PHOENIX
ENVIRONMENTAL SCIENCES

Revised flora and vegetation assessments for the Fimiston Gold Mine Operations

Prepared for Kalgoorlie Consolidated Gold Mines Pty Ltd

February 2024

Final

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Version history

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EXECUTIVE SUMMARY

The Fimiston Operational Area forms part of Northern Star Kalgoorlie Consolidated Gold Mines Pty Ltd's (KCGM) operations, located east of the City of Kalgoorlie-Boulder in the Goldfields region of Western Australia. In March 2021, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by KCGM to undertake a gap analysis of biological values at the Fimiston Operational Area, and to conduct a botanical survey in areas identified as data deficient. The gap analysis was required as previous surveys in the area were conducted prior to the release of a new technical guidance for flora surveys for environmental impact assessment and the analysis was required to determine where the previous surveys did not meet the requirements of the new guidance.

The study areas comprised the Floodway north and Floodway south study areas and the Fimiston IIE TSF, G cell, Fimiston III TSF and western areas adjacent to town study areas.

The desktop review for the gap analysis comprised a literature review and database searches for significant flora, vegetation and terrestrial fauna previously recorded within the 40 km radius of the study area to identify knowledge gaps with respect to biological values within the study area.

Field surveys were undertaken from 19-21 May, 4-8 October and 13-16 December 2021. Field methods included surveying of quadrats and relevés, targeted flora searches, vegetation type and condition ground-truthing. A total of 27 quadrat and 5 relevés were sampled in the study area during the current survey.

Following the field survey, data from previous surveys was consolidated with data collected in the current survey to produce a comprehensive database of botanical values for the Fimiston Operational Area to inform future developments. Data from a total of 96 quadrats and 15 relevés were used for the assessment.

A total of 106 flora taxa representing 24 families and 54 genera identified to species level were recorded in the study area during the field surveys. The assemblage included 97 native species and 9 introduced species, including 78 perennial species, and 28 annual or short-lived species. The most prominent families recorded were Chenopodiaceae (24 spp.), Scrophulariaceae (15 spp.), Asteraceae (11 spp.), Fabaceae (8 spp.) and Myrtaceae (8 spp.).

Taking the results of the current and previous surveys into account, a total of 270 flora species have been recorded in the Project, representing 42 families and 108 genera. The most common families are the Chenopodiaceae (53 taxa), Fabaceae (35 taxa), Scrophulariaceae (31 taxa), Myrtaceae (28 taxa) and Asteraceae (25 taxa).

One Priority 2 flora species, *Eremophila praecox,* was recorded in the study areas during the current survey with a total of 102 plants recorded. Plants were recorded in each of the 4 study areas.

Of the 22 other significant flora identified in the desktop review the presence of 5, *Ptilotus procumbens* (P1), *Elachanthus pusillus* (P2), *Chrysocephalum apiculatum* subsp. *norsemanense* (P3), *Notisia intonsa* (P3) and *Eremophila caerulea* subsp. *merrallii* (P4) can not be completely discounted as suitable habitat for these species is present in the study area. It is considered unlikely that 17 of the significant flora from the desktop review would occur in the study area due to a lack of suitable habitat and/or there was limited suitable habitat which was adequately searched, or the natural distribution for the species occurs at more than 40 km from the study areas.

Under current listings, 2 declared pests, **Echium plantagineum*, **Opuntia elata* and one weed of national significance **Lycium ferocissimum* were recorded in the study area.

The native remnant vegetation comprise 8 *Eucalyptus* woodlands, a *Casuarina pauper* woodland and 2 shrublands. The *Eucalyptus* woodlands comprised the majority (77.5%) of the study area with one woodland, EsEsMt, encompassing 54.9% of the study area. The *Casuarina pauper* woodland comprised 6.6% of the study area and the shrublands just 2.6%. The condition of remnant native vegetation across the study area was variable ranging from Excellent to Degraded.

Woodland vegetation types dominated the study area and are representative of vegetation association 468 that has more than 98% pre-European extent remaining, is rated as Least Concern and covers a broad area (total 583,903 ha). The shrubland communities were dominated by common species with broad distributions and are likely to be well represented in the broader landscape. In addition, all of the vegetation types present in the study area also occur outside of the study area.

None of the vegetation types are considered regionally significant or represent a listed Threatened or Priority Ecological Community. Six of the vegetation types may be considered locally significant as habitat for the Priority 2 flora, *Eremophila praecox.* The study area does not contain any highly restricted vegetation types that would be considered locally significant.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1 INTRODUCTION

The Fimiston Operational Area forms part of Kalgoorlie Consolidated Gold Mines Pty Ltd's (KCGM) operations, located east of the City of Kalgoorlie-Boulder in the Goldfields region of Western Australia. This area contains the Fimiston Gold Mine Operations (the Project), which comprise the Fimiston Open Pit, waste rock dumps, tailings storage facilities (Fimiston I, Fimiston II and Kaltails) and infrastructure corridors.

In September 2021, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by KCGM to undertake flora and vegetation assessments for the Project. The purpose of the surveys was to inform Environmental Protection Authorities (EPA) S38 approvals for developments within the Floodway North, Floodway South, Fimiston IIE TSF, G cell and Fimiston III TSF study areas (Figure 1-1).

The Project is located in the Shire of Kalgoorlie-Boulder and crosses the boundary of the South-West Interzone Botanical Provinces as defined by EPA (2016c) occurring primarily in the South-West Interzone.

The current report is a revised report of (Phoenix 2019) supporting data collected since 2022 and was updated in response to a request for information (RFI) from the EPA.

1.1 BACKGROUND

Each of the study areas have previously been surveyed and flora and vegetation mapped (Botanica Consulting 2015a, b). As these surveys were conducted prior to the release of the current technical guidance for flora and vegetation surveys (EPA 2016c) in 2018 Phoenix were commissioned by KCGM to undertake a gap analysis and biological survey to ensure surveys met current guidance requirements (Phoenix 2019). The scope of the gap analysis was to:

- conduct a desktop review of existing biological information for the Project to identify existing survey coverage and adequacy
- undertake flora and vegetation survey to identify floristic values in unsurveyed or inadequately surveyed parts of the study area (identified gaps) and map the vegetation types and condition
- collate of all baseline biological data into a complete GIS dataset for the study area.

The gap analysis and field surveys determined that an insufficient number of quadrats had been surveyed for numerous vegetation types to comply with the current technical guidance and the previous surveys (Botanica Consulting 2015a, b) had not recorded populations of the Priority 2 flora, *Eremophila praecox*. The gap analysis also updated nomenclature and conservation status of the flora recorded where required.

1.2 SCOPE OF WORK

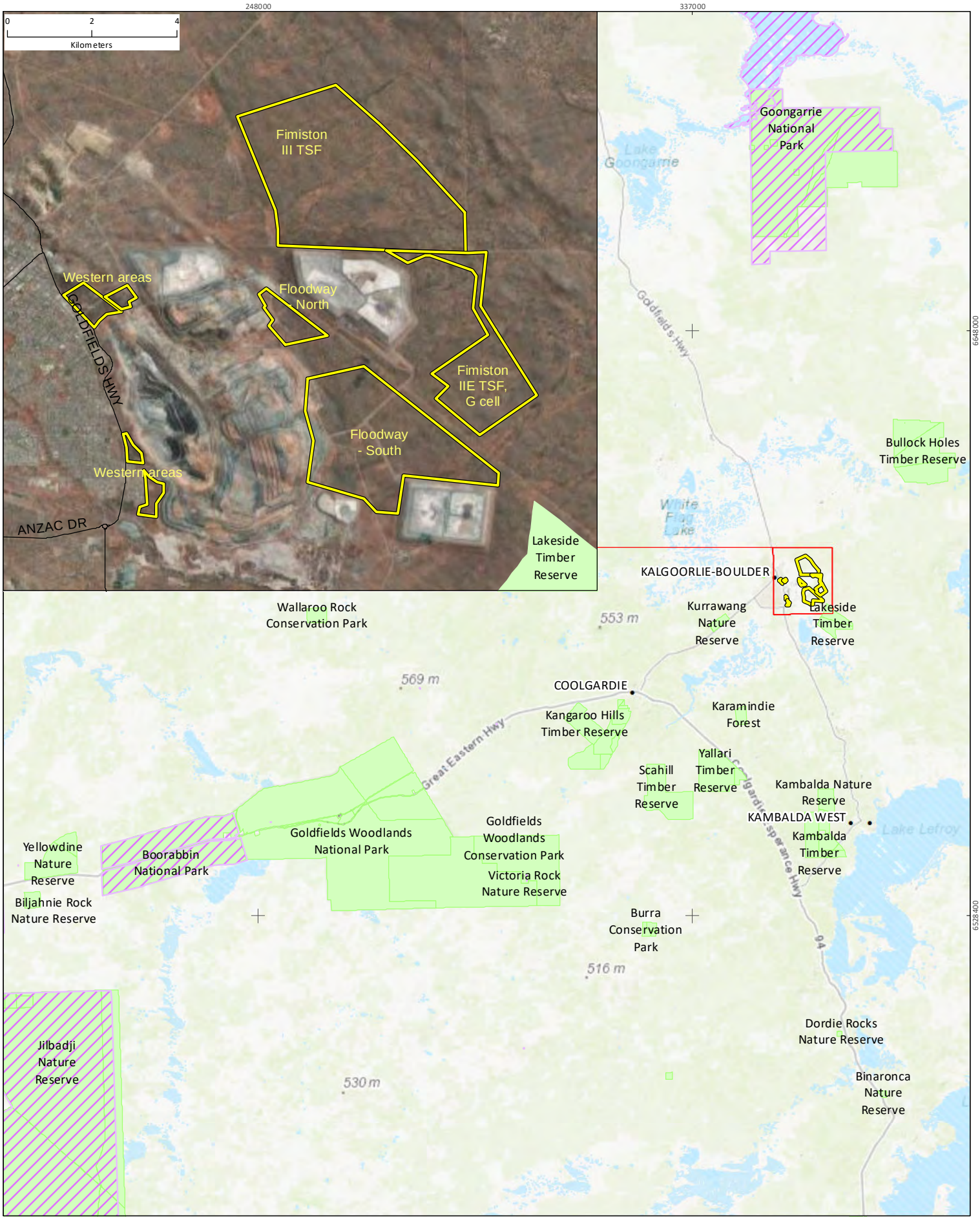
The proposed scope of work for the current study areas was essentially the same as for the previous gap analysis:

- conduct a desktop review of existing biological information for the Project to identify existing survey coverage and adequacy in accordance to the current technical guidance (EPA 2016c)
- undertake flora and vegetation survey to identify floristic values in unsurveyed or inadequately surveyed parts of the study area and map the vegetation types and condition
- update species nomenclature and status as required

- undertake targeted searches for significant flora and vegetation
- collate of all baseline biological data into a complete GIS dataset for the study area (inclusive of historical data as per EPA RFI 2023) this included data from the Botanica Consulting (2015a) and (Botanica Consulting 2015b) surveys, Phoenix (2018b) and surveys conducted for the 1st iteration of this report (Phoenix 2019).

1.3 STUDY AREA

The study areas cover 2478.5 ha and are located predominantly approximately 6 km east of Kalgoorlie-Boulder (Figure 1-1).



Kalgoorlie Consolidated Gold Mines Pty Ltd
KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	8/02/2024
Drawn by	GW
Map author	GW

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Kilometers

1:1,000,000 (at A4) GCS WGS 1984

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- Study area
- Environmentally Sensitive Area
- DBCA managed land
- Lake

Figure 1-1

Project location and study area

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2 LEGISLATIVE CONTEXT

The protection of flora and vegetation 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).

The BC Act came into full effect on 1 January 2019 and replaced the functions of the *Wildlife Conservation Act 1950* (WC Act).

2.1 COMMONWEALTH

The EPBC Act is administered by the Federal Department of Agriculture, Water and the Environment (DAWE). 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.

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

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

Ecological communities are defined as 'naturally occurring biological assemblages that occur in a particular type of habitat' (English & Blyth 1997). There are 3 categories under which ecological communities can be listed as TECs under the EPBC Act: Critically Endangered, 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)[2] in the following categories:

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

[2] The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the BC Act.

- Critically Endangered (CR) – species facing an extremely high risk of extinction in the wild in the immediate future[3]
- Endangered (EN) – species facing a very high risk of extinction in the wild in the near future[3]
- Vulnerable (VU) – species facing a high risk of extinction in the wild in the medium term future[3].

Species may also be listed as specially protected (SP) under the BC Act in one or more of the following categories:

- species of special conservation interest (conservation dependent fauna, CD) – species with a naturally low population, restricted natural range, of special interest to science, or subject to or recovering from a significant population decline or reduction in natural range
- migratory species (Mig.), including birds subject to international agreement
- species otherwise in need of special protection (OS).

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 lists 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[3]
- Endangered – facing a very high risk of becoming eligible for listing as a collapsed ecological community in the near future[3]
- Vulnerable – facing a high risk of becoming eligible for listing as a collapsed ecological community in the medium term future[3].

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 guidelines, flora and vegetation may be considered significant for a range of reasons other than listing as a Threatened or Priority species or ecological community.

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

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

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

Table 2-1 Bioregional conservation status of ecological vegetation classes

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

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

2.2.5 Environmentally Sensitive Areas

Under section 51B of the EP Act the Minister for Environment may declare by notice either a specified area of the State or a class of areas of the State to be Environmentally Sensitive Areas (ESAs). ESAs are declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, which was gazetted on 8 April 2005 (Government of Western Australia 2005).

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

- the area covered by vegetation within 50 metres (m) of Threatened flora, to the extent to which the vegetation is continuous with the vegetation in which the Threatened flora is located
- the area covered by a TEC

- a defined wetland (Ramsar wetlands, conservation category wetlands and nationally important wetlands) and the area within 50 m of the wetland
- Bush Forever sites.

2.2.6 Introduced flora

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

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

- Declared Pest – the Biosecurity and Agriculture Management Act 2007 (BAM Act), 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 study area falls predominantly within the Interim Biogeographic Regionalisation of Australia (IBRA) Eastern Goldfields subregion (COO3) of the Coolgardie bioregion (Figure 3-1, Table 3-1). A small section of the study area occurs in the Eastern Murchison (MUR1) subregion of Murchison bioregion.

The Eastern Goldfields subregion is characterised by (Cowan 2001a) as:

- gently undulating plains interrupted in the west with low hills and ridges of Archaean greenstones and in the east by a horst of Proterozoic basic granulite
- tertiary soils dominated by calcareous earths overlay eroded gneisses and granites
- vegetation consisting of mallees, *Acacia* thickets and shrub-heaths on sandplains and dwarf shrublands of samphire persisting on salt lakes, surrounded by diverse *Eucalyptus* woodlands, which also occur on ranges and in valleys.
- in the western half, a series of large playa lakes indicate the remnants of ancient major drainage lines
- arid to semi-arid climate with 200–300 mm of mostly summer rainfall.

Rare features within the subregion include highly diverse floristic species and ecosystem diversity, in particular, *Eucalyptus* spp., *Acacia* spp. and ephemeral flora communities of the Fraser Range vegetation complex and Woodline Hills and several notable wetlands including freshwater lakes, large salt lakes, claypans, and freshwater swamps such as Rowles Lagoon, Clear and Muddy Lakes and Swan Lake (Cowan 2001a).

The Eastern Murchison subregion is characterised by (Cowan 2001b) as:

- many internal drainages
- extensive areas of elevated red desert and plains with minimal dune development
- salt lake systems associated with the occluded Paleodrainage system
- broad plains of red-brown soils and breakaway complexes as well as red sandplains
- vegetation dominated by Mulga woodlands, often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands
- an arid climate, with mainly winter rainfall (200 mm).

Rare features within the Eastern Murchison subregion include calcrete aquifers known to support a wide range of subterranean aquatic fauna that are short-range endemics.

Table 3-1 IBRA regions that intersect the study area

IBRA region	Area (ha)	% of study area
Eastern Goldfields	2111.3	85.2
Eastern Murchison	367.1	14.8

3.2 LAND SYSTEMS AND SURFACE GEOLOGY

DPIRD undertakes land system mapping for WA using a nesting soil-landscape mapping hierarchy (Schoknecht & Payne 2011). While the primary purpose of the mapping is to inform pastoral and agricultural land capability, it is also useful for informing biological assessments. Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage (Payne & Leighton 2004).

The study area intersects 5 land systems but occurs predominantly in the Mx43 system (Table 3-2; Figure 3-2).

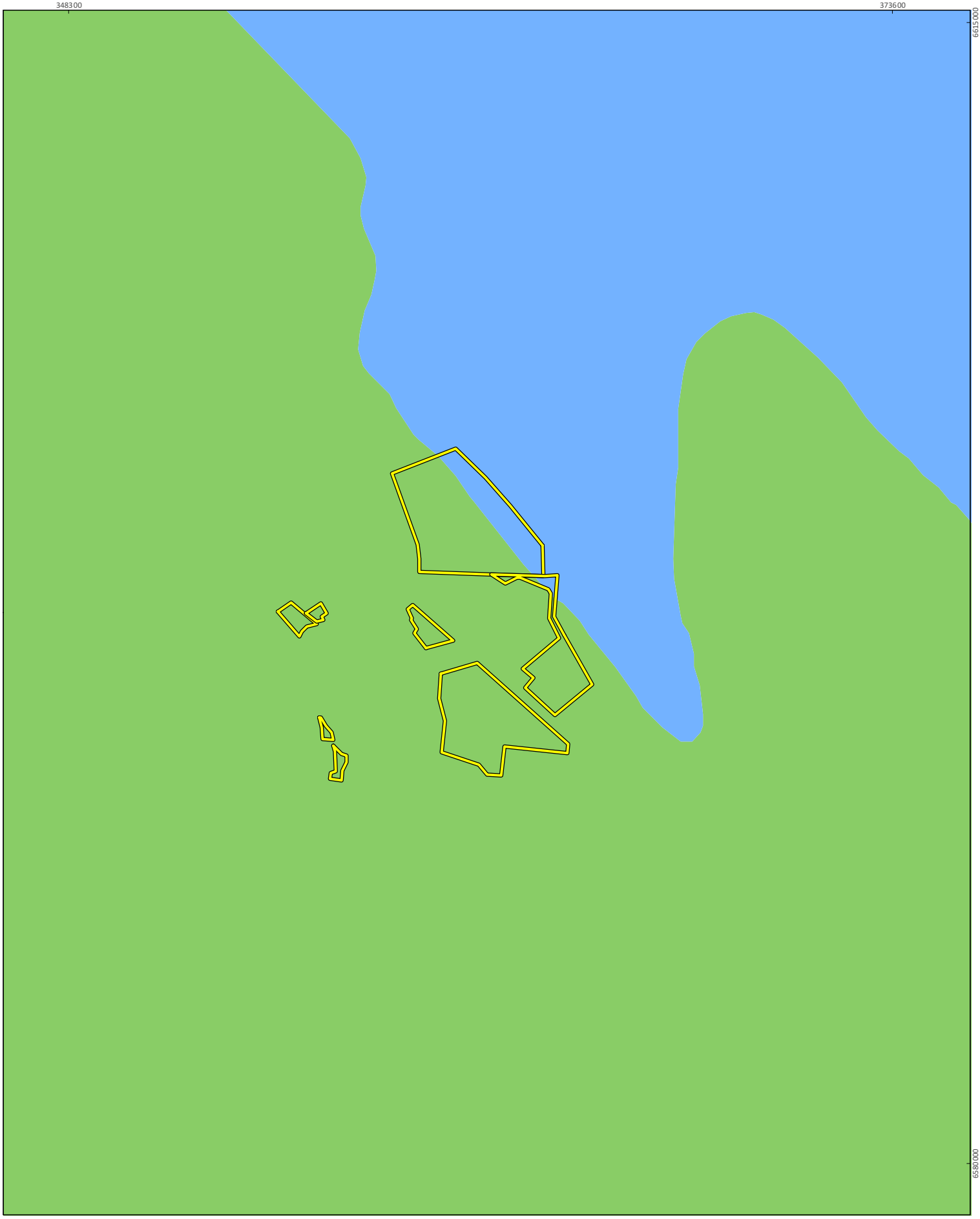
Table 3-2 Land systems and extent in study area

Land system	Description	Area (ha)	% of study area
BB5	Rocky ranges and hills of greenstones-basic igneous rocks.	183.5	7.4
Graves System	Basalt and greenstone rises and low hills supporting eucalypt woodlands with prominent saltbush and bluebush understoreys.	20.3	0.8
Gumland System	Extensive pedeplains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys.	311.3	12.6
Moriarty System	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.	35.7	1.4
Mx43	Gently undulating valley plains and pediments; some outcrop of basic rock.	1927.6	77.8
	Total	**2478.5**	**100%**

According to the Surface Geology of Australia 1:1,000,000 scale, Western Australia database (Stewart *et al.* 2008), the study area intersects 4 geological formations (Table 3-3; Figure 3-2) with the majority of the area associated with channel, floodplain and sheetwash formations

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

Surface geology	Abbreviation	Description	Area (ha)	% of study area
mafic intrusive rocks 74263	Ade	Mafic intrusive rocks, medium to coarse-grained; layered mafic to ultramafic intrusions–dolerite, gabbro, olivine gabbro, peridotite, pyroxenite, leucogabbro, quartz dolerite, quartz gabbro, gabbronorite	50.1	2.0
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	340.0	13.7
alluvium 38485	Qa	Channel and flood plain alluvium; gravel, sand, silt, clay, locally calcreted	701.7	28.3
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	1386.6	55.9
		Total	**2478.4**	**100%**



Western Australia

PERTH

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KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	1/02/2024
Drawn by	GW
Map author	GW

0 1.5 3
Kilometers

1:150,000 (at A4) GCS WGS 1984

Study area

IBRA region and subregion

Coolgardie, Eastern Goldfield

Murchison, Eastern Murchison

Figure 3-1

Study area in relation to IBRA bioregions and subregions

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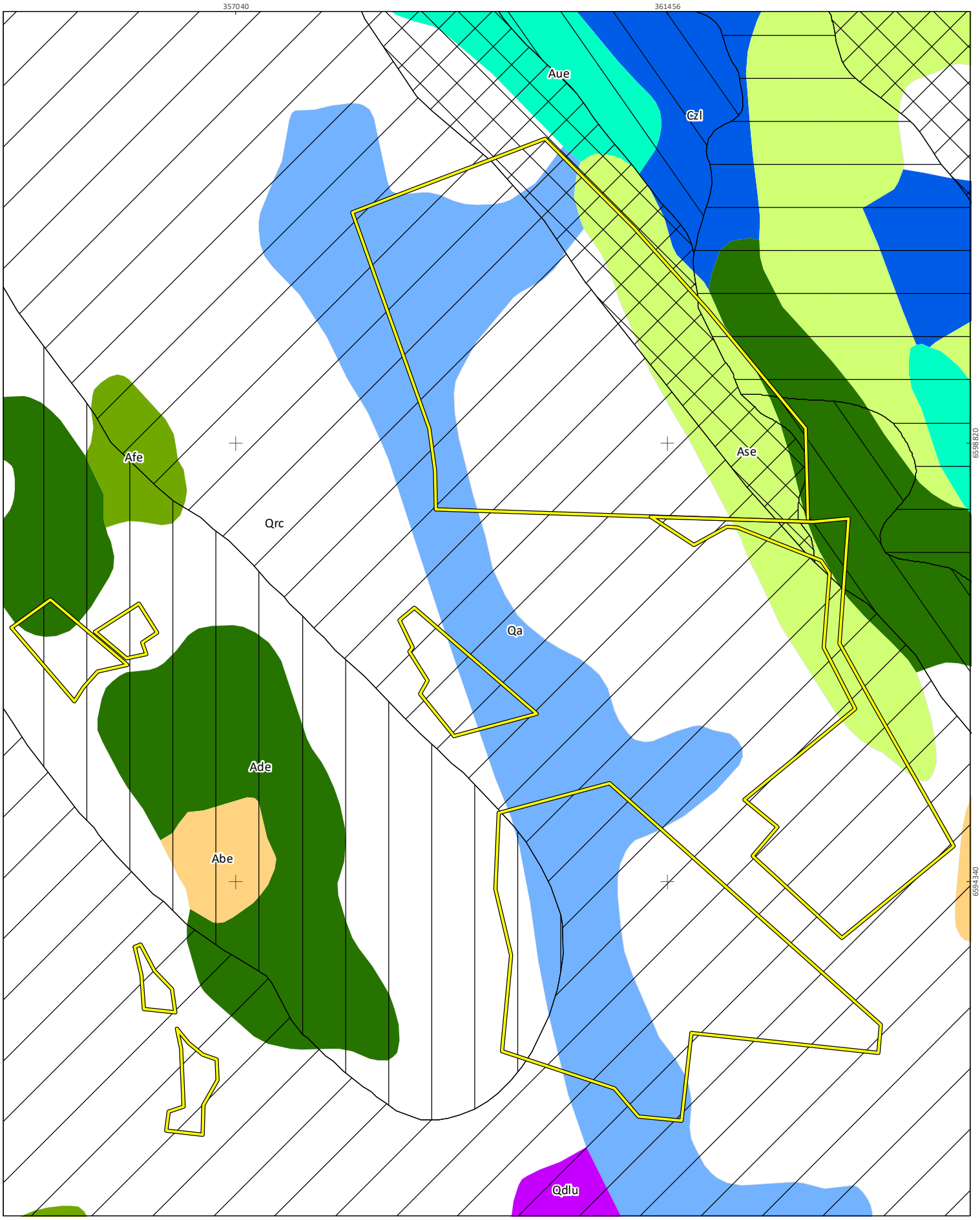

Western Australia

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Map author	GW

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Study area

Surface geology

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

Land system

- BB5
- Graves System
- Gumland System
- Moriarty System
- Mx43

Figure 3-2

Land systems and surface geology in the study area

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3.3 CLIMATE AND WEATHER

The climate of the Coolgardie bioregion is described as arid non-seasonal to semi-arid Mediterranean, with cool winters and hot dry summers. The Murchison bioregion has an arid climate with predominantly winter rainfall (Bastin & ACRIS Management Committee 2008).

The nearest Bureau of Meteorology (BoM) weather station with comprehensive data collection and historic climate data is located at Kalgoorlie-Boulder Airport (Site 012038; Latitude: 30.78°S Longitude: 121.45°E). Kalgoorlie-Boulder Airport records the highest maximum mean monthly temperature (33.6°C) in January, the lowest maximum mean annual temperature (16.7°C) in July (BoM 2017). The highest minimum mean monthly temp (18.3°C) is recorded in January with the lowest (5.0°C) recorded in July (BoM 2017). Average annual rainfall is 266.3 mm with January, February and June recording the highest monthly averages (26.8, 30.4 and 27.7 mm respectively) (BoM 2017). Tropical rain-bearing depressions moving southwards from northern Australian waters can cause heavy rainfall events in summer (BoM 2017).

Daily mean maximum temperatures at Kalgoorlie-Boulder Airport in the months preceding the Primary survey were frequently above the historical averages but were below average in 3 of the 6 months prior to the survey (Figure 3-3). Daily mean maximum temperatures were below average for 6 months prior to the Supplementary survey and above average for the other 6 months (Figure 3-4).

Records from Kalgoorlie-Boulder Airport show that annual rainfall in the 12 months preceding the Primary survey (226 mm) was lower than the historical average (265.2 mm). Rainfall in the 3 months preceding the survey was well above average due to well above average rainfall in February and above average rainfall in March despite below average rainfall in April (Figure 3-3). Annual rainfall (305.2 mm) prior to the Supplementary field survey was above the annual average and was above average in 4 of the 6 months prior to the field survey (Figure 3-4).

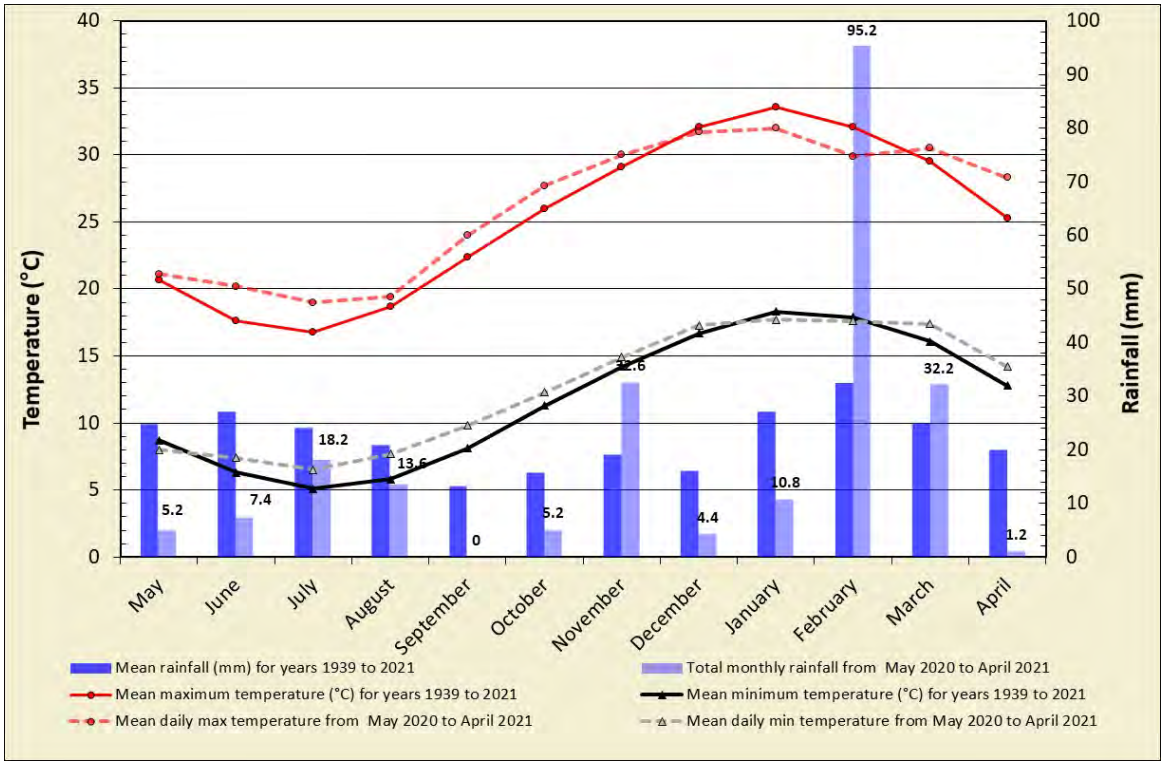

Figure 3-3 **Annual climate and weather data (rainfall and temperatures) for Kalgoorlie-Boulder Airport (no. 012038) and mean monthly data for the 12 months preceding the primary survey (BoM 2021)**

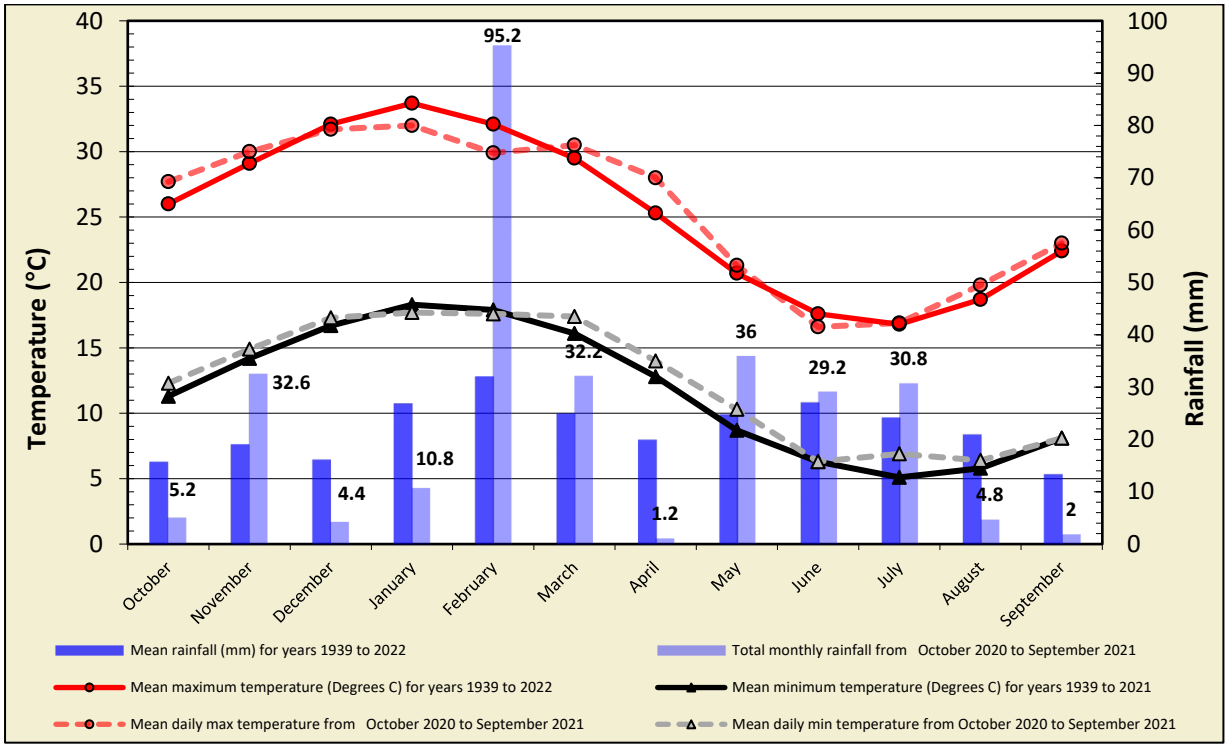

Figure 3-4 **Annual climate and weather data (rainfall and temperatures) for Kalgoorlie-Boulder Airport (no. 012038) and mean monthly data for the 12 months preceding the supplementary survey (BoM 2021)**

3.4 LAND USE

The dominant land use within the Eastern Goldfields subregion is Unallocated Crown Land (UCL) or Crown reserve and grazing-native pasture-leasehold and to a lesser extent conservation reserves and mining tenements (Cowan 2001a). Within the Eastern Murchison subregion, the dominant land use is grazing–native pasture, which accounts for approximately 85.47% of land use, and to a lesser extent UCL and Crown reserves, mining and mineral exploration activities (Cowan 2001b).

3.5 CONSERVATION RESERVES AND ESAS

The nearest conservation reserve to the study area is Lakeside Timber Reserve and Kurrawang Nature Reserve, located within 12.7 km of the study area (Figure 1-1).

There are no ESAs in the study area.

4 METHODS

The 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 2016c) (Dec 13, 2016).

4.1 DESKTOP REVIEW

A desktop assessment was previously undertaken that covers the current study area (Phoenix 2019). The assessment included database searches and a literature review.

The following database searches were undertaken within a 40 km buffer around the study area:

- EPBC Act Protected Matters Search Tool (Department of the Environment and Energy 2017)
- DBCA Threatened and Priority Flora and Ecological Communities databases (DBCA 2017c)
- DBCA/WA Museum NatureMap database (DBCA 2017b)

A total of 12 reports were reviewed in the desktop assessment (Table 4-1). The results of this assessment have been utilised for the current survey/report and updated to reflect changes in conservation status and taxonomy/nomenclature and to include findings from the Phoenix (2019) surveys and targeted searches for *Eremophila praecox* (P2) (Phoenix 2020c).

Table 4-1 Reports reviewed for the desktop assessment (Phoenix 2019)

Report author	Survey type	Project and client
McKenzie & Hall (1992)	Level 2 flora and fauna surveys	Eastern Goldfields Biological Survey
Botanica (2009, 2010b, 2011b, 2012a, 2013, 2014a)	Vegetation monitoring 2009–2014	Fimiston I and II Tailings Storage Facilities (KCGM)
Botanica (2010a, 2011a, 2012b, 2014b)	Vegetation monitoring 2010–2014	Fimiston I and II. Kaltails and Gidji Tailings Storage Facilities (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
Botanica (2014c)	Desktop flora assessment	Tailings Storage Facility Expansion (KCGM)
Botanica (2015c)	Level 2 flora and vegetation survey	Tailings Storage Facility Expansion (KCGM)
Botanica (2015a)	Level 1 flora and vegetation survey	Fimiston Waste Rock Dump Extension (KCGM)
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 (2018d)	Level 2 flora and vegetation and Level 1 terrestrial fauna	Gidji Operations (KCGM)
Phoenix (2018a)	Level 2 flora and vegetation and Level 1 terrestrial fauna	Crossroads Tenement (KCGM)
Phoenix (2019)	Detailed flora and vegetation and Level 1 terrestrial fauna	Fimiston operations (KCGM)
Phoenix (2020a)	Detailed flora and vegetation and Level 1 terrestrial fauna	St Ives Gold Mine (St Ives)
Phoenix (2020b)	Summary of regional targeted searches for *Eremophila praecox*	KCGM
Phoenix (2020c)	Targeted searches for *Eremophila praecox*	Fimiston operations (KCGM)
Phoenix (2021a)	Detailed flora and vegetation and Level 1 terrestrial fauna	Parker Range Haul Road Project (MRL)
Phoenix (2021b)	Detailed flora and vegetation and Level 1 terrestrial fauna	Larkinville and Eagles Nest (MRL)
Phoenix (2021c)	Targeted searches	Hunt Range (MRL)

4.2 FIELD SURVEY

4.2.1 Survey timing

Field survey dates for all surveys from which data were used to delineate vegetation types are provided in Table 4-2.

The majority of the study areas occur in the South-West Interzone Botanical Province for which the Primary survey period is Spring with supplementary surveys conducted after Autumn rains (EPA 2016c). The Primary survey period for the Eremaean botanical province is 6-8 weeks post-wet season

(March-June) with the supplementary survey conducted in the dry season (after winter rainfall if available) (EPA 2016c).

Surveys were conducted in the Floodway north and Floodway south study areas during the Autumn and Spring surveys. The Fimiston IIE TSF, G cell area was surveyed during the Spring survey period. A reconnaissance survey of the Fimiston III TSF study area was completed in a summer survey.

Table 4-2 Survey dates

Survey type	Season	Dates
Botanica Consulting (2015b)	Phase 1 Spring Phase 2–Autumn	Between 24 September to 28 October 2014 14-16 April 2015
Phoenix (2018b)	Spring	6-8 September and 11-12 November 2017
Phase 1 survey	Autumn	19-21 May 2021
Phase 2 survey	Spring	4-8 October 2021
Reconnaissance survey	Summer	13-16 December 2021

4.2.2 Flora and vegetation

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

- surveying of quadrats and relevés (see 4.2.2.1)
- targeted flora searches (4.2.2.2)
- vegetation type and condition mapping (4.2.2.3, 4.2.2.4)

Prior to the commencement of the field survey, data including satellite imagery, survey boundary, and pre-selected vegetation survey locations 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, relevés and transects

Quadrat locations were selected to ensure that an accurate representation of the major vegetation types within the study area were sampled adequately, with a minimum 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 based on the previous mapping, with selection based on ensuring a minimum of 3 quadrats had been surveyed for each of the vegetation types within the study areas. Final quadrat placement was determined in the field while ground-truthing the study area on foot. Some preliminary quadrats were moved to locations which better represented vegetation types and some quadrats were changed to relevés, where only dominant vegetation was recorded for the purposes of accurate vegetation mapping.

For the current field survey, 27 quadrats and 5 relevés were surveyed across the study area (Figure 4-1; Appendix 1). Incorporating survey locations from the previous surveys a total of 111 quadrats and 5 relevés have been surveyed within the study area and adjacent areas (Figure 4-1).

Quadrat sampling dimensions were 20 m x 20 m in accordance with EPA guidance for the South-West Interzone Botanical Province. The following information was recorded for each quadrat (Appendix 2):

- location – the geographic coordinates of all 4 corners of the quadrat in WGS84 projection
- description of vegetation – a broad description utilising the structural formation and height classes based on National Vegetation Information System (ESCAVI 2003a) and in accordance with EPA (2016c) (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 2016c)for the South-West Interzone Botanical Province
- height and percentage foliage cover (PFC) – a visual estimate of cover of total vegetation cover, cover of shrubs and trees >2 m tall, cover of shrubs <2 m, total grass cover and total herb cover
- photograph – a colour photograph of the vegetation within each quadrat in a south-easterly direction from the north-west corner of the quadrat
- flora species list – comprehensive list of all flora species recorded within the quadrat.

To ensure accurate taxonomic identification of flora species present within the study area, collections were made of each specimen at least once and each collection was pressed and documented for identification using the WA Herbarium resources. For each species identified, records on FloraBase and the Australasian Virtual Herbarium were consulted to provide information on known ranges to determine whether the study areas represented a range extension for the species.

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

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

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 vehicle and by foot in meandering transects/traverses (Figure 4-2) 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.

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Western Australia
PERTH

Kalgoorlie Consolidated Gold Mines Pty Ltd
KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	1/02/2024
Drawn by	GW
Map author	GW

0 0.5 1
Kilometers

1:36,000 (at A3) GDA 1994 MGA Zone 51

Study area

Site

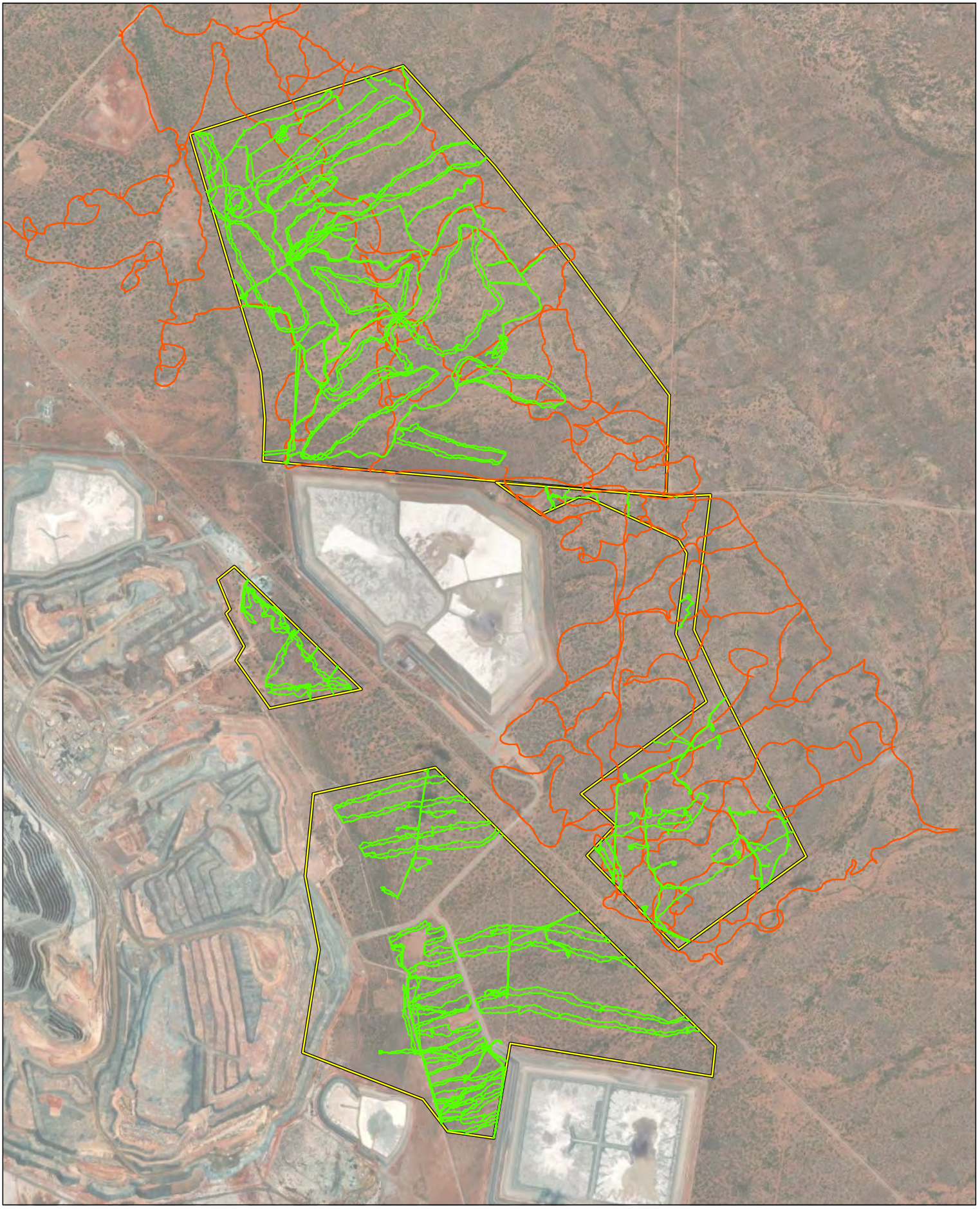
- Quadrat
- Relevé
- Phoenix (2018)
- Botanica (2015)

Figure 4-1

Flora and vegetation survey sites

PHOENIX ENVIRONMENTAL SCIENCES

P:\Data\Projects\KCGM Superpit\1422-FIM-KCG-BOT\Mapping\MapDocuments\Figures\Figure_4_1_Flora_sites_and_Botanica2015.mxd



Kalgoorlie Consolidated Gold Mine Pty Ltd
KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	31/01/2024
Drawn by	AJ, GW
Map author	AJ

0 0.75 1.5
Kilometers

1:45,938 (at A4) GDA 1994 MGA Zone 50

Study area
Survey transects
Survey transects (Botanica 2015b)

Figure 4-2

Tracks of transects /traversers of the study area and surrounds

PHOENIX ENVIRONMENTAL SCIENCES

P:\Data\Projects\KCGM Superpit\1634-FIM-NSR-ADV\GIS\Mapping\MapDocuments\Figures\figure_4_2_survey transects20240116.mxd

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 in each of the study areas was previously mapped (Botanica Consulting 2015b; Phoenix 2018b, c). This mapping was loaded on to field devices for ground-truthing and quadrat and relevé surveys conducted as required to attempt to ensure a minimum of 3 replicates per vegetation type.

For the current survey, the vegetation descriptions from quadrats and relevés from the 3 surveys (96 quadrats and 15 relevés, Figure 4-1, Appendix 1) 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.). To support delineation of vegetation types, a cluster analysis was conducted based on species cover within each quadrat.

Data management was conducted utilising Microsoft Excel. The species recorded by Botanica Consulting were scored with a 1 (one) to account for their presence in a quadrat or a 2 to account for species listed as a dominant taxon in the quadrat. Botanica Consulting described 3 strata per quadrat and one dominant species per stratum. Therefore, only 3 species per quadrat were allocated a 2 when managing the data available from the Botanica Consulting report. Once the scoring was completed, a matrix with the cover value of each species per quadrat was created in Microsoft Excel.

The other 2 surveys included in the mapping for this project, were completed by Phoenix Environmental Sciences (PES). The data collected by PES was scored with 1 and 2 to match the format of the Botanica Consulting data after the scoring treatment. However, the PES data was scored 1 and 2 under a different rule. With the availability of foliage cover per species (data not recorded by Botanica Consulting), the PES scorings were given a 1 when the cover was <= to 5%, and a 2 when the species cover was >5%. Subsequently, a matrix per project was created in the same format as with the Botanica Consulting data.

With the data being consistent with the 1 and 2 scoring formats across the 3 projects, all 3 matrices were spliced into one large matrix. Species names were checked for currency and equivalent species names across the projects were reconciled into one entity. The resulting matrix with the clean data was imported into PATN (Belbin 2003) for analysis utilising the data from the 111 quadrats.

In PATN, the fusion strategy for the site classification was flexible unweighted pair group method with arithmetic mean (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 the National Vegetation Inventory System (NVIS) Level V – Association (ESCAVI 2003a). The term ‘vegetation type’ was used for local scale vegetation units in accordance with EPA technical guidance (EPA 2016c).

Vegetation boundaries from the previous surveys were typically determined to be satisfactory, some small adjustments were made based on the statistical analyses conducted and revision of aerial imagery.

4.2.2.4 Vegetation condition mapping

The condition of vegetation was assessed across the study area based on the appropriate condition scale for the South-West Interzone Botanical Province within which the majority of the study areas occur (Keighery 1994 in EPA 2016c) (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.

Vegetation condition mapping was ground truthed during the field survey.

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

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

4.2.3 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).

Table 4-4 Survey personnel

Name	Permit	Qualifications	Role/s
Dr Grant Wells	Flora collection permit no. FB62000227 Threatened flora collection permit no. TFL103-1920	PhD.	Project manager, field survey lead, data analysis
Dr Andrew Perkins	NA	PhD.	Taxonomy
Shenade Findlay	Flora collection permit no. FB62000173	Ma. Sci. (Cons. Biol.)	Field survey, data management
Brody Loneragan	Flora collection permit no. FB62000296 Threatened flora collection permit no. TFL092-2122	BSc. Hons (Env. Sci.)	Field survey, data management
Adam Crosby-Clark	Flora collection permit no. FB62000349	Ba. Sci. (Env. Mgt).	Field survey, data management, reporting

5 RESULTS

5.1 DESKTOP REVIEW

5.1.1 Flora and vegetation

5.1.1.1 Flora assemblage

The desktop review identified records of a total of 248 flora taxa have been recorded in the study area, representing 39 families and 98 genera (Appendix 4) of which 234 have been identified to species level. This included 223 native and 25 introduced flora. The most prominent families were the Chenopodiaceae (51 taxa), Fabaceae (35 taxa), Scrophulariaceae (28 taxa), Myrtaceae (26 taxa) and Asteraceae (21 taxa).

5.1.1.2 Significant flora

23 Priority flora species were identified from the desktop review as previously recorded within 40 km of the study area (Table 5-1; Figure 5-1). One of the Priority flora, *Tecticornia flabelliformis*, is also listed as Threatened under the EPBC Act.

Baeckea sp. Bulla Bulling (P1) was recorded in the database searches conducted by Phoenix (2019), this species is now known as *Hysterobaeckea ochropetala* and is no longer listed as a Priority flora (WA Herbarium 1998).

Eremophila praecox was a Priority 1 flora at the time of the desktop assessment (Phoenix 2019) but is now listed as a Priority 2 species (WA Herbarium 1998). *Thryptomene planiflora* (P1) was known as *Thryptomene* sp. Londonderry (R.H. Kuchel 1763) at the time of the desktop assessment.

None of the desktop records occured within the study areas (Figure 5-1).

Table 5-1 Significant flora species identified from the desktop review

Species	Status	Nearest record to study area	Source	Habitat
Alyxia tetanifolia	P3	7.5 km south-west	Botanica Consulting (2014d)	*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 (DBCA 2017a).
Angianthus prostratus	P3	35.6 km north	DBCA database search	*Tecticornia* low heath over open herbs or dense low grass in red clay or loamy soils in saline depressions on beach edge of Salt Lake (DBCA 2017a).
Chrysocephalum apiculatum subsp. *norsemanense*	P3	39.6 km south-west	DBCA database search	Low *Eucalyptus* shrubland in orange sandy loam on sandplain (DBCA 2017a).
Austrostipa sp. Carlingup Road	P3	16.3 km south	DBCA database search	*Eucalyptus* woodlands on hillslopes and claypan with crabholes in sandy loam to cracking clay soils.
Cyathostemon verrucosus	P3	7.7 km north-west	DBCA database search	Open *Eucalyptus* mallees over *Acacia* mixed shrubland over *Triodia* hummock grassland on yellow sandplain (DBCA 2017a).
Elachanthus pusillus	P2	5.6 km west (right in Kalgoorlie)	DBCA database search	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 (DBCA 2017a).
Eremophila caerulea subsp. *merrallii*	P4	31.6 km south-west	DBCA database search	Open Eucalyptus woodland over shrubland in sand, clay or loam with ironstone/quartz pebbles on undulating plains (DBCA 2017a).
Eremophila praecox	P2	Several records are surrounded by the study areas, the closest is 0.4 km from the boundary of the Fimiston IIE TAF, G cell study area	Phoenix (2020c)	Low *Eucalyptus* woodland over dwarf scrubland in red-brown sandy loam on undulating plains (DBCA 2017a).
Eremophila xantholaema	P1	11 km east	DBCA database search	*Eucalyptus* woodlands with *Eremophila* spp. shrublands and *Eremophila* spp. shrublands, frequently *E. pustulata*, on hill slopes in brown/orange loamy soils.
Eucalyptus brockwayi	P3	3.5 km west	Jims Seeds (2006)	Low *Eucalyptus* woodland over shrubland in gravelly sandy loam or sand clay on low rocky hills and slopes (DBCA 2017a).

Species	Status	Nearest record to study area	Source	Habitat
Eucalyptus formanii	P4	3.5 km west	Jims Seeds (2006)	Mallee scrub or *Eucalyptus* woodland in red sand or yellow sandy loam on ironstone slopes (DBCA 2017a).
Eucalyptus jutsonii subsp. *jutsonii*	P4	22.1 km south-west	DBCA database search	Open *Eucalyptus* mallee woodland with spinifex grassland in red to pale orange deep sands on undulating areas and on dunes (DBCA 2017a).
Eucalyptus x *brachyphylla*	P4	6.8 km west (right in Kalgoorlie)	DBCA database search	*Eucalyptus* mallee woodland over shrubland in sandy loam or clay loam on granite outcrops (DBCA 2017a).
Frankenia glomerata	P4	5.8 km west	DBCA database search	Low shrubland in white sand or grey-brown sandy loam seasonally inundated plain or Salt Lake or in pink-orange sandy loam with sandstone on scree slope below breakaway (DBCA 2017a).
Goodenia salina	P2	12.6 km south-west	DBCA database search	Open woodland over isolated chenopod shrubs in saline, grey, red or brown sandy loamy clay in low gypseous dunes near salt pans (DBCA 2017a).
Isolepis australiensis	P3	12.6 km south-west	DBCA database search	*Melaleuca* open shrubland or *Casuarina*/*Eucalyptus* open woodland in silty sand, sandy clay on lake margins, pools or granite outcrop (DBCA 2017a).
Lepidium fasciculatum	P3	5.7 km west (right in Kalgoorlie)	DBCA database search	Open *Acacia* or *Maireana* shrubland in brown cracking clay on plain or red loam on dry lakebed (DBCA 2017a).
Melaleuca coccinea	P3	4.9 km west (right in Kalgoorlie)	DBCA database search	*Acacia* or *Melaleuca* shrubland in sandy loam over granite on granite outcrops, sandplain and river valleys (DBCA 2017a).
Notisia intonsa	P3	21 km south-west	DBCA database search	*Eucalyptus* woodland over shrubland in red-orange clayey sand with ironstone and quartz gravel on plain or shallow depression (DBCA 2017a).
Ptilotus chortophytus	P1	31.8 km north-west	DBCA database search	Tall open *Melaleuca* shrubland or open low chenopod shrubland or *Eucalyptus* mallee woodland in yellow brown sandy loam on quartz rocky low hill (DBCA 2017a).
Ptilotus procumbens	P1	5.9 km west (right in Kalgoorlie)	DBCA database search	Open *Acacia* shrubland over mixed forbland in red clay on plain with lateritic gravel (DBCA 2017a).
Tecticornia flabelliformis	P1 (WA); VU (EPBC)	27.8 km east	DBCA database search	Low samphire shrubland in red-brown clayey sand on saline flats (DBCA 2017a).
Thryptomene planiflora	P1	37 km south-west	DBCA database search	Isolated *Eucalyptus* trees over tall *Acacia* shrubland over open *Triodia* hummock grassland or tall *Acacia* and *Allocasuarina* shrubland over heathland in sand plain area with lateritic gravel (DBCA 2017a).

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Western Australia

PERTH

Kalgoorlie Consolidated Gold Mines Pty Ltd
KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	9/02/2024
Drawn by	GW
Map author	GW

0 5 10
Kilometers

1:320,000 (at A3) GDA 1994 MGA Zone 51

Study area
Desktop study area (40km buffer)

Status

EN (EPBC Act); VU (BC Act)
VU (EPBC Act); P1 (DBCA list)
P1 (DBCA list)
P2 (DBCA list)
P3 (DBCA list)
P4 (DBCA list)
Locally significant

Figure 5-1

Desktop records of significant flora and vegetation

PHOENIX ENVIRONMENTAL SCIENCES

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5.1.1.3 Introduced flora

The desktop review identified records for 75 weed species within 40 km of the study area (Appendix 5). Under current listings (DAFWA 2016; Department of the Environment 2014), 8 of the species are declared pests and 7 are WoNS (Table 5-2).

Previous surveys also reported **Carthamus lanatus*, **Marrubium vulgare* and **Rumex hypogaeus* as declared pests but these but these are no longer listed as declared on the Western Australian Organism List (DAFWA 2016).

Table 5-2 Significant weed species identified by the desktop review

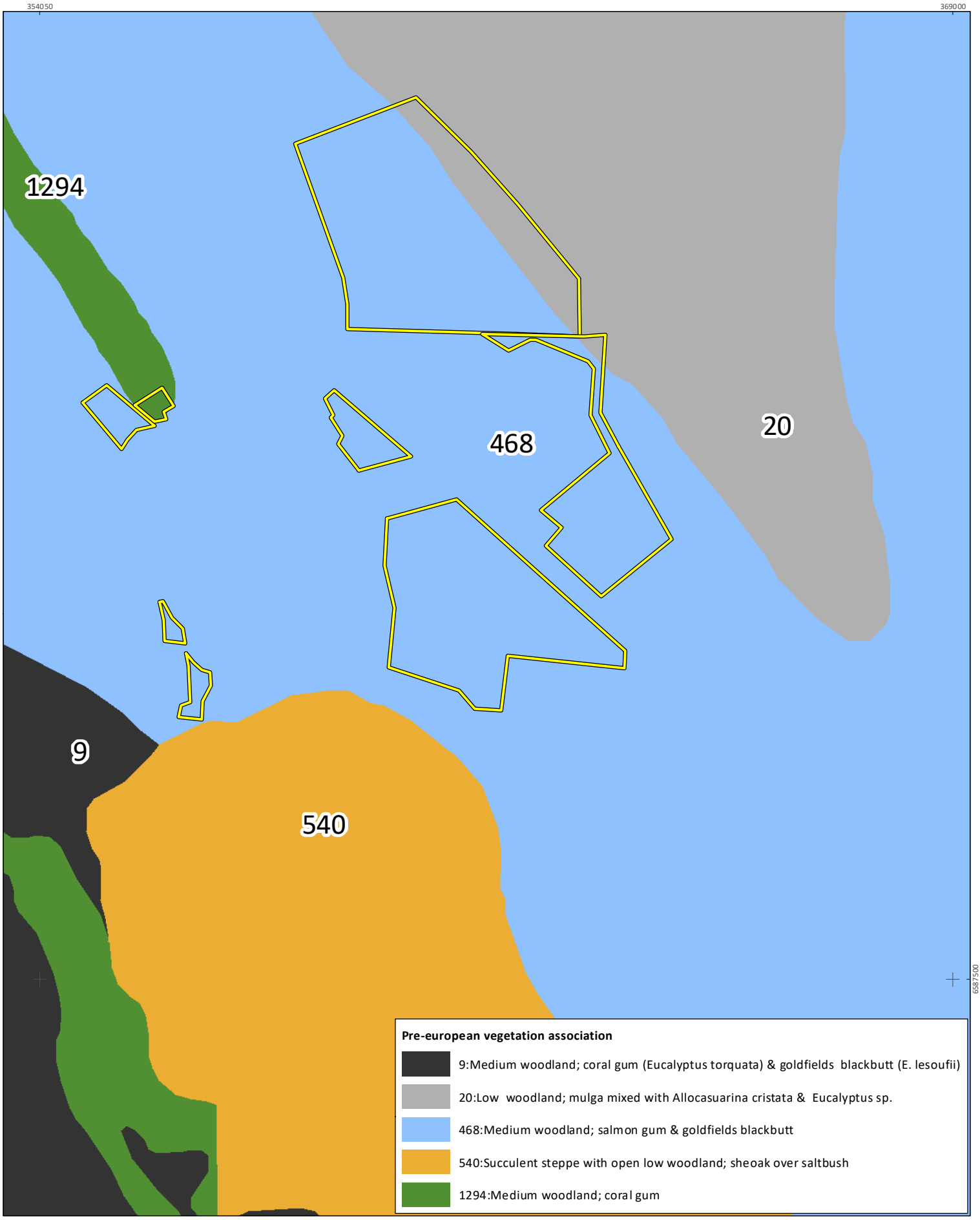
Family	Name	Declared Pest/WoNS
Boraginaceae	**Echium plantagineum* (Paterson's Curse)	Declared pest, S22(2) (C3)
Cactaceae	**Cylindropuntia fulgida* var. *mamillata* (Boxing Glove Cactus)	Declared pest, S22(2) (C3); WoNS
Cactaceae	**Cylindropuntia imbricata* (Devil's Rope)	Declared pest, S22(2) (C3); 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* (Athel Pine)	Declared pest, S22(2) (C3); WoNS

5.1.1.4 Vegetation associations

Regional scale pre-European vegetation mapping for Western Australia (Beard *et al.* 2013; DPIRD 2018) identifies 3 vegetation associations in the study area (Table 5-3; Figure 5-2). The remaining extent of each vegetation association at the State-wide scale exceeds 98% and they are therefore considered of Least Concern] (Table 5-3).

Table 5-3 State-wide 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	1,295,103.39	1,292,474.58	99.80	19.42	10.61
468	592,022.32	583,902.76	98.63	23.15	88.67
1294	6,295.54	6,047.45	96.05	1.9	0.72



Kalgoorlie Consolidated Gold Mines Pty Ltd
KCGM Operations

Project No	1422-FIM-KCG-BOT
Date	1/02/2024
Drawn by	IN
Map author	GW

0 1 2
Kilometers

1:80,000 (at A4) GDA 1994 MGA Zone 51

Study area

Figure 5-2

Vegetation associations of the study area

PHOENIX ENVIRONMENTAL SCIENCES

P:\Data\Projects\KCGM Superpit\LI 634-FIM-NSR-ADV\GIS\Mapping\MapDocuments\Figures\Figure_5_2_Veg_assoc.mxd

5.1.1.5 Significant vegetation

No Commonwealth or State listed TECs or DBCA listed PECs intersect the study area. Previous surveys did not identify any vegetation of the study area as aligning with any significant ecological communities.

5.2 FIELD SURVEY

5.2.1 Flora and vegetation

5.2.1.1 Flora assemblage

A total of 106 flora taxa representing 24 families and 54 genera identified to species level were recorded in the study area during the field surveys (Appendix 4). The assemblage included 97 native species and 9 introduced species, including 78 perennial species, and 28 annual or short-lived species. The most prominent families recorded were Chenopodiaceae (24 spp.), Scrophulariaceae (15 spp.), Asteraceae (11 spp.), Fabaceae (8 spp.) and Myrtaceae (8 spp.).

5.2.1.2 Significant flora

No Threatened flora were recorded during the field survey, records for one Priority flora, *Eremophila praecox* (P2), were recorded (Table 5-4; Figure 5-3). The majority of plants (84.3%) were recorded in vegetation type EsEsMt and 5.9% were recorded in disturbed/rehabilitated areas.

Table 5-4 Details of significant flora recorded during the field survey

Species	Status	Distribution and ecology	Survey records	Photograph
Eremophila praecox	P2	Occurs in the Coolgardie, Murchison, and Nullarbor bioregions from 34 records (WA Herbarium 1998). Population sizes for the FloraBase WA Herbarium (1998) records range from one to few plants	A total of 102 plants were recorded in the current survey within 6 of the native remnant vegetation types, in a disturbed area and in a rehabilitated area (Table 5-5).	 

Table 5-5 Occurrence of *Eremophila praecox* in vegetation types

Vegetation type/habitat	
El*LfMb	1
ElAkEp	1
ElAnEp	4
EoCcSs	3
EsEsMt	86
EsppEsMg	1
Disturbed	1
Rehabilitation	5
Total	**102**

The likelihood of occurrence assessment (section 4.2.2.2) for the remaining significant species identified in the desktop review (section 5.1.1.2) determined 5 may possibly occur and 15 are unlikely to occur (Table 5-6).

Of the 23 significant flora identified in the desktop review, only one species, *Eremophila praecox* (P2), was recorded in the study area. It is considered unlikely that 17 of the significant flora from the desktop review would occur in the study area due to a lack of suitable habitat and/or there was limited suitable habitat which was adequately searched, or the natural distribution for the species occurs at more than 40 km from the study areas (Table 5-6). The presence of 5 significant species, *Ptilotus procumbens* (P1), *Elachanthus pusillus* (P2), *Chrysocephalum apiculatum s*ubsp. *norsemanense* (P3), *Notisia intonsa* (P3) and *Eremophila caerulea* subsp. *merrallii* (P4) cannot be completely discounted as suitable habitat for these species is present in the study area. More stringent transect searches than those conducted in the study area to date would provide greater certainty on whether these are present.

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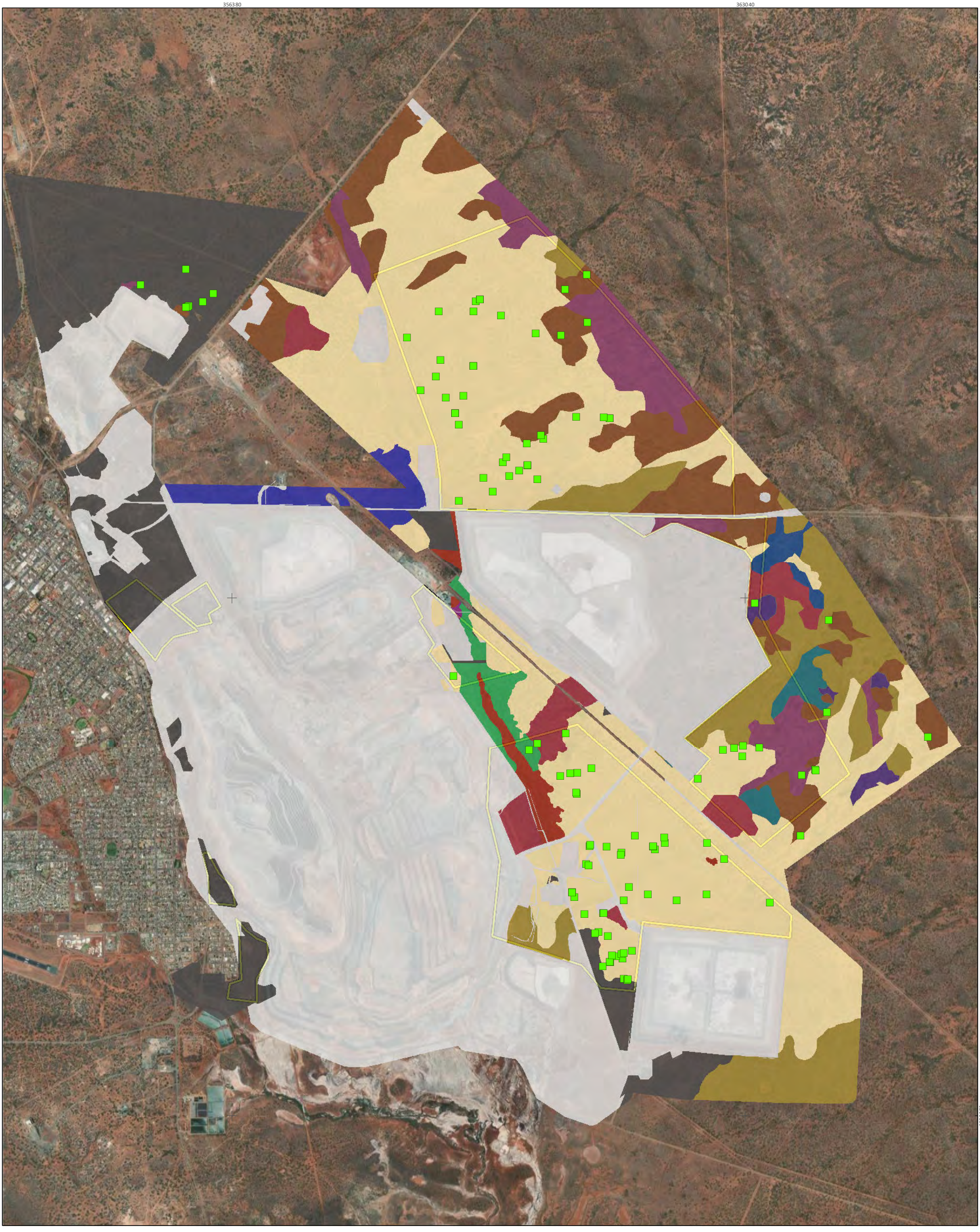

Western Australia

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Date	13/02/2024
Drawn by	GW
Map author	GW

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Kilometers

1:45,000 (at A3) GDA 1994 MGA Zone 51

Study area

Eremophila praecox, P2 (DBCA list)

Vegetation types with *E.p* records

- El*LfMb
- ElAkEp
- ElAnEp
- EoCcSs
- EsEsMt
- EsppEsMg
- Rehabilitation / dust abatement areas
- Disturbed

Figure 5-3

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	Habitat (DBCA 2017a)	Likelihood of occurrence
Alyxia tetanifolia	P3	Drainage lines, near lakes	Unlikely, no suitable habitat
Angianthus prostratus	P3	Red clay, beach of Salt Lake, saline depressions	Unlikely, no suitable habitat
Chrysocephalum apiculatum subsp. *norsemanense*	P3	Undulating and flat plains, sandy loam soils	Possible, potential habitat in study area
Austrostipa sp. Carlingup Road	P3	*Eucalyptus* woodlands on hillslopes and claypan with crabholes in sandy loam to cracking clay soils	Unlikely, small area of suitable habitat (hills) in study areas adequately searched
Cyathostemon verrucosus	P3	Yellow sandplain	Unlikely, no suitable habitat
Elachanthus pusillus	P2	Low plain, red-orange loam-clay, red loam on drainage flat	Possible, potential habitat in study area
Eremophila caerulea subsp. *merrallii*	P4	Clay or loam undulating plains	Possible, potential habitat in study area
Eremophila praecox	P2	Undulating plains with red-brown sandy loam	Recorded in the study area
Eremophila xantholaema	P1	*Eucalyptus* woodlands with *Eremophila* spp. shrublands and *Eremophila* spp. shrublands, frequently *E. pustulata*, on hill slopes in brown/orange loamy soils	Unlikely, small area of suitable habitat (hills) in study areas adequately searched
Eucalyptus brockwayi	P3	Low *Eucalyptus* woodland over shrubland in gravelly sandy loam or sand clay on low rocky hills and slopes	Unlikely, species natural distribution occurs more than 40 km from study areas, plants recorded by Jims Seeds (2006) were planted into a rehabilitation area
Eucalyptus formanii	P4	Mallee scrub or *Eucalyptus* woodland in red sand or yellow sandy loam on ironstone slope	Unlikely, species natural distribution occurs more than 40 km from study areas, plants recorded by Jims Seeds (2006) were planted into a rehabilitation area
Eucalyptus jutsonii subsp. *jutsonii*	P4	Red to pale orange deep sands, undulating areas and on dunes	Unlikely, no suitable habitat
Eucalyptus x *brachyphylla*	P4	Granite outcrops	Unlikely, no suitable habitat
Frankenia glomerata	P4	Floodplain, watercourse, seasonally inundated grey/brown sandy loam, white sand	Unlikely, no suitable habitat
Goodenia salina	P2	Gypseous sandy rise, gypsum clay mounds	Unlikely, no suitable habitat
Isolepis australiensis	P3	Silty sand, sandy clay, lake margins, pools	Unlikely, no suitable habitat

Species	Status	Habitat (DBCA 2017a)	Likelihood of occurrence
Lepidium fasciculatum	P3	Dry lake bed, brown cracking clay	Unlikely, no suitable habitat
Melaleuca coccinea	P3	Granite outcrops, sandplain, river valleys	Unlikely, no suitable habitat
Notisia intonsa	P3	Plain, ironstone, red-orange sandy clay	Possible, potential habitat in study area
Ptilotus chortophytus	P1	Quartz / rocky low hill, breakaways, rocky hills	Unlikely, no suitable habitat
Ptilotus procumbens	P1	Red clay, red sandy loam	Possible, potential habitat in study area
Tecticornia flabelliformis	P1 (WA); VU (EPBC)	Saline flats, lake shoreline, lake playa	Unlikely, no suitable habitat
Thryptomene sp. Londonderry (R.H. Kuchel 1763)	P1	Yellow or red sand plain	Unlikely, no suitable habitat

5.2.1.3 Introduced flora

Nine introduced flora species were recorded during the survey, of which 3 are a WoNS or Declared Pest (Table 5-7, Figure 5-4).

Table 5-7 Introduced flora recorded in the field survey

Family	Species	Declared Pest	WoNS
Asteraceae	**Centaurea melitensis*		
Asteraceae	**Oligocarpus calendulaceus*		
Asteraceae	**Sonchus oleraceus*		
Boraginaceae	**Echium plantagineum*	x	
Brassicaceae	**Carrichtera annua*		
Cactaceae	**Opuntia elata*	x	
Lamiaceae	**Salvia verbenaca*		
Solanaceae	**Datura ferox*		
Solanaceae	**Lycium ferocissimum*		x

5.2.1.4 Vegetation types

There were 12 vegetation types defined based on the cluster analysis (Figure 5-5) of which 11 were present in the current study area as well as disturbed areas (cleared of vegetation, 9.8%) and areas of rehabilitation (3.4%, Figure 5-6). The native remnant vegetation comprise 8 *Eucalyptus* woodlands, a *Casuarina pauper* woodland and 2 shrublands, a 3rd shrubland did not occur in the study area (Table 5-8).

The *Eucalyptus* woodlands comprised the majority (77.5%) of the study area with one woodland, EsEsMt, encompassing 54.9% of the study area. The *Casuarina pauper* woodland comprised 6.6% of the study area and the shrublands just 2.6%. Three vegetation types, EtMsHa, Mb and ElAkEp represented less than 1% of the study area.

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Project No	1634-FIM-NSR-ADV
Date	1/02/2024
Drawn by	IN
Map author	GW

0 0.5 1
Kilometers

1:40,000 (at A3) GCS WGS 1984

Study area

Declared Pests

- *Echium plantagineum*
- *Opuntia elata*

WoNS

- *Lycium ferocissimum*

Figure 5-4

Declared pests and WoNS recorded in the survey area

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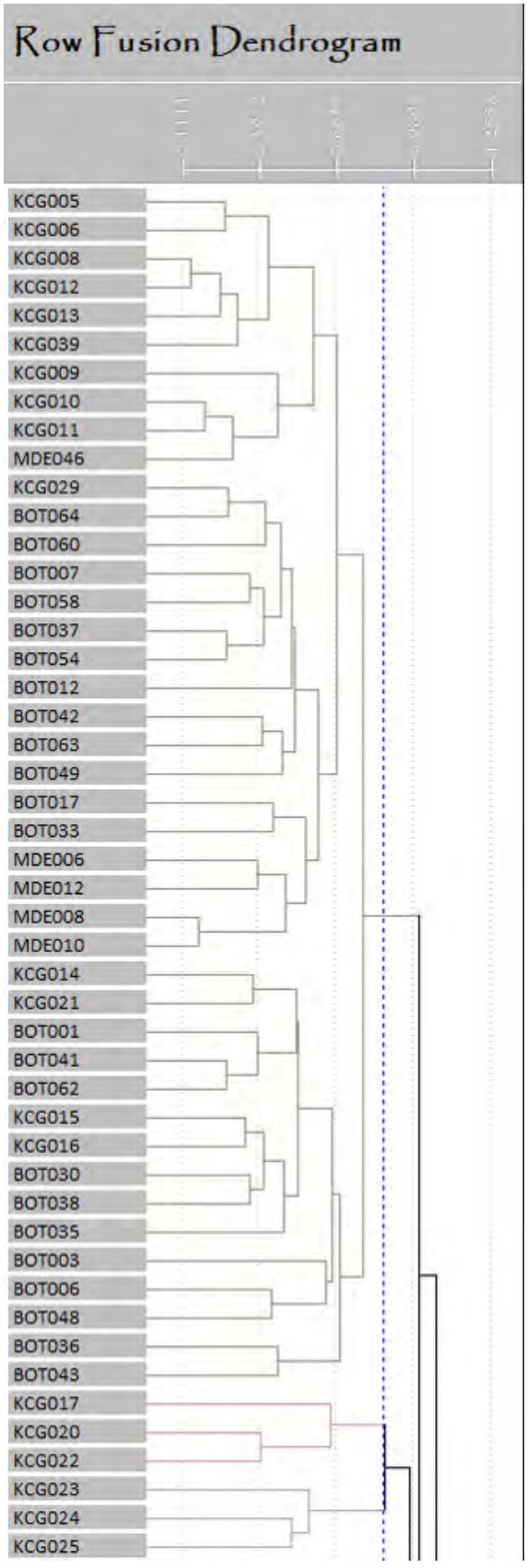
EsalmEsMt	
El*LfMb	
EcSafMg	

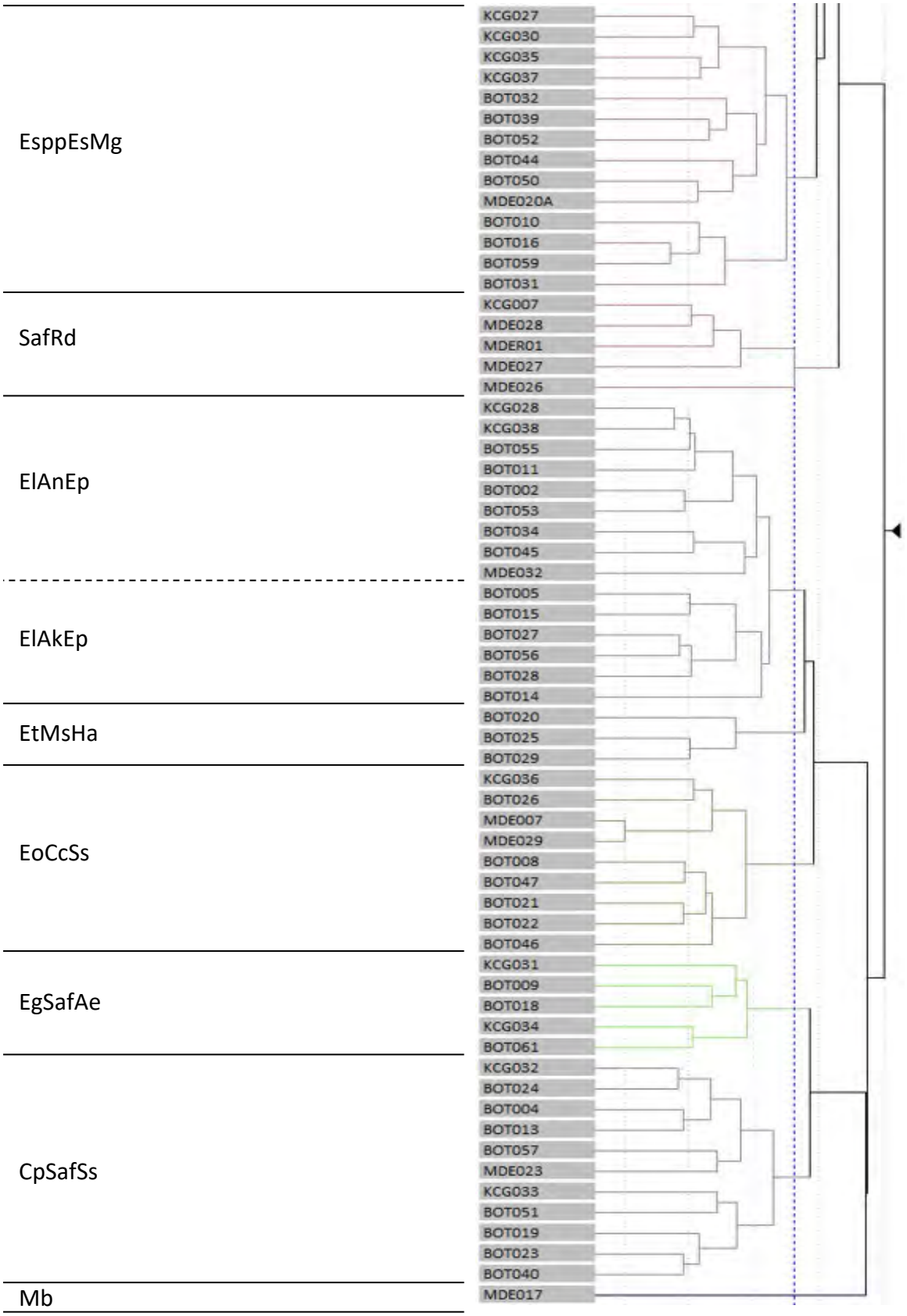
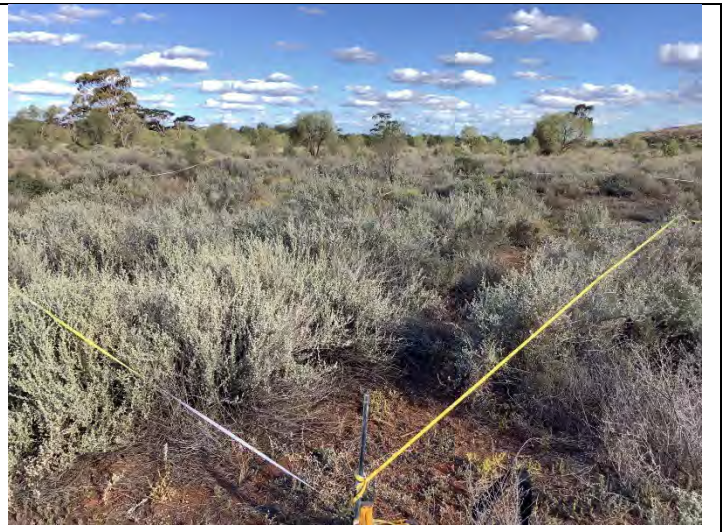


Figure 5-5 Hierarchical clustering (UPGMA) of the flora quadrats of the study area

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
EsEsMt	BOT001 BOT003 BOT006 BOT007 BOT012 BOT017 BOT030 BOT033 BOT035 BOT036 BOT037 BOT038 BOT041 BOT042 BOT043 BOT048 BOT049 BOT054 BOT058 BOT060 BOT062 BOT063 BOT064 KCG005 KCG006 KCG008 KCG009 KCG010 KCG011 KCG012 KCG013 KCG014 KCG015 KCG016 KCG021 KCG029 KCG039 MDE006 MDE008 MDE010 MDE012 MDE046	Mid-open woodland to woodland of *Eucalyptus salmonophloia*, over mid-open shrubland of *Eremophila scoparia*, *Acacia hemiteles*, and *Senna artemisioides* subsp. *filifolia*, over a low sparse chenopod shrubland of *Maireana triptera*, *Maireana georgei*, and *Atriplex vesicaria*.	1,359.3ha, 54.9%	

El*LfMb	KCG017 KCG020 KCG022	Tall sparse to open shrubland of *Eremophila longifolia*, over mid-sparse shrubland of **Lycium ferocissimum*, over a low sparse chenopod shrubland of *Maireana brevifolia*, *Maireana georgei*, and *Rhagodia drummondii/eremaea*.	28.6ha, 1.1%	
EcSafMg	KCG023 KCG024 KCG025	Low open woodland of *Eucalyptus corrugata* and/or *E. celastroides*, over mid-sparse shrubland of *Senna artemisioides* subsp. *filifolia*, *Acacia hemiteles*, and *A. nyssophylla*, over a low sparse chenopod shrubland of *Maireana georgei* and *M. trichoptera*, with the occasional presence of **Salvia verbenacea*.	Does not occur in current study area	

EsppEsMg	BOT010 BOT016 BOT031 BOT032 BOT039 BOT044 BOT050 BOT052 BOT059 KCG027 KCG030 KCG035 KCG037 MDE020A	Mid-open woodland variable composed of *Eucalyptus celastroides*, *E. lesouefii*, and/or *E. salubris*, over mid-open shrubland of *Eremophila scoparia*, occasionally with *Senna artemisioides* subsp. *filifolia*, and/or *Pimelea microcephala*, over a low sparse to open chenopod shrubland of *Maireana georgei*, *Atriplex vesicaria*, and *Maireana triptera*.	202.9ha, 8.2%Ä	
SafRd	KCG007 MDE026 MDE027 MDE028 MDER01	Mid-sparse to open shrubland of *Senna artemisioides* subsp. *filifolia*, *Eremophila scoparia*, and *Acacia hemiteles*, over a sparse shrubland of variably present *Rhagodia drummondii/eremaea*, and *Maireana thesioides*.	36.6ha, 1.5%	

ElAnEp	BOT002 BOT011 BOT034 BOT045 BOT053 BOT055 KCG028 KCG038 MDE032	Low woodland of *Eucalyptus lesouefii*, over mid-sparse shrubland of *Atriplex nummularia*, *Senna artemisioides* subsp. *filifolia*, and variably present *Eremophila scoparia*, over a low sparse to open shrubland of *Eremophila parvifolia*, *Scaevola spinescens*, and *Maireana pentatropis*.	261.7ha, 10.6%	
ElAkEp	BOT005 BOT014 BOT015 BOT027 BOT028 BOT056	Low woodland of *Eucalyptus lesouefii*, over mid-sparse to open shrubland of *Acacia kalgoorliensis*, *Halgania andromedifolia*, and *Eremophila oldfieldii* subsp. *angustifolia*, over a low sparse shrubland of *Eremophila parvifolia*, *Scaevola spinescens*, and *Maireana pentatropis*.	3.69ha, 0.20%	

EtMsHa	BOT020 BOT025 BOT029	Mid-open woodland of *Eucalyptus transcontinentalis* and *E. lesouefii*, over a tall shrubland of *Melaleuca sheathiana*, over mid-sparse shrubland of *Halgania andromedifolia*, with *Acacia erinacea*.	3.3ha, 0.1%	
EoCcSs	BOT008 BOT021 BOT022 BOT026 BOT046 BOT047 KCG036 MDE007 MDE029	Mid-open woodland of *Eucalyptus oleosa*, and/or *E. lesouefii*, over mid-open shrubland of *Cratystylis conocephala*, *Eremophila scoparia*, and *Senna artemisioides* subsp. *filifolia*, over a low sparse shrubland of *Scaevola spinescens*, *Olearia muelleri*, and *Eremophila parvifolia*.	65.7ha, 2.7%	

EgSafAe	BOT009 BOT018 BOT061 KCG031 KCG034	Mid-open woodland of *Eucalyptus griffithsii*, over mid-sparse to open shrubland of *Senna artemisioides* subsp. *filifolia*, *Acacia hemiteles*, and *Dodonaea lobulata*, over a low sparse shrubland of *Acacia erinacea*, *Scaevola spinescens*, and *Westringia rigida*, over an occasionally present low sparse hummock grassland of *Triodia scariosa/irritans*.	24.5ha, 1%	
CpSafSs	BOT004 BOT013 BOT019 BOT023 BOT024 BOT040 BOT051 BOT057 KCG032 KCG033 MDE023	Low woodland of *Casuarina pauper* with variably present *Grevillea nematophylla*, over mid-sparse to open shrubland of *Senna artemisioides* subsp. *filifolia*, *Acacia hemiteles*, and *Dodonaea lobulata*, over a low sparse shrubland of *Scaevola spinescens*, *Olearia muelleri*, and *Westringia rigida*.	162.6ha, 6.6%	

Mb	MDE017	Low closed shrubland of *Maireana brevifolia*, with occasional *Atriplex amnicola*.	0.1ha, >0.1%	

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Figure 5-5a

Figure 5-5b

Western Australia

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KCGM Operations

Project No	1634-FIM-NSR-ADV
Date	9/02/2024
Drawn by	GW
Map author	GW

0 0.8 1.6

Kilometers

1:40,000 (at A3) GDA 1994 MGA Zone 51

Study area

Vegetation type

- EcSafMg
- ElAnEp
- EoCcSs
- EsEsMt
- Rehabilitation / dust abatement areas
- Disturbed

Figure 5-5a

Vegetation types in the study area

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Figure 5-5a

Figure 5-5b

Western Australia

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Project No	1634-FIM-NSR-ADV
Date	9/02/2024
Drawn by	GW
Map author	GW

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Study area

Vegetation type

- CpSafSs
- EcSafMg
- EgSafAe
- El*LfMb
- ElAkEp
- ElAnEp
- EoCcSs
- EsEsMt
- EsSafRd
- EsppEsMg
- EtMsHa
- Mb
- SafRd
- Rehabilitation / dust abatement areas
- Disturbed

Figure 5-5b

Vegetation types in the study area

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5.2.1.5 Vegetation condition

The consolidated data set has identified that condition of the remnant vegetation in the study area has been recorded from Completely Degraded (cleared areas) to Excellent (Figure 5-7) with the majority (56.3%) recorded as Good (Table 5-9). Just under a 3rd (28.6%) of the study areas was in Very Good to Excellent condition and 15% (combined total) was in Degraded to Completely Degraded condition.

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

Condition rating	Area (ha)	% of study area
Excellent	456.3	18.4
Very Good	252.9	10.2
Good	1396.1	56.3
Degraded	24.7	1.0
Completely Degraded	347.6	14.0

The majority of the bushland areas in and around Kalgoorlie have been historically cleared resulting in the high proportion of the study areas recorded to be in Good condition with “Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing”. Areas in Very Good to Excellent condition may also have been historically cleared but showed less obvious signs, had greater species diversity and typically contained very few or no introduced flora.

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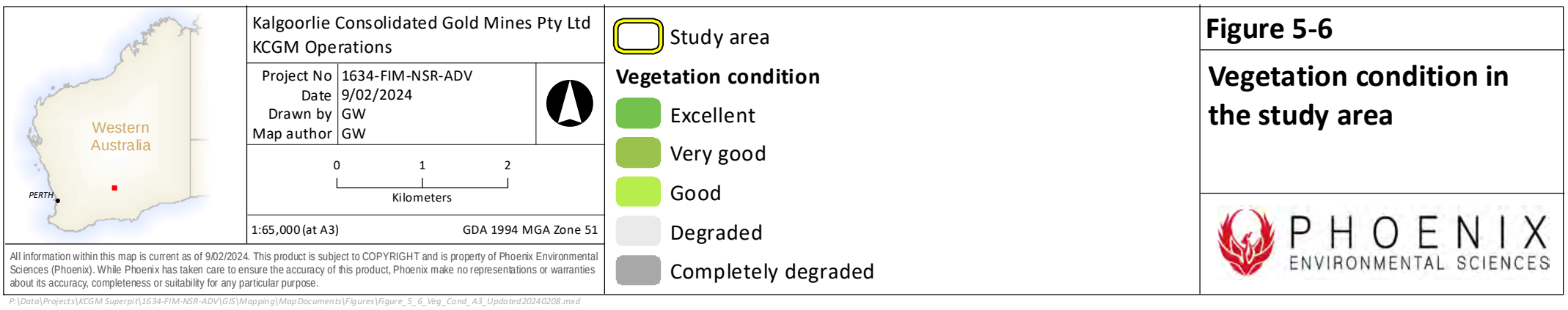

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Project No	1634-FIM-NSR-ADV
Date	9/02/2024
Drawn by	GW
Map author	GW

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Kilometers

1:65,000 (at A3) GDA 1994 MGA Zone 51

Study area

Vegetation condition

- Excellent
- Very good
- Good
- Degraded
- Completely degraded

Figure 5-6

Vegetation condition in the study area

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5.2.1.6 Threatened and Priority Ecological Communities

No vegetation within the study area represented a listed TEC or PEC.

5.2.1.7 Local and regional significance of vegetation

None of the vegetation types are considered regionally significant as they do not represent habitat for Federal or State listed Threatened Flora or are representative of vegetation with less than 30% Pre-European extent remaining.

Three vegetation types comprised less than 1% of the study area however the majority of these vegetation types, EtMsHa (37.3ha, 91.9%), Mb (1.3ha, 92.9%) and ElAkEp (50.8ha, 92.9%) occur outside of the study area. Subsequrntly none of these vegetation types are considered locally significant due to restricted distribution.

Eremophila praecox was recorded in 6 vegetation types (Table 5-5) that may be considered locally significant providing a role as a refuge for significant flora. However, the species was also recorded in a disturbed area and in rehabilitation.

5.3 SURVEY LIMITATIONS

The limitations of the flora and vegetation survey and terrestrial fauna survey have been considered in accordance with EPA (2016c, d) (Table 5-10).

Table 5-10 Consideration of potential survey limitations

Limitations	Comments
Availability of contextual information at a regional and local scale	Numerous surveys have previously been undertaken within or in the vicinity of the study area which provide adequate contextual information.
Competency/experience of the team carrying out the survey	The field team and report authors have extensive experience in flora surveys within the vicinity of the study area and across WA.
Scope and completeness	The surveys conducted have completed the scope of works. Not all vegetation types have 3 replicate quadrats. Mb only had a single quadrat but was highly impacted area and adding quadrats to the solitary location would be pseudo-replication.
Proportion of flora recorded and/or collected, any identification issues	The surveys conducted have increased the number of species recorded for the Project. For the current survey, all species were identified to species level.
Access within the study area	The whole of the study area was accessible by vehicle or on foot.
Timing, rainfall, season	The surveys conducted during the Primary and Supplementary survey periods were conducted after favourable seasonal conditions and subsequently all plants were identified to species level.
Disturbance that may have affected the results of the survey	No disturbances occurred during the field survey which are considered to have impacted the results.

6 DISCUSSION

In assessing development proposals, the EPA has the objective of protecting flora and vegetation, and terrestrial fauna so that biological diversity and ecological integrity are maintained (EPA 2016a, b). Considerations for flora and vegetation in Environmental Impact Assessment (EIA) at the State level include significance of values present, current state of knowledge of those values, potential impacts and the scale at which the impacts are assessed (EPA 2016a, b). At the Federal level, the Commonwealth publishes guidelines on assessing on significance of impacts to matters of NES (Department of the Environment 2013). Consequently, the focus of this survey was on evaluating the potential presence of significant flora and vegetation in the study areas.

6.1 FLORA AND VEGETATION

Taking the results of the current and historical surveys into account, a total of 269 flora species have been recorded in the Project, representing 42 families and 108 genera (Appendix 4). The most common families are the Chenopodiaceae (53 taxa), Fabaceae (35 taxa), Scrophulariaceae (31 taxa), Myrtaceae (28 taxa) and Asteraceae (24 taxa).

6.1.1 Significant flora

A recent survey for *Eremophila praecox* (Phoenix 2020c) established that the species has a greater distribution than that currently recorded on FloraBase (WA Herbarium 1998) or NatureMap (DBCA 2021). The species is most frequently recorded in clay loam soils in *Eucalyptus* and/or *Allocasuarina* woodland with a variable understorey, frequently with *Acacia* and *Eremophila* species. *Eremophila praecox* has previously been recorded in conservation reserves including the Karrawang Nature Reserve (WA Herbarium 1998) and Bullock Holes Timber Reserve (Phoenix 2020c).

Phoenix (2020c) recorded a total of 340 *Eremophila praecox* plants noting that some records of the species were not visited during the survey as they were not accessible and subsequently the total population size of the species would exceed this figure. 125 plants were recorded in nature reserves. Further populations have since been recorded comprising of:

- 6 plants at 3 locations (Phoenix 2020a)
- a single plant (Phoenix 2021)
- 5 plants at 4 locations (Tari Laatz (Evolution Mining) pers. comm. via email to Janine Cameron (KCGM) 17/09/2021)
- survey conducted for this report 90 plants
- an additional 10 plants identified on KCGM tenure outside the study area.

Seven known records of *Eremophila praecox* have been removed during clearing for the Fimiston tailings. Subsequently the total population size for the species now exceeds 487 plants (population size of some records remains unknown, of those known there are 445 plants). The 95 remaining plants recorded in the current survey represents 21.3% of the known population. However, recent surveys (Phoenix 2018d, 2019, 2020a, b, c, 2021) have identified that the species has a broad distribution, is frequently located and may be expected to have a substantially higher population due to the substantial area of suitable habitat for the species across the recorded distribution.

6.1.2 Introduced flora

**Opuntia elata* is a C3 restricted Declared Pest which is an "Organism that should have some form of management applied that will alleviate the harmful impact of the organism, reduce the numbers or

distribution of the organism or prevent or contain the spread of the organism" (DPIRD 2023). **Echium plantagineum* is an Exempt Declared Pest, no management requirements are provided for the species (DPIRD 2023), but it is "an offence under the *Biosecurity and Agriculture Management Act 2007* to sell or transport hay or other materials containing declared plants" (DPIRD 2022). Subsequently measures should be taken to ensure development in the study areas does not result in the spread of either of these species.

For **Opuntia elata* recommended management requirements include (DPIRD 2023):

- treat to destroy all plants, prevent seed set and prevent the spread of seed or plant parts within and from the area on or in livestock, fodder, grain, vehicles and/or machinery. Treat prior to seed set each year
- erect a biosecurity sign for persons conducting an activity on the land.

**Lycium ferocissimum* is a WoNS, there are no management requirements for WoNS.

6.1.3 Vegetation

Woodland vegetation types dominated the study area. These woodlands are representative of the Shepherd *et al.* (2002, after Beard) vegetation association 468 mapped by Shepherd *et al.* (2002), medium woodland; salmon gum (*Eucalyptus salmonophloia*) & goldfields blackbutt (*Eucalyptus lesouefii*) that has more than 98% pre-European extent remaining and covers a broad area (total 583,903 ha) (Government of Western Australia 2019). The shrubland communities are dominated by common species with broad distributions and are likely to be well represented in the broader landscape. In addition, all of the vegetation types present in the study area also occur outside of the study area. The greater variety of *Eucalyptus* woodlands recorded for the current study with respect to Shepherd *et al.* (2002) reflects the difference in scale of vegetation classification.

Six of the vegetation types may be considered locally significant as habitat for the Priority 2 flora, *Eremophila praecox.* However, the species has also been recorded in disturbed and rehabilitated areas and as noted above has a broad distribution, is frequently located and may be expected to have a substantially higher population due to the substantial area of suitable habitat for the species across the recorded distribution.

6.2 CONCLUSION

Development in the current study areas would not impact on any listed significant vegetation type. One Priority 2 species, *Eremophila praecox,* is present in all of the current study areas.

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Appendix 1 Survey site locations

Site	Latitude	Longitude
Phoenix		
KCG005	-30.791	121.5418
KCG006	-30.782	121.5426
KCG007	-30.7771	121.5414
KCG008	-30.7874	121.5479
KCG009	-30.7903	121.5483
KCG010	-30.7804	121.5522
KCG011	-30.7748	121.5459
KCG012	-30.7703	121.548
KCG013	-30.772	121.5426
KCG014	-30.7596	121.5353
KCG015	-30.7537	121.5271
KCG016	-30.7609	121.5294
KCG017	-30.7605	121.5314
KCG020	-30.7557	121.5315
KCG021	-30.758	121.533
KCG022	-30.7601	121.5333
KCG023	-30.7392	121.5205
KCG024	-30.7385	121.5235
KCG025	-30.7381	121.5179
KCG027	-30.7693	121.5776
KCG028	-30.7749	121.5776
KCG029	-30.7728	121.5656
KCG030	-30.7739	121.57
KCG031	-30.776	121.5711
KCG032	-30.7667	121.5648
KCG033	-30.7624	121.5732
KCG034	-30.764	121.574
KCG035	-30.7679	121.5714
KCG036	-30.7779	121.5673
KCG037	-30.7434	121.5581
KCG038	-30.7443	121.5672
KCG039	-30.7462	121.5701
MDE006	-30.7993	121.5783
MDE007	-30.7882	121.5511
MDE008	-30.7893	121.5662
MDE010	-30.7834	121.5549
MDE012	-30.777	121.5471
MDE017	-30.7534	121.5301
MDE020A	-30.7143	121.4873
MDE023	-30.8101	121.5773

MDE026	-30.7806	121.5419
MDE027	-30.7797	121.5439
MDE028	-30.7694	121.5375
MDE029	-30.7664	121.5446
MDE032	-30.7174	121.4938
MDE046	-30.7818	121.5645
MDER01	-30.7831	121.5641
Botanica		
BOT001	121.5914	-30.7635
BOT002	121.5936	-30.7666
BOT003	121.5966	-30.7703
BOT004	121.59	-30.7719
BOT005	121.5882	-30.7728
BOT006	121.5843	-30.7761
BOT007	121.5745	-30.7789
BOT008	121.5683	-30.779
BOT009	121.5711	-30.7764
BOT010	121.5761	-30.7743
BOT011	121.5772	-30.7721
BOT012	121.5814	-30.77
BOT013	121.5889	-30.7644
BOT014	121.5872	-30.7623
BOT015	121.5811	-30.7635
BOT016	121.5761	-30.7666
BOT017	121.562	-30.7726
BOT018	121.5598	-30.771
BOT019	121.5579	-30.77
BOT020	121.5621	-30.7604
BOT021	121.5582	-30.7618
BOT022	121.5573	-30.7644
BOT023	121.5691	-30.7651
BOT024	121.5791	-30.7601
BOT025	121.5797	-30.752
BOT026	121.5775	-30.7523
BOT027	121.5691	-30.7535
BOT028	121.5722	-30.7523
BOT029	121.5715	-30.7481
BOT030	121.5702	-30.7469
BOT031	121.5597	-30.7479
BOT032	121.563	-30.7431
BOT033	121.5701	-30.7463
BOT034	121.5243	-30.6949
BOT035	121.5282	-30.697
BOT036	121.5282	-30.7027

BOT037	121.5304	-30.7131
BOT038	121.5382	-30.7225
BOT039	121.5569	-30.7275
BOT040	121.5585	-30.7371
BOT041	121.5468	-30.7333
BOT042	121.5371	-30.7233
BOT043	121.5208	-30.7053
BOT044	121.5179	-30.7124
BOT045	121.5047	-30.7208
BOT046	121.5088	-30.7218
BOT047	121.5091	-30.7195
BOT048	121.515	-30.718
BOT049	121.5237	-30.7081
BOT050	121.54	-30.7069
BOT051	121.5448	-30.7129
BOT052	121.551	-30.7189
BOT053	121.5405	-30.7313
BOT054	121.5395	-30.7361
BOT055	121.5689	-30.7399
BOT056	121.5629	-30.7471
BOT057	121.5617	-30.7653
BOT058	121.5672	-30.7722
BOT059	121.5741	-30.7698
BOT060	121.5751	-30.7824
BOT061	121.5719	-30.7771
BOT062	121.5201	-30.7326
BOT063	121.515	-30.7244
BOT064	121.5282	-30.7283

Site details			
Site	**KCG005**	**Position (WGS84)**	-30.791017, 121.541777
Slope	negligible	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay, clay loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (04 Oct 2021)	
Sample description	Mid *Acacia hemiteles*, *Eremophila ionantha* and *Myoporum montanum* shrubland over low isolated *Atriplex vesicaria*, *Lycium australe* and *Enchylaena tomentosa* var. *tomentosa* shrubs over isolated low *Erodium cygnorum*,* *Oligocarpus calendulaceus* and **Centaurium melitensis* forbs.
Habitat	shrubland
Disturbance	evidence of feral animals, historic clearing, large-scale clearing, livestock tracks, weed infestation,

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	45	**Tree cover (%)**	0
Shrub cover (%)	40	**Grass cover (%**	0.1
Herb cover (%)	5		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04-Oct-2021	50m x 50m	Grant Wells

Species (21)	Status	Cover (%)	Height (m)
Acacia hemiteles		35	1.8
Eragrostis dielsii		5	0.01
Myoporum montanum		2	1.7
Atriplex vesicaria		2	0.5
**Oligocarpus calendulaceus*	Weed	2	0.1
Eremophila ionantha		1	1.7
Atriplex nummularia subsp. *spathulata*		1	1.5
Lycium australe		1	1
Erodium cygnorum		1	0.15
Senna artemisioides subsp. *filifolia*		0.5	2
Enchylaena tomentosa var. *tomentosa*		0.2	0.6
Eremophila decipiens subsp. *decipiens*		0.1	1
Austrostipa elegantissima		0.1	0.5
Eremophila scoparia		0.1	0.4
Maireana triptera		0.1	0.3
**Centaurea melitensis*	Weed	0.1	0.3
Maireana trichoptera		0.1	0.2
**Echium plantagineum*	Weed	0.1	0.2
Brachyscome ciliaris		0.1	0.15
Minuria leptophylla		0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KCG006**	**Position (WGS84)**	-30.781984, 121.54262
Slope	negligible	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay, clay loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (04 Oct 2021)	
Sample description	Tall *Acacia hemiteles*, *Senna artemisioides* subsp. *filifolia* and *Eremophila scoparia* shrubland over isolated low *Rhagodia drummondii*, *Atriplex vesicaria* and *Maireana georgei* shrubland over low sparse **Oligocarpus calendulaceus*, *Erodium cygnorum* and *Sclerolaena diacantha* forbland.
Habitat	shrubland
Disturbance	evidence of feral animals, historic clearing, large-scale clearing, litter, weed infestation,

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	45	**Tree cover (%)**	0
Shrub cover (%)	40	**Grass cover (%**	1
Herb cover (%)	6		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04-Oct-2021	50m x 50m	Grant Wells

Species (25)	Status	Cover (%)	Height (m)
Senna artemisioides subsp. *filifolia*		12	2
Acacia hemiteles		10	2
Eremophila scoparia		7	2
**Oligocarpus calendulaceus*	Weed	3	0.2
Acacia nyssophylla		2	2.2
Rhagodia drummondii		2	0.4
Sclerolaena diacantha		2	0.2
Eremophila ionantha		1	0.8
Lycium australe		1	0.6
Atriplex vesicaria		1	0.5
Maireana georgei		1	0.4
Enchylaena tomentosa var. *tomentosa*		0.5	0.5
Scaevola spinescens		0.5	0.5
Eremophila alternifolia		0.1	2
Myoporum montanum		0.1	1.2
Pimelea microcephala		0.1	1.2
Eremophila decipiens subsp. *decipiens*		0.1	1
Austrostipa elegantissima		0.1	0.5
Maireana triptera		0.1	0.3
Ptilotus exaltatus		0.1	0.3
Vittadinia sulcata		0.1	0.3
**Salvia verbenaca*	Weed	0.1	0.2
Maireana trichoptera		0.1	0.2
Goodenia mimuloides		0.1	0.15
Erodium cygnorum		0.1	0.1

Site details			
Site	**KCG007**	**Position (WGS84)**	-30.777111, 121.541391
Slope	negligible	**Topography**	plain
Soil colour	red-brown, red-orange	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (05 Oct 2021)	
Sample description	Mid *Acacia hemiteles*, *Eremophila ionantha* and *Senna artemisioides* subsp. *filifolia* shrubland over low isolated *Maireana thesioides, Rhagodia drummondii* and *Sclerolaena diacantha* shrubs over low isolated *Oligocarpus calandulaceus* and *Goodenia mimuloides* forbs.

Habitat	shrubland		
Disturbance	historic clearing, large-scale clearing, litter,		
Vegetation condition	Poor	**Fire age**	not evident
Total veg. cover (%)	70	**Tree cover (%)**	0
Shrub cover (%)	70	**Grass cover (%**	0.1
Herb cover (%)	1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (14)	Status	Cover (%)	Height (m)
Acacia hemiteles		50	1.5
Senna artemisioides subsp. *filifolia*		10	1.9
Eremophila ionantha		10	1.7
**Oligocarpus calendulaceus*	Weed	1	0.1
Acacia nyssophylla		0.2	1.5
Eremophila scoparia		0.1	1.2
Eremophila decipiens subsp. *decipiens*		0.1	1.2
Rhagodia drummondii		0.1	1
Lycium australe		0.1	1
Chenopodium curvispicatum		0.1	0.4
Maireana thesioides		0.1	0.3
Sclerolaena diacantha		0.1	0.1
Goodenia mimuloides		0.1	0.1
Austrostipa elegantissima			0.1

Site details			
Site	**KCG008**	**Position (WGS84)**	-30.787421, 121.547877
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay, clay loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (05 Oct 2021)	
Sample description	Mid open *Eucalyptus salmonophloia* woodland over mid *Acacia hemiteles*, *Eremophila ionantha* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Maireana triptera*, *M. georgei* and *Ptilotus obovatus* shrubland.
Habitat	open woodland
Disturbance	evidence of feral animals, historic clearing, litter, livestock tracks, weed infestation,

Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	45	**Tree cover (%)**	8
Shrub cover (%)	40	**Grass cover (%**	0.1
Herb cover (%)	2		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (22)	Status	Cover (%)	Height (m)
Senna artemisioides subsp. *filifolia*		15	1.8
Eucalyptus salmonophloia		8	12
Acacia hemiteles		6	1.5
Ptilotus obovatus		3	0.6
Eremophila ionantha		2	1.6
Maireana triptera		2	0.4
**Oligocarpus calendulaceus*	Weed	2	0.15
Eremophila scoparia		1	1.6
Enchylaena tomentosa var. *tomentosa*		1	0.5
Maireana georgei		1	0.5
Scaevola spinescens		0.5	1
Atriplex vesicaria		0.2	0.5
Eremophila decipiens subsp. *decipiens*		0.1	1.4
Pimelea microcephala		0.1	1.2
Cratystylis conocephala		0.1	1.2
Acacia nyssophylla		0.1	1.2
Rhagodia drummondii		0.1	0.8
Olearia pimeleoides		0.1	0.6
Austrostipa elegantissima		0.1	0.5
Maireana trichoptera		0.1	0.2
Ptilotus exaltatus		0.1	0.15
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KCG009**	**Position (WGS84)**	-30.790324, 121.548272
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (04 Oct 2021)			
Sample description	Low open *Eucalyptus griffithsii* and *E. lesuoefii* woodland over mid open *Eremophila scoparia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* shrubland over low isolated *Eremophila parvifolia* subsp. *auricampa* shrubs.		
Habitat	open woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	7
Shrub cover (%)	25	**Grass cover (%**	0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	04-Oct-2021	50m x 50m	Grant Wells

Species (22)	Status	Cover (%)	Height (m)
Eremophila scoparia		10	1.8
Senna artemisioides subsp. *filifolia*		8	1.4
Eucalyptus griffithsii		7	6
Scaevola spinescens		5	1
Eremophila parvifolia subsp. *auricampa*		5	0.4
Exocarpos aphyllus		1	1.4
Cratystylis conocephala		1	1.2
Maireana sedifolia		1	1.2
Eucalyptus salmonophloia		0.1	10
Eucalyptus lesouefii		0.1	8
Eremophila decipiens subsp. *decipiens*		0.1	1.4
Eremophila caperata		0.1	1.2
Austrostipa elegantissima		0.1	1.2
Pimelea microcephala		0.1	1
Rhagodia drummondii		0.1	0.8
Acacia nyssophylla		0.1	0.5
Ptilotus obovatus		0.1	0.5
Olearia muelleri		0.1	0.4
Maireana georgei		0.1	0.2
Maireana trichoptera		0.1	0.15
Eriochiton sclerolaenoides		0.1	0.15
Roepera ovata		0.1	0.08

Site details			
Site	**KCG010**	**Position (WGS84)**	-30.780431, 121.552238
Slope	negligible	**Topography**	plain
Soil colour	red-orange, brown	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (05 Oct 2021)	
Sample description	Mid *Eucalyptus salmonophlia* woodland over mid open *Acacia hemiteles*, *Cratystylis conocephala* and *Eremophila scoparia* shrubland over low open *Eremophila parvifolia* subsp. *auricampa*, *Maireana sedifolia* and *Scaevola spinescens* shrubland.

Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing, litter, vehicle tracks,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	15
Shrub cover (%)	20	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (13)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		15	15
Eremophila scoparia		5	2
Acacia hemiteles		5	1.2
Eremophila parvifolia subsp. *auricampa*		5	0.4
Senna artemisioides subsp. *filifolia*		2	1.1
Cratystylis conocephala		2	1
Scaevola spinescens		2	0.5
Exocarpos aphyllus		0.5	1.6
Acacia nyssophylla		0.2	0.5
Maireana sedifolia		0.1	0.8
Olearia muelleri		0.1	0.2
Ptilotus exaltatus		0.1	0.15
Maireana trichoptera		0.1	0.15

Site details			
Site	**KCG011**	**Position (WGS84)**	-30.77476, 121.545863
Slope	negligible	**Topography**	plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (05 Oct 2021)			
Sample description	Mid *Eucalyptus salmonophloia* woodland over mid open *Acacia hemiteles, Senna artemisioides* subsp. *filifolia* and *Exocarpos aphyllus* shrubland over low sparse *Atriplex vesicaria*, *Eremophila parvifolia* subsp. *auricampa* and *Scaevola spinescens* shrubland.		
Habitat	woodland		
Disturbance	historic clearing, litter, vehicle tracks,		
Vegetation condition	Very Good	**Fire age**	not recorded
Total veg. cover (%)	30	**Tree cover (%)**	15
Shrub cover (%)	20	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (18)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		15	15
Senna artemisioides subsp. *filifolia*		10	1.6
Eremophila scoparia		4	2.5
Acacia hemiteles		2	1.8
Scaevola spinescens		2	0.5
Eremophila parvifolia subsp. *auricampa*		2	0.3
Exocarpos aphyllus		1	1.6
Atriplex vesicaria		1	0.5
Maireana sedifolia		0.1	0.8
Cratystylis conocephala		0.1	0.8
Acacia nyssophylla		0.1	0.8
Eremophila praecox	P1 (DBCA list)	0.1	0.6
Austrostipa elegantissima		0.1	0.5
Ptilotus obovatus		0.1	0.4
Olearia muelleri		0.1	0.3
Maireana georgei		0.1	0.3
Ptilotus exaltatus		0.1	0.2
Maireana trichoptera		0.1	0.15

Site details			
Site	**KCG012**	**Position (WGS84)**	-30.770289, 121.548029
Slope	negligible	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (05 Oct 2021)			
Sample description	Low *Eucalyptus salmonophloia* and *E. lesoueffi* woodland over mid open *Acacia hemiteles*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Maireana triptera, Ptilotus obovatus* and *Scaevola spinescens* shrubland.		
Habitat	open woodland		
Disturbance	evidence of feral animals, historic clearing, weed infestation,		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	5
Shrub cover (%)	30	**Grass cover (%**	0.1
Herb cover (%)	3		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (27)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		20	10
Acacia hemiteles		10	1.8
Senna artemisioides subsp. *filifolia*		7	1.8
Eremophila scoparia		5	1.8
Ptilotus obovatus		5	0.5
Acacia nyssophylla		3	2.2
Santalum spicatum		2	2.2
Exocarpos aphyllus		2	1.5
Eremophila ionantha		2	1.5
Rhagodia drummondii		2	1.2
Maireana triptera		2	0.4
Rhodanthe floribunda		2	0.1
Eucalyptus lesouefii		1	5
Scaevola spinescens		1	0.8
Maireana georgei		1	0.4
**Oligocarpus calendulaceus*	Weed	0.2	0.15
Eremophila decipiens subsp. *decipiens*		0.1	1
Pimelea microcephala		0.1	0.6
Atriplex vesicaria		0.1	0.5
Maireana sedifolia		0.1	0.5
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Ptilotus exaltatus		0.1	0.2
Maireana trichoptera		0.1	0.2
Vittadinia sulcata		0.1	0.15
Sclerolaena diacantha		0.1	0.1
Goodenia mimuloides		0.1	0.08
Eragrostis dielsii		0.1	0.01

Site details			
Site	**KCG013**	**Position (WGS84)**	-30.771992, 121.542564
Slope	negligible	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	clay loam, sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (05 Oct 2021)			
Sample description	Mid *Eucalyptus salmonophloia* woodland over mid open *Acacia hemiteles*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over isolated clumps of low *Enchylaena tomentosa* var. *tomentosa*, *Maireana trichoptera* and *Pimelea microcephala* shrubs.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing, litter, weed infestation,		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	45	**Tree cover (%)**	20
Shrub cover (%)	40	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (14)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		20	8
Senna artemisioides subsp. *filifolia*		15	1.9
Acacia hemiteles		7	1.9
Eremophila scoparia		2	2
Eremophila ionantha		1	1.6
**Oligocarpus calendulaceus*	Weed	0.2	0.2
Maireana trichoptera		0.2	0.2
Pimelea microcephala		0.1	0.7
Rhagodia drummondii		0.1	0.5
Austrostipa elegantissima		0.1	0.5
Maireana georgei		0.1	0.4
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Rhodanthe floribunda		0.1	0.1
Goodenia mimuloides		0.1	0.05

Site details			
Site	**KCG014**	**Position (WGS84)**	-30.759561, 121.535334
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy loam
Rock cover (%)	5	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (06 Oct 2021)			
Sample description	Mid *Eucalyptus salmonophloia* woodland over tall open *Exocarpos aphyllus* shrubland over mid open *Eremophila scoparia*, *Acacia nysophylla* and *Eremophila ionantha* shrubland.		
Habitat	woodland		
Disturbance	historic clearing, litter, vehicle tracks,		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (20)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		20	15
Exocarpos aphyllus		10	4
Eremophila scoparia		5	1.8
Acacia nyssophylla		3	1.5
Atriplex vesicaria		3	0.5
Eremophila ionantha		2	1.5
Rhagodia drummondii		2	0.7
Maireana triptera		1	0.3
Maireana pyramidata		0.5	1.1
Eremophila longifolia		0.1	1.3
Pimelea microcephala		0.1	1.2
Maireana sedifolia		0.1	1.1
Senna artemisioides subsp. *filifolia*		0.1	1
Scaevola spinescens		0.1	0.8
Ptilotus obovatus		0.1	0.3
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Maireana georgei		0.1	0.3
Chenopodium curvispicatum		0.1	0.25
Maireana trichoptera		0.1	0.15
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KCG015**	**Position (WGS84)**	-30.753729, 121.527122
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	2	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (06 Oct 2021)	
Sample description	Mid *Eucalyptus salmonophloia* woodland over mid open *Atriplex nummularia*, *A. vesicaria* and *Eremophila parvifolia* subsp. *auricampa* shrubland over low isolated *Olearia muelleri, Maireana georgei* and *Maireana triptera* shrubs.
Habitat	woodland
Disturbance	evidence of feral animals, excavation, grazing-medium, historic clearing, large-scale clearing, litter, livestock tracks, revegetation, vehicle tracks,

Vegetation condition	Poor	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	15
Shrub cover (%)	20	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	06-Oct-2021	50m x 50m	Grant Wells

Species (12)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		15	12
Atriplex vesicaria		15	1
Atriplex nummularia subsp. *spathulata*		2	1.5
Eremophila parvifolia subsp. *auricampa*		2	1.2
Acacia hemiteles		0.1	1.5
Senna artemisioides subsp. *filifolia*		0.1	1.4
Pimelea microcephala		0.1	1.4
Scaevola spinescens		0.1	1
Eremophila decipiens subsp. *decipiens*		0.1	1
Olearia muelleri		0.1	0.6
Maireana georgei		0.1	0.4
Maireana triptera		0.1	0.2

Site details			
Site	**KCG016**	**Position (WGS84)**	-30.760918, 121.529442
Slope	negligible	**Topography**	plain
Soil colour	red-brown, whitish	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (05 Oct 2021)	
Sample description	Mid *Eucalyptus salmonophloia* woodland over mid isolated *Eremophila praecox, Eremophila scoparia* and *Eremophila oldfieldii* subsp*. angustifolia* shrubs over low open *Atriplex vesicaria, Eremophila parvifolia* subsp*. auricampa* and *Scaevola spinescens* shrubland*.*
Habitat	woodland
Disturbance	evidence of feral animals, grazing-medium, historic clearing, large-scale clearing, litter, livestock tracks, vehicle tracks, weed infestation,

Vegetation condition	Poor	**Fire age**	not evident
Total veg. cover (%)	40	**Tree cover (%)**	20
Shrub cover (%)	25	**Grass cover (%**	0.1
Herb cover (%)	0.1		

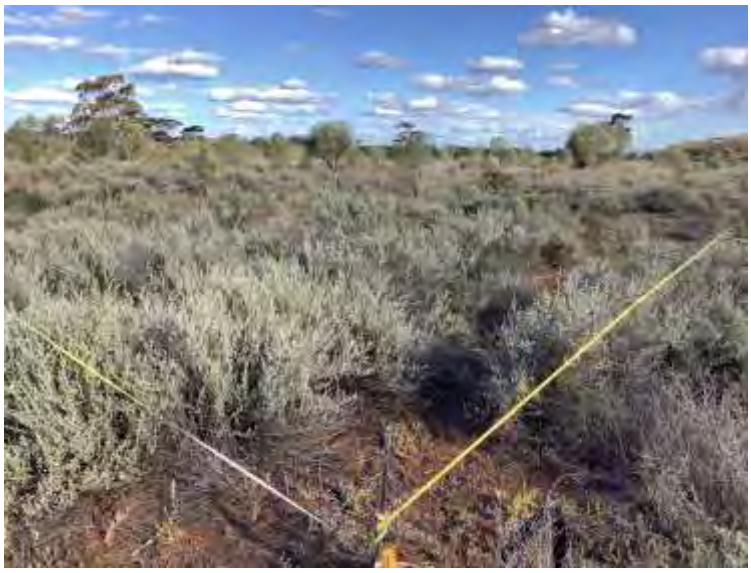
Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	05-Oct-2021	50m x 50m	Grant Wells

Species (21)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		20	15
Atriplex vesicaria		10	0.4
Eremophila parvifolia subsp. *auricampa*		4	0.6
Scaevola spinescens		3	0.6
Roepera eremaea		2	0.2
Eremophila praecox	P1 (DBCA list)	1	1.3
Eucalyptus lesouefii		0.1	6
Eremophila scoparia		0.1	1.8
Eremophila oldfieldii subsp. *angustifolia*		0.1	1.4
Pimelea microcephala		0.1	1.2
**Lycium ferocissimum*	Weed (WoNS)	0.1	1
Lycium australe		0.1	0.7
Olearia muelleri		0.1	0.6
Eremophila decipiens subsp. *decipiens*		0.1	0.6
Chenopodium curvispicatum		0.1	0.5
Austrostipa elegantissima		0.1	0.5
Exocarpos aphyllus		0.1	0.5
Maireana triptera		0.1	0.4
Ptilotus obovatus		0.1	0.4
Enchylaena tomentosa var. *tomentosa*		0.1	0.4
Maireana georgei		0.1	0.3

Site details			
Site	**KCG017**	**Position (WGS84)**	-30.760476, 121.531367
Slope	negligible	**Topography**	plain
Soil colour	red-brown	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (05 Oct 2021)	
Sample description	Tall isolated *Eremophila longifolia* shrubs over Mid *Atriplex stipitata* subsp. *stipitata*, *Maireana brevifolia* and *M. pyramidata* shrubland over low open *Carichterra annua*, *Oligocarpus calandulaceus* and *Sclerolaena diacantha* forbland.
Habitat	shrubland
Disturbance	evidence of feral animals, grazing-high, historic clearing, large-scale clearing, litter, livestock tracks, vehicle tracks, weed infestation,

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	45	**Tree cover (%)**	0
Shrub cover (%)	30	**Grass cover (%**	0.1
Herb cover (%)	15		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (16)	Status	Cover (%)	Height (m)
Atriplex stipitata subsp. stipitata	Weed	20	1.5
Sclerolaena brevifolia		7	0.1
**Oligocarpus calendulaceus*	Weed	5	0.1
Sclerolaena diacantha		5	0.1
Maireana brevifolia		4	1.1
Roepera eremaea		3	0.5
Salsola australis		3	0.5
Atriplex codonocarpa		2	0.3
**Carrichtera annua*	Weed	2	0.2
Maireana pyramidata		1	1.2
Eremophila longifolia		0.2	2
**Lycium ferocissimum*	Weed (WoNS)	0.1	1.5
Rhagodia drummondii		0.1	1.2
Roepera reticulata		0.1	0.5
Maireana georgei		0.1	0.4
Maireana trichoptera		0.1	0.15

Site details			
Site	**KCG020**	**Position (WGS84)**	-30.755691, 121.531519
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (06 Oct 2021)	
Sample description	Tall open *Acacia tetragonophylla*, *Eremophila longifolia* and *E. alternifolia* shrubland over mid open *Pimelea microcephala*, *Rhagodia drummondii* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Oligocarpus calandulaceus*, *Carrichtera annua* and *Sclerolaena brevifolia* forbland.
Habitat	shrubland
Disturbance	evidence of feral animals, excavation, grazing-high, historic clearing, large-scale clearing, litter, livestock tracks, revegetation, vehicle tracks, weed infestation,

Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	10
Shrub cover (%)	15	**Grass cover (%**	0.1
Herb cover (%)	10		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (30)	Status	Cover (%)	Height (m)
Eremophila longifolia		5	4
Rhagodia drummondii		5	1.2
**Oligocarpus calendulaceus*	Weed	5	0.2
Sclerolaena brevifolia		5	0.1
Pimelea microcephala		4	1.8
Eremophila alternifolia		3	3
Senna artemisioides subsp. *filifolia*		3	1.7
Acacia tetragonophylla		2	3
Sclerolaena diacantha		2	0.1
Eremophila ionantha		1	1.2
**Lycium ferocissimum*	Weed (WoNS)	1	1.2
Atriplex vesicaria		1	0.6
**Carrichtera annua*	Weed	1	0.2
Acacia nyssophylla		0.5	1.8
Lycium australe		0.5	1.5
Atriplex codonocarpa		0.5	0.3
Oxalis perennans		0.5	0.2
Maireana sedifolia		0.1	1.2
Eremophila scoparia		0.1	1.2
Eremophila decipiens subsp. *decipiens*		0.1	1
Maireana thesioides		0.1	1
Maireana brevifolia		0.1	0.5
Enchylaena tomentosa var. *tomentosa*		0.1	0.5
Maireana georgei		0.1	0.5
Roepera eremaea		0.1	0.3
**Sonchus oleraceus*	Weed	0.1	0.2
Ptilotus exaltatus		0.1	0.2
Einadia nutans subsp. *eremaea*		0.1	0.2
Vittadinia sulcata		0.1	0.2
**Echium plantagineum*	Weed	0.1	0.2

Site details			
Site	**KCG021**	**Position (WGS84)**	-30.757966, 121.532986
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (06 Oct 2021)			
Sample description	Mid *Eucalyptus salmonophloia* woodland over tall isolated *Eremophila longifolia* shrubs over low *Atriplex vesicari*, *Rhagodia drummondii* and *Enchylaena tomentosa var. tomentosa* chenopod shrubland.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing, large-scale clearing, litter, revegetation, vehicle tracks, weed infestation,		
Vegetation condition	Poor	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	15
Shrub cover (%)	20	**Grass cover (%**	0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (16)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		12	12
Atriplex vesicaria		10	1
Enchylaena tomentosa var. *tomentosa*		3	0.5
Eremophila longifolia		2	2.5
Rhagodia drummondii		2	1
Senna artemisioides subsp. *filifolia*		1	1.5
Acacia nyssophylla		0.5	0.7
Maireana brevifolia		0.1	0.9
**Carrichtera annua*	Weed	0.1	0.4
Maireana trichoptera		0.1	0.3
Maireana triptera		0.1	0.3
Maireana georgei		0.1	0.3
Salsola australis		0.1	0.2
**Oligocarpus calendulaceus*	Weed	0.1	0.1
Sclerolaena diacantha		0.1	0.1
Enneapogon polyphyllus		0.1	0.05

Site details			
Site	**KCG022**	**Position (WGS84)**	-30.760123, 121.533272
Slope	gentle	**Topography**	drainage line
Soil colour	red-brown	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (05 Oct 2021)			
Sample description	Mid open *Eucalyptus salmonophloia* woodland over tall open *Eremophila longifolia* and *Acacia tetragonophylla* shrubland over mid isolated *Acacia hemiteles*, *Senna artemisioides* subsp. *filifolia* and *Rhagodia drummondii* shrubs.		
Habitat	open woodland		
Disturbance	evidence of feral animals, excavation, grazing-medium, historic clearing, large-scale clearing, litter, livestock tracks, vehicle tracks, weed infestation,		
Vegetation condition	Degraded	**Fire age**	not evident
Total veg. cover (%)	20	**Tree cover (%)**	15
Shrub cover (%)	6	**Grass cover (%**	0.1
Herb cover (%)	3		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	05-Oct-2021	50m x 50m	Grant Wells

Species (21)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		8	15
Eremophila longifolia		7	4
Acacia hemiteles		3	1.5
**Oligocarpus calendulaceus*	Weed	3	0.15
Acacia tetragonophylla		2	3
Rhagodia drummondii		2	1.4
Senna artemisioides subsp. *filifolia*		2	1.2
Atriplex amnicola		1	0.8
Pimelea microcephala		0.1	1.2
**Lycium ferocissimum*	Weed (WoNS)	0.1	1.2
Eremophila scoparia		0.1	0.7
Eremophila decipiens subsp. *decipiens*		0.1	0.5
Lycium australe		0.1	0.5
Roepera reticulata		0.1	0.4
Einadia nutans subsp. *eremaea*		0.1	0.4
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Maireana georgei		0.1	0.3
Solanum esuriale		0.1	0.3
Roepera eremaea		0.1	0.2
Maireana brevifolia		0.1	0.2
Ptilotus holosericeus		0.1	0.02

Site details			
Site	**KCG027**	**Position (WGS84)**	-30.769313, 121.57758
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (06 Oct 2021)	
Sample description	Low *Eucalyptus celastroides* subsp. *celastroides* woodland over tall sparse *Eremophila interstans subsp. interstans* shrubland over mid open *Atriplex nummularia subps. spathulata*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland.

Habitat	woodland		
Disturbance	historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	15
Shrub cover (%)	25	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (21)	Status	Cover (%)	Height (m)
Eucalyptus celastroides subsp. *celastroides*		12	5
Eremophila interstans subsp. *interstans*		6	3
Senna artemisioides subsp. *filifolia*		6	1.5
Eremophila scoparia		3	1.6
Atriplex nummularia subsp. *spathulata*		3	1.4
Exocarpos aphyllus		2	1.7
Eremophila oppositifolia subsp. *oppositifolia*		1	1.9
Eremophila glabra subsp. *glabra*		1	1.2
Acacia erinacea		1	1.2
Eucalyptus salmonophloia		0.1	20
Acacia hemiteles		0.1	2
Lycium australe		0.1	1
Scaevola spinescens		0.1	0.7
Eremophila decipiens subsp. *decipiens*		0.1	0.6
Olearia muelleri		0.1	0.4
Enchylaena tomentosa var. *tomentosa*		0.1	0.4
Atriplex vesicaria		0.1	0.4
Solanum nummularium		0.1	0.3
Eremophila parvifolia subsp. *auricampa*		0.1	0.25
Maireana triptera		0.1	0.2
Maireana trichoptera		0.1	0.1

Site details			
Site	**KCG028**	**Position (WGS84)**	-30.774892, 121.577583
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy loam
Rock cover (%)	5	**Rock type**	ferrous - ironstone

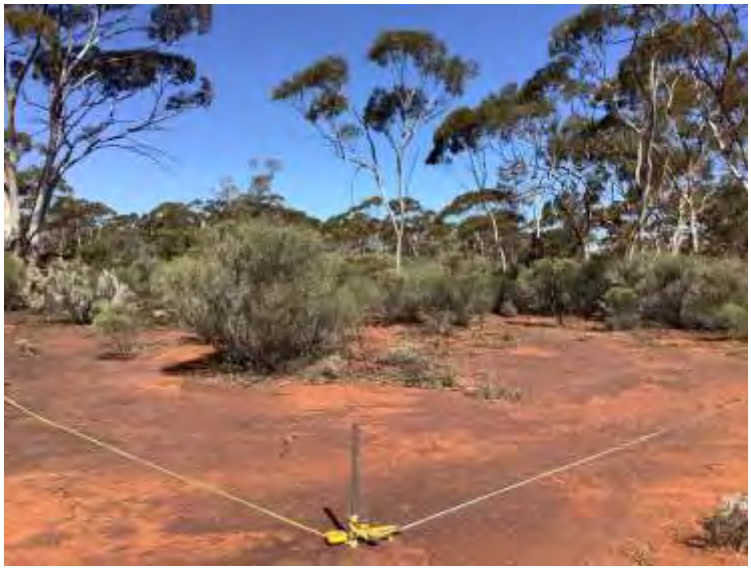
Observation details - visit 1 (06 Oct 2021)			
Sample description	Mid *Eucalyptus lesoueffii* woodland over isolated tall *Eremophila interstans* subsp. *interstans*, *E. scoparia* and *Exocarpos aphyllus* shrubs over isolated low *Acacia erinacea*, *Eremophila parvifolia* subsp. *auricampa* and *Olearia muelleri* shrubs.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing, livestock tracks,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	35
Shrub cover (%)	4	**Grass cover (%**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (13)	Status	Cover (%)	Height (m)
Eucalyptus lesouefii		30	11
Eremophila interstans subsp. *interstans*		2	4
Exocarpos aphyllus		2	2.5
Senna artemisioides subsp. *filifolia*		1	1.5
Olearia muelleri		1	0.4
Eremophila scoparia		0.5	2.5
Atriplex nummularia subsp. *spathulata*		0.5	0.6
Acacia erinacea		0.5	0.6
Eremophila parvifolia subsp. *auricampa*		0.2	0.5
Eremophila glabra subsp. *glabra*		0.1	1.4
Maireana pentatropis		0.1	0.3
Scaevola spinescens		0.1	0.2
Maireana georgei		0.1	0.2

Site details			
Site	**KCG029**	**Position (WGS84)**	-30.772776, 121.565578
Slope	gentle	**Topography**	undulating plain
Soil colour	red-brown	**Soil texture**	sandy loam
Rock cover (%)	20	**Rock type**	ferrous - ironstone

Observation details - visit 1 (06 Oct 2021)			
Sample description	Mid *Eucalyptus salmonophloia* and *E. transcontinentalis* woodland over mid sparce *Atriplex nummularia* subsp. *spathulata*, *Acacia hemiteles* and *Eremophila scoparia* shrubland over isolated low *Eremophila parvifolia* subsp. *auricampa, Olearia muelleri* and *Ptilotus obovatus* shrubs.		
Habitat	woodland		
Disturbance	historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	25	**Grass cover (%**	0
Herb cover (%)	0.1		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (19)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		10	15
Eucalyptus transcontinentalis		10	13
Eremophila scoparia		8	1.8
Acacia hemiteles		6	1.5
Senna artemisioides subsp. *filifolia*		2	1.5
Atriplex nummularia subsp. *spathulata*		2	1.5
Olearia muelleri		2	0.5
Ptilotus obovatus		1	0.5
Scaevola spinescens		0.5	0.5
Eremophila parvifolia subsp. *auricampa*		0.5	0.2
Amyema preissii		0.1	1.2
Marsdenia australis		0.1	0.8
Eremophila oblonga		0.1	0.8
Eremophila glabra subsp. *glabra*		0.1	0.5
Maireana georgei		0.1	0.3
Maireana triptera		0.1	0.2
Austrostipa nitida		0.1	0.2
Maireana trichoptera		0.1	0.1
Sclerolaena cuneata		0.1	0.05

Site details			
Site	**KCG030**	**Position (WGS84)**	-30.773901, 121.569979
Slope	gentle	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (06 Oct 2021)	
Sample description	Mid *Eucalyptus ravida* and *E. celastroides* subsp. *celastroides* woodland over tall open *Exocarpos aphyllus* and *Acacia tetragonophylla* shrubland over low sparse *Lycium australe*, *Ptilotus obovatus* and *Scaevola spinescens* shrubland.

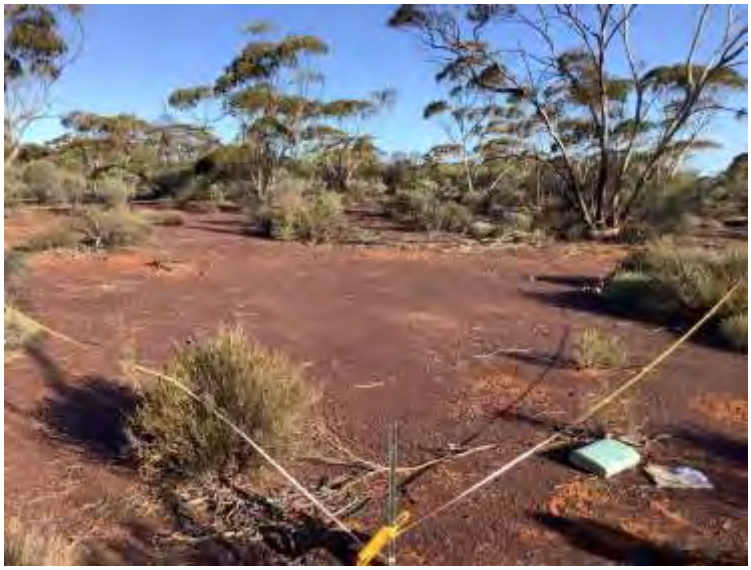
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing, vehicle tracks,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	20
Shrub cover (%)	20	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (24)	Status	Cover (%)	Height (m)
Senna artemisioides subsp. *filifolia*		12	1.8
Eucalyptus celastroides subsp. *celastroides*		10	10
Exocarpos aphyllus		6	3.5
Eucalyptus ravida		2	10
Lycium australe		2	0.8
Ptilotus obovatus		2	0.5
Scaevola spinescens		1	0.8
Rhagodia drummondii		1	0.5
Enchylaena tomentosa var. *tomentosa*		0.5	0.5
Eremophila scoparia		0.2	1.6
Acacia erinacea		0.2	1
Olearia muelleri		0.2	0.3
Acacia tetragonophylla		0.1	2.5
Pittosporum angustifolium		0.1	1.8
Senna cardiosperma		0.1	1.1
Marsdenia australis		0.1	1
Pimelea microcephala		0.1	1
Eremophila decipiens subsp. *decipiens*		0.1	0.5
Maireana georgei		0.1	0.3
Maireana triptera		0.1	0.2
Ptilotus exaltatus		0.1	0.2
Maireana trichoptera		0.1	0.2
**Oligocarpus calendulaceus*	Weed	0.1	0.1
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KCG031**	**Position (WGS84)**	-30.775998, 121.571092
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	90	**Rock type**	ferrous - ironstone

Observation details - visit 1 (06 Oct 2021)			
Sample description	Mid *Eucalyptus oleosa subsp. oleosa* and *E. griffithsii* woodland over mid sparse *Acacia hemiteles*, *A. erinacea* and *Senna artemisioides* subsp. *filifolia* shrubland over isolated low *Triodia scariosa* hummock grasses.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	20
Shrub cover (%)	7	**Grass cover (%**	3
Herb cover (%)	0		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	06-Oct-2021	50m x 50m	Grant Wells

Species (16)	Status	Cover (%)	Height (m)
Eucalyptus oleosa subsp. *oleosa*		20	11
Senna artemisioides subsp. *filifolia*		4	1.5
Triodia scariosa		3	0.3
Westringia rigida		2	0.5
Santalum spicatum		1	2.5
Scaevola spinescens		1	1
Acacia hemiteles		1	1
Acacia erinacea		1	1
Halgania andromedifolia		0.5	1.1
Eremophila parvifolia subsp. *auricampa*		0.2	0.3
Eucalyptus griffithsii		0.1	11
Westringia rigida		0.1	0.6
Solanum nummularium		0.1	0.3
Maireana trichoptera		0.1	0.2
Maireana georgei		0.1	0.2
Roepera ovata		0.1	0.1

Site details			
Site	**KCG032**	**Position (WGS84)**	-30.766689, 121.564762
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	60	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (07 Oct 2021)			
Sample description	Low open *Casuarina pauper* woodland over tall open *Acacia burkittii*, *Grevillea nematophylla* subsp. *nematophylla* and *Acacia tetragonophylla* shrubland over mid open *Dodonaea lobulata, Acacia erinacea* and *Senna artemisioides* subsp. *filifolia* shrubland.		
Habitat	open woodland		
Disturbance	evidence of feral animals, historic clearing, vehicle tracks,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	55	**Tree cover (%)**	45
Shrub cover (%)	15	**Grass cover (%**	0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07-Oct-2021	50m x 50m	Grant Wells

Species (15)	Status	Cover (%)	Height (m)
Grevillea nematophylla subsp. *nematophylla*		10	4.5
Casuarina pauper		8	5
Acacia burkittii		5	3
Scaevola spinescens		3	0.8
Acacia tetragonophylla		2	2.8
Dodonaea lobulata		2	1.4
Westringia rigida		2	0.6
Eremophila oppositifolia subsp. *oppositifolia*		1	2.5
Senna artemisioides subsp. *filifolia*		1	1.5
Acacia erinacea		1	1.2
Acacia hemiteles		0.5	1
Amyema linophylla subsp. *linophylla*		0.1	4
Amyema gibberula var. *gibberula*		0.1	3
Alyxia buxifolia		0.1	2
Olearia muelleri		0.1	0.5

Site details			
Site	**KCG033**	**Position (WGS84)**	-30.762434, 121.573194
Slope	moderate	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sand, sandy clay, sandy loam
Rock cover (%)	2	**Rock type**	ferrous - ironstone quartz siltstone / mudstone

Observation details - visit 1 (07 Oct 2021)			
Sample description	Mid open *Casuarina pauper* woodland over tall *Acacia burkittii*, *A. tetragonophylla* and *Eremophila oldfieldii* subsp. *angustifolia* shrubland over mid open *Eremophila metallicorum, Eremophila alternifolia* and *Scaevola spinescens* shrubland.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	35	**Tree cover (%)**	15
Shrub cover (%)	20	**Grass cover (%**	0
Herb cover (%)	0		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07-Oct-2021	50m x 50m	Grant Wells

Species (24)	Status	Cover (%)	Height (m)
Acacia burkittii		20	4
Eremophila oldfieldii subsp. *angustifolia*		10	4
Casuarina pauper		5	12
Acacia tetragonophylla		5	4
Santalum spicatum		5	4
Eremophila alternifolia		5	2
Eremophila metallicorum		5	1.5
Scaevola spinescens		3	1
Dodonaea lobulata		2	2.5
Senna artemisioides subsp. *filifolia*		2	1.5
Atriplex nummularia subsp. *spathulata*		1	1.5
Eremophila glabra subsp. *glabra*		1	1.2
Eremophila decipiens subsp. *decipiens*		1	1.2
Olearia muelleri		1	1
Ptilotus obovatus		1	0.5
Exocarpos aphyllus		0.5	1.5
Maireana triptera		0.5	0.3
Alectryon oleifolius		0.1	2
Marsdenia australis		0.1	1.5
Rhagodia drummondii		0.1	1.5
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Maireana georgei		0.1	0.3
Sclerolaena diacantha		0.1	0.2
Maireana trichoptera		0.1	0.1

Site details			
Site	**KCG034**	**Position (WGS84)**	-30.763951, 121.573965
Slope	gentle	**Topography**	hill slope
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	30	**Rock type**	ferrous - ironstone quartz

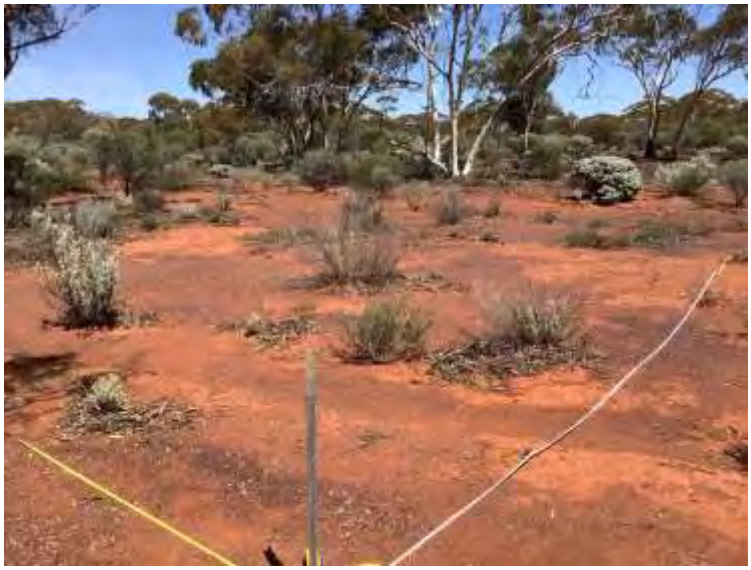
Observation details - visit 1 (07 Oct 2021)			
Sample description	Low *Eucalyptus griffithsii* woodland over tall open *Acacia burkittii*, *Casuarina pauper* and *Eremophila oldfieldii* subsp. *angustifolia* shrubland over mid open *Dodonaea lobulata, Acacia tetragonophylla* and *Scaevola spinescens* shrubland.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	10
Shrub cover (%)	25	**Grass cover (%**	0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07-Oct-2021	50m x 50m	Grant Wells

Species (18)	Status	Cover (%)	Height (m)
Eucalyptus griffithsii		10	9
Acacia burkittii		10	3.5
Dodonaea lobulata		6	1.4
Scaevola spinescens		5	1.2
Westringia rigida		2	0.6
Atriplex nummularia subsp. *spathulata*		1	1.5
Acacia tetragonophylla		1	1.2
Eremophila oldfieldii subsp. *angustifolia*		0.2	2
Acacia erinacea		0.2	0.6
Alectryon oleifolius		0.1	3
Casuarina pauper		0.1	3
Austrostipa elegantissima		0.1	1.2
Eremophila interstans subsp. *interstans*		0.1	1.2
Senna artemisioides subsp. *filifolia*		0.1	1
Eremophila metallicorum		0.1	0.8
Marsdenia australis		0.1	0.6
Ptilotus obovatus		0.1	0.3
Eremophila parvifolia subsp. *auricampa*		0.1	0.25

Site details			
Site	**KCG035**	**Position (WGS84)**	-30.767878, 121.571402
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sand, sandy clay, sandy loam
Rock cover (%)	5	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (07 Oct 2021)			
Sample description	Mid *Eucalyptus celastroides* subsp. *celastroides*, *E. griffithsii* and *E. planipes* woodland over isolated mid *Eremophila oldfieldii* subsp. *angustifolia*, *Senna artemisioides* subsp. *filifolia* and *S. cardiosperma* shrubs over isolated low *Atriplex vesicaria, Maireana triptera* and *Olearia muelleri* shrubs.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
Total veg. cover (%)	25	**Tree cover (%)**	20
Shrub cover (%)	6	**Grass cover (%**	0
Herb cover (%)	0.1		



Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Quadrat	1	07-Oct-2021	50m x 50m	Grant Wells

Species (21)	Status	Cover (%)	Height (m)
Eucalyptus celastroides subsp. *celastroides*		15	10
Eucalyptus griffithsii		5	8
Eremophila oldfieldii subsp. *angustifolia*		1	1.5
Senna artemisioides subsp. *filifolia*		1	1.2
Atriplex vesicaria		1	0.5
Eremophila scoparia		0.5	1.5
Acacia hemiteles		0.5	1.2
Senna cardiosperma		0.5	1.2
Cratystylis conocephala		0.5	1.1
Scaevola spinescens		0.5	0.5
Maireana triptera		0.5	0.2
Eucalyptus planipes		0.1	15
Eremophila glabra subsp. *glabra*		0.1	0.9
Atriplex nummularia subsp. *spathulata*		0.1	0.8
Acacia erinacea		0.1	0.4
Olearia muelleri		0.1	0.4
Maireana convexa		0.1	0.2
Maireana georgei		0.1	0.2
Sclerolaena diacantha		0.1	0.1
Maireana trichoptera		0.1	0.1
Eriochiton sclerolaenoides		0.1	0.1

Site details			
Site	**KCG036**	**Position (WGS84)**	-30.777905, 121.567257
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange, whitish	**Soil texture**	sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone

Observation details - visit 1 (07 Oct 2021)			
Sample description	Mid *Eucalyptus lesouefii* and *E. oleosa* woodland over mid open *Cratystylis conocephala*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over isolated low *Eremophila parvifolia* subsp. *auricampa, Atriplex vesicaria* and *Acacia erinacea* shrubs.		
Habitat	woodland		
Disturbance	evidence of feral animals, historic clearing,		
Vegetation condition	Very Good	**Fire age**	not evident
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-Oct-2021	50m x 50m	Grant Wells

Species (16)	Status	Cover (%)	Height (m)
Cratystylis conocephala		25	1.1
Eucalyptus lesouefii		18	12
Eucalyptus oleosa subsp. *oleosa*		7	10
Eremophila parvifolia subsp. *auricampa*		2	0.4
Senna artemisioides subsp. *filifolia*		1	1.5
Eremophila scoparia		0.2	1.8
Acacia hemiteles		0.2	1.2
Atriplex vesicaria		0.2	0.4
Casuarina pauper		0.1	2.2
Atriplex nummularia subsp. *spathulata*		0.1	0.6
Maireana sedifolia		0.1	0.4
Acacia erinacea		0.1	0.4
Maireana convexa		0.1	0.2
Olearia muelleri		0.1	0.2
Roepera reticulata		0.1	0.2
Sclerolaena diacantha		0.1	0.1

Site details			
Site	**KCG037**	**Position (WGS84)**	-30.743379, 121.558052
Slope	negligible	**Topography**	plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	1	**Rock type**	ferrous - ironstone quartz

Observation details - visit 1 (07 Oct 2021)			
Sample description	Mid *Eucalyptus celastroides* subsp. *celastroides* mallee woodland over isolated mid *Maireana pyramidata*, *Eremophila scoparia* and *E. glabra* subsp. *glabra* shrubs over low sparse *Maireana triptera, Maireana trichoptera* and *Ptilotus obovatus* shrubland.		
Habitat	mallee woodland		
Disturbance	evidence of feral animals, grazing-low, historic clearing, large-scale clearing, litter, vehicle tracks, weed infestation,		
Vegetation condition	Poor	**Fire age**	not evident
Total veg. cover (%)	30	**Tree cover (%)**	25
Shrub cover (%)	10	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	07-Oct-2021	50m x 50m	Grant Wells

Species (14)	Status	Cover (%)	Height (m)
Eucalyptus celastroides subsp. *celastroides*		25	5
Maireana triptera		5	0.2
Maireana pyramidata		2	1.2
Ptilotus obovatus		1	0.25
Eremophila glabra subsp. *glabra*		0.5	1.4
Eremophila scoparia		0.2	1.2
Maireana trichoptera		0.2	0.15
Maireana glomerifolia		0.1	0.4
Maireana sedifolia		0.1	0.3
Maireana georgei		0.1	0.3
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Atriplex vesicaria		0.1	0.3
**Carrichtera annua*	Weed	0.1	0.25
Eriochiton sclerolaenoides		0.1	0.1

Site details			
Site	**KCG038**	**Position (WGS84)**	-30.744334, 121.567247
Slope	gentle	**Topography**	undulating plain
Soil colour	red-orange	**Soil texture**	sandy loam
Rock cover (%)	0	**Rock type**	None

Observation details - visit 1 (07 Oct 2021)			
Sample description	Mid *Eucalyptus griffithsii* and *E. lesouefii* woodland over tall open *Eremophila interstans* subsp. *interstans* and *Santalum acuminatum* shrubland over mid *Atriplex nummularia* subsp. *spathulata, Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland.		
Habitat	woodland		
Disturbance	evidence of feral animals, excavation, historic clearing, litter, vehicle tracks,		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	40	**Tree cover (%)**	25
Shrub cover (%)	20	**Grass cover (%**	0
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	07-Oct-2021	Unbounded	Grant Wells

Species (18)	Status	Cover (%)	Height (m)
Eucalyptus griffithsii		15	20
Eucalyptus lesouefii		10	15
Eremophila interstans subsp. *interstans*		6	2
Senna artemisioides subsp. *filifolia*		4	1.8
Atriplex vesicaria		3	0.5
Atriplex nummularia subsp. *spathulata*		2	1.6
Eremophila scoparia		2	1.2
Exocarpos aphyllus		1	2.5
Santalum acuminatum		1	2
Cratystylis conocephala		0.5	1.2
Scaevola spinescens		0.5	1
Eremophila parvifolia subsp. *auricampa*		0.2	0.3
Dodonaea lobulata		0.1	1.5
Eremophila glabra subsp. *glabra*		0.1	1.2
Maireana sedifolia		0.1	1
Acacia erinacea		0.1	1
Olearia muelleri		0.1	0.3
Austrostipa nitida		0.1	0.1

Site details			
Site	**KCG039**	**Position (WGS84)**	-30.746236, 121.57014
Slope	moderate	**Topography**	drainage line
Soil colour	red-orange	**Soil texture**	sand, sandy clay, sandy loam
Rock cover (%)	0	**Rock type**	ferrous - ironstone quartz sandstone, siltstone / mudstone

Observation details - visit 1 (07 Oct 2021)			
Sample description	Tall *Eucalyptus salmonophloia* woodland over mid *Acacia hemiteles, Atriplex nummularia* subsp. *spathulata* and *Senna artemisioides* subsp. *filifolia* shrubland over low isolated *Atriplex vesicaria, Cratystylis conocephala* and *Maireana triptera* shrubs.		
Habitat	woodland		
Disturbance	evidence of feral animals, grazing-low, historic clearing, weed infestation,		
Vegetation condition	Good	**Fire age**	not evident
Total veg. cover (%)	60	**Tree cover (%)**	40
Shrub cover (%)	30	**Grass cover (%**	0.1
Herb cover (%)	0.1		

Sample and effort summary				
Sample method	**Visit**	**Sample date**	**Dimensions**	**Observer**
Relevé	1	07-Oct-2021	Unbounded	Grant Wells

Species (23)	Status	Cover (%)	Height (m)
Eucalyptus salmonophloia		40	35
Acacia hemiteles		15	1.8
Senna artemisioides subsp. *filifolia*		10	1.8
Eucalyptus griffithsii		5	15
Atriplex nummularia subsp. *spathulata*		5	1.6
Eremophila scoparia		2	1.7
Atriplex vesicaria		2	0.5
Cratystylis conocephala		1	0.8
**Oligocarpus calendulaceus*	Weed	1	0.2
Santalum spicatum		0.5	2
Eremophila glabra subsp. *glabra*		0.5	1.2
Exocarpos aphyllus		0.2	1.5
Ptilotus obovatus		0.2	1.2
Pimelea microcephala		0.2	1
Maireana triptera		0.2	0.3
Eremophila metallicorum		0.1	1.5
Acacia jennerae		0.1	1.2
Lycium australe		0.1	1
Scaevola spinescens		0.1	0.5
Maireana georgei		0.1	0.4
Ptilotus exaltatus		0.1	0.4
Enchylaena tomentosa var. *tomentosa*		0.1	0.3
Maireana trichoptera		0.1	0.2

Site:	MDE006	**Type:**	Relevé (unbounded)
Date(s):	06 September 2017	**Position:**	-30.799318, 121.578257
Total vegetation cover (%):	65	**Topography:**	plain
Tree/shrub cover >2 m (%):	50	**Soil colour:**	red-brown
Shrub cover <2 m (%):	20	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0	**Fire age:**	not evident
Disturbance details:	vehicle tracks		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Eucalyptus salmonophloia* and *E. salubris* woodland over tall open *Eremophila scoparia* shrubland over low open *Atriplex* sp., *Acacia hemiteles* and *Senna artemisioides* subsp. *filifolia* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salmonophloia	30.0	12.00		
Eremophila scoparia	20.0	02.30		
Eucalyptus salubris	10.0	08.00		
Atriplex sp.1	10.0	00.70		
Senna artemisioides subsp. *filifolia*	05.0	01.20		
Acacia hemiteles	05.0	00.80		
Eremophila parvifolia subsp. *auricampa*	03.0	00.40		
Maireana planifolia	02.0	00.30		
Exocarpos aphyllus	01.0	02.20		

Site:	MDE007	**Type:**	Quadrat (50 m x 50 m)
Date(s):	07 September 2017	**Position:**	-30.788223, 121.55105
Total vegetation cover (%):	55	**Topography:**	plain
Tree/shrub cover >2 m (%):	30	**Soil colour:**	red-brown
Shrub cover <2 m (%):	35	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0.1	**Fire age:**	not evident
Disturbance details:	historic operations		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Eucalyptus lesouefii* woodland over mid *Cratystylis conocephala*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Exocarpos aphyllus* and *Olearia muelleri* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus lesouefii	30.0	12.00		
Cratystylis conocephala	15.0	01.20		
Eremophila scoparia	10.0	01.50		
Senna artemisioides subsp. *filifolia*	05.0	01.50		
Exocarpos aphyllus	05.0	00.90		
Olearia muelleri	02.0	00.40		
Ptilotus sp. Goldfields (R. Davis 10796)	00.1	00.20		

Site:	MDE008	**Type:**	Relevé (unbounded)
Date(s):	06 September 2017	**Position:**	-30.789322, 121.566183
Total vegetation cover (%):	70	**Topography:**	plain
Tree/shrub cover >2 m (%):	40	**Soil colour:**	red-brown
Shrub cover <2 m (%):	40	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0.1	**Fire age:**	not evident
Disturbance details:	none		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Eucalyptus salmonophloia* woodland over tall open *Eremophila scoparia* shrubland over mid *Acacia hemiteles*, *Eremophila ionantha* and *Senna artemisioides* subsp. *filifolia* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salmonophloia	30.0	12.00		
Acacia hemiteles	25.0	01.50		
Eremophila scoparia	15.0	02.20		
Senna artemisioides subsp. *filifolia*	10.0	01.80		
Eremophila ionantha	05.0	01.20		
Atriplex sp.2	03.0	00.60		
Maireana triptera	03.0	00.40		
Acacia acuminata	01.0	00.90		
Ptilotus sp. Goldfields (R. Davis 10796)	00.1	00.10		

Site:	MDE010	**Type:**	Relevé (unbounded)
Date(s):	06 September 2017	**Position:**	-30.783366, 121.554888
Total vegetation cover (%):	75	**Topography:**	plain
Tree/shrub cover >2 m (%):	30	**Soil colour:**	red-brown
Shrub cover <2 m (%):	60	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0.3	**Fire age:**	not evident
Disturbance details:	historic clearing		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Casuarina pauper* and *Eucalyptus salmonophloia* woodland over mid *Acacia hemiteles*, *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Atriplex* sp., *Maireana triptera* and *Ptilotus obovatus* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eremophila scoparia	30.0	01.80		
Eucalyptus salmonophloia	20.0	15.00		
Acacia hemiteles	15.0	01.50		
Casuarina pauper	10.0	10.00		
Senna artemisioides subsp. *filifolia*	05.0	01.50		
Atriplex sp.1	05.0	00.60		
Ptilotus obovatus	05.0	00.30		
Maireana triptera	03.0	04.00		
Eremophila ionantha	02.0	01.20		
Acacia acuminata	01.0	02.00		
Ptilotus sp. Goldfields (R. Davis 10796)	00.1	00.10		
Rhodanthe floribunda	00.1	00.10		
Ptilotus carlsonii	00.1	00.10		

Site:	MDE012	**Type:**	Quadrat (50 m x 50 m)
Date(s):	07 September 2017	**Position:**	-30.776979, 121.547121
Total vegetation cover (%):	70	**Topography:**	plain
Tree/shrub cover >2 m (%):	35	**Soil colour:**	red-brown
Shrub cover <2 m (%):	45	**Soil:**	clay loam
Grass cover (%):	0.1	**Rock type:**	not recorded
Herb cover (%):	0.1	**Fire age:**	not evident
Disturbance details:	none		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Eucalyptus salmonophloia* woodland over tall open *Eremophila scoparia* and *Exocarpos aphyllus* shrubland over mid open *Atriplex nummularia*, *Eremophila caperata* and *Senna artemisioides* subsp. *filifolia* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salmonophloia	30.0	15.00		
Eremophila parvifolia subsp. *auricampa*	15.0	00.50		
Eremophila scoparia	10.0	02.50		
Senna artemisioides subsp. *filifolia*	10.0	01.50		
Eremophila caperata	05.0	01.80		
Atriplex nummularia	05.0	01.50		
Exocarpos aphyllus	01.0	02.20		
Acacia hemiteles	01.0	01.20		
Scaevola spinescens	00.1	00.40		
Acacia nyssophylla	00.1	00.40		
Austrostipa nitida	00.1	00.40		
Maireana triptera	00.1	00.20		
Ptilotus sp. Goldfields (R. Davis 10796)	00.1	00.20		

Site:	MDE017	**Type:**	Relevé (unbounded)
Date(s):	07 September 2017	**Position:**	-30.753408, 121.530094
Total vegetation cover (%):	95	**Topography:**	plain
Tree/shrub cover >2 m (%):	0	**Soil colour:**	red-brown
Shrub cover <2 m (%):	95	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	1	**Fire age:**	not evident
Disturbance details:	historic operations, historic clearing, weed infestation		
Vegetation condition:	Good, EPA (2016)		
Vegetation description:	Low closed *Maireana brevifolia* shrubland with occasional *Atriplex amnicola* shrubs over isolated low **Echium plantagineum* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Maireana brevifolia	95.0	00.60		
Atriplex amnicola	01.0	00.50		
Echium plantagineum	01.0	00.30	*	

Site:	MDE020A	**Type:**	Quadrat (20 m x 20 m)
Date(s):	11 November 2017	**Position:**	-30.714269, 121.487287
Total vegetation cover (%):	50	**Topography:**	plain
Tree/shrub cover >2 m (%):	20	**Soil colour:**	red-orange,
Shrub cover <2 m (%):	30	**Soil:**	clay loam,
Grass cover (%):	0.1	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	not evident

Disturbance details: historic clearing, historic operations, litter, vehicle tracks,

Vegetation condition: Very Good, EPA (2016)

Vegetation description: Mid *Eucalyptus lesouefii* and *E. salubris* woodland over mid open *Senna artemisioides* subsp *filifolia*, *S. artemisioide*s subsp x *artemisioides* and *Eremophila scoparia* shrubland over low open *Maireana sedifolia* and *M. pyramidata* shrubland.

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salubris	10.0	15.00		
Maireana sedifolia	10.0	00.90		
Eucalyptus lesouefii	10.0	15.00		
Maireana pyramidata	05.0	00.90		
Senna artemisioides subsp. x *artemisioides*	04.0	01.50		
Senna artemisioides subsp. *filifolia*	03.0	01.50		
Eremophila scoparia	03.0	01.80		
Maireana triptera	01.0	00.30		
Atriplex vesicaria	01.0	00.40		
Rhagodia eremaea	01.0	00.50		
Exocarpos aphyllus	01.0	01.80		
Eremophila interstans subsp. *interstans*	01.0	04.00		
Eremophila alternifolia	01.0	01.80		
Sclerolaena diacantha	00.1	00.10		
Eremophila decipiens	00.1	00.70		
Atriplex semibaccata	00.1	00.25		
Austrostipa elegantissima	00.1	00.30		
Pimelea microcephala	00.1	01.30		
Scaevola spinescens	00.1	00.50		

Site:	MDE023	**Type:**	Relevé (unbounded)
Date(s):	06 September 2017	**Position:**	-30.81013, 121.57732
Total vegetation cover (%):	25	**Topography:**	plain
Tree/shrub cover >2 m (%):	15	**Soil colour:**	red-brown
Shrub cover <2 m (%):	15	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0	**Fire age:**	not evident
Disturbance details:	none		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid open *Casuarina pauper* woodland over tall open *Acacia acuminata*, *Eremophila scoparia* and *Exocarpos aphyllus* shrubland over mid open *Acacia hemiteles*, *Senna artemisioides* subsp. *filifolia* and *Acacia nyssophylla* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Casuarina pauper	10.0	12.00		
Acacia acuminata	05.0	02.00		
Senna artemisioides subsp. *filifolia*	05.0	01.50		
Acacia hemiteles	05.0	01.50		
Eremophila scoparia	03.0	02.20		
Olearia muelleri	03.0	00.40		
Exocarpos aphyllus	01.0	02.20		
Acacia nyssophylla	01.0	00.60		

Site:	MDE026	**Type:**	Relevé (unbounded)
Date(s):	07 September 2017	**Position:**	-30.780571, 121.541938
Total vegetation cover (%):	95	**Topography:**	plain
Tree/shrub cover >2 m (%):	0	**Soil colour:**	red-brown
Shrub cover <2 m (%):	90	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	5	**Fire age:**	not evident
Disturbance details:	historic clearing, weed infestation		
Vegetation condition:	Good, EPA (2016)		
Vegetation description:	Closed mid *Acacia hemiteles* shrubland over sparse low **Echium plantagineum* and **Monoculus monstrosus* forbland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Acacia hemiteles	90.0	01.50		
Monoculus monstrosus	05.0	00.10	*	
Echium plantagineum	01.0	00.40	*	

Site:	MDE027	**Type:**	Relevé (unbounded)
Date(s):	07 September 2017	**Position:**	-30.779735, 121.543885
Total vegetation cover (%):	55	**Topography:**	plain
Tree/shrub cover >2 m (%):	15	**Soil colour:**	red-brown
Shrub cover <2 m (%):	35	**Soil:**	clay loam
Grass cover (%):	0.1	**Rock type:**	not recorded
Herb cover (%):	5	**Fire age:**	not evident
Disturbance details:	none		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Tall open *Eremophila scoparia* shrubland over mid open *Acacia nyssophylla* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Eremophila caperata*, *Rhagodia drummondii* and *Scaevola spinescens* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eremophila scoparia	15.0	02.30		
Senna artemisioides subsp. *filifolia*	10.0	01.50		
Rhagodia drummondii	10.0	00.90		
Acacia nyssophylla	05.0	01.20		
Scaevola spinescens	05.0	00.90		
Eremophila caperata	05.0	00.70		
Sclerolaena diacantha	05.0	00.20		
Maireana thesioides	00.1	00.50		
Austrostipa nitida	00.1	00.50		

Site:	MDE028	**Type:**	Relevé (unbounded)
Date(s):	07 September 2017	**Position:**	-30.769406, 121.537506
Total vegetation cover (%):	70	**Topography:**	drainage line
Tree/shrub cover >2 m (%):	40	**Soil colour:**	red-brown
Shrub cover <2 m (%):	30	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	5	**Fire age:**	not evident
Disturbance details:	historic operations, weed infestation		
Vegetation condition:	Very Good, EPA (2016)		
Vegetation description:	Tall *Acacia hemiteles, Eremophila longifolia* and *E. scoparia* shrubland over mid open *Senna artemisioides* subsp. *filifolia* shrubland over low open *Cratystylis conocephala* and *Eremophila ionantha* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Acacia hemiteles	35.0	02.50		
Senna artemisioides subsp. *filifolia*	15.0	01.90		
Eremophila longifolia	05.0	03.50		
Cratystylis conocephala	05.0	00.60		
Eremophila ionantha	05.0	00.50		
Monoculus monstrosus	05.0	00.10	*	
Eremophila scoparia	02.0	02.20		
Echium plantagineum	01.0	00.40	*	
Lysimachia arvensis	01.0	00.10	*	

Site:	MDE029	**Type:**	Relevé (unbounded)
Date(s):	07 September 2017	**Position:**	-30.766444, 121.544555
Total vegetation cover (%):	65	**Topography:**	plain
Tree/shrub cover >2 m (%):	30	**Soil colour:**	red-brown
Shrub cover <2 m (%):	35	**Soil:**	clay loam
Grass cover (%):	0	**Rock type:**	not recorded
Herb cover (%):	0	**Fire age:**	not evident
Disturbance details:	historic operations		
Vegetation condition:	Excellent, EPA (2016)		
Vegetation description:	Mid *Eucalyptus lesouefii* woodland over mid *Eremophila scoparia , Cratystylis conocephala* and *Senna artemisioides* subsp*. filifolia* shrubland over low open *Olearia muelleri*, *Exocarpos aphyllus* and *Scaevola spinescens* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus lesouefii	30.0	12.00		
Cratystylis conocephala	20.0	01.20		
Eremophila scoparia	15.0	01.50		
Senna artemisioides subsp. *filifolia*	10.0	01.20		
Olearia muelleri	05.0	00.50		
Exocarpos aphyllus	00.1	00.50		
Scaevola spinescens	00.1	00.40		

Site:	MDE032	**Type:**	Quadrat (20 m x 20 m)
Date(s):	11 November 2017	**Position:**	-30.717427, 121.493789
Total vegetation cover (%):	35	**Topography:**	plain
Tree/shrub cover >2 m (%):	20	**Soil colour:**	red-orange,
Shrub cover <2 m (%):	20	**Soil:**	clay loam,
Grass cover (%):	0.1	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	not evident

Disturbance details: evidence of feral animals, historic clearing, large-scale clearing, litter, vehicle tracks,

Vegetation condition: Very Good, EPA (2016)

Vegetation description: Low *Eucalyptus lesouefii* and *E. transcontinentalis* woodland over sparse mid *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* shrubland over low open *Atriplex stipitata*, *Acacia nyssophylla* and *Maireana sedifolia* shrubland.

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus lesouefii	15.0	08.00		
Acacia nyssophylla	05.0	00.50		
Atriplex stipitata	05.0	00.40		
Eucalyptus transcontinentalis	05.0	07.00		
Eremophila scoparia	04.0	02.00		
Senna artemisioides subsp. *filifolia*	02.0	01.40		
Maireana triptera	01.0	00.30		
Maireana sedifolia	01.0	00.60		
Maireana pyramidata	01.0	00.80		
Cratystylis subspinescens	00.5	00.70		
Cratystylis conocephala	00.5	00.80		
Eremophila oldfieldii	00.1	01.20		
Enneapogon caerulescens	00.1	00.15		
Enteropogon ramosus	00.1	00.15		
Austrostipa nitida	00.1	00.15		
Eremophila glabra subsp. *glabra*	00.1	00.70		
Lycium australe	00.1	00.50		
Maireana trichoptera	00.1	00.15		

Eremophila parvifolia subsp. *auricampa*	00.1	00.50
Sclerolaena diacantha	00.1	00.15
Ptilotus nobilis	00.1	00.10

Site:	MDE046	**Type:**	Quadrat (20 m x 20 m)
Date(s):	10 November 2017	**Position:**	-30.7818, 121.564492
Total vegetation cover (%):	40	**Topography:**	plain
Tree/shrub cover >2 m (%):	25	**Soil colour:**	red-orange,
Shrub cover <2 m (%):	25	**Soil:**	sandy loam,
Grass cover (%):	0	**Rock type:**	none
Herb cover (%):	0	**Fire age:**	not evident

Disturbance details: evidence of feral animals, historic clearing, historic operations,

Vegetation condition: Very Good, EPA (2016)

Vegetation description: Mid *Eucalyptus salmonophloia* woodland over tall sparse *Exocarpos aphyllus* and *Alectryon oleifolius* shrubland over mid open *Eremophila scoparia*, *Acacia hemiteles* and *Senna artemisioides* subsp. *filifolia* shrubland.

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salmonophloia	20.0	20.00		
Senna artemisioides subsp. *filifolia*	15.0	01.50		
Acacia hemiteles	05.0	01.50		
Eremophila scoparia	05.0	02.50		
Exocarpos aphyllus	02.0	03.00		
Alectryon oleifolius	02.0	03.00		
Maireana trichoptera	01.0	00.15		
Maireana triptera	00.1	00.25		
Maireana georgei	00.1	00.40		
Ptilotus holosericeus	00.1	00.01		
Scaevola spinescens	00.1	00.30		
Maireana sedifolia	00.1	01.20		
Sclerolaena diacantha	00.1	00.10		
Atriplex vesicaria	00.1	00.40		
Rhagodia spinescens	00.1	00.40		
Olearia muelleri	00.1	00.15		
Sclerolaena patenticuspis	00.1	00.20		

Site:	MDER01	**Type:**	Relevé (unbounded)
Date(s):	10 November 2017	**Position:**	-30.783121, 121.564121
Total vegetation cover (%):	90	**Topography:**	seasonally wet area
Tree/shrub cover >2 m (%):	75	**Soil colour:**	red-orange,
Shrub cover <2 m (%):	60	**Soil:**	sandy clay, sandy loam,
Grass cover (%):	0	**Rock type:**	none
Herb cover (%):	0	**Fire age:**	not evident
Disturbance details:	historic clearing,		
Vegetation condition:	Very Good, EPA (2016)		
Vegetation description:	Low *Eucalyptus salubris* forest over mid *Eremophila ionantha* and *Senna artemisioides* subsp. *filifolia* shrubland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus salubris	75.0	08.00		
Eremophila ionantha	40.0	01.70		
Senna artemisioides subsp. *filifolia*	20.0	01.50		
Atriplex amnicola	00.1	00.50		
Eremophila scoparia	00.1	01.80		
Acacia nyssophylla	00.1	01.80		

Appendix 9: Datasheets from the Quadrat Flora Survey Autumn 2015

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 1	
Quadrat size: 20x20		
WP: 5	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 6/7/8		
Landform: Flat/Bottom third/Valley plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Very slightly, very few (<2%)/Medium gravelly; medium pebbles (6-20mm)/Subangular		
Rock outcrop (abundance/runoff): No bedrock exposed/Very rapid		
Soil (profile/field texture/soil surface): Red/Uniform/Heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 40		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus stricklandii	*Eremophila scoparia*	*Atriplex vesicaria*
ALL SPECIES		
Acacia coolgardiensis		
Acacia hemiteles		
Atriplex vesicaria		
Eremophila alternifolia		
Eremophila granitica		
Eremophila scoparia		
Eucalyptus salmonophloia		
Eucalyptus stricklandii		
Exocarpos aphyllus		
Maireana georgei		
Maireana triptera		
Ptilotus obovatus		
Rhagodia eremaea		
Senna artemisioides subsp. *filifolia*		

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 2	
Quadrat size: 20x20		
WP: 8/9	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 12/13/14		
Landform: Simple slope/Bottom third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Very rapid		
Soil (profile/field texture/soil surface): Grey brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Atriplex nummularia* subsp. *spathulata*	*Eremophila parvifolia*

ALL SPECIES
Acacia hemiteles
Atriplex nummularia subsp. *spathulata*
Eremophila parvifolia
Eucalyptus lesouefii
Maireana georgei
Maireana triptera
Scaevola spinescens

Project Name: KCGM TSF Expansion	
Date: 14/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 3
Quadrat size: 20x20	
WP: 10	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*
Photo number: 15/16/17	
Landform: Flat/Bottom third/Valley flat	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 60	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Atriplex nummularia* subsp. *spathulata*	*Maireana triptera*

ALL SPECIES
Ptilotus nobilis
Atriplex nummularia subsp. *spathulata*
Carrichtera annua (W)
Dodonaea lobulata
Eremophila decipiens
Euphorbia drummondii (A)
Eremophila interstans
Eremophila scoparia
Eucalyptus salmonophloia
Exocarpos aphyllus
Lycium australe
Maireana triptera
Marsdenia australis
Rhagodia eremaea
Santalum spicatum
Scaevola spinescens
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 14/05/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 4	
Quadrat size: 20x20		
WP: 12	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*	
Photo number: 18/19/20		
Landform: Simple slope/Middle third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 10		
%Cover bare ground: 90		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Isolated clumps (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia kalgoorliensis*	*Westringia rigida*
ALL SPECIES		
Acacia hemiteles		
Acacia tetragonophylla		
Acacia kalgoorliensis		
Austrostipa elegantissima		
Casuarina pauper		
Eremophila oldfieldii subsp. *angustifolia*		
Grevillea acuaria		
Grevillea nematophylla		
Santalum spicatum		
Scaevola spinescens		
Westringia rigida		

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 5	
Quadrat size: 20x20		
WP: 15	**Vegetation Group:** Low woodland of *Eucalyptus ravida* over low scrub of *Eremophila pustulata/ Eremophila scoparia* and *Atriplex vesicaria*	
Photo number: 21/22/23		
Landform: Simple slope/Bottom third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Coarse gravelly, large pebbles (20-60mm)/Subrounded tabular		
Rock outcrop (abundance/runoff): No bedrock exposed/Slow		
Soil (profile/field texture/soil surface): Light brown/Uniform/Medium clay/Soft		
%Cover leaf litter: 60		
%Cover bare ground: 90		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia kalgoorliensis*	*Olearia muelleri*

ALL SPECIES
Acacia erinacea
Acacia kalgoorliensis
Eremophila decipiens
Eremophila parvifolia
Eucalyptus lesouefii
Maireana pentatropis
Olearia muelleri

Project Name: KCGM TSF Expansion	
Date: 14/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 6
Quadrat size: 20x20	
WP: 17	**Vegetation Group:** Low woodland of *Eucalyptus ravida* over low scrub of *Eremophila pustulata/ Eremophila scoparia* and *Atriplex vesicaria*
Photo number: 24/25/26	
Landform: Flat/Valley flat	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No coarse fragments	
Rock outcrop (abundance/runoff): No bedrock exposed/Rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Medium clay/Firm	
%Cover leaf litter: 70	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila scoparia*	*Maireana pyramidata*

ALL SPECIES
Atriplex nummularia subsp. *spathulata*
Cratystylis microphylla
Chenopodium curvispicatum
Eremophila scoparia
Eucalyptus salmonophloia
Lycium australe
Maireana pyramidata
Olearia muelleri
Pimelea microcephala
Ptilotus obovatus
Ptilotus nobilis
Rhagodia eremaea
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 14/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 7
Quadrat size: 20x20	
WP: 23	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 27/28/29	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/Rounded platy	
Rock outcrop (abundance/runoff): Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Eremophila parvifolia*

ALL SPECIES
Acacia erinacea
Acacia hemiteles
Cratystylis conocephala
Eremophila glabra
Eremophila parvifolia
Eremophila scoparia
Eucalyptus lesouefii
Eucalyptus salmonophloia
Exocarpos aphyllus
Maireana pentatropis
Maireana trichoptera
Olearia muelleri
Scaevola spinescens
Sclerolaena diacantha
Sclerolaena parviflora
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 8	
Quadrat size: 20x20		
WP: 26/25	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over open low scrub of *Exocarpos aphyllus* and open dwarf scrub of *Eremophila parvifolia/Olearia muelleri*	
Photo number: 30/31/32		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Very slighty, very few (<2%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderatly rapid		
Soil (profile/field texture/soil surface): Light brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 30		
%Cover bare ground: 60		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee (>8m)	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Exocarpos aphyllus*	*Cratystylis conocephala*

ALL SPECIES
Acacia hemiteles
Alyxia buxifolia
Atriplex stipitata
Cratystylis conocephala
Eremophila scoparia
Eucalyptus oleosa
Exocarpos aphyllus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Zygophyllum glaucum (A)

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 9	
Quadrat size: 20x20		
WP: 27	**Vegetation Group:** Tree mallee of *Eucalyptus griffithsii* over thicket of *Acacia acuminata* over open dwarf scrub of *Ptilotus obovatus* and open hummock grass of *Triodia irritans*	
Photo number: 33/34/35		
Landform: Simple slope/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Light brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee (>8m)	**Growth form:** Shrub	**Growth form:** Hummock Grass
Height: 6-12m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Senna artemisioides* subsp. *filifolia*	*Triodia irritans*

ALL SPECIES
Acacia acuminata
Acacia erinacea
Acacia hemiteles
Eremophila interstans
Eucalyptus griffithsii
Halgania andromedifolia
Senna artemisioides subsp. *filifolia*
Triodia irritans
Westringia rigida

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 10	
Quadrat size: 20x20		
WP: 30	**Vegetation Group:** Dense low forest of *Eucalyptus ravida* over heath of *Senna artemisioides* subsp. *filifolia/ Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 36/37/38		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No coarse fragments		
Rock outcrop (abundance/runoff): No bedrock exposed/Slow		
Soil (profile/field texture/soil surface): Brown/Medium heavy clay/Soft		
%Cover leaf litter: 70		
%Cover bare ground: 100		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus ravida	*Eremophila scoparia*	*Maireana georgei*

ALL SPECIES
Acacia erinacea
Cratystylis subspinescens
Eremophila scoparia
Eucalyptus celastroides
Eucalyptus ravida
Frankenia setosa
Maireana georgei
Olearia muelleri
Pimelea microcephala
Sclerolaena diacantha
Sclerolaena parviflora
Templetonia ceracea

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 11	
Quadrat size: 20x20		
WP: 34	**Vegetation Group:** Low woodland of *Eucalyptus ravida* over low scrub of *Eremophila pustulata/ Eremophila scoparia* and *Atriplex vesicaria*	
Photo number: 40/41/42		
Landform: Flat/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Light brown/Uniform/Light medium clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Exocarpos aphyllus*	*Eremophila parvifolia*

ALL SPECIES
Acacia erinacea
Cratystylis conocephala
Eremophila interstans
Eremophila parvifolia
Eremophila scoparia
Eucalyptus lesouefii
Exocarpos aphyllus
Maireana pentratropis
Olearia muelleri

Project Name: KCGM TSF Expansion	
Date: 14/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 12
Quadrat size: 20x20	
WP: 36	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 43/44/45	
Landform: Simple slope/Bottom third/Hillslope	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Rapid	
Soil (profile/field texture/soil surface): Red/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila oldfieldii* subsp. *angustifolia*	*Eremophila parvifolia*

ALL SPECIES
Acacia burkittii
Acacia hemiteles
Acacia tetragonophylla
Austrostipa elegantissima
Eremophila oldfieldii subsp. *angustifolia*
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana georgei
Maireana pentratropis
Maireana trichoptera
Maireana triptera
Ptilotus obovatus
Scaevola spinescens
Senna artemisioides subsp. filifolia
Westringia rigida

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 13	
Quadrat size: 20x20		
WP: 40	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*	
Photo number: 46/47/48		
Landform: Mid slope/Middle third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Isolated plants (<1%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia kalgoorliensis*	*Westringia rigida*

ALL SPECIES
Casuarina pauper
Acacia kalgoorliensis
Westringia rigida
Pimelea microcephala
Halgania andromedifolia
Scaevola spinescens
Exocarpos aphyllus
Sclerolaena drummondii
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 14	
Quadrat size: 20x20		
WP: 43	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*	
Photo number: 49/50/51		
Landform: Simple slope/Bottom third/Hillslope		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Medium gravelly; medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 90		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus stricklandii	*Acacia kalgoorliensis*	*Eremophila parvifolia*

ALL SPECIES
Acacia acuminata
Acacia kalgoorliensis
Eremophila oldfieldii subsp. *oldfieldii*
Eremophila parvifolia
Eucalyptus stricklandii
Exocarpos aphyllus
Grevillea acuaria
Maireana georgei
Santalum spicatum
Scaevola spinescens
Sclerolaena drummondii
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 15	
Quadrat size: 20x20		
WP: 45	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over scrub of *Melaleuca sheathiana* and open dwarf scrub of *Eremophila parvifolia/ Olearia muelleri*	
Photo number: 55/56/57		
Landform: Simple slope/Bottom third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Light clay/Firm		
%Cover leaf litter: 20		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Melaleuca sheathiana*	*Olearia muelleri*

ALL SPECIES
Acacia kalgoorliensis
Eremophila parvifolia
Eremophila scoparia
Eucalyptus lesouefii
Exocarpos aphyllus
Maireana pentatropis
Maireana triptera
Melaleuca sheathiana
Olearia muelleri
Sclerolaena parvifolia
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 16	
Quadrat size: 20x20		
WP: 50	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 58/59/60		
Landform: Flat/Bottom third/Valley flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus ravida	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Acacia erinacea
Atriplex vesicaria
Eremophila scoparia
Eucalyptus ravida
Exocarpos aphyllus
Maireana georgei
Maireana triptera
Pimelia microcephala
Ptilotus obovatus
Ptilotus sp. (sterile)
Solanum nummularium

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 17	
Quadrat size: 20x20		
WP: 55	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 61/62/63		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance:		
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Soil (profile/field texture/soil surface): Red/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 40		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Atriplex stipitata*
ALL SPECIES		
Acacia hemiteles		
Atriplex stipitata		
Eremophila scoparia		
Eucalyptus salmonophloia		
Maireana pentatropis		
Ptilotus obovatus		
Ptilotus nobilis		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Zygophyllum glaucum (A)		

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 18	
Quadrat size: 20x20		
WP: 57	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 64/65/66		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Slow		
Soil (profile/field texture/soil surface): Light brown/Uniform/Lightclay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Shrub Mallee (<8m)	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Senna artemisioides* subsp. *filifolia*	*Eremophila parvifolia*
ALL SPECIES		
Acacia hemiteles		
Atriplex vesicaria		
Austrostipa nitida		
Chenopodium curvispicatum		
Eremophila interstans		
Eremophila parvifolia		
Eucalyptus griffithsii		
Maireana trichoptera		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Zygophyllum eremaeum (A)		

Project Name: KCGM TSF Expansion	
Date: 14/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 19
Quadrat size: 20x20	
WP: 59	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens.*
Photo number: 67/68/69	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Slow	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 30	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Eremophila alternifolia*	*Ptilotus obovatus*

ALL SPECIES
Acacia hemiteles
Aristida contorta (A)
Austrostipa nitida
Casuarina pauper
Eremophila alternifolia
Eremophila clarkei
Maireana georgei
Maireana triptera
Marsdenia australis
Olearia pimeleoides
Ptilotus obovatus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 14/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 20	
Quadrat size: 20x20		
WP: 63	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over scrub of *Melaleuca sheathiana* and open dwarf scrub of *Eremophila parvifolia/ Olearia muelleri*	
Photo number: 70/71/72		
Landform: Simple slope/Middle third		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Melaleuca sheathiana*	*Maireana sedifolia*

ALL SPECIES
Acacia erinacea
Eucalyptus salmonophloia
Eucalyptus transcontinentalis
Halgania andromedifolia
Maireana sedifolia
Melaleuca sheathiana
Sclerolaena diacantha
Sclerolaena parviflora

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 21
Quadrat size: 20x20	
WP: 67	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over open low scrub of *Exocarpos aphyllus* and open dwarf scrub of *Eremophila parvifolia/Olearia muelleri*
Photo number: 73/74/75	
Landform: Flat/Valley flat	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Very slighty, very few (<2%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Senna artemisioides subsp. filifolia*	*Cratystylis conocephala*

ALL SPECIES
Cratystylis conocephala
Eremophila interstans
Eremophila scoparia
Eucalyptus lesouefii
Eucalyptus oleosa
Exocarpos aphyllus
Maireana georgei
Maireana pentatropis
Olearia muelleri
Ptilotus nobilis
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 22	
Quadrat size: 20x20		
WP: 70	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over open low scrub of *Exocarpos aphyllus* and open dwarf scrub of *Eremophila parvifolia/Olearia muelleri*	
Photo number: 91/92/93		
Landform: Flat/Bottom/Valley flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Pisiolite/Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:**	**Crown cover %:**
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Eremophila scoparia*	*Cratystylis conocephala*
ALL SPECIES		
Carrichtera annua (W)		
Cratystylis conocephala		
Eremophila glabra		
Eremophila interstans		
Eremophila scoparia		
Eucalyptus oleosa		
Maireana georgei		
Maireana pentatropis		
Maireana triptera		
Pimelea microcephala		
Ptilotus nobilis		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Zygophyllum eremaeum (A)		

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 23	
Quadrat size: 20x20		
WP: 72	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*	
Photo number: 127/128/129		
Landform: Simple slipe/Bottom third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Pisiolite/Very, abundant (50-90%)/Medium gravelly, medium pebbles (6-20mm)/Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Light medium clay/Hard setting		
%Cover leaf litter: 20		
%Cover bare ground: 60		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Senna artemisioides* subsp. *filifolia*	*Ptilotus obovatus*

ALL SPECIES
Acacia hemiteles
Acacia tetragonophylla
Casuarina pauper
Dodonaea lobulata
Eremophila clarkei
Eremophila oldfieldii subsp. *angustifolia*
Maireana georgei
Maireana triptera
Ptilotus helipteroides
Ptilotus obovatus
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*
Westringia rigida

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 24
Quadrat size: 20x20	
WP: 73	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*
Photo number: 124/125/126	
Landform: Upper slope/Top third/Hill crest/Hill slope	
Land surface/disturbance:	
Coarse fragments on the surface (abundance/size/shape): Extremely, very abundant (>90%)/Cobbly, or cobbles (60-200mm)/Rounded platy	
Rock outcrop (abundance/runoff): Latritic/Rockland/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Slity clay loam/Soft	
%Cover leaf litter: 20	
%Cover bare ground: 60	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia kalgoorliensis*	*Westringia rigida*

ALL SPECIES
Acacia acuminata
Acacia erinacea
Acacia kalgoorliensis
Acacia tetragonophylla
Alyxia buxifolia
Casuarina pauper
Cryptandra aridicola
Dodonaea lobulata
Grevillea nematophylla
Hovea acanthoclada
Olearia muelleri
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Trymalium myrtillus subsp. *myrtillus*
Westringia rigida

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 25
Quadrat size: 20x20	
WP: 78	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over scrub of *Melaleuca sheathiana* and open dwarf scrub of *Eremophila parvifolia/ Olearia muelleri*
Photo number: 121/122/123	
Landform: Simple slope/Middle third/Hillslope	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Latrite/Extremely, very abundant (>90%)/Coarse gravelly, large pebbles (20-60mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Slity loam/Soft	
%Cover leaf litter: 20	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Very sparse (<10%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Melaleuca sheathiana*	*Acacia kalgoorliensis*

ALL SPECIES
Acacia kalgoorliensis
Eucalyptus lesouefii
Eucalyptus stricklandii
Eucalyptus transcontinentalis
Exocarpos aphyllus
Grevillea acuaria
Halgania andromedifolia
Maireana georgei
Melaleuca sheathiana
Scavola spinescens
Sclerolaena diacantha
Sclerolaena drummondii

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 26	
Quadrat size: 20x20		
WP: 80	**Vegetation Group**: Low woodland of *Eucalyptus lesouefii* over open scrub of *Exocarpos aphyllus* and dwarf scrub of *Cratystylis conocephala*	
Photo number: 118/119120		
Landform: Mid slope/Top third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Greenstone/Very, abundant (50-90%)/Coarse gravelly, large pebbles (20-60mm)/Angular tabular		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia erinacea*	*Cratystylis conocephala*
ALL SPECIES		
Acacia erinacea		
Atriplex vesicaria		
Cratystylis conocephala		
Eremophila glabra		
Eremophila parvifolia		
Eremophila scoparia		
Eucalyptus lesouefii		
Maireana georgei		
Olearia muelleri		
Scaevola spinescens		

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 27	
Quadrat size: 20x20		
WP: 90	**Vegetation Group**: Low woodland of *Eucalyptus lesouefii* over open scrub of *Exocarpos aphyllus* and dwarf scrub of *Cratystylis conocephala*	
Photo number: 112/113/114		
Landform: Upper slope/Middle third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Greenstone/Extremely, very abundant (<90%)/Coarse gravelly, large pebbles (20-60mm)/Angular		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Light medium clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Isolated clumps (<1%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia kalgoorliensis*	*Cratystylis conocephala*
ALL SPECIES		
Acacia kalgoorliensis		
Atriplex vesicaria		
Cratystylis conocephala		
Eremophila parvifolia		
Eucalyptus lesouefii		
Halgania andromedifolia		
Maireana pentatropis		
Scaevola spinescens		

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 28
Quadrat size: 20x20	
WP: 92	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*
Photo number: 115/116/117	
Landform: Mid slope/Middle third/Hillslope	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Laterite/Extremely, very abundant (>90%)/Coarse gravelly, large pebbles (20-60mm)/Subrounded	
Rock outcrop (abundance/runoff): Very rocky/Slow/Moderatly rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Slity clay loam/Loose	
%Cover leaf litter: 20	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia kalgoorliensis*	*Halgania andromedifolia*

ALL SPECIES
Acacia erinacea
Acacia kalgoorliensis
Eremophila oldfieldii subsp*. angustifolia*
Eucalyptus lesouefii
Grevillea acuaria
Halgania andromedifolia
Scaevola spinescens

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 29
Quadrat size: 20x20	
WP: 96	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*
Photo number: 109/110/111	
Landform: Mid slope/Middle third/Hillslope	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Very, abundant (50-90%)/Coarse gravelly, large pebbles (20-60mm)/Angular tabular	
Rock outcrop (abundance/runoff): No bedrock exposed/Slow	
Soil (profile/field texture/soil surface): Red brown/Uniform/Slity clay loam/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Melaleuca sheathiana*	*Acacia erinacea*

ALL SPECIES
Acacia erinacea
Eucalyptus lesouefii
Eucalyptus transcontinentalis
Melaleuca sheathiana
Sclerolaena diacantha
Sclerolaena drummondii

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 30	
Quadrat size: 20x20		
WP: 98	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 106/107/108		
Landform: Flat/Bottom third/Valley Flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No coarse fragments		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/medium heavy clay		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Atriplex nummularia* subsp. *spathulata*	*Atriplex vesicaria*

ALL SPECIES
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Austrostipa elegantissima
Eucalyptus salmonophloia
Maireana georgei
Maireana triptera
Pimelea microcephala
Ptilotus nobilus
Ptilotus obovatus
Sclerolaena diacantha
Sclerolaena parviflora
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 31	
Quadrat size: 20x20		
WP: 116	**Vegetation Group:** Forest of *Eucalyptus salubris* over low scrub of *Eremophila scoparia* and low heath of *Maireana sedifolia*	
Photo number: 103/104/105		
Landform: Flat/Bottom third/Valley flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No coarse fragments		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Loose		
%Cover leaf litter: 80		
%Cover bare ground: 90		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Dense (>70%)	**Crown cover %:** Isolated plants (<1%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Acacia erinacea
Acacia kalgoorliensis
Atriplex vesicaria
Eremophila glabra
Eremophila scoparia
Eucalyptus salubris
Maireana georgei
Maireana sedifolia
Olearia muelleri
Templetonia ceracea

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 32
Quadrat size: 20x20	
WP: 124	**Vegetation Group**: Low woodland of *Eucalyptus lesouefii* over open scrub of *Exocarpos aphyllus* and dwarf scrub of *Cratystylis conocephala*
Photo number: 106/107/108	
Landform: Midslope/Middle third/Hillslope	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Slow	
Soil (profile/field texture/soil surface): Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Eremophila pustulata*	*Scaevola spinescens*

ALL SPECIES
Alyxia buxifolia
Atriplex vesicaria
Eremophila pustulata
Eremophila scoparia
Eucalyptus lesouefii
Exocarpos aphyllus
Maireana sedifolia
Maireana triptera
Olearia muelleri
Scaevola spinescens
Sclerolaena diacantha
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 33
Quadrat size: 20x20	
WP: 125	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*
Photo number: 109/110/111	
Landform: Flat/Bottom third/Valley flat	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; Medium pebbles (6-20mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Light brown/Uniform/medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Exocarpos aphyllus*	*Acacia hemiteles*

ALL SPECIES
Acacia hemiteles
Acacia jennerae
Atriplex vesicaria
Austrostipa elegantissima
Casuarina pauper
Eremophila scoparia
Eucalyptus salmonophloia
Exocarpos aphyllus
Lycium australe
Pittosporum angustifolium
Ptilotus nobilus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 34
Quadrat size: 20x20	
WP: 130	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over low scrub of *Maireana sedifolia/ Eremophila scoparia/ Cratystylis conocephala* and dwarf scrub of *Eremophila parvifolia.*
Photo number: 13/14/15	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: Limited Clearing	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; Medium pebbles (6-20mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 70	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 0.5-1m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Maireana sedifolia*	*Halgania andromedifolia*

ALL SPECIES
Atriplex nummularia subsp. *spathulata*
Austrostipa nitida
Cratystylis microphylla
Eucalyptus lesouefii
Eucalyptus salubris
Halgania andromedifolia
Lycium australe
Maireana pentratropis
Maireana sedifolia
Nitraria billardierei
Olearia muelleri

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 35
Quadrat size: 20x20	
WP: 132	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Acacia hemiteles/ Eremophila ionantha/ Maireana sedifolia* and dwarf scrub of *Atriplex vesicaria/ Eremophila parvifolia*
Photo number: 16/17/18	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Pisiolite/Very, abundant (50-90%)/Fine gravelly, small pebbles (2-6mm)/Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/uniform/medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 70	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila ionantha*	*Atriplex vesicaria*

ALL SPECIES
Acacia eremophila
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Eremophila ionantha
Eremophila scoparia
Eucalyptus salmonophloia
Maireana georgei
Maireana pyramidata
Maireana trichoptera
Maireana triptera
Sclerolaena drummondii
Sida spodochroma

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 36	
Quadrat size: 20x20		
WP: 135	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Acacia hemiteles/ Eremophila ionantha/ Maireana sedifolia* and dwarf scrub of *Atriplex vesicaria/ Eremophila parvifolia*	
Photo number: 19/20/21		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No coarse fragments		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Isolated plants (<1%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Maireana pyramidata*	*Atriplex vesicaria*

ALL SPECIES
Atriplex vesicaria
Austrostipa elegantissima
Carrichtera annua (W)
Eucalyptus salmonophloia
Maireana platycarpa
Maireana pyramidata
Pimelea microcephala
Pittosporum angustifolium
Ptilotus sp. (sterile)
Sclerolaena eriacantha
Sclerolaena parviflora
Sida spodochroma
Solanum lasiophyllum

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 37	
Quadrat size: 20x20		
WP: 140	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 22/23/24		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Eremophila parvifolia*

ALL SPECIES
Acacia hemiteles
Atriplex bunburyana
Atriplex nummularia subsp. *spathulata*
Atriplex stipitata
Carrichtera annua (W)
Eremophila parvifolia
Eucalyptus salmonophloia
Maireana georgei
Maireana sedifolia
Mairena triptera
Olearia muelleri
Pimelea microcephala
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 38	
Quadrat size: 20x20		
WP: 145	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 25/26/27		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy		
Rock outcrop (abundance/runoff): Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Atriplex vesicaria*

ALL SPECIES
Acacia hemiteles
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Cratystylis microphylla
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana georgei
Maireana sedifolia
Maireana triptera
Pimelea microcephala
Ptilotus obovatus
Rhagodia eremaea
Sclerolaena parviflora
Sida spodochroma

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 39
Quadrat size: 20x20	
WP: 152	**Vegetation Group**: Low woodland of *Eucalyptus lesouefii* over open scrub of *Exoca* *aphyllus* and dwarf scrub of *Cratystylis conocephala*
Photo number: 28/29/30	
Landform: Simple slope/Middle third/Hillslope	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): Lateicte/Moderately, many (20-90%)/Coarse gravelly, large pebbles 20mm)/Angular	
Rock outcrop (abundance/runoff): Rocky/Moderately rapid	
Soil (profile/field texture/soil surface): Grey brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 70	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Senna artemisioides subsp. filifolia*	*Atriplex vesicaria*

ALL SPECIES
Acacia erinacea
Acacia kalgoorliensis
Atriplex vesicaria
Austrostipa elegantissima
Eremophila glabra
Eremophila oldfieldii subsp. *angustifolia*
Eucalyptus griffithsii
Eucalyptus lesouefii
Maireana georgei
Maireana triptera
Olearia muelleri
Ptilotus obovatus
Santalum spicatum
Scaevola spinescens
Sclerolaena parvifolia
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 40
Quadrat size: 20x20	
WP: 164	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*
Photo number: 31/32/33	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Pixilite/No qualifer common (10-20%)/Medium gravelly; medium pebbles (6-20mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium clay/Hard setting	
%Cover leaf litter: 30	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Senna artemisioides* subsp. *filifolia*	*Olearia muelleri*

ALL SPECIES
Acacia hemiteles
Casuarina pauper
Dodonaea lobulata
Eremophila clarkei
Maireana georgei
Olearia muelleri
Ptilotus obovatus
Rhagodia eremaea
Santalum spicatum
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 41
Quadrat size: 20x20	
WP: 109	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 24/25/26	
Landform: Flat/Bottom third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 50	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Isolated plants (<1%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Acacia hemiteles
Atriplex stipitata
Atriplex vesicaria
Eremophila scoparia
Eucalyptus salmonophloia
Exocarpos aphyllus
Frankenia setosa
Maireana georgei
Maireana trichoptera
Maireana triptera
Scaevola spinescens
Sclerolaena diacantha

Project Name: KCGM TSF Expansion	
Date: 15/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 42
Quadrat size: 20x20	
WP: 174	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 37/38/39	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): Pissolite/No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Olearia muelleri*

ALL SPECIES
Acacia hemiteles
Casuarina pauper
Eremophila ionantha
Eremophila parvifolia
Eremophila scoparia
Eriochiton sclerolaenoides
Eucalyptus salmonophloia
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Olearia muelleri
Ptilotus holosericeus
Santalum acuminatum
Scaevola spinescens
Sida spodochroma

Project Name: KCGM TSF Expansion		
Date: 15/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 43	
Quadrat size: 20x20		
WP: 180	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*	
Photo number: 40/41/42		
Landform: Flat/Bottom third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Pissolite/No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Maireana pyramidata*	*Atriplex vesicaria*

ALL SPECIES
Atriplex vesicaria
Austrostipa elegantissima
Carrichtera annua (W)
Eremophila ionantha
Eremophila scoparia
Eucalyptus salubris
Frankenia setosa
Maireana pyramidata
Maireana sedifolia
Maireana triptera
Ptilotus nobilus
Ptilotus obovatus
Sclerolaena parvifolia
Senna artemisioides subsp. *filifolia*
Sida spodochroma

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 44
Quadrat size: 20x20	
WP: 183	**Vegetation Group:** Forest of *Eucalyptus salubris* over low scrub of *Eremophila scoparia* and low heath of *Maireana sedifolia*
Photo number: 43/44/45	
Landform: Flat/Bottom third/Valley flat	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/ Rounded platy	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Eremophila ionantha*	*Ptilotus obovatus*

ALL SPECIES
Carrichtera annua (W)
Enchylaena tomentosa
Eremophila ionantha
Eremophila parvifolia
Eucalyptus salmonophloia
Eucalyptus salubris
Lycium australe
Maireana georgei
Maireana triptera
Pimelea microcephala
Ptilotus obovatus
Ptilotus nobilis
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 45
Quadrat size: 20x20	
WP: 1	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over low scrub of *Maireana sedifolia/ Eremophila scoparia/ Cratystylis conocephala* and dwarf scrub of *Eremophila parvifolia.*
Photo number: 1/2/3	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No coarse fragments 0	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Maireana sedifolia*	*Eremophila parvifolia*

ALL SPECIES
Atriplex nummularia subsp. *spathulata*
Austrostipa nitida
Eremophila decipiens
Eremophila parvifolia
Eremophila scoparia
Eucalyptus lesouefii
Eucalyptus transcontinentalis
Maireana pentatropis
Maireana sedifolia
Maireana triptera
Nitraria billardierei
Olearia muelleri
Ptilotus nobilus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Senna cardiosperma

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 46	
Quadrat size: 20x20		
WP: 2	**Vegetation Group**: Tree mallee of *Eucalyptus oleosa* over heath of *Cratystylis conocephala* and dwarf scrub of *Atriplex stipitata*	
Photo number: 4/5/6		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly, small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Cratystylis conocephala*	*Scaevola spinescens*

ALL SPECIES
Acacia colletioides
Atriplex stipitata
Austrostipa nitida
Chenopodium curvispicatum
Cratystylis conocephala
Eremophila parvifolia
Eucalyptus oleosa
Eucalyptus salmonophloia
Maireana georgei
Maireana triptera
Pimelea microcephala
Scaevola spinescens
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*
Templetonia ceracea
Zygophyllum aurantiacum (A)

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 47	
Quadrat size: 20x20		
WP: 3	**Vegetation Group**: Tree mallee of *Eucalyptus oleosa* over heath of *Cratystylis conocephala* and dwarf scrub of *Atriplex stipitata*	
Photo number: 7/8/9		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals/Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly, small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Cratystylis conocephala*	*Eremophila parvifolia*
ALL SPECIES		
Cratystylis conocephala		
Eremophila parvifolia		
Eremophila scoparia		
Eucalyptus oleosa		
Maireana sedifolia		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 48
Quadrat size: 20x20	
WP: 4	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 10/11/12	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): No coarse fragments 0	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila scoparia*	*Maireana pyramidata*

ALL SPECIES
Acacia colletioides
Acacia hemiteles
Carrichtera annua (W)
Chenopodium curvispicatum
Enchylaena tomentosa
Eremophila ionantha
Eremophila scoparia
Eucalyptus salmonophloia
Maireana georgei
Maireana pyramidata
Maireana trichoptera
Maireana triptera
Marsdenia australis
Ptilotus holosericeus
Ptilotus obovatus
Ptilotus nobilis
Sclerolaena parviflora
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 49	
Quadrat size: 20x20		
WP: 6	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 13/14/15		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium Heavy clay/Firm		
%Cover leaf litter: 60		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila scoparia*	*Eremophila parvifolia*

ALL SPECIES
Acacia colletioides
Atriplex vesicaria
Carrichtera annua (W)
Enchylaena tomentosa
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana sedifolia
Maireana triptera
Olearia muelleri
Ptilotus nobilus
Scaevola spinescens
Sclerolaena parviflora
Sida spodochroma
Templetonia ceracea
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 50
Quadrat size: 20x20	
WP: 7	**Vegetation Group:** Forest of *Eucalyptus salubris* over low scrub of *Eremophila scoparia* and low heath of *Maireana sedifolia*
Photo number: 16/17/18	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): No coarse fragments 0	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 90	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Maireana sedifolia*	*Atriplex vesicaria*

ALL SPECIES
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Austrostipa elegantissima
Carrichtera annua (W)
Eremophila scoparia
Eucalyptus salubris
Lycium australe
Maireana georgei
Maireana sedifolia
Maireana triptera
Olearia muelleri
Pimelea microcephala
Scaevola spinescens
Sclerolaena diacantha
Sclerolaena drummondii
Sclerolaena parviflora
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 51	
Quadrat size: 20x20		
WP: 8	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*	
Photo number: 19/20/21		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Coarse gravelly, large pebbles (6-20mm)/Angular tabular		
Rock outcrop (abundance/runoff): Slightly rocky/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium clay/Firm		
%Cover leaf litter: 20		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia ?duriuscula*	*Scaevola spinescens*

ALL SPECIES
Acacia ?duriuscula
Alectryon oleifolius
Atriplex vesicaria
Casuarina pauper
Dodonaea lobulata
Eremophila clarkei
Eremophila glabra
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Marsdenia australis
Ptilotus obovatus
Santalum spicatum
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 52
Quadrat size: 20x20	
WP: 9	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*
Photo number: 22/23/24	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly; small pebbles (2-6mm)/Subrounded	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Acacia hemiteles
Atriplex vesicaria
Eremophila oldfieldii subsp. *angustifolia*
Eremophila pustulata
Eremophila interstans
Eremophila scoparia
Eucalyptus celastroides
Eucalyptus lesouefii
Maireana georgei
Maireana pyramidata
Maireana trichoptera
Maireana triptera
Ptilotus obovatus
Sclerolaena diacantha
Sclerolaena parviflora

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 53
Quadrat size: 20x20	
WP: 10	**Vegetation Group:** Low woodland of *Eucalyptus lesouefii* over low scrub of *Maireana sedifolia/ Eremophila scoparia/ Cratystylis conocephala* and dwarf scrub of *Eremophila parvifolia.*
Photo number: 25/26/27	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/Subrounded	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Heavy clay/Firm	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia hemiteles*	*Eremophila parvifolia*

ALL SPECIES
Acacia hemiteles
Cratystylis microphylla
Eremophila parvifolia
Eucalyptus lesouefii
Exocarpos aphyllus
Maireana georgei
Maireana oppostifolia
Scaevola spinescens
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 54
Quadrat size: 20x20	
WP: 11	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Acacia hemiteles/ Eremophila ionantha/ Maireana sedifolia* and dwarf scrub of *Atriplex vesicaria/ Eremophila parvifolia*
Photo number: 28/29/30	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals	
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly; small pebbles (2-6mm)/Subrounded	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay	
%Cover leaf litter: 60	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Eremophila parvifolia*

ALL SPECIES
Acacia hemiteles
Atriplex bunburyana
Austrostipa nitida
Casuarina pauper
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Exocarpos aphyllus
Maireana georgei
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Ptilotus nobilis
Scaevola spinescens
Sclerolaena parvifolia

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 55
Quadrat size: 20x20	
WP: 12/13	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*
Photo number: 1/2/3	
Landform: Simple slope/Middle third/Hillslope	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Medium gravelly; Medium pebbles (6-20mm)/Angular tabular	
Rock outcrop (abundance/runoff): No bedrock exposed/Slow	
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Eremophila interstans*	*Eremophila parvifolia*

ALL SPECIES
Acacia erinacea
Acacia hemiteles
Acacia tetragonophylla
Atriplex nummularia subsp. *spathulata*
Eremophila interstans
Eremophila parvifolia
Eucalyptus griffithsii
Eucalyptus lesouefii
Maireana pentatropis
Ptilotus nobilis
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 56	
Quadrat size: 20x20		
WP: 14	**Vegetation Group:** Open low woodland of *Eucalyptus lesouefii/ Eucalyptus transcontinentalis/ Casuarina pauper* over low scrub of *Acacia kalgoorliensis* and open dwarf scrub of *Westringia rigida*	
Photo number: 4/5/6		
Landform: Flat/Middle third/Valley flat		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Ironstone/Very, abundant (50-90%)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 10		
%Cover bare ground: 60		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Acacia kalgoorliensis*	*Eremophila parvifolia*

ALL SPECIES
Acacia hemiteles
Acacia kalgoorliensis
Atriplex vesicaria
Eremophila oldfieldii subsp. *angustifolia*
Eremophila pustulata
Eremophila parvifolia
Eremophila scoparia
Eucalyptus lesouefii
Halgania andromedifolia
Scaevola spinescens
Sclerolaena parvifolia

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 57	
Quadrat size: 20x20		
WP: 15	**Vegetation Group:** Forest of *Casuarina pauper* over low scrub of *Acacia hemiteles/ Senna artemisioides* subsp. *filifolia* and dwarf scrub of *Scaevola spinescens*	
Photo number: 7/8/9		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals/Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium Heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia hemiteles*	*Scaevola spinescens*

ALL SPECIES
Acacia erinacea
Acacia hemiteles
Casuarina pauper
Enchylaena lanata
Eremophila oldfieldii subsp. *angustifolia*
Grevillea nematophylla
Olearia muelleri
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 58	
Quadrat size: 20x20		
WP: 17	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 10/11/12		
Landform: Flat/Middle third/Valley Flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Moderately, many (20-50%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 20		
%Cover bare ground: 60		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Scaevola spinescens*

ALL SPECIES
Acacia hemiteles
Amyema preissii
Austrostipa nitida
Cratystylis conocephala
Eremophila parvifolia
Eucalyptus salmonophloia
Exocarpos aphyllus
Maireana pentatropis
Maireana triptera
Olearia muelleri
Scaevola spinescens
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 59	
Quadrat size: 20x20		
WP: 18	**Vegetation Group:** Dense low forest of *Eucalyptus ravida* over heath of *Senna artemisioides* subsp. *filifolia/ Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 13/14/15		
Landform: Flat/Middle third/Valley flat		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): No coarse fragments 0		
Rock outcrop (abundance/runoff): No bedrock exposed		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Isolated plants (<1)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus ravida	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Atriplex vesicaria
Carrichtera annua (W)
Eremophila scoparia
Eucalyptus celastroides
Eucalyptus ravida
Frankenia setosa
Lycium australe
Maireana georgei
Olearia muelleri
Ptilotus obovatus
Sclerolaena parviflora

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 60	
Quadrat size: 20x20		
WP: 19	**Vegetation Group:** Low woodland of *Eucalyptus stricklandii/ Eucalyptus ravida* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*	
Photo number: 16/17/18		
Landform: Flat/Middle third/Valley flat		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): No qualifer common (10-20%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 10		
%Cover bare ground: 60		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Maireana pyramidata*

ALL SPECIES
Acacia hemiteles
Acacia jennerae
Enchylaena lanata
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana georgei
Maireana pyramidata
Maireana triptera
Ptilotus obovatus
Santalum spicatum
Scaevola spinescens
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 61	
Quadrat size: 20x20		
WP: 20	**Vegetation Group:** Tree mallee of *Eucalyptus griffithsii* over thicket of *Acacia acuminata* over open dwarf scrub of *Ptilotus obovatus* and open hummock grass of *Triodia irritans*	
Photo number: 19/20/21		
Landform: Simple slope/Middle third/Hillslope		
Land surface/disturbance: No effective disturbances except for grazing by hoofed animals		
Coarse fragments on the surface (abundance/size/shape): Ironstone/Moderately, many (20-50%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Red brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 30		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee (>8m)	**Growth form:** Shrub	**Growth form:** Hummock grass
Height: 3-6m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Mid-dense (30-70%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Acacia burkittii*	*Triodia irritans*

ALL SPECIES
Acacia burkittii
Acacia erinacea
Acacia tetragonophylla
Dodonaea lobulata
Eremophila decipiens
Eucalyptus griffithsii
Santalum spicatum
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Triodia irritans
Westringia rigida

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 62	
Quadrat size: 20x20		
WP: 21	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Acacia hemiteles/ Eremophila ionantha/ Maireana sedifolia* and dwarf scrub of *Atriplex vesicaria/ Eremophila parvifolia*	
Photo number: 22/23/24		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Ironstone/Very, abundant (50-90%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm		
%Cover leaf litter: 30		
%Cover bare ground: 70		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila scoparia*	*Atriplex vesicaria*

ALL SPECIES
Acacia colletioides
Acacia hemiteles
Atriplex vesicaria
Austrostipa nitida
Eremophila scoparia
Eucalyptus salmonophloia
Eucalyptus salubris
Exocarpos aphyllus
Maireana georgei
Maireana sedifolia
Maireana triptera
Scaevola spinescens
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*
Zygophyllum eremaeum (A)

Project Name: KCGM TSF Expansion		
Date: 16/04/2015	**Botanist:** JW and PH	
Location: KCGM	**Quadrat:** 63	
Quadrat size: 20x20		
WP: 22	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Eremophila scoparia/ Cratystylis subspinescens* and dwarf scrub of *Maireana sedifolia/ Eremophila parvifolia*	
Photo number: 25/26/27		
Landform: Flat/Middle third/Plain		
Land surface/disturbance: Limited clearing		
Coarse fragments on the surface (abundance/size/shape): Ironstone/Very, abundant (50-90%)/Fine gravelly; small pebbles (2-6mm)/Subrounded		
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Uniform/Heavy clay/Firm		
%Cover leaf litter: 40		
%Cover bare ground: 80		
Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Mid-dense (30-70%)	**Crown cover %:** Very sparse (<10%)	**Crown cover %:** Very sparse (<10%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Maireana sedifolia*

ALL SPECIES
Acacia colletioides
Acacia hemiteles
Atriplex vesicaria
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Ptilotus holosericeus
Sclerolaena diacantha
Sclerolaena parviflora
Senna artemisioides subsp. *filifolia*
Templetonia ceracea

Project Name: KCGM TSF Expansion	
Date: 16/04/2015	**Botanist:** JW and PH
Location: KCGM	**Quadrat:** 64
Quadrat size: 20x20	
WP: 23	**Vegetation Group:** Low woodland of *Eucalyptus salmonophloia* over low scrub of *Acacia hemiteles/ Eremophila ionantha/ Maireana sedifolia* and dwarf scrub of *Atriplex vesicaria/ Eremophila parvifolia*
Photo number: 28/29/30	
Landform: Flat/Middle third/Plain	
Land surface/disturbance: Limited clearing	
Coarse fragments on the surface (abundance/size/shape): Ironstone/Very, abundant (50-90%)/Fine gravelly; small pebbles (2-6mm)/Subrounded	
Rock outcrop (abundance/runoff): No bedrock exposed/Moderately rapid	
Soil (profile/field texture/soil surface): Brown/Uniform/Medium heavy clay/Firm	
%Cover leaf litter: 40	
%Cover bare ground: 80	

Tallest stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover %: Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)	**Crown cover %:** Sparse (10-30%)
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Acacia hemiteles*	*Scaevola spinescens*

ALL SPECIES
Acacia hemiteles
Amyema miquelii
Austrostipa nitida
Eremophila glabra
Eremophila parvifolia
Eremophila scoparia
Eucalyptus salmonophloia
Maireana trichoptera
Maireana triptera
Marsdenia australis
Pimelea micrcephala
Ptilotus obovatus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Zygophyllum eremaeum (A)

Appendix 10: Photographs of the KCGM TSF Expansion level 2 flora survey Quadrats

Quadrat 1



Spring 2014



Autumn 20

Quadrat 2



Spring 2014



Autumn 2015

Quadrat 3



Spring 2014



Autumn 2015

Quadrat 4



Spring 2014



Autumn 2015

Quadrat 5



Spring 2014



Autumn 2015

Quadrat 6



Spring 2014



Autumn 2015

Quadrat 7



Spring 2014



Autumn 2015

Quadrat 8



Spring 2014



Autumn 2015

Quadrat 9



Spring 2014



Autumn 2015

Quadrat 10



Spring 2014



Autumn 2015

Quadrat 11



Spring 2014



Autumn 2015

Quadrat 12



Spring 2014



Autumn 2015

Quadrat 13



Spring 2014



Autumn 2015

Quadrat 14



Spring 2014



Autumn 2015

Quadrat 15



Spring 2014



Autumn 2015

Quadrat 16



Spring 2014



Autumn 2015

Quadrat 17



Spring 2014



Autumn 2015

Quadrat 18



Spring 2014



Autumn 2015

Quadrat 19



Spring 2014



Autumn 2015

Quadrat 20



Spring 2014



Autumn 2015

Quadrat 21



Spring 2014



Autumn 2015

Quadrat 22



Spring 2014



Autumn 2015

Quadrat 23



Spring 2014



Autumn 2015

Quadrat 24



Spring 2014



Autumn 2015

Quadrat 25



Spring 2014



Autumn 2015

Quadrat 26



Spring 2014



Autumn 2015

Quadrat 27



Spring 2014



Autumn 2015

Quadrat 28



Spring 2014



Autumn 2015

Quadrat 29



Spring 2014



Autumn 2015

Quadrat 30



Spring 2014



Autumn 2015

Quadrat 31



Spring 2014



Autumn 2015

Quadrat 32



Spring 2014



Autumn 2015

Quadrat 33



Spring 2014



Autumn 2015

Quadrat 34



Spring 2014



Autumn 2015

Quadrat 35



Spring 2014



Autumn 2015

Quadrat 36



Spring 2014



Autumn 2015

Quadrat 37



Spring 2014



Autumn 2015

Quadrat 38



Spring 2014



Autumn 2015

Quadrat 39



Spring 2014



Autumn 2015

Quadrat 40



Spring 2014



Autumn 2015

Quadrat 41



Spring 2014



Autumn 2015

Quadrat 42



Spring 2014



Autumn 2015

Quadrat 43

Spring 2014

Autumn 2015

Quadrat 44

Spring 2014

Autumn 2015

Quadrat 45



Spring 2014



Autumn 2015

Quadrat 46



Spring 2014



Autumn 2015

Quadrat 47



Spring 2014



Autumn 2015

Quadrat 48



Spring 2014



Autumn 2015

Quadrat 49



Spring 2014



Autumn 2015

Quadrat 50



Spring 2014



Autumn 2015

Quadrat 51



Spring 2014



Autumn 2015

Quadrat 52



Spring 2014



Autumn 2015

Quadrat 53



Spring 2014



Autumn 2015

Quadrat 54



Spring 2014



Autumn 2015

Quadrat 55



Spring 2014



Autumn 2015

Quadrat 56



Spring 2014



Autumn 2015

Quadrat 57



Spring 2014



Autumn 2015

Quadrat 58



Spring 2014



Autumn 2015

Quadrat 59



Spring 2014



Autumn 2015

Quadrat 60



Spring 2014



Autumn 2015

Quadrat 61



Spring 2014



Autumn 2015

Quadrat 62



Spring 2014



Autumn 2015

Quadrat 63



Spring 2014



Autumn 2015

Quadrat 64



Spring 2014



Autumn 2015

Appendix 3 NVIC Information Hierarchy (ESCAVI 2003b) and comparable WA current practice (from EPA 2016c)

Western Australia Current Practice			National Standard		
Hierarchy of terms	**Brief description in WA**	**Indicative scale**	**NVIS Level**	**Description**	**NVIS structural/floristic components required**
Vegetation formation	Structure and growth form – 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	II	Structural Formation	Dominant growth form, cover and height for the ecologically or structurally dominant stratum.
Vegetation association	Structural form and dominant species– 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 – 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 Consolidated flora species inventory for study area

Family	Taxon	Previous survey	Current survey
Aizoaceae	*Disphyma crassifolium*	x	
Aizoaceae	*Gunniopsis quadrifida*	x	
Amaranthaceae	*Ptilotus aervoides*	x	
Amaranthaceae	*Ptilotus carlsonii*	x	
Amaranthaceae	*Ptilotus exaltatus*	x	x
Amaranthaceae	*Ptilotus helipteroides*	x	
Amaranthaceae	*Ptilotus holosericeus*	x	x
Amaranthaceae	*Ptilotus obovatus*	x	x
Amaranthaceae	*Ptilotus* sp. (sterile)	x	
Amaranthaceae	*Ptilotus* sp. *Goldfields* (R. Davis 10796)	x	
Anacardiaceae	**Schinus molle*	x	
Apocynaceae	*Alyxia buxifolia*	x	x
Apocynaceae	*Leichhardtia australis*	x	x
Arecaceae	**Phoenix dactylifera*	x	
Asparagaceae	*Thysanotus manglesianus*	x	
Asphodelaceae	**Asphodelus fistulosus*	x	
Asteraceae	**Carthamus lanatus*	x	
Asteraceae	**Centaurea melitensis*	x	x
Asteraceae	**Monoculus monstrosus*	x	
Asteraceae	**Oligocarpus calendulaceus*	x	x
Asteraceae	**Sonchus oleraceus*	x	x
Asteraceae	**Symphyotrichum squamatum*	x	
Asteraceae	*Angianthus tomentosus*	x	
Asteraceae	*Brachyscome ciliaris*		x
Asteraceae	*Cephalipterum drummondii*	x	
Asteraceae	*Chrysocephalum puteale*	x	
Asteraceae	*Cratystylis conocephala*	x	x
Asteraceae	*Cratystylis microphylla*	x	
Asteraceae	*Cratystylis subspinescens*	x	
Asteraceae	*Minuria leptophylla*		x
Asteraceae	*Olearia muelleri*	x	x
Asteraceae	*Olearia pimeleoides*	x	x
Asteraceae	*Rhodanthe charsleyae*	x	
Asteraceae	*Rhodanthe floribunda*	x	x
Asteraceae	*Streptoglossa cylindriceps*	x	x
Asteraceae	*Streptoglossa liatroides*	x	
Asteraceae	*Vittadinia eremaea*	x	
Asteraceae	*Vittadinia sulcata*		x
Asteraceae	*Waitzia acuminata*	x	

Family	Taxon	Previous survey	Current survey
Asteraceae	*Waitzia fitzgibbonii*	x	x
Boraginaceae	**Echium plantagineum*	x	
Boraginaceae	*Halgania andromedifolia*	x	x
Boraginaceae	*Heliotropium curassavicum*	x	
Brassicaceae	**Carrichtera annua*	x	x
Cactaceae	**Opuntia elata*		x
Casuarinaceae	*Casuarina pauper*	x	x
Chenopodiaceae	*Atriplex amnicola*	x	x
Chenopodiaceae	*Atriplex bunburyana*	x	
Chenopodiaceae	*Atriplex codonocarpa*	x	x
Chenopodiaceae	*Atriplex holocarpa*	x	
Chenopodiaceae	*Atriplex lindleyi*	x	
Chenopodiaceae	*Atriplex nummularia*	x	
Chenopodiaceae	*Atriplex nummularia* subsp. *spathulata*	x	x
Chenopodiaceae	*Atriplex semibaccata*	x	
Chenopodiaceae	*Atriplex* sp.1	x	
Chenopodiaceae	*Atriplex* sp.2	x	
Chenopodiaceae	*Atriplex stipitata* subsp. *stipitata*	x	x
Chenopodiaceae	*Atriplex vesicaria*	x	x
Chenopodiaceae	*Chenopodium curvispicatum*	x	x
Chenopodiaceae	*Dissocarpus paradoxus*	x	
Chenopodiaceae	*Dysphania melanocarpa*	x	
Chenopodiaceae	*Einadia nutans* subsp. *eremaea*		x
Chenopodiaceae	*Enchylaena lanata*	x	
Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*	x	x
Chenopodiaceae	*Eriochiton sclerolaenoides*	x	x
Chenopodiaceae	*Maireana amoena*	x	
Chenopodiaceae	*Maireana atkinsiana*	x	
Chenopodiaceae	*Maireana brevifolia*	x	x
Chenopodiaceae	*Maireana carnosa*	x	
Chenopodiaceae	*Maireana convexa*	x	x
Chenopodiaceae	*Maireana georgei*	x	x
Chenopodiaceae	*Maireana glomerifolia*	x	x
Chenopodiaceae	*Maireana oppositifolia*	x	
Chenopodiaceae	*Maireana pentatropis*	x	x
Chenopodiaceae	*Maireana planifolia*	x	
Chenopodiaceae	*Maireana platycarpa*	x	
Chenopodiaceae	*Maireana pyramidata*	x	x
Chenopodiaceae	*Maireana sedifolia*	x	x
Chenopodiaceae	*Maireana thesioides*	x	x

Family	Taxon	Previous survey	Current survey
Chenopodiaceae	*Maireana tomentosa*	x	
Chenopodiaceae	*Maireana trichoptera*	x	x
Chenopodiaceae	*Maireana triptera*	x	x
Chenopodiaceae	*Rhagodia drummondii*	x	x
Chenopodiaceae	*Rhagodia eremaea*	x	
Chenopodiaceae	*Rhagodia spinescens*	x	
Chenopodiaceae	*Salsola australis*	x	x
Chenopodiaceae	*Sclerolaena brevifolia*		x
Chenopodiaceae	*Sclerolaena cuneata*	x	x
Chenopodiaceae	*Sclerolaena diacantha*	x	x
Chenopodiaceae	*Sclerolaena drummondii*	x	
Chenopodiaceae	*Sclerolaena eriacantha*	x	
Chenopodiaceae	*Sclerolaena eurotioides*	x	
Chenopodiaceae	*Sclerolaena obliquicuspis*	x	
Chenopodiaceae	*Sclerolaena parviflora*	x	
Chenopodiaceae	*Sclerolaena patenticuspis*	x	
Chenopodiaceae	*Sclerolaena* sp.	x	
Chenopodiaceae	*Sclerolaena uniflora*	x	
Chenopodiaceae	*Tecticornia disarticulata*	x	
Chenopodiaceae	*Tecticornia indica*	x	
Convolvulaceae	*Convolvulus clementii*	x	
Convolvulaceae	*Convolvulus remotus*	x	
Cucurbitaceae	**Cucumis myriocarpus*	x	
Euphorbiaceae	*Euphorbia drummondii*	x	
Fabaceae	**Erythrostemon gilliesii*	x	
Fabaceae	**Medicago minima*	x	
Fabaceae	*Acacia*? *duriuscula*	x	
Fabaceae	*Acacia acuminata*	x	
Fabaceae	*Acacia assimilis*	x	
Fabaceae	*Acacia burkittii*	x	x
Fabaceae	*Acacia caesaneura*	x	
Fabaceae	*Acacia colletioides*	x	
Fabaceae	*Acacia coolgardiensis*	x	
Fabaceae	*Acacia donaldsonii*	x	
Fabaceae	*Acacia eremophila*	x	
Fabaceae	*Acacia erinacea*	x	x
Fabaceae	*Acacia hemiteles*	x	x
Fabaceae	*Acacia jennerae*	x	x
Fabaceae	*Acacia kalgoorliensis*	x	
Fabaceae	*Acacia ligulata*	x	

Family	Taxon	Previous survey	Current survey
Fabaceae	*Acacia microbotrya*	x	
Fabaceae	*Acacia murrayana*	x	
Fabaceae	*Acacia nyssophylla*	x	x
Fabaceae	*Acacia oswaldii*	x	
Fabaceae	*Acacia prainii*	x	
Fabaceae	*Acacia* sp.	x	
Fabaceae	*Acacia tetragonophylla*	x	x
Fabaceae	*Acacia victoriae*	x	
Fabaceae	*Glycyrrhiza acanthocarpa*	x	
Fabaceae	*Senna artemisioides*	x	
Fabaceae	*Senna artemisioides* subsp. *filifolia*	x	x
Fabaceae	*Senna artemisioides* subsp. x *artemisioides*	x	
Fabaceae	*Senna cardiosperma*	x	x
Fabaceae	*Senna pleurocarpa* var. *angustifolia*	x	
Fabaceae	*Senna stowardii*	x	
Fabaceae	*Swainsona canescens*	x	
Fabaceae	*Templetonia ceracea*	x	
Fabaceae	*Templetonia egena*	x	
Fabaceae	*Templetonia sulcata*	x	
Frankeniaceae	*Frankenia interioris*	x	
Geraniaceae	*Erodium crinitum*	x	
Geraniaceae	*Erodium cygnorum*		x
Goodeniaceae	*Goodenia mimuloides*		x
Goodeniaceae	*Goodenia pinnatifida*	x	
Goodeniaceae	*Goodenia* sp.	x	
Goodeniaceae	*Scaevola spinescens*	x	x
Gyrostemonaceae	*Codonocarpus cotinifolius*	x	
Lamiaceae	**Marrubium vulgare*	x	
Lamiaceae	**Mentha suaveolens*	x	
Lamiaceae	**Salvia verbenaca*	x	x
Lamiaceae	*Westringia rigida*	x	x
Loranthaceae	*Amyema gibberula* var. *gibberula*		x
Loranthaceae	*Amyema linophylla* var. *linophylla*		x
Loranthaceae	*Amyema miquelii*	x	
Loranthaceae	*Amyema preissii*	x	x
Malvaceae	*Radyera farragei*	x	
Malvaceae	*Sida calyxhymenia*	x	
Malvaceae	*Sida* sp.	x	
Malvaceae	*Sida* sp. (sterile)	x	
Malvaceae	*Sida spodochroma*	x	

Family	Taxon	Previous survey	Current survey
Meliaceae	*Melia azedarach*	x	
Myrtaceae	*Callistemon phoeniceus*	x	
Myrtaceae	*Eucalyptus brockwayi* (P3)	x	
Myrtaceae	*Eucalyptus camaldulensis*	x	
Myrtaceae	*Eucalyptus campaspe*	x	
Myrtaceae	*Eucalyptus celastroides*	x	
Myrtaceae	*Eucalyptus celastroides* subsp. *celastroides*		x
Myrtaceae	*Eucalyptus celastroides* subsp. *virella*	x	
Myrtaceae	*Eucalyptus corrugata*	x	
Myrtaceae	*Eucalyptus diptera*	x	
Myrtaceae	*Eucalyptus dundasii*	x	
Myrtaceae	*Eucalyptus eremophila*	x	
Myrtaceae	*Eucalyptus erythronema*	x	
Myrtaceae	*Eucalyptus flocktoniae*	x	
Myrtaceae	*Eucalyptus formanii* (P4)	x	
Myrtaceae	*Eucalyptus griffithsii*	x	x
Myrtaceae	*Eucalyptus lesouefii*	x	x
Myrtaceae	*Eucalyptus oleosa* subsp. *oleosa*	x	x
Myrtaceae	*Eucalyptus planipes*		x
Myrtaceae	*Eucalyptus ravida*	x	x
Myrtaceae	*Eucalyptus salmonophloia*	x	x
Myrtaceae	*Eucalyptus salubris*	x	
Myrtaceae	*Eucalyptus* sp. (sterile)	x	
Myrtaceae	*Eucalyptus stricklandii*	x	
Myrtaceae	*Eucalyptus torquata*	x	
Myrtaceae	*Eucalyptus transcontinentalis*	x	x
Myrtaceae	*Eucalyptus woodwardii*	x	
Myrtaceae	*Melaleuca armillaris* subsp. *armillaris*	x	
Myrtaceae	*Melaleuca sheathiana*	x	
Nitrariaceae	*Nitraria billardierei*	x	
Oxalidaceae	*Oxalis perennans*		x
Pittosporaceae	*Pittosporum angustifolium*	x	x
Poaceae	**Cenchrus clandestinus*	x	
Poaceae	**Stenotaphrum secundatum*	x	
Poaceae	*Aristida contorta*	x	
Poaceae	*Austrostipa elegantissima*	x	x
Poaceae	*Austrostipa nitida*	x	x
Poaceae	*Austrostipa scabra*	x	
Poaceae	*Cynodon dactylon*	x	
Poaceae	*Enneapogon caerulescens*	x	

Family	Taxon	Previous survey	Current survey
Poaceae	*Enneapogon polyphyllus*		x
Poaceae	*Enteropogon ramosus*	x	
Poaceae	*Eragrostis dielsii*	x	x
Poaceae	*Eragrostis eriopoda*	x	
Poaceae	*Eriachne helmsii*	x	
Poaceae	*Rytidosperma caespitosum*	x	
Poaceae	*Triodia irritans*	x	
Poaceae	*Triodia scariosa*	x	x
Polygonaceae	**Rumex hypogaeus*	x	
Primulaceae	**Lysimachia arvensis*	x	
Proteaceae	*Grevillea nematophylla* subsp. *nematophylla*	x	x
Rhamnaceae	*Cryptandra aridicola*	x	
Rhamnaceae	*Trymalium myrtillus* subsp. *myrtillus*	x	
Santalaceae	*Exocarpos aphyllus*	x	x
Santalaceae	*Santalum acuminatum*	x	x
Santalaceae	*Santalum spicatum*	x	x
Sapindaceae	*Alectryon oleifolius*	x	x
Sapindaceae	*Alectryon oleifolius* subsp. *canescens*	x	
Sapindaceae	*Dodonaea adenophora*	x	
Sapindaceae	*Dodonaea lobulata*	x	x
Scrophulariaceae	*Eremophila*? *granitica*	x	
Scrophulariaceae	*Eremophila alternifolia*	x	x
Scrophulariaceae	*Eremophila caperata*	x	x
Scrophulariaceae	*Eremophila clarkei*	x	
Scrophulariaceae	*Eremophila decipiens*	x	
Scrophulariaceae	*Eremophila decipiens* subsp. *decipiens*	x	x
Scrophulariaceae	*Eremophila georgei*	x	
Scrophulariaceae	*Eremophila glabra*	x	
Scrophulariaceae	*Eremophila glabra* subsp. *glabra*	x	x
Scrophulariaceae	*Eremophila granitica*	x	
Scrophulariaceae	*Eremophila interstans*	x	
Scrophulariaceae	*Eremophila interstans* subsp. *interstans*	x	x
Scrophulariaceae	*Eremophila interstans* subsp. *virgata*	x	
Scrophulariaceae	*Eremophila ionantha*	x	x
Scrophulariaceae	*Eremophila longifolia*	x	x
Scrophulariaceae	*Eremophila metallicorum*		x
Scrophulariaceae	*Eremophila miniata*	x	
Scrophulariaceae	*Eremophila oblonga*		x
Scrophulariaceae	*Eremophila oldfieldii*	x	
Scrophulariaceae	*Eremophila oldfieldii* subsp. *angustifolia*	x	x

Family	Taxon	Previous survey	Current survey
Scrophulariaceae	*Eremophila oldfieldii* subsp. *oldfieldii*	x	
Scrophulariaceae	*Eremophila oppositifolia*	x	
Scrophulariaceae	*Eremophila oppositifolia* subsp. *angustifolia*	x	
Scrophulariaceae	*Eremophila oppositifolia* subsp. *oppositifolia*		x
Scrophulariaceae	*Eremophila parvifolia*	x	
Scrophulariaceae	*Eremophila parvifolia* subsp. *auricampa*	x	x
Scrophulariaceae	*Eremophila pustulata*	x	
Scrophulariaceae	*Eremophila praecox* (P2)	x	x
Scrophulariaceae	*Eremophila scoparia*	x	x
Scrophulariaceae	*Eremophila* sp. (sterile)	x	
Scrophulariaceae	*Myoporum platycarpum*	x	x
Solanaceae	**Datura ferox*		x
Solanaceae	**Lycium ferocissimum*	x	x
Solanaceae	**Nicotiana glauca*	x	
Solanaceae	**Solanum nigrum*	x	
Solanaceae	*Lycium australe*	x	x
Solanaceae	*Solanum esuriale*		x
Solanaceae	*Solanum lasiophyllum*	x	
Solanaceae	*Solanum nummularium*	x	x
Solanaceae	*Solanum orbiculatum*	x	
Tamaricaceae	**Tamarix aphylla*	x	
Thymelaeaceae	*Pimelea microcephala*	x	x
Zygophyllaceae	*Roepera aurantiaca*	x	
Zygophyllaceae	*Roepera eremaea*	x	x
Zygophyllaceae	*Roepera fruticulosa*	x	
Zygophyllaceae	*Roepera glauca*	x	
Zygophyllaceae	*Roepera ovata*		x
Zygophyllaceae	*Roepera reticulata*		x
Zygophyllaceae	*Roepera* sp.	x	
Zygophyllaceae	*Roepera* sp. sterile	x	

Appendix 5 Records of weed species from the desktop review

Family	Name	Declared Pest/WoNS
Aizoaceae	**Aizoon pubescens*	
Aizoaceae	**Mesembryanthemum crystallinum*	
Aizoaceae	**Mesembryanthemum nodiflorum*	
Amaranthaceae	**Amaranthus viridis*	
Anacardiaceae	**Schinus molle*	
Anacardiaceae	**Schinus molle* var. *areira*	
Apocynaceae	**Asclepias curassavica*	
Apocynaceae	**Orbea variegata*	
Arecaceae	**Phoenix dactylifera*	
Asparagaceae	**Agave americana*	
Asteraceae	**Arctotheca calendula*	
Asteraceae	**Carthamus lanatus*	
Asteraceae	**Centaurea melitensis*	
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	**Helianthus annuus*	
Asteraceae	**Lactuca serriola* forma *serriola*	
Asteraceae	**Monoculus monstrosus*	
Asteraceae	**Oligocarpus calendulaceus*	
Asteraceae	**Oncosiphon suffruticosum*	
Asteraceae	**Sonchus oleraceus*	
Asteraceae	**Symphyotrichum squamatum*	
Boraginaceae	**Buglossoides arvensis*	
Boraginaceae	**Echium plantagineum*	Declared pest, S22(2) (C3)
Boraginaceae	**Heliotropium europaeum*	
Brassicaceae	**Alyssum linifolium*	
Brassicaceae	**Brassica tournefortii*	
Brassicaceae	**Capsella bursa-pastoris*	
Brassicaceae	**Carrichtera annua*	
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
Caryophyllaceae	**Spergularia rubra*	
Chenopodiaceae	**Chenopodium album*	
Chenopodiaceae	**Chenopodium murale*	
Cucurbitaceae	**Cucumis myriocarpus*	
Didiereaceae	**Portulacaria afra*	
Fabaceae	**Alhagi maurorum*	Declared pest, S22(2) (C3)
Fabaceae	**Erythrostemon gilliesii*	
Fabaceae	**Medicago minima*	
Fabaceae	**Medicago polymorpha*	
Geraniaceae	**Erodium cicutarium*	
Lamiaceae	**Marrubium vulgare*	
Lamiaceae	**Mentha suaveolens*	
Lamiaceae	**Salvia reflexa*	
Lamiaceae	**Salvia verbenaca*	
Liliaceae	**Asphodelus fistulosus*	
Malvaceae	**Malva parviflora*	
Oxalidaceae	**Oxalis bowiei*	
Oxalidaceae	**Oxalis pes-caprae*	
Poaceae	**Bromus diandrus*	
Poaceae	**Cenchrus ciliaris*	
Poaceae	**Cenchrus clandestinus*	
Poaceae	**Cynodon dactylon*	
Poaceae	**Hordeum glaucum*	
Poaceae	**Hordeum leporinum*	
Poaceae	**Rostraria pumila*	
Poaceae	**Schismus arabicus*	
Poaceae	**Schismus barbatus*	
Poaceae	**Stenotaphrum secundatum*	
Polygonaceae	**Polygonum aviculare*	
Polygonaceae	**Rumex hypogaeus*	
Polygonaceae	**Rumex vesicarius*	
Primulaceae	**Lysimachia arvensis*	
Solanaceae	**Datura inoxia*	
Solanaceae	**Lycium ferocissimum*	WoNS
Solanaceae	**Nicotiana glauca*	
Solanaceae	**Solanum nigrum*	
Tamariaceae	**Tamarix aphylla*	Declared pest, S22(2) (C3), WoNS
Urticaceae	**Urtica urens*	
Verbenaceae	**Phyla canescens*	
Zygophyllaceae	**Tribulus terrestris*	