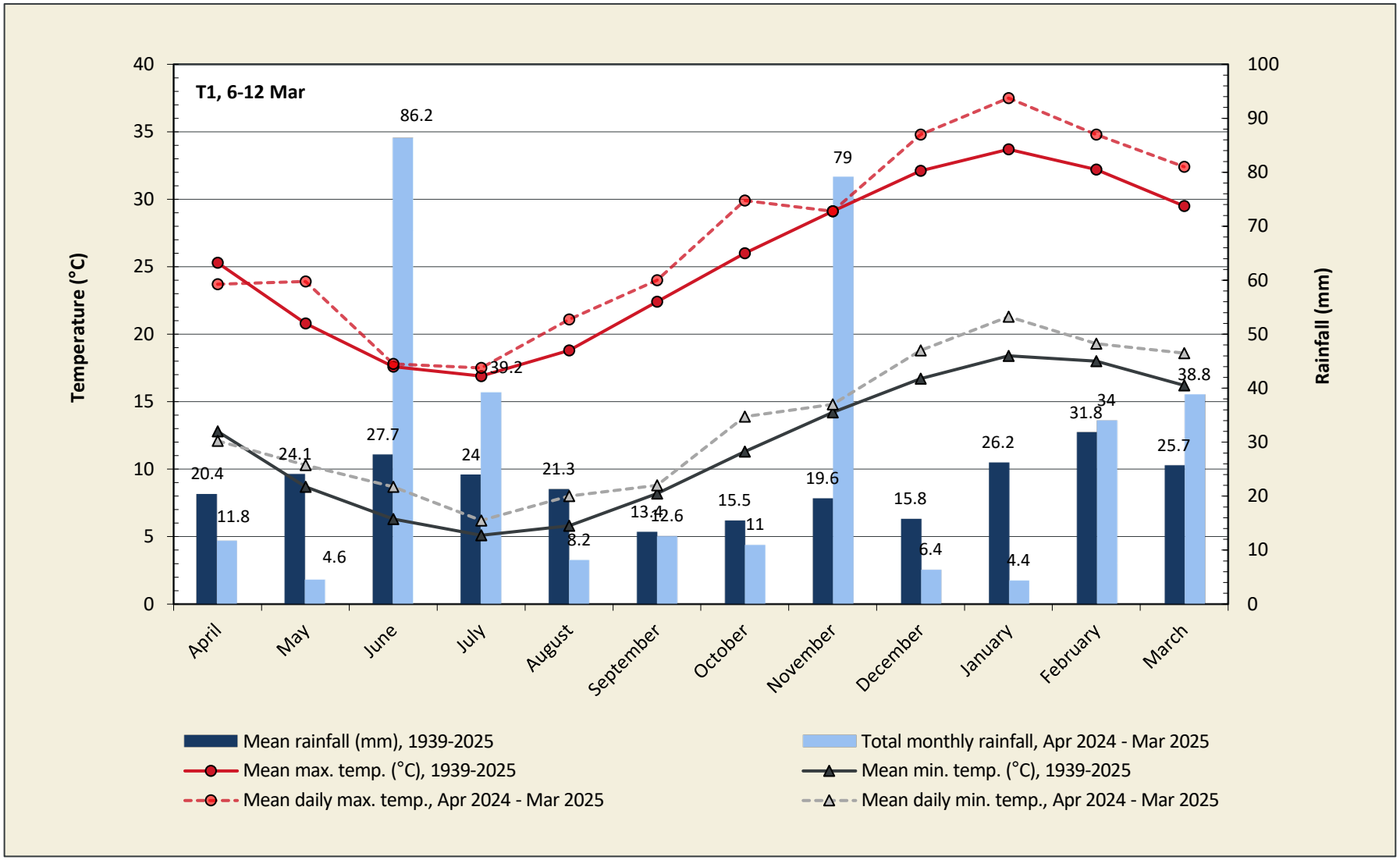


Figure 3-4 **Annual climate and weather data for Kalgoorlie-Boulder Airport (no. 012038) and mean monthly data for the 12 months preceding the survey (BoM 2025)**

4 METHODS

The Detailed flora and vegetation survey was conducted in accordance with relevant survey guidelines and guidance, including:

- EPA Environmental Factor Guideline: Flora and vegetation (EPA 2016a)
- EPA Technical Guidance: Flora and vegetation surveys for Environmental Impact Assessment (EPA 2016b)

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).

Table 4-1 Database searches conducted for the desktop review

Database	Target group/s	Search coordinates and extent
Protected Matters Search Tool (DCCEEW 2025)	EPBC Act Threatened flora and ecological communities	Study area plus a 40 km buffer
DBCA Threatened and Priority Ecological Communities Database (DBCA 2024a)	TECs and PECs	Study area plus a 40 km buffer
DBCA Threatened and Priority Flora Database (DBCA 2024b)	Threatened and Priority flora	Study area plus a 40 km buffer
Dandjoo Biodiversity Data Repository (DBCA 2025a)	All flora taxa	Approximate centre point of study area (30.701267°S, 121.60511°E) with 40 km buffer

A literature search was conducted for accessible reports for biological surveys conducted within 40 km of the study area to build on the lists developed from the database searches (Table 4-2).

Table 4-2 Survey reports included in the desktop review

Report author	Survey description	Project
Botanica (2014)	Desktop flora assessment	Tailings Storage Facility Expansion (KCGM)
Botanica (2015a)	Level 1 flora and vegetation survey	Fimiston Waste Rock Dump Extension (KCGM)
Botanica (2015c)	Level 2 flora and vegetation survey	Tailings Storage Facility Expansion (KCGM)
Jim's Seeds, Weeds & Trees (2004)	Flora and vegetation survey	Fimiston III (KCGM)
Jim's Seeds, Weeds & Trees (2006)	Flora and vegetation survey	KCGM rehabilitation sites
McKenzie & Hall (1992)	Level 2 flora and fauna surveys	Eastern Goldfields Biological Survey
Phoenix (2016)	Level 2 aquatic and riparian flora and fauna survey	Hannan Lake (KCGM)
Phoenix (2017)	Level 2 aquatic and riparian flora and fauna survey	Hannan Lake (KCGM)
Phoenix (2018a)	Level 2 flora and vegetation and Level 1 terrestrial fauna	Crossroads Tenement (KCGM)
Phoenix (2018c)	Level 2 flora and vegetation and Level 1 terrestrial fauna	Gidji Operations (KCGM)

Report author	Survey description	Project
Phoenix (2019a)	Detailed flora and vegetation and Level 1 terrestrial fauna	Fimiston operations (KCGM)
Phoenix (2020)	Targeted searches for *Eremophila praecox*	Fimiston operations (KCGM)
Phoenix (2022b)	Reconnaissance and targeted flora and vegetation survey	Kalgoorlie Operations regional core yard
Phoenix (2023)	Reconnaissance and targeted flora and vegetation survey	Kalgoorlie Operations
Phoenix (2024)	Reconnaissance flora and vegetation survey	Kalgoorlie Operations

4.2 FIELD SURVEY

4.2.1 Survey timing

The Detailed survey was conducted from 6 to 12 March 2025 by Dr Grant Wells and Calvin Williams. Regional targeted searches for *Eremophila praecox* were conducted from 29 April to 4 May 2025 by Luis Buchan and Etienne Rousseau.

4.2.2 Field methods

Field methods for the flora and vegetation survey of the study area included:

- surveying of quadrats (see 4.2.2.1)
- targeted flora searches (4.2.2.3)
- vegetation type and condition mapping (4.2.2.4 and 4.2.2.5)
- TEC/PEC assessment (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

Quadrat locations were selected to ensure that an accurate representation of the major vegetation types within the study area were sampled adequately, with a goal of at least 3 quadrats per vegetation type. Two methods were used for the selection of quadrat placement within the study area. Preliminary quadrat locations were pre-selected using aerial photography, with selection based on apparent changes in the vegetation visible in the aerial imagery. Final quadrat placement was determined in the field whilst 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 for the purposes of accurate vegetation mapping.

In total, 58 quadrats (20 m x 20 m) were surveyed across the study area (Figure 4-1; Appendix 1).

Quadrat sampling dimensions were 20 m x 20 m in accordance with EPA guidance for the Coolgardie and Murchison Botanical Provinces. 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 specific Botanical Province
- height and percentage foliage cover (PFC) – a visual estimate 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 study area represented a range extension for the species.

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 meandering transects with the searches focused on habitats considered likely to support significant flora, in addition to previously recorded locations of significant plants or populations in close proximity to 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.

4.2.2.3 Vegetation type mapping

Vegetation mapping was undertaken at a scale of 1:10,000 using the National Vegetation Information System (NVIS) sub-association level (L5) for structural descriptions (ESCAVI 2003). The vegetation descriptions from quadrats from the survey were grouped according to similarity of community structure (i.e. canopy levels), species composition and combination of species and the prevalent community structure (i.e. woodland, shrubland, etc.). The vegetation boundaries were mapped utilising ArcMap ESRI imagery and from vegetation boundaries recorded on GPS during the field survey.

To support delineation of vegetation types, a cluster analysis was conducted based on species presence in each quadrat. The fusion strategy for the site classification was flexible UPGMA with a beta value of -0.1 and Bray Curtis association measure in the software package PATN (Belbin 2003). A dendrogram was produced to illustrate the similarities between the vegetation units identified. Statistically distinct vegetation units (the floristic group) classified the vegetation at a local scale. Local scale vegetation units were described at 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).

4.2.2.4 Vegetation condition mapping

The condition of vegetation was mapped across the study area based on the condition scale considered more applicable to the Goldfields (Trudgen 1988 in EPA 2016b) (Table 4-3). 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.

Completely cleared areas (e.g. roads, tracks, paddocks) were excluded from condition ratings and mapped as 'cleared'. Major unpaved tracks were mapped as cleared where the field crew ground truthed those tracks are easily accessible by car and well transited, acting as a road.

The condition scale utilised in the KRRE was the Eremaean and Northern botanical provinces scale. The study area virtually falls half in the South-West Interzone and half in the Eremaean and Northern botanical provinces, where the condition scale varies (EPA 2016b). Since the study area is located in the northern border of these botanical provinces, only the Eremaean and Northen scale was used for consistency across the condition assessment of quadrats.

Table 4-3 Vegetation condition rating scale (EPA 2016b)

Condition rating	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.

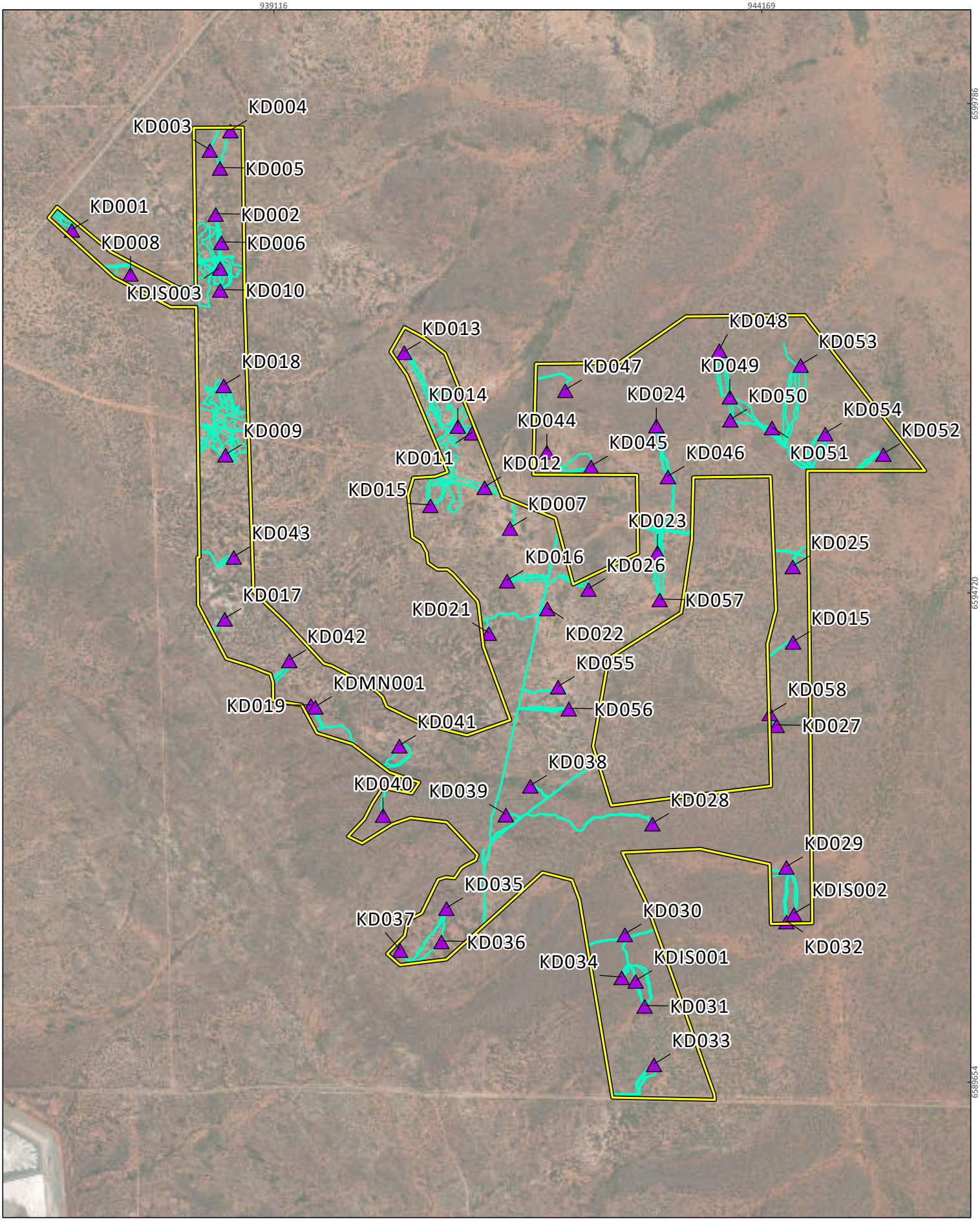
Condition rating	Description
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching Good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

4.2.2.5 Significant vegetation

Vegetation types mapped in this survey were classified as regionally significant if they were identified as TEC, PEC or contained Threatened flora. Vegetation types were designated as of local significance if they contained Priority flora, locally significant flora (e.g. notable range extensions (>100 km), novel species), restricted vegetation (representing <1% of native vegetation in the study area) or unique assemblages.

The DBCA's TEC/PEC database search provided a brief description and locations of TEC/PEC within the desktop extent. Further literature review was conducted to source detailed descriptions of each TEC/PEC (e.g. vegetation, landform, geology, land system, elevation, slope, aspect, water and soil) and whether previous surveys conducted in the area found vegetation analogous with TEC/PEC. To designate TEC/PEC following statistical analysis and vegetation mapping, vegetation types were compared with the TEC/PEC description. Providing vegetation types were analogous to the descriptions, those mapped within TEC/ PEC extent were designated as TEC/ PEC. For vegetation units occurring both within and out of the TEC/ PEC boundary, outside occurrences were marked as analogous to TEC/ PEC but not designated as TEC/ PEC vegetation. Designation of TEC/ PEC also considered relevant conservation advice, such as minimum patch size and/or vegetation condition.

Figure 4-1 Survey sites and survey effort



Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	16/07/2025
Drawn by	BK
Map author	CW

0 1 2
Kilometers

1:50,600 (at A4) GDA 1994 MGA Zone 51

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Study area
Sites
Tracks

Figure 4-1

Survey Sites and Survey Effort

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4.2.2.6 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.

4.2.3 Survey personnel

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

Table 4-4 Survey personnel

Name	Permit	Qualifications	Role/s
Grant Wells	Flora collection permit no: FB62000538	PhD (Botany)	Principal Botanist Project manager, field team leader, field survey
Calvin Williams	Flora collection permit no: FB62000525	BSc. (Sciences)	Graduate Botanist Field survey, reporting, taxonomy
Luis Buchan	Flora collection permit no: FB62000514 TFL 2324-0018	Grad Dip. (Biodiversity Science)	Botanist Field team leader, data analysis, vegetation mapping
Etienne Rousseau	NA	BSc. (Botany & Zoology)	Graduate Botanist Field survey, logistics
Beth Arbery	NA	BSc. (Conservation & Wildlife Biology, Environmental Science)	Graduate Botanist Reporting
Dr Andrew Perkins	NA	PhD (Botany)	Botanical Taxonomist Taxonomy
Natalie Kierse	NA	NA	Office Manager Logistics and administration
Brigitte Kovar	NA	MSc (Geospatial Intelligence)	GIS Specialist Spatial data management

5 RESULTS

5.1 DESKTOP REVIEW

5.1.1 Flora assemblage

The desktop review identified records of 789 flora taxa within the desktop search extent comprised of 77 families and 299 genera. This included 698 native and 91 introduced flora taxa. The most prominent families were the Asteraceae (102 taxa), Chenopodiaceae (93 taxa), Fabaceae (89 taxa), Myrtaceae (67 taxa) and Poaceae (63 taxa). The most recent reconnaissance flora and vegetation survey (Phoenix 2024) recorded 102 species representing 25 families, mostly comprised of Scrophulariaceae (19 spp.), Chenopodiaceae (15 spp.), Fabaceae (13 spp.), and Myrtaceae (10 spp.).

The dominant families recorded by Botanica during its surveys of the KCGM Tailings Storage Facility Expansion, KCGM Fimiston Waste Rock Dump Extension included Chenopodiaceae, Fabaceae, Myrtaceae and Scrophulariaceae (Botanica Consulting 2015a, b).

Surveys conducted by Jim's Seeds, Weeds & Trees identified Chenopodiaceae, Scrophulariaceae (formerly Myoporaceae), Myrtaceae and Fabaceae as being the most dominant families (Jim's Seeds 2006).

Another survey conducted in the Eastern Goldfields saw dominant families consisting of Asteraceae, Fabaceae, Chenopodiaceae, Myrtaceae and Poaceae (McKenzie & Hall 1992).

Most of the previous surveys conducted by Phoenix at Hannan Lake, KCGM Crossroads Tenement, KCGM Gidji Operations, KCGM Fimiston Operations and Kalgoorlie Operations found Chenopodiaceae, Scrophulariaceae and Fabaceae to be the most dominant families (Phoenix 2016, 2017, 2018b, c, 2019b, 2023, 2024).

5.1.2 Significant flora

Records of 24 significant flora species were identified within the desktop search extent, comprising one Threatened (Vulnerable) flora, *Tecticornia flabelliformis*, listed under the EPBC Act (this species is a Priority 2 under State listing) and 23 Priority flora (Table 5-1).

Phoenix data from previous surveys included 462 records of 4 significant flora species, *Eremophila xantholaemus* (P1, one record), *Eremophila praecox* (P2, 459 records), *Allocasuarina eriochlamys* subsp. *grossa* (P3, one record), and *Notisia intonsa* (P3, one record).

Of these, the only records within the study area were for *Eremophila praecox*. The other species were recorded in areas encompassing the study area that were surveyed as part of the broader reconnaissance surveys. In total, 2 records of *Eremophila praecox* (P2) occurred in the study area (Figure 5-1).

The desktop assessment conducted by Botanica found several species which were considered possible to occur; *Angianthus prostratus* (P3), *Austroparmelina macrospora* (P3), *Elachanthus pusillus* (P2), *Lepidium fasciculatum* (P3), *Ptilotus procumbens* (P1) and *Xanthoparmelia dayiana* (P3) (Botanica Consulting 2014). The subsequent field surveys conducted by Botanica did not record any significant flora (Botanica Consulting 2015a, b).

Surveys conducted by Jim's Seeds, Weeds & Trees recorded 2 significant species; *Eucalyptus formanii* (P4) and *Eucalyptus brockwayi* (P3), (Jim's Seeds 2006).

A survey conducted in the Eastern Goldfields did not identify any conservation significant species of flora (McKenzie & Hall 1992).

Phoenix conducted a survey at the Gidji Operations (Phoenix 2019b) in which a single Priority flora species was found (*Eremophila praecox*). The study area was significantly smaller than that of the current survey (483.5 ha).

A reconnaissance and targeted flora survey conducted in 2022 (Phoenix 2023) resulted in a total of 2 significant flora species being found (*Eremophila praecox* and *Allocasuarina eriochlamys* subsp. *grossa*). The study area for this survey was significantly larger than that of the current survey (11,413.3 ha).

Another reconnaissance flora survey was conducted in 2024 (Phoenix 2024) recorded 2 significant flora species, *Eremophila praecox* and *Notisia intonsa*. This study area was approximately half the size of the study area for the current survey (1,776.5 ha).

Multiple previous surveys recorded no significant flora species (Botanica Consulting 2015a, b; McKenzie & Hall 1992).

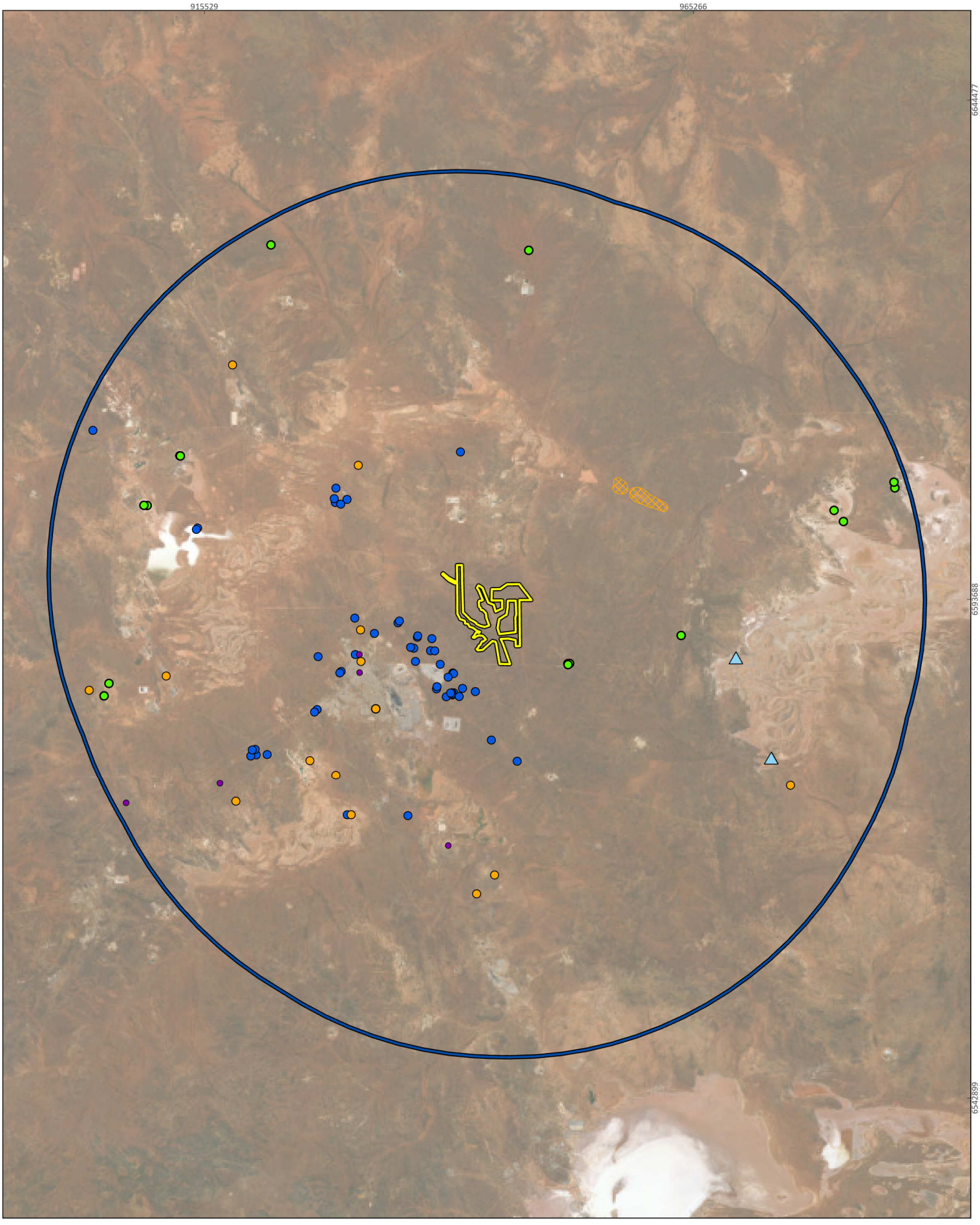
Table 5-1 Significant flora identified in the desktop review

Species	Status	Proximity to study area	Habitat
Tecticornia flabelliformis	VU/P2 (EPBC Act; DBCA list)	21.5 km ESE of study area	On salt lake playa or near the shoreline of salt lake in clay soils in samphire and chenopod dominated shrublands (WA Herbarium 1998–).
Acacia epedunculata	P1 (DBCA list)	37.7 km NNW of study area	*Eucalyptus* mallee woodland over *Callitris* and *Banksia* shrubland over *Triodia* grasses on yellow sand plain. Flowers July to August (WA Herbarium 1998–).
Calandrinia lefroyensis	P1 (DBCA list)	30.8 km WNW of study area	Occurs on salt lake flats among samphire communities, soils are brown silty loams or brown-grey sandy clays, favour the outer edges of samphire communities including within the ecotone of adjacent communities where there are open assemblages of taller species such as *Casuarina obesa* and *Eucalyptus* spp. Flowers October to November (Obbens 2018).
Eremophila xantholaemus	P1 (DBCA list)	5.5 km ESE of study area	Growing in stony, brown loam soils in *Eucalyptus-Casuarina* woodland on the upper slopes of low rocky hills. Associated species include *Casuarina pauper*, *Eremophila glabra* subsp. *glabra*, *E. parvifolia* subsp. *auricampa*, *E. pustulata*, *Senna artemisioides* subsp. *filifolia* and *Westringia rigida*. Flowers from September to October (Brown & Davis 2019).
Ptilotus procumbens	P1 (DBCA list)	11.9 km WSW of study area	Open *Acacia* shrubland over mixed forbland in red clay or deep red clay and in mulga scrub on plains with lateritic gravel. Recorded flowering September to November (WA Herbarium 1998–).
Ptilotus rigidus	P1 (DBCA list)	31.1 km WNW of study area	Associated with salt lakes, occurs in red loam/clay or orange sand on salt lake edges, quartz rises, rocky outcrops in *Tecticornia* shrublands, kopi dune vegetation and *Melaleuca* shrublands. Flowers September to November (Lally 2009; WA Herbarium 1998–).

Species	Status	Proximity to study area	Habitat
Ptilotus sp. Kalgoorlie (J. Jackson & B. Moyle 260)	P1 (DBCA list)	29.2 km WNW of study area	Quartz hills and outcrop in *Tecticornia* dominated shrublands. Recorded in flower bud in September (WA Herbarium 1998–).
Elachanthus pusillus	P2 (DBCA list)	10.7 km WSW of study area	Sparse *Eucalyptus* spp. woodland over open mixed shrubland over open mixed herbs or Chenopod shrubland in bare lateritic gravel – red loamy clay soils or red loam over limestone on low plain. Flowers August to October (WA Herbarium 1998–).
Eremophila praecox	P2 (DBCA list)	Within study area	Hill slope. Low *Eucalyptus* woodland over dwarf scrubland in red-brown sandy loam on undulating plains. Red-brown clay loam over ferrous ironstone. Flowers October to December (WA Herbarium 1998–).
Goodenia salina	P2 (DBCA list)	21.1 km SW of study area	Found in low gypseous dunes near salt pans in well-drained, saline, grey or brown loamy clay with scattered *Callitris preissii* subsp. *verrucosa*, *Tecticornia* spp. and *Austrostipa juncifolia*. Flowers September to October (Sage & Shepherd 2007).
Allocasuarina eriochlamys subsp. *grossa*	P3 (DBCA list)	840 m WSW of study area	Hill crests and slopes in lateritic soils and granite outcrops in *Melaleuca*, *Acacia* and *Allocasuarina* thickets, tall shrublands and *Eucalyptus* mallee woodland (WA Herbarium 1998–).
Alyxia tetanifolia	P3 (DBCA list)	19.2 km SW of study area	*Casuarina pauper* woodland or Chenopod shrubland in sandy clay, loam, concretionary gravel or granite on drainage lines near lakes or lateritic low rises and breakaways. Recorded flowering May to June and November (WA Herbarium 1998–).
Angianthus prostratus	P3 (DBCA list)	13.9 km NW of study area	*Tecticornia* spp. low heath over open herbs or dense low grass in red clay or loamy soils in saline depressions on beach edges of salt lakes. Flowers July to September (WA Herbarium 1998–).
Austrostipa turbinata	P3 (DBCA list)	21.5 km S of study area	*Eucalyptus* woodlands on hillslopes and claypans with crabholes in sandy loam or cracking clay soils. Flowers September to October (WA Herbarium 1998–; Williams 2022).
Cyathostemon verrucosus	P3 (DBCA list)	9.9 km WSW of study area	Found on yellow sand plains, recorded in shrublands, sometimes dominated by mallees or *Banksia* (Trudgen & Rye 2014). Flowers mainly from late September to early December, also recorded in early March (Trudgen & Rye 2014).
Eremophila arachnoides subsp. *tenera*	P3 (DBCA list)	31.3 km ESE of study area	Shrublands frequently dominated by *Maireana sedifolia*, *Cratystylis subspinescens* and *Atriplex* spp. with open *Eucalyptus* woodland overstorey on plains in calcareous sandy loam. Recorded flowering from September to January (WA Herbarium 1998–).

Species	Status	Proximity to study area	Habitat
Isolepis australiensis	P3 (DBCA list)	21.1 km SW of study area	*Melaleuca* open shrubland or *Casuarina*/*Eucalyptus* open woodland in silty sand, sandy clay and red clay on lake margins, pools or granite outcrops. Recorded flowering in June and September (WA Herbarium 1998–).
Lepidium fasciculatum	P3 (DBCA list)	10.8 km WSW of study area	Open *Acacia* or *Maireana* shrubland in brown cracking clay on plains or red loam on dry lakebed. Recorded in fruit in September (WA Herbarium 1998–).
Melaleuca coccinea	P3 (DBCA list)	11.9 km WSW of study area	*Acacia* or *Melaleuca* shrubland in sandy loam over granite on granite outcrops, sandplains and river valleys. Recorded flowering from September to November and in January (WA Herbarium 1998–).
Notisia intonsa	P3 (DBCA list)	607 m E of study area	*Eucalyptus* woodlands over shrublands in red-orange clayey sand with ironstone and quartz gravel on plains, floodplains and shallow depressions. Recorded flowering September to November (WA Herbarium 1998–).
Eremophila caerulea subsp. *merrallii*	P4 (DBCA list)	38.7 km WSW of study area	Open *Eucalyptus* woodland over shrubland in sand, clay or loam with ironstone/quartz pebbles on undulating plains. Recorded flowering from October to December (WA Herbarium 1998–).
Eucalyptus jutsonii subsp. *jutsonii*	P4 (DBCA list)	29.4 km WSW of study area	Open *Eucalyptus* mallee woodland with spinifex grassland in red, yellow or orange deep sands on sandplains, undulating areas and on dunes. Recorded flowering April to March and November (WA Herbarium 1998–).
Eucalyptus x *brachyphylla*	P4 (DBCA list)	11.5 km WSW of study area	Sandy loam. Granite outcrops. Red loam over granite, on slopes. *Eucalyptus* mallee woodland over shrublands in sandy loam or clay loam on granite outcrops. Recorded flowering in December with buds recorded in January (WA Herbarium 1998–).
Frankenia glomerata	P4 (DBCA list)	10.7 km WSW of study area	Associated primarily with waterways and saline areas, in particular, salt lakes/pan edges in shrublands, including samphire shrublands in sandy or clay loam soils. Recorded flowering August to December (WA Herbarium 1998–).

Figure 5-1 Desktop records of significant flora and vegetation



Northern Star Resources Limited
East Kalgoorlie Wind Farm

Project No	1701
Date	28/05/2025
Drawn by	BK
Map author	CW

0 10 20
Kilometers

1:496,900 (at A4) GDA 1994 MGA Zone 51

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Study area
PEC
40km search area

Status

- P1 (DBCA list)
- P2 (DBCA list)
- P3 (DBCA list)
- P4 (DBCA list)
- VU/P2 (EPBC Act; DBCA list)

Figure 5-1

Desktop Records of Significant Flora and Vegetation

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5.1.3 Introduced flora

The desktop review identified records of 91 introduced species within the desktop search extent, of which 10 are a Declared Pest and 6 are WoNS (Table 5-2; Appendix 4).

Table 5-2 Desktop records of significant weeds

Species	Declared Pest	WoNS
Asteraceae	**Xanthium spinosum*	Declared pest, S22(2) (C2, C3)
Boraginaceae	**Echium plantagineum* (Paterson's Curse)	Declared pest, S22(2) (C3)
Cactaceae	**Cylindropuntia fulgida* var. *mamillata* (Boxing Glove Cactus)	Declared pest, S22(2) (C3); WoNS
Cactaceae	**Cylindropuntia imbricata* (Devil's Rope)	Declared pest, S22(2) (C3); WoNS
Cactaceae	**Cylindropuntia kleiniae* (Candle Cholla)	Declared pest, S22(2) (C3); WoNS
Cactaceae	**Opuntia elata* (Riverina Pear)	Declared pest, S22(2) (C3); WoNS
Cactaceae	**Opuntia ficus-indica* (Prickly Pear)	Declared pest, S22(2) (C3); WoNS
Fabaceae	**Alhagi maurorum* (Camelthorn)	Declared pest, S22(2) (C3)
Solanaceae	**Lycium ferocissimum* (African boxthorn)	WoNS
Tamariaceae	**Tamarix aphylla*	Declared pest, S12 (C1)
Tamariaceae	**Tamarix chinensis*	Declared pest, S12 (C1)

5.1.4 Vegetation associations

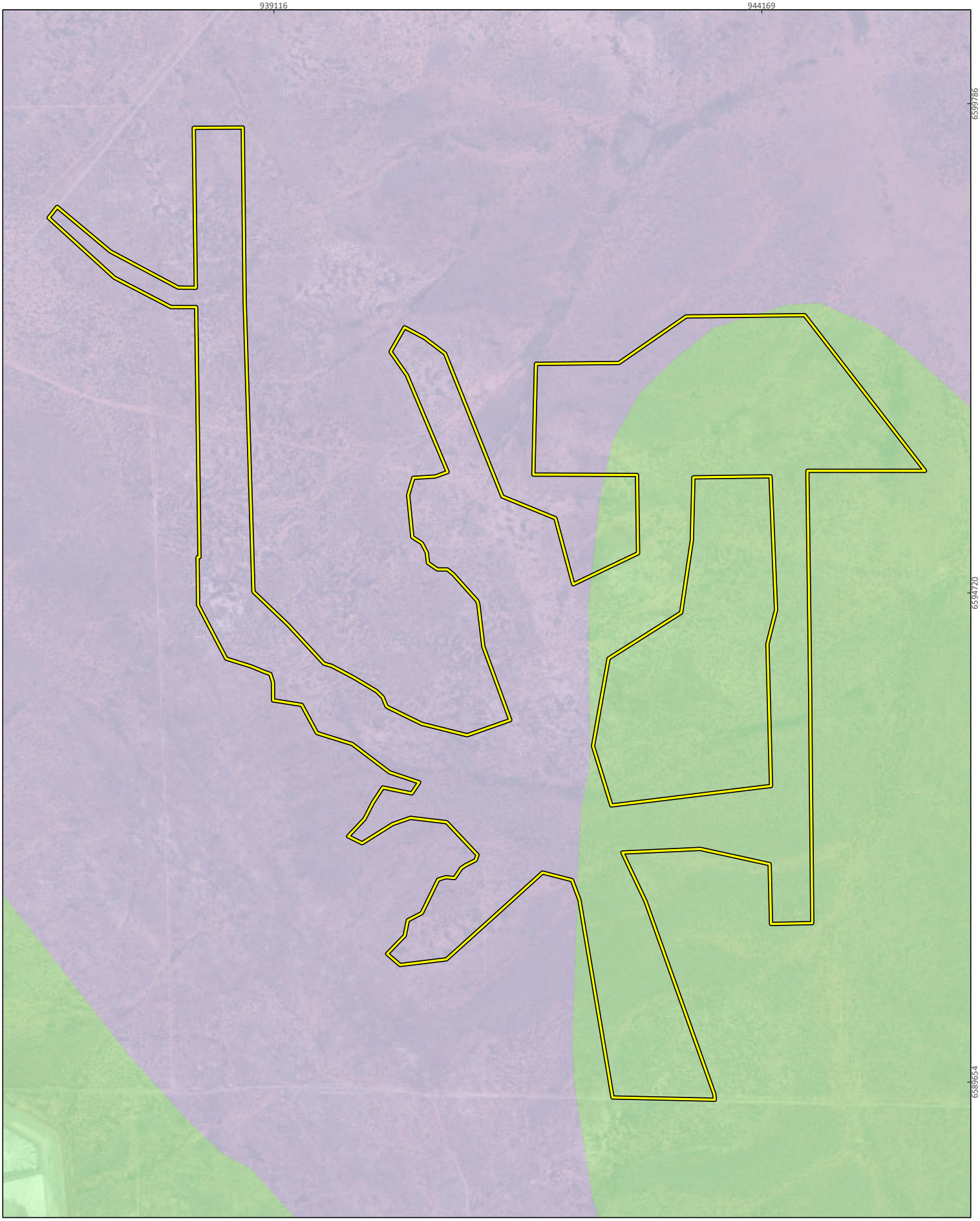
Regional scale pre-European vegetation mapping for WA (Beard *et al.* 2013; DPIRD 2018) identifies 2 vegetation associations mapped in the study area (Table 5-3; Figure 5-2). The remaining extent of both vegetation associations at the Statewide scale exceeds 98%, and they are therefore considered of Least Concern (Table 5-3). Each of the associations have over 95% remaining at both the bioregional and subregional scales (Government of Western Australia 2019).

Since the time of mapping, vegetation association 20, *Allocasuarina cristata* (common name Black Oak) has been determined not to occur in WA. It is likely to have been a misidentification of *Casuarina pauper* (common name Black Oak) (WA Herbarium 1998–) that is common in the Coolgardie and Murchison bioregions.

Table 5-3 Statewide extent of Pre-European vegetation associations present in the study area (Government of Western Australia 2019)

Vegetation association	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent in DBCA lands (%)	% of study area
20, Low woodland; mulga mixed with *Allocasuarina cristata* & *Eucalyptus* sp.	1,295,103.39	1,292,474.58	99.8	19.42	68.98
468, Medium woodland; salmon gum & Goldfields blackbutt	592,022.32	583,902.76	98.63	23.15	31.02

Figure 5-2 Vegetation associations of the study area



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Study area

Pre-european vegetation association

20,Low woodland; mulga mixed with Allocasuarina cristata & Eucalyptus sp.

468,Medium woodland; salmon gum & goldfields blackbutt

Figure 5-2

Vegetation Associations of the Study Area

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5.1.5 Significant vegetation

No Commonwealth or State listed TECs intersect the study area. The DBCA Threatened and Priority Ecological Communities database search identified the presence of one PEC within the desktop search extent (Figure 5-1; Table 5-4). However, the community does not intersect the study area.

Phoenix (2022a) identified 13 vegetation types that may be considered locally significant as habitat for the Priority flora *Eremophila praecox* but also noted that the species was recorded in disturbed areas and in rehabilitation.

Table 5-4 PECs identified in the desktop review

Community name	Status	Proximity to study area	Description
Emu Land System	Priority 3	15.6 km	Characterised by rounded, rocky rises and low hills with a mixture of shallow, stony soils and texture contrast soils. All have coarse grained surfaces which are marginally fertile and are highly erodible. The Emu Land System faces several threats, including: • Soil Erosion: Due to the highly erodible nature of the soils, wind and water erosion can significantly degrade the land. • Overgrazing: Livestock can overgraze the vegetation, leading to soil compaction and further erosion. • Invasive Species: Non-native plants and animals can disrupt the natural ecosystem balance. • Climate Change: Changes in temperature and precipitation patterns can affect the health and sustainability of the land system. • Human Activities: Land clearing, mining, and other development activities can lead to habitat destruction and soil degradation.

5.2 FIELD SURVEY

5.2.1 Flora assemblage

A total of 131 flora taxa representing 27 families and 62 genera were recorded within the study area during the field survey, with only one of those species not able to be identified to species level (Appendix 5). Species richness ranged from 7 - 30 species between quadrats (Appendix 5). The assemblage included 124 native species, 6 introduced species and one of unknown status, including 106 perennial species, 16 annual or short-lived species, 5 species considered to be either annual or perennial and 4 having unknown status. The most prominent families recorded were Chenopodiaceae (24 spp.), Scrophulariaceae (18 spp.), Poaceae (15 spp.), Fabaceae (13 spp.), Asteraceae (11 spp.) and Myrtaceae (10 spp.).

The species accumulation curve demonstrates survey completeness. The near flattening of the curve indicates that sufficient sites were surveyed to capture the majority of flora present during the time of surveying the study area (Figure 5-3).

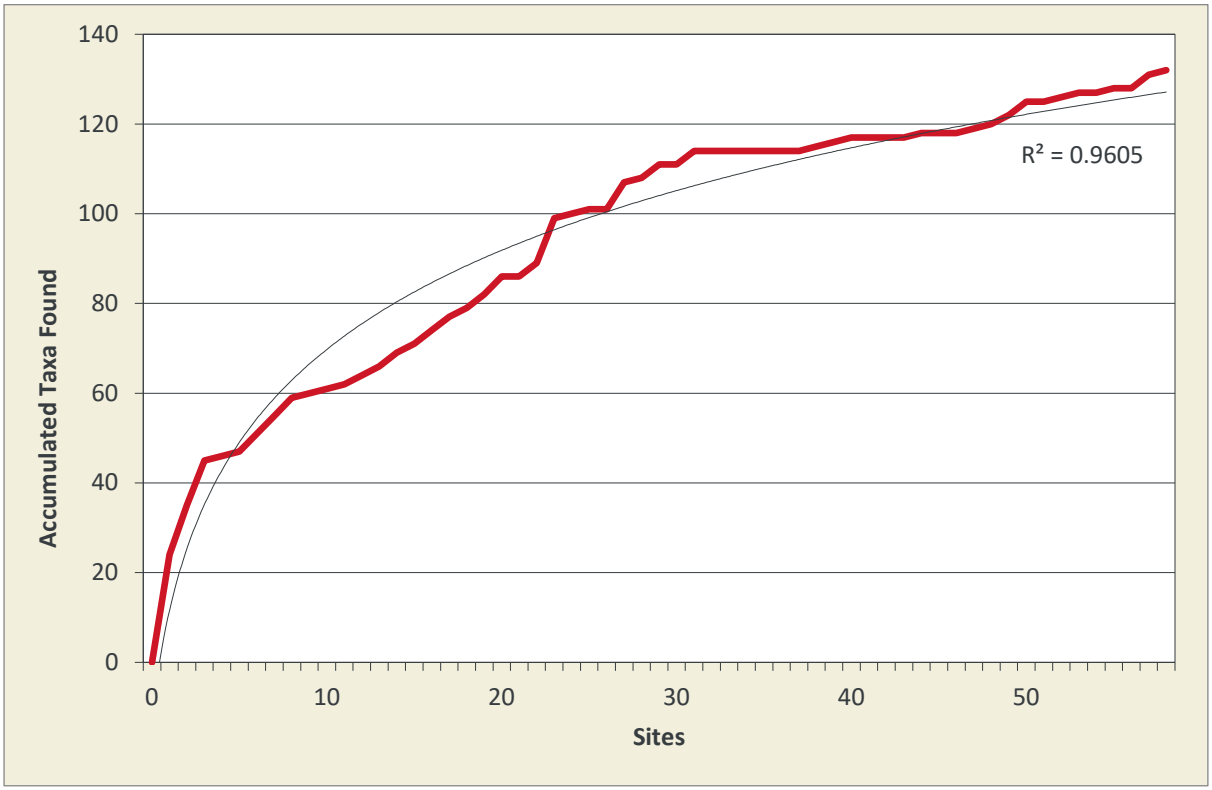


Figure 5-3 Species accumulation curve for Phoenix survey sites (red) and trendline (black)

5.2.2 Significant flora

No Threatened flora were recorded during the field survey. One Priority flora was recorded during the field survey, *Eremophila praecox* (P2) (Table 5-5; Figure 5-4). A total of 7 populations were found, consisting of 21 individual plants.

There were 2 populations of *Streptoglossa cylindriceps* recorded that represent a (80 km direction) range extension for the species (Figure 5-4) and therefore these records are considered significant for the species (refer to section 2.2.4). A cover value of 0.1 was assigned at one location and cover of 5% at the second location. The cover values indicate a low number of individuals present at one site (0.1% cover) whilst the 5% cover value indicates plant numbers in the tens to hundreds at this population.

A specimen of all significant flora was lodged with the WA Herbarium and a Threatened and Priority flora report form submitted to DBCA (lodgement no. TBA).

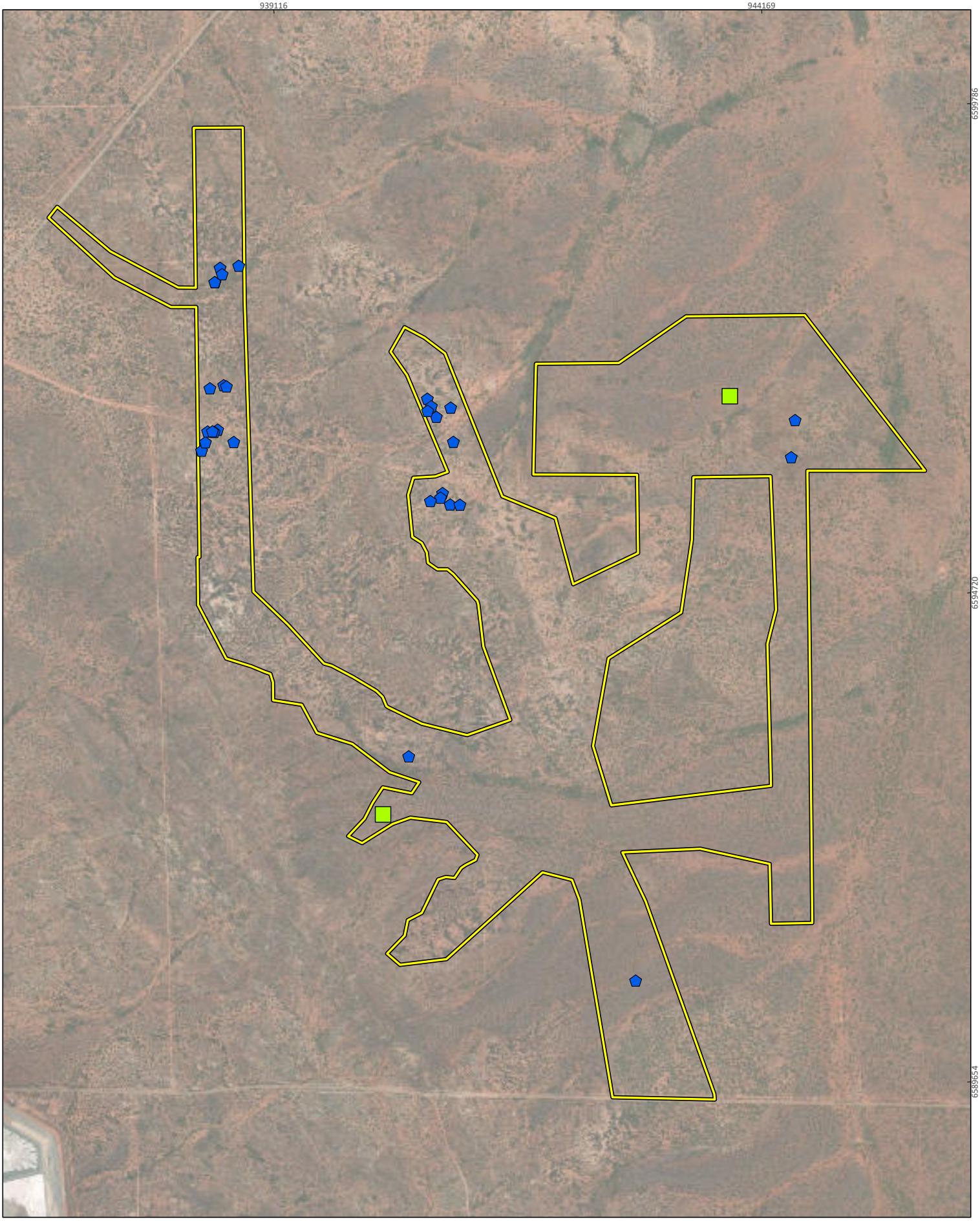
The likelihood of occurrence assessment (section 4.2.2.3) for the remaining significant species identified in the desktop review (Section 5.1.2) determined one had been previously recorded in the study area, 8 may possibly occur, and 15 are unlikely to occur (Table 5-6).

Table 5-5 Details of significant flora recorded during the field survey

Species	Status	WA Herbarium accession no.	Distribution and ecology	Survey records	Photograph
Eremophila praecox	P2 (DBCA list)	TBA	Occurs in the Murchison and Coolgardie bioregions (DBCA 2025b). There are 52 records of this species in Florabase (WA Herbarium 1998–). Habitat descriptions include floodplains or wet areas, on red or brown sand, clay or loam. Found in *Eucalyptus* spp. low to mid woodlands over *Acacia* spp., *Atriplex* spp. and *Eremophila* spp. mid open shrubland over *Maireana* spp. low open forbland. Population sizes for the Florabase records range from one to 2 plants.	A total of 7 populations were found, with 21 individual plants spread across these populations. Records were found on plains with sandy loam, sandy clay or loam with light-brown, red-brown or orange soil. Found in *Eucalyptus* spp. mid open woodlands over *Eremophila* spp., *Senna artemisioides* subsp. *filifolia* and *Maireana sedifolia* mid open shrubland.	 Source: Phoenix, WA Herbarium (1998–)

Species	Status	WA Herbarium accession no.	Distribution and ecology	Survey records	Photograph
Streptoglossa cylindriceps	Range Extension	TBA	Occurs in the Murchison and Coolgardie bioregions (DBCA 2025b). There are 68 records of this species in Florabase (WA Herbarium 1998–). Habitat descriptions include floodplains or wet areas, on red or brown sand, clay or loam. Found in open *Eucalyptus* spp. or *Acacia* spp. woodland over *Melaleuca* spp., *Senna* sp. and *Eremophila* spp. shrubland over *Eriachne* spp. open tussock grassland. Population sizes for the Florabase records range from 6 to over 50 plants.	Two populations found. Each population contained one plant. Records were found on plains or seasonally wet areas, on red-brown or red-orange sandy loam or sandy clay, on siltstone, mudstone, quartz or ferrous ironstone. Found in *Eucalyptus* spp. mid open woodlands over *Eremophila interstans* subsp. *virgata* open shrubland.	  Source: Atlas of Living Australia (ALA 2025)

Figure 5-4 Significant flora records from the field survey



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Map author	CW

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Study area

Species

- *Eremophila praecox*
- *Streptoglossa cylindriceps*

Figure 5-4

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

Species	Status	Likelihood of occurrence
Tecticornia flabelliformis	VU/P2 (EPBC Act; DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Calandrinia lefroyensis	P1 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area. (WA Herbarium 1998–).
Eremophila xantholaemus	P1 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species (WA Herbarium 1998–). Close proximity to the study area. Survey undertaken outside of the flowering period for this species.
Ptilotus procumbens	P1 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for the species. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).
Ptilotus rigidus	P1 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Ptilotus sp. Kalgoorlie (J. Jackson & B. Moyle 260)	P1 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Acacia epedunculata	P1 (DBCA list)	Unlikely. No suitable habitat present within the study area. Greater distance from the study area (WA Herbarium 1998–).
Eremophila praecox	P2 (DBCA list)	Recorded. Previously recorded within the study area. Suitable habitat present within the study area. Within the range of the natural distribution of the species (WA Herbarium 1998–).
Elachanthus pusillus	P2 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution of the species (WA Herbarium 1998–). Survey undertaken outside of the flowering period for this species.
Goodenia salina	P2 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Allocasuarina eriochlamys subsp. *grossa*	P3 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species (WA Herbarium 1998–). Close proximity to the study area.
Alyxia tetanifolia	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area. Within the range of the natural distribution for this species. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).

Species	Status	Likelihood of occurrence
Angianthus prostratus	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Austrostipa turbinata	P3 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).
Cyathostemon verrucosus	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Eremophila arachnoides subsp. *tenera*	P3 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).
Isolepis australiensis	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Lepidium fasciculatum	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Melaleuca coccinea	P3 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Notisia intonsa	P3 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species. Close proximity to the study area. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).
Eremophila caerulea subsp. *merrallii*	P4 (DBCA list)	Possible. Suitable habitat present within the study area. Within the range of the natural distribution for this species. Survey undertaken outside of the flowering period for this species (WA Herbarium 1998–).
Eucalyptus jutsonii subsp. *jutsonii*	P4 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Eucalyptus x *brachyphylla*	P4 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).
Frankenia glomerata	P4 (DBCA list)	Unlikely. Lack of suitable habitat present within the study area (WA Herbarium 1998–).

5.2.3 Introduced flora

Six introduced flora species were recorded during the survey, None of these species are a WoNS or Declared Pest (Table 5-7).

Table 5-7 Introduced flora recorded in the field survey

Family	Species	Declared Pest	WoNS
Aizoaceae	**Mesembryanthemum nodiflorum*	No	No
Asteraceae	**Centaurea melitensis*	No	No
Brassicaceae	**Carrichtera annua*	No	No
Lamiaceae	**Salvia verbenaca*	No	No
Poaceae	**Pentameris airoides* subsp. *airoides*	No	No
Primulaceae	**Lysimachia arvensis*	No	No

5.2.4 Unidentified flora

One specimen collected during the survey could not be identified to species level, mainly as a result of insufficient taxonomic characters, as the specimen was sterile and lacking reproductive structures. It is unclear whether this specimen represents any significant flora due to the lack of characters present.

5.2.5 Vegetation types

A total of 14 vegetation types were defined for the study area based on the cluster analysis (Figure 5-5; Table 5-8). They comprised 7 broad vegetation communities:

- 3 low *Casuarina pauper* woodlands
- 3 low *Eucalyptus* woodlands over mixed shrublands with *Eremophila* spp. prominent
- 2 low *Eucalyptus* woodlands over low chenopod shrublands
- 2 mid *Eucalyptus salmonophloia* woodlands over chenopod shrublands
- 2 mid *Eucalyptus salmonophloia* woodlands over mixed shrublands with *Eremophila* spp. prominent
- A low *Melaleuca* woodland
- Open chenopod shrubland.

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

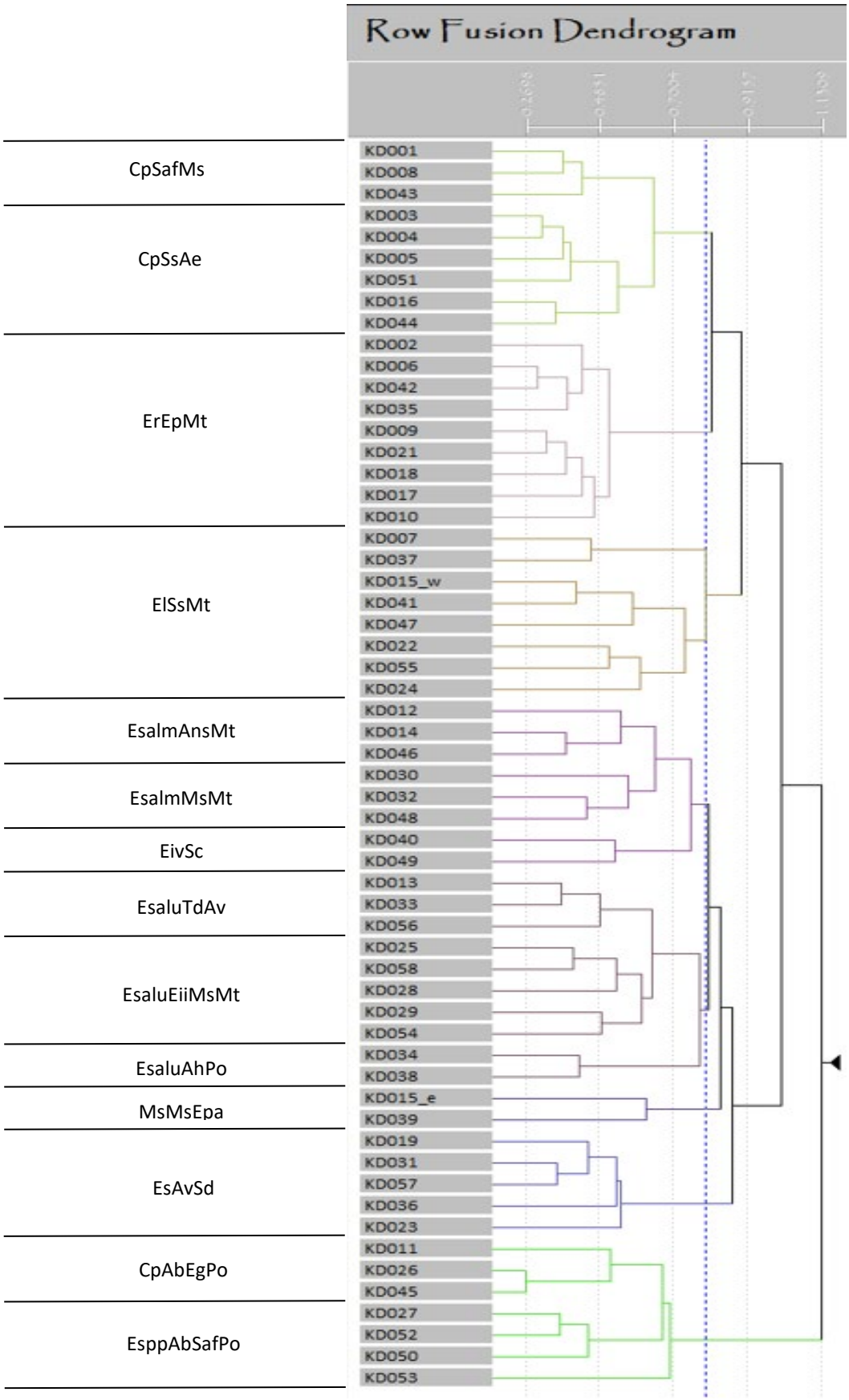


Table 5-8 Vegetation types, description and extent in the study area

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
CpSafMs	KD001, KD008, KD043	Low open woodland of *Casuarina pauper* and *Santalum spicatum*, over mid open shrubland of *Senna artemisioides* subsp. *filifolia*, *Acacia kalgoorliensis*, and *Eremophila oldfieldii*, over low sparse chenopod shrubland of *Maireana sedifolia*, *M. georgei*, and *M. trichoptera*.	43.70 ha (1.90%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
CpSsAe	KD003, KD004, KD005, KD016, KD044, KD051	Low woodland of *Casuarina pauper*, over mid open shrubland of *Scaevola spinescens*, *Senna artemisioides* subsp. *filifolia*, and *Eremophila oppositifolia*, over low sparse shrubland of *Acacia erinacea*, *Maireana georgei* and *M. trichoptera*.	130.09 ha (5.67%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
ErEpMt	KD002, KD006, KD009, KD010, KD017, KD018, KD021, KD035, KD042	Low woodland of *Eucalyptus ravida* and *E. celastroides*, over mid open shrubland of *Eremophila pustulata*, *E. scoparia*, and *Exocarpos aphyllus*, over low sparse chenopod shrubland of *Maireana triptera* and *Atriplex vesicaria*, with *Acacia erinacea*.	502.40 ha (21.88%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
ElSsMt	KD007, KD015_w, KD022, KD024, KD037, KD041, KD047, KD055	Low open woodland of *Eucalyptus lesouefii* and *E. transcontinentalis*, occasionally with *E. ravida*, over mid sparse to open shrubland of *Scaevola spinescens*, *Senna artemisioides* subsp. *filifolia*, and *Eremophila interstans* subsp. *interstans*, over low sparse shrubland of variably present *Maireana trichoptera*, *Eremophila parvifolia* subsp. *auricampa*, and *Acacia erinacea*.	434.84 ha (18.94%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsalmAnsMt	KD012, KD014, KD046	Mid open woodland of *Eucalyptus salmonophloia* with variably present *E. celastroides* and *E. salubris*, over mid sparse chenopod shrubland of *Atriplex nummularia* subsp. *spathulata*, *Maireana sedifolia*, and *M. pyramidata*, over low sparse chenopod shrubland of *Maireana triptera* with *Ptilotus obovatus* and *M. trichoptera*.	27.08 ha (1.18%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EivSc	KD040, KD049	Variably present mid isolated trees of *Eucalyptus salmonophloia*, over mid open shrubland of *Eremophila interstans* subsp. *virgata*, *Exocarpos aphyllus*, and *Atriplex nummularia* subsp. *spathulata*, over low sparse forbland of *Streptoglossa cylindriceps*, *Sclerolaena fusiformis*, and *Sclerolaena diacantha*.	61.13 ha (2.66%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsaluTdAv	KD013, KD033, KD056	Low open woodland of *Eucalyptus salubris* with *E. celastroides* and *E. ravida*, over mid open chenopod shrubland of *Tecticornia disarticulata*, *Maireana sedifolia*, and *Atriplex nummularia* subsp. *spathulata*, over low sparse chenopod shrubland of *Atriplex vesicaria* and *Maireana triptera*, with *Sclerolaena diacantha*.	193.02 ha (8.41%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsaluEiiMsMt	KD025, KD028, KD029, KD054, KD058	Low open woodland of *Eucalyptus salubris*, over tall isolated shrubs of *Eremophila interstans* subsp. *interstans*, over mid open shrubland of *Maireana sedifolia*, *Senna artemisioides* subsp. *filifolia*, and variably present *Maireana pyramidata*, over low isolated shrubs of *Maireana triptera* and *M. trichoptera*.	431.06 ha (18.78%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsaluAhPo	KD034, KD038	Mid open woodland of *Eucalyptus salubris* and *E. salmonophloia*, occasionally with *E. transcontinentalis*, over mid open shrubland of *Acacia hemiteles*, *Eremophila scoparia*, and *Senna artemisioides* subsp. *filifolia*, over low isolated shrubs of *Ptilotus obovatus*, *Rhagodia drummondii*, and *Eremophila decipiens* subsp. *decipiens*.	53.37 ha (2.32%)	

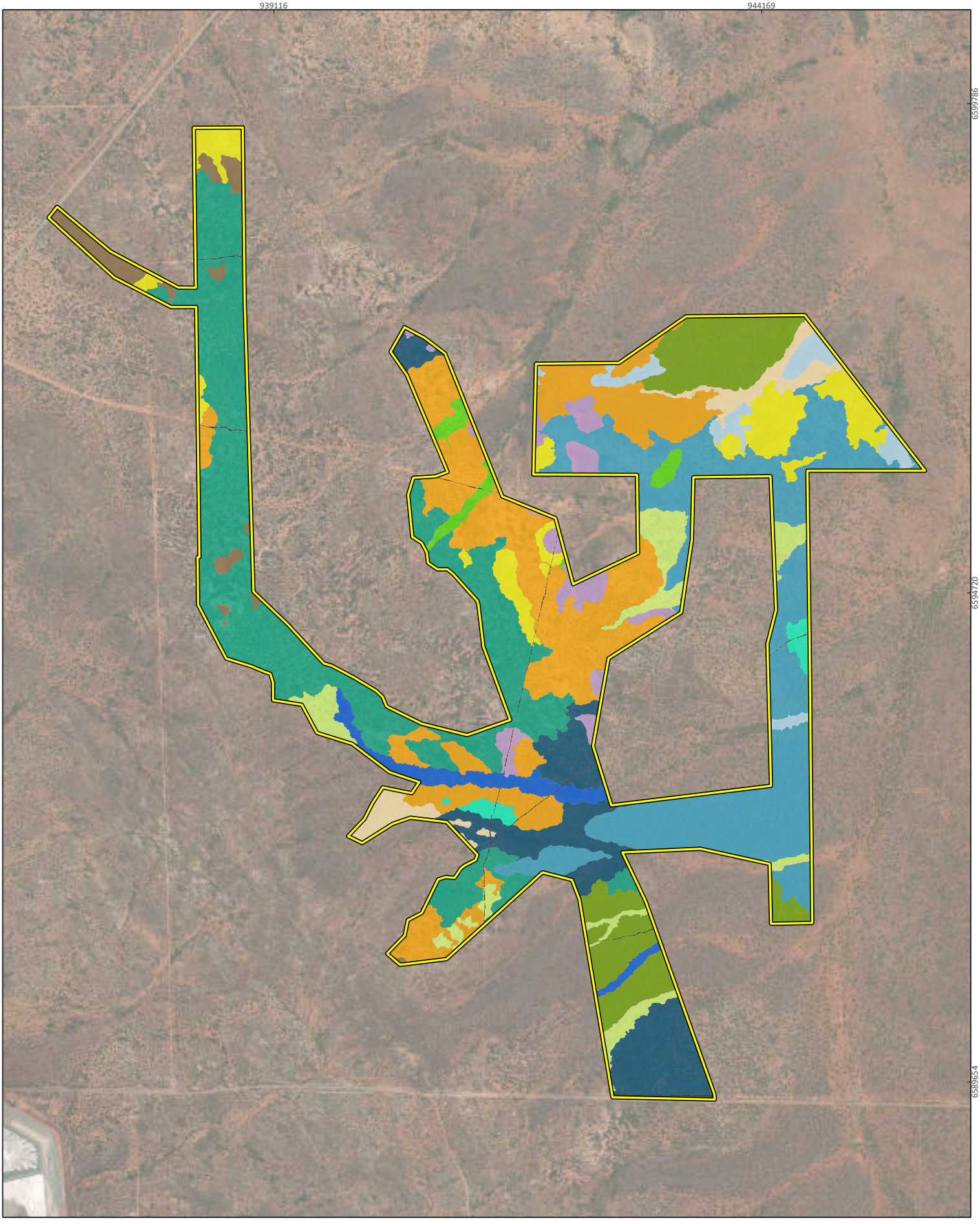
Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
MsMsEpa	KD015_e, KD039	Low open woodland of *Melaleuca sheathiana*, with *Eucalyptus lesouefii* or *E. oleosa* subsp. *oleosa*, over mid sparse to open shrubland of *Maireana sedifolia* with *Eremophila scoparia*, over low sparse shrubland of *Eremophila parvifolia* subsp. *auricampa* or *Atriplex vesicaria*.	18.33 ha (0.80%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsAvSd	KD019, KD023, KD031, KD036, KD057	Mid sparse shrubland of *Eremophila scoparia*, *Maireana pyramidata*, and *Senna artemisioides* subsp. *filifolia*, over low sparse to open chenopod shrubland of *Atriplex vesicaria*, *Maireana triptera*, and *M. trichoptera*, over low isolated forbs of *Sclerolaena diacantha* and **Carrichtera annua*.	97.16 ha (4.23%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
CpAbEgPo	KD011, KD026, KD045	Low open woodland of *Casuarina pauper* with variably present *Eucalyptus griffithsii*, over tall open shrubland of *Acacia burkitii*, *Exocarpos aphyllus*, and *Acacia hemiteles*, over mid sparse shrubland of *Eremophila granitica*, *Scaevola spinescens*, and *Senna artemisioides* subsp. *filifolia* low isolated shrubs of *Ptilotus obovatus*, *Maireana triptera*, and *Rhagodia drummondii*.	64.38 ha (2.80%)	

Vegetation type	Site/s	Vegetation description	Extent in study area (ha) and % of study area	Representative photograph
EsppAbSafPo	KD027, KD050, KD052, KD053	Low open woodland to woodland of variably present *Eucalyptus griffithsii*, *E. oleosa* subsp. *oleosa*, or *E. salubris*, over tall open shrubland to shrubland of *Acacia burkitii*, over mid sparse to open shrubland of *Senna artemisioides* subsp. *filifolia*, *Eremophila granitica*, and variably present *E. alternifolia*, over low isolated shrubs of *Ptilotus obovatus*, *Enchylaena tomentosa*, and *Rhagodia drummondii*.	45.39 ha (1.98%)	
Cleared	N/A	N/A	6.58 ha (0.29%)	N/A

Figure 5-6 Vegetation types recorded in the field survey



Western Australia

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Northern Star Resources Limited
East Kalgoorlie Wind Farm

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Drawn by	BK
Map author	CW

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Kilometers

1:50,600 (at A4) GDA 1994 MGA Zone 51

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Study area

Vegetation type

- Cleared
- CpAbEgPo
- CpSafMs
- CpSsAe
- EivSc
- ElSsMt
- ErEpMt
- EsAvSd
- EsalmAnsMt
- EsalmMsMt
- EsaluAhPo
- EsaluEiiMsMt
- EsaluTdAv
- EsppAbSafPo
- MsMsEpa

Figure 5-6

Vegetation Types Recorded in the Field Survey

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5.2.6 Vegetation condition

Remnant vegetation in the study area was recorded to be in Degraded to Excellent condition (Figure 5-7) with the majority (93.93%) in Very Good to Excellent condition (Table 5-9). Disturbances present at sites consisted of evidence of feral animals, vehicle tracks, livestock tracks, exploration (drill pads and access tracks), historic clearing, litter, vehicle tracks, erosion channels, weed infestation, large-scale clearing and grazing. Sites where disturbances were not evident included KD016, KD017, KD027, KD042 and KD044.

Table 5-9 Vegetation condition – extent of each condition rating in study area

Condition rating	Area (ha)	% of study area	Vegetation types
Excellent	884.08	38.51	CpSafMs, CpSsAe, ErEpMt, ElSsMt, EsalmMsMt, EsaluTdAv, EsaluEiiMsMt, EsaluAhPo, MsMsEpa, CpAbEgPo, EsppAbSafPo.
Very Good	1272.33	55.42	CpSafMs, CpSsAe, ErEpMt, ElSsMt, EsalmAnsMt, EsalmMsMt, EivSc, EsaluTdAv, EsaluEiiMsMt, EsaluAhPo, MsMsEpa, EsAvSd, CpAbEgPo, EsppAbSafPo.
Good	119.57	5.21	CpSafMs, CpSsAe, ErEpMt, ElSsMt, EsalmMsMt, EivSc, EsaluEiiMsMt, MsMsEpa, EsAvSd, EsppAbSafPo.
Poor	0.42	0.02	EsaluEiiMsMt.
Degraded	12.78	0.56	CpSsAe, EsaluTdAv, EsAvSd.
Completely Degraded	0.00	0.00	Nil.
Cleared	6.58	0.29	N/A.

Figure 5-7 Vegetation condition recorded in the field survey

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Map author	CW

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Study area

Vegetation condition

- Excellent
- Very good
- Good
- Poor
- Degraded
- NA

Figure 5-7

Vegetation Condition Recorded in the Field Survey

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5.2.7 Significant vegetation

No TECs or PECs were present within the study area.

In total, 5 vegetation types may be considered to have local significance (Table 5-10). Four as they have a role as a refuge habitat for *Eremophila praecox* (P2) and the other as it had a unique flora assemblage with a restricted distribution (comprising less than 1% of the study area).

Table 5-10 Significant vegetation types in the study area

Vegetation type	Significance	Level of significance
CpSafMs	Contains *Eremophila praecox* (P2).	Locally significant.
CpSsAe	Contains *Eremophila praecox* (P2).	Locally significant.
ElSsMt	Contains *Eremophila praecox* (P2).	Locally significant.
ErEpMt	Contains *Eremophila praecox* (P2).	Locally significant.
MsMsEpa	Restricted vegetation type (<1% of the study area).	Locally significant.

5.3 SURVEY LIMITATIONS

The limitations of the flora and vegetation survey have been considered in accordance with EPA (2016b) (Table 5-11).

Table 5-11 Consideration of potential survey limitations

Limitations	Comments
Availability of contextual information at a regional and local scale	Not a limitation. Regional and local information was readily available for the desktop review and survey.
Competency/experience of the team carrying out the survey	Not a limitation. Dr Grant Wells has over 25 years of experience in environmental consulting, with taxonomic expertise covering a range of regions such as the Pilbara, Gascoyne, Murchison, Coolgardie and Great Victoria Desert. Calvin Williams has 2 years of experience in environmental consulting, with a combined 8 years of experience working with flora in both NSW and WA.
Scope and completeness	Not a limitation. Detailed quadrat surveys were conducted at all pre-field selected survey locations and additional quadrats were conducted during the field survey. Not a limitation. A single season detailed survey was conducted. However, this followed 2 previous reconnaissance surveys conducted by Phoenix, which sought to establish the key botanical values for the area.
Proportion of flora recorded and/or collected, any identification issues	Not a limitation. The majority of species encountered during the survey were collected in the field and identified in the laboratory at a later stage.
Access within the study area	Minor limitation. Most access throughout the study area was good. However, certain sections of the study area were not accessible with a vehicle, and were subsequently accessed by foot.
Timing, rainfall, season	Minor limitation. The survey was undertaken in March, which is outside of the recommended survey period for the South-West and Interzone Botanical Province, but within the recommended survey period for the Eremaean Botanical Province.
Disturbance that may have affected the results of the survey	No limitations.

6 DISCUSSION

A total of 131 species representing 27 families and 62 genera were recorded in the study area, representing 16.6% of the species, 35.1% families and 20.7% genera identified within the desktop review. The total species identified in this survey is notably less than what was identified in the desktop review. The significant difference between the species diversity in the desktop review and the survey can be justified by the following influences:

- There were various landform types identified in the survey. However, the landforms that support high levels of diversity (floodplains, creeks and permanent pools) comprised a small portion of the study area.
- Additional landform types that also support high levels of diversity (ridges, major drainages and salt lakes) were within the desktop extent but not within the study area.

The most prominent families recorded during this survey were Chenopodiaceae, Scrophulariaceae, Poaceae, Fabaceae and Asteraceae which mostly align with the database outputs, previous reconnaissance survey and desktop surveys. All desktop review sources observed Chenopodiaceae and Fabaceae as prominent families.

6.1 SIGNIFICANT FLORA

Only 2 significant flora species were identified during the survey. This number is similar to the number of significant flora recorded in previous surveys within the area.

Eremophila praecox (P2) was the only Priority flora species recorded during the survey. Recent and previous regional targeted surveys for *Eremophila praecox* (P2) have identified that many more plants and populations do exist across a variety of land systems and habitats, and over a broad distribution. The vast majority of records are likely to be extant, as they are not located near any urban areas, although there are some records located within 1 km of the town of Kalgoorlie.

A regional targeted survey for *Eremophila praecox* (P2) recorded 93 plants located in *Eucalyptus* or *Casuarina* woodlands over *Acacia*, *Eremophila*, *Senna* and *Maireana* shrublands. The records were also distributed across a variety of land systems such as BB5, Campsite, Doney, Gumland, Kanowna, Moriarty, Mx43 and Yilgangi. Some of these land systems are present either within or adjacent to the study area for the current survey.

Further populations of *Eremophila praecox* were recorded by Phoenix (2023) and Phoenix (2024) which combined recorded an additional 30 plants primarily in *Eucalyptus* and *Casuarina* woodlands over various shrublands.

A regional survey for *Eremophila praecox* conducted by Phoenix, which took place concurrently with the current survey, identified 11 new populations, comprised of 52 individual plants (Phoenix 2025). Some records were recorded approximately 120 km east, 80 km north and 55 km west of Kalgoorlie. Records were also found within DBCA managed lands and conservation estates such as Bullock Holes Timber Reserve, Kangaroo Hills Timber Reserve, Kurrawang Nature Reserve, Lakeside Timber Reserve, Majestic Timber Reserve and Yallari Timber Reserve. At the current time there are 785 known plants of *E. praecox* with 227 plants (28.9%) recorded in conservation estate (Phoenix 2025).

The surveys described above have identified that *Eremophila praecox* is widely distributed, occurs across a number of habitats and land systems indicating a considerable area of suitable habitat for the species in the region. The vast majority of these records are not under threat from development. Subsequently, the vegetation within the study area that may be considered locally significant as a role as a refuge for this species in accordance with (EPA 2016b) is not considered to represent critical habitat for the species.

Streptoglossa cylindriceps is considered to be a range extension as it is located approximately 80 km from the nearest known record, and is known from only 2 records within the study area, both from the current survey. Therefore, this species is of local significance to the study area. There are no known records inside or near the study area on Florabase (WA Herbarium 1998–). None of the desktop records are considered to be well-protected as they are not located within any conservation estates, but are likely to be extant as they are not located near any urban areas. There is no critical habitat defined for this species, though it was found in the vegetation type EivSc. Based on field observations and aerial imagery, it is likely that *Streptoglossa cylindriceps* could be found outside of the study area as similar habitat occurs in the broader landscape.

Eremophila xantholaemus was considered possible to occur and may occur in many of the recorded vegetation types for the current survey. However, the species is only known from 4 records (WA Herbarium 1998–) all of which occur on hill slopes and subsequently should the species occur in the study area it is likely to be restricted to hills.

Ptilotus procumbens was considered possible to occur and may occur in vegetation types CpAbEgPo, EsppAbSafPo, CpSafMs, CpSsAe, ErEpMt and EsaluAhPo. There are only 5 records for the species (WA Herbarium 1998–) all associated with water bodies or floodplains indicating that should the species occur in the study area it is most likely to occur in riparian areas.

Elachanthus pusillus was considered possible to occur and may occur in vegetation types ErEpMt, ElSsMt, EsalmAnsMt, EsalmMsMt, EivSc, EsaluTdAv, EsaluEiiMsMt, EsaluAhPo, MsMsEpa and EsppAbSafPo. The species is known form 7 records (WA Herbarium 1998–) and occurs on plains, drainage flats and hills and therefore may potentially occur across a large portion of the study area.

Allocasuarina eriochlamys subsp*. grossa* was considered possible to occur and may occur in all recorded vegetation types apart from CpSafMs, CpSsAe and EsAvSd. There are 29 records for the species (WA Herbarium 1998–) with virtually all habitats described as granite or lateritic hills indicating that should the species occur in the study area it is likely restricted to hills.

Austrostipa turbinata was considered possible to occur and may occur in all recorded vegetation types from the current survey apart from CpSafMs, CpSsAe, EsAvSd and CpAbEgPo. This species is known from 25 records (WA Herbarium 1998–) with a broad distribution in south-west Western Australia with the majority occurring on hill slopes.

Eremophila arachnoides subsp*. tenera* was considered possible to occur and may occur in vegetation types such as MsMsEpa, EsaluEiiMsMt, EsaluTdAv, EsalmMsMt, EsalmAnsMt and ErEpMt. This species is known from 18 records (WA Herbarium 1998–) with the majority associated with drainage areas and floodplains and frequently in calcareous soils.

Notisia intonsa was considered to be possible to occur and may occur in most vegetation types recorded in the current survey apart from, CpSafMs, CpSsAe and EsAvSd. The species is known from 29 records (WA Herbarium 1998–) and has a broad distribution in central and south-west Western Australia and is typically restricted to wetter areas such as riparian vegetation and drainage lines.

Eremophila caerulea subsp*. merrallii* was considered possible to occur and may occur in all recorded vegetation types for this survey except for CpSafMs, CpSsAe and EsAvSd. The species is known from 23 records across 3 bioregions (WA Herbarium 1998–) and has been recorded in a variety of habitats including plains and hills.

6.2 INTRODUCED FLORA

Of the 6 introduced species of flora, none are a WoNS or Declared Pests and there are therefore no mandatory management requirements for these species.

None of these species are widespread throughout the study area, and are mostly contained to the eastern half. All of the species have a widespread distribution in south-west Western Australia and are recorded in multiple bioregions (WA Herbarium 1998–).

6.3 VEGETATION

The pre-European vegetation associations covering the study area consisted of a split between *Acacia aneura* (and associated species) on the western half of the study area and *Eucalyptus loxophleba*, *E. salmonophloia*, *E. salubris*, *E. oleosa* and *E. camaldulensis* on the eastern half (Beard *et al.* 2013). This aligns well with the vegetation mapping results for the survey, which indicate the presence of *E. salmonophloia*, *E. oleosa*, *E. salubris* woodlands within the eastern section of the study area.

The western half of the study area has been mapped as *Casuarina pauper* or various *Eucalyptus* spp. woodlands. This fits well with the pre-European vegetation association mapping, as association 20 is considered to be a low woodland of mulga mixed with *Allocasuarina cristata* and *Eucalyptus* sp. The aligning pre-European vegetation association on the eastern side of the study area (*Eucalyptus* spp. woodlands) seems to be in Very Good condition, with 98.6% remaining across the state.

These results align with those of previous surveys (Botanica Consulting 2015a, b; Jim's Seeds 2006; McKenzie & Hall 1992; Phoenix 2018b, c, 2019b, 2023, 2024), where *Eucalyptus* and *Casuarina* dominated woodlands interspersed with *Eremophila* and *Acacia* shrublands have also been recorded.

MsMsEpa was identified as locally significant due to its restricted distribution as it comprised less than 1% of the study area. The vegetation type is a low open woodland of *Melaleuca sheathiana* not recorded in any of the previous surveys reviewed for this report. The vegetation type does extend beyond the mapped location at one location in the study area. There is also further suitable habitat for this vegetation in the broader landscape.

CpSafMs, CpSsAe, ElSsMt and ErEpMt may be considered locally significant due to their role as a refuge habitat for *Eremophila praecox*. However, they are representative of widespread vegetation associations indicating they are likely to occur in the border landscape providing suitable habitat for this species elsewhere. As more than 28% of known plants of *E. praecox* occur in conservation estate and the majority of records of the species are recorded in areas not currently subject to development, the vegetation in the study area is not considered to be critical habitat for the species.

No vegetation types represent a TEC or PEC, as neither TECs nor PECs occur within close proximity to the KRRE and all vegetation types recorded are representative of common, widespread vegetation associations.

Vegetation types which were assigned a condition value of Excellent (one or less disturbances) included CpSafMs, CpSsAe, ErEpMt, ElSsMt, EsalmMsMt, EsaluTdAv, EsaluEiiMsMt, EsaluAhPo, MsMsEpa, CpAbEgPo, EsppAbSafPo. The majority of the study area was assigned a condition value of Very Good. Vegetation types which were assigned this condition included CpSafMs, CpSsAe, ErEpMt, ElSsMt, EsalmAnsMt, EsalmMsMt, EivSc, EsaluTdAv, EsaluEiiMsMt, EsaluAhPo, MsMsEpa, EsAvSd, CpAbEgPo, EsppAbSafPo. The total area for this condition was approximately 1,272.33 ha or 55.42% of the study area. Vegetation in Excellent condition is considered to be of higher value than the remaining vegetation in study area as it contains fewer disturbances in an area subject to a high level of anthropogenic disturbances.

The results for vegetation condition are consistent with previous surveys (Phoenix 2018b, c, 2019b, 2023, 2024), where the majority of vegetation was recorded to be in Excellent to Very Good condition.

6.4 CONCLUSION

In summary, 2 significant flora species were identified within the study area; *Eremophila praecox* (P2) and *Streptoglossa cylindriceps* (locally significant). There was a total of 5 significant vegetation types, that may be considered locally significant, with 4 of these containing suitable habitat for *Eremophila praecox* (CpSafMs, CpSsAe, ElSsMt and ErEpMt) and one considered to be a restricted vegetation type as it comprised less than 1% of the study area (MsMsEpa). A total of 6 introduced flora species were identified during the survey, none of which are considered to be WoNS or Declared Pests, and all have a widespread distribution in south-west WA and are recorded in multiple bioregions.

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Appendix 1 Survey site locations

Site name	Site type	Sample type	Latitude	Longitude
KD001	Botany site	Quadrat	-30.6620	121.5582
KD002	Botany site	Quadrat	-30.6607	121.5738
KD003	Botany site	Quadrat	-30.6547	121.5732
KD004	Botany site	Quadrat	-30.6529	121.5755
KD005	Botany site	Quadrat	-30.6564	121.5743
KD006	Botany site	Quadrat	-30.6633	121.5743
KD007	Botany site	Quadrat	-30.6903	121.6051
KD008	Botany site	Quadrat	-30.6662	121.5645
KD009	Botany site	Quadrat	-30.6832	121.5745
KD010	Botany site	Quadrat	-30.6678	121.5741
KD011	Botany site	Quadrat	-30.6814	121.6011
KD012	Botany site	Quadrat	-30.6865	121.6024
KD013	Botany site	Quadrat	-30.6738	121.5939
KD014	Botany site	Quadrat	-30.6807	121.5996
KD015_e	Botany site	Quadrat	-30.6881	121.5965
KD015_w	Botany site	Quadrat	-30.7013	121.6356
KD016	Botany site	Quadrat	-30.6952	121.6047
KD017	Botany site	Quadrat	-30.6985	121.5742
KD018	Botany site	Quadrat	-30.6767	121.5744
KD019	Botany site	Quadrat	-30.7066	121.5834
KD021	Botany site	Quadrat	-30.7001	121.6027
KD022	Botany site	Quadrat	-30.6979	121.6090
KD023	Botany site	Quadrat	-30.6927	121.6210
KD024	Botany site	Quadrat	-30.6809	121.6211
KD025	Botany site	Quadrat	-30.6942	121.6356
KD026	Botany site	Quadrat	-30.6961	121.6135
KD027	Botany site	Quadrat	-30.7090	121.6337
KD028	Botany site	Quadrat	-30.7181	121.6201
KD029	Botany site	Quadrat	-30.7223	121.6345
KD030	Botany site	Quadrat	-30.7284	121.6170
KD031	Botany site	Quadrat	-30.7351	121.6190
KD032	Botany site	Quadrat	-30.7274	121.6345
KD033	Botany site	Quadrat	-30.7406	121.6200
KD034	Botany site	Quadrat	-30.7324	121.6166
KD035	Botany site	Quadrat	-30.7257	121.5977
KD036	Botany site	Quadrat	-30.7288	121.5971
KD037	Botany site	Quadrat	-30.7296	121.5927
KD038	Botany site	Quadrat	-30.7144	121.6070
KD039	Botany site	Quadrat	-30.7171	121.6043
KD040	Botany site	Quadrat	-30.7170	121.5910
KD041	Botany site	Quadrat	-30.7105	121.5929

Site name	Site type	Sample type	Latitude	Longitude
KD042	Botany site	Quadrat	-30.7024	121.5811
KD043	Botany site	Quadrat	-30.6927	121.5752
KD044	Botany site	Quadrat	-30.6832	121.6092
KD045	Botany site	Quadrat	-30.6847	121.6140
KD046	Botany site	Quadrat	-30.6857	121.6223
KD047	Botany site	Quadrat	-30.6775	121.6113
KD048	Botany site	Quadrat	-30.6740	121.6280
KD049	Botany site	Quadrat	-30.6783	121.6290
KD050	Botany site	Quadrat	-30.6805	121.6291
KD051	Botany site	Quadrat	-30.6812	121.6336
KD052	Botany site	Quadrat	-30.6839	121.6456
KD053	Botany site	Quadrat	-30.6755	121.6367
KD054	Botany site	Quadrat	-30.6819	121.6393
KD055	Botany site	Quadrat	-30.7052	121.6101
KD056	Botany site	Quadrat	-30.7073	121.6112
KD057	Botany site	Quadrat	-30.6972	121.6212
KD058	Botany site	Quadrat	-30.7079	121.6329
KDIS001	Botany site	Individual specimen	-30.7327	121.6181
KDIS002	Botany site	Individual specimen	-30.7267	121.6353
KDIS003	Botany site	Individual specimen	-30.6657	121.5742
KDMN001	Botany site	Mapping note	-30.7068	121.5838

Appendix 2 Flora survey site descriptions

Site details			
Site	**KD001**	**Position (WGS84)**	121.5582, -30.6620
Slope	gentle	**Topography**	hill top
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	quartz		

Observation details - visit 1 (08 Mar 2025)	
Site description	Isolated low *Casuarina pauper* trees over mid open *Senna artemisioides* subsp. *filifolia*, *Dodonaea lobulata* and *Acacia kalgoorliensis* shrubland over isolated low *Maireana sedifolia* and *Ptilotus obovatus* shrubs.

Habitat	shrubland
Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	30	**Tree cover (%)**	1
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Senna artemisioides subsp. *filifolia*		7.0	1.7
Dodonaea lobulata		4.0	1.6
Acacia kalgoorliensis		3.0	1.5
Acacia tetragonophylla		2.0	1.7
Eremophila oldfieldii		2.0	1.2
Maireana sedifolia		2.0	0.8
Casuarina pauper		1.0	6.0
Scaevola spinescens		1.0	1.5
Acacia oswaldii		0.5	1.5
Rhagodia drummondii		0.5	1.4
Ptilotus obovatus		0.5	0.5
Austrostipa scabra subsp. *scabra*		0.3	0.5
Austrostipa platychaeta		0.2	0.6
Vincetoxicum lineare		0.1	1.5
Eremophila glabra subsp. *glabra*		0.1	1.0
Austrostipa nitida		0.1	0.3
Maireana georgei		0.1	0.2
Maireana trichoptera		0.1	0.2
Roepera ovata		0.1	0.2
Siemssenia capillaris		0.1	0.2
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD002**	**Position (WGS84)**	121.5738, -30.6607
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (08 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over isolated tall *Santalum acuminatum* shrubs over mid *Eremophila pustulata* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	50	**Tree cover (%)**	25
Shrub cover (%)	35	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila pustulata		30.0	1.2
Eucalyptus ravida		24.0	5.5
Senna artemisioides subsp. *filifolia*		3.0	1.5
Santalum acuminatum		2.0	2.0
Eucalyptus celastroides subsp. *celastroides*		1.0	3.5
Eremophila scoparia		1.0	1.5
Exocarpos aphyllus		0.5	1.5
Senna cardiosperma		0.5	1.5
Maireana sedifolia		0.5	0.5
Scaevola spinescens		0.5	0.5
Atriplex vesicaria		0.2	0.5
Frankenia desertorum		0.2	0.4
Maireana georgei		0.2	0.2
Eremophila ionantha		0.1	1.2
Maireana triptera		0.1	0.2
Maireana trichoptera		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD003**	**Position (WGS84)**	121.5732, -30.6547
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (12 Mar 2025)

Site description	Low *Casuarina pauper* woodland over tall sparse *Eremophila interstans* subsp. *interstans*, *E. scoparia* and *E. oppositifolia* shrubland over low sparse *Scaevola spinescens*, *Atriplex vesicaria* and *Maireana sedifolia* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, livestock tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	20
Shrub cover (%)	15	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Casuarina pauper		20.0	7.0
Eremophila oldfieldii		5.0	1.6
Scaevola spinescens		5.0	0.8
Eremophila scoparia		3.0	2.1
Eremophila oppositifolia		3.0	2.0
Eremophila glabra subsp. *glabra*		3.0	1.7
Maireana sedifolia		3.0	0.9
Atriplex vesicaria		3.0	0.8
Eremophila parvifolia subsp. *auricampa*		3.0	0.6
Senna artemisioides subsp. *filifolia*		2.0	1.7
Acacia kalgoorliensis		2.0	1.6
Atriplex nummularia **subsp.** *spathulata*		2.0	0.8
Maireana pyramidata		2.0	0.8
Olearia muelleri		2.0	0.5
Senna cardiosperma		1.0	1.6
Senna artemisioides subsp. x *artemisioides*		1.0	1.5
Acacia erinacea		1.0	1.3
Grevillea acuaria		1.0	1.0
Maireana georgei		0.2	0.3
Maireana triptera		0.2	0.2
Sclerolaena fusiformis		0.2	0.1
Santalum acuminatum		0.1	1.8
Austrostipa platychaeta		0.1	0.7
Maireana tomentosa subsp. *tomentosa*		0.1	0.15
Maireana trichoptera		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD004**	**Position (WGS84)**	121.5755, -30.6529
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz, siltstone / mudstone		

Observation details - visit 1 (12 Mar 2025)

Site description	Low open *Casuarina pauper* woodland over mid *Senna artemisioides* subsp. *filifolia*, *Eremophila scoparia* and *Scaevola spinescens* shrubland over isolated low *Atriplex vesicaria*, *Maireana triptera* and *Olearia muelleri* shrubs.

Habitat	open woodland

Disturbance	evidence of feral animals, exploration (drill pads and access tracks), historic clearing, litter, livestock tracks, vehicle tracks

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	40	**Tree cover (%)**	8
Shrub cover (%)	40	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila pustulata		10.0	1.6
Casuarina pauper		8.0	9.0
Senna artemisioides subsp. *filifolia*		6.0	1.7
Santalum spicatum		5.0	2.5
Eremophila scoparia		5.0	1.8
Scaevola spinescens		5.0	1.5
Atriplex vesicaria		3.0	0.6
Atriplex nummularia **subsp.** *spathulata*		2.0	1.5
Maireana sedifolia		2.0	1.4
Acacia erinacea		2.0	1.2
Olearia muelleri		2.0	0.6
Exocarpos aphyllus		1.0	1.7
Eremophila glabra subsp. *glabra*		1.0	1.6
Senna artemisioides subsp. x *artemisioides*		1.0	1.6
Ptilotus obovatus		0.5	0.4
Maireana georgei		0.2	0.2
Eremophila oppositifolia		0.1	1.6
Austrostipa platychaeta		0.1	0.7
Maireana trichoptera		0.1	0.2
Maireana triptera		0.1	0.2
Sclerolaena diacantha		0.1	0.2
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD005**	**Position (WGS84)**	121.5743, -30.6564
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (12 Mar 2025)

Site description	Low *Casuarina pauper* and *Eucalyptus celastroides* subsp. *celastroides* woodland over tall open *Eremophila oppositifolia*, *E. oldfieldii* and *Exocarpos aphyllus* shrubland over mid open *Eremophila parvifolia* subsp. *auricampa*, *Senna artemisioides* subsp. *filifolia* and *Scaevola spinescens* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	45	**Tree cover (%)**	20
Shrub cover (%)	35	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Casuarina pauper		15.0	6.0
Eremophila oppositifolia		7.0	2.2
Eucalyptus celastroides subsp. *celastroides*		5.0	4.0
Acacia kalgoorliensis		5.0	1.5
Scaevola spinescens		5.0	1.4
Eremophila oldfieldii		3.0	2.0
Senna artemisioides subsp. *filifolia*		3.0	1.6
Atriplex bunburyana		3.0	1.2
Exocarpos aphyllus		2.0	1.9
Acacia tetragonophylla		2.0	1.7
Maireana sedifolia		2.0	1.6
Eremophila glabra subsp. *glabra*		2.0	1.5
Eremophila parvifolia subsp. *auricampa*		2.0	0.4
Acacia erinacea		1.0	1.2
Olearia muelleri		1.0	0.6
Maireana georgei		0.3	0.2
Maireana triptera		0.2	0.2
Sclerolaena fusiformis		0.2	0.1
Dodonaea lobulata		0.1	0.8
Austrostipa platychaeta		0.1	0.7
Rhagodia drummondii		0.1	0.3
Maireana trichoptera		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD006**	**Position (WGS84)**	121.5743, -30.6633
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (08 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over mid *Eremophila scoparia*, *E. pustulata* and *Maireana sedifolia* shrubland over isolated low *Atriplex vesicaria*, *Maireana georgei* and *Frankenia interioris* shrubs.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	40	**Tree cover (%)**	15
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila scoparia		10.0	2.0
Eucalyptus ravida		8.0	6.0
Eucalyptus celastroides subsp. *celastroides*		7.0	6.0
Eremophila pustulata		6.0	1.5
Maireana sedifolia		4.0	1.2
Exocarpos aphyllus		2.0	1.6
Tecticornia disarticulata		2.0	1.5
Acacia erinacea		1.0	1.6
Eremophila ionantha x *scoparia*		1.0	1.5
Senna cardiosperma		1.0	1.5
Atriplex vesicaria		1.0	0.4
Senna artemisioides subsp. *filifolia*		0.5	1.6
Eremophila glabra subsp. *glabra*		0.5	1.5
Frankenia interioris		0.5	1.2
Scaevola spinescens		0.5	1.2
Lycium australe		0.5	1.0
Olearia muelleri		0.2	0.4
Maireana georgei		0.2	0.2
Maireana trichoptera		0.2	0.2
Maireana triptera		0.2	0.2
Maireana tomentosa subsp. *tomentosa*		0.2	0.1
Sclerolaena diacantha		0.1	0.2
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD007**	**Position (WGS84)**	121.6051, -30.6903
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (10 Mar 2025)

Site description	Mid *Eucalyptus ravida* and *E. transcontinentalis* woodland over isolated mid *Senna artemisioides* subsp. *filifolia*, *Eremophila pustulata* and *Pimelea microcephala* shrubs.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	60	**Tree cover (%)**	60
Shrub cover (%)	4	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		55.0	11.0
Eucalyptus transcontinentalis		5.0	15.0
Eremophila interstans subsp. *interstans*		2.0	1.5
Senna artemisioides subsp. *filifolia*		2.0	1.4
Eremophila pustulata		1.0	1.5
Pittosporum angustifolium		0.5	1.6
Pimelea microcephala		0.1	1.2
Scaevola spinescens		0.1	0.4

Site details			
Site	**KD008**	**Position (WGS84)**	121.5645, -30.6662
Slope	gentle	**Topography**	hill slope
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	quartz, siltstone / mudstone, ferrous - ironstone		

Observation details - visit 1 (08 Mar 2025)

Site description	Isolated low *Casuarina pauper* trees over mid open *Senna artemisioides* subsp. *filifolia*, *Acacia kalgoorliensis* and *Eremophila oldfieldii* shrubland over isolated low *Ptilotus obovatus*, *Maireana triptera* and *M. georgei* shrubs.

Habitat	shrubland

Disturbance	evidence of feral animals, vehicle tracks

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	25	**Tree cover (%)**	1
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Senna artemisioides subsp. *filifolia*		7.0	1.8
Acacia kalgoorliensis		5.0	1.7
Eremophila oldfieldii		4.0	2.5
Santalum spicatum		2.0	2.5
Alyxia buxifolia		2.0	1.4
Scaevola spinescens		2.0	1.4
Ptilotus obovatus		2.0	0.3
Casuarina pauper		1.0	4.5
Eremophila glabra subsp. *glabra*		1.0	1.5
Maireana triptera		1.0	0.3
Maireana sedifolia		0.5	0.7
Solanum lasiophyllum		0.5	0.5
Maireana georgei		0.5	0.3
Lycium australe		0.2	1.2
Leichardtia australis		0.1	3.0
Austrostipa platychaeta		0.1	0.6
Roepera reticulata		0.1	0.4
Siemssenia capillaris		0.1	0.4
Maireana trichoptera		0.1	0.2
Austrostipa scabra subsp. *scabra*		0.1	0.15

Site details			
Site	**KD009**	**Position (WGS84)**	121.5745, -30.6832
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	quartz		

Observation details - visit 1 (11 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over mid *Eremophila pustulata*, *Cratystylis conocephala* and *Senna artemisioides* subsp. *filifolia* shrubland over isolated *Scaevola spinescens* and *Olearia muelleri* shrubs.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	60	**Tree cover (%)**	40
Shrub cover (%)	40	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		30.0	9.0
Eremophila pustulata		30.0	1.4
Eucalyptus celastroides subsp. *celastroides*		10.0	7.0
Eremophila glabra subsp. *glabra*		3.0	1.8
Eremophila oppositifolia		2.0	1.8
Exocarpos aphyllus		2.0	1.6
Senna artemisioides subsp. *filifolia*		2.0	1.6
Scaevola spinescens		2.0	1.5
Cratystylis conocephala		2.0	1.4
Acacia erinacea		2.0	0.5
Rhagodia drummondii		1.0	1.5
Maireana sedifolia		1.0	1.4
Eremophila scoparia		1.0	1.3
Atriplex vesicaria		1.0	0.8
Eremophila ionantha		1.0	0.7
Olearia muelleri		1.0	0.4
Maireana triptera		1.0	0.1
Sclerolaena diacantha		0.2	0.1
Roepera reticulata		0.1	3.0
Austrostipa platychaeta		0.1	0.3
Maireana georgei		0.1	0.2
Maireana trichoptera		0.1	0.2

Site details			
Site	**KD010**	**Position (WGS84)**	121.5741, -30.6678
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (08 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over isolated tall *Eremophila interstans* subsp. *interstans*, *E. oppositifolia* and *Acacia burkittii* shrubs over mid open *Eremophila pustulata*, *Dodonaea lobulata* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	45	**Tree cover (%)**	35
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		25.0	6.0
Eucalyptus celastroides subsp. *celastroides*		10.0	4.0
Eremophila pustulata		7.0	1.5
Dodonaea lobulata		4.0	1.5
Senna artemisioides subsp. *filifolia*		4.0	1.5
Exocarpos aphyllus		3.0	1.8
Acacia burkittii		1.0	3.0
Eremophila oppositifolia		1.0	2.5
Eremophila interstans subsp. *interstans*		1.0	2.1
Eremophila oldfieldii		1.0	1.9
Eremophila glabra subsp. *glabra*		1.0	1.5
Maireana sedifolia		1.0	1.3
Casuarina pauper		0.5	1.5
Eremophila scoparia		0.5	1.5
Acacia kalgoorliensis		0.5	1.1
Lycium australe		0.5	1.0
Acacia erinacea		0.5	0.6
Ptilotus obovatus		0.2	0.2
Leichardtia australis		0.1	1.5
Austrostipa platychaeta		0.1	0.6
Olearia muelleri		0.1	0.5
Maireana triptera		0.1	0.2

Site details			
Site	**KD011**	**Position (WGS84)**	121.6011, -30.6814
Slope	gentle	**Topography**	hill slope
Soil colour	red-brown	**Soil texture**	sandy clay, sandy loam
Rock type	ferrous - ironstone, quartz		

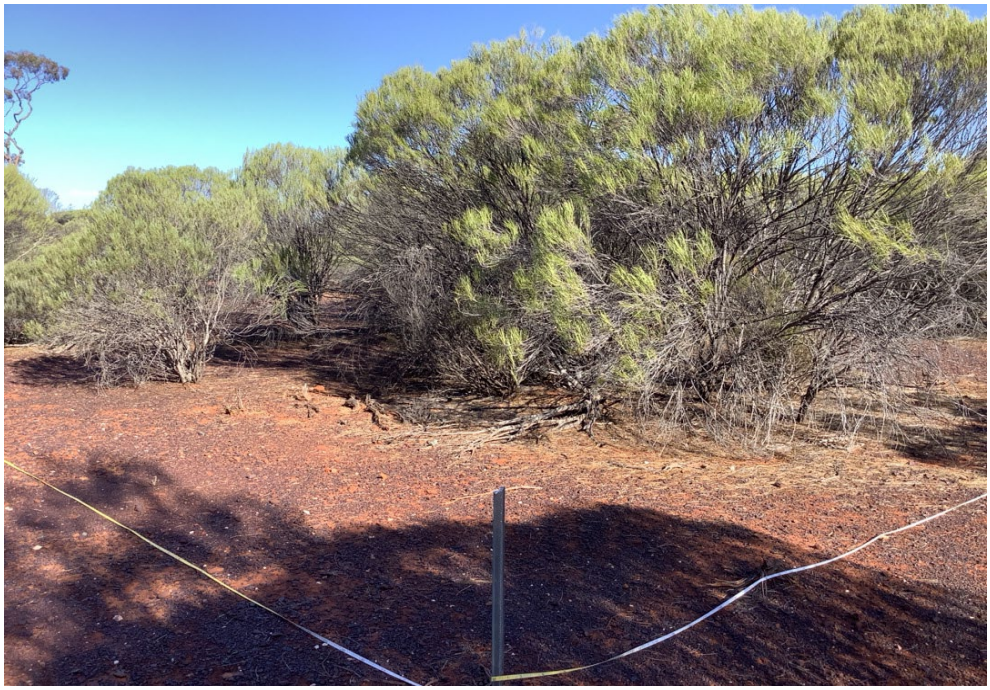
Observation details - visit 1 (08 Mar 2025)

Site description	Isolated low *Casuarina pauper* trees over tall open *Acacia burkittii* and *Eremophila oppositifolia* shrubland over mid open *Acacia kalgoorliensis* and *Scaevola spinescens* shrubland.

Habitat	shrubland

Disturbance	litter, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	45	**Tree cover (%)**	1
Shrub cover (%)	45	**Grass cover (%)**	0
Herb cover (%)	0		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia burkittii		20.0	3.5
Acacia kalgoorliensis		15.0	1.6
Eremophila oppositifolia		5.0	3.0
Eremophila granitica		3.0	1.0
Scaevola spinescens		2.0	1.6
Casuarina pauper		1.0	5.0
Exocarpos aphyllus		0.1	1.8
Ptilotus obovatus		0.1	0.4
Maireana triptera		0.1	0.1

Site details			
Site	**KD012**	**Position (WGS84)**	121.6024, -30.6865
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (08 Mar 2025)

Site description	Mid open *Eucalyptus salmonophloia* woodland over mid open *Atriplex nummularia* subsp. *spathulata*, *Eremophila scoparia* and *Tecticornia* shrubland over isolated low *Atriplex vesicaria* shrubs.

Habitat	open woodland

Disturbance	litter, livestock tracks, vehicle tracks, evidence of feral animals

Vegetation condition	Very Good	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	25	**Tree cover (%)**	10
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		10.0	25.0
Atriplex nummularia **subsp.** *spathulata*		10.0	1.6
Eremophila scoparia		4.0	1.5
Tecticornia disarticulata		3.0	1.2
Senna artemisioides subsp. *filifolia*		1.0	1.5
Maireana sedifolia		1.0	1.2
Atriplex vesicaria		1.0	0.5
Sclerolaena diacantha		1.0	0.15
Eremophila glabra subsp. *glabra*		0.5	0.4
Lycium australe		0.3	0.6
Maireana trichoptera		0.2	0.2
Maireana triptera		0.2	0.2
Santalum acuminatum		0.1	2.5
Senna cardiosperma		0.1	1.6
Eremophila interstans subsp. *interstans*		0.1	1.0
Pittosporum angustifolium		0.1	1.0
Enchylaena tomentosa		0.1	0.4
Maireana pyramidata		0.1	0.4
Ptilotus obovatus		0.1	0.3
Leichardtia australis		0.1	0.25
Maireana tomentosa subsp. *tomentosa*		0.1	0.1

Site details			
Site	**KD013**	**Position (WGS84)**	121.5939, -30.6738
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

Observation details - visit 1 (10 Mar 2025)

Site description	Mid *Eucalyptus salubris* woodland over mid sparse *Maireana sedifolia*, *Eremophila pustulata* and *Tecticornia* shrubland over low sparse *Atriplex vesicaria* and *Frankenia interioris* shrubland.

Habitat	woodland

Disturbance	historic clearing, evidence of feral animals, vehicle tracks

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		20.0	20.0
Eremophila pustulata		5.0	1.6
Maireana sedifolia		5.0	1.6
Senna artemisioides subsp. *filifolia*		3.0	1.5
Tecticornia disarticulata		3.0	1.2
Cratystylis conocephala		2.0	1.6
Atriplex vesicaria		2.0	1.5
Cratystylis subspinescens		2.0	1.5
Frankenia interioris		2.0	0.4
Eremophila scoparia		1.0	1.7
Atriplex nummularia **subsp.** *spathulata*		1.0	1.4
Rhagodia drummondii		1.0	1.3
Maireana triptera		0.3	0.2
Sclerolaena diacantha		0.3	0.1
Maireana georgei		0.2	0.2
Maireana trichoptera		0.1	0.2
Maireana tomentosa subsp. *tomentosa*		0.1	0.1
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD014**	**Position (WGS84)**	121.5996, -30.6807
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy loam, sandy clay
Rock type	siltstone / mudstone, quartz, ferrous - ironstone		

Observation details - visit 1 (08 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* and *E. salubris* woodland over isolated mid *Atriplex nummularia* subsp. *spathulata*, *Maireana pyramidata* and *M. sedifolia* shrubs over low open *Maireana triptera*, *Atriplex vesicaria* and *A. codonocarpa* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, livestock tracks, erosion channels, evidence of feral animals

Vegetation condition	Very Good	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	25	**Tree cover (%)**	20
Shrub cover (%)	10	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		10.0	15.0
Eucalyptus salubris		5.0	11.0
Sclerolaena diacantha		5.0	0.3
Maireana triptera		5.0	0.25
Atriplex codonocarpa		3.0	0.4
Atriplex nummularia **subsp.** *spathulata*		2.0	1.4
Atriplex vesicaria		2.0	0.5
Eucalyptus celastroides subsp. *celastroides*		1.0	4.0
Maireana sedifolia		1.0	1.4
Acacia kalgoorliensis		1.0	1.2
Maireana pyramidata		1.0	1.1
Eremophila glabra subsp. *glabra*		0.5	1.2
Ptilotus obovatus		0.2	0.3
Salsola australis		0.2	0.3
Sclerolaena fusiformis		0.2	0.3
Enchylaena tomentosa		0.2	0.2
Maireana tomentosa		0.2	0.2
Maireana georgei		0.1	0.3
Maireana trichoptera		0.1	0.2

Site details			
Site	**KD015_e**	**Position (WGS84)**	121.6356, -30.7013
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

Observation details - visit 1 (12 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* and *E. oleosa* subsp. *oleosa* woodland over tall open *Melaleuca sheathiana* and *Eremophila interstans* subsp. *interstans* shrubland over mid open *Maireana sedifolia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals, historic clearing, vehicle tracks

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	10
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Maireana sedifolia		15.0	1.4
Melaleuca sheathiana		9.0	3.5
Eremophila parvifolia subsp. *auricampa*		5.0	0.5
Eucalyptus oleosa subsp. *oleosa*		3.0	15.0
Eremophila interstans subsp. *interstans*		1.0	3.5
Eremophila scoparia		1.0	1.8
Austrostipa scabra subsp. *scabra*		0.1	0.2

Site details			
Site	**KD015_w**	**Position (WGS84)**	121.5965, -30.6881
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	siltstone / mudstone, quartz		

Observation details - visit 1 (10 Mar 2025)

Site description	Mid *Eucalyptus salubris*, *E. salmonophloia* and *E. lesouefii* woodland over mid *Eremophila pustulata*, *Cratystylis conocephala* and *Maireana sedifolia* shrubland over isolated low *Eremophila parvifolia* subsp. *auricampa*, *Olearia muelleri* and *Scaevola spinescens* shrubs.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	60	**Tree cover (%)**	40
Shrub cover (%)	40	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila pustulata		25.0	1.6
Eucalyptus salubris		20.0	20.0
Eucalyptus salmonophloia		10.0	20.0
Eucalyptus lesouefii		10.0	15.0
Eremophila parvifolia subsp. *auricampa*		10.0	0.6
Senna artemisioides subsp. *filifolia*		5.0	1.7
Cratystylis conocephala		5.0	1.4
Scaevola spinescens		5.0	1.2
Maireana sedifolia		2.0	1.5
Olearia muelleri		2.0	0.7
Eremophila glabra subsp. *glabra*		1.0	1.2
Atriplex bunburyana		0.5	1.2
Atriplex vesicaria		0.3	0.7
Maireana pentatropis		0.1	1.0
Maireana trichoptera		0.1	0.1
Roepera aurantiaca subsp. *aurantiaca*		0.1	0.1

Site details			
Site	**KD016**	**Position (WGS84)**	121.6047, -30.6952
Slope	moderate	**Topography**	hill slope
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	granite - rocks		

Observation details - visit 1 (10 Mar 2025)

Site description	Low open *Casuarina pauper* woodland over tall sparse *Eremophila oppositifolia* shrubland over mid open *Dodonaea lobulata*, *Scaevola spinescens* and *Grevillea acuaria* shrubland.

Habitat	open woodland

Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	40	**Tree cover (%)**	5
Shrub cover (%)	40	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Dodonaea lobulata		10.0	1.5
Eremophila oppositifolia		8.0	2.5
Casuarina pauper		5.0	8.0
Exocarpos aphyllus		3.0	2.2
Acacia hemiteles		3.0	1.7
Grevillea acuaria		3.0	1.4
Scaevola spinescens		3.0	1.3
Westringia rigida		3.0	1.2
Alyxia buxifolia		2.0	1.8
Acacia tetragonophylla		2.0	1.5
Acacia erinacea		2.0	0.5
Eremophila glabra subsp. *glabra*		1.0	1.5
Olearia muelleri		1.0	0.4
Eucalyptus griffithsii		0.2	5.0
Ptilotus obovatus		0.2	0.3
Leichardtia australis		0.1	2.5
Maireana georgei		0.1	0.2
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD017**	**Position (WGS84)**	121.5742, -30.6985
Slope	gentle	**Topography**	breakaway
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	granite - rocks		

Observation details - visit 1 (11 Mar 2025)

Site description	Low *Eucalyptus ravida*, *E. stricklandii*, and *E. transcontinentalis* woodland over low open *Eremophila pustulata*, *Scaevola spinescens* and *Olearia muelleri* shrubland.

Habitat	woodland

Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	10
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila pustulata		30.0	1.4
Eucalyptus ravida		20.0	5.0
Eucalyptus transcontinentalis		10.0	7.0
Eucalyptus stricklandii		4.0	6.0
Eremophila oppositifolia		3.0	1.5
Scaevola spinescens		3.0	0.8
Eremophila parvifolia subsp. *auricampa*		3.0	0.6
Eucalyptus celastroides **subsp.** *celastroides*		2.0	3.0
Acacia erinacea		2.0	0.5
Exocarpos aphyllus		1.0	1.8
Acacia kalgoorliensis		1.0	1.3
Cratystylis conocephala		1.0	1.2
Eremophila glabra subsp. *glabra*		1.0	1.2
Maireana sedifolia		1.0	1.2
Westringia rigida		1.0	1.0
Atriplex vesicaria		0.5	0.5
Maireana pentatropis		0.2	0.8
Atriplex nummularia subsp. spathulata		0.2	0.3
Maireana georgei		0.2	0.2
Grevillea acuaria		0.1	0.4
Roepera glauca		0.1	0.2
Maireana triptera		0.1	0.1
Sclerolaena diacantha		0.1	0.1
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD018**	**Position (WGS84)**	121.5744, -30.6767
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (11 Mar 2025)

Site description	Low *Eucalyptus celastroides* subsp. *celastroides* and *E. ravida* woodland over mid open *Eremophila scoparia* and *E. oppositifolia* shrubland over low sparse *Atriplex vesicaria*, *Eremophila parvifolia* subsp. *auricampa* and *Olearia muelleri* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50	**Tree cover (%)**	40
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus celastroides subsp. *celastroides*		25.0	6.0
Eucalyptus ravida		15.0	6.0
Eremophila scoparia		8.0	1.9
Exocarpos aphyllus		5.0	4.0
Scaevola spinescens		3.0	1.2
Eremophila parvifolia subsp. *auricampa*		3.0	0.6
Eremophila oppositifolia		2.0	1.8
Maireana pyramidata		2.0	1.5
Atriplex nummularia **subsp.** *spathulata*		2.0	1.4
Rhagodia drummondii		2.0	0.6
Acacia erinacea		2.0	0.5
Olearia muelleri		2.0	0.5
Eremophila interstans subsp. *interstans*		1.0	2.3
Eremophila oldfieldii		1.0	1.8
Senna artemisioides subsp. *filifolia*		1.0	1.6
Acacia tetragonophylla		1.0	1.5
Eremophila decipiens subsp. *decipiens*		1.0	1.2
Eremophila glabra subsp. *glabra*		1.0	1.2
Maireana sedifolia		1.0	1.2
Lycium australe		1.0	0.8
Atriplex vesicaria		1.0	0.6
Santalum acuminatum		0.5	1.7
Sclerolaena diacantha		0.3	0.1
Austrostipa platychaeta		0.2	0.7
Solanum nummularium		0.2	0.5
Maireana triptera		0.2	0.2
Eremophila praecox	P2 (DBCA list)	0.1	0.8
Ptilotus obovatus		0.1	0.3
Enchylaena tomentosa		0.1	0.2
Maireana georgei		0.1	0.2

Site details			
Site	**KD019**	**Position (WGS84)**	121.5834, -30.7066
Slope	gentle	**Topography**	undulating plain
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	siltstone / mudstone, quartz, ferrous - ironstone		

Observation details - visit 1 (11 Mar 2025)

Site description	Isolated low *Casuarina pauper* trees over isolated tall *Eremophila scoparia* shrubs over low open *Atriplex vesicaria*, *Frankenia interioris* and *Maireana pyramidata* shrubland.
Habitat	shrubland
Disturbance	evidence of feral animals, vehicle tracks

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	20	**Tree cover (%)**	1
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Atriplex vesicaria		10.0	0.7
Eremophila scoparia		3.0	1.9
Frankenia interioris		3.0	0.5
Atriplex nummularia **subsp.** *spathulata*		2.0	1.2
Maireana pyramidata		2.0	0.7
Casuarina pauper		1.0	5.0
Senna artemisioides subsp. x *artemisioides*		1.0	0.4
Sclerolaena diacantha		0.3	0.2
Maireana georgei		0.2	0.2
Leichardtia australis		0.1	0.2
Sclerolaena obliquicuspis		0.1	0.2
Enneapogon avenaceus		0.1	0.1
Lepidium phlebopetalum		0.1	0.1
Maireana trichoptera		0.1	0.1
Maireana triptera		0.1	0.1
Sclerolaena fusiformis		0.1	0.1
Lawrencia repens		0.1	0.01

Site details			
Site	**KD021**	**Position (WGS84)**	121.6027, -30.7001
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

Observation details - visit 1 (10 Mar 2025)

Site description	Low *Eucalyptus ravida* woodland over mid open *Eremophila pustulata* and *Senna artemisioides* subsp. *filifolia* shrubland over low sparse *Atriplex vesicaria*, *Acacia erinacea* and *Scaevola spinescens* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	35	**Tree cover (%)**	15
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		15.0	6.0
Eremophila pustulata		12.0	1.4
Eremophila scoparia		3.0	1.8
Scaevola spinescens		3.0	0.6
Exocarpos aphyllus		2.0	1.9
Senna artemisioides subsp. *filifolia*		2.0	1.6
Tecticornia disarticulata		2.0	1.6
Atriplex vesicaria		2.0	1.2
Eremophila parvifolia subsp. *auricampa*		2.0	0.6
Eremophila oppositifolia		1.0	2.2
Alyxia buxifolia		1.0	1.6
Acacia erinacea		1.0	0.6
Frankenia interioris		1.0	0.5
Olearia muelleri		1.0	0.5
Eremophila glabra subsp. *glabra*		0.5	1.0
Maireana triptera		0.3	0.2
Ptilotus obovatus		0.2	0.4
Enchylaena tomentosa		0.2	0.2
Maireana georgei		0.2	0.2
Maireana trichoptera		0.2	0.2
Sclerolaena diacantha		0.2	0.2
Eucalyptus salmonophloia		0.1	15.0
Eucalyptus transcontinentalis		0.1	10.0
Eucalyptus celastroides subsp. *celastroides*		0.1	3.0
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD022**	**Position (WGS84)**	121.6090, -30.6979
Slope	gentle	**Topography**	foot slope
Soil colour	orange, whitish	**Soil texture**	sandy clay
Rock type	quartz, siltstone / mudstone		

Observation details - visit 1 (07 Mar 2025)

Site description	Low open *Eucalyptus transcontinentalis*, *E. lesouefii* and *E. salmonophloia* woodland over isolated tall *Eremophila interstans* subsp. *interstans* shrubs over low open *Tecticornia disarticulata*, *Acacia erinacea* and *Maireana glomerifolia* shrubland.

Habitat	open woodland

Disturbance	historic clearing, livestock tracks, evidence of feral animals

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	5
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Tecticornia disarticulata		15.0	0.8
Eucalyptus lesouefii		5.0	7.0
Eremophila interstans subsp. *interstans*		2.0	2.5
Cratystylis conocephala		1.0	1.4
Cratystylis microphylla		1.0	1.2
Acacia erinacea		1.0	1.0
Scaevola spinescens		1.0	0.8
Atriplex nummularia **subsp.** *spathulata*		0.5	1.3
Maireana sedifolia		0.5	1.2
Atriplex vesicaria		0.5	0.7
Eremophila parvifolia subsp. *auricampa*		0.5	0.6
Maireana glomerifolia		0.5	0.4
Frankenia desertorum		0.5	0.3
Maireana triptera		0.3	0.3
Sclerolaena fusiformis		0.3	0.15
Enchylaena tomentosa		0.2	0.2
Maireana trichoptera		0.2	0.2
Eucalyptus salmonophloia		0.1	15.0
Eucalyptus transcontinentalis		0.1	12.0
Roepera reticulata		0.1	0.4
Acacia hemiteles		0.1	0.3
Maireana tomentosa		0.1	0.3
Sclerolaena brevifolia		0.1	0.3
Sclerolaena diacantha		0.1	0.2

Site details			
Site	**KD023**	**Position (WGS84)**	121.6210, -30.6927
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

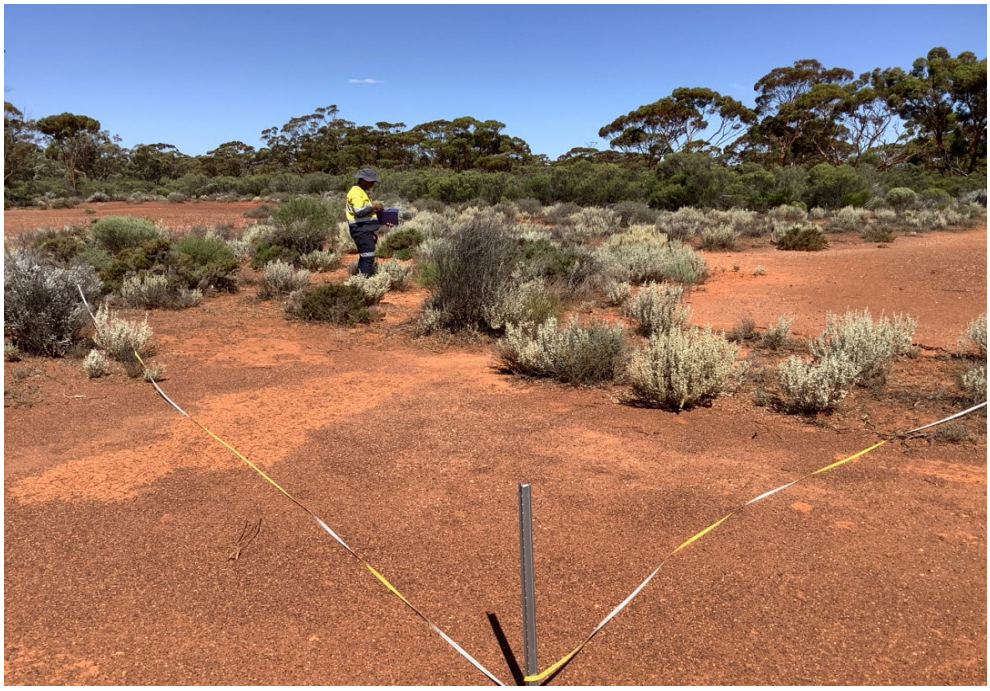
Observation details - visit 1 (08 Mar 2025)

Site description	Isolated mid *Eremophila alternifolia* and *E. scoparia* shrubs over low open *Atriplex vesicaria*, *Tecticornia disarticulata* and *Maireana pyramidata* shrubland.

Habitat	shrubland

Disturbance	vehicle tracks, weed infestation, large-scale clearing, historic clearing, evidence of feral animals, livestock tracks

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	0
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	1		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Atriplex vesicaria		7.0	0.5
Tecticornia disarticulata		5.0	1.2
Eremophila decipiens subsp. *decipiens*		2.0	1.5
Maireana pyramidata		2.0	1.4
Eremophila alternifolia		1.0	1.5
Eremophila scoparia		1.0	1.5
Senna artemisioides subsp. *filifolia*		1.0	1.5
Eremophila granitica		1.0	1.2
Frankenia interioris		1.0	0.6
Maireana sedifolia		0.5	1.4
**Centaurea melitensis*	Weed	0.5	0.3
**Carrichtera annua*	Weed	0.5	0.2
Siemssenia capillaris		0.3	0.4
Solanum lasiophyllum		0.3	0.3
Maireana tomentosa subsp. *tomentosa*		0.3	0.2
**Salvia verbenaca*	Weed	0.3	0.02
Ptilotus obovatus		0.2	0.4
Atriplex codonocarpa		0.2	0.1
Enneapogon caerulescens		0.2	0.1
Maireana triptera		0.1	0.3
Sclerolaena diacantha		0.1	0.2
Brachyscome ciliaris		0.1	0.15
Paspalidium constrictum		0.1	0.15
**Pentameris airoides* subsp. *airoides*	Weed	0.1	0.1
Enneapogon avenaceus		0.1	0.1
Sida fibulifera		0.1	0.02
Eragrostis pergracilis		0.1	0.01

Site details			
Site	**KD024**	**Position (WGS84)**	121.6211, -30.6809
Slope	gentle	**Topography**	undulating plain
Soil colour	red-brown	**Soil texture**	sandy loam
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (09 Mar 2025)

Site description	Low *Eucalyptus campaspe* and *E. transcontinentalis* woodland over isolated tall *Eremophila interstans* subsp. *interstans* shrubs over isolated low *Eremophila parvifolia* subsp. *auricampa*, *Maireana sedifolia* and *Scaevola spinescens* shrubs.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	20
Shrub cover (%)	7	**Grass cover (%)**	0
Herb cover (%)	1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus transcontinentalis		10.0	10.0
Eucalyptus ravida		10.0	6.0
Eremophila parvifolia subsp. *auricampa*		5.0	0.8
Acacia erinacea		3.0	0.6
Maireana sedifolia		2.0	1.2
Eremophila interstans subsp. *interstans*		1.0	3.5
Templetonia ceracea		1.0	1.4
Atriplex bunburyana		0.5	0.6
Scaevola spinescens		0.5	0.5
Sclerolaena fusiformis		0.3	0.1
Maireana triptera		0.2	0.2
Sclerolaena diacantha		0.2	0.2
Eremophila oppositifolia		0.1	0.5
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD025**	**Position (WGS84)**	121.6356, -30.6942
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy loam
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (08 Mar 2025)

Site description	Mid open *Eucalyptus salubris* woodland over isolated tall *Eremophila interstans* subsp. *interstans* shrubs over mid open *Maireana sedifolia*, *Senna artemisioides* subsp. *filifolia* and *Maireana pyramidata* shrubland.

Habitat	open woodland

Disturbance	vehicle tracks, evidence of feral animals, livestock tracks

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	8
Shrub cover (%)	15	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	08 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Maireana sedifolia		12.0	1.4
Eucalyptus salubris		8.0	12.0
Senna artemisioides subsp. *filifolia*		2.0	1.6
Maireana pyramidata		2.0	1.2
Maireana tomentosa subsp. *tomentosa*		2.0	0.6
Cratystylis microphylla		0.5	0.6
Ptilotus obovatus		0.2	0.3
Sclerolaena diacantha		0.2	0.3
Maireana triptera		0.2	0.2
Eremophila interstans subsp. *interstans*		0.1	3.0
Alectryon oleifolius subsp. *canescens*		0.1	1.2
Maireana trichoptera		0.1	0.2
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KD026**	**Position (WGS84)**	121.6135, -30.6961
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz, granite - rocks		

Observation details - visit 1 (10 Mar 2025)

Site description	Mid open *Eucalyptus griffithsii* mallee woodland over tall open *Acacia burkittii*, *Exocarpos aphyllus* and *Eremophila oldfieldii* shrubland over mid sparse *Eremophila granitica*, *Senna artemisioides* subsp. *filifolia* and *Acacia hemiteles* shrubland.

Habitat	shrubland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	30	**Tree cover (%)**	6
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia burkittii		15.0	2.5
Eucalyptus griffithsii		6.0	6.0
Eremophila granitica		4.0	1.2
Scaevola spinescens		3.0	1.4
Exocarpos aphyllus		2.0	3.0
Acacia hemiteles		2.0	1.5
Acacia tetragonophylla		2.0	1.5
Eremophila pustulata		2.0	1.5
Senna artemisioides subsp. *filifolia*		2.0	1.5
Eremophila oldfieldii		1.0	2.0
Casuarina pauper		1.0	1.2
Eremophila glabra subsp. *glabra*		1.0	1.2
Rhagodia drummondii		1.0	0.6
Maireana georgei		0.1	0.2
Maireana triptera		0.1	0.2
Ptilotus obovatus		0.1	0.2
Leichardtia australis		0.1	0.1

Site details			
Site	**KD027**	**Position (WGS84)**	121.6337, -30.7090
Slope	negligible	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (12 Mar 2025)

Site description	Isolated low *Grevillea berryana* trees over tall *Acacia burkittii* and *A. tetragonophylla* shrubland over mid open *Eremophila granitica* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	shrubland

Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	65	**Tree cover (%)**	3
Shrub cover (%)	65	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

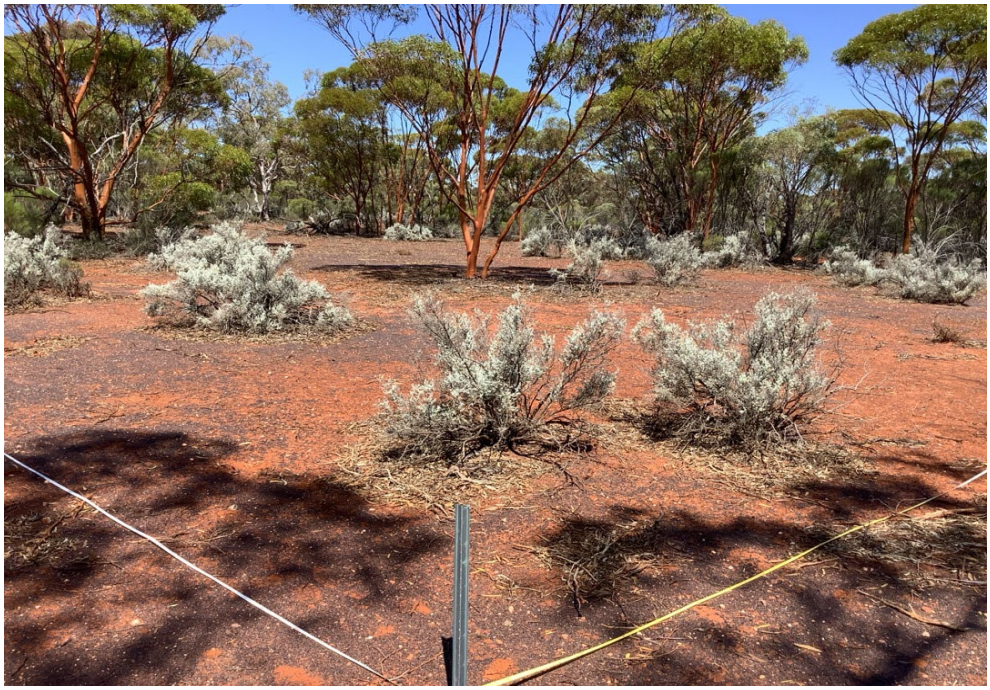
Species	Status	Cover (%)	Height (m)
Acacia burkittii		30.0	6.0
Acacia tetragonophylla		30.0	5.0
Eremophila granitica		10.0	1.5
Senna artemisioides subsp. *filifolia*		5.0	1.7
Grevillea nematophylla subsp. *nematophylla*		3.0	10.0
Lycium australe		2.0	1.6
Rhagodia drummondii		2.0	1.6
Ptilotus obovatus		0.5	0.3
Enchylaena tomentosa		0.2	0.3
Siemssenia capillaris		0.2	0.3
Austrostipa tuckeri		0.2	0.2
Amyema preissii		0.1	2.5
Amyema gibberula var. *gibberula*		0.1	2.2
Leichardtia australis		0.1	2.0
Olearia pimeleoides		0.1	1.2
Eremophila ionantha		0.1	0.7
Halgania integerrima		0.1	0.3
Pittosporum angustifolium		0.1	0.2
Solanum lasiophyllum		0.1	0.2

Site details			
Site	**KD028**	**Position (WGS84)**	121.6201, -30.7181
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	loamy sand
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (07 Mar 2025)

Site description	Low *Eucalyptus salubris* and *E. celastroides* subsp. *celastroides* woodland over mid open *Maireana sedifolia*, *Eremophila interstans* subsp. *virgata* and *Templetonia ceracea* shrubland.
Habitat	woodland
Disturbance	vehicle tracks, livestock tracks, evidence of feral animals, historic clearing

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	10
Shrub cover (%)	12	**Grass cover (%)**	0
Herb cover (%)	0		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Maireana sedifolia		10.0	1.4
Eucalyptus salubris		9.0	7.0
Templetonia ceracea		2.0	1.0
Eucalyptus celastroides subsp. *celastroides*		1.0	3.5
Eremophila interstans subsp. *interstans*		1.0	1.6
Eremophila interstans subsp. *virgata*		1.0	1.2
Tecticornia disarticulata		1.0	1.2
Eremophila parvifolia subsp. *auricampa*		0.1	0.4
Maireana trichoptera		0.1	0.2
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD029**	**Position (WGS84)**	121.6345, -30.7223
Slope	negligible	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone		

Observation details - visit 1 (07 Mar 2025)

Site description	Mid *Eucalyptus salubris* mallee woodland over isolated mid *Eremophila scoparia* shrubs over low open *Maireana pyramidata* and *M. sedifolia* shrubland.
Habitat	mallee woodland
Disturbance	evidence of feral animals, historic clearing, vehicle tracks, livestock tracks, litter, erosion channels, weed infestation

Vegetation condition	Good	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	20	**Tree cover (%)**	10
Shrub cover (%)	12	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		10.0	7.0
Maireana pyramidata		10.0	1.0
Eremophila scoparia		2.0	1.7
Maireana sedifolia		2.0	0.6
Eremophila ionantha		1.0	1.5
Senna artemisioides subsp. *filifolia*		1.0	1.5
Cratystylis subspinescens		0.5	1.2
Acacia tetragonophylla		0.3	1.2
Sclerolaena diacantha		0.3	0.2
**Carrichtera annua*	Weed	0.2	0.25
Maireana trichoptera		0.1	2.0
Eremophila decipiens subsp. *decipiens*		0.1	0.8
Leichardtia australis		0.1	0.8
Austrostipa platychaeta		0.1	0.5
Ptilotus exaltatus		0.1	0.4
Atriplex codonocarpa		0.1	0.3
Maireana triptera		0.1	0.3
Ptilotus obovatus		0.1	0.3
Enteropogon ramosus		0.1	0.2
Sclerolaena brevifolia		0.1	0.2
Enneapogon avenaceus		0.1	0.1
Paspalidium constrictum		0.1	0.1
Ptilotus aervoides		0.1	0.03

Site details			
Site	**KD030**	**Position (WGS84)**	121.6170, -30.7284
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock type	quartz, ferrous - ironstone		

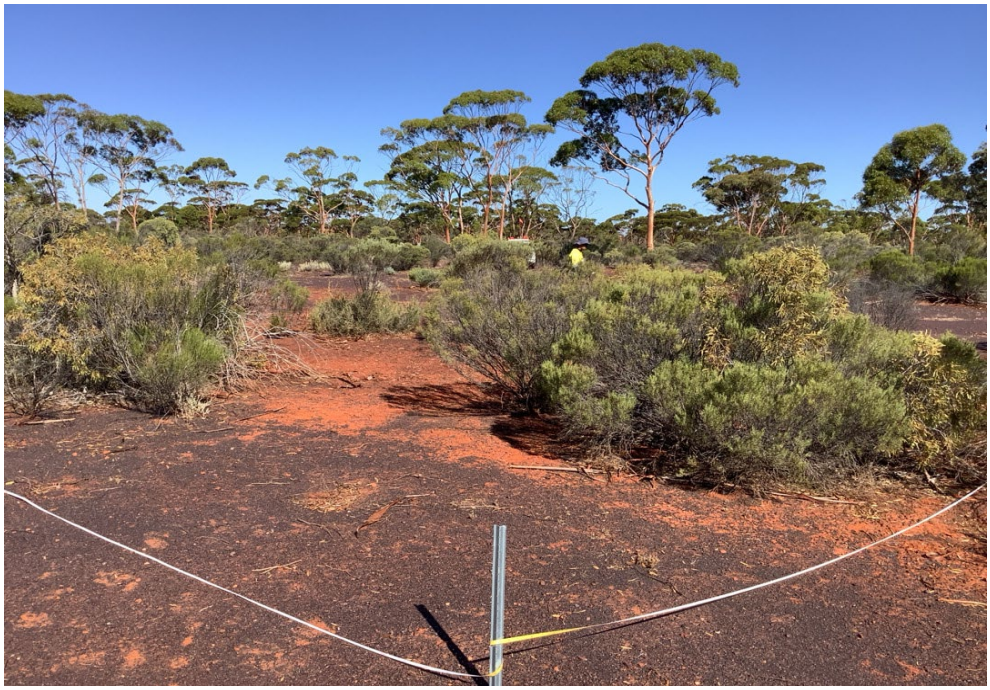
Observation details - visit 1 (06 Mar 2025)

Site description	Mid open *Eucalyptus salmonophloia* woodland over mid open *Eremophila interstans* subsp. *virgata*, *E. scoparia* and *Santalum acuminatum* shrubland over isolated low *Atriplex vesicaria*, *Maireana triptera* and *Acacia erinacea* shrubs.

Habitat	open woodland

Disturbance	historic clearing, vehicle tracks, livestock tracks, evidence of feral animals, litter

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	6
Shrub cover (%)	15	**Grass cover (%)**	0
Herb cover (%)	0		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		6.0	15.0
Eremophila interstans subsp. *virgata*		5.0	1.7
Eremophila scoparia		3.0	1.6
Santalum acuminatum		3.0	1.5
Eremophila ionantha		1.0	1.6
Acacia hemiteles		0.5	1.0
Templetonia ceracea		0.5	0.5
Acacia erinacea		0.5	0.4
Atriplex vesicaria		0.5	0.4
Maireana triptera		0.5	0.4
Sclerolaena fusiformis		0.5	0.1
Atriplex nummularia **subsp.** *spathulata*		0.2	1.2
Eremophila decipiens subsp. *decipiens*		0.1	0.4
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD031**	**Position (WGS84)**	121.6190, -30.7351
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone		

Observation details - visit 1 (06 Mar 2025)

Site description	Isolated low *Eucalyptus ravida* trees over isolated mid *Eremophila scoparia* shrubs over low sparse *Maireana pyramidata* and *Atriplex vesicaria* shrubland.
Habitat	shrubland
Disturbance	historic clearing, grazing-low, evidence of feral animals, livestock tracks, weed infestation

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	10	**Tree cover (%)**	1
Shrub cover (%)	10	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Atriplex vesicaria		5.0	0.7
Maireana pyramidata		4.0	0.6
Eucalyptus ravida		1.0	5.0
Eremophila scoparia		1.0	1.5
Sclerolaena fusiformis		0.5	0.3
Maireana triptera		0.3	0.3
Templetonia ceracea		0.2	1.0
Maireana tomentosa		0.2	0.6
Ptilotus exaltatus		0.2	0.4
Sclerolaena diacantha		0.2	0.3
**Carrichtera annua*	Weed	0.2	0.2
Maireana trichoptera		0.2	0.2
Atriplex codonocarpa		0.1	0.3
Rytidosperma caespitosum		0.1	0.2
Sporobolus australasicus		0.1	0.2
Paspalidium constrictum		0.1	0.1
Plantago debilis		0.1	0.1
Ptilotus obovatus		0.1	0.1
Senna artemisioides subsp. x *artemisioides*		0.1	0.1

Site details			
Site	**KD032**	**Position (WGS84)**	121.6345, -30.7274
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock type	ferrous - ironstone		

Observation details - visit 1 (06 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* woodland over isolated tall *Eremophila scoparia* shrubs over mid sparse *Maireana sedifolia* shrubland.
Habitat	woodland
Disturbance	historic clearing, livestock tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	15	**Tree cover (%)**	10
Shrub cover (%)	5	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		10.0	15.0
Maireana sedifolia		5.0	1.2
Eremophila scoparia		0.1	2.3
Acacia hemiteles		0.1	2.2
Eremophila ionantha		0.1	1.4
Eremophila ionantha x *scoparia*		0.1	1.2
Cratystylis subspinescens		0.1	0.6
Scaevola spinescens		0.1	0.6
Olearia muelleri		0.1	0.4
Maireana triptera		0.1	0.3
Ptilotus obovatus		0.1	0.3
Maireana trichoptera		0.1	0.2
Sclerolaena brevifolia		0.1	0.2
Sclerolaena fusiformis		0.1	0.2
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD033**	**Position (WGS84)**	121.6200, -30.7406
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy loam, sandy clay
Rock type	none		

Observation details - visit 1 (06 Mar 2025)

Site description	Low *Eucalyptus salubris* and *E. celastroides* subsp. *celastroides* woodland over isolated tall *Eremophila interstans* shrubs over mid open *Eremophila scoparia*, *E. pustulata* and *Maireana sedifolia* shrubland.

Habitat	woodland

Disturbance	historic clearing, vehicle tracks, evidence of feral animals, livestock tracks

Vegetation condition	Very Good	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		15.0	6.0
Eucalyptus celastroides subsp. *celastroides*		5.0	4.0
Eremophila scoparia		4.0	1.2
Eremophila pustulata		4.0	1.0
Maireana sedifolia		4.0	1.0
Scaevola spinescens		2.0	1.2
Tecticornia disarticulata		1.0	1.0
Atriplex nummularia **subsp.** *spathulata*		0.5	1.5
Senna artemisioides subsp. *filifolia*		0.5	0.4
Maireana triptera		0.5	0.3
Atriplex vesicaria		0.2	0.4
Maireana georgei		0.2	0.3
Templetonia ceracea		0.1	1.0
Olearia muelleri		0.1	0.5
Cratystylis subspinescens		0.1	0.4
Eremophila parvifolia subsp. *auricampa*		0.1	0.3
Austrostipa scabra subsp. *scabra*		0.1	0.1
Maireana trichoptera		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD034**	**Position (WGS84)**	121.6166, -30.7324
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy loam
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (06 Mar 2025)

Site description	Low *Eucalyptus salmonophloia*, *E. transcontinentalis* and *E. salubris* woodland over mid open *Eremophila ionantha*, *E. interstans* subsp. *virgata* and *E. scoparia* shrubland over low sparse *Scaevola spinescens*, *Acacia erinacea* and *Grevillea acuaria* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals, historic clearing, grazing-low

Vegetation condition	Very Good	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	35	**Tree cover (%)**	15
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		7.0	10.0
Eucalyptus transcontinentalis		5.0	9.0
Eremophila ionantha		5.0	1.7
Eremophila interstans subsp. *virgata*		4.0	1.8
Eucalyptus salubris		3.0	6.0
Eremophila scoparia		3.0	1.6
Scaevola spinescens		3.0	0.8
Acacia hemiteles		2.0	2.1
Grevillea acuaria		2.0	0.6
Acacia erinacea		2.0	0.5
Acacia tetragonophylla		1.0	2.2
Templetonia ceracea		1.0	2.2
Senna artemisioides subsp. x *artemisioides*		1.0	1.6
Maireana sedifolia		0.3	1.3
Maireana triptera		0.3	0.5
Ptilotus obovatus		0.2	0.5
Santalum spicatum		0.1	2.2
Senna artemisioides subsp. *filifolia*		0.1	1.2
Rhagodia drummondii		0.1	0.6
Eremophila decipiens subsp. *decipiens*		0.1	0.25

Site details			
Site	**KD035**	**Position (WGS84)**	121.5977, -30.7257
Slope	gentle	**Topography**	foot slope
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, siltstone / mudstone, quartz		

Observation details - visit 1 (07 Mar 2025)

Site description	Low *Eucalyptus ravida* woodland over mid *Eremophila pustulata*, *E. scoparia* and *Maireana sedifolia* shrubland over isolated low *Acacia erinacea*, *Atriplex vesicaria* and *Maireana triptera* shrubs.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	50	**Tree cover (%)**	25
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		25.0	5.0
Eremophila pustulata		15.0	1.5
Eremophila scoparia		7.0	2.1
Exocarpos aphyllus		3.0	1.6
Eremophila interstans subsp. *virgata*		2.0	1.7
Maireana sedifolia		2.0	1.2
Santalum acuminatum		1.0	4.0
Eremophila ionantha x *scoparia*		1.0	1.5
Eremophila interstans subsp. *interstans*		1.0	0.7
Acacia erinacea		1.0	0.5
Atriplex vesicaria		1.0	0.4
Maireana triptera		1.0	0.3
Solanum nummularium		0.5	1.2
Eremophila decipiens subsp. *decipiens*		0.5	0.5
Frankenia interioris		0.2	0.6
Sclerolaena fusiformis		0.2	0.3
Sclerolaena diacantha		0.2	0.2
Austrostipa platychaeta		0.1	0.3
Ptilotus exaltatus		0.1	0.3
Enchylaena tomentosa		0.1	0.2
Maireana trichoptera		0.1	0.2
Austrostipa scabra subsp. *scabra*		0.1	0.1

Site details			
Site	**KD036**	**Position (WGS84)**	121.5971, -30.7288
Slope	gentle	**Topography**	foot slope
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, siltstone / mudstone, quartz		

Observation details - visit 1 (07 Mar 2025)

Site description	Isolated low *Eucalyptus ravida* and *Casuarina pauper* trees over isolated low *Atriplex vesicaria* and *Maireana triptera* shrubs over isolated low **Carrichtera annua* forbs.

Habitat	shrubland

Disturbance	vehicle tracks, erosion channels, evidence of feral animals, historic clearing, large-scale clearing, weed infestation

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	6	**Tree cover (%)**	0
Shrub cover (%)	5	**Grass cover (%)**	0
Herb cover (%)	2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Atriplex vesicaria		4.0	0.5
**Carrichtera annua*	Weed	2.0	0.2
Senna artemisioides subsp. *filifolia*		1.0	1.5
Maireana triptera		1.0	0.3
Eremophila scoparia		0.5	1.5
Atriplex nummularia **subsp.** *spathulata*		0.5	1.0
Maireana tomentosa		0.3	0.3
Maireana georgei		0.2	0.2
Maireana trichoptera		0.2	0.2
Sclerolaena diacantha		0.2	0.2
Casuarina pauper		0.1	6.0
Eucalyptus ravida		0.1	6.0
Eremophila decipiens subsp. *decipiens*		0.1	0.4
Maireana sedifolia		0.1	0.4
Solanum lasiophyllum		0.1	0.25
Sclerolaena fusiformis		0.1	0.2
Enneapogon avenaceus		0.1	0.1

Site details			
Site	**KD037**	**Position (WGS84)**	121.5927, -30.7296
Slope	gentle	**Topography**	hill slope
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (07 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. lesouefii* forest over isolated mid *Senna artemisioides* subsp. *filifolia* and *Eremophila pustulata* shrubs over isolated low *Alyxia buxifolia*, *Solanum nummularium* and *Acacia erinacea* shrubs.

Habitat	forest

Disturbance	vehicle tracks, litter, historic clearing

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	70	**Tree cover (%)**	70
Shrub cover (%)	5	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		60.0	9.0
Eucalyptus lesouefii		10.0	9.0
Senna artemisioides subsp. *filifolia*		3.0	1.8
Acacia hemiteles		1.0	1.7
Eremophila pustulata		1.0	1.5
Pittosporum angustifolium		0.3	1.6
Eremophila decipiens subsp. *decipiens*		0.3	1.3
Alyxia buxifolia		0.3	0.8
Dodonaea lobulata		0.2	1.5
Acacia erinacea		0.2	0.5
Solanum nummularium		0.2	0.5
Leichardtia australis		0.1	1.5
Ptilotus obovatus		0.1	0.2

Site details			
Site	**KD038**	**Position (WGS84)**	121.6070, -30.7144
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (07 Mar 2025)

Site description	Mid *Eucalyptus salubris* and *E. salmonophloia* woodland over isolated tall *Acacia tetragonophylla* and *Exocarpos aphyllus* shrubs over mid *Senna artemisioides* subsp. *filifolia*, *Acacia hemiteles* and *Eremophila scoparia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals, litter

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	50	**Tree cover (%)**	30
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		22.0	11.0
Eucalyptus salmonophloia		8.0	15.0
Acacia hemiteles		7.0	1.9
Senna artemisioides subsp. *filifolia*		7.0	1.8
Eremophila scoparia		5.0	1.7
Acacia tetragonophylla		3.0	3.5
Exocarpos aphyllus		3.0	3.0
Scaevola spinescens		1.0	1.6
Maireana sedifolia		1.0	1.5
Eremophila ionantha		1.0	1.2
Ptilotus obovatus		1.0	0.5
Eremophila decipiens subsp. *decipiens*		0.5	0.5
Maireana georgei		0.5	0.5
Rhagodia drummondii		0.5	0.5
Olearia pimeleoides		0.2	0.6
Leichardtia australis		0.1	3.0
Enchylaena tomentosa		0.1	0.5
Maireana suaedifolia		0.1	0.5

Site details			
Site	**KD039**	**Position (WGS84)**	121.6043, -30.7171
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy loam
Rock type	ferrous - ironstone, calcrete		

Observation details - visit 1 (07 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* and *E. lesouefii* woodland over tall open *Melaleuca sheathiana* shrubland over mid sparse *Senna artemisioides* subsp. *filifolia* and *Maireana sedifolia* shrubland.

Habitat	woodland

Disturbance	historic clearing, litter, vehicle tracks, evidence of feral animals

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	10
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Melaleuca sheathiana		15.0	3.5
Eucalyptus salmonophloia		5.0	15.0
Eucalyptus lesouefii		5.0	11.0
Senna artemisioides subsp. *filifolia*		3.0	1.5
Maireana sedifolia		3.0	1.1
Atriplex vesicaria		1.0	0.5
Santalum acuminatum		0.1	2.5
Maireana radiata		0.1	0.3
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD040**	**Position (WGS84)**	121.5910, -30.7170
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock type	siltstone / mudstone, quartz, ferrous - ironstone		

Observation details - visit 1 (11 Mar 2025)

Site description	Mid open *Eucalyptus salmonophloia* and *E. transcontinentalis* woodland over tall open *Eremophila interstans* subsp. *virgata* shrubland over isolated low *Atriplex vesicaria* shrubs.
Habitat	open woodland
Disturbance	evidence of feral animals, vehicle tracks

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	30	**Tree cover (%)**	5
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila interstans subsp. *virgata*		10.0	1.8
Exocarpos aphyllus		5.0	2.2
Eucalyptus salmonophloia		4.0	20.0
Atriplex vesicaria		2.0	1.2
Eucalyptus transcontinentalis		1.0	20.0
Enchylaena tomentosa		1.0	1.5
Templetonia ceracea		1.0	1.2
Sclerolaena fusiformis		0.5	0.1
Maireana trichoptera		0.2	0.1
Atriplex nummularia **subsp.** *spathulata*		0.1	0.8
Ptilotus exaltatus		0.1	0.2
Sclerolaena diacantha		0.1	0.1
Streptoglossa cylindriceps	Range extension	0.1	0.02
Eragrostis pergracilis		0.1	0.01

Site details			
Site	**KD041**	**Position (WGS84)**	121.5929, -30.7105
Slope	gentle	**Topography**	hill slope
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	quartz		

Observation details - visit 1 (11 Mar 2025)

Site description	Low *Eucalyptus lesouefii* woodland over mid sparse *Eremophila pustulata* and *Exocarpos aphyllus* shrubland over isolated low *Eremophila parvifolia* subsp. *auricampa* shrubs.

Habitat	woodland

Disturbance	historic clearing, evidence of feral animals

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	15
Shrub cover (%)	7	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus lesouefii		15.0	9.0
Eremophila pustulata		5.0	1.2
Exocarpos aphyllus		2.0	1.6
Eremophila parvifolia subsp. *auricampa*		2.0	0.4
Scaevola spinescens		1.0	1.2
Senna artemisioides subsp. *filifolia*		1.0	1.2
Olearia muelleri		1.0	0.6
Acacia erinacea		0.5	0.5
Cratystylis conocephala		0.1	1.0
Maireana pentatropis		0.1	1.0
Eremophila interstans subsp. *interstans*		0.1	0.4
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD042**	**Position (WGS84)**	121.5811, -30.7024
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	siltstone / mudstone, quartz		

Observation details - visit 1 (11 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over mid open *Eremophila pustulata* and *Maireana sedifolia* shrubland over isolated low *Atriplex vesicaria*, *Frankenia interioris* and *Olearia muelleri* shrubs.

Habitat	woodland

Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	15
Shrub cover (%)	15	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus ravida		10.0	6.0
Eremophila pustulata		10.0	1.6
Eucalyptus celastroides **subsp.** *celastroides*		5.0	5.0
Atriplex vesicaria		5.0	0.8
Maireana sedifolia		3.0	1.6
Templetonia ceracea		3.0	1.2
Acacia erinacea		1.0	1.2
Olearia muelleri		0.5	0.6
Scaevola spinescens		0.5	0.6
Maireana georgei		0.3	0.2
Sclerolaena diacantha		0.3	0.1
Eremophila interstans subsp. *interstans*		0.2	2.3
Eremophila scoparia		0.2	1.2
Maireana triptera		0.2	0.6
Frankenia interioris		0.2	0.3
Maireana trichoptera		0.2	0.2
Sclerolaena fusiformis		0.2	0.1
Senna artemisioides subsp. x *artemisioides*		0.1	0.3
Maireana tomentosa subsp. *tomentosa*		0.1	0.2
Austrostipa scabra subsp. *scabra*		0.1	0.1

Site details			
Site	**KD043**	**Position (WGS84)**	121.5752, -30.6927
Slope	gentle	**Topography**	foot slope
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (11 Mar 2025)

Site description	Isolated low *Casuarina pauper* trees over tall open *Eremophila oldfieldii*, *Acacia tetragonophylla* and *Santalum spicatum* shrubland over mid open *Acacia kalgoorliensis*, *Scaevola spinescens* and *Dodonaea lobulata* shrubland.

Habitat	shrubland

Disturbance	vehicle tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	0
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	11 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Santalum spicatum		5.0	3.5
Eremophila oldfieldii		5.0	2.5
Dodonaea lobulata		5.0	1.8
Scaevola spinescens		5.0	1.8
Acacia kalgoorliensis		3.0	1.7
Senna artemisioides subsp. *filifolia*		3.0	1.7
Eremophila granitica		2.0	1.7
Maireana sedifolia		1.0	1.4
Atriplex vesicaria		0.5	1.3
Maireana georgei		0.3	0.2
Maireana triptera		0.3	0.2
Sclerolaena fusiformis		0.2	0.1
Casuarina pauper		0.1	4.0
Maireana trichoptera		0.1	0.2
Austrostipa scabra subsp. *scabra*		0.1	0.1
Enneapogon caerulescens		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD044**	**Position (WGS84)**	121.6092, -30.6832
Slope	gentle	**Topography**	hill slope
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, granite - rocks, quartz		

Observation details - visit 1 (10 Mar 2025)

Site description	Low *Casuarina pauper* woodland over mid *Senna artemisioides* subsp. *filifolia*, *Scaevola spinescens* and *Acacia erinacea* shrubland.

Habitat	woodland

Disturbance	none evident

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	45	**Tree cover (%)**	15
Shrub cover (%)	35	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Westringia rigida		3.0	1.2
Senna artemisioides subsp. *filifolia*		3.0	1.7
Sclerolaena fusiformis		0.1	0.1
Scaevola spinescens		5.0	1.2
Roepera eremaea		0.1	0.2
Ptilotus obovatus		0.5	0.3
Maireana triptera		0.1	0.1
Maireana trichoptera		0.1	0.1
Maireana sedifolia		1.0	1.4
Maireana georgei		0.3	0.2
Grevillea acuaria		2.0	1.3
Exocarpos aphyllus		5.0	2.0
Eremophila parvifolia subsp. *auricampa*		3.0	1.2
Eremophila glabra subsp. *glabra*		5.0	1.4
Enchylaena tomentosa		0.1	0.2
Dodonaea lobulata		5.0	1.4
Casuarina pauper		15.0	2.2
Alectryon oleifolius subsp. *canescens*		3.0	3.5
Acacia tetragonophylla		2.0	1.5
Acacia hemiteles		0.5	1.2
Acacia erinacea		5.0	1.2

Site details			
Site	**KD045**	**Position (WGS84)**	121.6140, -30.6847
Slope	gentle	**Topography**	hill slope
Soil colour	red-orange, brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz, granite - rocks		

Observation details - visit 1 (10 Mar 2025)

Site description	Low open *Casuarina pauper* woodland over tall open *Acacia burkittii* shrubland over mid sparse *Eremophila granitica*, *Senna artemisioides* subsp. *filifolia* and *Scaevola spinescens* shrubland.

Habitat	shrubland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	30	**Tree cover (%)**	5
Shrub cover (%)	30	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia burkittii		20.0	3.5
Eremophila granitica		5.0	1.4
Casuarina pauper		3.0	6.0
Senna artemisioides subsp. *filifolia*		3.0	1.4
Scaevola spinescens		3.0	1.3
Santalum acuminatum		1.0	4.0
Acacia hemiteles		1.0	1.6
Exocarpos aphyllus		1.0	1.3
Eremophila glabra subsp. *glabra*		1.0	1.2
Ptilotus obovatus		1.0	0.3
Sclerolaena fusiformis		0.3	0.1
Atriplex nummularia **subsp.** *spathulata*		0.2	0.2
Rhagodia drummondii		0.2	0.2
Eucalyptus griffithsii		0.1	6.0
Vincetoxicum lineare		0.1	2.5
Maireana georgei		0.1	0.2
Maireana triptera		0.1	0.2

Site details			
Site	**KD046**	**Position (WGS84)**	121.6223, -30.6857
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

Observation details - visit 1 (09 Mar 2025)

Site description	Mid open *Eucalyptus salmonophloia* woodland over mid *Eucalyptus celastroides* subsp. *celastroides* mallee woodland over mid open *Maireana sedifolia* and *Eremophila scoparia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals, vehicle tracks, historic clearing, livestock tracks

Vegetation condition	Very Good	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus celastroides subsp. *celastroides*		20.0	4.5
Maireana triptera		10.0	0.6
Eucalyptus salmonophloia		5.0	20.0
Maireana sedifolia		5.0	1.4
Atriplex nummularia **subsp.** *spathulata*		2.0	1.6
Exocarpos aphyllus		2.0	1.5
Maireana pyramidata		2.0	1.5
Rhagodia drummondii		1.0	0.6
Maireana georgei		1.0	0.5
Ptilotus obovatus		0.3	0.2
Sclerolaena diacantha		0.3	0.2
Austrostipa platychaeta		0.2	0.6
Sclerolaena fusiformis		0.2	0.2
Ptilotus exaltatus		0.1	0.3
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD047**	**Position (WGS84)**	121.6113, -30.6775
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay, sandy loam
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (10 Mar 2025)

Site description	Mid *Eucalyptus lesouefii* and *E. transcontinentalis* woodland over isolated tall *Eremophila interstans* subsp. *interstans* shrubs over mid open *Senna artemisioides* subsp. *filifolia*, *Eremophila scoparia* and *Atriplex nummularia* subsp. *spathulata* shrubland.

Habitat	woodland

Disturbance	historic clearing, vehicle tracks, evidence of feral animals

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	12
Shrub cover (%)	10	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus lesouefii		10.0	12.0
Senna artemisioides subsp. *filifolia*		10.0	1.7
Eucalyptus transcontinentalis		5.0	15.0
Scaevola spinescens		5.0	1.2
Eremophila dempsteri		3.0	3.5
Eremophila interstans subsp. *interstans*		2.0	2.4
Acacia hemiteles		2.0	1.5
Atriplex nummularia **subsp.** *spathulata*		1.0	1.4
Eremophila scoparia		0.5	1.6
Olearia muelleri		0.5	0.5
Maireana georgei		0.3	0.3
Maireana pentatropis		0.1	1.0
Leichardtia australis		0.1	0.1
Maireana trichoptera		0.1	0.1
Salsola australis		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD048**	**Position (WGS84)**	121.6280, -30.6740
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone		

Observation details - visit 1 (09 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* woodland over isolated tall *Exocarpos aphyllus* and *Santalum acuminatum* shrubs over mid sparse *Cratystylis subspinescens*, *Maireana sedifolia* and *Eremophila maculata* subsp. *brevifolia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	30	**Tree cover (%)**	25
Shrub cover (%)	10	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		20.0	20.0
Cratystylis subspinescens		5.0	1.4
Maireana sedifolia		4.0	1.3
Exocarpos aphyllus		2.0	2.2
Eremophila maculata subsp. *brevifolia*		2.0	1.2
Santalum acuminatum		1.0	2.1
Templetonia ceracea		0.5	0.8
Maireana triptera		0.2	0.2
Sclerolaena fusiformis		0.2	0.2
Maireana georgei		0.1	0.2
Maireana trichoptera		0.1	0.1
Paspalidium constrictum		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD049**	**Position (WGS84)**	121.6290, -30.6783
Slope	gentle	**Topography**	seasonally wet area
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	quartz, ferrous - ironstone		

Observation details - visit 1 (09 Mar 2025)

Site description	Mid open *Eremophila interstans* subsp. *virgata*, *Maireana pyramidata* and *Cratystylis subspinescens* shrubland over low open *Streptoglossa cylindriceps*, **Centaurea melitensis* and **Carrichtera annua* forbland.

Habitat	shrubland

Disturbance	weed infestation, livestock tracks, evidence of feral animals

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	0
Shrub cover (%)	25	**Grass cover (%)**	1
Herb cover (%)	10		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila interstans subsp. *virgata*		10.0	2.0
Maireana pyramidata		6.0	1.6
Streptoglossa cylindriceps	Range extension	5.0	0.02
Cratystylis subspinescens		4.0	1.6
**Centaurea melitensis*	Weed	3.0	0.4
Exocarpos aphyllus		2.0	1.6
Atriplex nummularia **subsp.** *spathulata*		2.0	1.5
Rhagodia drummondii		2.0	1.5
Lycium australe		2.0	1.4
**Carrichtera annua*	Weed	2.0	0.2
Atriplex vesicaria		1.0	1.3
Dichanthium sericeum subsp. *sericeum*		1.0	0.3
Solanum nummularium		0.5	0.4
Maireana triptera		0.2	0.2
Sclerolaena fusiformis		0.2	0.2
Austrostipa platychaeta		0.1	0.6
Austrostipa nitida		0.1	0.4
Austrostipa scabra subsp. *scabra*		0.1	0.3
Sclerolaena diacantha		0.1	0.25
**Lysimachia arvensis*	Weed	0.1	0.1
Eragrostis pergracilis		0.1	0.1
Maireana tomentosa subsp. *tomentosa*		0.1	0.1
Plantago debilis		0.1	0.1

Site details			
Site	**KD050**	**Position (WGS84)**	121.6291, -30.6805
Slope	negligible	**Topography**	seasonally wet area
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (09 Mar 2025)

Site description	Mid *Eucalyptus oleosa* subsp. *oleosa* mallee over tall *Acacia burkittii* and *Alectryon oleifolius* subsp. *canescens* shrubland over isolated mid *E. alternifolia* and *E. granitica* shrubs.

Habitat	shrubland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	65	**Tree cover (%)**	15
Shrub cover (%)	60	**Grass cover (%)**	1
Herb cover (%)	2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia burkittii		40.0	4.0
Eucalyptus oleosa subsp. *oleosa*		15.0	7.0
Exocarpos aphyllus		10.0	3.5
Acacia tetragonophylla		5.0	1.8
Alectryon oleifolius subsp. *canescens*		4.0	5.0
Senna artemisioides subsp. *filifolia*		3.0	1.6
Eremophila granitica		3.0	1.5
Eremophila alternifolia		2.0	1.9
Gnephosis arachnoidea		2.0	0.2
Casuarina pauper		1.0	7.0
Eremophila scoparia		1.0	1.8
Lycium australe		1.0	1.4
Rhagodia drummondii		1.0	1.4
Ptilotus obovatus		1.0	0.6
Rytidosperma caespitosum		0.2	0.3
Vittadinia sulcata		0.2	0.1
Leichardtia australis		0.1	1.5
Eremophila decipiens subsp. *decipiens*		0.1	0.6
Olearia muelleri		0.1	0.4
Paspalidium constrictum		0.1	0.4
Vincetoxicum lineare		0.1	0.3
Enchylaena tomentosa		0.1	0.2
Maireana georgei		0.1	0.2
Abutilon cryptopetalum		0.1	0.1
Sida fibulifera		0.1	0.1
Solanum lasiophyllum		0.1	0.1

Site details			
Site	**KD051**	**Position (WGS84)**	121.6336, -30.6812
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	granite - rocks		

Observation details - visit 1 (09 Mar 2025)

Site description	Low *Casuarina pauper* woodland over isolated tall *Acacia burkittii* shrubs over mid open *Senna artemisioides* subsp. *filifolia*, *S. artemisioides* subsp. x *artemisioides* and *Scaevola spinescens* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	25	**Tree cover (%)**	10
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Casuarina pauper		15.0	8.0
Senna artemisioides subsp. *filifolia*		10.0	1.6
Scaevola spinescens		7.0	1.3
Exocarpos aphyllus		3.0	1.7
Acacia erinacea		3.0	1.2
Acacia burkittii		2.0	2.4
Maireana sedifolia		2.0	1.5
Senna artemisioides subsp. x *artemisioides*		2.0	1.5
Eremophila parvifolia subsp. *auricampa*		2.0	0.5
Eremophila oppositifolia		1.0	1.8
Senna cardiosperma		1.0	1.5
Eremophila granitica		1.0	1.3
Grevillea acuaria		1.0	0.6
Maireana triptera		1.0	0.25
Sclerolaena diacantha		1.0	0.15
Westringia rigida		0.5	0.8
Maireana trichoptera		0.5	0.1
Ptilotus obovatus		0.2	0.3
Sclerolaena fusiformis		0.2	0.1
Rhagodia drummondii		0.1	0.5
Atriplex vesicaria		0.1	0.3
Maireana georgei		0.1	0.2

Site details			
Site	**KD052**	**Position (WGS84)**	121.6456, -30.6838
Slope	negligible	**Topography**	seasonally wet area
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (09 Mar 2025)

Site description	Isolated mid *Eucalyptus salubris* trees over tall *Acacia burkittii* shrubland over mid open *Eremophila granitica*, *E. alternifolia* and *Senna artemisioides* subsp. *filifolia* shrubland.
Habitat	shrubland
Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	60	**Tree cover (%)**	2
Shrub cover (%)	60	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia burkittii		55.0	4.5
Eremophila granitica		5.0	1.4
Eucalyptus salubris		3.0	11.0
Eremophila alternifolia		3.0	1.9
Senna artemisioides subsp. *filifolia*		3.0	1.8
Acacia tetragonophylla		1.0	1.6
Rhagodia drummondii		0.5	0.8
Eremophila glabra subsp. *glabra*		0.2	1.5
Eremophila decipiens subsp. *decipiens*		0.2	1.2
Austrostipa platychaeta		0.2	0.3
Leichardtia australis		0.1	3.0
Enchylaena tomentosa		0.1	0.4
Paspalidium constrictum		0.1	0.3
Ptilotus obovatus		0.1	0.3
Cheilanthes sieberi		0.1	0.1
Ptilotus exaltatus		0.1	0.1
Solanum lasiophyllum		0.1	0.1

Site details			
Site	**KD053**	**Position (WGS84)**	121.6367, -30.6755
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	ferrous - ironstone		

Observation details - visit 1 (09 Mar 2025)

Site description	Mid *Eucalyptus griffithsii* mallee woodland over tall open *Acacia burkittii* and *Eremophila interstans* subsp. *interstans* shrubland over isolated low *Olearia muelleri* and *Maireana* spp. shrubs.

Habitat	mallee woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	long-unburnt (>10 years)
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus griffithsii		20.0	7.0
Acacia burkittii		12.0	3.0
Senna artemisioides subsp. *filifolia*		5.0	1.7
Acacia colletioides		3.0	1.5
Olearia muelleri		3.0	0.4
Eremophila interstans subsp. *interstans*		2.0	3.5
Maireana sedifolia		1.0	0.7
Scaevola spinescens		0.5	0.5
Ptilotus obovatus		0.2	0.3
Austrostipa platychaeta		0.1	0.6
Austrostipa scabra subsp. *scabra*		0.1	0.2
Enchylaena tomentosa		0.1	0.2
Maireana georgei		0.1	0.2

Site details			
Site	**KD054**	**Position (WGS84)**	121.6393, -30.6819
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	siltstone / mudstone, quartz, ferrous - ironstone		

Observation details - visit 1 (09 Mar 2025)

Site description	Low *Eucalyptus salubris* woodland over isolated tall *Acacia burkittii* and *Eremophila interstans* subsp. *interstans* shrubs over mid sparse *Maireana sedifolia*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	30	**Tree cover (%)**	25
Shrub cover (%)	15	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	09 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		25.0	10.0
Maireana sedifolia		7.0	1.2
Acacia burkittii		3.0	2.5
Eremophila scoparia		2.0	1.6
Rhagodia drummondii		2.0	1.4
Ptilotus obovatus		2.0	0.3
Eremophila interstans subsp. *interstans*		1.5	3.5
Eremophila granitica		1.0	1.5
Exocarpos aphyllus		1.0	1.5
Atriplex bunburyana		1.0	1.4
Senna artemisioides subsp. *filifolia*		1.0	1.4
Lycium australe		1.0	1.3
Maireana pyramidata		1.0	1.2
Eremophila glabra subsp. *glabra*		0.5	1.5
Eremophila oldfieldii		0.5	1.2
Solanum nummularium		0.5	1.2
Maireana georgei		0.5	0.5
Maireana triptera		0.5	0.5
Enchylaena tomentosa		0.2	0.4
Eremophila parvifolia subsp. *auricampa*		0.2	0.4
Vincetoxicum lineare		0.1	3.0
Scaevola spinescens		0.1	1.0
Austrostipa platychaeta		0.1	0.4
Paspalidium constrictum		0.1	0.3
Sclerolaena diacantha		0.1	0.2
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD055**	**Position (WGS84)**	121.6101, -30.7052
Slope	gentle	**Topography**	undulating plain
Soil colour	orange, whitish	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz, calcrete		

Observation details - visit 1 (07 Mar 2025)

Site description	Low *Eucalyptus transcontinentalis*, *E. lesouefii* and *E. stricklandii* open woodland over isolated mid *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubs over low open *Tecticornia*, *Acacia erinacea* and *Maireana glomerifolia* shrubland.

Habitat	open woodland

Disturbance	evidence of feral animals, vehicle tracks, livestock tracks

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	7
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Tecticornia disarticulata		15.0	1.0
Eucalyptus transcontinentalis		5.0	8.0
Maireana glomerifolia		5.0	0.4
Eucalyptus lesouefii		2.0	6.0
Senna artemisioides subsp. *filifolia*		2.0	1.6
Eremophila parvifolia subsp. *auricampa*		2.0	0.6
Eremophila scoparia		1.0	1.6
Acacia erinacea		1.0	0.5
Frankenia interioris		0.5	0.6
Eremophila oblonga		0.5	0.5
Scaevola spinescens		0.3	0.4
Ptilotus obovatus		0.2	0.3
Eucalyptus stricklandii		0.1	8.0
Maireana georgei		0.1	0.2
Sclerolaena diacantha		0.1	0.2
Sclerolaena fusiformis		0.1	0.2
Maireana trichoptera		0.1	0.1

Site details			
Site	**KD056**	**Position (WGS84)**	121.6112, -30.7073
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	quartz		

Observation details - visit 1 (07 Mar 2025)

Site description	Low *Eucalyptus salubris*, *E. ravida* and *E. celastroides* subsp. *celastroides* woodland over low open *Tecticornia disarticulata* shrubland.
Habitat	woodland
Disturbance	livestock tracks, evidence of feral animals

Vegetation condition	Excellent	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	25	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Tecticornia disarticulata		20.0	1.6
Eucalyptus salubris		12.0	6.0
Eucalyptus ravida		3.0	5.0
Eucalyptus celastroides subsp. *celastroides*		1.0	3.5
Maireana sedifolia		1.0	1.2
Atriplex vesicaria		0.5	0.4
Atriplex nummularia **subsp.** *spathulata*		0.2	0.5
Sclerolaena fusiformis		0.2	0.2
Maireana pyramidata		0.1	0.3
Maireana georgei		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KD057**	**Position (WGS84)**	121.6212, -30.6972
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	clay, sandy clay
Rock type	quartz, siltstone / mudstone, ferrous - ironstone		

Observation details - visit 1 (10 Mar 2025)

Site description	Isolated mid *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubs over low open *Atriplex vesicaria* and *Maireana pyramidata* shrubland over isolated low **Carrichtera annua* and **Mesembryanthemum nodiflorum* forbs.

Habitat	shrubland

Disturbance	grazing-low, historic clearing, livestock tracks, weed infestation, evidence of feral animals

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	0
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	10 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Atriplex vesicaria		10.0	1.0
Maireana pyramidata		5.0	1.1
Eremophila scoparia		3.0	1.9
Senna artemisioides subsp. *filifolia*		2.0	1.5
Tecticornia disarticulata		2.0	1.3
**Carrichtera annua*	Weed	1.0	0.2
**Mesembryanthemum nodiflorum*	Weed	1.0	0.1
Maireana sedifolia		0.5	0.8
**Centaurea melitensis*	Weed	0.2	0.4
Maireana triptera		0.2	0.3
Atriplex codonocarpa		0.2	0.1
Leichardtia australis		0.1	1.5
Enchylaena tomentosa		0.1	0.2
Maireana tomentosa		0.1	0.2
Paspalidium constrictum		0.1	0.2
Senna artemisioides subsp. x *artemisioides*		0.1	0.2
Brachyscome ciliaris		0.1	0.15
Vittadinia sulcata		0.1	0.15
Indeterminate		0.1	0.1
Maireana trichoptera		0.1	0.1
Plantago debilis		0.1	0.1
Sclerolaena diacantha		0.1	0.1
Rytidosperma setaceum		0.1	0.05

Site details			
Site	**KD058**	**Position (WGS84)**	121.6329, -30.7079
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	ferrous - ironstone, quartz		

Observation details - visit 1 (12 Mar 2025)

Site description	Mid *Eucalyptus salubris* and *E. salmonophloia* woodland over tall sparse *Melaleuca sheathiana* and *Eremophila interstans* subsp. *interstans* shrubland over mid open *Maireana sedifolia* shrubland.

Habitat	woodland

Disturbance	vehicle tracks, evidence of feral animals, litter, historic clearing

Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%)**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	12 Mar 2025	20m x 20m	Grant Wells

Species	Status	Cover (%)	Height (m)
Eucalyptus salubris		15.0	12.0
Maireana sedifolia		12.0	1.2
Melaleuca sheathiana		8.0	3.5
Eucalyptus salmonophloia		5.0	30.0
Senna artemisioides subsp. *filifolia*		2.0	1.5
Eremophila interstans subsp. *interstans*		1.0	3.0
Exocarpos aphyllus		0.1	1.0
Maireana triptera		0.1	0.3
Solanum nummularium		0.1	0.3
Chenopodium curvispicatum		0.1	0.2
Sclerolaena diacantha		0.1	0.1
Sclerolaena fusiformis		0.1	0.1

Site details			
Site	**KDIS001**	**Position (WGS84)**	121.6181, -30.7327
Slope	gentle	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy loam
Rock type	ferrous - ironstone		

Observation details - visit 1 (06 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* and *E. transcontinentalis* woodland over isolated tall *Eremophila oppositifolia* shrubs over low sparse *Eremophila parvifolia* subsp. *auricampa*, *Olearia muelleri* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	woodland

Disturbance	historic clearing

Vegetation condition	Excellent	**Fire age**	-
Total veg. cover (%)	-	**Tree cover (%)**	-
Shrub cover (%)	-	**Grass cover (%)**	-
Herb cover (%)	-		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Individual specimen	1	06 Mar 2025	unbounded	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila praecox	P2 (DBCA list)	-	-

Site details			
Site	**KDIS002**	**Position (WGS84)**	121.6353, -30.7266
Slope	moderate	**Topography**	seasonally wet area
Soil colour	red-orange	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (06 Mar 2025)

Site description	N/A.
Habitat	-
Disturbance	-

Vegetation condition	-	**Fire age**	-
Total veg. cover (%)	-	**Tree cover (%)**	-
Shrub cover (%)	-	**Grass cover (%)**	-
Herb cover (%)	-		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Individual specimen	1	06 Mar 2025	unbounded	Grant Wells

Species	Status	Cover (%)	Height (m)
Indigofera australis	-	-	-

Site details			
Site	**KDIS003**	**Position (WGS84)**	121.5742, -30.6657
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (08 Mar 2025)

Site description	Low *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over isolated tall *Eremophila interstans* subsp. *interstans* shrubs over mid open *Senna artemisioides* subsp. *filifolia*, *Maireana sedifolia* and *Acacia kalgoorliensis* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	moderate (5-10 years)
Total veg. cover (%)	-	**Tree cover (%)**	-
Shrub cover (%)	-	**Grass cover (%)**	-
Herb cover (%)	-		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Individual specimen	1	08 Mar 2025	unbounded	Grant Wells

Species	Status	Cover (%)	Height (m)
Eremophila praecox	P2 (DBCA list)	-	-

Site details			
Site	**KDMN001**	**Position (WGS84)**	121.5838, -30.7068
Slope	gentle	**Topography**	undulating plain
Soil colour	red-brown	**Soil texture**	sandy clay
Rock type	none		

Observation details - visit 1 (11 Mar 2025)

Site description	Mid *Eucalyptus salmonophloia* woodland over tall open *Eremophila scoparia* and *Exocarpos aphyllus* shrubland over low open *Rhagodia drummondii* and *Scaevola spinescens* shrubland.

Habitat	woodland

Disturbance	evidence of feral animals

Vegetation condition	Excellent	**Fire age**	-
Total veg. cover (%)	-	**Tree cover (%)**	-
Shrub cover (%)	-	**Grass cover (%)**	-
Herb cover (%)	-		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Mapping note	1	11 Mar 2025	unbounded	Grant Wells

Species	Status	Cover (%)	Height (m)
Acacia hemiteles		-	-
Atriplex nummularia **subsp.** *spathulata*		-	-
Atriplex vesicaria		-	-
Lycium australe		-	-

Appendix 3 NVIS hierarchy

WA 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	Name	Declared Pest/WoNS
Aizoaceae	**Aizoon pubescens*	
Aizoaceae	**Mesembryanthemum crystallinum*	
Aizoaceae	**Mesembryanthemum nodiflorum*	
Amaranthaceae	**Amaranthus viridis*	
Anacardiaceae	**Schinus molle* var. *areira*	
Apocynaceae	**Asclepias curassavica*	
Apocynaceae	**Orbea variegata*	
Asparagaceae	**Agave americana*	
Asteraceae	**Arctotheca calendula*	
Asteraceae	**Carduus tenuiflorus*	
Asteraceae	**Carthamus lanatus*	
Asteraceae	**Centaurea melitensis*	
Asteraceae	**Cichorium intybus*	
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	**Helianthus annuus*	
Asteraceae	**Lactuca serriola* forma *serriola*	
Asteraceae	**Leontodon rhagadioloides*	
Asteraceae	**Monoculus monstrosus*	
Asteraceae	**Oligocarpus calendulaceus*	
Asteraceae	**Oncosiphon suffruticosum*	
Asteraceae	**Sonchus oleraceus*	
Asteraceae	**Symphyotrichum squamatum*	
Asteraceae	**Xanthium spinosum*	Declared pest, S22(2) (C2, C3)
Boraginaceae	**Buglossoides arvensis*	
Boraginaceae	**Echium plantagineum*	Declared pest, S22(2) (C3)
Boraginaceae	**Heliotropium europaeum*	
Boraginaceae	**Heliotropium supinum*	
Brassicaceae	**Alyssum linifolium*	
Brassicaceae	**Brassica tournefortii*	
Brassicaceae	**Capsella bursa-pastoris*	
Brassicaceae	**Carrichtera annua*	
Brassicaceae	**Sisymbrium erysimoides*	
Brassicaceae	**Sisymbrium irio*	
Brassicaceae	**Sisymbrium orientale*	
Cactaceae	**Cylindropuntia fulgida* var. *mamillata*	Declared pest, S22(2) (C3), WoNS
Cactaceae	**Cylindropuntia imbricata*	Declared pest, S22(2) (C3), WoNS
Cactaceae	**Cylindropuntia kleiniae*	Declared pest, S22(2) (C3), WoNS
Cactaceae	**Opuntia elata*	Declared pest, S22(2) (C3), WoNS
Cactaceae	**Opuntia ficus-indica*	Declared pest, S22(2) (C3), WoNS
Caryophyllaceae	**Spergularia diandra*	

Family	Name	Declared Pest/WoNS
Chenopodiaceae	**Chenopodium album*	
Chenopodiaceae	**Chenopodium murale*	
Crassulaceae	**Bryophyllum delagoense*	
Cucurbitaceae	**Citrullus colocynthis*	
Cucurbitaceae	**Cucumis myriocarpus* subsp. *myriocarpus*	
Didiereaceae	**Portulacaria afra*	
Fabaceae	**Alhagi maurorum*	Declared pest, S22(2) (C3)
Fabaceae	**Erythrostemon gilliesii*	
Fabaceae	**Medicago laciniata*	
Fabaceae	**Medicago minima*	
Fabaceae	**Medicago polymorpha*	
Geraniaceae	**Erodium aureum*	
Geraniaceae	**Erodium cicutarium*	
Lamiaceae	**Marrubium vulgare*	
Lamiaceae	**Salvia reflexa*	
Lamiaceae	**Salvia verbenaca*	
Lythraceae	**Lythrum hyssopifolia*	
Malvaceae	**Malva parviflora*	
Martyniaceae	**Proboscidea louisianica*	
Meliaceae	**Melia azedarach*	
Oxalidaceae	**Oxalis bowiei*	
Oxalidaceae	**Oxalis pes-caprae*	
Papaveraceae	**Argemone ochroleuca* subsp. *ochroleuca*	
Poaceae	**Bromus catharticus*	
Poaceae	**Bromus diandrus*	
Poaceae	**Cenchrus ciliaris*	
Poaceae	**Cenchrus setaceus*	
Poaceae	**Ehrharta villosa*	
Poaceae	**Eragrostis curvula*	
Poaceae	**Hordeum glaucum*	
Poaceae	**Hordeum leporinum*	
Poaceae	**Pennisetum villosum*	
Poaceae	**Phalaris paradoxa*	
Poaceae	**Rostraria pumila*	
Poaceae	**Schismus arabicus*	
Poaceae	**Schismus barbatus*	
Poaceae	**Sorghum halepense*	
Polygonaceae	**Polygonum aviculare*	
Polygonaceae	**Rumex vesicarius*	
Primulaceae	**Lysimachia arvensis*	
Resedaceae	**Reseda luteola*	
Solanaceae	**Datura ferox*	
Solanaceae	**Datura inoxia*	

Family	Name	Declared Pest/WoNS
Solanaceae	**Lycium ferocissimum*	WoNS
Solanaceae	**Solanum nigrum*	
Tamaricaceae	**Tamarix aphylla*	Declared pest, S12 (C1)
Tamaricaceae	**Tamarix chinensis*	Declared pest, S12 (C1)
Urticaceae	**Urtica urens*	
Verbenaceae	**Phyla canescens*	
Zygophyllaceae	**Tribulus terrestris*	

Appendix 5 Flora species inventory

Family	Species	Status
Aizoaceae	**Mesembryanthemum nodiflorum*	Weed
Amaranthaceae	*Ptilotus aervoides*	
	Ptilotus exaltatus	
	Ptilotus obovatus	
Apocynaceae	*Alyxia buxifolia*	
	Leichardtia australis	
	Vincetoxicum lineare	
Asteraceae	*Brachyscome ciliaris*	
	**Centaurea melitensis*	Weed
	Cratystylis conocephala	
	Cratystylis microphylla	
	Cratystylis subspinescens	
	Gnephosis arachnoidea	
	Olearia muelleri	
	Olearia pimeleoides	
	Siemssenia capillaris	
	Streptoglossa cylindriceps	Range extension
	Vittadinia sulcata	
Boraginaceae	*Halgania integerrima*	
Brassicaceae	**Carrichtera annua*	Weed
	Lepidium phlebopetalum	
Casuarinaceae	*Casuarina pauper*	
Chenopodiaceae	*Atriplex bunburyana*	
	Atriplex codonocarpa	
	Atriplex nummularia **subsp.** *spathulata*	
	Atriplex vesicaria	
	Chenopodium curvispicatum	
	Enchylaena tomentosa	
	Maireana georgei	
	Maireana glomerifolia	
	Maireana pentatropis	
	Maireana pyramidata	
	Maireana radiata	
	Maireana sedifolia	
	Maireana suaedifolia	
	Maireana tomentosa subsp. *tomentosa*	
	Maireana tomentosa	
	Maireana trichoptera	
	Maireana triptera	
	Rhagodia drummondii	
	Salsola australis	
	Sclerolaena brevifolia	
	Sclerolaena diacantha	
	Sclerolaena fusiformis	
	Sclerolaena obliquicuspis	

Family	Species	Status
	Tecticornia disarticulata	
Fabaceae	*Acacia burkittii*	
	Acacia colletioides	
	Acacia oswaldii	
	Acacia erinacea	
	Acacia hemiteles	
	Acacia kalgoorliensis	
	Acacia nyssophylla	
	Acacia tetragonophylla	
	Indigofera australis	
	Senna artemisioides subsp. *filifolia*	
	Senna artemisioides subsp. x *artemisioides*	
	Senna cardiosperma	
	Templetonia ceracea	
Frankeniaceae	*Frankenia desertorum*	
	Frankenia interioris	
Goodeniaceae	*Scaevola spinescens*	
Lamiaceae	**Salvia verbenaca*	Weed
	Westringia rigida	
Loranthaceae	*Amyema gibberula* var. *gibberula*	
	Amyema preissii	
Malvaceae	*Abutilon cryptopetalum*	
	Lawrencia repens	
	Sida fibulifera	
Myrtaceae	*Eucalyptus celastroides* subsp. *celastroides*	
	Eucalyptus griffithsii	
	Eucalyptus lesouefii	
	Eucalyptus oleosa subsp. *oleosa*	
	Eucalyptus ravida	
	Eucalyptus salmonophloia	
	Eucalyptus salubris	
	Eucalyptus stricklandii	
	Eucalyptus transcontinentalis	
	Melaleuca sheathiana	
Pittosporaceae	*Pittosporum angustifolium*	
Plantaginaceae	*Plantago debilis*	
Poaceae	*Austrostipa nitida*	
	Austrostipa platychaeta	
	Austrostipa scabra subsp. *scabra*	
	Austrostipa tuckeri	
	Dichanthium sericeum subsp. *sericeum*	
	Enneapogon avenaceus	
	Enneapogon caerulescens	
	Enteropogon ramosus	
	Eragrostis pergracilis	
	Paspalidium constrictum	

Family	Species	Status
	**Pentameris airoides* subsp. *airoides*	Weed
	Rytidosperma caespitosum	
	Rytidosperma setaceum	
	Sporobolus australasicus	
Primulaceae	**Lysimachia arvensis*	Weed
Proteaceae	*Grevillea acuaria*	
	Grevillea nematophylla subsp. *nematophylla*	
Pteridaceae	*Cheilanthes sieberi*	
Santalaceae	*Exocarpos aphyllus*	
	Santalum acuminatum	
	Santalum spicatum	
Sapindaceae	*Alectryon oleifolius* subsp. *canescens*	
	Dodonaea lobulata	
Scrophulariaceae	*Eremophila alternifolia*	
	Eremophila decipiens subsp. *decipiens*	
	Eremophila dempsteri	
	Eremophila glabra subsp. *glabra*	
	Eremophila granitica	
	Eremophila interstans subsp. *interstans*	
	Eremophila interstans subsp. *virgata*	
	Eremophila ionantha	
	Eremophila ionantha x *scoparia*	
	Eremophila maculata subsp. *brevifolia*	
	Eremophila oblonga	
	Eremophila oldfieldii	
	Eremophila oppositifolia	
	Eremophila parvifolia subsp. *auricampa*	
	Eremophila praecox	P2 (DBCA list)
	Eremophila praecox x *pustulata*	
	Eremophila pustulata	
	Eremophila scoparia	
Solanaceae	*Lycium australe*	
	Solanum lasiophyllum	
	Solanum nummularium	
Thymelaeaceae	*Pimelea microcephala*	
Zygophyllaceae	*Roepera aurantiaca* subsp. *aurantiaca*	
	Roepera eremaea	
	Roepera glauca	
	Roepera ovata	
	Roepera reticulata	

Appendix 6 Flora species by site matrix