

DECEMBER 2013



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**POLARIS METALS PTY LTD
J4 MINE AND HAUL ROAD
FLORA AND VEGETATION ASSESSMENT**

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FLORA AND VEGETATION ASSESSMENT

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ACRONYMS

AoAS	Atlas of Australian Soils
ARRP Act	<i>Agriculture and Related Resources Protection Act 1976</i>
BAM Act	<i>Biosecurity and Agriculture Management Act 2007</i>
BIF	Banded Ironstone Formation
CALM	Department of Conservation and Land Management (now DPaW and DER)
DAFWA	Department of Agriculture and Food Western Australia
DEC	Department of Environment and Conservation (now DPaW)
DER	Department of Environmental Regulation
DPaW	Department of Parks and Wildlife
DRF	Declared Rare Flora (now Threatened Flora)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EIA	Environmental Impact Assessment
EPA	Environment Protection Authority
EP Act	<i>Environment Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
IBRA	Interim Biogeographic Regionalisation for Australia, Version 7
IUCN	International Union for Conservation of Nature
PEC	Priority Ecological Community
SFDV	Sheet Flow Dependent Vegetation
TEC	Threatened Ecological Community
TPFL	Threatened and Priority Flora
WA	Western Australia
WAOL	Western Australian Organism List
WC Act	<i>Wildlife Conservation Act 1950</i>
WONS	Weeds of National Significance

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EXECUTIVE SUMMARY

Polaris Metals Pty Ltd (Polaris) operates the Carina Iron Ore mine, 130 km west of Kalgoorlie at a rate of 6 Mtpa. To expand production Polaris intends to develop the J4 deposit and utilise the existing processing facilities and rail siding of the Carina mine.

Polaris commissioned *ecologia* Environment (*ecologia*) to conduct a Level 2 flora and vegetation assessment for the J4 project area and the associated haul road to the Carina mine. Mattiske Consulting Pty Ltd (Mattiske) conducted two phases of flora and vegetation surveys of the J4 mine and haul road study area, the first in spring (October) 2012 with a follow-up survey in autumn (April) 2013.

A total of 281 quadrats (400 m² each) were sampled by *ecologia* in spring (September) 2013 over 65 person-days. The majority of quadrats (253) installed by Mattiske in the previous phases were resurveyed and an additional 28 quadrats were installed by *ecologia* in potential gaps. A series of transects were completed while walking to, from and between quadrats, for the purpose of targeting Threatened and Priority Flora and supplementing the species inventory. Additional transects were conducted in strategic locations throughout the study area and the region, with spacing (50, 100 or 200 m apart) dependent on habitat suitability for significant flora and the potential for impact.

A total of 359 vascular plant taxa were recorded from the J4 study area. The adequacy of flora sampling was estimated using a species accumulation curve, which estimated that between 82 and 85% of the taxa present were recorded.

No Threatened Flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Wildlife Conservation Act 1950* (WC Act) were recorded within the disturbance area. The absence of the Threatened taxa *Leucopogon spectabilis*, *Ricinocarpos brevis*, *Tetratheca aphylla* or *T. harperi* within the study area is corroborated by the lack of suitable habitat for these species.

Five Priority taxa were recorded in the J4 disturbance area, with an additional nine Priority species recorded in the study area during the current study. The five Priority taxa occurring within the disturbance area were: *Banksia arborea* (P4), *Calytrix ?creswellii* (P3), *Grevillea georgeana* (P3), *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) and *Neurachne annularis* (P3).

The nine Priority species recorded inside the study area but outside the disturbance area were: *Acacia crenulata* (P3), *Baeckea* sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586), *Beyeria rostellata* (P1), *Gompholobium cinereum* (P3), *Hibbertia lepidocalyx* subsp. *tuberculata* (P3), *Leptospermum macgillivrayi* (P1), *Mirbelia ferricola* (P3), *Sowerbaea multicaulis* (P4) and *Stenanthemum newbeyi* (P3).

Ten taxa represent range extensions of more than 100 km from the nearest location, according to locations lodged at the Herbarium of Western Australia. These taxa are: *Acacia leptopetala*, *Chrysocephalum apiculatum*, *Cryptandra aridicola*, *Digitaria ammophila*, *Indigofera australis*, *Isopogon gardneri*, *Microcorys obovata*, *Parietaria debilis*, *Phebalium microphyllum* complex and *Thysanotus* sp. Twining Wheatbelt (N.H. Brittan 81/29).

No Weeds of National Significance (WONS) or Declared Pests (weeds) for the Yilgarn region were recorded in the study area. Seven weed species were recorded within the study area: **Centaurea melitensis*, **Cleretum papulosum* subsp. *papulosum*, **Erodium aureum*, **Hypochaeris glabra*, **Sonchus asper*, **Sonchus oleraceus* and **Vulpia myuros*. One species, **Centaurea melitensis*, has a high environmental (risk) rating within the Department of Parks and Wildlife's (DPaW) classification of Environmental Weeds within the Coolgardie bioregion. A low number of individuals (less than two) of each weed species was recorded during the survey with the exception of **Sonchus oleraceus* (42 individuals recorded).

A total of 30 vegetation units were described and delineated within the study area, based on multivariate analysis, interpretation of aerial imagery and ground truthing. Eight of these communities were considered components of the Priority 1 Mount Jackson Range vegetation complexes (banded ironstone formation) Priority Ecological Community (PEC).

Vegetation units RMR3 (24.3 ha) and RMR7 (23.2 ha) each represent less than 0.1% of vegetation communities mapped within the study area. Although these units are likely exist beyond the study area they are also likely to have a restricted range due to be confined to the BIF range.

Broad scale mapping at the bioregion level by Shepherd *et al.* (2001) suggests that the vegetation associations 141, 435, 520, 538 and 936 are within the study area but these areas represent a small percentage of the regional distribution and are therefore considered to be well represented elsewhere in the bioregion.

Twenty-nine of the 30 vegetation units were found to be associated with Priority Flora, four of which support only one Priority species, *Neurachne annularis* (P3). Vegetation units RMR4 (155.6 ha), RMR1 (46.4 ha) and RMR6 (250.7 ha) which are all located on the upper rocky mid slopes and hilltops of the BIF range in study area, with 8.4 ha (5.4%), 1.0 ha (2.2%) and 17.8 ha (7.1%) of their extent within the proposed disturbance area respectively, were found to support the most Priority Flora. Collectively, these three vegetation units support eight of the 14 Priority Flora taxa recorded during this survey: *Banksia arborea* (P4), *Grevillea georgeana* (P3), *Hibbertia lepidocalyx* subsp. *tuberculata* (P3), *Leptospermum macgillivrayi* (P1) *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (P3), *Mirbelia ferricola* (P3) *Neurachne annularis* (P3) and *Stenanthemum newbeyi* (P3).

A review of the records in all available regional studies identified that *Neurachne annularis* and *Banksia arborea* are facing an impact of 10.2 and 18.5%, respectively, of their known locations. The impacts to the three other Priority Flora taxa recorded inside the disturbance area are lower: an impact of 6.3% to the number of locations of *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069); an impact of 2.9% to the locations of *Calytrix creswellii*; and 0.2% to *Grevillea georgeana*. The remaining Priority Flora recorded were not present within the disturbance area.

Vegetation unit SGP1, which is not located on BIF, will be proportionally impacted more than the other community types, with a proposed disturbance area of 58.6 ha (14.9% of the total area of the vegetation unit). Vegetation unit RMR8, located on BIF, has the next largest proportional impact; an area of 17.7 ha (9.3% of the total area of the vegetation unit).

1 INTRODUCTION

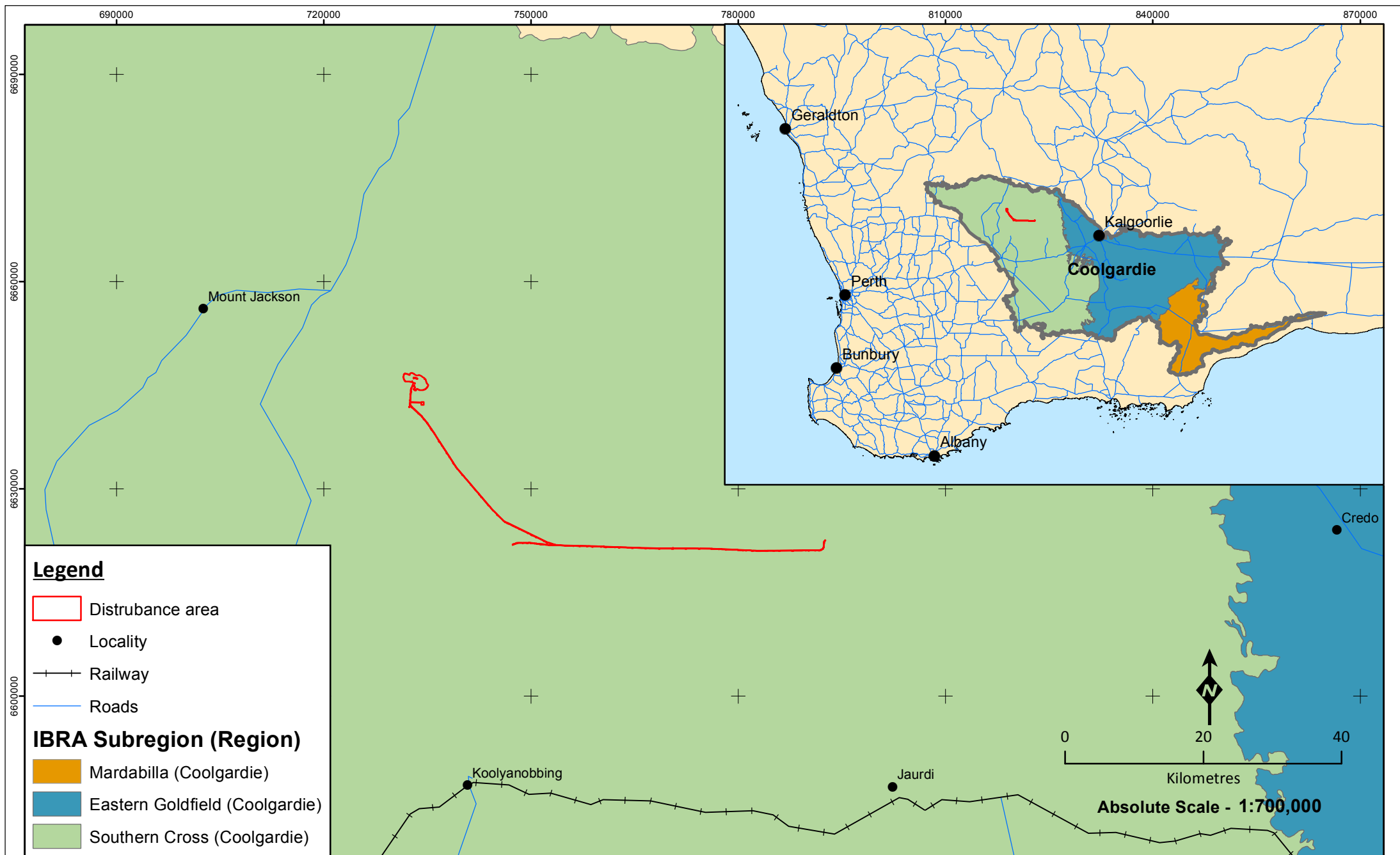
1.1 PROJECT BACKGROUND

Polaris Metals Pty Ltd (Polaris) operates the Carina Iron Ore mine, 130 km west of Kalgoorlie at a rate of 6 Mtpa. To expand production Polaris intends to develop the J4 deposit and utilise the existing processing facilities and rail siding of the Carina mine.

Polaris required a Level 2 flora and vegetation assessment, to be conducted for the J4 project including the haul road to the Carina mine. Mattiske Consulting Pty Ltd (Mattiske) conducted two phases of flora and vegetation surveys of the study area in spring (October) 2012 and in autumn (April) 2013. The quadrats established by Mattiske were re-sampled by *ecologia* Environment (*ecologia*) and new quadrats and transects were established where gaps were possibly present. The disturbance area, defined within this report as the area proposed to be cleared for any aspect associated with the project, covers 831.2 ha.

The Department of Parks and Wildlife (DPaW) recommends that for surveys on Banded Ironstone Formation (BIF), 30% of the survey effort should be outside of the target tenements. The total area surveyed here is referred to as the study area; and it includes the disturbance area and surroundings, allowing for the adjustment of the mining footprint. The study area covers 40,329 ha within the Coolgardie bioregion (Figure 1.1).

A small portion of the study area is located within the south-west corner of the Helena-Aurora Range Conservation Park, approximately 100 km north of Southern Cross and approximately 180 km west of Kalgoorlie, Western Australia.



Legend

- Disturbance area
- Locality
- Railway
- Roads

IBRA Subregion (Region)

- Mardabilla (Coolgardie)
- Eastern Goldfield (Coolgardie)
- Southern Cross (Coolgardie)

Figure 1.1
Project ID: 1555

Drawn: CP
 Date: 18/10/2013

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Unique Map ID: CP348

A4



**Location of the
 J4 disturbance area
 in relation to IBRA subregions**

1.2 LEGISLATIVE AND POLICY FRAMEWORK

Legislation relevant to the protection of biodiversity in Western Australia includes the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the Western Australian (WA) *Wildlife Conservation Act 1950* (WC Act) and the WA *Environmental Protection Act 1986* (EP Act).

The EPBC Act provides protection for matters of national environmental significance and includes provisions to protect threatened species and communities as well as the conservation of migratory species.

The WC Act provides for the protection of wildlife in Western Australia. Under Section 14 of this Act, all flora and fauna are protected in Western Australia. In addition, the Minister has published a list of species in need of special protection because they are considered rare, likely to become extinct, or are presumed extinct. The current listing was published in the WA Government Gazette on 17 September 2013.

The EP Act ensures that impacts on native flora and fauna are considered in the assessment of development proposals. *ecologia's* flora and vegetation assessment conforms to the requirements of the Environmental Protection Authority's (EPA's) *Position Statement No. 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection* (EPA 2002) and *Guidance Statement No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004b).

Whilst not a legislated act, DPaW's interim BIF protocol provides guidance on conducting floristic surveys on and within the vicinity of BIF ((DEC 2005).

1.2.1 Threatened and Priority Flora

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia)

At a Commonwealth level, Threatened flora are protected under the EPBC Act 1999, which lists species that are considered Critically Endangered, Endangered, Conservation Dependant, Extinct, or Extinct in the Wild (Appendix A).

Wildlife Conservation Act 1950 (Western Australia)

Taxa which have been adequately searched for and are deemed to be rare, in danger of extinction, or otherwise in need of special protection in the wild, are gazetted as Threatened Flora (Schedule 1, WC Act). Threatened Flora (Schedule 1, September 2013) taxa are further categorised by the Department according to their level of threat using IUCN Red List criteria:

- CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild;
- EN: Endangered – considered to be facing a very high risk of extinction in the wild; and
- VU: Vulnerable – considered to be facing a high risk of extinction in the wild.

These taxa are legally protected and their removal or impact to their surroundings cannot occur without Ministerial approval, obtained specifically on each occasion for each population (refer to Appendix A for conservation category definitions).

1.2.2 Priority Flora

The DPaW maintains a list of Priority Flora taxa, which are considered poorly known, uncommon or under threat but for which there is insufficient justification, based on known distribution and population sizes, for inclusion in Schedule 1 of the WC Act. A Priority taxon is assigned to one of five priority categories (Appendix A).

1.2.3 Introduced Flora

Weeds of National Significance (WONS)

At a national level there are 32 weed species listed as Weeds of National Significance (WONS). *The Commonwealth National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance* (DSEWPaC 2013) describes broad goals and objectives to manage these species.

Declared Pests (Weeds)

The *Biosecurity and Agriculture Management Act 2007* (BAM Act, DAFWA 2007) seeks to prevent serious animal and plant pests and diseases from entering the State and becoming established, and to minimise the spread and impact of any that are already present. The BAM Act (and associated regulations) replaces the *Agriculture and Related Resources Protection Act 1976* (and associated regulations). The BAM regulations were enacted on 1 May 2013, placing organisms into four categories:

- Permitted organism (listed under Section 11) – permitted in Western Australia subject to regulations;
- Prohibited organism (listed under Section 12) – prohibited in Western Australia subject to regulations (i.e. is a Declared Pest for the whole of State);
- Permitted organism: permit required (under regulation 73) – must not be imported unless in accordance with an import permit; and
- Permitted organism: Declared Pests (under Section 22) – can apply to part of or the whole of the State.

The current Western Australian Organism List (WAOL) was published on 1 May 2013 (DAFWA 2013) and lists organisms in each of these categories. Unlisted organisms must not be imported (unless in accordance with an import permit and regulations). The BAM Act further categorises Declared Pests in one of three control categories (Table 1.1):

- C1 – Exclusion;
- C2 – Eradication; or
- C3 – Management.

Table 1.1 – Control categories for Declared Pests

Declared plant category	Description
C1 - Exclusion	Pests assigned to this category are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 - Eradication	Pests assigned to this category are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 - Management	Pests assigned to this category are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

*Source: BAM Act 2007 and WAOL (DAFWA 2013)

Environmental Weeds

A third and much more extensive categorisation of weeds has been developed by the DPaW in the Environmental Weed Strategy (CALM 1999). Species considered to adversely affect the communities they invade are evaluated based on the following criteria:

- Invasiveness; ability to invade bushland in good to excellent condition or ability to invade waterways (scored as yes or no).
- Distribution; wide current or potential distribution including consideration of known history of widespread distribution elsewhere in the world (scored as yes or no).
- Environmental impacts; ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community (scored as yes or no).

Weeds listed as Environmental Weeds are ranked into four categories using the above criteria and the scoring system:

- High; a species which scores yes to all three of the above criteria. A rating of high indicates a species that should be prioritised for control and/or research.
- Moderate; a species which scores yes for two of the above criteria. A rating of moderate indicates a species which should be monitored. Control or research should be directed to it if funds are available.
- Mild; a species which scores yes to one of the criteria. A mild rating indicates monitoring or control if appropriate.
- Low; a species which does not score yes for any of the criteria. A low rating indicates a low requirement for monitoring.

1.2.4 Threatened and Priority Ecological Communities

Ecological communities are naturally occurring biological assemblages located in a particular type of habitat. At a national level, Threatened Ecological Communities (TECs) are protected under the EPBC Act. TECs are listed under this Act as either 'Critically Endangered', 'Endangered' or 'Vulnerable'. A definition of these codes is provided in Appendix A.

The Western Australian DPaW also maintains a list of TECs endorsed by the Minister of Environment (DPaW 2013) that are classified as being either 'Presumed Totally Destroyed', 'Critically Endangered', 'Endangered' or 'Vulnerable'. Definition of these codes is also provided in Appendix A.

The DPaW maintains an additional list of Priority Ecological Communities (PECs), for communities that could potentially be classified as TECs, but are not currently adequately defined or surveyed. Communities are placed in this category while consideration can be given to their declaration as a TEC. Five priority categories exist for PECs and these are defined in Appendix A.

1.2.5 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are areas that require special protection due to aspects such as landscape, wildlife of historical value. ESAs are declared under the *Environmental Protection (Clearing of Native Vegetation) Regulation 2004*.

1.2.6 Conservation Estate

The National Reserve System (NRS) is a network of protected areas made up of Commonwealth, state and territory reserves managed for conservation under international guidelines. The objective of placing areas into the Conservation Estate is to achieve and maintain a comprehensive, adequate and representative reserve system for the biodiversity values of Australia. Areas within the Conservation Estate in Western Australia are typically vested in the Conservation Commission and managed by the DPAW.

1.3 SURVEY OBJECTIVES

The primary objective of the survey is to provide sufficient information to the EPA to enable informed decision-making with respect to the impact of the proposed development on the vegetation and flora of the study and disturbance area.

Specifically, this survey was carried out to satisfy the requirements of EPA Guidance Statement 51, EPA Position Statement No. 3 and DPAW's interim BIF protocol. It provides:

- A review of background information (including literature and database searches);
- An inventory of species observed in the study area;
- An inventory and a map of species of biological and conservation significance recorded or likely to occur within the study area and surrounds;
- An inventory and a map of introduced species recorded in the study area;
- An inventory of vegetation types and flora species occurring in the study area, incorporating recent published and unpublished records;
- A map and detailed description of vegetation types (to NVIS Level V: Association) occurring in the study area and an assessment of which vegetation units represent TECs or PECs;
- A map of the vegetation condition and discussion on the type of disturbances encountered;
- A map of Sheet Flow and Surface Water Dependent Vegetation, and discussion on the vegetation units described that may be surface water dependent, if present;
- An appraisal of the current knowledge base for the area, including a review of previous surveys conducted in the area relevant to the current study; and
- A review of regional and biogeographical significance, including the conservation status of species recorded in the study area.

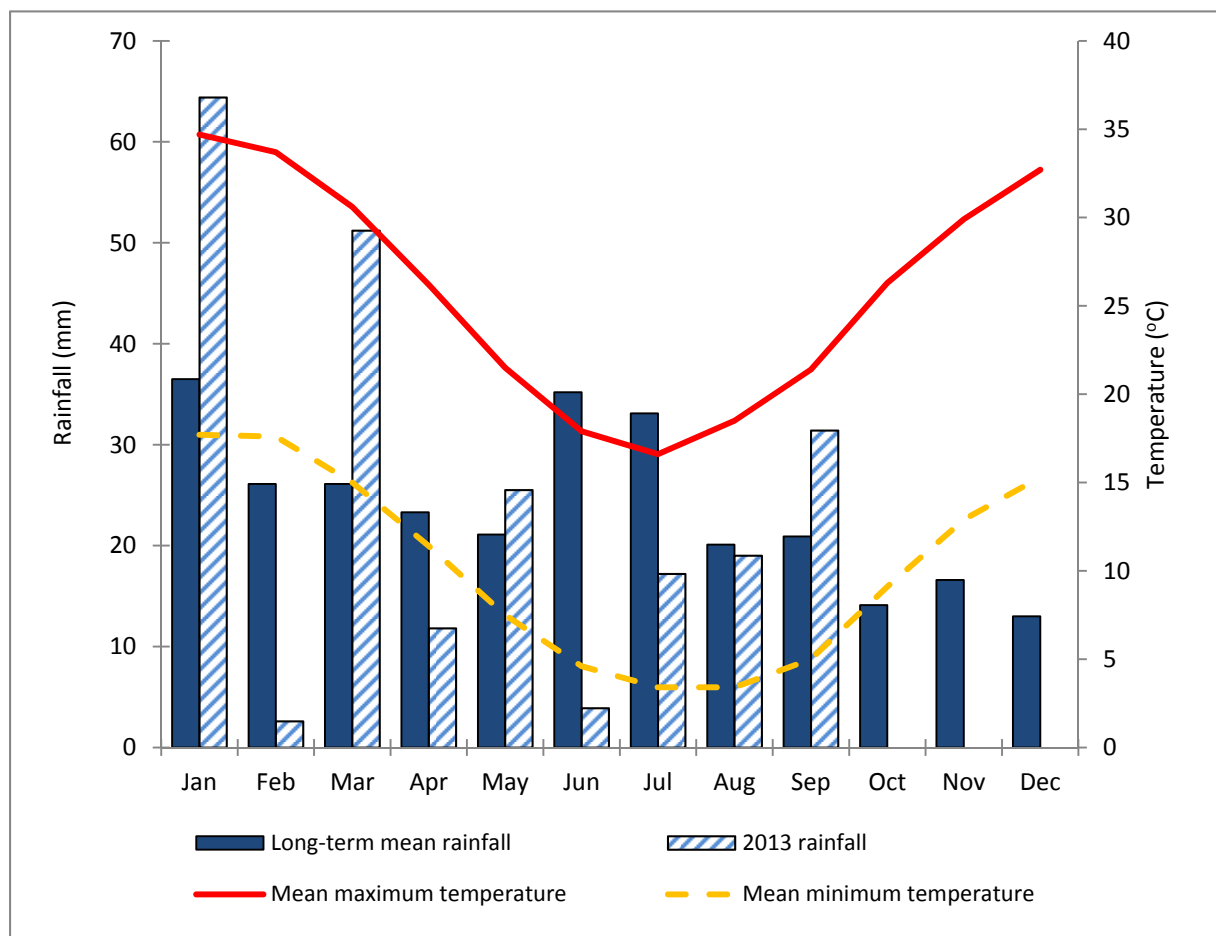
2 EXISTING ENVIRONMENT

2.1 CLIMATE

The study area is located in the Coolgardie bioregion of Western Australia. The Coolgardie region experiences an arid to semi-arid climate with four distinct seasons; a hot summer from December to February, a mild autumn from March to May followed by a cool winter from June to August in which the highest rainfall is recorded and a mild spring from September to November. Temperatures are generally high, with summer temperatures frequently reaching the mid to high 30°C.

Rainfall is localised and the quantity is consistent on an annual basis, with an average of 250-300 mm of rainfall being recorded throughout the year (McKenzie *et al.* 2002). The Coolgardie bioregion has a bimodal rainfall distribution; from December to March rains resulting from tropical storms formed in the north of the state occasionally reach the Coolgardie bioregion bringing summer rains. From May to August, extensive cold fronts move eastwards across the state reaching the Coolgardie bioregion. These fronts usually produce only light rains and thunderstorms.

The nearest Bureau of Meteorology (BOM) station for which complete rainfall data available is Koolyanobbing (Site No. 012227), 58 km south of the J4 mine and 31 km south of the haul road. Koolyanobbing has an average annual rainfall of 265.6 mm (BOM 2013). The nearest complete temperature data is available from the Southern Cross Airport (Site No: 012320). These locations experience a typical Coolgardie climate of hot summers with late sporadic summer storms and cool wet winters (Figure 2.1 and Table 2.1).



Source: BOM (2013). Rainfall data from Koolyanobbing and temperature data from Southern Cross Airport.

Figure 2.1 – Mean monthly rainfall and temperature

Rainfall data in the period preceding the spring 2013 flora surveys is also available from Windarling (Site No. 012141) 50 km to the north-north-west (Table 2.1). Rainfall from Koolyanobbing in the six months prior to the survey was 44.9 mm below the long term average. However in January and March, Koolyanobbing received rainfall that exceeded the long term average by 27.9 and 25.1 mm, respectively. Rainfall reviewed at Windarling in the six months prior to the survey was 17.5 mm above the long term average.

Table 2.1 – Monthly rainfall at Koolyanobbing and Windarling

Month	Koolyanobbing		Windarling	
	2013 Monthly total (mm)	1967-2013 Monthly average (mm)	2013 Monthly total (mm)	2004-2013 Monthly average (mm)
October 2012	5.6	14.1	18.8	11
November 2012	74	16.6	28.6	13.4
December 2012	21.2	13	22.2	13.1
January 2013	64.4	36.5	43.6	37.4
February 2013	2.6	26.1	0.4	35.9
March 2013	51.2	26.1	54.8	26.5
April 2013	11.8	23.3	21.2	21.9
May 2013	25.5	21.1	45.8	20
June 2013	3.9	35.2	15.4	22.8
July 2013	17.2	33.1	25.2	28.8
August 2013	19	20.1	12.6	17
September 2013	31.4	20.9	26.8	19

Source: BOM (2013)

2.2 GEOLOGY AND SOILS

2.2.1 Geology

The Coolgardie bioregion is within the Yilgarn Craton and the Fraser Range Block. The Yilgarn Craton is comprised of granite basements which include Archaean Greenstone intrusions, a subset of the Yilgarn Craton, the Fraser Range Block is derived from Proterozoic granite and gneiss, frequented by ironstone outcrops and banded ironstone formations (Beard 1990).

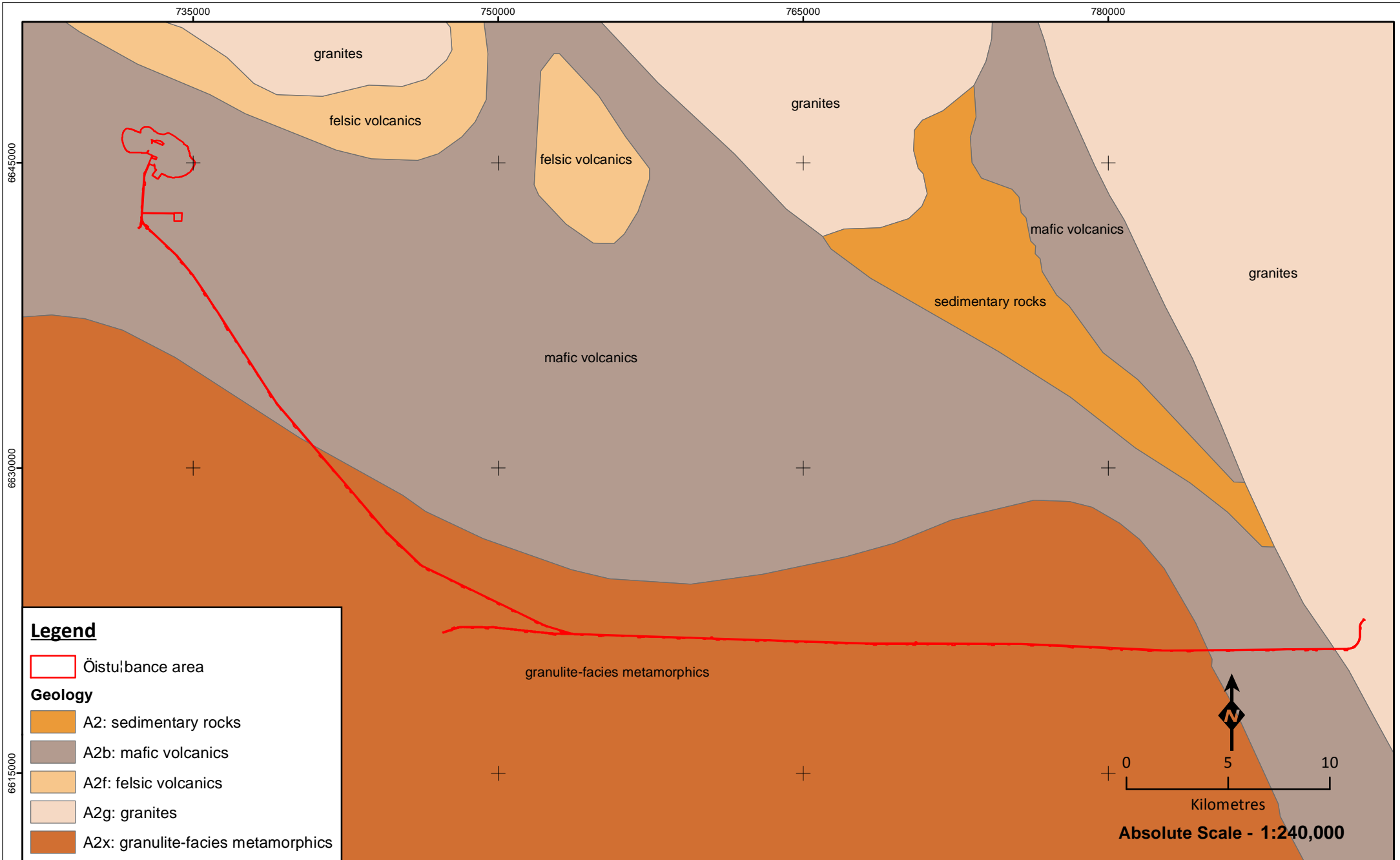
More specifically, the Coolgardie bioregion contains Eocene marine limestone plains with a granite basement and red-brown loams and aeolian sand soils in the north. To the south, gently undulating uplands on granite strata and low valleys of banded low greenstone hills occur. Undulating plains interrupted by hills and ridges of Archaean greenstones and Proterozoic basic can be found to the east. Drainage is mostly occluded (McKenzie *et al.* 2002).

The J4 mine and haul road study area is comprised of three geological units, A2b, A2g and A2x (Table 2.2 and Figure 2.2), which lie within, respectively, the dominant mafic volcanics, granites and granulite-facies metamorphics from the Archaean era. The cover rocks are comprised entirely of basement from the Archaean Palaeoproterozoic era (DMP 2007).

Table 2.2 – Geology of the J4 mine and haul road study area

Geological code	Lithology association	Area within study area (ha)	Definition of code
A2b	mafic volcanics	625.4	Archaean
A2g	granites	9.1	Archaean
A2x	granulite-facies metamorphics	197.0	Archaean

Source: Geological map of Western Australia (DMP 2007)



Legend

Östurbance area

Geology

- A2: sedimentary rocks
- A2b: mafic volcanics
- A2f: felsic volcanics
- A2g: granites
- A2x: granulite-facies metamorphics



Geology of the J4 and haul road disturbance area

Figure: 2.2
Project ID: 1475

Drawn: CP
Date: 18/10/2013

Unique Map ID: CP349

A4

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

2.2.2 Soils

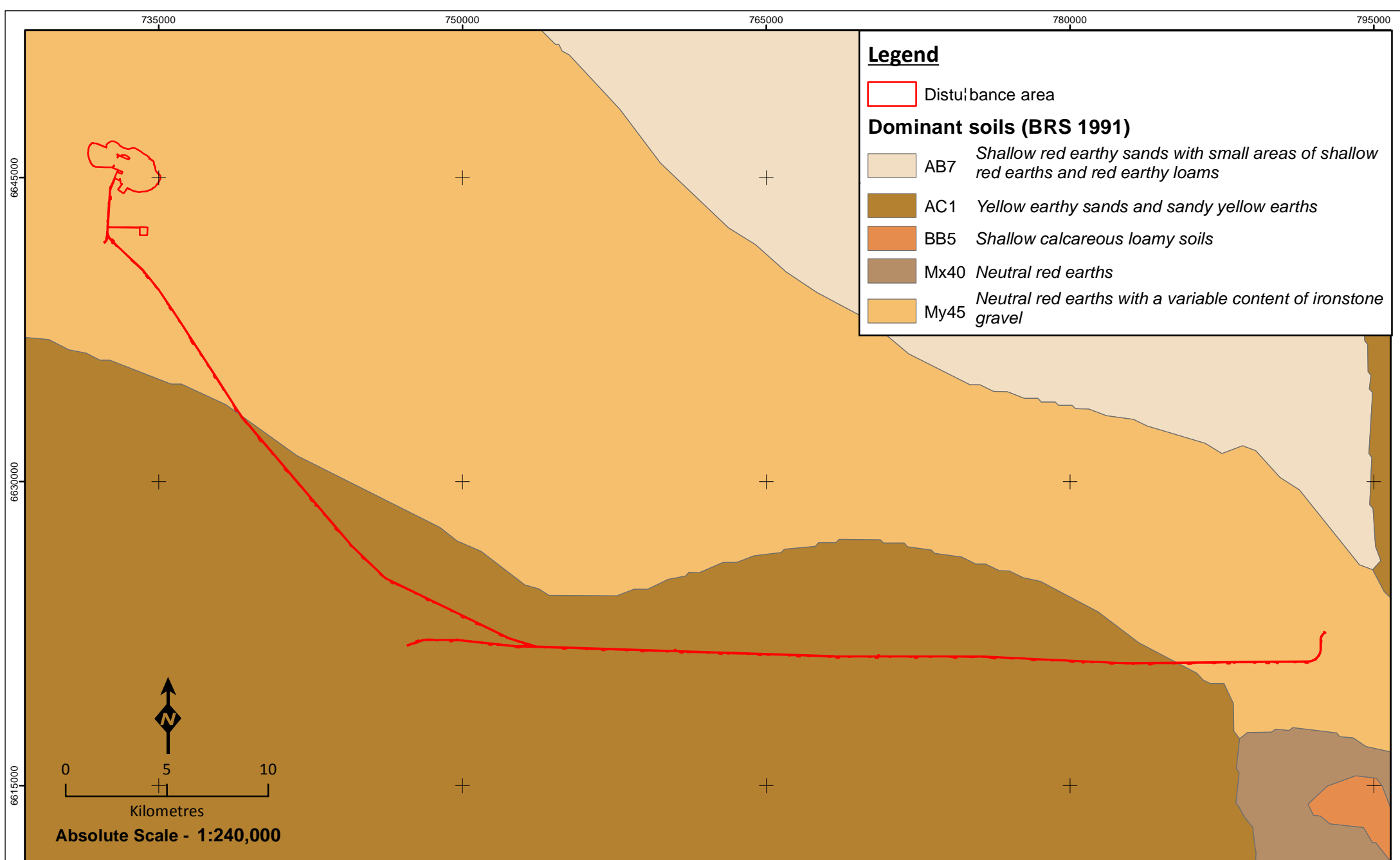
Forty-four broad soil groups have been identified in the Coolgardie bioregion in the Atlas of Australian Soils (BRS 1991). Soils are predominantly red-brown loams and aeolian sands.

The most extensive soils are yellow earthy sands and sandy yellow earths on depositional sites, with ironstone gravels together on erosion sites where they are underlain by hardened mottled-zone. The south is populated by undulating land with small valleys occasionally broken by low, narrow rocky hills and ridges, some clay pans and salt lakes with dunes. The chief soils are brown and grey-brown calcareous earths, mostly with loamy surface soils, but there are some areas with sandy surface soils and gilgais (BRS 1991).

Within the disturbance area the dominant soil types are yellow, earthy sands and neutral red earths with a variable content of ironstone gravel (Figure 2.3). These have been further classified into the following units (BRS 1991):

AC1: Gently sloping to gently undulating plateau areas, or uplands on granites, gneisses, and allied rocks, with long gentle slopes and in places abrupt erosional scarps; some granitic bosses and tors; irregularly traversed by narrow shallow valleys and flats: chief soils are yellow earthy sands and sandy yellow earths on depositional sites, and ironstone gravels together with ironstone gravels on erosional sites where they are underlain by hardened mottled-zone material. Soil dominance varies locally.

My45: Undulating terrain with small gently sloping plains and some ranges on basic schists, gneisses, and allied rocks: chief soils seem to be neutral red earths with a variable content of ironstone gravel. Associated are small areas of unit Fa4 (ranges with numerous rock outcrops containing basic igneous rocks (greenstones): chief soils seem to be shallow loams). Red-brown hardpan may occur in portions of the area, especially the northern portions.



**Soil assemblages of the
J4 and haul road disturbance area**

Figure: 2.3
Project ID: 1475

Drawn: CP
Date: 18/10/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

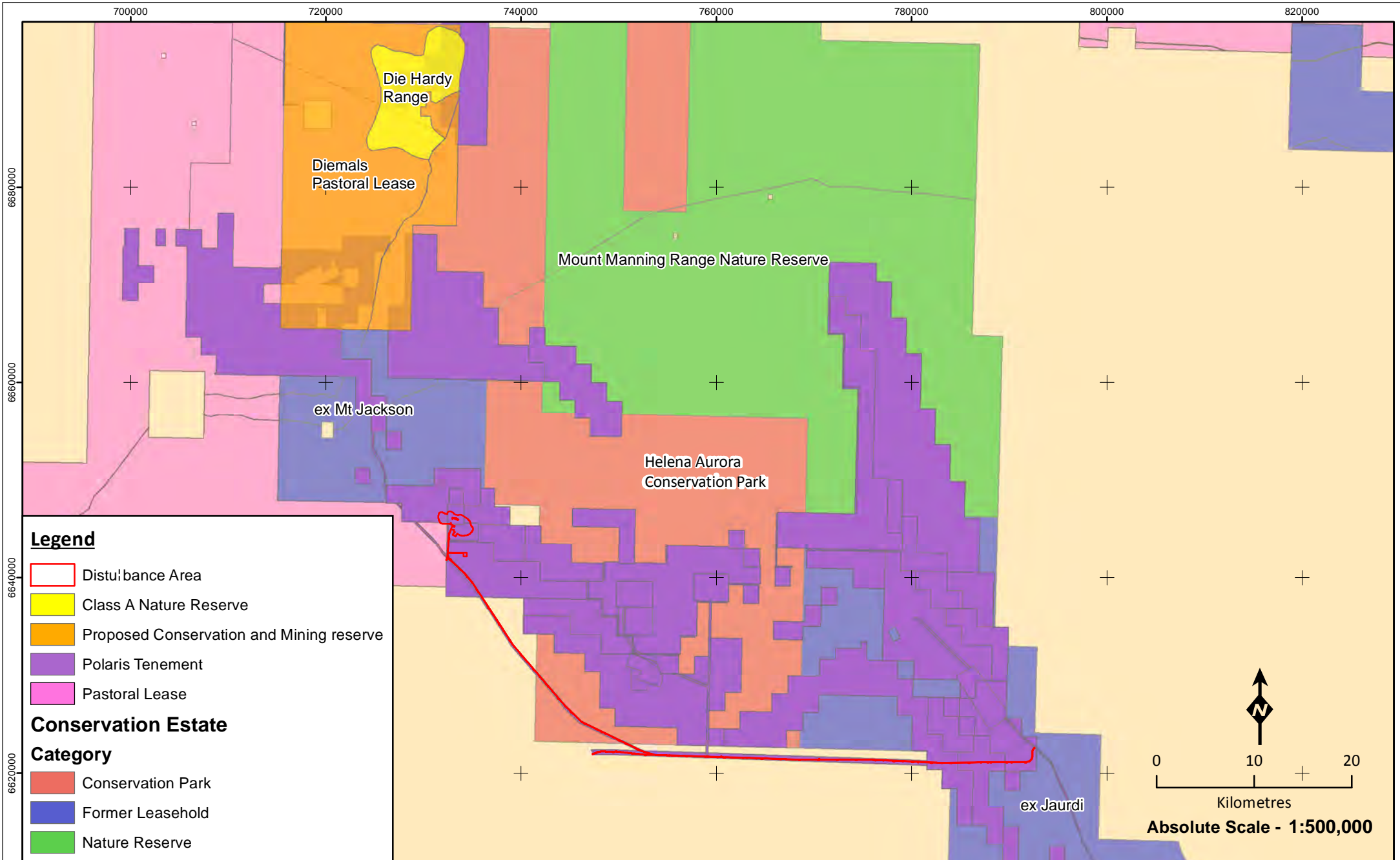
Unique Map ID: CP350

2.3 LAND USE HISTORY

Within the Coolgardie bioregion there are 202 different pastoral leases (Landgate 2012) which collectively occupy 26,558 km² (20.6%). Areas set aside for conservation account for 15,384 km² (11.9%), consisting of 41 conservation reserves or national parks and five unnamed nature reserves listed in the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) spatial database (DSEWPaC 2009). In addition, the pastoral leases of Mt Jackson, Mt Elvire, Jaurdi and Credo have been purchased by the DPaW and destocked. These areas will be incorporated into the existing conservation estate, contributing a further 3.7% of the bioregion. The state heritage listed Great Western Woodlands of Western Australia occupies the south western section of the bioregion and the Goldfields Water Supply Scheme also traverses the bioregion, collectively occupying 58,044 km² (45.0%) of the bioregion.

Aboriginal reserves and heritage areas occupy 2,905 km² (2.3%) of the bioregion. Mining and exploration leases collectively occupy 64.5% of the bioregion although active mining is largely confined to ironstone ranges and greenstone belts throughout (Landgate 2013). Unallocated Crown land accounts for about 7.6 km² (0.006%) of the Coolgardie bioregion.

The J4 study area lies to the west and south of the Helena-Aurora Range Conservation Park, with a small portion of the haul road intersecting the south west corner of the Park. The eastern end of the haul road lies within the ex-leasehold of Jaurdi which is proposed for a mixture of conservation and conservation/mining areas. The north-west portion of the study area is situated on the L3114639 pastoral lease (Figure 2.4). The study area is intersected by more than 30 mining exploration leases. Existing iron ore mines are also present in the region, with the Carina mine approximately 63 km to the east of the J4 lease and Koolyanobbing mine approximately 35 km to the south of the haul road.



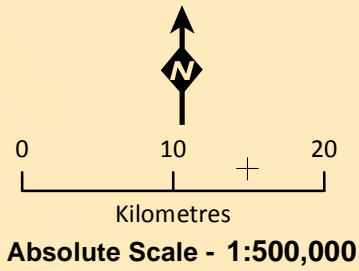
Legend

- Disturbance Area
- Class A Nature Reserve
- Proposed Conservation and Mining reserve
- Polaris Tenement
- Pastoral Lease

Conservation Estate

Category

- Conservation Park
- Former Leasehold
- Nature Reserve



**Land use of the
J4 and haul road disturbance area**

Figure: 2.4
Project ID: 1555

Drawn: CP
Date: 18/10/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: CP351

2.4 BIOGEOGRAPHY

The J4 mine and haul road study area are situated within the Southern Cross subregion of the Coolgardie bioregion (Figure 1.1).

The Southern Cross subregion (70,412 km²) comprises the western section of the Yilgarn Craton and is comprised of gently undulating uplands dissected by broad valleys with bands of low greenstone hills (Cowan *et al.* 2001). The granite strata of the Yilgarn Craton are interrupted by parallel intrusions of Archaean Greenstone. Diverse *Eucalyptus* woodlands (*Eucalyptus salmonophloia*, *E. salubris*, *E. transcontinentalis* and *E. longicornis*) rich in endemic eucalypts that occur around salt lakes on the low greenstone hills, valley alluvial and broad plains of calcareous earths are characteristic of this subregion. Granite basement outcrops at mid-levels in the landscape and support swards of *Borya constricta*, with stands of *Acacia acuminata* and *Eucalyptus loxophleba*. Upper levels in the landscape are the eroded remnants of a lateritic duricrust yielding yellow sandplains, gravelly sandplains and laterite breakaways. Mallees (*Eucalyptus leptopoda*, *E. platycorys* and *E. scyphocalyx*) and scrub-heaths (*Allocasuarina corniculata*, *Callitris preissii*, *Melaleuca uncinata* and *Acacia beauverdiana*) occur on these uplands (Cowan *et al.* 2001).

2.5 THREATENED ECOLOGICAL COMMUNITIES

2.5.1 Nationally Listed Threatened Ecological Communities

A search of the DPaW TEC Database identified that no Commonwealth listed TECs occur within 50 km of the disturbance area (DPaW search reference 39-0913EC).

2.5.2 State Listed Threatened Ecological Communities

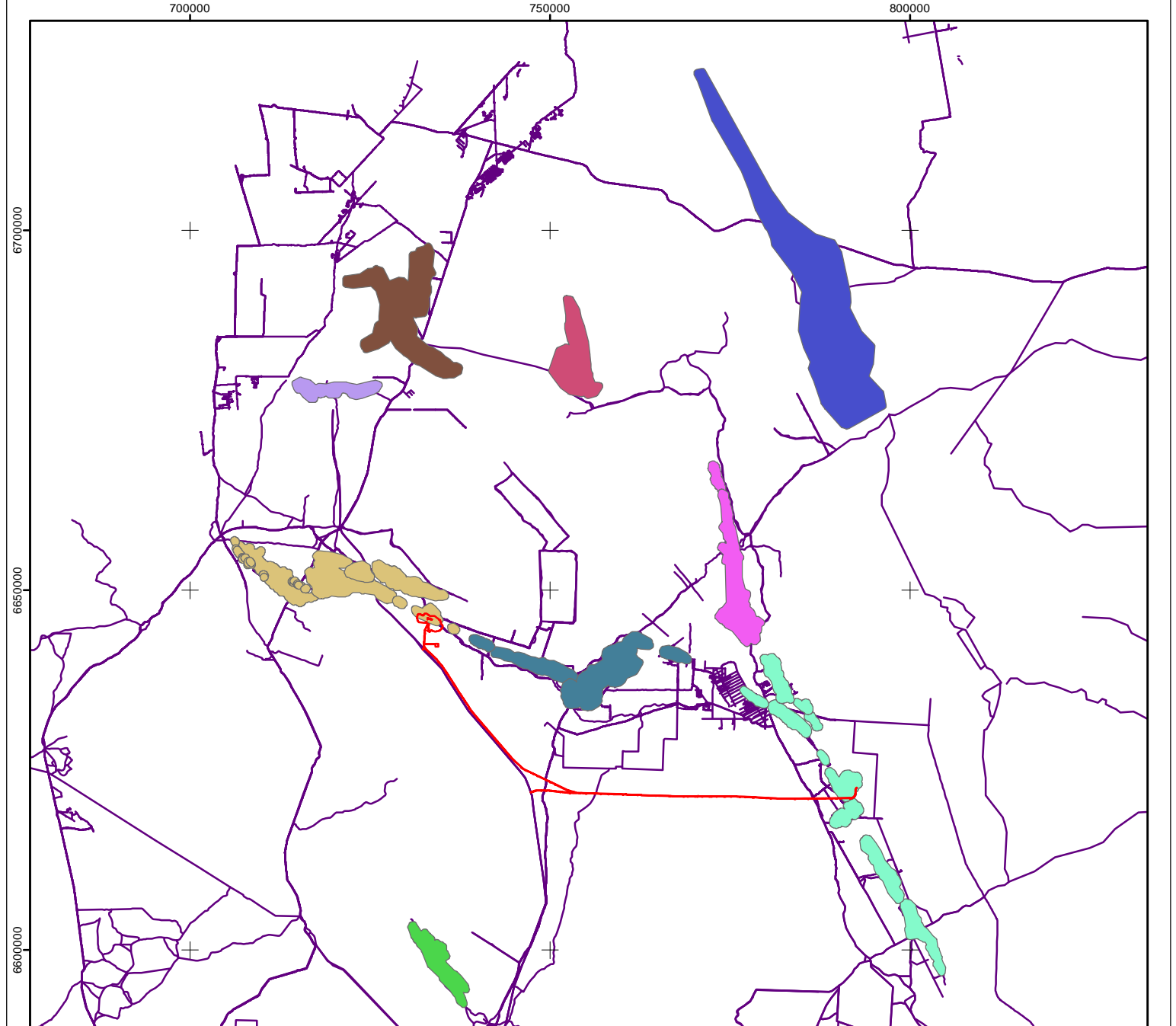
No State Listed TECs occur within 50 km of the disturbance area (DPaW search reference 39-0913EC).

2.5.3 State Listed Priority Ecological Communities

A search of the DPAW database (DPaW Reference: 39-0913EC) returned nine PECs within 50 km of the J4 mine and haul road study area (Table 2.3 and Figure 2.5). The 500 m buffer zone of the Priority 1 PEC, Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation) intersects the eastern end of the study area; the haul road itself runs between the ranges. The Priority 1 PEC, Mount Jackson Range vegetation complexes (banded ironstone formation); is present within the western portion of the study and disturbance area (Figure 2.5).

Table 2.3 – PECs within the search buffer zone (50 km) of the J4 mine and haul road

Status	PEC	Distance from study area
Priority 1	Die Hardy Range/Diemels vegetation complex (banded ironstone formation)	32 km
Priority 1	Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation)	Overlaps with J4 haul road impact and study area to the west
Priority 1	Mount Jackson Range vegetation complex (banded ironstone formation)	Overlaps with J4 study and disturbance area to the west area
Priority 1	Helena and Aurora Range vegetation complexes (banded ironstone formation)	6 km
Priority 1	Hunt Range vegetation complex (banded ironstone formation)	21 km
Priority 1	Koolyanobbing vegetation complexes (banded ironstone formation)	26 km
Priority 1	Windarling Ranges vegetation complex (banded ironstone formation)	31 km
Priority 1	Mount Manning Range vegetation complex (banded ironstone formation)	36 km
Priority 1	Lake Giles vegetation complexes (banded ironstone formation)	49 km



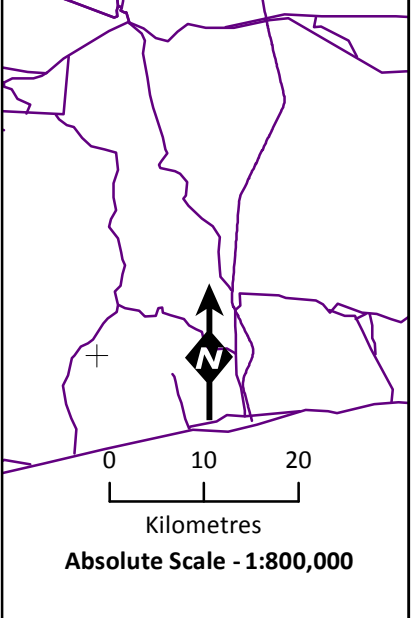
Legend

- Disturbance area
- Tracks

Priority Ecological Community Buffers (DPAW Search Results)

Priority 1

- Die Hardy Range/Diemels vegetation complex (banded ironstone formation)
- Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation)
- Helena and Aurora Range vegetation complexes (banded ironstone formation)
- Hunt Range vegetation complexes (banded ironstone formation)
- Koolyanobbing vegetation complex (banded ironstone formation)
- Lake Giles (northern Yerilgee Hills) vegetation complexes (banded ironstone formation)
- Mount Jackson Range vegetation complexes (banded ironstone formation)
- Mount Manning Range vegetation complex (banded ironstone formation)
- Windarling Ranges vegetation complex (banded ironstone formation)



PECs within 50 km of the J4 and haul road disturbance area

Figure: 2.5 Project ID: 1555	Drawn: CP Date: 21/10/2013
<small>Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994</small>	<small>Unique Map ID: CP352</small>

2.6 PREVIOUS VEGETATION SURVEYS

2.6.1 Beard Vegetation Associations

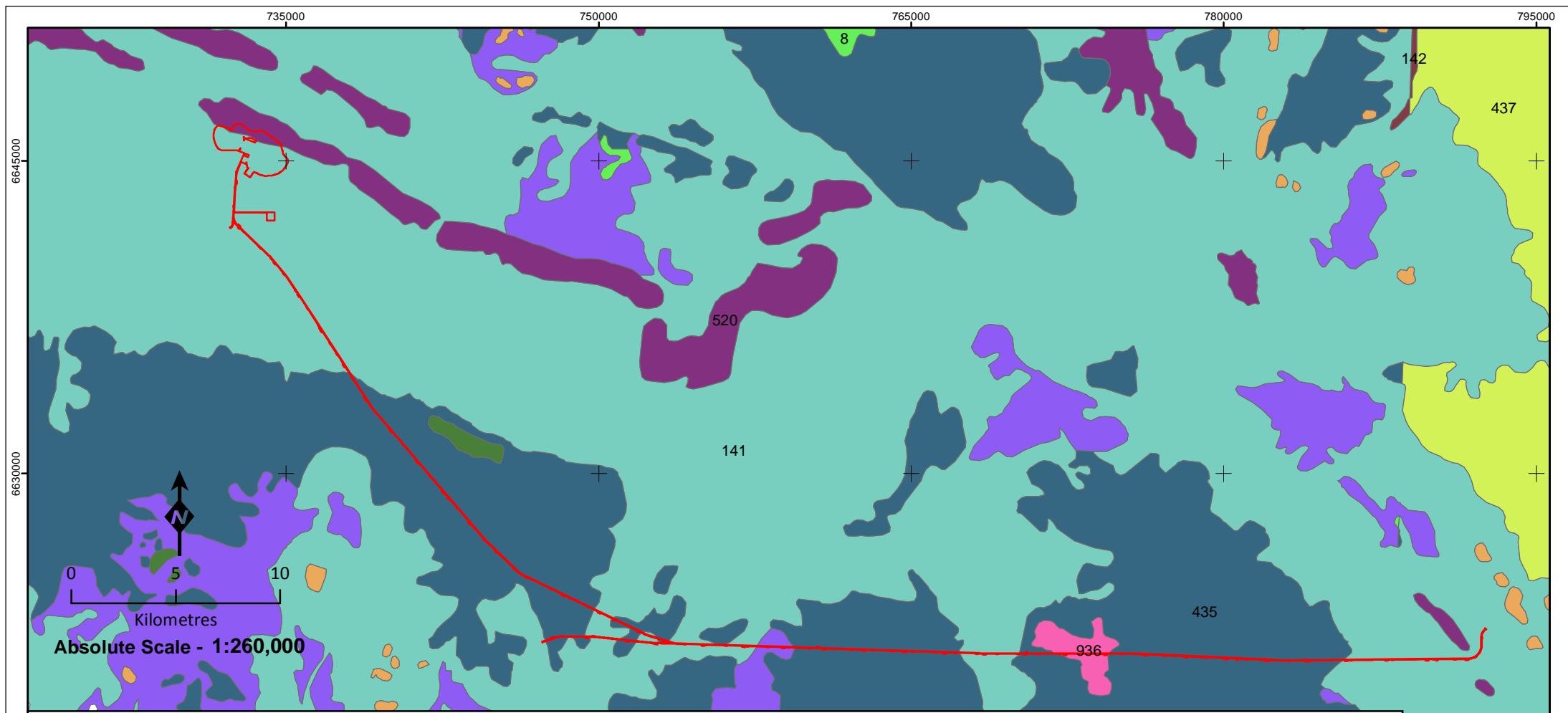
The disturbance area lies within Beard's (1975) Coolgardie region of the Eremaean Botanical Province, part of a series of maps completed by Beard *et al.* from 1974 to 1981 throughout Western Australia. This vegetation mapping has been subsequently reinterpreted and digitised to reflect the National Vegetation Information System (NVIS, ESCAVI 2003) standards and revised taxonomy for some species (Shepherd *et al.* 2001). Five vegetation associations are mapped within the disturbance area (Figure 2.6, Table 2.4).

Table 2.4 – Vegetation associations, structure and associated species of the study area

Code [^]	Structure [#]	Vegetation association [#]	Associated species [#]
141	<i>Eucalyptus</i> woodland	<i>Eucalyptus</i> woodland/ <i>Acacia</i> mixed open shrubland/ <i>Cephalopterum</i> mixed open forbland	<i>Eucalyptus salmonophloia</i> , <i>Eucalyptus loxophleba</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus oleosa</i> , <i>Eucalyptus transcontinentalis</i> , <i>Eucalyptus celastroides</i> , <i>Acacia acuminata</i> , <i>Alyxia buxifolia</i> , <i>Choretrum</i> sp., <i>Dodonaea attenuata</i> , <i>Eremophila</i> sp.
435	<i>Acacia</i> closed shrubland	<i>Acacia</i> closed shrubland / <i>Astroloma</i> mixed sparse heath	<i>Acacia neurophylla</i> , <i>Calothamnus quadrifidus</i> , <i>Grevillea excelsior</i> , <i>Hakea multilineata</i> , <i>Melaleuca uncinata</i> , <i>Astroloma serratifolium</i> , <i>Baeckea ochropetala</i> , <i>Brachysema chambersii</i> , <i>Eriostemon deserti</i> , <i>Grevillea acacioides</i> .
520	<i>Acacia</i> shrubland	<i>Acacia</i> shrubland	<i>Acacia quadrimarginea</i> , <i>Acacia tetragonophylla</i> , <i>Allocasuarina campestris</i> , <i>Eremophila oldfieldii</i> , <i>Dodonaea lobulata</i> , <i>Atriplex nummularia</i> , <i>Maireana</i> sp., <i>Scaevola spinescens</i> , <i>Ptilotus obovatus</i> , <i>Helipterum humboldtianum</i>
538	<i>Acacia</i> open shrubland	<i>Casuarina</i> mixed isolated trees/ <i>Acacia</i> open shrubland/ <i>Helichrysum</i> open forbland	<i>Casuarina cristata</i> , <i>Brachychiton gregorii</i> , <i>Callitris columellaris</i> , <i>Acacia aneura</i> , <i>Acacia brachystachya</i> , <i>Bossiaea walkeri</i> , <i>Dodonaea attenuata</i> , <i>Eremophila miniata</i> , <i>Exocarpos aphyllus</i> , <i>Acacia</i> sp., <i>Eremophila decipiens</i> , <i>Grevillea</i> sp.
936	<i>Eucalyptus</i> woodland	<i>Eucalyptus</i> woodland	<i>Eucalyptus salmonophloia</i> , <i>Eucalyptus lesouefii</i> , <i>Eucalyptus transcontinentalis</i> , <i>Eucalyptus longicornis</i> , <i>Eucalyptus Campaspe</i> , <i>Casuarina cristata</i> , <i>Atriplex</i> sp.

[^]Source: Shepherd *et al.* (2001)

[#]Source: Beard (1975)



Legend

- | | | |
|--|---|--|
| Disturbance area | 128: Bare areas: rock outcrops | 435: <i>Acacia</i> shrubland |
| Beard Vegetation Associations (Level 3)
(Shepherd <i>et al.</i> 2001) | 141: <i>Eucalyptus</i> woodland | 437: <i>Atriplex</i> mixed sparse chenopod shrubland |
| 8: <i>Eucalyptus</i> woodland | 142: <i>Eucalyptus</i> woodland | 520: <i>Acacia</i> shrubland |
| 125: Bare areas: salt lakes | 144: <i>Eucalyptus</i> woodland | 538: <i>Acacia</i> open shrubland |
| | 147: <i>Acacia</i> mixed open shrubland | 936: <i>Eucalyptus</i> woodland |



**Beard vegetation associations
of the J4 and haul road disturbance area**

Figure: 2.6
Project ID: 1555

Drawn: CP
Date: 14/01/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: CP352

2.6.2 Previous fine scale flora and vegetation surveys

A review of all previous surveys within the vicinity of the study area were reviewed as a part of the desktop assessment. The six most recent and relevant surveys, which contain both species and vegetation community data are summarised below. The remaining surveys reviewed in section 2.7 are targeted flora searches or only contain Priority Flora location data

2.6.2.1 Mattiske (2013) Flora and Vegetation of the Jackson 4 Mine Site and Haul Road

Mattiske surveyed the J4 study area and the haul road in 2012 and 2013 which included the assessment of 255 bounded (20 x 20 m) quadrats (Mattiske 2013). This survey is of high relevance as it occupied much of the same spatial area and employed similar methodology as the current survey. In a combination of two surveys conducted in spring of 2012 and April of 2013, a total of 311 species were recorded from quadrat and opportunistic sampling. The survey recorded one introduced species and 13 Threatened and Priority Flora species (Table 2.5). However, *Ricinocarpos brevis* (T) and *Grevillea lissopleura* (P1) are thought to be misidentifications. Six of the listed species (*Ricinocarpos brevis*, *Dampiera plumosa*, *Leptospermum macgillivrayi*, *Hibbertia lepidocalyx* subsp. *tuberculata*, *Mirbelia ferricola* and *Stenanthemum newbeyi*) were recorded outside of the J4 study area from regional quadrats.

Table 2.5 – Flora of significance recorded from the Mattiske (2013) survey

Taxon	Current Status
<i>Ricinocarpos brevis</i> (possible misidentification)	T
<i>Dampiera plumosa</i>	P1
<i>Grevillea lissopleura</i> (possible misidentification)	P1
<i>Leptospermum macgillivrayi</i>	P1
<i>Acacia crenulata</i>	P3
<i>Baekea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586)	P3
<i>Calytrix creswellii</i>	P3
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	P3
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)	P3
<i>Mirbelia ferricola</i>	P3
<i>Neurachne annularis</i>	P3
<i>Stenanthemum newbeyi</i>	P3
<i>Banksia arborea</i>	P4


2.6.2.2 ecologia (2013) Helena and Aurora Range

ecologia completed a Level 2 flora and vegetation assessment of portions of the Helena and Aurora Range in spring 2012 (ecologia 2012). The study area is located 15 km to the east of J4 mine and 10 km to the north of the haul road and it employed the same methodology as the current survey. The Helena and Aurora Range survey (ecologia 2013) included the assessment of 74 bounded (20 x 20 m) quadrats on the range, the surrounding lower slopes, valleys and plains, as well as some regional quadrats. A total of 194 taxa of which 192 were native and two introduced were recorded from a combination of quadrats and opportunistic collections conducted over 32 person days. The survey recorded two Threatened flora species and 12 additional Priority Flora (Table 2.6).

Table 2.6 – Flora of significance recorded from the ecologia (2013) survey

Taxon	Current Status
<i>Leucopogon spectabilis</i>	T
<i>Tetradlea aphylla</i> subsp. <i>Aphylla</i>	T
<i>Acacia adinophylla</i>	P1
<i>Acacia</i> sp. Bungalbin Hill (J.J. Alford 1119)	P1
<i>Lepidosperma bungalbin</i>	P1
<i>Grevillea georgeana</i>	P3
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	P3
<i>Lepidosperma ferricola</i>	P3
<i>Mirbelia ferricola</i>	P3

Taxon	Current Status
<i>Neurachne annularis</i>	P3
<i>Philothea coateana</i>	P3
<i>Stenanthemum newbeyi</i>	P4
<i>Banksia arborea</i>	P4
<i>Grevillea erectiloba</i>	P4

 Highlighted taxa are considered to be endemic to the Helena and Aurora Range

Species richness within the *ecologia* (2013) quadrats varied from four to 28 taxa, with a mean species richness of 15.3 (n= 74). Multivariate analysis of species composition recognised 18 distinct vegetation units (Table 2.7). The driving factor behind species composition and the division of communities was the topography, with the skeletal and weathered soils associated with the hilltops, midslopes and footslopes of the BIF ranges (communities *AqAaPhNa*, *BaCpMnNaAe*, *EeeCpEgMnNa*, *EeeEgGzNa* and *EeeCpMnSnNa*) separated from the calcareous comparatively fertile soils of the peripheral vegetation of the BIF ranges on valley floors (communities *EcEeeOmNa*, *EcEeeMgPoAeNa*, *EeeNa*, *EeeEtEaEoaAeSs*, *EeeBaAbNa*, *EccEoaAe*, *EllSsAe*, *AaNa*, *EyEccMf*, *AeLspAcc* and *EeeHmAeNa*). These two broad units are again separated from a final broad group of vegetation units characteristic of the sandy or gravelly plains/dry floodplains of the study area (communities *ElEsEvAnAvAe*, *EsAvMtAe* and *EsOm*).

Table 2.7 – Summary of floristic community types described by *ecologia* (2013)

Floristic community type	Topography	Vegetation Description
<i>AaNa</i>	Rocky Footslopes	<i>Acacia aneura</i> mid sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland
<i>AeLspAcc</i>	Sandy Plains/Floodplains	<i>Acacia effusifolia</i> tall open shrubland, over <i>Leucopogon</i> sp. Clyde Hill low sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> isolated tussock grassland
<i>AqAaPhNa</i>	Rocky footslopes	<i>Acacia quadrimarginea</i> , <i>Allocasuarina acutivalvis</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> mid open shrubland, over sparse <i>Neurachne annularis</i> tussock grassland
<i>BaCpMnNaAe</i>	Rocky Midslope/Ridge top	<i>Banksia arborea</i> low open woodland/or shrubland, over <i>Calycopeplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid open shrubland over <i>Neurachne annularis</i> and <i>Austrostipa elegantissima</i> sparse tussock grassland
<i>EccEoaAe</i>	Steep Rocky Midslopes and Ridges	<i>Eucalyptus capillosa</i> subsp. <i>capillosa</i> low open woodland, over <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> mid sparse shrubland, over <i>Austrostipa elegantissima</i> sparse tussock grassland
<i>EcEeeMgPoAeNa</i>	Sandy Plains/Floodplains	<i>Eucalyptus corrugata</i> and <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> mid open woodland, over <i>Maireana georgei</i> and <i>Ptilotus obovatus</i> low sparse shrubland over <i>Austrostipa elegantissima</i> sparse tussock grassland with or without <i>Neurachne annularis</i>
<i>EcEeeOmNa</i>	Gravelly Ironstone Plains	<i>Eucalyptus corrugata</i> and <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> mid open woodland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland
<i>EeeBaAbNa</i>	Steep Rocky Midslopes and Ridges	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low woodland, over <i>Banksia arborea</i> mid sparse shrubland, over <i>Alyxia buxifolia</i> low sparse shrubland, over <i>Neurachne annularis</i> sparse hummock grassland
<i>EeeCpEgMnNa</i>	Rocky Midslope/Ridge top	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over mid <i>Calycopeplus paucifolius</i> , <i>Eremophila georgei</i> and <i>Melaleuca nematophylla</i> sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland
<i>EeeCpMnSnNa</i>	Rocky Midslope/Ridge top	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Calycopeplus paucifolius</i> , <i>Melaleuca nematophylla</i> and <i>Stenanthemum newbeyi</i> mid sparse shrubland, over open <i>Neurachne annularis</i> tussock grassland
<i>EeeEgGzNa</i>	Rocky Midslope/Ridge top	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Eremophila georgei</i> and <i>Grevillea zygoloba</i> mid sparse

Floristic community type	Topography	Vegetation Description
		shrubland, over <i>Neurachne annularis</i> open tussock grassland
<i>EeeEtEaEoaAeSs</i>	Gravelly Ironstone Plains	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> or <i>Eucalyptus transcontinentalis</i> low open woodland, over <i>Exocarpos aphyllus</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> mid sparse shrubland over low <i>Olearia muelleri</i> and <i>Scaevola spinescens</i> sparse shrubland
<i>EeeHmAeNa</i>	Sandy Plains/Floodplains	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Hakea minyma</i> mid sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>Neurachne annularis</i> sparse tussock grassland
<i>EeeNa</i>	Rocky footslopes	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Neurachne annularis</i> sparse tussock grassland
<i>ElEsEvAnAvAe</i>	Sandy Plains/Floodplains	<i>Eucalyptus longicornis</i> or <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus vittata</i> low open woodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> mid/low sparse shrubland, over <i>Austrostipa elegantissima</i> isolated tussock grassland
<i>ElISsAe</i>	Dry Densely Vegetated Drainage Line	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> mid open woodland, over <i>Santalum spicatum</i> and <i>Eremophila decipiens</i> tall/mid sparse shrubland, over <i>Austrostipa elegantissima</i> isolated tussock grassland
<i>EsAvMtAe</i>	Sandy Plains/Floodplains	<i>Eucalyptus salmonophloia</i> low open woodland, over <i>Atriplex vesicaria</i> and <i>Maireana triptera</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> isolated tussock grasses
<i>EsOm</i>	Sandy Plains/Floodplains	<i>Eucalyptus salubris</i> mid open woodland, over <i>Olearia muelleri</i> isolated shrubs

2.6.2.3 Western Botanical (2009) Western Jackson Range Survey

Western Botanical sampled the flora of the Western Jackson Range over a five year period from 2004 to 2008, encompassing all seasonal conditions (Western Botanical 2009). The study area was located ca. 12 km west of the J4 mine and haul road study area. Flora and vegetation were recorded using a combination of quadrats and targeted Threatened and Priority Flora searches. This combination of sampling yielded a total of 10 Priority Flora species, with no Threatened taxa recorded (Table 2.8)

Table 2.8 – Flora of significance recorded from the Western Botanical (2009) survey

Taxon	Current Status
<i>Beyeria rostellata</i>	P1
<i>Lepidosperma jacksonense</i>	P1
<i>Leptospermum macgillivrayi</i>	P1
<i>Austrostipa blackii</i>	P3
<i>Bossiaea</i> sp. Jackson Range (G. Cockerton & S. McNeen LCS 13614)	P3
<i>Lepidosperma ferricola</i>	P3
<i>Spartothamnella</i> sp. Helena & Aurora Range (P.G. Armstrong 155-109)	P3
<i>Stenanthemum newbeyi</i>	P3
<i>Banksia arborea</i>	P4
<i>Eucalyptus formanii</i>	P4

Twenty-four vegetation units were defined during these surveys. Of these, 11 units are of significance as they are considered to be sub-units of the Priority 1 PEC Mount Jackson Range vegetation complex (banded ironstone formation). The composition of these 11 vegetation units and the landform on which they are found are presented in Table 2.9.

Table 2.9 – Summary of floristic community types described by Western Botanical (2009)

Floristic community type	Topography	Vegetation Description
<i>AlleSM</i>	Lower slope in shallow gravel soils	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> shrubland with mallee
<i>AlleT</i>	lower slopes and foot slopes	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> thicket
<i>AmjS</i>	BIF ranges or BIF hills	<i>Acacia</i> sp. Mount Jackson (B. Ryan 176) shrubland

Floristic community type	Topography	Vegetation Description
DaS	BIF ranges or BIF hills	<i>Dryandra</i> (currently <i>Banksia</i>) <i>arborea</i> shrubland
EeWH1	mid and lower slopes	<i>Eucalyptus ebbanoensis</i> woodland over heath with <i>Calytrix</i> sp. Paynes Find (F. & J. Hort 1188)
EeWH2	mid and lower slopes	<i>Eucalyptus ebbanoensis</i> woodland over heath with <i>Phebalium</i> species
EeWH3	mid and lower slopes	<i>Eucalyptus ebbanoensis</i> woodland over heath with <i>Olearia muelleri</i> and <i>Westringia cephalantha</i>
EeWH4	mid and lower slopes	<i>Eucalyptus ebbanoensis</i> woodland over heath with <i>Atriplex</i> species
EeWH5	mid and lower slopes	<i>Eucalyptus ebbanoensis</i> woodland over heath with <i>Acacia acanthoclada</i> subsp. <i>glaucescens</i>
EfWH	mid and lower slopes	<i>Eucalyptus formanii</i> woodland over heath
PoS	Upper debris slope	<i>Ptilotus obovatus</i> shrubland

2.6.2.4 Mattiske (2008c) Flora and Vegetation Survey of the Chameleon Exploration Tenement

This Mattiske survey was conducted in May and July 2008 to survey the vegetation and flora of the Carina Exploration Tenement to ultimately enable the impacts of mining on the vegetation of the area to be assessed (Mattiske 2008c). This survey intersects the current haul road study area on the eastern end. The survey included the assessment of 235 survey sites, which comprised a 25 m radius from a central point on the Chameleon exploration tenement (E77/1115-I). These survey sites, along with opportunistic collections yielded a total of 237 taxa of which 235 were native and two were introduced.

The survey recorded six Priority Flora species: *Pseudactinia* sp. Bungalbin Hill (F.H. & M.P. Molemans 3069) (P1), *Acacia crenulata* (P3), *Acacia eremophila* var. *variabilis* (P3), *Grevillea georgeana* (P3), *Spartothamnella* sp. Helena and Aurora Range (P3) and *Daviesia purpurascens* (P4).

A total of 25 plant communities were defined and mapped by Mattiske (Table 2.10). These communities can be divided into two broad units: *Eucalypt* woodland and *Acacia* scrub and thicket. Further divisions into communities were dependent on factors such as physical environmental characteristics, restricted or unique *Eucalyptus* taxa, type of woodland, non-*Eucalypt* species present and soil characteristics.

Table 2.10 – Summary of floristic community types described by Mattiske (2008c)

Floristic community type	Vegetation Description
S1	Scrub of <i>Allocasuarina corniculata</i> , <i>Acacia sibina</i> , <i>Melaleuca hamata</i> , <i>Acacia resinimarginea</i> and occasional dense patches of <i>Callitris preissii</i> over <i>Baeckea elderiana</i> , <i>Phebalium canaliculatum</i> , <i>Thryptomene kochii</i> and <i>Hibbertia eatoniae</i> on sandy flats.
S2	Scrub of <i>Allocasuarina campestris</i> , <i>Casuarina pauper</i> , <i>Banksia arborea</i> , <i>Melaleuca hamata</i> , <i>Melaleuca nematophylla</i> , <i>Acacia sibina</i> , <i>Calycopeplus paucifolius</i> and <i>Brachychiton gregorii</i> over <i>Baeckea elderiana</i> and <i>Philotheca brucei</i> subsp. <i>brucei</i> and <i>Eremophila decipiens</i> subsp. <i>decipiens</i> , with emergent <i>Eucalyptus ewartiana</i> , <i>Eucalyptus horistes</i> and <i>Eucalyptus oleosa</i> subsp. <i>oleosa</i> on red-brown clay upper slopes and ridges.
S5	Scrub of <i>Allocasuarina campestris</i> over <i>Acacia tetragonophylla</i> and <i>Alyxia buxifolia</i> over <i>Melaleuca leiocarpa</i> , <i>Philotheca brucei</i> subsp. <i>brucei</i> , <i>Eremophila decipiens</i> subsp. <i>decipiens</i> and <i>Exocarpos aphyllus</i> over <i>Scaevola spinescens</i> , <i>Prostanthera grylloana</i> and <i>Phebalium megaphyllum</i> on red-brown clay with quartz pebbles on lower slopes.
W1	Woodland of <i>Eucalyptus salmonophloia</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus sheathiana</i> , <i>Eucalyptus corrugata</i> , <i>Eucalyptus yilgarnensis</i> , <i>Eucalyptus transcontinentalis</i> , <i>Eucalyptus longicornis</i> and <i>Eucalyptus ravida</i> over <i>Acacia jennerae</i> , <i>Acacia prainii</i> , <i>Acacia colletioides</i> , <i>Santalum acuminatum</i> , <i>Exocarpos aphyllus</i> , <i>Eremophila scoparia</i> , <i>Eremophila granitica</i> , <i>Eremophila ionantha</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Atriplex nummularia</i> over <i>Atriplex vesicaria</i> , <i>Grevillea acuarua</i> , <i>Olearia muelleri</i> , <i>Olearia pimelioides</i> and <i>Austrostipa elegantissima</i> on red-brown clay on flats.

Floristic community type	Vegetation Description
W2	Woodland of <i>Eucalyptus salmonophloia</i> with <i>Eucalyptus ravid</i> a and mixed Eucalypts over <i>Eremophila ionantha</i> , <i>Exocarpos aphyllus</i> , <i>Atriplex nummularia</i> and <i>Acacia colletioides</i> over <i>Atriplex vesicaria</i> on flat red clay soils.
W4	Woodland of <i>Eucalyptus longicornis</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus corrugata</i> and <i>Eucalyptus moderata</i> over <i>Eremophila ionantha</i> , <i>Eremophila scoparia</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Exocarpos aphyllus</i> , <i>Atriplex nummularia</i> and <i>Santalum acuminatum</i> over <i>Acacia colletioides</i> and <i>Atriplex vesicaria</i> on red-brown sandy clay flats with scattered ironstone and quartz pebbles.
W5	Woodland of <i>Eucalyptus longicornis</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus corrugata</i> , <i>Eucalyptus ravid</i> a and <i>Eucalyptus moderata</i> over <i>Eremophila ionantha</i> , <i>Santalum acuminatum</i> and <i>Templetonia sulcata</i> over <i>Olearia muelleri</i> on clay-loam soils on lower slopes and flats.
W7	Woodland of <i>Eucalyptus yilgarnensis</i> , <i>Eucalyptus horistes</i> , <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> , <i>Eucalyptus transcontinentalis</i> and <i>Eucalyptus oleosa</i> subsp. <i>oleosa</i> over <i>Eremophila caperata</i> and <i>Acacia multispicata</i> and <i>Halgania andromedifolia</i> over <i>Triodia irritans</i> and <i>Amphipogon caricinus</i> on orange to yellow sandy clay soils on flats.
W11	Open Woodland of <i>Eucalyptus salmonophloia</i> over <i>Cratystylis subspinescens</i> over <i>Atriplex vesicaria</i> on red-brown clay flats.
W12	Open Woodland of <i>Eucalyptus sheathiana</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> , <i>Eucalyptus ravid</i> a and <i>Eucalyptus salmonophloia</i> over <i>Acacia burkittii</i> , <i>Eremophila ionantha</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Acacia colletioides</i> over <i>Grevillea acuaria</i> on red-brown clay to sandy clay on flats with scattered ironstone pebbles.
W13	Low Woodland of <i>Eucalyptus corrugata</i> and <i>Eucalyptus sheathiana</i> over <i>Acacia burkittii</i> , <i>Alyxia buxifolia</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> over <i>Ptilotus obovatus</i> var. <i>obovatus</i> , <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> on flat red clay soils.

2.6.2.5 Mattiske (2011b) Carina and Chameleon project areas

Mattiske again undertook a flora and vegetation assessment in August 2010 (Mattiske 2011b) encompassing the area between the Carina and Chameleon project areas. The assessment was conducted in accordance with a Level 1 assessment as per Environmental Protection Authority (EPA) Guidance Statement 51 (2004) and a total of 96 sites were installed, at which the flora and vegetation was described and sampled with additional opportunistic collecting undertaken, recording a total of 136 plant taxa (135 native). The floristic and environmental parameters recorded at each site were as per those listed above for the 2008 study. One Priority 3, *Grevillea georgeana* and two Priority 4 flora, *Banksia arborea* and *Daviesia purpurascens* species were recorded during the study. Two undescribed taxa were also recorded: *Lepidosperma* sp. novel (MVW18) and *Acacia* sp. novel (KR054).

Data was analysed using PATN™, from which 14 vegetation units were described, which were used to update the previous vegetation mapping of the area (Mattiske 2008c) (Table 2.11). These can be classified into two broad groups (Eucalypt woodlands or scrub) were mapped in the study area. Thirteen of these have previously been mapped in the Carina and Chameleon exploration tenements.

Table 2.11 – Summary of floristic community types described by Mattiske 2011b

Floristic community type	Extent of study area	Vegetation description
W1	1577 ha (31.7%)	Woodland of <i>Eucalyptus salmonophloia</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus sheathiana</i> , <i>Eucalyptus corrugata</i> , <i>Eucalyptus yilgarnensis</i> , <i>Eucalyptus transcontinentalis</i> , <i>Eucalyptus longicornis</i> and <i>Eucalyptus ravid</i> a over <i>Acacia jennerae</i> , <i>Acacia prainii</i> , <i>Acacia colletioides</i> , <i>Santalum acuminatum</i> , <i>Exocarpos aphyllus</i> , <i>Eremophila scoparia</i> , <i>Eremophila granitica</i> , <i>Eremophila ionantha</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Atriplex nummularia</i> over <i>Atriplex vesicaria</i> , <i>Grevillea acuaria</i> , <i>Olearia muelleri</i> , <i>Olearia pimelioides</i> and <i>Austrostipa elegantissima</i> on red-brown clay on flats
W2	1962 ha (39.5%)	Woodland of <i>Eucalyptus salmonophloia</i> , with <i>Eucalyptus ravid</i> a and mixed Eucalypts over <i>Eremophila ionantha</i> , <i>Exocarpos aphyllus</i> , <i>Atriplex nummularia</i> and <i>Acacia colletioides</i> over <i>Atriplex vesicaria</i> on red clay soils on flats
W7	16 ha (0.3%)	Woodland of <i>Eucalyptus yilgarnensis</i> , <i>Eucalyptus horistes</i> , <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> , <i>Eucalyptus transcontinentalis</i> and <i>Eucalyptus oleosa</i> subsp. <i>oleosa</i> over

Floristic community type	Extent of study area	Vegetation description
		<i>Eremophila caperata</i> and <i>Acacia multispicata</i> and <i>Halgania andromedifolia</i> over <i>Triodia irritans</i> and <i>Amphipogon caricinus</i> on orange to yellow sandy clay soils on flats
W11	48 ha (1%)	Open Woodland of <i>Eucalyptus salmonophloia</i> over <i>Cratystylis</i> subsp. <i>inescens</i> over <i>Atriplex vesicaria</i> on red-brown clay flats
W12	110 ha (2.2%)	Open Woodland of <i>Eucalyptus sheathiana</i> , <i>Eucalyptus salubris</i> , <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> , <i>Eucalyptus ravidia</i> and <i>Eucalyptus salmonophloia</i> over <i>Acacia burkittii</i> , <i>Eremophila ionantha</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Acacia colletioides</i> over <i>Grevillea acuaria</i> on red-brown clay to sandy clay on flats with scattered ironstone pebbles
W13	8 ha (0.2%)	Low Woodland of <i>Eucalyptus corrugata</i> and <i>Eucalyptus sheathiana</i> over <i>Acacia burkittii</i> , <i>Alyxia buxifolia</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> over <i>Ptilotus obovatus</i> var. <i>obovatus</i> , <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> on flat red clay soils
W15	43 ha (0.9%)	Low Woodland of <i>Eucalyptus corrugata</i> , <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> and <i>Eucalyptus longicornis</i> over <i>Acacia burkittii</i> , <i>Allocasuarina campestris</i> and <i>Exocarpos aphyllus</i> over <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Philothea tomentella</i> , <i>Prostanthera grylloana</i> , <i>Templetonia sulcata</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> over <i>Grevillea acuaria</i> and <i>Scaevola spinescens</i> on red-brown clay soils on flats
W21	143 ha (2.9%)	Open Low Woodland of <i>Eucalyptus capillosa</i> subsp. <i>capillosa</i> , <i>Eucalyptus corrugata</i> , <i>Eucalyptus delicata</i> and <i>Eucalyptus longicornis</i> over <i>Eremophila ionantha</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Acacia colletioides</i> and <i>Eremophila scoparia</i> over <i>Olearia muelleri</i> and <i>Atriplex vesicaria</i> on red-brown sandy clay flats
W22	155 ha (3.1%)	Open Low Woodland of <i>Eucalyptus corrugata</i> with mixed Eucalypts over <i>Allocasuarina campestris</i> and <i>Acacia burkittii</i> over <i>Alyxia buxifolia</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> and <i>Grevillea paradoxa</i> over <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> on red-brown clays soils on mid and lower slopes
W28	119 ha (2.4%)	Woodland of <i>Eucalyptus salmonophloia</i> , <i>Eucalyptus transcontinentalis</i> , <i>Eucalyptus ravidia</i> and <i>Eucalyptus calycogona</i> over <i>Eremophila interstans</i> subsp. <i>interstans</i> , <i>Eremophila interstans</i> subsp. <i>virgata</i> , <i>Eremophila ionantha</i> and <i>Santalum acuminatum</i> over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> on sand with quartz pebbles on flats
S1	152 ha (3.1%)	Scrub of <i>Allocasuarina corniculata</i> , <i>Acacia sibina</i> , <i>Melaleuca hamata</i> , <i>Acacia resinimarginea</i> and occasional dense patches of <i>Callitris preissii</i> over <i>Baeckea elderiana</i> , <i>Phebalium canaliculatum</i> , <i>Thryptomene kochii</i> and <i>Hibbertia eatoniae</i> on sandy flats
S2	128 ha (2.6%)	Scrub of <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> , <i>Casuarina pauper</i> , <i>Banksia arborea</i> , <i>Melaleuca hamata</i> , <i>Melaleuca nematophylla</i> , <i>Acacia sibina</i> , <i>Calycopeplus paucifolius</i> and <i>Brachychiton gregorii</i> over <i>Baeckea elderiana</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> and <i>Eremophila decipiens</i> subsp. <i>decipiens</i> , with emergent <i>Eucalyptus ewartiana</i> , <i>Eucalyptus horistes</i> and <i>Eucalyptus oleosa</i> subsp. <i>oleosa</i> on red-brown clay upper slopes and ridges
S6	368 ha (7.4%)	Scrub of <i>Acacia burkittii</i> , <i>Grevillea zygodoba</i> , <i>Hakea francisiana</i> and <i>Baeckea elderiana</i> over low scrub of <i>Prostanthera grylloana</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> and with emergent mixed eucalypts on low to mid slopes
S30	140 ha (2.8%)	Scrub of <i>Acacia sibina</i> , <i>Acacia burkittii</i> and <i>Melaleuca hamata</i> with occasional emergent <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> , over <i>Grevillea paradoxa</i> , <i>Rinzia carnosa</i> , <i>Leucopogon</i> sp. Clyde Hill, <i>Thryptomene urceolaris</i> and <i>Prostanthera grylloana</i>

2.6.2.6 Gibson *et al.* (1997) Helena and Aurora Range Survey

Gibson *et al.* (1997) surveyed the Helena and Aurora Range and the surrounding lower slopes, valleys and outwash plains in July and September of 1995. The survey included the assessment of 55 quadrats (20 x 20 m) and these quadrats, along with opportunistic collections and previous collections lodged at the Western Australian Herbarium, yielded a total of 324 taxa of which 303 were native and 21 were introduced. The survey also recorded two Threatened Flora species and nine Priority Flora taxa (Table 2.12). Four of the species recorded in the study were considered endemic to the range (Table 2.12).

Table 2.12 – Flora of significance recorded from the Gibson *et al.* (1997) survey

Gibson <i>et al.</i> (1997) survey results		Current (2013) species name	
Taxon	1997 Status	Taxon	Current Status
<i>Acacia adinophylla</i>	P1	<i>Acacia adinophylla</i>	P1
<i>Acacia cylindrica</i>	P3	<i>Acacia cylindrica</i>	P3
<i>Daviesia purpurascens</i>	P4	<i>Daviesia purpurascens</i>	No longer listed
<i>Gnephosis intonsa</i>	P1	<i>Gnephosis intonsa</i>	P3
<i>Grevillea erectiloba</i>	P4	<i>Grevillea erectiloba</i>	P4
<i>Grevillea georgeana</i>	P3	<i>Grevillea georgeana</i>	P3
<i>Leucopogon breviflorus</i>	P2	<i>Leucopogon breviflorus</i>	No longer listed
<i>Leucopogon sp.</i> Helena & Aurora (BJL 2077)	P1 (suggested)	<i>Leucopogon spectabilis</i>	T
<i>Mirbelia sp.</i> Helena & Aurora (BJL 2003)	P2 (suggested)	<i>Mirbelia ferricola</i>	P3
<i>Neurachne sp.</i> Helena & Aurora (KRN 8972)	Not listed	<i>Neurachne annularis</i>	P3
<i>Phlegmatospermum eremaeum</i>	P2	<i>Phlegmatospermum eremaeum</i>	P2
<i>Prostanthera magnifica</i>	P4	<i>Prostanthera magnifica</i>	No longer listed
<i>Stenanthemum newbeyi</i>	P1	<i>Stenanthemum newbeyi</i>	P3
<i>Tetratheca aphylla</i>	DRF	<i>Tetratheca aphylla</i> subsp. <i>aphylla</i>	T

Highlighted taxa are considered to be endemic to the Helena and Aurora Range

Species richness of sites sampled during the Gibson *et al.* (1997) survey ranged from three to 20 taxa. Multivariate analysis of species composition recognised six distinct vegetation units (Table 2.13). The driving factor behind species composition and the division of sites was the topography, with the skeletal and weathered soils of the uplands (communities 1, 2, 3 and 4) separated from the calcareous fertile soils of the valley bottoms (communities 5 and 6).

Table 2.13 – Summary of floristic community types described by Gibson *et al.* (1997)

Floristic Community Type	Topography	Vegetation Description
1	Uplands or midslopes on massive banded ironstone. Skeletal yellow or red soils.	Shrublands or woodlands not dominated by eucalypt species.
2	Entirely restricted to the tops of massive banded ironstone hills. Skeletal yellow or red soils.	Woodlands dominated by <i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> or <i>E. capillosa</i> , <i>Acacia capillosa</i> with <i>Alyxia buxifolia</i> and/or <i>Stenanthemum newbeyi</i> in understorey
3	Open side slope/Midslope community	Dominated by <i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over <i>Neurachne sp.</i> Helena & Aurora, chenopods absent
4	Lower slope and flats below the range	Generally dominated by <i>Acacia</i> spp. Or if dominated by eucalypts then with <i>Eremophila clarkei</i> and <i>Grevillea zygoloba</i> present. Almost complete lack of chenopod species
5	5a Lower slope and flats close to the change in slope	<i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over chenopods and over <i>Neurachne sp.</i> Helena & Aurora
	5b Extensive flats between ranges where the slope species of unit 5a decline	Eucalypt over chenopod shrubland
6	Flats	Species poor and further sampling of this community is needed to clarify its relationships with other communities

2.7 PREVIOUS RECORDS OF THREATENED AND PRIORITY FLORA

Searches of the DPaW database, the Department's Threatened Flora Database (TPFL) and the WA Herbarium's (WAHERB) specimen database were conducted within a polygon encompassing the J4 mine and haul road study area with a 50 km buffer (DPaW Reference: 38-0912).

In addition to the results from the DPaW searches, Priority Flora location data was also extracted from 27 surveys previously conducted nearby. These locations were used in a regional impact assessment of Threatened and Priority Flora recorded within the disturbance area. The regional reports reviewed to extract the Priority Flora locations and population sizes included:

- Review of vegetation on Portman Iron Ore proposed expansion areas (Mattiske 2001);
- Carina Chameleon Vela J4 Flora Interim Report (Mattiske 2007a);
- Mattiske Flora and Vegetation Survey of Drill Hole Sites in Exploration Tenement E77/842-1 (Mattiske 2007b);
- Flora and Vegetation Survey of Drill Hole Sites in Exploration Tenement E77/1115 Carina Prospect (Mattiske 2007c);
- Flora and Vegetation Survey of Drill Hole Sites in Exploration Tenements E77/1115 (Carina Prospect) E77/946-1 (Chameleon Prospect) E77/1076-1 (Vela Prospect) E77/1097-1 (J4-Extension & Musca Prospects) Interim Report (Mattiske 2007d);
- Carina DH Flora E77-1115 (Mattiske 2008a);
- Flora and Vegetation Survey of Proposed Drill Hole Sites in Exploration Tenement E77/842-1 Jackson-5 Prospect (Mattiske 2008b);
- Flora and Vegetation Survey of the Carina Exploration Lease Area (Mattiske 2008c);
- Flora and Vegetation Survey of the Proposed Carina Transport Route (Mattiske 2008d);
- Carina Mine Tenement M77/1244A Declared Rare and Priority Flora Survey (Mattiske 2009a);
- Chameleon Flora and Vegetation E77-946-1 (Mattiske 2009b);
- Flora and Vegetation Survey of the Chameleon Exploration Lease Area Exploration Tenement E77/946-1 (Mattiske 2009c);
- Flora and Vegetation Survey of the Proposed Carina Transport Route Carina Mine to Mount Walton Road Siding (Mattiske 2009d);
- Flora and Vegetation of the Western Jackson Range (Mount Jackson Range) (Western Botanical 2009);
- Flora and Vegetation Survey for the Proposed Carina Mine Rail Siding (Mattiske 2010);
- BC Exploration Camp Flora M77-1096 (Mattiske 2011a);
- Flora and Vegetation Survey (Infill) Carina and Chameleon Prospects Tenements E77/1275, E77/946 & E77/3946-1 (Mattiske 2011b);
- Flora and Vegetation Survey for a Proposed Power Line Corridor Tenement L15/318 (Mattiske 2011c);
- Threatened and Priority Flora Survey Tenement M77/1096 Proposed Bungalbin Central Exploration Camp (Mattiske 2011d);
- Flora and Vegetation Survey for a Proposed Carina Mine Accommodation Village Area and Associated Access Route (Mattiske 2012a);

- Threatened and Priority Flora Survey Additional Proposed Drill Hole Locations Tenement E77/1275: Hunt Ranges (Mattiske 2012b);
- Threatened and Priority Flora Survey Mount Walton Road Borrow Pit Locations (Mattiske 2012c);
- Threatened and Priority Flora Survey of the Yellow Sandplain Vegetation - Mt Walton Road (Mattiske 2012d);
- Threatened and Priority Flora Survey Proposed Drill Hole Locations Tenement m77/1242-i and E77/1097-I J4 Prospect (Mattiske 2012e);
- Threatened and Priority Flora Survey Tenement M77/1261a Carina Extended (Mattiske 2012f);
- Flora and vegetation survey of the Jackson 4 and haul road. Unpublished report for Polaris Metals (Mattiske 2013); and
- Polaris Metals Pty Ltd J5 and Bungalbin East Flora and Vegetation Phase 1 (*ecologia* 2013).

2.7.1 Flora Listed under the EBPC Act

Four EPBC-listed Threatened Flora species have previously been recorded within 50 km of the disturbance area: *Leucopogon spectabilis* (Critically Endangered), *Ricinocarpos brevis* (Endangered), *Tetratheca aphylla* (Vulnerable) and *Tetratheca harperi* (Vulnerable). None of these are known to occur within the disturbance area. It is possible that the record of *Ricinocarpos brevis* is a misidentification, as the record locations were re-visited in a suitable timing and the species was not found.

2.7.2 Flora Listed under the WC Act

A search of the DPaw Threatened and Priority Flora Database (DPaw search reference: 15-1013FL) returned four Threatened Flora (as gazetted on 17 September 2013) which have previously been recorded within 50 km of the disturbance area: *Leucopogon spectabilis* (CR), *Ricinocarpos brevis* (CR), *Tetratheca aphylla* subsp. *aphylla* (VU) and *Tetratheca harperi* (VU). As above, none of these species have been previously recorded within the disturbance area. It is possible that the record of *Ricinocarpos brevis* is a misidentification, as the record locations were re-visited in a suitable timing and the species was not found.

The likelihood of occurrence of each taxon within the disturbance area was assessed based on known distribution and habitat preference, using the criteria shown in Table 2.13. Their current conservation status and likelihood of occurrence within the disturbance area are presented in Table 2.16 (see Appendix A for further information on these taxa).

2.7.3 Priority Flora

A spatial search of the DPaw Threatened and Priority Flora Database (DPaw search reference: 38-0912FL) and regional data retrieved from 27 surveys (see Section 2.7) returned 53 Priority Flora that have previously been recorded from near the study area. A further 21 Priority taxa were identified from the DPaw's nearby place name search but have no known spatial location and are considered unlikely to occur in the disturbance area.

Thirty-two Priority Flora species returned from the search occur within 50 km of the disturbance area (Figure 2.7, Figure 2.8 and (Figure 2.9), including nine Priority Flora taxa recorded within the disturbance area: *Grevillea lissopleura* (P1; possible misidentification), *Acacia crenulata* (P3) *Baeckea* sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) (P3) *Calytrix creswellii* (P3) *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (P3) *Neurachne annularis* (P3) *Stenanthemum newbeyi* (P3), *Banksia arborea* (P4) and *Grevillea ?erectiloba* (P4).

The likelihood of occurrence of each taxon was assessed based on known distribution and habitat preference, using the rankings shown in Table 2.14. The results of the name based search are presented in Table 2.15. Taxa identified in the spatial search and their current conservation status and likelihood of occurrence within the disturbance area are presented in Table 2.16 (see Appendix A for further information on these taxa).

2.7.4 Novel Taxa

Two species collected by Mattiske during the spring 2012 survey of the J4 mine and haul road study area were considered novel or undescribed taxa. These two species received the provisional names of *Lepidosperma* aff. *resinosum* (B. Ellery 97); and *Thysanotus* aff. *rectantherus* (B. Ellery 82). It is likely that the *Thysanotus* taxon is actually *Thysanotus rectantherus*, as this species was identified in the current survey. On the other hand, it is unknown whether any further identification was made on *Lepidosperma* aff. *resinosum* (B. Ellery 97) as no herbarium lodgement numbers are documented.

Table 2.14 – Criteria to assess likelihood of occurrence of significant flora

Likelihood of occurrence	Criteria
Recorded	The taxon has been recorded within the project area.
Highly Likely	Due to the proximity of previous records (<2 km) and the presence of suitable habitat, the taxon is considered highly likely to occur within the project area.
Likely	Given the presence of suitable habitat and moderate proximity (2 - 5 km) of previous records, the taxon is considered likely to occur within the project area.
Possible	The habitat specificity of the taxon is only broadly defined, or is not defined and/or there are no current records within 5-10 km. However there is insufficient information available to exclude the possibility of occurrence within the project area.
Unlikely	The habitat specificity of the taxon is well defined from previous records and the habitat is considered unlikely to be present within the project area.

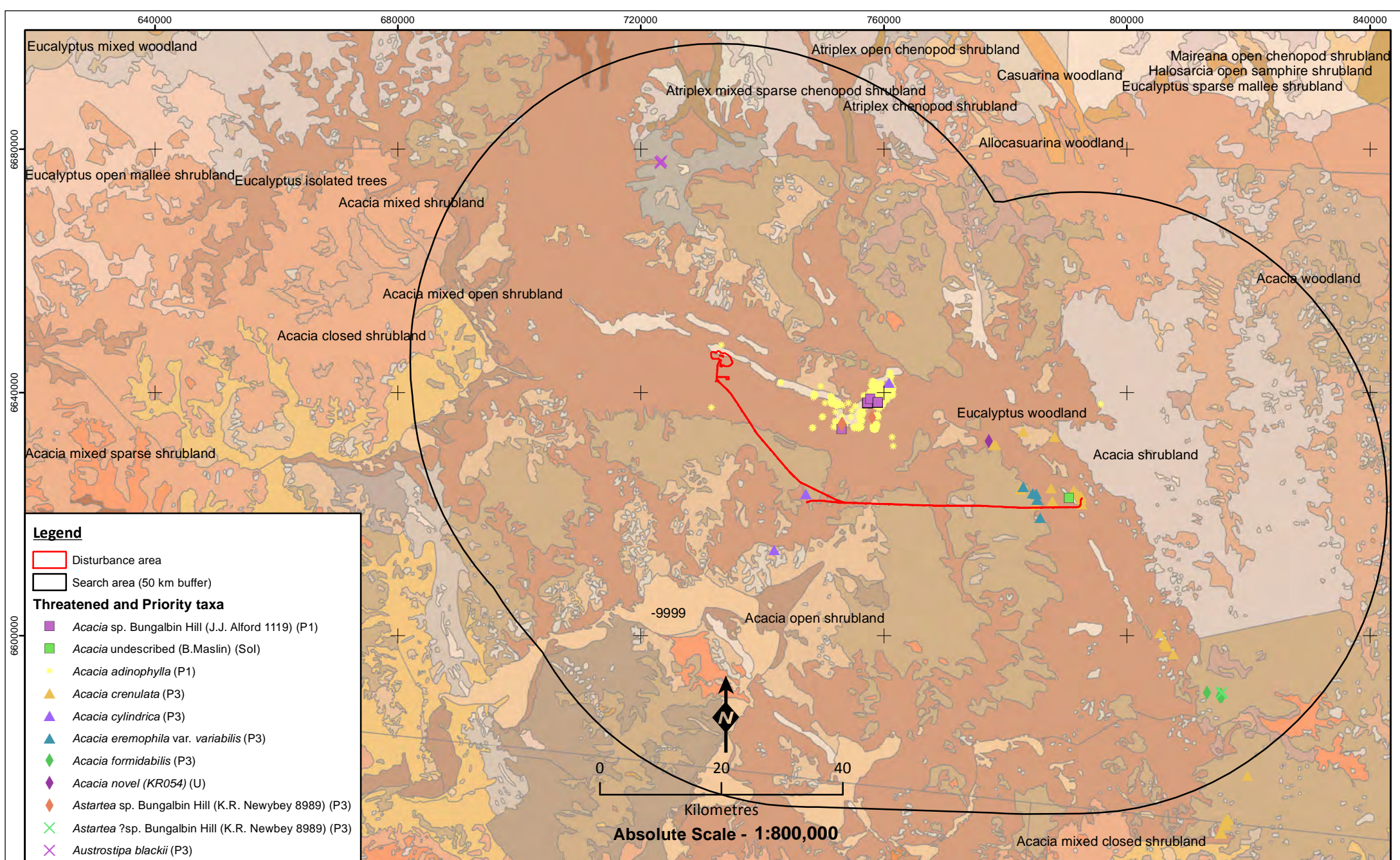
Table 2.15 – Results from the name-based search of DPaW's database

Taxa	Status	Likelihood of occurrence
<i>Tetratheca erubescens</i>	T	Unlikely
<i>Baeckea</i> sp. Die Hardy Range (E. Mattiske J91)	1	Unlikely
<i>Baeckea</i> sp. Helena and Aurora Range (G.J. Keighery 4424)	1	Unlikely
<i>Calytrix</i> sp. Jackson Range (G. Cockerton et al. LCH 13786)	1	Unlikely
<i>Dampiera</i> sp. Jaurdi (D. Angus DA 268)	1	Unlikely
<i>Tecticornia flabelliformis</i>	1	Unlikely
<i>Baeckea</i> sp. Jaurdi Station (L.W. Sage & F. Hort 2229)	2	Unlikely
<i>Brachysola halganiacea</i>	2	Unlikely
<i>Elachanthus pusillus</i>	2	Unlikely
<i>Frankenia brachyphylla</i>	2	Unlikely
<i>Goodenia jaurdiensis</i>	2	Unlikely
<i>Hemigenia tenelliflora</i>	2	Unlikely
<i>Lepidium merrallii</i>	2	Unlikely
<i>Lissanthe scabra</i>	2	Unlikely
<i>Eremophila succinea</i>	3	Unlikely
<i>Eucalyptus exigua</i>	3	Unlikely
<i>Gnephosis</i> sp. Norseman (K.R. Newbey 8096)	3	Unlikely
<i>Gompholobium cinereum</i>	3	Unlikely
<i>Leucopogon</i> sp. Yanneymooning (F. Mollemans 3797)	3	Unlikely
<i>Grevillea tetrapleura</i>	4	Unlikely
<i>Haegiela tatei</i>	4	Unlikely

Table 2.16 – Threatened and Priority Flora previously recorded within 50 km of the study area

Status	Likelihood of occurrence within disturbance area	Taxa	DPaW	WB	M	E
T	Unlikely	<i>Leucopogon spectabilis</i>	•	•		•
		<i>Ricinocarpus brevis</i> (possible misidentification)			•	
		<i>Tetratheca aphylla</i> subsp. <i>aphylla</i>	•	•	•	•
		<i>Tetratheca harperi</i>	•			
P1	Recorded	<i>Grevillea lissopleura</i> (possible misidentification)			•	
	Likely	<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	•	•	•	•
	Highly likely	<i>Acacia adinophylla</i>	•	•	•	•
		<i>Lepidosperma bungalbin</i>	•	•		•
		<i>Leptospermum macgillivrayi</i>			•	
Unlikely	<i>Acacia</i> sp. Bungalbin Hill (J.J. Alford 1119) <i>Beyeria rostellata</i> <i>Chamaelucium</i> sp. Koolyanobbing (V. Clarke 644) <i>Jacksonia jackson</i> <i>Leucopogon</i> sp. Yellowdine (M. Hislop & F. Hort MH 3194) <i>Persoonia leucopogon</i> <i>Phebalium appressum</i>	• • • • • • •	• •	•	•	
P2	Unlikely	<i>Spartothamnella puberula</i>	•			
P3	Recorded	<i>Acacia crenulata</i>	•		•	
		<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586)	•		•	•
		<i>Calytrix creswellii</i>	•		•	
		<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)	•		•	
		<i>Neurachne annularis</i>	•	•	•	•
P3	Likely	<i>Stenanthemum newbeyi</i>	•	•	•	•
		<i>Acacia cylindrica</i>	•			
		<i>Acacia eremophila</i> var. <i>variabilis</i>			•	
		<i>Grevillea georgeana</i>	•	•	•	•
		<i>Philothea deserti</i> subsp. <i>brevifolia</i>	•		•	
P3	Possible	<i>Spartothamnella</i> sp. Helena & Aurora Range (P.G. Armstrong 155-109)	•	•	•	•
		<i>Bossiaea</i> sp. Jackson Range (G. Cockerton & S. McNeen LCS 13614)	•			
		<i>Lepidium genistoides</i>	•			
		<i>Lepidosperma ferricola</i>	•	•	•	•
		<i>Mirbelia ferricola</i>	•	•		
P3	Unlikely	<i>Philothea coateana</i>	•			
		<i>Styphelia</i> sp. Bullfinch (M. Hislop 3574)	•			
		<i>Acacia formidabilis</i>			•	
		<i>Astartea</i> sp. Bungalbin Hill (K.R. Newybey 8989)	•		•	
		<i>Austrostipa blackii</i>	•		•	
P4	Recorded	<i>Banksia lullfitzii</i>	•			
		<i>Gnephosis intonsa</i>	•			
	Possible	<i>Homalocalyx grandiflorus</i>	•		•	
		<i>Labichea eremaea</i>	•			
		<i>Phebalium drummondii</i>	•	•		
Unlikely	<i>Phlegmatospermum eremaeum</i>	•				
	<i>Stylidium choreanthum</i>	•				
P4	Recorded	<i>Verticordia mitodes</i>	•			
		<i>Banksia arborea</i>	•	•	•	•
	Possible	<i>Grevillea ?erectiloba</i>			•	
		<i>Eremophila caerulea</i> subsp. <i>merrallii</i>				•
		<i>Grevillea erectiloba</i>	•	•	•	•
Unlikely	<i>Sowerbaea multicaulis</i>	•				
	<i>Eucalyptus formanii</i>	•	•			
		<i>Lepidosperma lyonsii</i>			•	

DPaW = Department of Parks and Wildlife, WB = Western Botanical, M = Mattiske, E = *ecologia*



Legend

Disturbance area
 Search area (50 km buffer)

Threatened and Priority taxa

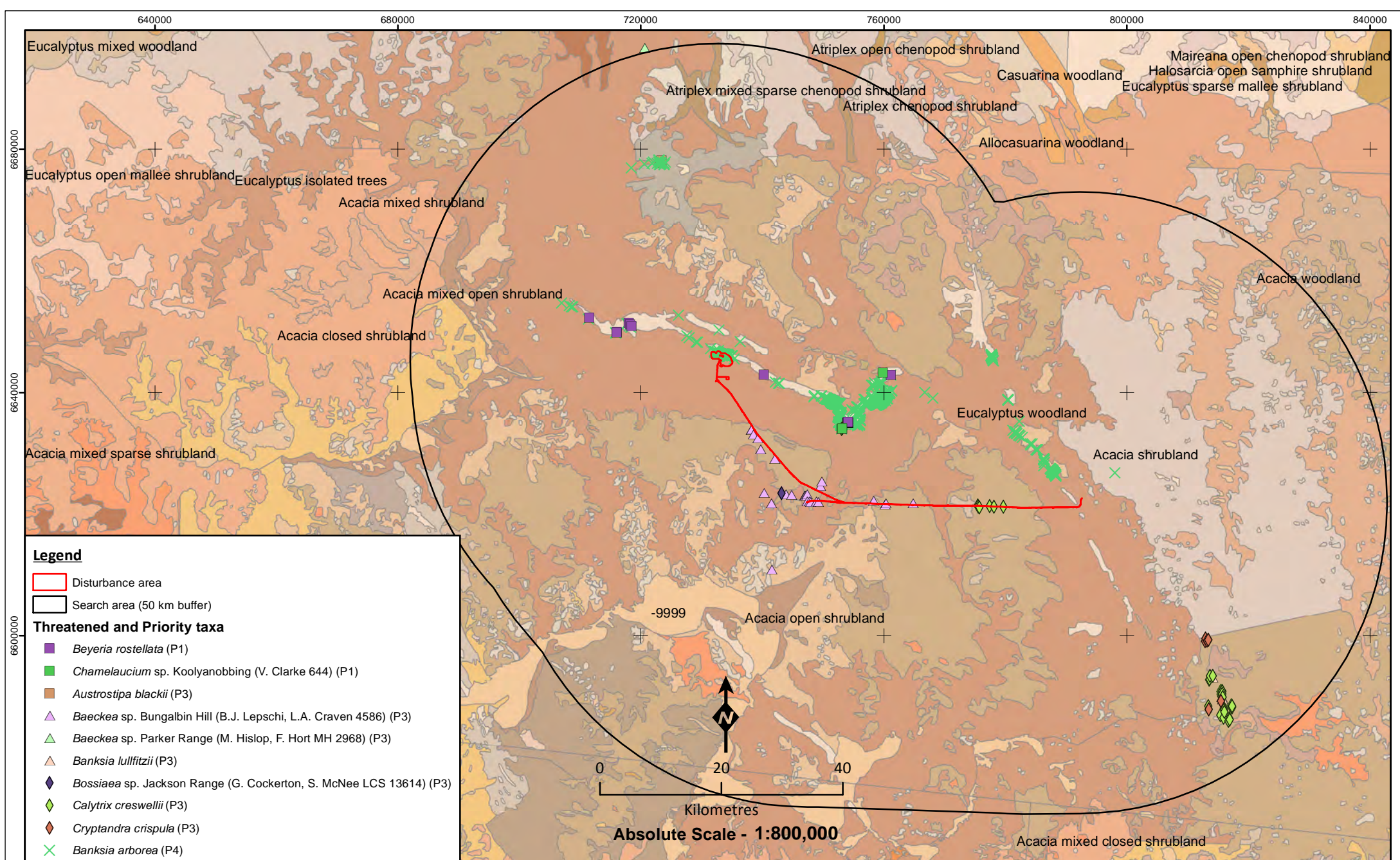
- Acacia* sp. Bungalbin Hill (J.J. Alford 1119) (P1)
- Acacia* undescribed (B.Maslin) (Sol)
- Acacia adinophylla* (P1)
- Acacia crenulata* (P3)
- Acacia cylindrica* (P3)
- Acacia eremophila* var. *variabilis* (P3)
- Acacia formidabilis* (P3)
- Acacia novel* (KR054) (U)
- Astartea* sp. Bungalbin Hill (K.R. Newbey 8989) (P3)
- Astartea* ?sp. Bungalbin Hill (K.R. Newbey 8989) (P3)
- Austrostipa blackii* (P3)

0 20 40
 Kilometres
Absolute Scale - 1:800,000



Threatened and Priority Flora within 50 km of the J4 disturbance area - Map A

Figure: 2.7 Project ID: 1555	Drawn: CP Date: 21/10/2013
Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994	Unique Map ID: CP353



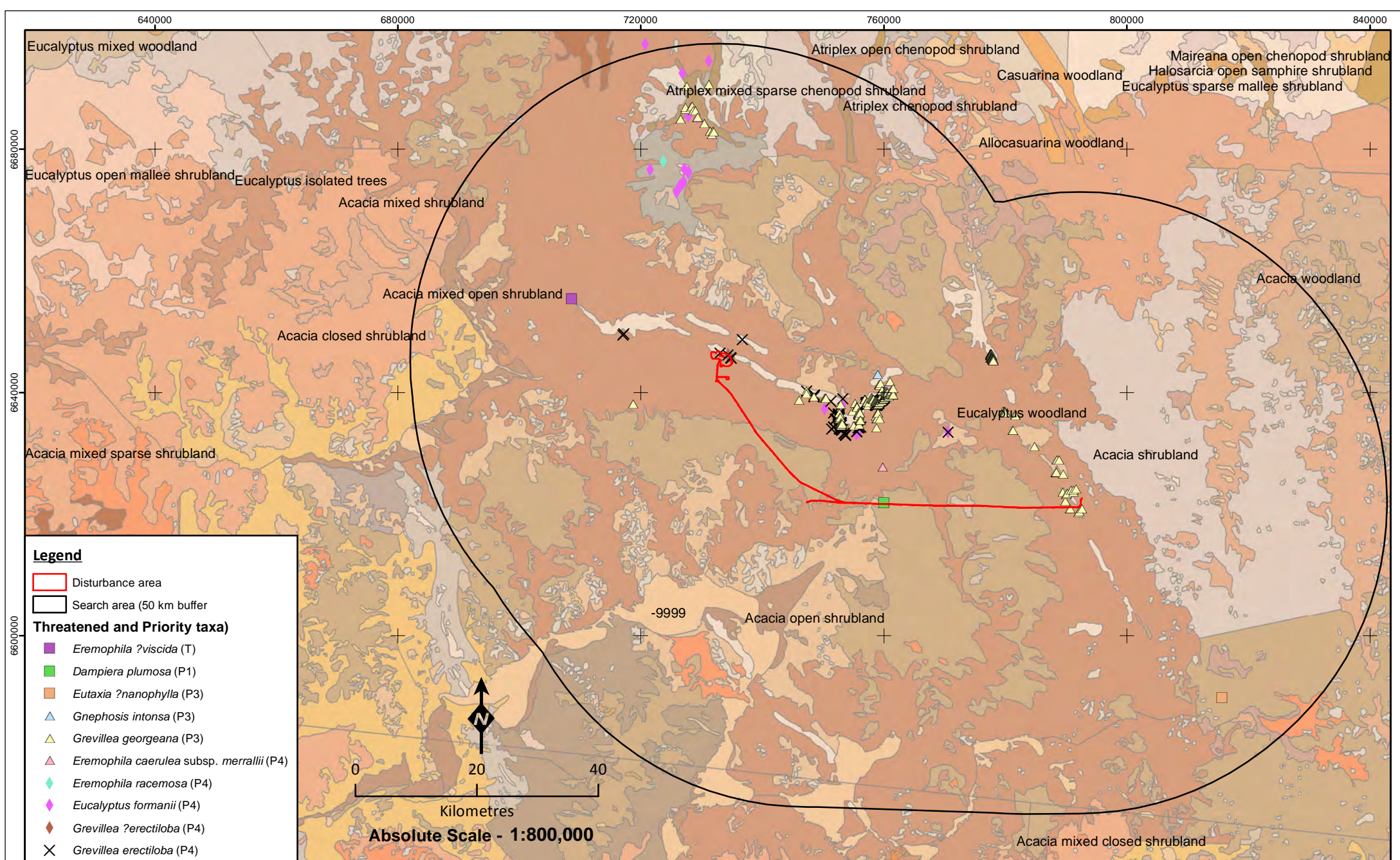
Threatened and Priority Flora within 50 km of the J4 disturbance area - Map B

Figure: 2.8
Project ID: 1555

Drawn: CP
Date: 21/10/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: CP354



Legend

- Disturbance area
- Search area (50 km buffer)

Threatened and Priority taxa

- Eremophila ?viscida* (T)
- Dampiera plumosa* (P1)
- Eutaxia ?nanophylla* (P3)
- Gnephosis intonsa* (P3)
- Grevillea georgeana* (P3)
- Eremophila caerulea* subsp. *merrallii* (P4)
- Eremophila racemosa* (P4)
- Eucalyptus formanii* (P4)
- Grevillea ?erectiloba* (P4)
- Grevillea erectiloba* (P4)



Absolute Scale - 1:800,000



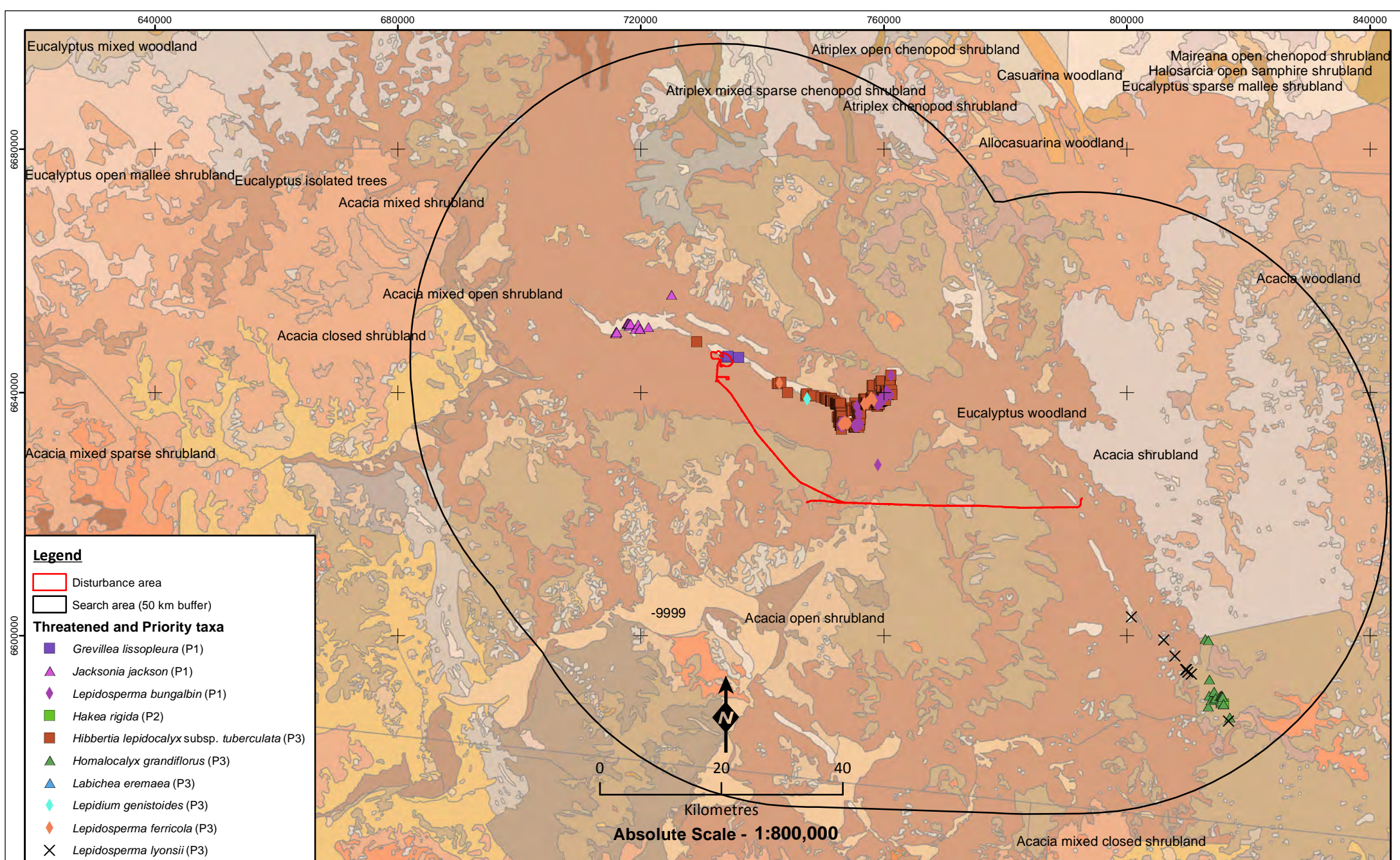
**Threatened and Priority Flora within
50 km of the J4 disturbance area - Map C**

Figure: 2.9
Project ID: 1555

Drawn: CP
Date: 21/10/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: CP355



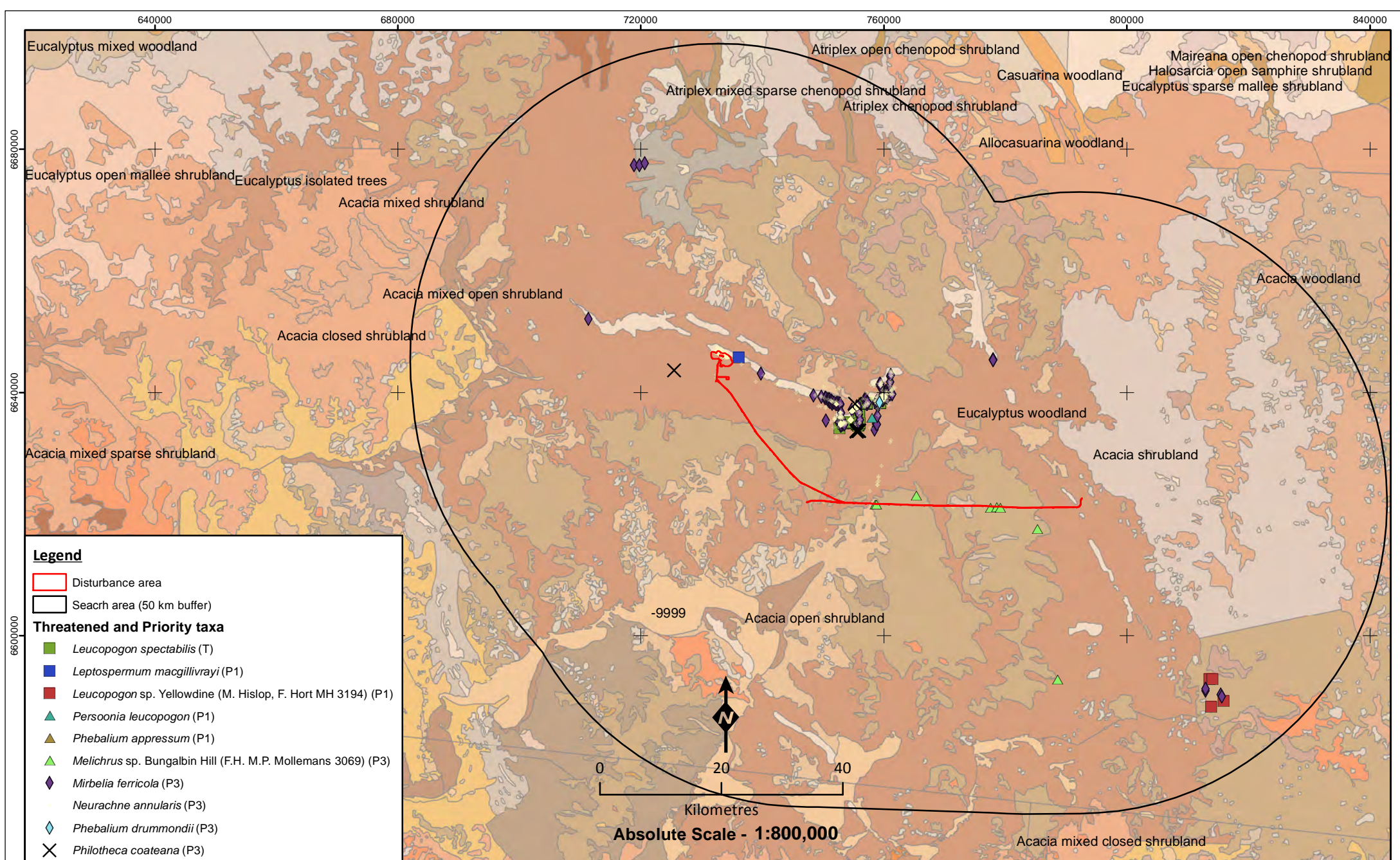
**Threatened and Priority Flora within
50 km of the J4 disturbance area - Map D**

Figure: 2.10
Project ID: 1555

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Drawn: CP
Date: 26/11/2013

Unique Map ID: CP368



Legend

Disturbance area
 Search area (50 km buffer)

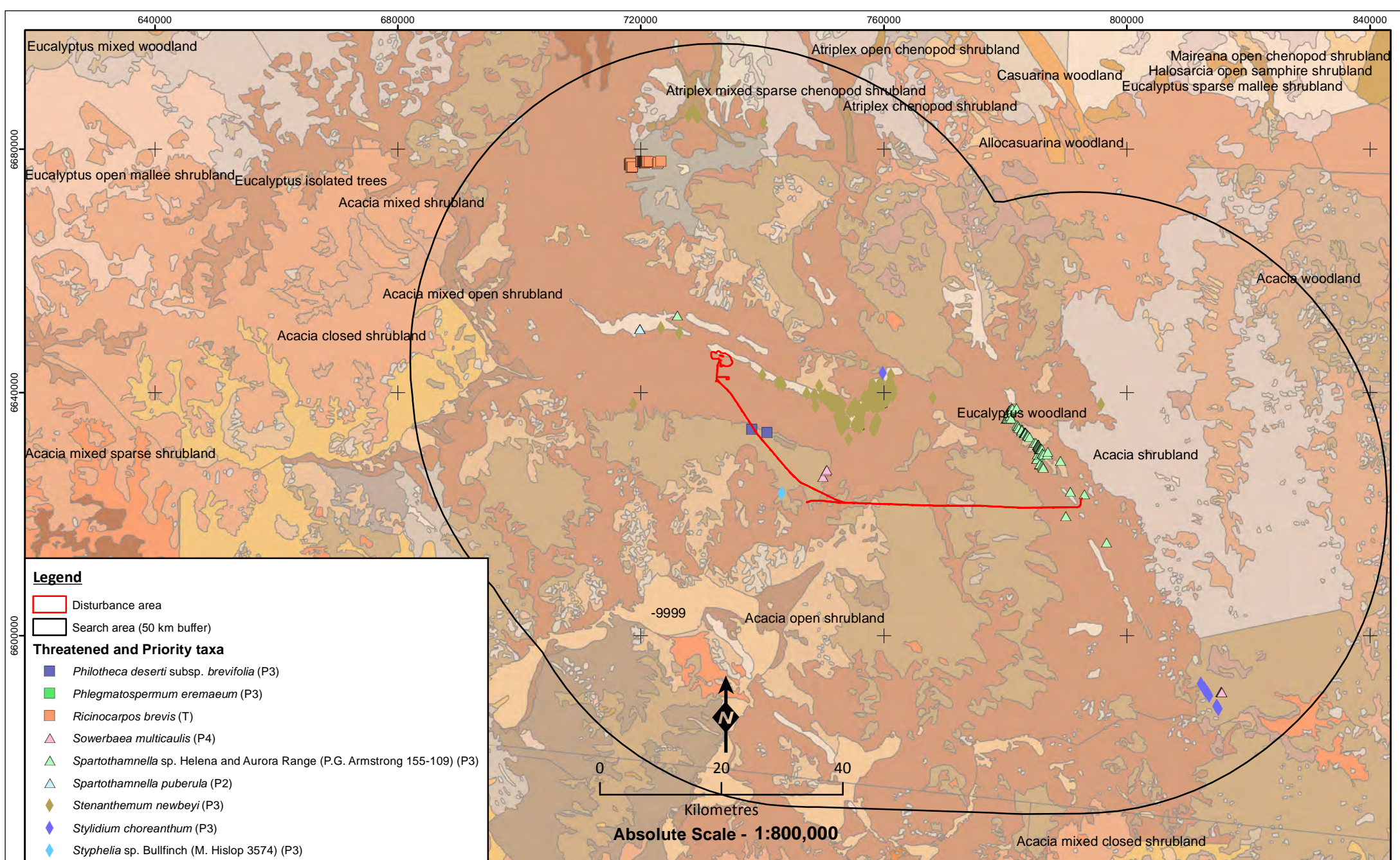
Threatened and Priority taxa

- *Leucopogon spectabilis* (T)
- *Leptospermum macgillivrayi* (P1)
- *Leucopogon* sp. Yellowdine (M. Hislop, F. Hort MH 3194) (P1)
- ▲ *Persoonia leucopogon* (P1)
- ▲ *Phebalium appressum* (P1)
- ▲ *Melichrus* sp. Bungalbin Hill (F.H. M.P. Mollemans 3069) (P3)
- ◆ *Mirbelia ferricola* (P3)
- ◆ *Neurachne annularis* (P3)
- ◆ *Phebalium drummondii* (P3)
- × *Philotheca coateana* (P3)



Threatened and Priority Flora within 50 km of the J4 disturbance area - Map E

Figure: 2.11 Project ID: 1555	Drawn: CP Date: 26/11/2013
Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994	Unique Map ID: CP369 A4

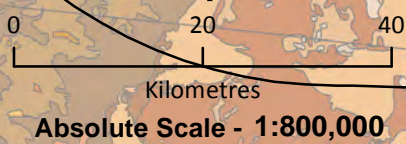


Legend

- Disturbance area
- Search area (50 km buffer)

Threatened and Priority taxa

- Philothea deserti* subsp. *brevifolia* (P3)
- Phlegmatospermum eremaicum* (P3)
- Ricinocarpos brevis* (T)
- Sowerbaea multicaulis* (P4)
- Spartothamnella* sp. Helena and Aurora Range (P.G. Armstrong 155-109) (P3)
- Spartothamnella puberula* (P2)
- Stenanthemum newbeyi* (P3)
- Stylidium choreanthum* (P3)
- Styphelia* sp. Bullfinch (M. Hislop 3574) (P3)



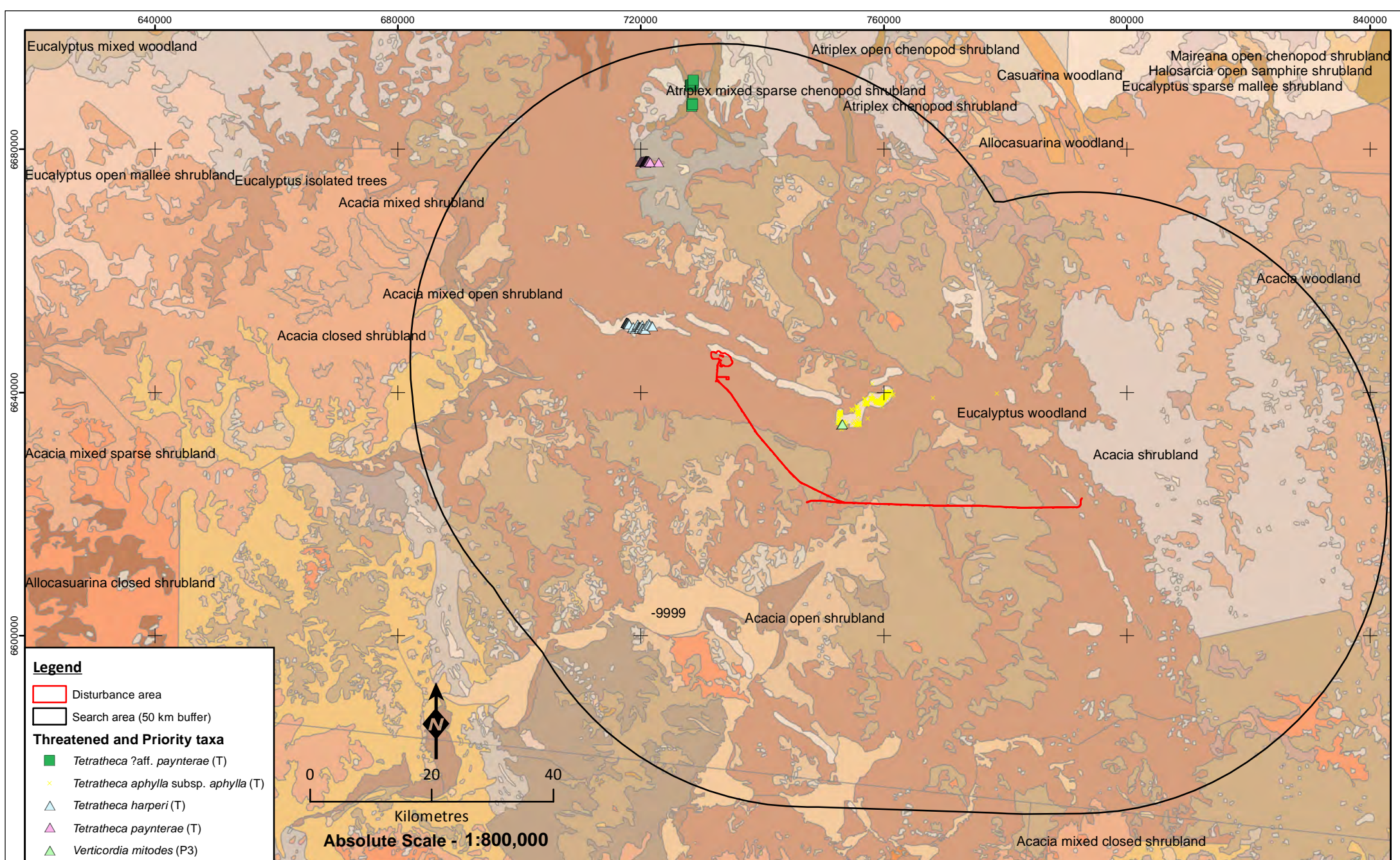
**Threatened and Priority Flora within
50 km of the J4 disturbance area - Map F**

Figure: 2.12
Project ID: 1555

Drawn: CP
Date: 26/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: CP370



Legend

Disturbance area
 Search area (50 km buffer)

Threatened and Priority taxa

- *Tetratheca* ?aff. *paynterae* (T)
- × *Tetratheca aphylla* subsp. *aphylla* (T)
- △ *Tetratheca harperi* (T)
- △ *Tetratheca paynterae* (T)
- △ *Verticordia mitodes* (P3)

0 20 40
Kilometres
Absolute Scale - 1:800,000



**Threatened and Priority Flora within
50 km of the J4 disturbance area - Map G**

Figure: 2.13 Project ID: 1555	Drawn: CP Date: 26/11/2013
<small>Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994</small>	<small>Unique Map ID: CP371</small>

3 SURVEY METHODOLOGY

3.1 GUIDING PRINCIPLES

The survey methods adopted by *ecologia* were formulated using:

- Position Statement 3 (EPA 2002) on terrestrial biological surveys as an element of biodiversity protection;
- Guidance Statement 51 (EPA 2004c) on terrestrial flora and vegetation surveys for environmental impact assessment;
- Clearing of Native Vegetation Regulations 2004 (WA) (EPA 2004a);
- Background research to gather background information on the footprint or target area (i.e. search of literature, data and map-based information); and
- The Recommended Interim Protocol for Flora Surveys of Banded Ironstone Formations (BIF) of the Yilgarn Craton (CALM 2005).

Furthermore, *ecologia* representatives together with representatives from Polaris, including Polaris' peer reviewer, engaged in a series of consultations with relevant DPaW personnel to ensure that the methodology for the surveys was appropriately robust to define the flora and vegetation values of the project area. This consultation included meetings and written correspondence, culminating in a document dated 20 December 2012 which sought in-principle support from DPaW for methodologies proposed. The outcome of this consultation was an agreement to place at least 30% of the survey effort outside of the disturbance area to provide regional context for the data.

Guidance Statement 51 recommends the following characteristics for a Level 2 Flora and Vegetation survey which were incorporated into the survey and reporting design:

- One or more visits to the target area in the main flowering season;
- Replication of plots in each vegetation unit to thoroughly sample the flora and characterise the vegetation units over their full extent in the target area;
- Multivariate analysis of the vegetation using, at a minimum, presence/absence data and perennial species;
- Mapping of vegetation at an appropriate scale; and
- Tabulation of the area of each vegetation unit mapped and an assessment of the environmental values including such factors as extent, condition and presence of significant flora.

3.2 DATABASE SEARCHES

Searches of the following databases were undertaken in August 2013 prior to the field survey, to determine species of conservation significance previously recorded in the vicinity of the disturbance area:

- DPaW Threatened (Declared Rare) Flora Database (TPFL);
- DPaW Declared Rare and Priority Flora List (TPlist);
- Western Australian Herbarium Specimen Database (WAHERB);
- DPaW TEC Database;
- EPBC Protected Matters Database; and
- CAD Resources' compiled data from Mattiske and Western Botanical.

3.3 VEGETATION AND FLORA ASSESSMENT

In accordance with the methodologies described in EPA Guidance Statement 51 (EPA 2004c) and the Recommended Interim Protocol for Flora Surveys of Banded Ironstone Formations (BIF) of the Yilgarn Craton (CALM 2005), the survey was conducted by sampling within permanent bounded quadrats 400 m² in area (20 x 20 m), supplemented by a series of linked field and grid-based transects. Opportunistic collections during traverses is a more time efficient method of maximising the floristic inventory and thus increasing the probability of locating flora of potential significance. However, standardised quadrats allow the vegetation to be consistently characterised and facilitate multivariate analysis of vegetation associations. Both methods contributed to the delineation of fine scale vegetation units and a comprehensive floristic inventory of the study area. Vegetation was mapped up to 2 km surrounding the study area in order to place the disturbance area in context with the immediate surroundings. Mapping beyond 2 km of the study area with no floristic units assessed through quadrat sampling would become unreliable.

3.3.1 Survey Timing

The vegetation and flora of the J4 mine and haul road study area was surveyed by eleven botanists on a survey from 4 to 11 September 2013 (not including travel time), with an additional survey effort of three botanists for two days between 29 and 30 October 2013. Seventy-one person days were spent surveying the study area. Approximately 85% of this time was spent completing quadrats and the other 15% (12 person-days) was spent recording the presence of Threatened and Priority Flora as encountered while walking to and from the quadrats and conducting targeted searches via transects. An additional six person days were spent targeting Priority Flora in the area during October 2013.

3.3.2 Quadrats

A total of 281 quadrats were sampled. Of these, 48 were located inside the disturbance area with the remaining quadrats located outside to provide context for the results. Re-surveys of previously established quadrats amounted to 253 quadrats. A map of quadrat locations including those resurveyed is presented in Figure 3.1.

New quadrats were implemented to target the BIF areas and the PEC that overlaps the study area; to fill spatial gaps present in the previous location of quadrats; to add to under-sampled vegetation units (based on spring 2012 and autumn 2013 mapping); and to accompany the fauna sites locations. The areas located southeast and southwest of the J4 mine; as well as the accommodation camp, did not have new quadrats implemented on them despite the apparent spatial gap due to the fact that these consist of large, relatively uniform vegetation units adequately surveyed in other parts of the study area.

All quadrats were 20 x 20 m. Newly established quadrats were marked with a star picket at the north-west corner of the plot, and galvanised fence droppers at the three other corners.

Coordinates for all quadrats are provided in Appendix B.

For each newly established quadrat, the following were recorded:

- Height range and percentage foliage cover for each species within the site (including introduced species);
- Vegetation condition (degree of disturbance);
- Estimated time since fire;
- GPS co-ordinate for each corner;
- Digital image of the quadrat vegetation, taken from the north-west corner;
- All observed flora species and the average height, percentage cover (using the ranges cited by NVIS) and observable presence/absence of fruit/flowers for each;

- Vegetation structure (scoring three layers for dominance, growth form, height and estimated cover consistent with NVIS Level V);
- The landform element (morphological type, position and element type) that the plot occupies;
- The presence of coarse fragments on the surface;
- The presence of rock outcrops (type and abundance);
- Soil type (colour, profile, field texture and surface type);
- Position, slope and aspect; and
- The degree and nature of any site disturbance.

Quadrats that had been previously established by Mattiske (spring 2012 and autumn 2013) were re-surveyed for floristics, but the physical and environmental attributes were not recorded again. Due to this, descriptions of quadrats established by Mattiske contain a different set of attributes:

- GPS co-ordinate for the northwest corner;
- Survey date;
- Soil colour;
- Soil grade (texture);
- Surface rock fragments (rock type);
- Rock outcropping;
- Relative topography;
- Aspect (direction) of slope, if present;
- Percentage of bare ground;
- Estimated time since fire; and
- Height range and percentage foliage cover for each species within the site (including introduced species).

All quadrat descriptions are presented in Appendix C. In Appendix C, the quadrats established by Mattiske in spring 2012 and autumn 2013 have the original abiotic description and the up-to-date floristic composition (based on the re-survey of spring 2013).

Vouchers of all taxa recorded were collected for subsequent verification of identity. Nomenclature and taxonomy follow the conventions currently adopted by the Western Australian Herbarium (Western Australian Herbarium 1998-2013).

3.3.3 Vegetation Condition

Vegetation condition was assessed at locations where disturbance or degradation was observed using the condition scale of Trudgen (1991, cited in Department of Environmental Protection 2000), which is based on the criteria in Table 3.1.

Table 3.1 – Vegetation condition scale

Vegetation Condition	Criteria
Excellent	Pristine or nearly so, no obvious sign of damage caused by European man
Very good	Some relatively slight signs of damage caused by the activities of European man e.g. damage to tree trunks by repeated fires, the presence of some relatively non-aggressive weeds or occasional vehicle tracks.
Good	More obvious signs of damage caused by the activities of European man, including some obvious impact to vegetation structure such as caused by low levels of grazing or by selective logging. Weeds as above, possibly plus some more aggressive ones
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of European man such as grazing or partial clearing or very frequent fires. Presence of some more aggressive weeds.
Very poor	Severely impacted by grazing, fire, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weeds species including aggressive species.
Completely Degraded	Areas that are completely or almost completely without native vegetation e.g. areas that are cleared or parkland cleared with their flora comprising weed or crop species with isolated native trees or shrubs.

3.3.4 Transects and Targeted Flora Searches

A series of transects were completed while walking to, from and between quadrats to target Priority Flora (Figure 3.2). Additional grid-transects were conducted with intensity determined on habitat suitability and likelihood of impact (50, 100 or 200 m apart). It is expected that some areas have been thoroughly traversed in the past, but due to the fact that no shapefiles of previously walked tracks are available from the past surveys, the transects presented in Figure 3.2 are to be interpreted as those resulting from the current survey only.

The transects crossed a number of landforms and vegetation types to maximise the diversity of Priority Flora targeted with special attention paid to BIF ranges. Where Priority Flora were recorded, the data recorded was sufficient in detail to meet current DPaW standards and to place the values in a local and regional context and included:

- Soil type (colour, profile, field texture and surface type);
- The location for any plants thought to be Threatened or Priority taxa were recorded with a hand-held GPS;
- Where only a small number of individuals were present (<50), the number of plants present in the area were counted;
- Locations where many individuals were present (>50), an estimate to the nearest 10 or 100 individuals was made;
- In cases where the distribution was more-or-less-continuous, a series of locations was recorded, with an estimate of abundance for that section of line; and
- Voucher specimens were collected periodically to confirm the identity of all taxa recorded.

Opportunistic collections were also made of taxa not recorded within the quadrats to supplement the species list, including any introduced flora. Additional notes regarding the boundaries of the vegetation units were recorded during each transect to facilitate the mapping of the vegetation units and condition.

3.3.5 Range Extensions

Taxa recorded during the current survey that are outside of their known distribution are identified as range extensions. The distribution and range extensions have been subdivided into three categories:

- Bioregional Extension, indicates the taxon has not been previously recorded in the IBRA Bioregion in which the disturbance area is located;
- Range Extension, indicates the records in the study are at least 100 km from the boundary of the known distribution based on herbarium lodged records; and
- Bridging Record, indicates records between known populations, but at least 100 km from the nearest population.

3.3.6 Vegetation Mapping

Vegetation mapping is the delineation of plant communities based on distinctive characteristics that these communities share such as the vegetation structure, dominant species and species composition.

Quadrat floristic data was used to produce a dendrogram of dissimilarity between the quadrats. The dendrogram was divided into groups which correspond to the vegetation units. A combination of aerial photography, the vegetation unit grouping and ground truthing was used to interpret the vegetation patterns of the study area and allow for the mapping.

This method provides an objective means of defining vegetation units and provides insight into the hierarchical relationship between communities based on the degree of similarity in species composition and abundance. The boundaries of communities were then extrapolated to the entire study area based on their appearance in aerial imagery. A limit of 2 km from any surveyed quadrat was used for extrapolation of mapping, in order to provide context for the mapping outside of the disturbance area but still with mapping reliability.

Multivariate analysis was conducted using the site by species matrix from new quadrats completed by *ecologia* during the September 2013 field survey and quadrats resurveyed by *ecologia* of those previously sampled during the September 2012 and April 2013 Mattiske surveys (Mattiske 2013).

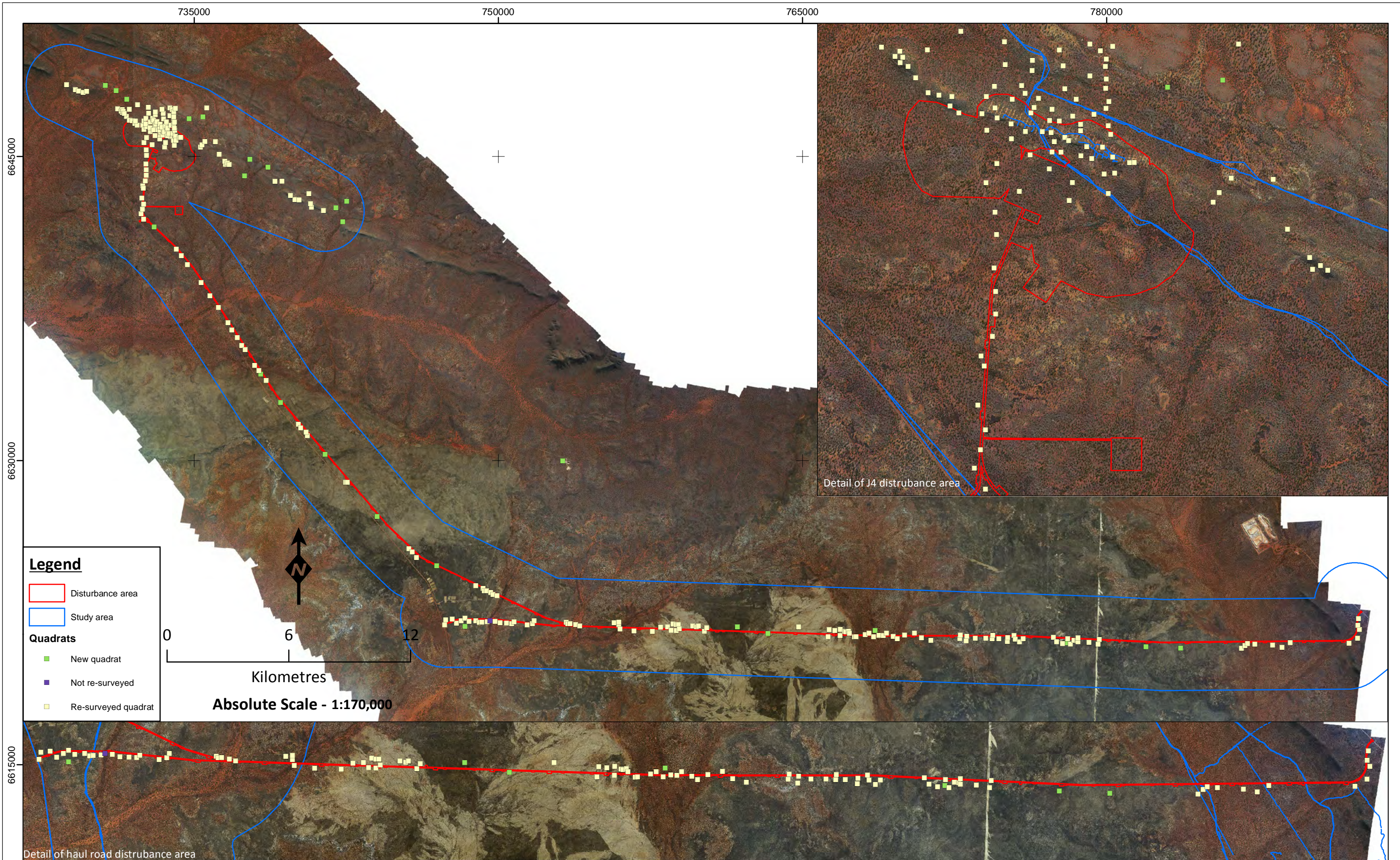
In order to best align the vegetation analysis with other surveys conducted in the region by DPaW and Mattiske, data in the species by site matrix was arranged in a similar fashion, according to the methodology in the regional surveys. This meant that:

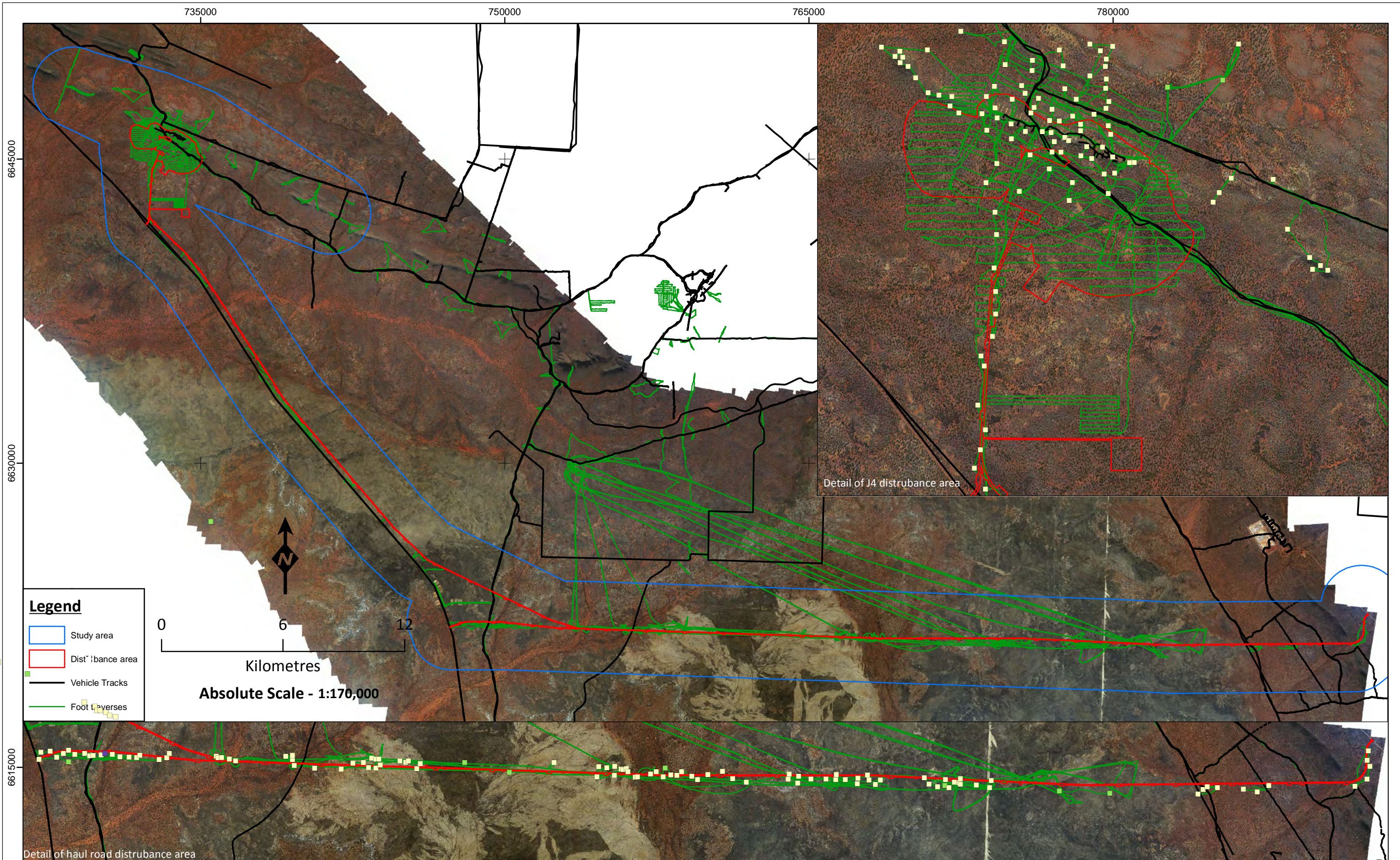
- Taxa of the same genus, but with not fully identified species, varieties or subspecies were grouped or removed from the analysis;
- Singletons, taxa represented by a single specimen or collection, were removed; and
- Annual taxa were removed for the regional analyses but not from the analysis on the current survey.

Cluster analysis was performed on the cover weighted site by species matrix using an association matrix of the Bray-Curtis coefficient with the multivariate programs PATN™ (CSIRO 2006 Version 3.1.1) and SYSTAT (SYSTAT Software, Inc 2007 Version 12.0.8). The resultant dendrograms were used to identify vegetation assemblages.

Analysis of two separate floristic groupings was performed. The first, at fine detail, grouped vegetation units based on floristic composition and weighted cover; which were described to NVIS Level V (association), and thus contain the components of dominant growth form, height, cover and species (three species) for the upper, mid and ground strata.

The same dendrogram resulting from floristic analysis was used to define broader vegetation units, referred to as 'supergroups'. The supergroups are a valuable tool to compare the floristic units to other surveys, as they allow regional comparisons to be conducted at a lesser level of detail (at a higher level of dissimilarity) thus decreasing the number of non-matching units. Supergroups were based on floristic composition but can be more easily defined by the landform they occur on.





3.3.7 Regional Vegetation Analysis

Vegetation datasets from surrounding survey areas were assessed to determine the similarities between vegetation units (based on floristic data) recorded within the study area and the surrounding region.

Two data sets were analysed quantitatively: the flora and vegetation surveys of the Helena and Aurora Range conducted by Gibson *et al.* (1997); and by *ecologia* (2013). The analysis was performed on the presence of taxa by site using an association matrix of the Bray-Curtis coefficient with the multivariate program PATN™ (CSIRO 2006 Version 3.1.1). Care was taken to update the nomenclature the previous studies for consistency with the current survey. Annual species and singletons were removed prior to analysis. As a result the final data set consisted of 253 perennial taxa from 408 quadrats. The locations of all quadrats are included in Figure 3.1.

One dataset (Mattiske 2009c) was analysed qualitatively. The vegetation units defined by Mattiske were compared by a combination of spatial distribution (overlaying the vegetation mapping from the Mattiske (2009) study and the mapping from the current study) and vegetation descriptions and species composition.

3.3.8 Species Accumulation Curve

Species accumulation curve (SAC) analysis provides a theoretical basis for understanding the relationship between sampling effort and the accumulation of species, and therefore provides a means of estimating the survey adequacy. As sampling effort increases, the rate at which new species are recorded is reduced until ultimately the number of species recorded becomes asymptotic. At the point where there is a minimal increase in species inventory with continued sampling effort, the survey size is deemed sufficient. Flora sampling adequacy was estimated using SAC analysis (Colwell 2009) and extrapolation of the curve to the asymptote using Michaelis-Menten modelling.

A SAC curve was calculated for the current survey, with 281 quadrats. Additional SAC curves were run for each vegetation unit defined in this study, both in the Level V grouping (29 vegetation units) and in the four broad floristic supergroups.

3.3.9 Priority Flora Regional Impact Analysis

A comparison was made between the number of individuals of Priority Flora recorded inside and outside the study and disturbance area. In order to minimise the potential to duplicate data, all records from this survey and from previous surveys (as listed in Section 2.7) were mapped together and when overlapping data existed, the most recent and most refined survey was used and the other data discarded. If two records of the same species were recorded within 5 m from each other in different surveys, the largest individual count was kept and the other data point excluded.

3.3.10 Vegetation impact analysis

Impact assessment of the vegetation communities was completed through the spatial mapping. Areas were calculated in ArcGIS and the area of impact (hectares) calculated for the disturbance area and the surrounding study area. Potentially, vegetation units extend further away than the limits of the study area; however, mapping further than 2 km from the disturbance area would become unreliable. The results of the impact assessment are therefore considered conservative values.

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4 RESULTS

4.1 FLORA SPECIES COMPOSITION

The species inventory contains 359 vascular plant taxa recorded from the study area. Of these, 350 are fully identified species and nine are partially identified (not able to be fully identified due to lack of suitable material) but known to not be repeats of fully identified species. There were also 112 collections that were not fully identified and have not been included in the total because they have been considered likely to be repeats.

A number of identified specimens are designated with a question mark in the species list, and are likely to belong to the named species, but due to insufficient vegetative, flowering or fruiting material their identification cannot be confirmed.

Several specimens could not be confidently identified to species level due to insufficient vegetative, flowering or fruiting material and are denoted as 'indet.' taxa. Many of these specimens probably represent taxa already included on the species list (e.g. *Austrostipa* sp., *Allocasuarina* sp., *Erodium* sp., *Eucalyptus* sp., *Sida* sp.). In some cases, however, these specimens represent taxa not already included (e.g. *Arthropodium* sp., *Hydrocotyle* sp.).

A number of specimens could not be satisfactorily identified to genus or species level despite the availability of good material. These have been assigned a unique code for the floristic analysis, and have been submitted to the Western Australian Herbarium for specialist identification.

Of the 359 vascular flora taxa, 321 were collected within the quadrats and the remaining 38 were collected opportunistically.

The composition of the flora of the J4 mine and haul road study area is summarised in Table 4.1. A complete list of taxa recorded, including opportunistic collections and partially identified specimens, is included in Appendix D.

Table 4.1 – Diversity of the flora of the study area

Number of quadrats surveyed	Number of taxa recorded	Number of families	Number of genera	Number of families represented by a single taxon	Number of genera represented by a single taxon
278 [^]	359	57	179	18	103

[^]Number of quadrats includes new re-sampled autumn quadrats (Mattiske 2013).

The families and genera represented by the greatest number of taxa and the most frequently recorded species in the study area are listed in Table 4.2. The high presence of annual families Asteraceae, Poaceae and Goodeniaceae recorded in this survey is an indication of the favourable spring seasonal conditions.

Table 4.2 – Most commonly recorded families, and genera of the study area

Most taxa per family [^]	Most taxa per genus [^]	Most frequently recorded taxa
Myrtaceae (49 taxa)	<i>Acacia</i> (26 taxa)	<i>Neurachne annularis</i> (103 records; 37.1% quadrats)
Fabaceae (38 taxa)	<i>Eucalyptus</i> (23 taxa)	<i>Austrostipa elegantissima</i> (93 records; 33.5% quadrats)
Asteraceae (33 taxa)	<i>Eremophila</i> (19 taxa)	<i>Olearia muelleri</i> (90 records; 32.4% quadrats)
Poaceae (21 taxa)	<i>Melaleuca</i> (9 taxa)	<i>Ptilotus obovatus</i> (74 records; 26.6% quadrats)
Scrophulariaceae (19 taxa)	<i>Grevillea</i> (9 taxa)	<i>Senna artemisioides</i> subsp. <i>filifolia</i> (74 records; 26.6% quadrats)
Lamiaceae (17 taxa)	<i>Ptilotus</i> (8 taxa)	<i>Amphipogon caricinus</i> subsp. <i>caricinus</i> (69 records; 24.8% quadrats)
Proteaceae (24 taxa)	<i>Austrostipa</i> (7 taxa)	<i>Dianella revoluta</i> subsp. <i>divaricata</i> (68 records; 24.5% quadrats)
Chenopodiaceae (18 taxa)	<i>Dodonaea</i> (7 taxa)	<i>Acacia</i> sp. narrow phyllode (67 records; 24.1% quadrats)
Goodeniaceae (14 taxa)	<i>Prostanthera</i> (6 taxa)	

^Excludes any species which could represent repeats in identification.

Species richness within quadrats varied from four to 38 taxa, with a mean species richness of 14.0 ± 0.3 ($n= 278$). The quadrats with the highest species richness, with 38, 35 and 35 taxa recorded, were located within the rocky upper slopes and ridgetops within vegetation unit RMR1 (*Brachychiton gregorii* low isolated trees, over *Eremophila georgei* and *Philothea brucei* subsp. *brucei* mid, sparse shrubland, over *Austrostipa elegantissima* sparse tussock grassland). The lowest species richness was recorded in vegetation units SGP5 (*Olearia exiguifolia* and *Westringia cephalantha* mid, sparse shrubland, over *Triodia scariosa* open hummock grassland and/or *Austrostipa elegantissima* open tussock grassland) and RMR5 (*Acacia* sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over *Ptilotus obovatus* and *Olearia muelleri*, low sparse shrubland, over *Neurachne annularis* tussock grassland) with four taxa. Vegetation unit SGP5 is located on the sandy plains and floodplains and RMR5 is located on the rocky midslopes.

4.1.1 Sampling Adequacy

Flora sampling adequacy was estimated using SAC analysis (Colwell 2009) and extrapolation of the curve to the asymptote using Michaelis-Menten modelling (Figure 4.1). Using this analysis, the incidence-based coverage estimators of species richness; Incidence Cover-based Estimator (ICE) Mean was determined to be 394 and Chao 2 Mean was 383. The total number of taxa collected in the study area quadrats (excluding opportunistic collections) was 324 if all potential duplicates not fully identified to subspecies level (and therefore possibly repeats of other taxa) are excluded. Thus it is estimated that between 82 and 85% of the taxa present were recorded.

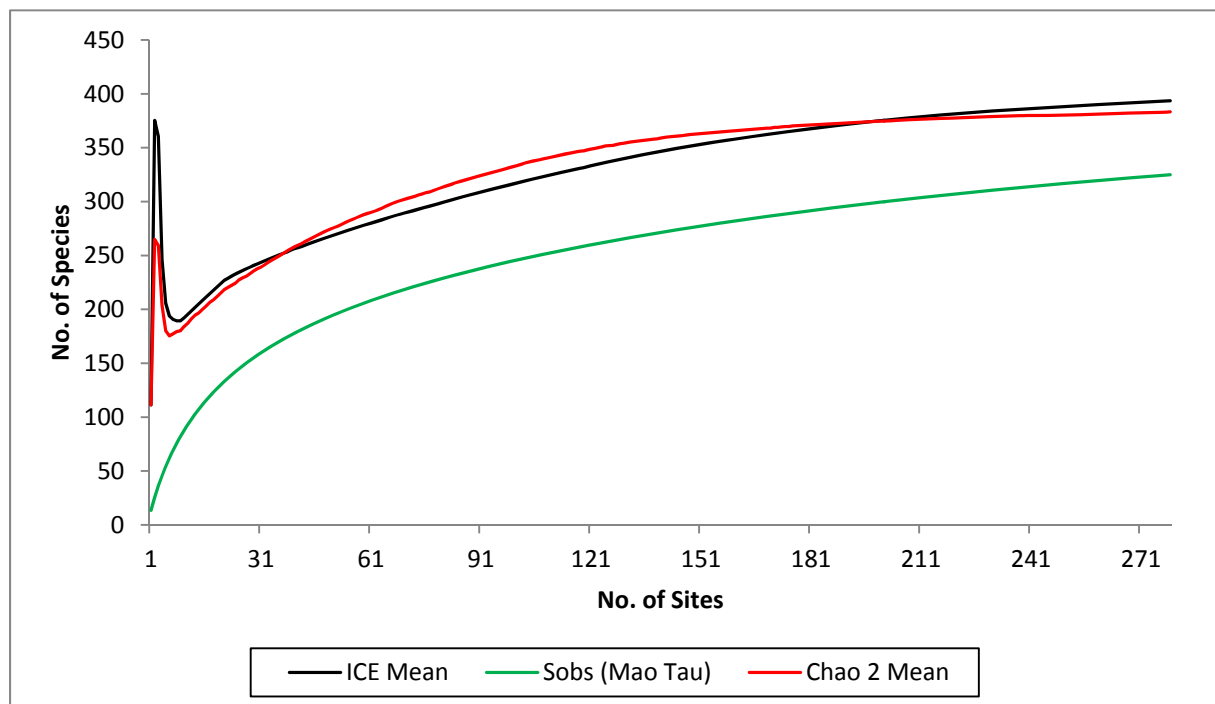


Figure 4.1 – Average randomised Species Accumulation Curve for the study area

In addition, the estimated species richness of each of the vegetation units described has been calculated Table 4.3. The highest value between ICE and Chao 2 was considered as the estimate of species richness for each vegetation unit.

For the present analysis, the percentage of the estimated species richness of each vegetation unit currently sampled ranged between 24 and 90%. The vegetation units with the lowest estimates of species sampled tended to be those with fewest quadrats, such as the vegetation units YS2 (24.3% of

species from 7 quadrats), *ElGzNa* (27.9% from 4 quadrats), SGP1 (37.4% from 5 quadrats) and SF1 (44.8% from 4 quadrats).

To overcome the intrinsic bias of sample size, estimates of species richness of broader vegetation units (supergroups) separated by their broader statistical similarities based on the landform on which they are present were also calculated (Table 4.4, Appendix F). For this additional analysis, the percentage of the estimated species richness of each broader vegetation unit sampled is greater than the previous analysis and varies between 57 and 80%.

Table 4.3 – Estimated species richness by vegetation unit

Vegetation code	Vegetation unit	Number of quadrats	Total species	Mean species richness	ICE Mean		Chao 2 Mean*	
					Value	%	Value	%
RMR1	<i>BgEgPbbAe</i>	5	71	30.2	105.6	67.3%	91.9	77.3%
RMR2	<i>AiEIIa</i>	8	45	12.9	85.1	52.9%	93.0	48.4%
RMR3	<i>AqCpMnNa</i>	8	45	15.8	68.4	65.8%	67.6	66.6%
RMR4	<i>AqPbbNa</i>	12	69	17.3	108.3	63.7%	129.1	53.5%
RMR5A	<i>AeNa</i>	4	15	6.25	25.8	58.2%	18.5	81.1
RMR5B	<i>Asp.nPoOmNa</i>	13	55	11.2	74.2	74.2%	61.4	89.6%
RMR6	<i>GzDrdNa</i>	10	49	11.5	87.5	56.0%	75.2	65.2%
RMR7	<i>ElGzNa</i>	4	38	14.3	121.3	31.3%	136.0	27.9%
RMR8	<i>EcAtSafNa</i>	18	66	12.7	112.6	58.6%	114.1	57.9%
SF1	<i>EsAvMtSdSd</i>	4	30	12.8	67.0	44.8%	60.1	49.9%
SF2	<i>ErAnAvAe</i>	8	48	13.3	99.6	48.2%	126.4	38.0%
SF3	<i>EcEaSafAe</i>	7	38	13.8	65.7	57.8%	68.1	55.8%
SF4	<i>EsEsAvAe</i>	11	56	15.3	81.0	69.2%	80.2	69.8%
SF5	<i>EsEsSafAe</i>	11	56	16.2	75.3	74.3%	66.1	84.7%
SF6	<i>EcAsp.nEaAe</i>	6	46	18.2	65.5	70.3%	56.2	81.9%
SF7	<i>EIEsSafOmAeAt</i>	10	51	12.8	111.9	45.6%	111.1	45.9%
SGP1	<i>Asp.nAnOmSf</i>	5	33	11.6	74.5	44.3%	88.1	37.4%
SGP2	<i>Asp.nSafMgNa</i>	9	65	18.2	105.2	61.8%	108.7	59.8%
SGP3	<i>EIIAsp.nEddAe</i>	11	64	13.8	118.7	53.9%	151.5	42.2%
SGP4	<i>Asp.nPoAcAe</i>	8	62	16.9	110.5	56.1%	104.7	59.2%
SGP5	<i>OeWcTsAe</i>	17	104	13.9	223.0	46.6%	191.0	54.4%
SGP6	<i>EsAeSsOmAe</i>	7	55	14	106.7	51.6%	89.3	61.6%
SGP7	<i>ArrPoMgAeAt</i>	5	42	15.8	80.3	52.3%	82.0	51.2%
YS1	<i>AcAsBAcc</i>	10	39	12	59.1	66.0%	57.3	68.1%
YS2	<i>AeBsp.Bac</i>	7	39	10.3	99.5	39.2%	160.5	24.3%
YS3	<i>ArPcTuAcc</i>	7	38	11.6	73.9	51.4%	69.5	54.7%
YS4	<i>ArPcTuAcc2</i>	15	62	16.3	90.4	68.6%	129.6	47.8%
YS5	<i>AePcTuAcc</i>	12	41	11.5	71.9	57.0%	81.0	50.6%
YS6	<i>AcPcAcc</i>	7	33	11.4	49.7	66.5%	43.9	75.2%
YS7	<i>AaaArTuPc</i>	20	63	13.1	106.0	59.4%	133.1	47.3%

*Note: All Chao 2 estimates are classic, except for RMR1, SF6 and SGP7 which use the bias correction method because the coefficient of variation is < 0.5.

Table 4.4 – Estimated species richness by broader vegetation unit

Supergroup	Vegetation Code	Vegetation units	Descriptors	ICE Mean		Chao 2 Mean*	
				Value	%	Value	%
Rocky midslopes/ Ridgetops	RMR1 RMR2 RMR3 RMR4 RMR5A RMR5B RMR6 RMR7 RMR8	<i>BgEgPbbAe</i> <i>AiEllNa</i> <i>AqCpMnNa</i> <i>AqPbbNa</i> <i>Asp.nPoOmNa</i> <i>GzDrdNa</i> <i>ElGzNa</i> <i>EcAtSafNa</i>	Number of quadrats: 82 Total species: 172 Mean species richness: 14.2	226.17	76.0	232.84	73.9
Sandy floodplains	SF1 SF2 SF3 SF4 SF5 SF6 SF7	<i>EsAvMtSdSd</i> <i>ErAnAvAe</i> <i>EcEaSafAe</i> <i>EsEsAvAe</i> <i>EsEsSafAe</i> <i>EcAsp.nEaAe</i> <i>ElEsSafOmAeAt</i>	Number of quadrats: 57 Total species: 115 Mean species richness: 14.7	154.77	74.3	144.45	79.6
Sandy/gravelly plains	SGP1 SGP2 SGP3 SGP4 SGP5 SGP6 SGP7	<i>Asp.nAnOmSf</i> <i>Asp.nSafMgNa</i> <i>EllAsp.nEddAe</i> <i>Asp.nPoAcAe</i> <i>OeWcTsAe</i> <i>EsAeSsOmAe</i> <i>ArrPoMgAeAt</i>	Number of quadrats: 62 Total species: 197 Mean species richness: 14.8	302.97	65.02	342.57	57.50
Yellow sandplains	YS1 YS2 YS3 YS4 YS5 YS6 YS7	<i>AcAsBAcc</i> <i>AeBsp.Bac</i> <i>ArPcTuAcc</i> <i>ArPcTuAcc2</i> <i>AePcTuAcc</i> <i>AcPcAcc</i> <i>AaaArTuPc</i>	Number of quadrats: 78 Total species: 126 Mean species richness: 12.8	176.24	71.5	187.63	67.2

*Note: All Chao 2 estimates are classic, except for Rocky midslopes and ridgetops and Sandy/gravelly plains which use the bias correction method because the coefficient of variation is < 0.5.

4.1.2 Flora of Conservation Significance

4.1.2.1 Flora Listed under the EBPC Act

No Threatened Flora species were recorded within the disturbance area despite intensive ground searching. The absence of records of *Leucopogon spectabilis*, *Ricinocarpos brevis*, *Tetratheca aphylla* or *T. harperi* within the study area is corroborated by the lack of suitable habitat for these species.

4.1.2.2 Flora listed under the WC Act

As discussed above, no Threatened Flora species were recorded within the disturbance area despite intensive searching. The absence of records of *Leucopogon spectabilis*, *Ricinocarpos brevis*, *Tetratheca aphylla* or *T. harperi* within the study area is corroborated by the lack of suitable habitat for these species.

4.1.2.3 Priority Flora



Fourteen Priority Flora species were recorded in the study area and its vicinity in the current survey. Of these, nine are located inside the study area but outside the disturbance area and five inside the disturbance area (Table 4.5). The details of all 14 Priority Flora species recorded in this survey are summarised in Table 4.5. The distribution of records within the study area is illustrated from Figure



4.2 to Figure 4.9, and coordinates of these records and Threatened and Priority Flora Report Forms are provided in Appendix G and Appendix H, respectively.



4.1.2.4 Novel/undescribed taxa



Although several specimens are awaiting confirmation by staff at the Western Australian Herbarium, there were no novel taxa identified during the course of the 2013 study.



Table 4.5 – Priority Flora recorded in the current survey


Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Beyeria rostellata</i> (P1) EUPHORBIACEAE</p> <p>Erect shrub to 1.8 m high, resinous on most parts, with recurved leaves and solitary flowers.</p>	RMR3 (<i>AqCpMnNa</i>)	<p>In study area: 1 (15)</p> <p>In disturbance area: 0 (0)</p>	<p>In study area: 2 (16)</p> <p>In disturbance area: 0 (0)</p>	<p>Slopes and summits. Skeletal red sandy to clay soils on banded ironstone substrates.</p> <p>Jackson Range</p>	May, Jul, Sep	 <p><i>ecologia</i> (2013)</p>
<p><i>Leptospermum macgillivrayi</i> (P1) MYRTACEAE</p> <p>A divaricate shrub to 1 m high with white flowers.</p>	RMR4 (<i>AqPbbNa</i>) RMR5B (<i>Asp.nPoOmNa</i>)	<p>In study area: 3 (65)</p> <p>In disturbance area: 0 (0)</p>	<p>In study area: 4 (140)</p> <p>In disturbance area: 0 (0)</p>	<p>Red loam soils with banded ironstone rock and gravel. On steep mid-slopes</p> <p>Jackson Range</p>	Aug-Sep	 <p><i>ecologia</i> (2013)</p>
<p><i>Acacia crenulata</i> (P3) FABACEAE</p> <p>Bushy shrub or tree to 3 m high with yellow flowers.</p>	YS1 (<i>AcAsBAcc</i>) RMR2 (<i>AiEIIIna</i>) SF6 (<i>EcAsp.nEaAe</i>) SF5 (<i>EsEsSafAe</i>)	<p>In study area: 1 (2)</p> <p>In disturbance area: 0 (0)</p>	<p>In study area: 6 (7)</p> <p>In disturbance area: 0 (0)</p>	<p>Clay, sandy clay or yellow sand. Rocky rises, granite outcrops, breakaways.</p> <p>Jackson Range</p>	May, Oct	No picture available.



Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) (P3) MYRTACEAE</p> <p>Spreading mid-dense shrub with white flowers.</p>	<p>SGP5 (<i>OeWcTsAe</i>) SGP6 (<i>EsAeSsOmAe</i>) YS2 (<i>AeBsp.Bac</i>) YS3 (<i>ArPcTuAcc</i>) YS4 (<i>ArPcTuAcc2</i>) YS5 (<i>AePcTuAcc</i>) YS6 (<i>AcPcAcc</i>) YS7 (<i>AaaArTuPc</i>)</p>	<p>In study area: 40 (2660) In disturbance area: 0 (0)</p>	<p>In study area: 60 (2770) In disturbance area: 0 (0)</p>	<p>Yellow-brown sand, laterite, gravel. Moderately exposed flat sand plains. Jackson Range</p>	<p>Nov</p>	 <p><i>ecologia</i> (2013)</p>
<p><i>Calytrix ?creswellii</i> (P3) MYRTACEAE</p> <p>Spreading shrub, 0.25 to 1 m high with white flowers.</p>	<p>YS1 (<i>AcAsBAcc</i>) YS5 (<i>AePcTuAcc</i>) YS7 (<i>AaaArTuPc</i>)</p>	<p>In study area: 3 (3) In disturbance area: 1 (1)</p>	<p>In study area: 9 (75) In disturbance area: 4 (37)</p>	<p>Yellow sand, sometimes with lateritic gravel. Sandplains. Jackson Range and Mt Manning Range</p>	<p>Sep-Dec</p>	 <p><i>ecologia</i> (2013)</p>

Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Gompholobium cinereum</i> (P3) FABACEAE</p> <p>Shrub to 30 cm high with pale purple flowers.</p>	<p>YS4 (<i>ArPcTuAcc2</i>)</p>	<p>In study area: 1 (5) In disturbance area: 0 (0)</p>	<p>In study area: 1 (5) In disturbance area: 0 (0)</p>	<p>Yellow sand, clayey sand, brown loam, sandy gravel, laterite. Well-drained open sites, slopes, plains, roadsides.</p> <p>Jackson Range</p>	<p>Sep-Nov</p>	 <p><i>ecologia</i> (2013)</p>
<p><i>Grevillea georgeana</i> (P3) PROTEACEAE</p> <p>Erect to widely spreading shrub, to 3 m high and with red flowers.</p>	<p>RMR1 (<i>BgEgPbbAe</i>) RMR2 (<i>AiElINa</i>) RMR6 (<i>GzDrdNa</i>) SGP3 (<i>ElIAsp.nEddAe</i>) SGP7 (<i>ArrPoMgAeAt</i>)</p>	<p>In study area: 8 (48) In disturbance area: 1 (2)</p>	<p>In study area: 12 (49) In disturbance area: 1 (2)</p>	<p>Stony loam-clay. Ironstone hilltops and slopes.</p> <p>Helena and Aurora Range, Hunt Range, Yendilberin and Watt Hills, Mt Manning Range</p>	<p>Jan, Mar, Sep-Nov</p>	 <p><i>ecologia</i> (2013)</p>

Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> (P3) DILLENIACEAE</p> <p>Small shrub to 1 m high with pungent, rough foliage.</p>	<p>RMR1 (<i>BgEgPbbAe</i>) RMR3 (<i>AqCpMnNa</i>) RMR4 (<i>AqPbbNa</i>) RMR5B (<i>Asp.nPoOmNa</i>) RMR6 (<i>GzDrdNa</i>)</p>	<p>In study area: 23 (218) In disturbance area: 0 (0)</p>	<p>In study area: 27 (233) In disturbance area: 0 (0)</p>	<p>Yellow-orange loam, ironstone gravel. Hunt Range, Helena and Aurora Range, Koolyanobbing Range</p>	<p>Jul</p>	 <p style="text-align: right;"><i>ecologia</i> (2013)</p>
<p><i>Melichrus</i> sp. Bungalbin Hill (P3) ERICACEAE</p> <p>Small shrub, to 30 cm with red/pink flowers.</p>	<p>RMR1 (<i>BgEgPbbAe</i>) YS1 (<i>AcAsBAcc</i>) YS3 (<i>ArPcTuAcc</i>) YS4 (<i>ArPcTuAcc2</i>) YS5 (<i>AePcTuAcc</i>) YS7 (<i>AaaArTuPc</i>)</p>	<p>In study area: 6 (10) In disturbance area: 1 (1)</p>	<p>In study area: 12 (25) In disturbance area: 1 (1)</p>	<p>Dry yellow sand or clayey sand. Sandplains. Jackson Range</p>	<p>Apr-May, Aug-Oct</p>	 <p style="text-align: right;"><i>ecologia</i> (2013)</p>

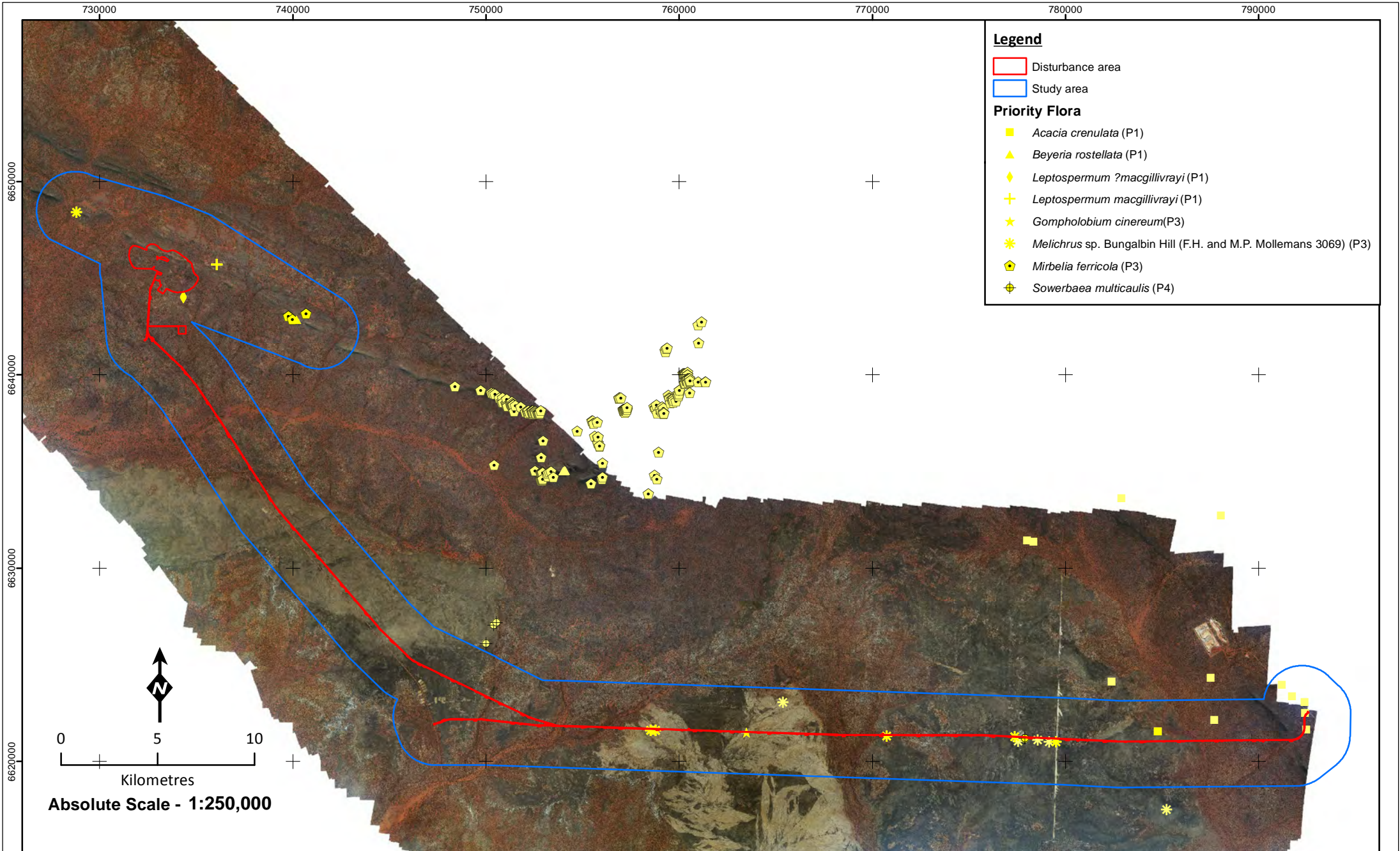
Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Mirbelia ferricola</i> (P3) FABACEAE</p> <p>Leafless upright shrub to 2 m high with wiry ribbed stems and yellow flowers</p>	<p>RMR3 (<i>AqCpMnNa</i>) RMR4 (<i>AqPbbNa</i>) RMR6 (<i>GzDrdNa</i>)</p>	<p>In study area: 3 (3) In disturbance area: 0 (0)</p>	<p>In study area: 4 (6) In disturbance area: 0 (0)</p>	<p>Skeletal orange-red loamy sand, on steep E aspect, near crest of range.</p> <p>Helena and Aurora Range, Jaurdi Stn, Coorara Soak, Mt Manning, Corby, Koolanooka Hills</p>	Sep	 <p><i>ecologia</i> (2013)</p>
<p><i>Neurachne annularis</i> (P3) POACEAE</p> <p>Tussock-forming perennial, grass-like or herb, to 0.75 m high.</p>	<p>RMR1 (<i>BgEgPbbAe</i>) RMR2 (<i>AiElINa</i>) RMR3 (<i>AqCpMnNa</i>) RMR4 (<i>AqPbbNa</i>) RMR5A (<i>AeNa</i>) RMR5B (<i>Asp.nPoOmNa</i>) RMR6 (<i>GzDrdNa</i>) RMR7 (<i>ElGzNa</i>) RMR8 (<i>EcAtSafNa</i>) SF1 (<i>EsAvMtSdSd</i>) SF2 (<i>ErAnAvAe</i>) SF3 (<i>EcEaSafAe</i>) SF4 (<i>EsEsAvAe</i>) SF5 (<i>EsEsSafAe</i>) SF6 (<i>EcAsp.nEaAe</i>) SGP1 (<i>Asp.nAnOmSf</i>) SGP2 (<i>Asp.nSafMgNa</i>) SGP3 (<i>ElIAsp.nEddAe</i>) SGP4 (<i>Asp.nPoAcAe</i>)</p>	<p>In study area: 503 (190402) In disturbance area: 208 (83275)</p>	<p>In study area: 764 (203164) In disturbance area: 444 (96077)</p>	<p>Shallow red-brown sandy loam, yellowish-red loam, sometimes with ironstone gravel or stones. Among rocks on tops, sides and bases of banded ironstone ranges.</p> <p>Bungalbin Hill, Helena & Aurora Range, Mount Manning Range</p>	Aug, Oct	 <p><i>ecologia</i> (2013)</p>

Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
	SGP6 (<i>EsAeSsOmAe</i>) SGP7 (<i>ArrPoMgAeAt</i>) YS2 (<i>AeBsp.Bac</i>) YS5 (<i>AePcTuAcc</i>) YS6 (<i>AcPcAcc</i>)					
<p><i>Stenanthemum newbeyi</i> (P3) RHAMNACEAE</p> <p>Erect or spreading shrub growing from 1 to 1.6 m high with distinctive rounded green leaves with a red-brown margin.</p>	RMR1 (<i>BgEgPbbAe</i>) RMR3 (<i>AqCpMnNa</i>) RMR4 (<i>AqPbbNa</i>) RMR5B (<i>Asp.nPoOmNa</i>) RMR6 (<i>GzDrdNa</i>)	<p>In study area: 17 (43)</p> <p>In disturbance area: 0 (0)</p>	<p>In study area: 7 (19)</p> <p>In disturbance area: 0 (0)</p>	<p>Clayey sand, clay or loam over laterite or ironstone. Hillslopes.</p> <p>Bungalbin Hill, Koolyanobbing, Die Hardy Range, Ennuin Stn, Mt Manning, Helena and Aurora Range, Mt Jackson</p>	<p>Aug-Sep, Dec-Jan</p>	 <p><i>ecologia</i> (2012)</p>

Taxon, family and description	Vegetation units in which taxon was recorded	Locations (and individuals) recorded in the study area during this survey	Locations (and individuals) recorded in the study area from all overlapping surveys	Habitat (Western Australian Herbarium 1998-2013) and distribution	Flower Period	Picture
<p><i>Banksia arborea</i> (P4) PROTEACEAE</p> <p>Large tree or shrub, 2-8 m high with large yellow flowers.</p>	<p>RMR1 (<i>BgEgPbbAe</i>) RMR2 (<i>AiEIIa</i>) RMR4 (<i>AqPbbNa</i>) RMR5B (<i>Asp.nPoOmNa</i>) RMR6 (<i>GzDrdNa</i>) RMR7 (<i>EIGzNa</i>) RMR8 (<i>EcAtSafNa</i>) SF4 (<i>EsEsAvAe</i>) SGP2 (<i>Asp.nSafMgNa</i>)</p>	<p>In study area: 45 (160) In disturbance area: 11 (32)</p>	<p>In study area: 212 (686) In disturbance area: 162 (526)</p>	<p>Stony loam. Ironstone hills.</p> <p>Koolyanobbing, Die Hardy Range, Jaurdi Stn., Mt Elvire Stn., Diemals Stn., Helena and Aurora Range, Hunt Range, Bungalbin Hill, Mt Jackson, Manning Range</p>	<p>Mar-May, Sep-Oct</p>	 <p><i>ecologia</i> (2012)</p>
<p><i>Sowerbaea multicaulis</i> (P4) ASPARAGACEAE</p> <p>Tufted perennial herb to 25 cm high with purple flowers.</p>	<p>YS7 (<i>AaaArTuPc</i>)</p>	<p>In study area: 1 (2) In disturbance area: 0 (0)</p>	<p>In study area: 1 (2) In disturbance area: 0 (0)</p>	<p>Yellow-brown sand.</p> <p>Unknown local distribution</p>	<p>Oct-Dec, Jan</p>	 <p><i>ecologia</i> (2013)</p>

*Vegetation unit codes are described in Section 4.2: Vegetation.

^Due to the dominance of *Neurachne annularis*, individual records were not made always for this species and as such these values are under estimates.



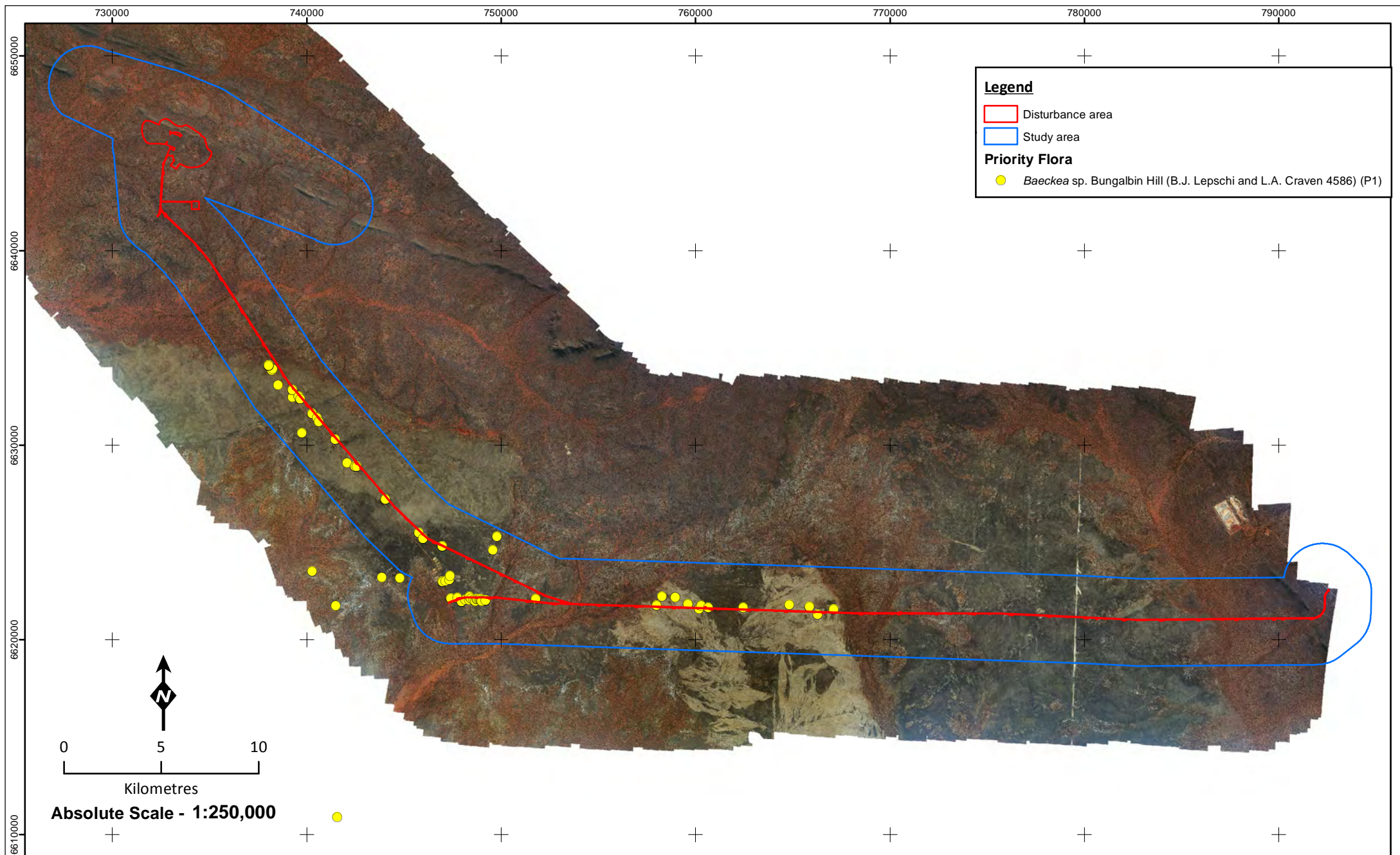
Priority Flora locations recorded regionally and within the disturbance area

Figure: 4.2
Project ID: 1555

Drawn: MC
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: MC255




Legend

- Disturbance area
- Study area

Priority Flora

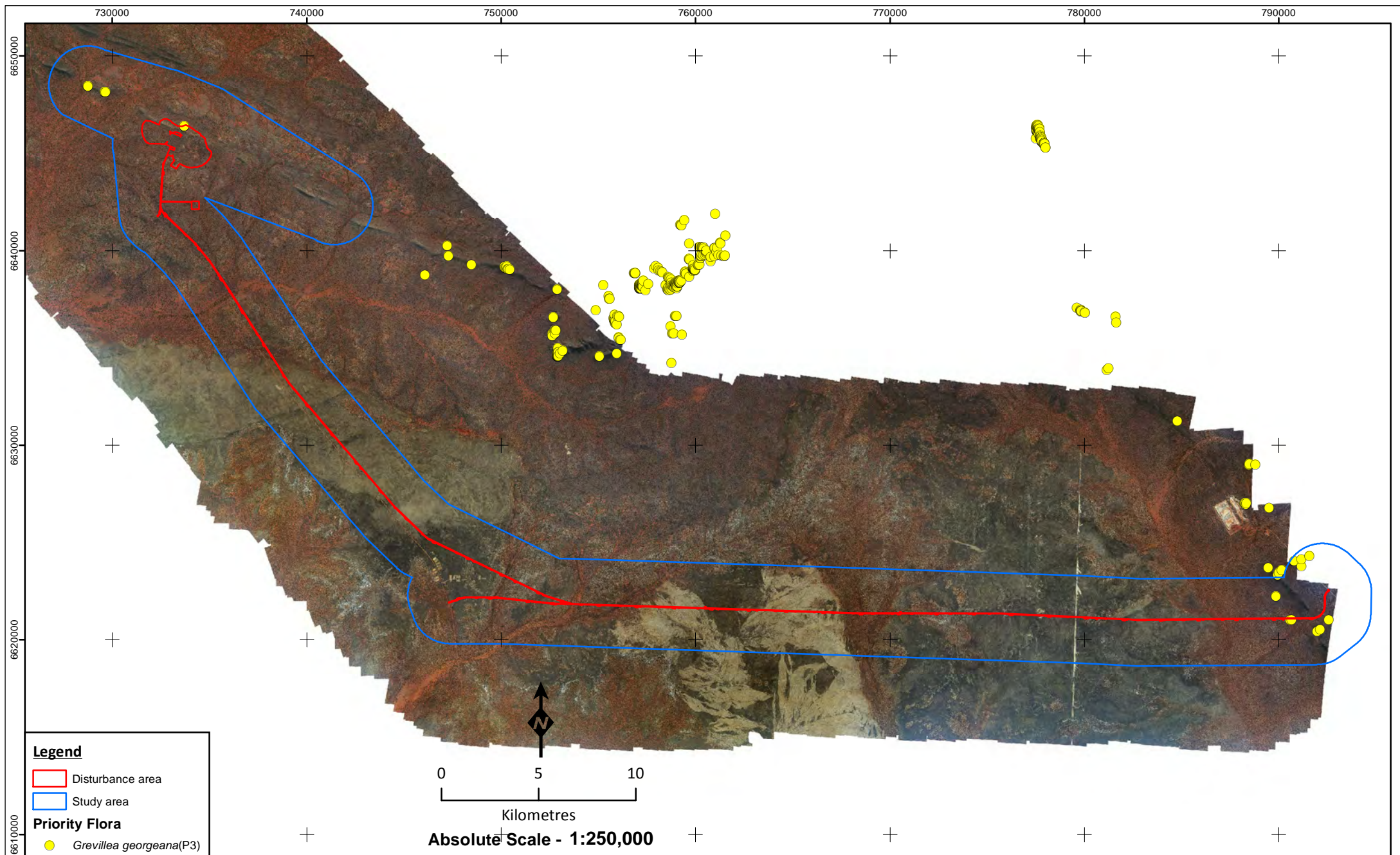
- *Baeckea* sp. Bungalbin Hill (B.J. Lepschi and L.A. Craven 4586) (P1)


 0 5 10
 Kilometres
Absolute Scale - 1:250,000

***Baeckea* sp. Bungalbin Hill (B.J. Lepschi and L.A. Craven 4586) (P1)
 locations recorded regionally and within the disturbance area**

Figure: 4.3 Project ID: 1555	Drawn: MC Date: 01/11/2013
Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994	Unique Map ID: MC256





Legend

Disturbance area

Study area

Priority Flora

● *Grevillea georgeana*(P3)

0 5 10
Kilometres
Absolute Scale - 1:250,000



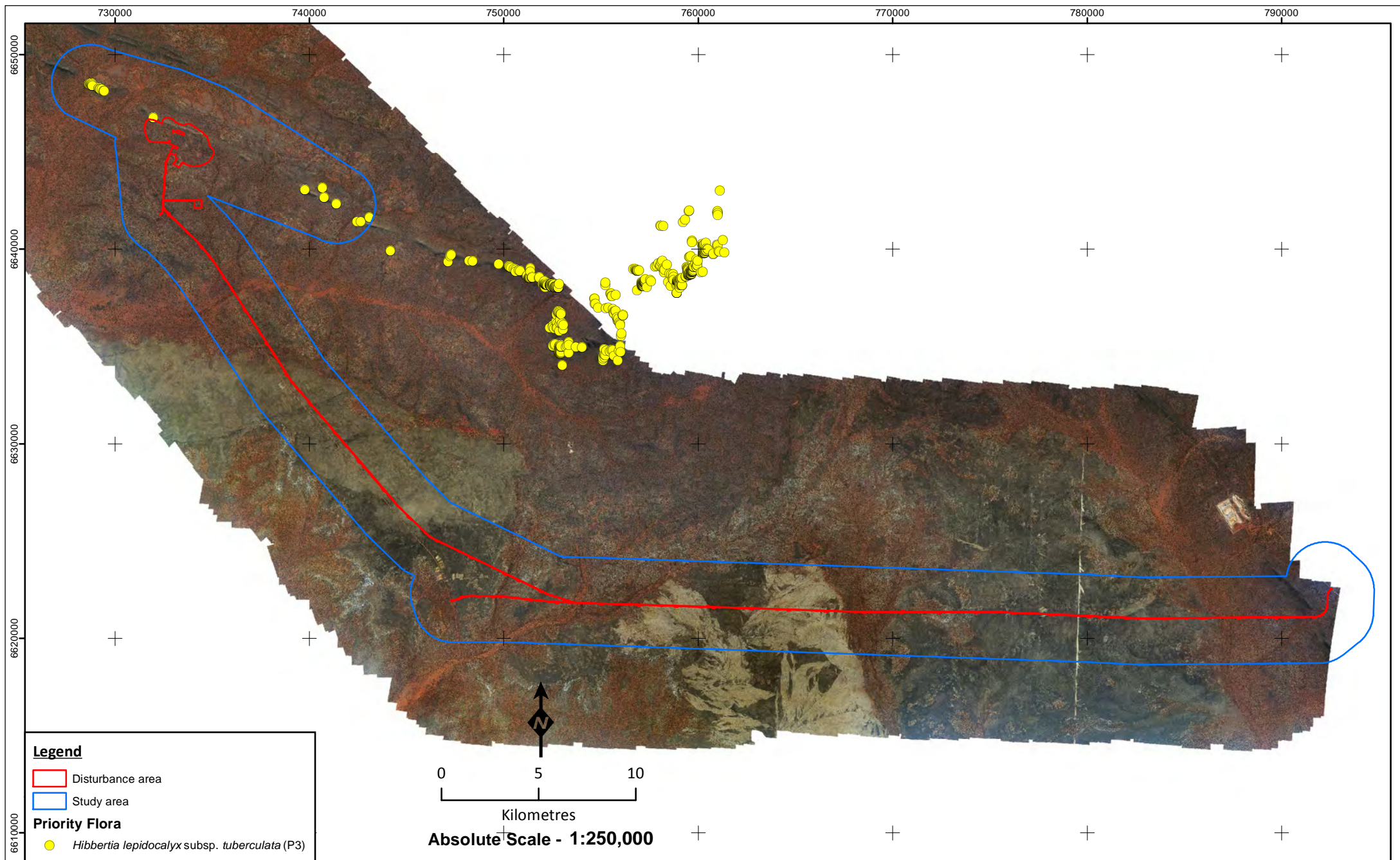
***Grevillea georgeana* (P3) locations recorded regionally and within the disturbance area**

Figure: 4.4
Project ID: 1555

Drawn: MC
Date: 01/11/2013

Unique Map ID: MC257

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994



Legend

Disturbance area

Study area

Priority Flora

● *Hibbertia lepidocalyx* subsp. *tuberculata* (P3)

***Hibbertia lepidocalyx* subsp. *tuberculata* (P3)**
locations recorded regionally and within the disturbance area

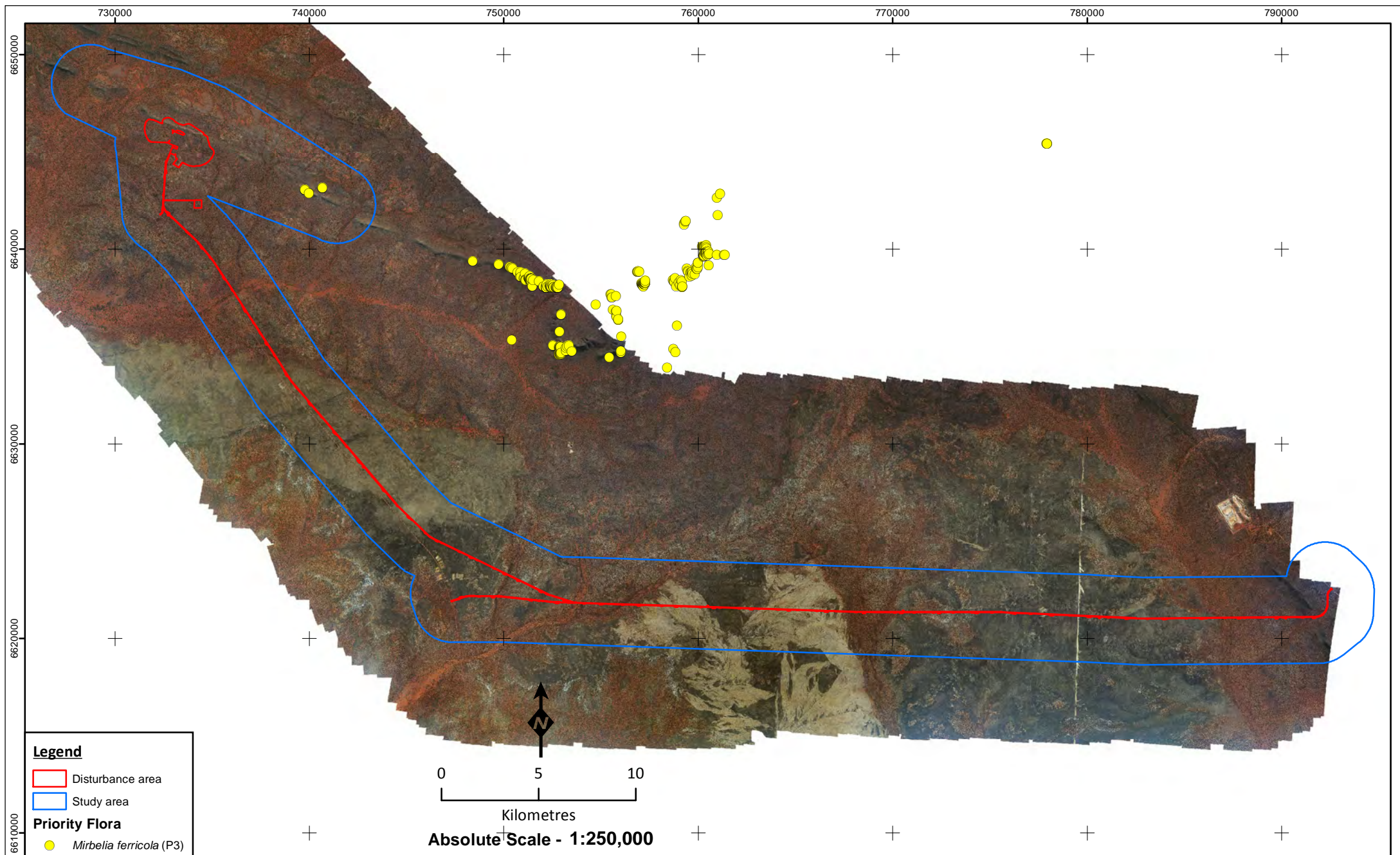
Figure: 4.5
Project ID: 1555

Drawn: MC
Date: 01/11/2013

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Unique Map ID: MC258






Legend

- Disturbance area
- Study area

Priority Flora

- *Mirbelia ferricola* (P3)


 0 5 10
 Kilometres
Absolute Scale - 1:250,000



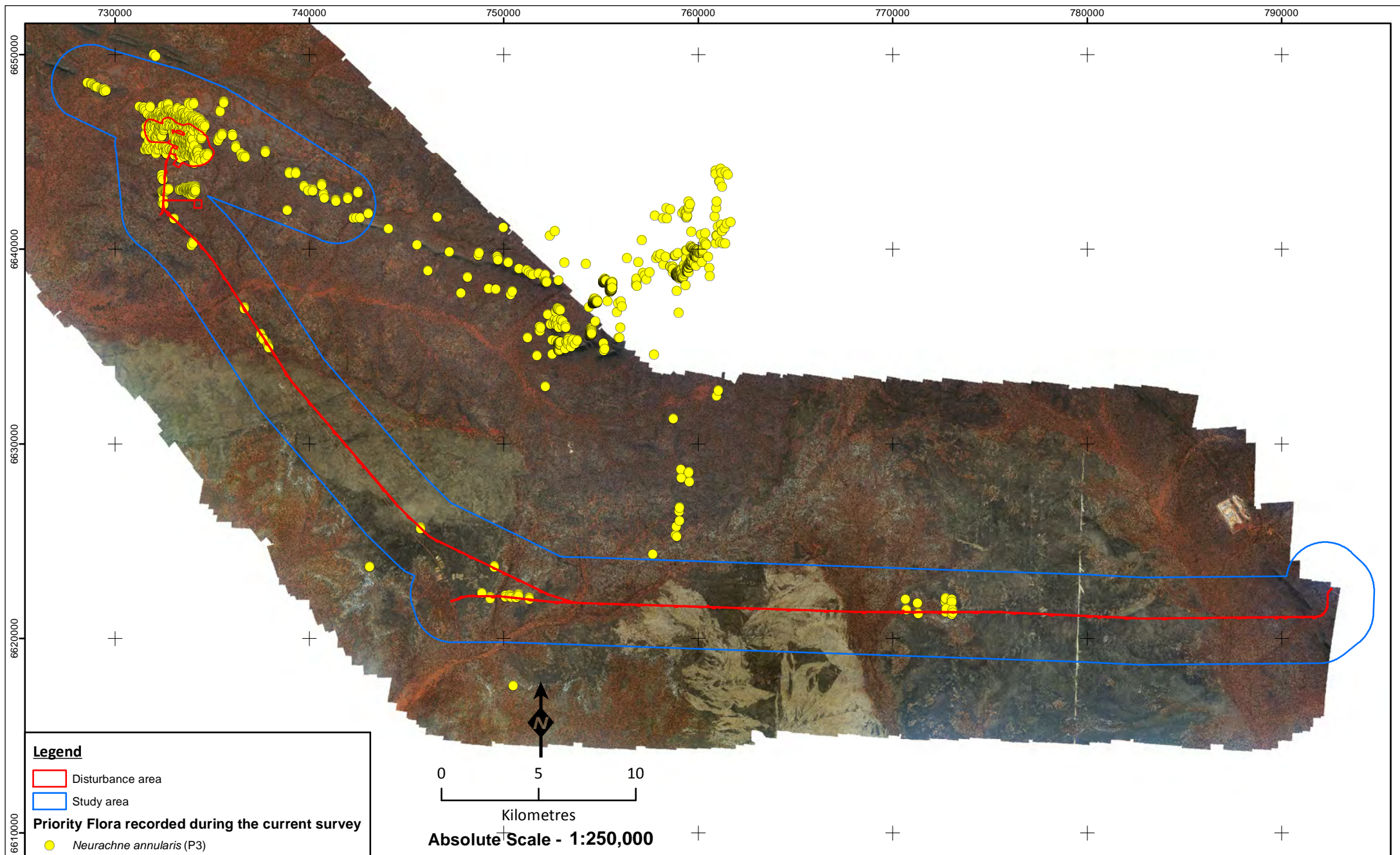
***Mirbelia ferricola* (P3)**
locations recorded regionally and within the disturbance area

Figure: 4.5
Project ID: 1555

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Drawn: MC
Date: 01/11/2013

Unique Map ID: MC259
A4



Legend

- Disturbance area
- Study area

Priority Flora recorded during the current survey

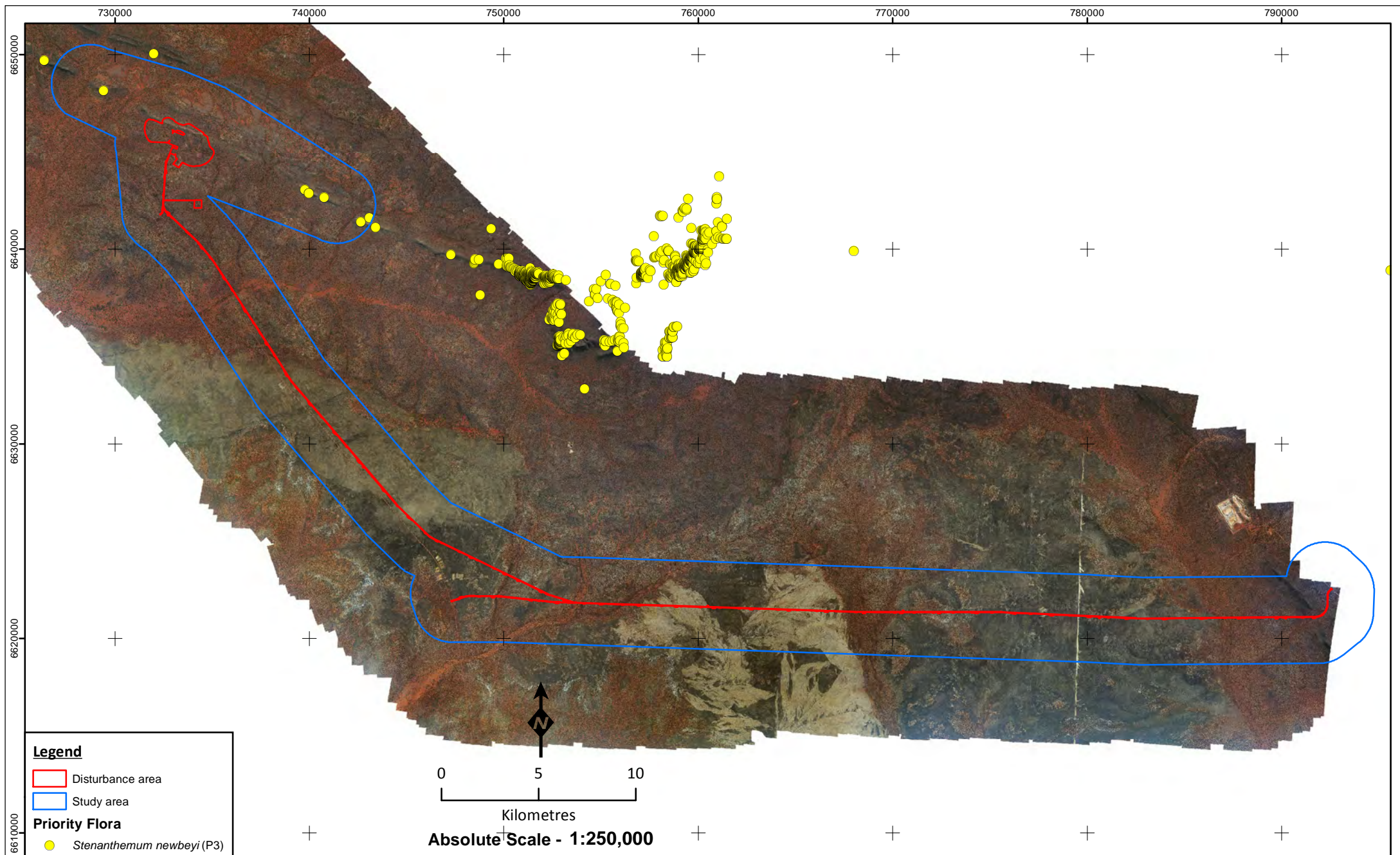
- *Neurachne annularis* (P3)

0 5 10
Kilometres
Absolute Scale - 1:250,000

***Neurachne annularis* (P3)**
locations recorded regionally and within the disturbance area

Figure: 4.7 Project ID: 1555	Drawn: MC Date: 01/11/2013
<small>Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994</small>	<small>Unique Map ID: MC259</small>






Legend

Disturbance area
 Study area

Priority Flora

● *Stenanthemum newbeyi* (P3)


 0 5 10
 Kilometres
Absolute Scale - 1:250,000



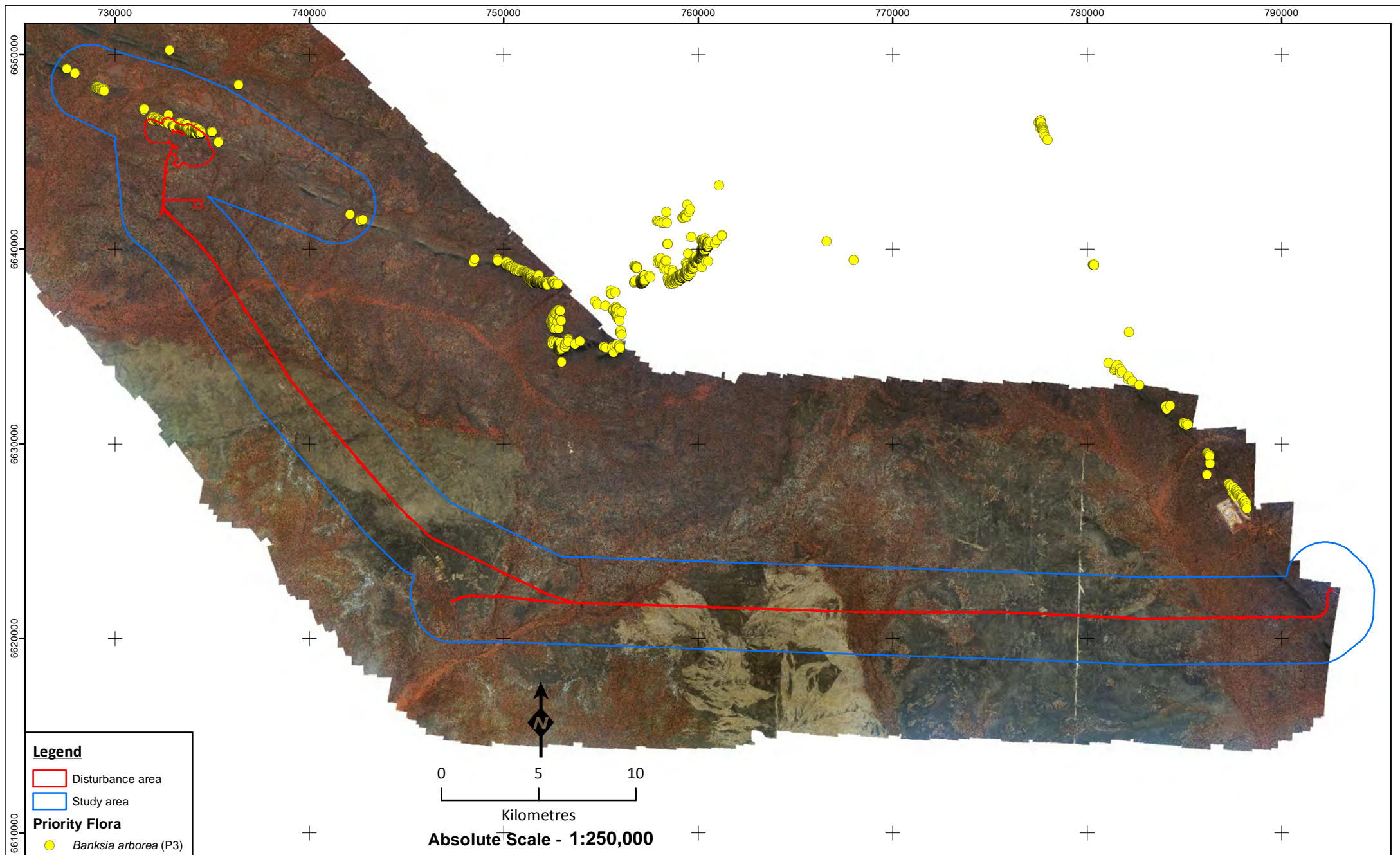
***Stenanthemum newbeyi* (P3)**
locations recorded regionally and within the disturbance area

Figure: 4.8
Project ID: 1555

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Drawn: MC
Date: 01/11/2013

Unique Map ID: MC260
A4




Legend

- Disturbance area
- Study area

Priority Flora

- *Banksia arborea* (P3)


 0 5 10
 Kilometres
Absolute Scale - 1:250,000



***Banksia arborea* (P3)**
locations recorded regionally and within the disturbance area

Figure: 4.9
Project ID: 1555

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Drawn: MC
Date: 01/11/2013

Unique Map ID: MC261
A4

4.1.3 Range Extensions

Ten records from the current survey represent range extensions of more than 100 km to the taxon's previously known distribution, based on collection records lodged at the Western Australian Herbarium (Western Australian Herbarium 1998-2013) (Table 4.6)

Table 4.6 – Range extensions recorded in the J4 mine and haul road study area

Species	Type of range extension	Nearest known record	Known distribution
<i>Acacia leptopetala</i> - Fabaceae	Bridging record	120 km east of study area	Avon Wheatbelt, Coolgardie, Esperance Plains, Mallee
<i>Chrysocephalum apiculatum</i> - Asteraceae	Bridging record	120 km south of study area	Avon Wheatbelt, Carnarvon, Central Kimberley, Central Ranges, Coolgardie, Esperance Plains, Gascoyne, Geraldton Sandplains, Great Sandy Desert, Great Victoria Desert, Jarrah Forest, Little Sandy Desert, Mallee, Murchison, Northern Kimberley, Nullarbor, Pilbara
<i>Cryptandra aridicola</i> - Rhamnaceae	Range extension	110 km east of study area	Coolgardie, Great Victoria Desert, Murchison
<i>Digitaria ammophila</i> – Poaceae	Bridging record	190 km east-southeast of study area	Central Kimberley, Central Ranges, Coolgardie, Great Victoria Desert, Murchison, Pilbara
<i>Indigofera australis</i> – Fabaceae	Bridging record	170 km southwest of study area	Avon Wheatbelt, Central Ranges, Coolgardie, Esperance Plains, Geraldton Sandplains, Mallee, Murchison
<i>Isopogon gardneri</i> – Proteaceae	Range extension	200 km south of study area	Avon Wheatbelt, Coolgardie, Mallee
<i>Microcorys obovata</i> - Lamiaceae	Range extension	180 km south of study area	Avon Wheatbelt, Coolgardie, Esperance Plains, Mallee
<i>Parietaria debilis</i> - Urticaceae	Range extension	250 km west of study area	Avon Wheatbelt, Central Ranges, Coolgardie, Esperance Plains, Geraldton Sandplains, Hampton, Jarrah Forest, Mallee, Nullarbor, Swan Coastal Plain, Warren, Yalgoo
<i>Phebalium microphyllum complex</i> - Rutaceae	Bridging record	120 km east of study area	Avon Wheatbelt, Coolgardie, Esperance Plains, Geraldton Sandplains, Great Victoria Desert, Mallee, Murchison
<i>Thysanotus</i> sp. Twining Wheatbelt (N.H. Brittan 81/29) - Asparagaceae	Range extension	130 km southeast of study area	Avon Wheatbelt, Coolgardie, Geraldton Sandplains, Mallee

4.1.4 Introduced flora

Weeds of National Significance (WONS)

No Weeds of National Significance were recorded in the J4 mine and haul road study area.

Declared Pests (Weeds)

No species of Declared Pests (weeds) for the Yilgarn region were recorded in the J4 mine and haul road study area.

Environmental Weeds



Seven weed species were recorded during the study: **Centaurea melitensis*; ** Cleretum papulosum* subsp. *papulosum*; **Erodium aureum*; **Hypochaeris glabra*; **Sonchus asper*; **Sonchus oleraceus*; and **Vulpia myuros*.



The locations at which these species were recorded are listed in Appendix H and mapped in Figure 4.10. The characteristics and broad distributions of these species are summarised in Table 4.7 and Table 4.8.

Table 4.7 – Environmental status of introduced species

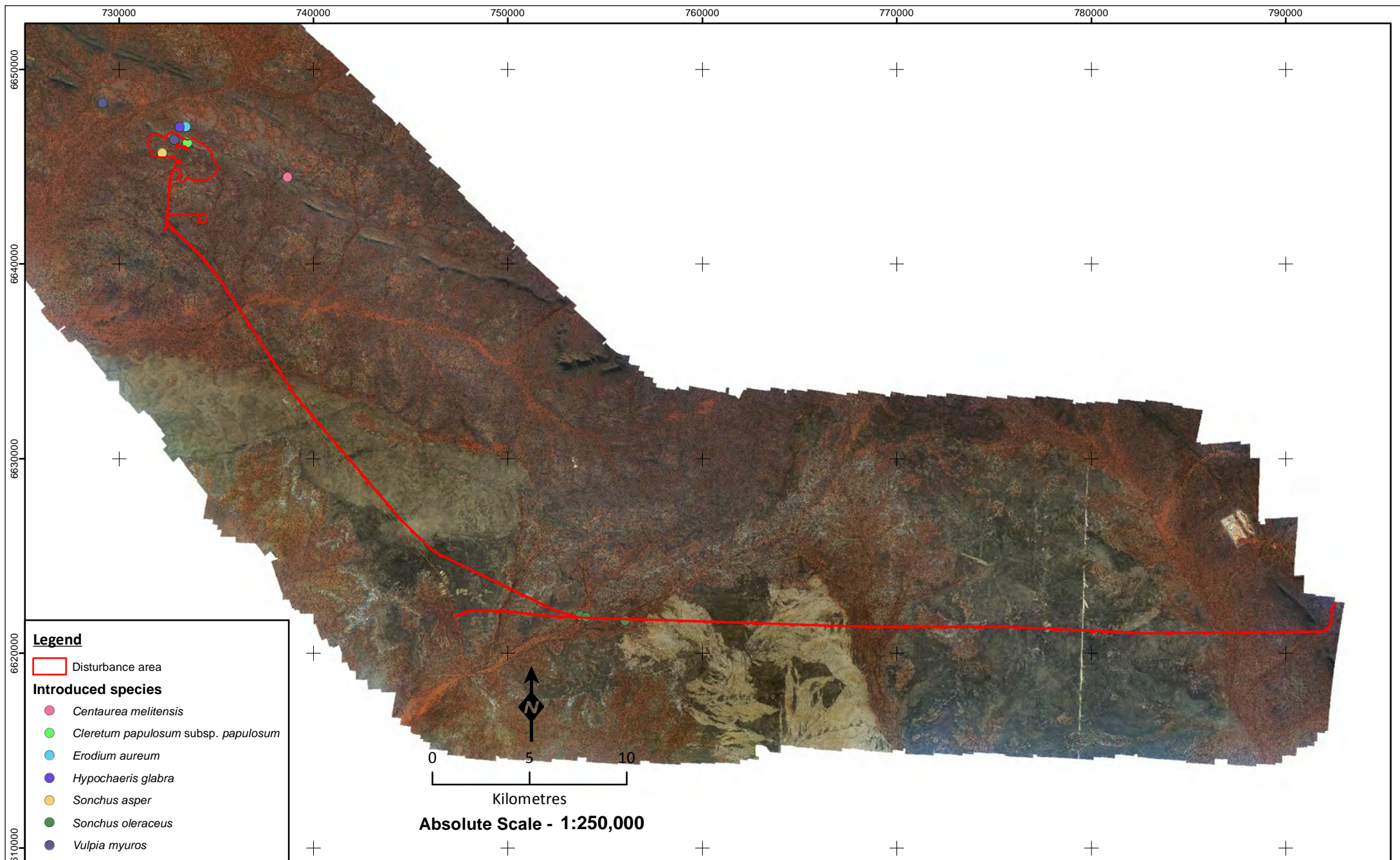
Taxa	DPaW Environmental Threat Assessment for the Coolgardie Bioregion (Department of Environment and Conservation 2012)								Number of locations in study area
	Environmental rating	Current distribution	Abundance	Ecological impact	Invasiveness	Feasibility of control	General trend	Status	
<i>*Centaurea melitensis</i>	High	Moderate	Common	High	Rapid	Moderate	Increasing	Established	1 (1 individual)
<i>*Cleretum papulosum</i> subsp. <i>papulosum</i>	-	-	-	-	-	-	-	-	1 (1 individual)
<i>*Erodium aureum</i>	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	1 (1 individual)
<i>*Hypochaeris glabra</i>	Unknown	Low	Common	Unknown	Unknown	Unknown	Unknown	Established	1 (1 individual)
<i>*Sonchus asper</i>	-	-	-	-	-	-	-	-	1 (1 individual)
<i>*Sonchus oleraceus</i>	Unknown	Moderate	Common	Unknown	Moderate	Low	Unknown	Established	3 (42 individuals)
<i>*Vulpia myuros</i>	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	2 (2 individuals)

Table 4.8 – Introduced flora species recorded at J4 mine and haul road study area

Taxa	Description	Picture
<p><i>*Centaurea melitensis</i> ASTERACEAE (Maltese cockspur)</p>	<p><i>*Centaurea melitensis</i> is an annual or biennial, herb from 0.2 to 1 m high (Western Australian Herbarium 1998-2013) with lobed leaves and yellow, thistle-like flowers (Western Australian Herbarium 1998-2013). The flowers can be seen from September to December or January to March (Western Australian Herbarium 1998-2013).</p> <p>This weed is widely distributed in the southern Eremaean and South-west regions of Western Australia along roadsides and disturbed areas (Western Australian Herbarium 1998-2013).</p> <p>It is native to the Mediterranean (Hussey <i>et al.</i> 2007).</p>	 <p><i>ecologia</i> (2013)</p>
<p><i>*Cleretum papulosum</i> subsp. <i>papulosum</i> AIZOACEAE</p>	<p><i>*Cleretum papulosum</i> subsp. <i>papulosum</i> is a prostrate, glistening annual with linear leaves and yellow flowers (Hussey <i>et al.</i> 2007).</p> <p>This species has been recorded on salt lake margins and estuaries from Carnarvon to Esperance; it is native to South Africa (Hussey <i>et al.</i> 2007).</p>	<p>No picture available.</p>
<p><i>*Erodium aureum</i> GERANIACEAE</p>	<p><i>*Erodium aureum</i> is a spreading perennial herb up to 20 cm high (Western Australian Herbarium 1998-2013).</p> <p>It occurs over sand, sandy-clay or loam, and is widespread in the Eremaean Province and South-West Province (Western Australian Herbarium 1998-2013).</p> <p>Native to south-west Asia (Hussey <i>et al.</i> 2007).</p>	<p>No picture available.</p>
<p><i>*Hypochoeris glabra</i> ASTERACEAE (Smooth cat's ear)</p>	<p><i>*Hypochoeris glabra</i> is a rosetted annual or perennial herb, 8 to 50 cm high with smooth leaves and flower heads up to 1.5 cm across (Western Australian Herbarium 1998-2013). Its yellow-petal flowers can be seen all year-round, but most commonly in spring (Hussey <i>et al.</i> 2007).</p> <p>This plant is a common weed of lawns, horticultural areas, roadsides and bushland (Western Australian Herbarium 1998-2013).</p> <p>Originated from Europe, this species is now distributed in the Eremaean and South-west of Western Australia (Western Australian Herbarium 1998-2013).</p>	 <p><i>Hypochoeris glabra</i> Photos: C. Horlin & K.C. Richardson (Western Australian Herbarium 1998-2013)</p>

Taxa	Description	Picture
<p><i>*Sonchus asper</i> ASTERACEAE (Rough sowthistle)</p>	<p><i>*Sonchus asper</i> is an erect, robust, spiny annual or biennial herb that can reach 1.8 metres in height (Western Australian Herbarium 1998-2013). Its yellow flowers are produced from October to December or January (Western Australian Herbarium 1998-2013).</p> <p>This species grows on white to grey sand, brown clayey loam, black sandy loam or black clayey peat (Western Australian Herbarium 1998-2013). It is present in dunes, valleys, seasonally wet areas, watercourses, lakes and wetlands, generally disturbed sites (Western Australian Herbarium 1998-2013).</p> <p>In Western Australia, it is distributed in the South-west and Coolgardie in the Eremaean (Western Australian Herbarium 1998-2013).</p>	 <p><i>Sonchus asper</i> Photo: J. Dodd (Western Australian Herbarium 1998-2013)</p>
<p><i>*Sonchus oleraceus</i> Asteraceae (Common sowthistle)</p>	<p><i>*Sonchus oleraceus</i> is an erect annual herb, up to 1.5 m high (Western Australian Herbarium 1998-2013). It has flaccid leaves (Hussey <i>et al.</i> 2007) and yellow flowers that are present all year round (Western Australian Herbarium 1998-2013).</p> <p>This species occurs in disturbed areas such as roadsides and wastelands in all parts of Western Australia, but most commonly in the south-west (Hussey <i>et al.</i> 2007).</p> <p>Native to Eurasia and North Africa (Hussey <i>et al.</i> 2007).</p>	 <p><i>Sonchus oleraceus</i> Photos: S.M. Armstrong & L. Fontanini (Western Australian Herbarium 1998-2013)</p>
<p><i>*Vulpia myuros</i> POACEAE (Rat's tail fescue)</p>	<p><i>*Vulpia myuros</i> is a tufted annual grass-like or herb plant, 7 to 70 cm tall (Western Australian Herbarium 1998-2013) with a linear, one-sided green inflorescence HUSSEY.</p> <p>It occurs over sand, loam or lateritic gravel (Western Australian Herbarium 1998-2013) and is a very widespread weed of cereal crops, pastures and re-vegetated areas (Hussey <i>et al.</i> 2007).</p> <p>This species is distributed from Shark Bay to Esperance (Hussey <i>et al.</i> 2007).</p>	<p>No picture available.</p>

Images from the Western Australian Herbarium, Department of Environment and Conservation (<http://florabase.dec.wa.gov.au/help/copyright>), accessed 30 October 2013.




Legend

Disturbance area

Introduced species

- *Centaurea melitensis*
- *Cleretum papulosum* subsp. *papulosum*
- *Erodium aureum*
- *Hypochaeris glabra*
- *Sonchus asper*
- *Sonchus oleraceus*
- *Vulpia myuros*


 0 5 10
 Kilometres
Absolute Scale - 1:250,000



**Introduced species locations
in the J4 and haul road disturbance area**

Figure: 4.10
Project ID: 1555

Drawn: MC
Date: 01/11/2013

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Unique Map ID: MC267

4.2 VEGETATION

4.2.1 Vegetation Units

A total of 30 floristic-based vegetation units were described and delineated within the study area. The vegetation units were based on multivariate analysis of the cover-weighted site by species matrix, interpretation of aerial imagery and ground truthing. The characteristics of these units are summarised in Table 4.9. The distribution of each vegetation unit is mapped in Appendix J and the relative dissimilarity of quadrats as determined by multivariate analysis is detailed in Appendix K (Figure K.1) with the two way table analysis and species by site matrix presented in Appendix K and Appendix L respectively. The floristic composition of each quadrat is detailed in Appendix D.

Alongside the 30 vegetation units, a less detailed floristic-based grouping was also described and delineated, resulting in four floristic supergroups. These four supergroups are defined by landform and allow for more generalised and broad regional comparisons.

The cluster analysis used in this study uses cover-weighted data, therefore quadrats are arranged into groups based largely on the dominant species present. Dominant species in the study area such as *Neurachne annularis*, *Eucalyptus* species and *Allocasuarina* species define portions of the dendrogram. This is strongly related to topography which determines the habitat available for these species. For example, *N. annularis* dominated the hillslopes and footslopes and was less common on the plains. The top section of the dendrogram (supergroup RMR – Rocky midslopes/ridgetops) is formed of tight groups of statistically similar quadrats. This portion is comprised of vegetation associated with the hilltops, midslopes and footslopes of the BIF ranges in the study area, with a strong presence of *N. annularis* in the ground stratum. Other dominant species in these quadrats are *Eucalyptus* species and *Grevillea georgeana*. Exceptions to this pattern are the quadrats which comprise vegetation unit RMR5A, which are located on low rises scattered widely through the plains, but are clustered with the BIF range quadrats due to the dominance of *Neurachne annularis* in the RMR5A quadrats. All four quadrats of RMR5A cluster with the RMR5B quadrats in the cluster analysis of quadrats from this survey alone, but when analysed with quadrats from other studies nearby, the RMR5A quadrats cluster within the sandplain supergroup.

The middle section of the dendrogram (SF – sandy floodplains; and SGP – sandy/gravelly plains) is comprised of primarily statistically similar quadrats, with the exception of three vegetation units (SGP5, SGP6 and SGP7) which were less tightly grouped. Despite these dissimilarities, these vegetation units were primarily located on the flats, floodplains and creeklines in the study area, with open *Eucalyptus* woodland over chenopods such as *Atriplex vesicaria* and other low shrubs. The foot of the dendrogram represents a combination of five statistically similar representative vegetation types of the yellow sandplains (YS3, YS4, YS5, YS6 and YS7) as well as two vegetation types (YS1 and YS2) which were less statistically similar. However, all vegetation types are dense shrublands rich in myrtaceous species frequently growing with various *Allocasuarina* species and *Phebalium canaliculatum*. These vegetation units are typically located on the flat plains with deep orange-yellow sandy soils.

The most floristically diverse vegetation unit was RMR1 (*Brachychiton gregorii* low isolated trees over *Eremophila georgei* and *Philotheca brucei* subsp. *brucei* mid, sparse shrubland, over *Austrostipa elegantissima* sparse tussock grassland), with an average of 29.0 species per 400 m² quadrat. The median species richness observed amongst all vegetation units was of 13.8 species per quadrats; with the least species rich vegetation unit being RMR5A (*Acacia effusifolia* shrubs over *Neurachne annularis* tussock grassland), with an average of 6.3 species per 400 m².

4.2.2 Vegetation Condition

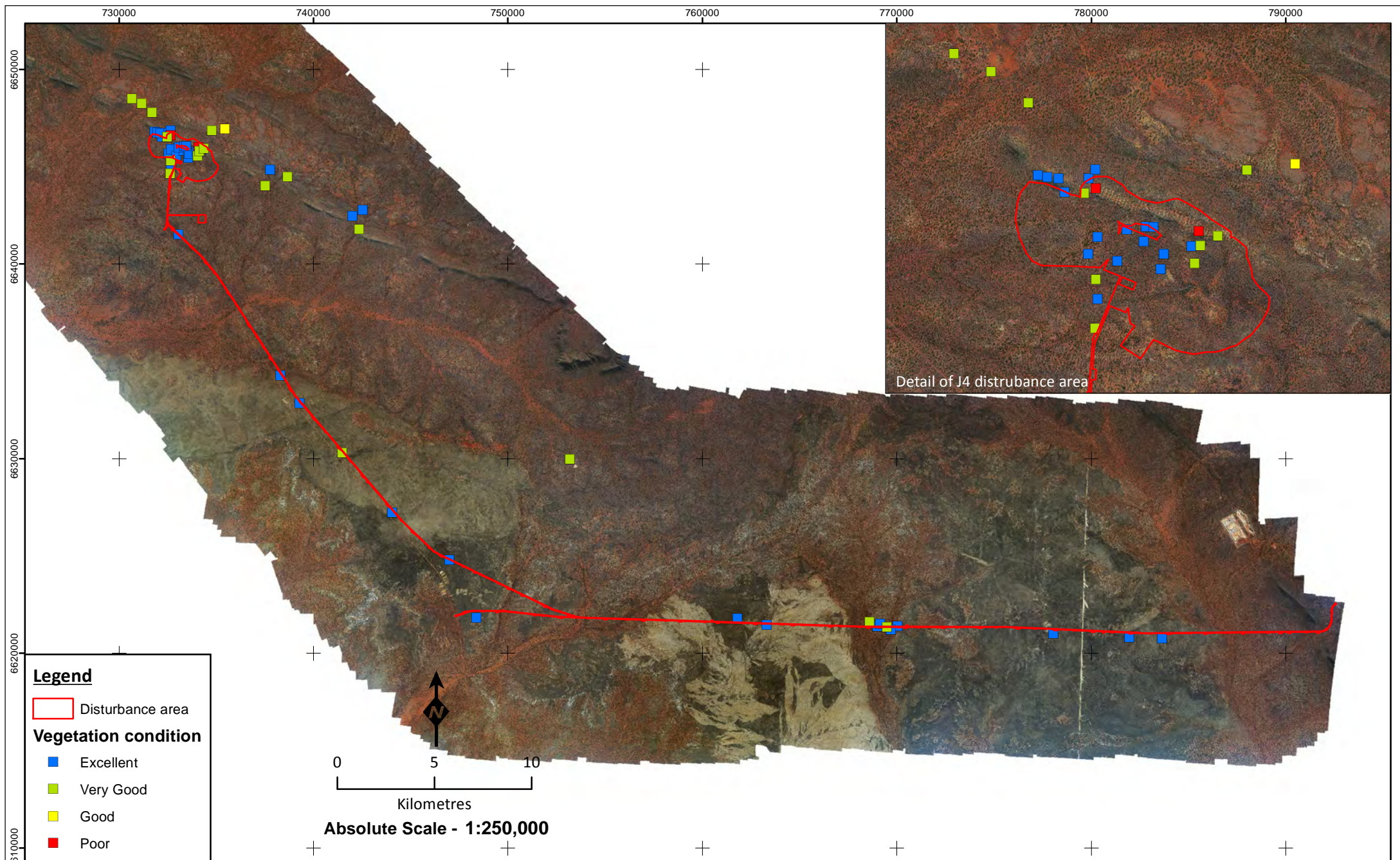
The Polaris J4 study and disturbance area comprises multiple mining and exploration leases; overlaps partly with a pastoral lease and partly with the Helena-Aurora Range Conservation Park.

There has been little disturbance of the vegetation in the study area from grazing by livestock and other human impacts. This is reflected in the assessment of vegetation condition in surveyed quadrats with 64% of the surveyed quadrats assessed to be in excellent condition and the 33% in very good condition according to the Trudgen (1991) vegetation condition scale. Two quadrats were considered in poor condition due to vegetation clearing for exploration drilling. These two quadrats in poor condition had been established by Mattiske in a previous survey and it is uncertain if the drill lines were cleared before or after the establishment of the quadrats.

The most commonly observed disturbance was rabbit tracks and scats which were recorded in all of the quadrats assessed to be in very good condition. Other disturbances observed were vehicle tracks and clearing from previous exploration activities and to a lesser extent, cattle tracks and other introduced species (Figure 4.11).

4.2.3 Fire History of the Study Area

The majority of the study area has not been recently burnt, with 95% of quadrats assessed with no evidence of fire or estimated to have been burnt more than 5 years before the field survey. Two quadrats were estimated to have been burnt 1-2 years ago and 12 quadrats estimated to have been burnt in the past 2-5 years. The pattern of burning appears to have been localised to one large area along the haul road (Figure 4.12), a pattern typical of fires created by lightning strikes in areas with dense vegetation.



Legend

Disturbance area

Vegetation condition

- Excellent
- Very Good
- Good
- Poor

0 5 10
Kilometres
Absolute Scale - 1:250,000



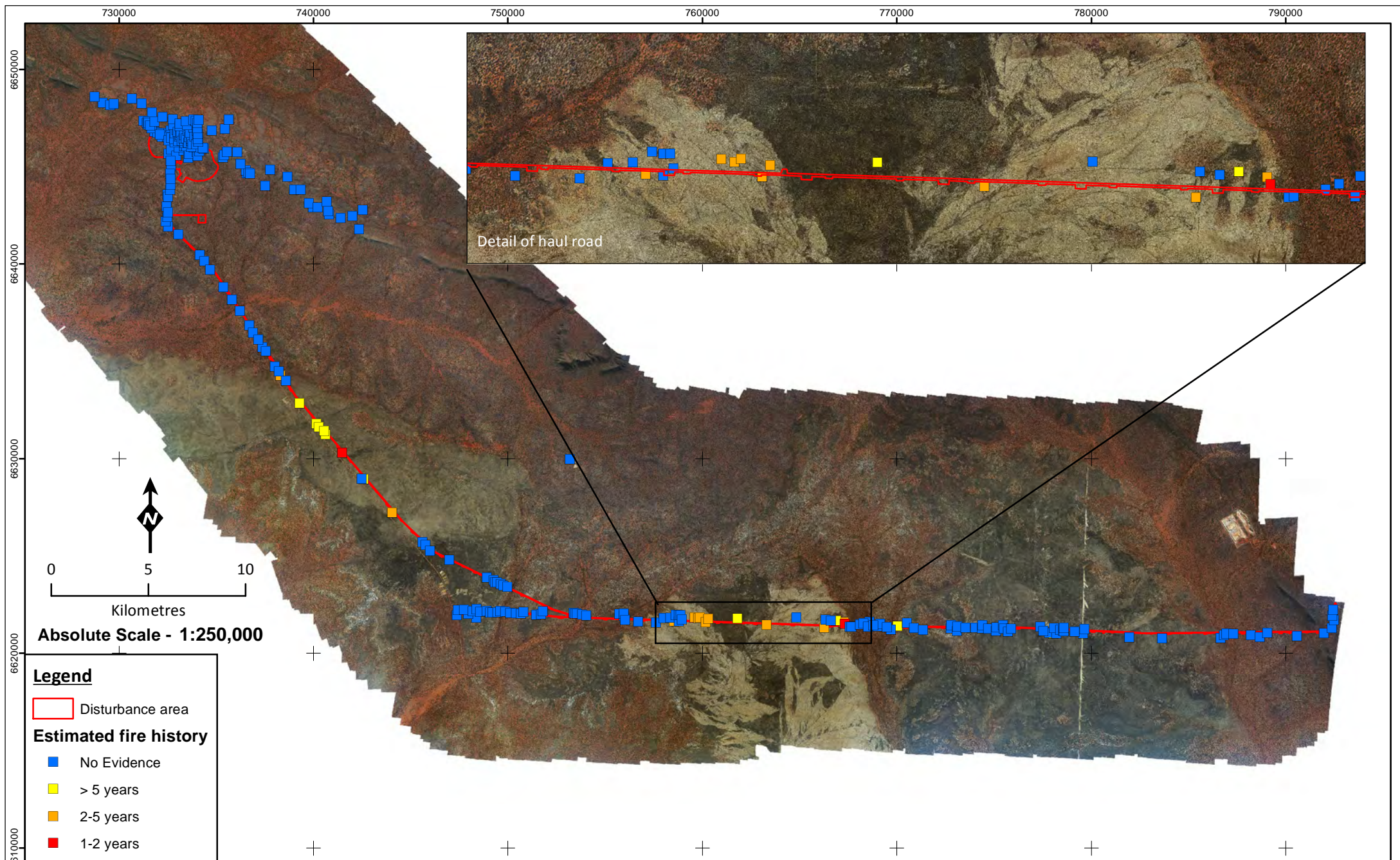
**Vegetation condition
of the J4 and haul road disturbance area**

Figure: 4.11
Project ID: 1555

Drawn: MC
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: MC265



Legend

Disturbance area

Estimated fire history

- No Evidence
- > 5 years
- 2-5 years
- 1-2 years

Absolute Scale - 1:250,000


0 5 10
Kilometres


Fire history assessment of the J4 and haul road disturbance area


Figure: 4.12 Project ID: 1555	Drawn: MC Date: 01/11/2013
Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994	Unique Map ID: MC266





Table 4.9 – Vegetation units of the study area


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
Rocky Midslopes and Ridgetops					
RMR1 (BgEgPbbAe)	S001 S002 S043 S047 S254	<p><i>Brachychiton</i> sparse shrubland</p> <p><i>Brachychiton gregorii</i> low isolated trees, over <i>Eremophila georgei</i> and <i>Philotheca brucei</i> subsp. <i>brucei</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> sparse tussock grassland</p> <p>Average species richness: 29.0 ± 5.6 (n=5)</p> <p>Geology: Orange clay-loam soil on BIF with ironstone outcropping. Leaf-litter covers approximately 60% of the vegetation unit.</p>	<p><i>Austrostipa elegantissima</i></p> <p><i>Brachychiton gregorii</i></p> <p><i>Cheilanthes adiantoides</i></p> <p><i>Daucus glochidiatus</i></p> <p><i>Dianella revoluta</i> var. <i>divaricata</i></p> <p><i>Dodonaea inaequifolia</i></p> <p><i>Eremophila georgei</i></p> <p><i>Lawrencella rosea</i></p> <p><i>Parietaria debilis</i></p> <p><i>Philotheca brucei</i> subsp. <i>brucei</i></p> <p><i>Trachymene ornata</i></p>	46.4 (0.12%)	1.0 (0.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR2 (AiEIIIna)	S013 S016 S017 S039 S044 S079 S085 S088	<p><i>Acacia</i> shrubland</p> <p><i>Acacia incurvaneura</i> tall, sparse shrubland, over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland</p> <p>Average species richness: 12.9 ± 1.2 (n=8)</p> <p>Geology: Orange clay-loam soil on BIF with ironstone outcropping. Leaf-litter covers approximately 60% of the vegetation unit.</p>	<p><i>Acacia caesaneura</i> <i>Acacia incurvaneura</i> <i>Acacia ramulosa</i> var. <i>ramulosa</i> <i>Banksia arborea</i> <i>Cheilanthes adiantoides</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Eremophila latrobei</i> subsp. <i>latrobei</i> <i>Neurachne annularis</i> <i>Philotheca brucei</i> subsp. <i>brucei</i> <i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32) <i>Waitzia acuminata</i> var. <i>acuminata</i></p>	135.9 (0.3%)	17.4 (2.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR3 (AqCpMnNa)	S015 S018 S135 S137 S158 S159 S161 S172	<p>Acacia shrubland</p> <p><i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Calycopeplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland</p> <p>Average species richness: 15.8 ± 0.8 (n=8)</p> <p>Geology: Orange clay-loam soil on BIF with ironstone outcropping. Leaf-litter covers approximately 70% of the vegetation unit.</p>	<p><i>Acacia quadrimarginea</i> <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> <i>Calycopeplus paucifolius</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Eremophila latrobei</i> subsp. <i>latrobei</i> <i>Grevillea zygaloba</i> <i>Melaleuca nematophylla</i> <i>Neurachne annularis</i> <i>Philotheca brucei</i> subsp. <i>brucei</i> <i>Prostanthera magnifica</i></p>	24.3 (0.1%)	0.0 (no occurrence in disturbance area)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR4 (AqPbbNa)	S011 S014 S037 S077 S084 S087 S090 S113 S127 S129 S138 S156	<p><i>Acacia</i> shrubland</p> <p><i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Philotheca brucei</i> subsp. <i>brucei</i>, mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland</p> <p>Average species richness: 17.3 ± 1.1 (n=12)</p> <p>Geology: Orange clay-loam soil on BIF with ironstone outcropping. Leaf-litter covers approximately 80% of the vegetation unit.</p>	<p><i>Acacia quadrimarginea</i> <i>Alyxia buxifolia</i> <i>Austrostipa elegantissima</i> <i>Banksia arborea</i> <i>Drosera macrantha</i> subsp. <i>macrantha</i> <i>Eremophila georgei</i> <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> <i>Lawrencella rosea</i> <i>Neurachne annularis</i> <i>Philotheca brucei</i> subsp. <i>brucei</i> <i>Trachymene ornata</i> <i>Waitzia acuminata</i> var. <i>acuminata</i></p>	155.6 (0.4%)	8.4 (1.0%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR5A (AeNa)	e307 S010 S045 S065 S066 S080 S092 S100 S114 S119 S134 S150 S152 S160 S198 S199 S234	<p><i>Neurachne</i> tussock grassland</p> <p><i>Acacia effusifolia</i> shrubs over <i>Neurachne annularis</i> tussock grassland</p> <p>Average species richness: 6.25 ± 0.6 (n=4)</p> <p>Geology: Orange/yellow sand with laterite gravel/pebbles. Leaf-litter is under shrubs/trees and covers approximately 35% of the vegetation unit.</p>	<p><i>Lawrencella rosea</i></p> <p><i>Amphipogon caricinus</i> var. <i>caricinus</i></p> <p><i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207)</p> <p><i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i></p> <p><i>Goodenia mimuloides</i></p> <p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i></p> <p><i>Cheilanthes sieberi</i> subsp. <i>sieberi</i></p> <p><i>Acacia coolgardiensis</i></p> <p><i>Prostanthera campbellii</i></p> <p><i>Eucalyptus longissima</i></p> <p><i>Melaleuca ?uncinata</i></p> <p><i>Santalum spicatum</i></p>	1,039.6 (2.6%)	52.7 (6.4%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR5B (<i>Asp.nPoOmNa</i>)	e307 S010 S045 S065 S066 S080 S092 S100 S114 S119 S134 S150 S152 S160 S198 S199 S234	<p><i>Acacia</i> shrubland</p> <p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Ptilotus obovatus</i> and <i>Olearia muelleri</i>, low sparse shrubland, over <i>Neurachne annularis</i> tussock grassland</p> <p>Average species richness: 10.2 ± 1.0 (n=13)</p> <p>Geology: Orange clay-loam soil with BIF gravel and rocks. Leaf-litter is under shrubs/trees and covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Allocasuarina dielsiana</i></p> <p><i>Dianella revoluta</i> var. <i>divaricata</i></p> <p><i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i></p> <p><i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i></p> <p><i>Lawrencella rosea</i></p> <p><i>Neurachne annularis</i></p> <p><i>Olearia muelleri</i></p> <p><i>Ptilotus obovatus</i></p> <p><i>Scaevola spinescens</i></p>	764.1 (1.91%)	63.8 (7.7%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR6 (GzDrdNa)	e309 S012 S038 S070 S071 S072 S110 S136 S139 S162	<p><i>Grevillea</i> shrubland</p> <p><i>Grevillea zygoloba</i> tall/mid, sparse shrubland, over <i>Dianella revoluta</i> var. <i>divaricata</i> sparse herbland, over <i>Neurachne annularis</i> tussock grassland</p> <p>Average species richness: 11.5 ± 0.9 (n=10)</p> <p>Geology: Orange clay-loam soil on BIF with stones and boulders. Leaf-litter is under shrubs/trees and covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia ramulosa</i> var. <i>ramulosa</i> <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Grevillea zygoloba</i> <i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207) <i>Melaleuca nematophylla</i> <i>Neurachne annularis</i> <i>Philotheca brucei</i> subsp. <i>brucei</i></p>	250.7 (0.6%)	17.8 (2.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR7 (EIGzNa)	S049 S069 S074 S128	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus longicornis</i> tall, open woodland, over <i>Grevillea zygoloba</i> mid, sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland</p> <p>Average species richness: 14.3 ± 2.3 (n=4)</p> <p>Geology: Orange clay-loam soil with ironstone surface rock. Leaf-litter covers approximately 90% of the vegetation unit.</p>	<p><i>Acacia ramulosa</i> var. <i>ramulosa</i></p> <p><i>Cheilanthes adiantoides</i></p> <p><i>Eucalyptus longicornis</i></p> <p><i>Grevillea zygoloba</i></p> <p><i>Neurachne annularis</i></p> <p><i>Olearia muelleri</i></p> <p><i>Ptilotus drummondii</i></p> <p><i>Ptilotus obovatus</i></p> <p><i>Thysanotus patersonii</i></p>	23.2 (0.1%)	1.3 (0.2%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of disturbance area)
RMR8 (EcAtSafNa)	S003 S019 S023 S042 S048 S051 S073 S078 S081 S082 S089 S091 S093 S094 S115 S116 S157 S233	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus corrugata</i>, tall, open woodland, over <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland</p> <p>Average species richness: 12.7 ± 0.7 (n=18)</p> <p>Geology: Orange-brown clay-loam soil with ironstone/laterite surface rock. Leaf litter covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia ramulosa</i> var. <i>ramulosa</i> <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) <i>Acacia tetragonophylla</i> <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> <i>Eucalyptus corrugata</i> <i>Neurachne annularis</i> <i>Olearia muelleri</i> <i>Ptilotus obovatus</i> <i>Scaevola spinescens</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	190.4 (0.5%)	17.7 (2.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
Sandy floodplains					
SF1 (EsAvMtSdSd)	e302 e303 e304 S148	<p><i>Eremophila</i> sparse shrubland</p> <p><i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i>, <i>Maireana trichoptera</i> and <i>Sclerolaena diacantha</i> low sparse shrubland <i>Sclerolaena drummondii</i></p> <p>Average species richness: 12.8 ± 2.4 (n=4)</p> <p>Geology: Orange-red sandy-clay soil with ironstone gravel/pebbles. Leaf-litter is under shrubs/trees and covers approximately 15% of the vegetation unit.</p>	<p><i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa trichophylla</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Eremophila scoparia</i> <i>Exocarpos aphyllus</i> <i>Maireana trichoptera</i> <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> <i>Sclerolaena diacantha</i> <i>Sclerolaena drummondii</i></p>	1,663.0 (4.2%)	3.4 (0.4%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF2 (ErAnAvAe)	S021 S022 S025 S035 S046 S101 S111 S118	<p><i>Eucalyptus</i> woodland</p> <p><i>Eucalyptus ravida</i> mid, woodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 13.3 ± 2.4 (n=8)</p> <p>Geology: Orange clay-loam soil with ironstone surface rock. Leaf-litter covers approximately 70% of the vegetation unit.</p>	<p><i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Eremophila scoparia</i> <i>Eucalyptus ravida</i> <i>Maireana trichoptera</i> <i>Sclerolaena diacantha</i> <i>Sclerolaena drummondii</i></p>	984.3 (2.46%)	24.5 (3.0%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF3 (EcEaSafAe)	e318 S024 S026 S028 S068 S146 S149	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus corrugata</i> mid, open woodland, over <i>Eremophila alternifolia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i>, mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 13.5 ± 1.6 (n=7)</p> <p>Geology: Orange clay soil with ironstone/laterite/quartz gravel/pebbles. Leaf-litter is dispersed and covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Atriplex nummularia</i></p> <p><i>Atriplex vesicaria</i></p> <p><i>Austrostipa elegantissima</i></p> <p><i>Eremophila alternifolia</i></p> <p><i>Eucalyptus corrugata</i></p> <p><i>Maireana trichoptera</i></p> <p><i>Olearia muelleri</i></p> <p><i>Ptilotus obovatus</i></p> <p><i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	1,209.8 (3.0%)	55.5 (6.7%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF4 (EsEsAvAe)	e306 e322 S032 S050 S107 S108 S112 S126 S179 S180 S253	<p><i>Eucalyptus</i> woodland</p> <p><i>Eucalyptus salubris</i>, tall woodland, over <i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 15.3 ± 0.8 (n=8)</p> <p>Geology: Orange-brown clay-loam soil with ironstone gravel/pebbles. Leaf-litter is either dispersed or under trees/shrubs and covers approximately 60% of the vegetation unit.</p>	<p><i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Eremophila rugosa</i> <i>Eremophila scoparia</i> <i>Eucalyptus salubris</i> <i>Maireana georgei</i> <i>Maireana trichoptera</i> <i>Olearia muelleri</i> <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> <i>Sclerolaena diacantha</i></p>	2,353.9 (5.9%)	44.2 (5.3%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF5 (EsEsSafAe)	S029 S099 S117 S131 S132 S133 S181 S186 S224 S251 S255	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus salmonophloia</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 16.7 ± 1.5 (n=11)</p> <p>Geology: Orange-brown clay soil with ironstone surface rock. Leaf-litter is under trees/shrubs and covers approximately 40% of the vegetation unit.</p>	<p><i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Austrostipa trichophylla</i> <i>Eremophila scoparia</i> <i>Eucalyptus salmonophloia</i> <i>Exocarpos aphyllus</i> <i>Maireana georgei</i> <i>Maireana trichoptera</i> <i>Olearia muelleri</i> <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> <i>Rhagodia drummondii</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	3,103.0 (7.8%)	28.4 (3.4%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF6 (EcAsp.nEaAe)	e301 S004 S122 S123 S142 S188	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus corrugata</i> mid, open woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) and <i>Exocarpos aphyllus</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 18.2 ± 1.8 (n=6)</p> <p>Geology: Orange-brown clay-sandy soil with ironstone gravel/pebbles. Leaf-litter is under shrubs/trees and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Austrostipa elegantissima</i></p> <p><i>Eremophila ionantha</i></p> <p><i>Eremophila scoparia</i></p> <p><i>Eucalyptus corrugata</i></p> <p><i>Exocarpos aphyllus</i></p> <p><i>Grevillea acuaria</i></p> <p><i>Olearia muelleri</i></p> <p><i>Ptilotus nobilis</i> subsp. <i>nobilis</i></p> <p><i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	1,766.9 (4.4%)	84.7 (10.2%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SF7 (EIEsSafOmAeAt)	S053 S054 S103 S140 S141 S143 S167 S182 S183 S250	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus longicornis</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> and/or <i>A. trichophylla</i> open tussock grassland</p> <p>Average species richness: 13.0 ± 1.1 (n=10)</p> <p>Geology: Orange-brown loam or sandy clay with ironstone surface rock. Leaf-litter is dispersed and covers approximately 50% of the vegetation unit.</p>	<p><i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Austrostipa trichophylla</i> <i>Eremophila ionantha</i> <i>Eremophila scoparia</i> <i>Eucalyptus longicornis</i> <i>Exocarpos aphyllus</i> <i>Maireana georgei</i> <i>Olearia muelleri</i> <i>Scaevola spinescens</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	1,593.8 (4.0%)	17.9 (2.2%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
Sandy/Gravelly Plains					
SGP1 (Asp.nAnOmSf)	e312 S034 S036 S067 S076	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Atriplex nummularia</i> and <i>Olearia muelleri</i> mid sparse shrubland, over <i>Sclerolaena fusiformis</i> low, sparse shrubland</p> <p>Average species richness: 11.8 ± 1.4 (n=5)</p> <p>Geology: Orange clay-sandy soil with ironstone surface rock. Leaf-litter is under shrubs/trees and covers approximately 30% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Atriplex nummularia</i></p> <p><i>Austrostipa elegantissima</i></p> <p><i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i></p> <p><i>Eucalyptus transcontinentalis</i></p> <p><i>Maireana georgei</i></p> <p><i>Neurachne annularis</i></p> <p><i>Olearia muelleri</i></p> <p><i>Ptilotus drummondii</i></p> <p><i>Ptilotus obovatus</i></p> <p><i>Scaevola spinescens</i></p> <p><i>Sclerolaena fusiformis</i></p>	393.2 (1.0%)	58.6 (7.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP2 (Asp.nSafMgNa)	S027 S030 S033 S041 S064 S151 S196 S231 S232	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Maireana georgei</i> low sparse shrubland, over <i>Neurachne annularis</i> open hummock grassland</p> <p>Average species richness: 19.0 ± 1.5 (n=9)</p> <p>Geology: Orange clay soil with occasional sand or loam. Ironstone/quartz surface rock. Leaf-litter covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Acacia tetragonophylla</i></p> <p><i>Austrostipa elegantissima</i></p> <p><i>Eremophila decipiens</i> subsp. <i>decipiens</i></p> <p><i>Eremophila granitica</i></p> <p><i>Maireana georgei</i></p> <p><i>Maireana trichoptera</i></p> <p><i>Neurachne annularis</i></p> <p><i>Ptilotus obovatus</i></p> <p><i>Sclerolaena diacantha</i></p> <p><i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	575.0 (1.4%)	42.3 (5.1%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP3 (EIIAsp.nEddAe)	e308 e310 e311 S009 S040 S086 S144 S155 S187 S189 S239	<p><i>Eucalyptus</i> open mallee woodland</p> <p><i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> mid, open mallee woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall sparse shrubland, over <i>Eremophila decipiens</i> subsp. <i>decipiens</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 13.8 ± 1.5 (n=11)</p> <p>Geology: Orange-red clay-loam soil with occasional ironstone gravel/pebbles. Leaf-litter is either dispersed or under shrubs/trees and covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Austrostipa elegantissima</i></p> <p><i>Eremophila decipiens</i> subsp. <i>decipiens</i></p> <p><i>Eucalyptus corrugata</i></p> <p><i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i></p> <p><i>Exocarpos aphyllus</i></p> <p><i>Olearia muelleri</i></p> <p><i>Olearia pimeleoides</i></p> <p><i>Senna artemisioides</i> subsp. <i>filifolia</i></p>	3,001.3 (7.5%)	37.6 (4.5%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP4 (Asp.nPoAcAe)	e305 Rockpool S008 S031 S095 S102 S145 S147	<p><i>Acacia</i> shrubland</p> <p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, shrubland, over <i>Ptilotus obovatus</i> low, sparse shrubland, over <i>Aristida contorta</i> and <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 18.0 ± 1.3 (n=7)</p> <p>Geology: Orange-brown clay soil with iron, chert and/or quartz surface rock. Leaf-litter is under shrubs/trees and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)</p> <p><i>Acacia tetragonophylla</i></p> <p><i>Aristida contorta</i></p> <p><i>Austrostipa elegantissima</i></p> <p><i>Cheilanthes sieberi</i> subsp. <i>sieberi</i></p> <p><i>Eremophila decipiens</i> subsp. <i>decipiens</i></p> <p><i>Lawrencella rosea</i></p> <p><i>Ptilotus obovatus</i></p>	1,542.5 (3.9%)	51.6 (6.2%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP5 (OeWcTsAe)	e325 S020 S056 S060 S061 S106 S190 S193 S200 S201 S205 S207 S209 S219 S220 S222 S249	<p><i>Olearia</i> and <i>Westringia</i> sparse shrubland</p> <p><i>Olearia exiguifolia</i> and <i>Westringia cephalantha</i> mid, sparse shrubland, over <i>Triodia scariosa</i> open hummock grassland and/or <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 14.4 ± 1.3 (n=17)</p> <p>Geology: Light orange-yellow clay-sand soil with occasional ironstone surface rock. Leaf-litter is under trees/shrubs and covers approximately 40% of the vegetation unit.</p>	<p><i>Amphipogon caricinus</i> var. <i>caricinus</i> <i>Austrostipa elegantissima</i> <i>Callitris preissii</i> <i>Eremophila caperata</i> <i>Olearia exiguifolia</i> <i>Olearia muelleri</i> <i>Phebalium canaliculatum</i> <i>Podolepis capillaris</i> <i>Prostanthera campbellii</i> <i>Scaevola spinescens</i> <i>Triodia scariosa</i> <i>Westringia cephalantha</i></p>	939.9 (2.4%)	19.8 (2.4%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP6 (EsAeSsOmAe)	e319 S063 S075 S098 S109 S164 S197	<p><i>Eucalyptus</i> open woodland</p> <p><i>Eucalyptus sheathiana</i> mid, open woodland, over <i>Acacia erinacea</i> mid, sparse shrubland, over <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland</p> <p>Average species richness: 14.0 ± 1.5 (n=7)</p> <p>Geology: Orange clay soil with ironstone/laterite surface rock. Leaf-litter is under trees/shrubs and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia erinacea</i> <i>Atriplex nummularia</i> <i>Austrostipa elegantissima</i> <i>Dodonaea inaequifolia</i> <i>Eucalyptus corrugata</i> <i>Eucalyptus sheathiana</i> <i>Maireana georgei</i> <i>Olearia muelleri</i> <i>Ptilotus obovatus</i> <i>Scaevola spinescens</i></p>	1,119.7 (2.1%)	28.3 (3.4%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
SGP7 (ArrPoMgAeAt)	S052 S083 S096 S097 S130	<p><i>Acacia</i> tall shrubland</p> <p><i>Acacia ramulosa</i> var. <i>ramulosa</i> tall, shrubland, over <i>Ptilotus obovatus</i> and <i>Maireana georgei</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>A. trichophylla</i> open tussock grassland</p> <p>Average species richness: 15.8 ± 3.9 (n=5)</p> <p>Geology: Orange-brown clay soil with ironstone surface rock. Leaf-litter covers approximately 80% of the vegetation unit.</p>	<p><i>Acacia ramulosa</i> var. <i>ramulosa</i> <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) <i>Acacia tetragonophylla</i> <i>Austrostipa elegantissima</i> <i>Austrostipa eremophila</i> <i>Austrostipa trichophylla</i> <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> <i>Keraudrenia velutina</i> subsp. <i>velutina</i> <i>Maireana georgei</i> <i>Neurachne annularis</i> <i>Ptilotus obovatus</i> <i>Solanum nummularium</i></p>	229.8 (0.6%)	0.0 (no occurrence within disturbance area)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
Yellow sandplains					
YS1 (AcAsBAcc)	S206 S208 S215 S216 S217 S218 S235 S241 S244 S245	<p><i>Allocasuarina</i> open woodland</p> <p><i>Allocasuarina corniculata</i> low, open woodland and <i>Acacia sibina</i> tall, sparse shrubland, over <i>Baeckea elderiana</i> low, sparse shrubland, over <i>Amphipogon carcinus</i> var. <i>carcinus</i> open tussock grassland</p> <p>Average species richness: 12.0 ± 0.9 (n=10)</p> <p>Geology: Yellow-orange sandy soil with laterite outcropping. Leaf litter covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia resinimarginea</i> <i>Acacia sibina</i> <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> <i>Allocasuarina corniculata</i> <i>Amphipogon carcinus</i> var. <i>carcinus</i> <i>Baeckea elderiana</i> <i>Grevillea paradoxa</i> <i>Hibbertia eatoniae</i> <i>Homalocalyx thryptomenoides</i> <i>Phebalium tuberosum</i> <i>Thryptomene urceolaris</i></p>	3,554.7 (8.9%)	24.0 (2.9%)
					


Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS2 (AeBsp.Bac)	e324 S006 S007 S195 S203 S204 S240	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia effusifolia</i> tall, sparse shrubland, over <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586) low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland</p> <p>Average species richness: 13.3 ± 3.4 (n=7)</p> <p>Geology: Yellow-orange/brown loamy-sandy soil with laterite surface rock. Leaf litter is under shrubs/trees and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia effusifolia</i></p> <p><i>Acacia stereophylla</i> var. <i>stereophylla</i></p> <p><i>Amphipogon caricinus</i> var. <i>caricinus</i></p> <p><i>Austrostipa elegantissima</i></p> <p><i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586)</p> <p><i>Eucalyptus leptopoda</i> subsp. <i>subluta</i></p> <p><i>Olearia pimeleoides</i></p> <p><i>Prostanthera campbellii</i></p> <p><i>Thryptomene urceolaris</i></p>	3,140.0 (7.9%)	20.4 (2.5%)
					

Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS3 (ArPcTuAcc)	S120 S173 S174 S176 S177 S178 S238	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland</p> <p>Average species richness: 13.4 ± 1.3 (n=7)</p> <p>Geology: Orange clay-sandy soil with laterite surface rock. Leaf-litter covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia resinimarginea</i> <i>Amphipogon caricinus</i> var. <i>caricinus</i> <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> <i>Homalocalyx thryptomenoides</i> <i>Leptospermum fastigiatum/roei</i> <i>Olearia pimeleoides</i> <i>Phebalium canaliculatum</i> <i>Phebalium tuberculosum</i> <i>Prostanthera grylloana</i> <i>Rinzia carnosa</i> <i>Thryptomene urceolaris</i></p>	364.7 (0.9%)	2.3 (0.3%)
					

Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS4 (ArPcTuAcc2)	e321 S057 S059 S062 S104 S105 S124 S125 S153 S163 S166 S211 S214 S246 S248	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland</p> <p>Average species richness: 17.0 ± 1.7 (n=15)</p> <p>Geology: Light orange-yellow clay-sandy soils with iron surface rock. Leaf-litter is dispersed and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia resinimarginea</i> <i>Allocasuarina corniculata</i> <i>Amphipogon caricinus</i> var. <i>caricinus</i> <i>Baeckea elderiana</i> <i>Cyanostegia angustifolia</i> <i>Dampiera stenostachya</i> <i>Hannafordia bissillii</i> subsp. <i>latifolia</i> <i>Homalocalyx thryptomenoides</i> <i>Keraudrenia velutina</i> <i>Leptospermum fastigiatum/roei</i> <i>Melaleuca hamata</i> <i>Phebalium canaliculatum</i> <i>Thryptomene urceolaris</i></p>	2,894.5 (7.2%)	29.7 (3.6%)
					

Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS5 (AePcTuAcc)	e313 S055 S058 S154 S191 S192 S210 S212 S213 S225 S226 S227	<p><i>Acacia</i> sparse shrubland</p> <p><i>Acacia effusifolia</i> mid, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i>, low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland</p> <p>Average species richness: 11.5 ± 0.6 (n=12)</p> <p>Geology: Orange-yellow loamy-sandy soil with iron and/or laterite surface rock. Leaf-litter is under shrubs/trees and covers approximately 50% of the vegetation unit.</p>	<p><i>Acacia effusifolia</i> <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> <i>Amphipogon caricinus</i> var. <i>caricinus</i> <i>Baeckea elderiana</i> <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586) <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Homalocalyx thryptomenoides</i> <i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207) <i>Phebalium canaliculatum</i> <i>Prostanthera grylloana</i> <i>Thryptomene urceolaris</i></p>	800.9 (2.0%)	13.1 (1.6%)
					

Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS6 (AcPcAcc)	S005 S202 S221 S228 S229 S230 S237	<p><i>Acacia</i> shrubland</p> <p><i>Acacia coolgardiensis</i> mid shrubland, over <i>Phebalium canaliculatum</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland</p> <p>Average species richness: 10.2 ± 1.6 (n=7)</p> <p>Geology: Orange-yellow sandy soil with occasional laterite surface rock. Leaf-litter covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia coolgardiensis</i> <i>Amphipogon caricinus</i> var. <i>caricinus</i> <i>Callitris preissii</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207) <i>Phebalium canaliculatum</i> <i>Thryptomene urceolaris</i> <i>Waitzia acuminata</i> var. <i>acuminata</i></p>	311.6 (0.8%)	8.3 (1.0%)
					

Vegetation Community Code	Quadrats	Vegetation Description (NVIS Level III and Level V)	Associated Species	Ha of study area (% of study area)	Ha of disturbance area (% of Disturbance area)
YS7 (AaaArTuPc)	e314 e315 e316 e317 e320 e323 S165 S168 S169 S170 S171 S175 S184 S185 S194 S236 S242 S243 S247 S252	<p><i>Allocasuarina</i> open woodland</p> <p><i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> low, open woodland, over <i>Acacia resinimarginea</i> tall shrubland, over <i>Thryptomene urceolaris</i> and <i>Phebalium canaliculatum</i> mid, open shrubland</p> <p>Average species richness: 12.7 ± 0.7 (n=20)</p> <p>Geology: Orange-yellow sandy soil with ironstone and/or laterite gravel/pebbles. Leaf-litter is under shrubs/trees and covers approximately 40% of the vegetation unit.</p>	<p><i>Acacia resinimarginea</i></p> <p><i>Acacia sibina</i></p> <p><i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i></p> <p><i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586)</p> <p><i>Callitris preissii</i></p> <p><i>Eucalyptus leptopoda</i> subsp. <i>subluta</i></p> <p><i>Malleostemon roseus</i></p> <p><i>Melaleuca hamata</i></p> <p><i>Phebalium canaliculatum</i></p> <p><i>Thryptomene urceolaris</i></p>	5,802.9 (14.5%)	55.7 (6.7%)
					

*S=resurveyed Mattiske quadrats, E=newly placed *ecologia* quadrat

4.2.4 Extrinsic Analysis

In addition to the floristic analysis, the extrinsic physical characteristics recorded at each of the quadrats were also analysed (Table 4.10). The autumn 2013 quadrats were included, but the quadrats of Gibson *et al.* (1997) were excluded because data on the extrinsic factors for each vegetation unit were not available. Therefore 279 quadrats were included in this analysis.

Factors included in the analysis were topographic position (1 = hilltop or upper slope, 2 = midslope, 3 = lower slope and plain), slope (1 = negligible to gentle slope, 2 = moderate slope, 3 = steep), rock cover (1 = <30% cover, 2 = 30-70%, 3 = >70%), average litter cover and average species richness.

The Kruskal-Wallis statistic indicates how well variables discriminate across groups. Of the extrinsic factors included in the analysis, topographic position and slope discriminate best across groups, with the vegetation units associated with the BIF range tending to occur on the steeper slopes and hilltops, whereas leaf litter cover has the smallest relationship with vegetation unit. It can be seen in Table 4.10 that vegetation units that are most alike are present on a similar landform (topographic position, rock cover and slope). Leaf litter cover does not appear to reflect or have an affect on the the similarity of vegetation units.

Table 4.10 – Average and standard deviation of extrinsic factors by vegetation unit

Vegetation code	Vegetation unit	Number of quadrats	Quadrats with extrinsic data	Topographic position	Slope	Rock cover	Litter cover	Species richness
RMR1	<i>BgEgPbbAe</i>	5	4	1.3 ± 0.5	2.8 ± 0.5	3.0 ± 0.0	59.5 ± 25.8	29.0 ± 11.2
RMR2	<i>AiEIIa</i>	8	8	1.8 ± 0.9	2.3 ± 0.9	2.6 ± 0.5	62.5 ± 24.2	12.9 ± 3.5
RMR3	<i>AqCpMnNa</i>	8	8	1.1 ± 0.4	2.9 ± 0.4	3.0 ± 0.0	72.5 ± 23.5	15.8 ± 2.3
RMR4	<i>AqPbbNa</i>	12	12	1.3 ± 0.6	2.8 ± 0.6	2.8 ± 0.6	81.4 ± 18.0	17.3 ± 3.6
RMR5A	<i>AeNa</i>	4	4	2.3 ± 1.0	1.8 ± 1.0	1.5 ± 1.0	35.0 ± 16.8	6.8 ± 2.0
RMR5B	<i>Asp.nPoOmNa</i>	13	13	2.3 ± 0.8	1.7 ± 0.8	2.4 ± 0.9	57.3 ± 26.5	11.7 ± 4.1
RMR6	<i>GzDrdNa</i>	10	10	1.6 ± 0.8	2.4 ± 0.8	2.5 ± 1.0	54.0 ± 26.5	11.5 ± 2.8
RMR7	<i>ElGzNa</i>	4	4	2.0 ± 0.8	2.0 ± 0.8	3.0 ± 0.0	91.8 ± 4.7	14.3 ± 4.6
RMR8	<i>EcAtSafNa</i>	18	18	2.4 ± 0.7	1.6 ± 0.7	2.4 ± 0.8	54.3 ± 33.4	12.7 ± 2.8
SF1	<i>EsAvMtSdSd</i>	4	4	3.0 ± 0.0	1.0 ± 0.0	0.5 ± 1.0	16.3 ± 10.3	12.8 ± 4.9
SF2	<i>ErAnAvAe</i>	8	8	3.0 ± 0.0	1.0 ± 0.0	2.0 ± 0.9	74.0 ± 31.3	13.3 ± 6.9
SF3	<i>EcEaSafAe</i>	7	6	2.8 ± 0.4	1.2 ± 0.4	2.0 ± 1.1	47.8 ± 27.6	13.5 ± 4.1
SF4	<i>EsEsAvAe</i>	11	11	2.7 ± 0.6	1.3 ± 0.6	1.8 ± 1.0	59.5 ± 22.3	15.3 ± 2.6
SF5	<i>EsEsSafAe</i>	11	10	3.0 ± 0.0	1.0 ± 0.0	1.6 ± 1.0	42.4 ± 27.1	16.7 ± 4.7
SF6	<i>EcAsp.nEaAe</i>	6	6	3.0 ± 0.0	1.0 ± 0.0	1.2 ± 1.3	37.5 ± 25.6	18.2 ± 4.3
SF7	<i>ElEsSafOmAeAt</i>	10	9	3.0 ± 0.0	1.0 ± 0.0	1.8 ± 0.7	54.4 ± 23.8	13.0 ± 3.3
SGP1	<i>Asp.nAnOmSf</i>	5	4	2.3 ± 1.0	1.8 ± 1.0	2.5 ± 0.6	31.8 ± 39.2	11.8 ± 2.9
SGP2	<i>Asp.nSafMgNa</i>	9	8	2.8 ± 0.7	1.3 ± 0.7	1.9 ± 0.8	43.1 ± 26.6	19.0 ± 4.3
SGP3	<i>ElAsp.nEddAe</i>	11	11	2.9 ± 0.3	1.1 ± 0.3	0.6 ± 1.1	47.1 ± 31.5	13.8 ± 5.0
SGP4	<i>Asp.nPoAcAe</i>	8	7	2.6 ± 0.8	1.4 ± 0.8	1.3 ± 1.1	37.1 ± 25.5	18.0 ± 3.4
SGP5	<i>OeWcTsAe</i>	17	14	3.0 ± 0.0	1.0 ± 0.0	1.4 ± 0.9	40.0 ± 10.6	14.4 ± 4.7
SGP6	<i>EsAeSsOmAe</i>	7	7	2.6 ± 0.8	1.4 ± 0.8	1.7 ± 1.3	39.3 ± 35.5	14.0 ± 4.0
SGP7	<i>ArrPoMgAeAt</i>	5	5	3.0 ± 0.0	1.0 ± 0.0	1.6 ± 0.5	76.0 ± 13.4	15.8 ± 8.7
YS1	<i>AcAsBAcc</i>	10	9	2.9 ± 0.3	1.1 ± 0.3	1.0 ± 1.0	53.1 ± 12.2	12.0 ± 2.8
YS2	<i>AeBsp.Bac</i>	7	3	3.0 ± 0.0	1.0 ± 0.0	0.7 ± 0.6	36.7 ± 25.2	13.3 ± 5.9
YS3	<i>ArPcTuAcc</i>	7	5	3.0 ± 0.0	1.0 ± 0.0	1.2 ± 0.4	38.0 ± 17.9	13.4 ± 2.9

Vegetation code	Vegetation unit	Number of quadrats	Quadrats with extrinsic data	Topographic position	Slope	Rock cover	Litter cover	Species richness
YS4	<i>ArPcTuAcc2</i>	15	12	3.0 ± 0.0	1.0 ± 0.0	1.6 ± 0.8	44.8 ± 25.6	17.0 ± 6.0
YS5	<i>AePcTuAcc</i>	12	10	3.0 ± 0.0	1.0 ± 0.0	1.3 ± 0.8	47.0 ± 20.2	11.5 ± 2.0
YS6	<i>AcPcAcc</i>	7	5	2.6 ± 0.5	1.4 ± 0.5	1.0 ± 1.2	40.0 ± 10.6	10.2 ± 3.5
YS7	<i>AaaArTuPc</i>	20	19	2.9 ± 0.5	1.1 ± 0.5	0.6 ± 0.8	38.7 ± 22.4	12.7 ± 3.1
Kruskal-Wallis				140.91	140.91	119.17	68.31	74.24

Note: Vegetation units highlighted in green are those that correspond to the Mount Jackson Range vegetation complex (banded ironstone formation) PEC.

4.3 SURVEY LIMITATIONS AND CONSTRAINTS

According to EPA Guidance Statement 51 (EPA 2004c), vegetation and flora surveys may be limited by several aspects. An assessment of these aspects with regard to this study is detailed in Table 4.11.

Table 4.11 – Flora and vegetation survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information (i.e. pre-existing background versus new material)	Nil	Broad scale (1:1,000,000) mapping by Shepherd <i>et al</i> (2006) based on the mapping by Beard (1975) is available. However, the more recent land system mapping has not yet been published in the area which limits the access to broad scale regional information on vegetation units based on land systems. Information in a local context was not limited due to a large number of previously completed flora and vegetation surveys in the study area and its vicinity.
The scope (i.e. what life forms were sampled)	Nil	The vascular flora of the study area was sampled in accordance with Guidance Statement 51. The survey approach was prepared in consultation with the DPaW. The survey was conducted in spring 2013, following previous surveys in the study area in autumn 2013 and spring 2012.
Proportion of flora collected and identified (based on sampling, timing and intensity)	Nil	Species accumulation curve analysis suggests that an estimated 82-85% of the taxa expected to be present were recorded. Survey timing was considered adequate with many perennial taxa bearing fertile material, as well as annual taxa recorded.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Minimal	The quadrat density is considered high for the size of the survey area (1 quadrat per 13 ha), with a relatively even coverage throughout the site. The distribution of quadrats is consistent with Guidance Statement 51 which stipulates a minimum of two sites per vegetation unit. Fewer quadrats were placed within the haul road alignment and its vicinity due to restricted vehicle and walking access (helicopters were used for 2.5 days of the survey). Consultation with DPaW established a guideline to place a minimum of 30% of the survey effort outside of the disturbance area. This recommendation was achieved, with 83% of the floristic units (quadrats) placed outside of the disturbance area.
Mapping reliability	Nil	High resolution aerial imagery was available and the number and distribution of quadrats was considered adequate for definition of vegetation within the study area.
Timing/weather/season/cycle	Minimal	The survey was conducted during favourable weather conditions. Reproductive material was collected from 49% of the specimens vouchered despite that fact that rainfall data for the six months preceding the survey was 45 mm below long-term average.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	There were no natural or human interventions that constrained the survey of the disturbance area.
Intensity (in retrospect, was the intensity adequate?)	Nil	The species accumulation curve suggests that 82-85% of species present were collected. Twenty-nine vegetation units mapped were represented by a minimum of three quadrats. Quadrats were distributed relatively evenly across the study area.
Resources	Nil	A total of 71 person-days (excluding travel days) was expended across the field trip which provided adequate coverage of the area, despite the fact some portions of the surrounding area were only accessible with a helicopter.
Access issues	Minimal	The majority of the study area was readily accessed. Some portions of the surrounding area were not able to be reached by car or by foot. A helicopter was available for 2.5 days which allowed for coverage of the impact and study area, but did not allow for detailed regional studies of portions of the haul road.

Aspect	Constraint	Comment
Experience levels (e.g. degree of expertise in plant identification to taxon level)	Nil	<p>The project manager has 10 years of experience conducting botanical surveys and the report has been reviewed by the Manager of Technical Services with over 14 years' experience in botanical surveys and environmental impact assessment. Botanists engaged in survey work have between 2 and 14 years' experience in biological surveys, including botanists experienced in surveys in the BIF ranges. The two taxonomists responsible for identifications both have Doctorates in botanical taxonomy and have completed identifications for many projects within WA, including previous projects in the BIF ranges. Where necessary, expertise from the Western Australian Herbarium was sought. The field work design and the report were peer reviewed by Dr Grant Wardell-Johnson, an independent scientist with more than 30 years' experience in research in Environment and Agriculture and currently the Director of the Curtin Institute for Biodiversity and Climate.</p>

5 DISCUSSION

5.1 FLORA

5.1.1 Species Richness

The floristic inventory recorded during the current survey was compared to that recorded in other quadrat-based surveys conducted in the Coolgardie bioregion (Table 5.1) in the vicinity of the current survey. The data presented in Table 5.1 allows for easy comparison of several parameters of any given survey, including species richness, survey effort and Priority Flora species observed.

The most directly comparable survey is the Jackson 4 and haul road (Mattiske 2013) as the study areas largely overlap and the same quadrats were resurveyed. The surveys in the Helena and Aurora Range (Gibson *et al.* 1997; *ecologia* 2013) adjoin the current study area to the east.

Mattiske's survey of Jackson 4 and haul road (Mattiske 2013) recorded 311 taxa from 255 quadrats and opportunistic collections, compared with 359 taxa from 278 quadrats in this survey (Table 5.1). The higher number of species collected in the current study reflects both the more suitable season (as part of the Mattiske data was collected in autumn) and the higher survey effort in the same area.

A further comparison of the floristics of this current survey and that recorded by Mattiske (2013) is presented in terms of families and genera in Table 5.4 and Table 5.5 with the complete inventory of species for each survey in Appendix M. Species which were not fully identified and had the potential to be repeats of taxa already listed were excluded from this comparison. In summary, 169 species were recorded by Mattiske in autumn 2013 and 221 species in spring 2012. Upon resurvey of the same quadrats and addition of 28 new quadrats, *ecologia* recorded 321 species in spring 2013.

A total of 249 species were only recorded in spring; and 131 species were only recorded in the spring of 2013 (current survey). Sixty-one species were not observed in the spring 2013 survey. Of these 61 species recorded only by Mattiske, it is expected that some taxa are misidentifications (e.g. *Ricinocarpus brevis*, *Acacia burkittii*), as the locations of such records were checked in spring 2013 and the species were not observed. It is, however, not possible to determine with certainty that these are misidentifications without examining the vouchered specimens.

These analyses show the value of spring surveys in the Coolgardie bioregion, where a larger number of families, genera and species are generally recorded compared with surveys at other times of year. Spring surveys also allow for easier and more accurate identification of the material, as a larger proportion of specimens are found flowering and/or fruiting. In the current study, 49% of individuals recorded were in flower or fruit.

The Helena and Aurora Range was surveyed by Gibson *et al.* (1997) where 324 species were recorded from 55 quadrats, ten of which were Threatened or Priority Flora species. The high number of species recorded is, however, a value inflated by inclusion of records of the Western Australian Herbarium within the study area.

An assessment of the Helena and Aurora Range was undertaken by *ecologia* in spring 2012 and autumn 2013. The survey of 74 quadrats recorded 194 taxa of which 14 were Priority and Threatened flora taxa. The current J4 mine and haul road survey recorded 359 species from 281 quadrats and appears to have a higher species richness due to extensively surveying the sandplain communities, whereas the *ecologia* study of the Helena and Aurora Range was confined to the BIF range and immediately surrounding areas.

Table 5.1 – Comparison with nearby BIF ranges

Study site	Date surveyed	Number of quadrats	Number of taxa	Number of weed taxa	Taxa currently listed as Threatened	Taxa currently listed as Priority Flora	PECs	Distance from study area (km)
Jackson Range area - J4 mine and haul road (current study)	Sep 2013	281	359	7	-	<p><i>Baeckea</i> sp. Bungalbin Hill (P3) <i>Beyeria rostellata</i> (P1) ● <i>Banksia arborea</i> (P4) <i>Calytrix creswelli</i> (P3) <i>Eremophila caerulea</i> subsp. <i>merrallii</i> (P4) <i>Gompholobium cinereum</i> (P3) ● <i>Grevillea georgeana</i> (P3) ● <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> (P3) <i>Melichrus</i> sp. Bungalbin Hill (P3) ● <i>Mirbelia ferricola</i> (P3) ■ <i>Neurachne annularis</i> (P3) <i>Sowerbaea multicaulis</i> (P4) ■ <i>Stenanthemum newbeyi</i> (P3)</p>	Mount Jackson Range vegetation complex (P1)	-
Helena and Aurora Range (ecologia 2013)	Oct-Nov 2012	74	194	2	<p>▲ <i>Leucopogon spectabilis</i> ▲ <i>Tetratheca aphylla</i> subsp. <i>aphylla</i></p>	<p>▲ <i>Acacia adinophylla</i> (P1) ▲ <i>Acacia</i> sp. Bungalbin Hill (J.J. Alford 1119) (P1) ● <i>Banksia arborea</i> (P4) <i>Grevillea erectiloba</i> (P4) ● <i>Grevillea georgeana</i> (P3) ● <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> (P3) ▲ <i>Lepidosperma bungalbin</i> (P1) ■ <i>Lepidosperma ferricola</i> (P3) ● <i>Mirbelia ferricola</i> (P3) ■ <i>Neurachne annularis</i> (P3) <i>Philothea coateana</i> (P3) ■ <i>Stenanthemum newbeyi</i> (P3)</p>	Helena and Aurora Range vegetation complex P1	10-15

Study site	Date surveyed	Number of quadrats	Number of taxa	Number of weed taxa	Taxa currently listed as Threatened	Taxa currently listed as Priority Flora	PECs	Distance from study area (km)
Helena and Aurora Range (Gibson <i>et al.</i> 1997)	Jul, Sep 1995	55	*324	21	<ul style="list-style-type: none"> ▲ <i>Leucopogon spectabilis</i> ▲ <i>Tetradlea aphylla</i> subsp. <i>aphylla</i> 	<ul style="list-style-type: none"> ▲ <i>Acacia adinophylla</i> (P1) <i>Acacia cylindrica</i> (P3) <i>Gnephosis intonsa</i> (P3) <i>Grevillea erectiloba</i> (P4) ● <i>Grevillea georgeana</i> (P3) <i>Phlegmatospermum eremaeum</i> (P2) ■ <i>Stenanthemum newbeyi</i> (P3) ● <i>Mirbelia ferricola</i> (P3) 	Helena and Aurora Range vegetation complex P1	10-15
Hunt Range, Yendilberin and Watt (Jaurdi) Hills (Gibson and Lyons 2001c)	Sep 1995	53	288	15	-	<ul style="list-style-type: none"> <i>Austrostipa blackii</i> (P3) <i>Elachanthus pusillus</i> (P2) <i>Eremophila caerulea</i> subsp. <i>merrallii</i> (P4) <i>Gnephosis</i> sp. Norseman (K.R. Newbey 8096) (P3) <i>Grevillea erectiloba</i> (P4) ● <i>Grevillea georgeana</i> (P3) <i>Lissanthe scabra</i> (P2) 	-	15
Mt Manning Range (Gibson 2004)	Nov 1995	54	238	4	-	<ul style="list-style-type: none"> <i>Calytrix creswellii</i> (P3) <i>Eucalyptus formanii</i> (P4) <i>Grevillea erectiloba</i> (P4) ● <i>Grevillea georgeana</i> (P3) 	Mount Manning Range vegetation complex (banded ironstone formation) P1	35
Northern Yerilgee Hills, Menzies (Markey and Dillon 2011)	Sep 2007	51	183	1	-	<ul style="list-style-type: none"> <i>Austrostipa blackii</i> (P3) ● <i>Banksia arborea</i> (P4) <i>Grevillea erectiloba</i> (P4) ● <i>Spartothamnella</i> sp. Helena & Aurora Range (P.G. Armstrong 155-109) (P3) 	<p>Banded Ironstone Hills with <i>Dryandra arborea</i> P1</p> <p>Lake Giles vegetation complexes (banded ironstone formation) P1</p>	45

Study site	Date surveyed	Number of quadrats	Number of taxa	Number of weed taxa	Taxa currently listed as Threatened	Taxa currently listed as Priority Flora	PECs	Distance from study area (km)
Highclere Hills (Gibson and Lyons 2001b)	Spring 1996	45	242	25	-	■ <i>Stenanthemum newbeyi</i> (P3) <i>Tricoryne</i> sp. Morawa (P3)	Highclere Hills (Mayfield) vegetation complex (banded ironstone formation) P1	65
Johnston Range (Diemels), Menzies (Markey and Dillon 2011)	Aug 2007	50	179	3	<i>Ricinocarpos brevis</i>	<i>Austrostipa</i> cf. <i>blackii</i> (P3) <i>Baeckea</i> sp. Parker Range (M. Hislop & F. Hort MH 2968) (P3) ● <i>Banksia arborea</i> (P4) ● <i>Spartothamnella</i> sp. Helena & Aurora Range (P.G. Armstrong 155-109) (P3)	Die Hardy Range/Diemels vegetation complex (banded ironstone formation) P1	70
Mt Ida (Mt Mason) (Meissner and Owen 2008)	Sep 2007	50	87	1	-	-	-	90
South Illaara Greenstone Belt (Meissner and Wright 2010)	Sep 2008	50	145	0	<i>Ricinocarpos brevis</i>	● <i>Banksia arborea</i> (P4)	-	95
Parker Range (Gibson and Lyons 1998b)	Spring 1994	61	254	10	<i>Isopogon robustus</i>	<i>Acacia asepala</i> (P2) <i>Acacia concolorans</i> (P2) <i>Drummondita wilsonii</i> (P1) <i>Gnephosis intonsa</i> (P3) <i>Grevillea phillipsiana</i> (P1) <i>Hakea pendens</i> (P3) <i>Hemigenia obovata</i> (P1) <i>Euryomyrtus</i> sp. Parker Range (N. Gibson & M. Lyons 2269) (P1)	Parker Range vegetation complexes P3iii	125
Brooking Hills (Meissner and Owen 2010)	Aug 2007	50	104	1	-	-	-	130

Study site	Date surveyed	Number of quadrats	Number of taxa	Number of weed taxa	Taxa currently listed as Threatened	Taxa currently listed as Priority Flora	PECs	Distance from study area (km)
Cashmere Downs Range (Meissner <i>et al.</i> 2009)	Sep 2006	50	144	2	-	<i>Hemigenia exilis</i> (P4) <i>Phyllanthus baeckeoides</i> (P3)	Cashmere Downs vegetation complexes (banded ironstone formation) P1	140
Mount Richardson (Bulga) Range (Meissner <i>et al.</i> 2009)	Aug 2006	51	114	1	-	<i>Aluta teres</i> (P1) ■ <i>Beyeria lapidicola</i> (P1)	Bulga Downs/Perinvale/Walling/v egetation complexes (banded ironstone formation) P1	165
Bremer Range (Gibson and Lyons 1998a)	Spring 1994	64	267	8	<i>Allocasuarina globosa</i> <i>Eucalyptus cerasiformis</i>	<i>Acacia triculenta</i> (P3) <i>Eucalyptus georgei</i> subsp. <i>georgei</i> (P4) <i>Eucalyptus rhomboidea</i> (P4)	<i>Allocasuarina globosa</i> assemblages on greenstone rock (Esperance District) P1 Bremer Range vegetation complexes P1	180

Study site	Date surveyed	Number of quadrats	Number of taxa	Number of weed taxa	Taxa currently listed as Threatened	Taxa currently listed as Priority Flora	PECs	Distance from study area (km)
Middle and South Ironcap, Digger Rock and Hatter Hill (Gibson 2004)	Sep 1996	38	345	3	<i>Banksia sphaerocarpa</i> var. <i>dolichostyla</i> <i>Boronia revoluta</i> <i>Leucopogon marginatus</i>	<i>Acacia heterochroa</i> subsp. <i>robertii</i> (P2) <i>Acacia singula</i> (P3) <i>Acacia tetraeneura</i> (P1) <i>Banksia rufa</i> subsp. <i>flavescens</i> (P3) <i>Banksia viscida</i> (P3) <i>Bentleya diminuta</i> (P2) <i>Calamphoreus inflatus</i> (P4) <i>Eremophila racemosa</i> (P4) <i>Eucalyptus exigua</i> (P3) <i>Eucalyptus georgei</i> subsp. <i>fulgida</i> (P4) <i>Eucalyptus rugulata</i> (P4) <i>Eutaxia acanthoclada</i> (P3) <i>Grevillea insignis</i> subsp. <i>elliottii</i> (P3) <i>Grevillea lullfitzii</i> (P1) <i>Hibbertia axillibarba</i> (P1) <i>Hibbertia carinata</i> (P1) <i>Leucopogon</i> sp. Ironcaps (N. Gibson and K. Brown 3070)(P3) <i>Logania exilis</i> (P2) <i>Melaleuca agathosmoides</i> (P1) <i>Microcybe pauciflora</i> subsp. <i>grandis</i> (P1) <i>Mirbelia densiflora</i> (P3) <i>Phebalium brachycalyx</i> (P3) <i>Stenanthemum liberum</i> (P1) <i>Stylidium sejunctum</i> (P2)	Ironcap Hills vegetation complexes P3iii	235

* species count includes Western Australian Herbarium records in addition to survey results.

▲ denotes BIF endemic restricted to a single range ■ denotes BIF endemics occurring across several ranges ● denotes taxa with distributions centred on BIF (Gibson *et al.* 2007).

Table 5.2 – Families recorded in three surveys of J4 mine and haul road

Parameter	Number	List
Families recorded in all three surveys (spring 2012, autumn 2013 and spring 2013)	26	Amaranthaceae, Apocynaceae, Asteraceae, Casuarinaceae, Chenopodiaceae, Cupressaceae, Dilleniaceae, Ericaceae, Euphorbiaceae, Fabaceae, Goodeniaceae, Lamiaceae, Loranthaceae, Malvaceae, Myrtaceae, Phormiaceae, Pittosporaceae, Poaceae, Proteaceae, Rutaceae, Santalaceae, Sapindaceae, Scrophulariaceae, Solanaceae, Stylidiaceae, Thymelaeaceae
Families recorded only in spring (combined spring 2012 and spring 2013)	29	Asparagaceae, Aizoaceae, Apiaceae, Araliaceae, Asphodelaceae, Boraginaceae, Brassicaceae, Campanulaceae, Caryophyllaceae, Celastraceae, Chloanthaceae, Crassulaceae, Cyperaceae, Droseraceae, Frankeniaceae, Geraniaceae, Gyrostemonaceae, Haloragaceae, Hypoxidaceae, Juncaceae, Loganiaceae, Orchidaceae, Phyllanthaceae, Plantaginaceae, Polygalaceae, Portulacaceae, Urticaceae, Violaceae, Zygophyllaceae
Families recorded only in autumn (2012)	0	nil
Families recorded only in the current survey (spring 2013)	14	Aizoaceae, Araliaceae, Caryophyllaceae, Crassulaceae, Droseraceae, Frankeniaceae, Geraniaceae, Hypoxidaceae, Juncaceae, Loganiaceae, Phyllanthaceae, Plantaginaceae, Portulacaceae, Urticaceae

Table 5.3 – Genera recorded in three surveys of J4 mine and haul road

Parameter	Number	List
Genera recorded in all three surveys (spring 2012, autumn 2013 and spring 2013)	52	<i>Acacia, Allocasuarina, Alyxia, Amphipogon, Amyema, Aristida, Atriplex, Austrostipa, Beyeria, Callitris, Casuarina, Daviesia, Dianella, Dodonaea, Enchylaena, Eremophila, Eucalyptus, Euryomyrtus, Exocarpos, Grevillea, Hakea, Hibbertia, Homalocalyx, Keraudrenia, Leptomeria, Leptospermum, Leucopogon, Maireana, Melaleuca, Mirbelia, Monachather, Neurachne, Olearia, Pentameris, Phebalium, Philotheca, Pimelea, Pittosporum, Prostanthera, Ptilotus, Rhagodia, Rytidosperma, Santalum, Scaevola, Sclerolaena, Senna, Sida, Solanum, Stylidium, Thryptomene, Triodia, Westringia</i>
Genera recorded only in spring (combined spring 2012 and spring 2013)	112	<i>?Menkea, ?Senecio, Abutilon, Actinobole, Androcalva, Arthropodium, Asteridea, Baeckea, Bellida, Brachyscome, Brachysola, Brunonia, Bulbine, Calandrinia, Calocephalus, Calotis, Calytrix, Campanulaceae, Centaurea, Cephalipterum, Chamaexeros, Chamelaucium, Chrysocephalum, Cleretum, Codonocarpus, Comesperma, Commersonia, Coopernookia, Crassula, Cyanicula, Cyanostegia, Dampiera, Daucus, Dicrasytis, Dillwynia, Drosera, Duboisia, Eragrostis, Eriachne, Eriochiton, Erodium, Erymophyllum, Frankenia, Gilberta, Glischrocaryon, Gnephosis, Gompholobium, Goodenia, Gyrostemon, Halgania, Haloragis, Hannafordia, Hemiphora, Hyalosperma, Hybanthus, Hydrocotyle, Hypochaeris, Hypoxis, Indigofera, Isoetopsis, Isopogon, Juncus, Lachnostachys, Lawrencella, Lawrenzia, Lepidosperma, Leucochrysum, Lobelia, Lomandra, Lysiana, Malva, Marsdenia, Melichrus, Micromyrtus, Millotia, Nicotiana, Ozothamnus, Parietaria, Paspalidium, Persoonia, Petrophile, Phyllangium, Physopsis, Pityrodia, Plantago, Platysace, Podolepis, Podotheca, Poranthera, Pterostylis, Rhodanthe, Rinzia, Schoenia, Schoenus, Senecio, Sonchus, Sowerbaea, Stackhousia, Stellaria, Stenopetalum, Streptoglossa, Swainsona, Tecticornia, Templetonia, Thelymitra, Thysanotus, Trachymene, Velleia, Vittadinia, Vulpia, Waitzia, Zygophyllum</i>
Genera recorded only in autumn (2012)	3	<i>Chenopodium, Microcorys, Tripogon</i>
Genera recorded only in the current survey (spring 2013)	61	<i>?Menkea, ?Senecio, Abutilon, Actinobole, Androcalva, Arthropodium, Asteridea, Bellida, Calandrinia, Campanulaceae, Centaurea, Chrysocephalum, Cleretum, Crassula, Cyanicula, Daucus, Dicrasytis, Dillwynia, Drosera, Eragrostis, Eriachne, Eriochiton, Erodium, Frankenia, Gilberta, Gompholobium, Gyrostemon, Haloragis, Hemiphora, Hyalosperma, Hydrocotyle, Hypochaeris, Hypoxis, Indigofera, Isoetopsis, Isopogon, Juncus, Lawrenzia, Malva, Micromyrtus, Nicotiana, Parietaria, Paspalidium, Petrophile, Phyllangium, Physopsis, Pityrodia, Plantago, Podotheca, Poranthera, Pterostylis, Rhodanthe, Senecio, Sonchus, Sowerbaea, Stellaria, Streptoglossa, Swainsona, Tecticornia, Trachymene, Vulpia</i>

5.1.2 Conservation Significant Flora

The significance of the flora of the study area has been assessed at four spatial scales: national, state, regional and local.

No taxa listed under the EPBC Act or the WC Act have been recorded inside the disturbance area to date, and the study area does not provide suitable habitat for *Leucopogon spectabilis* or *Tetratheca aphylla* subsp. *aphylla*; which occur abundantly outside of the study area.

Regional significance addresses the representation of species and habitats at a biogeographical regional level. Priority Flora, species endemic to the Coolgardie region or species whose distributions are restricted or unknown are considered, in this report, to be of higher conservation significance. Six Priority Flora species recorded during the current survey have their distributions restricted to the Coolgardie bioregion: *Baeckea* sp. Bungalbin Hill, *Beyeria rostellata*, *Hibbertia lepidocalyx* subsp. *tuberculata*, *Leptospermum macgillivrayi*, *Neurachne annularis* and *Stenanthemum newbeyi*.

Fourteen Priority Flora taxa were recorded by *ecologia* during the current survey within the study area, of which five occur inside the disturbance area. The known distribution and abundance of these 14 taxa from Florabase (Western Australian Herbarium 1998-2013) and DPaW (Search reference 15-1013) as well as additional records from other regional surveys are compiled in Table 5.4.

Beyeria rostellata, a Priority 1, has been recorded at a single location in the study area, amounting to 15 individuals (Figure 4.2). None of these locations are inside the disturbance area. There are 14 records of this species listed at the Western Australian Herbarium, all within the Yilgarn Government Area. This species occupies slopes and summits with skeletal red sandy to clay soils on banded ironstone substrates.

The Priority 1 shrub, *Leptospermum macgillivrayi* was collected from three locations during the current survey yielding 65 individuals, all outside of the disturbance area (Figure 4.2). Previously, 10 populations had been recorded from the Coolgardie bioregion. This species tends to occur in open areas on the hilltops of BIF where interspecies competition is low. It is represented by a single previously known population within the conservation estate.

Acacia crenulata, a Priority 3 taxon, is observed in clay, sandy clay or yellow sand on rocky rises, granite outcrops and breakaways. A total of two individuals were observed from a single location in the study area, none of them inside the disturbance area (Figure 4.2). The Western Australian Herbarium had previously two populations of *A. crenulata* recorded, with most records in the border between the Avon Wheatbelt and Coolgardie and fewer records in Coolgardie, west of Kalgoorlie.

Baeckea sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586), a Priority 3 taxon with 21 previously known records restricted to the Coolgardie bioregion has had a significant increase in its known distribution, with 2,660 individuals recorded in 40 locations (Figure 4.3) recorded during this survey. This species was not recorded in the disturbance area. Within the J4 mine and haul road study area it was observed to occur in yellow-brown sand, laterite or gravel on moderately exposed flat sand plains.

Calytrix creswellii (here combined with *C. ?creswellii*), Priority 3, was recorded at three locations the study area totalling three individuals (Figure 4.2). Previously, 16 regional records of this species were found in the Murchison and Coolgardie bioregions with 13 previous records present within the conservation estate. This species was recorded on sandplains growing in yellow sand occasionally with lateritic gravel in low density.

Gompholobium cinereum, Priority 3, was recorded at one location in the study area with five individuals (Figure 4.2). This record was made outside of the disturbance area. *G. cinereum* has a wide distribution range that spans from north of Geraldton to west of Kalgoorlie. In the study area, it was observed in a clayey flat area.

The Priority 3 shrub, *Grevillea georgeana* has 47 previously known records in two distinct populations in the Coolgardie and Murchison bioregions. The Murchison population is not within any conservation estates. In 2012, *ecologia* recorded *Grevillea georgeana* in eight locations in the study area (*ecologia* 2013), where it was found to be common in small populations. *Grevillea georgeana* has been recorded in 621 locations with over 2,400 individuals regionally; of which two individuals in one location are inside the disturbance area (Figure 4.4). The distribution of this species indicates that its preferred habitat is on rocky hillslopes and hilltops.

Hibbertia lepidocalyx subsp. *tuberculata*, a Priority 3 taxon had six previously known records confined to the Coolgardie bioregion and within 50 km of the study area, as well as 140 locations recorded by *ecologia* in 2012 (*ecologia* 2013). To date, 23 locations of this species have been recorded in the study area, with just over 230 individuals; none of which are inside the disturbance area (Figure 4.5). This species was predominantly observed growing in populations of low density over a large geographical area on rocky hillslopes and hilltops.

Melichrus sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069), Priority 3, was collected at 6 locations outside the disturbance area and one location inside the disturbance area (Figure 4.2). It is listed at the Western Australian Herbarium with 23 locations spanning four bioregions. This taxon can be found growing on pale orange or yellow sandplains with sparse mixed woodland or shrublands.

The Priority 3 shrub, *Mirbelia ferricola* was collected from 3 locations during the current survey, all outside of the disturbance area (Figure 4.2). Previously, 24 populations had been recorded from the Coolgardie and Avon Wheatbelt bioregions. This species tends to occur in open areas on the hilltops of BIF where interspecies competition is low. Three quarters of the previously known populations are not within the conservation estate.

Neurachne annularis, Priority 3, was collected from 503 locations, with an estimated 190,402 individuals in the study area, of which 208 locations and 83,275 individuals were recorded inside the disturbance area (Figure 4.7). This species was the most abundant Priority species recorded in the current survey. The recorded populations and estimated individuals are an under-representation of the true extent of the taxon's abundance as it was so common that recording each location was unfeasible. This species was found, at times, to be the dominant ground stratum throughout much of the surveyed area, dominating habitats including: sandy and gravelly plains, rocky footslopes, midslopes and hilltops.

Stenanthemum newbeyi, Priority 3, was recorded at 17 locations in the study area (all outside of the disturbance area) in the current survey (Figure 4.8). According to the Western Australian Herbarium, the distribution of this species was restricted to the Coolgardie region with 32 previous records confined to an area within 80 km of the study area. This species was common throughout the rocky hilltops and hillslopes of the study area and was predominantly observed to be growing in populations of low density.

Banksia arborea is a widespread Priority 4 species with records scattered throughout the Coolgardie, Jarrah Forest and Murchison bioregions. It was widely recorded in the 2012 survey (*ecologia* 2013), with 160 individuals recorded from 45 locations, as well as in the spring 2013 survey. It is commonly found growing on the BIF hillslopes and hilltops as solitary trees usually greater than *ca.* 10-20 m apart. This species has been recorded in 45 locations (160 individuals) in the study area. Of these, 11 locations and 32 individuals were in the disturbance area (Figure 4.9).

Sowerbaea multicaulis, Priority 4, is known from 21 locations in the vicinity of the study area, and spanning four bioregions. Two individuals of this species were recorded by *ecologia* a single locations outside the disturbance area (Figure 4.2). The species favours yellow-brown sand as a habitat.

5.1.3 Novel/undescribed taxa

Despite several specimens being currently at the Western Australian Herbarium awaiting confirmation of identification, no novel taxa were identified during the course of this study.

Table 5.4 – Regional distribution of Priority Flora recorded during the current survey

Taxon	Status	No. of locations (and individuals) regionally [#]	No. of locations (and individuals) in disturbance area [#]	No. of vouchered records [^]	Bioregions in which recorded [^]	Records within Conservation Estate	Recorded abundance elsewhere [^]
<i>Acacia crenulata</i> - FABACEAE	P3	139 (1,380)	0	17	Avon Wheatbelt Coolgardie	2	Occasional
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - MYRTACEAE	P3	67 (2,820)	0	21	Coolgardie	5	Locally common in some areas
<i>Banksia arborea</i> - PROTEACEAE	P4	1,474 (4,428)	179 (575)	44	Coolgardie Jarrah Forest Murchison	0	Common
<i>Beyeria rostellata</i> - EUPHORBIACEAE	P1	26 (35)	0	14	Coolgardie	0	Locally abundant
<i>Calytrix creswellii</i> [‡] - MYRTACEAE	P1	139 (3,023)	4 (37)	16	Coolgardie Murchison	13	Locally common
<i>Gompholobium cinereum</i> - FABACEAE	P3	1 (5)	0	16	Avon Wheatbelt Coolgardie Geraldton Sandplains	0	Sparse
<i>Grevillea georgeana</i> - PROTEACEAE	P3	621 (2,404)	1 (2)	47	Coolgardie Murchison	0	Locally common
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - DILLENIACEAE	P3	756 (4,753)	0	7	Coolgardie	0	Locally common in some areas
<i>Leptospermum macgillivrayi</i> - MYRTACEAE	P1	4 (140)	0	10	Coolgardie	1	Locally common in some areas
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) - ERICACEAE	P3	16 (52)	1 (1)	23	Avon Wheatbelt Coolgardie Murchison Yalgoo	14	Locally common in some areas
<i>Mirbelia ferricola</i> - FABACEAE	P3	351 (1,380)	0	24	Avon Wheatbelt Coolgardie	0	Sparse
<i>Neurachne annularis</i> - POACEAE	P3	2,507 (>340,000)	464 (>99,700)	22	Coolgardie	0	Locally abundant
<i>Sowerbaea multicaulis</i> - ASPARAGACEAE	P4	9 (12)	0	21	Coolgardie Jarrah Forest Mallee Murchison	2	Locally common
<i>Stenanthemum newbeyi</i> - RHAMNACEAE	P3	3,235 (11,040)	0	32	Coolgardie	18	Common

[#]Values refer to data recorded in the current survey in combination with data supplied by Polaris.

[^] Source: Florabase (Western Australian Herbarium 1998-2013). Accessed on 30 October 2013.

[‡] Includes both *Calytrix creswellii* and *C. ?creswellii*.

5.1.4 Local and regional impacts on flora of conservation significance

Flora of conservation significance were mapped regionally and the percent of the locations and individuals inside the disturbance area calculated (Table 5.5). The impact assessment is based on the clearing footprint of the haul road, associated borrow pits and mining infrastructure (Figure 1.1). The impact of the J4 project is put in a regional context based on locality and population size records from the 27 regional reports. Due to inconsistencies in reporting locations and/or population size, this assessment is an estimate. Reliable data on individual plant numbers and populations are available for the two surveys which encompass the impact and study area (current study and Matiske 2013) and for the purpose of this assessment, both datasets were used to calculate the local impact.

Using a compilation of locations and counts of Priority Flora individuals available, the number of individuals within and outside of the disturbance area were calculated. The values obtained are biased by the survey effort; i.e. with greater survey effort, more Priority Flora individuals are likely to be recorded. All species of Priority Flora that were recorded inside the disturbance area also occur outside.

Fourteen Priority Flora species were recorded during this survey, of which five were present in the disturbance area. A review of the records in all available regional studies (Table 5.3) revealed that *Neurachne annularis* and *Banksia arborea* are facing an impact to 10.2 and 18.5%, of their recorded locations, respectively. The impacts to the three other Priority Flora species recorded inside the disturbance area are lower: an impact of 6.3% to the number of locations of *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069); an impact of 2.9% to the locations of *Calytrix creswellii*; and 0.2% to *Grevillea georgeana*. Nine of the 14 recorded Priority Flora species were recorded regionally, but not within the disturbance area: *Acacia crenulata* (P3), *Baeckea* sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586), *Beyeria rostellata* (P1), *Gompholobium cinereum* (P3), *Hibbertia lepidocalyx* subsp. *tuberculata* (P3), *Leptospermum macgillivrayi* (P1), *Mirbelia ferricola* (P3), *Sowerbaea multicaulis* (P4) and *Stenanthemum newbeyi* (P3).

Table 5.5 – Local and regional impacts on Priority Flora

Taxon	ecologia and Mattiske (2013) surveys						All regional surveys [#]					
	All individuals	Individuals in disturbance area	Percentage impacted	All locations	Locations in disturbance area	Percentage impacted	All individuals	Individuals in disturbance area	Percentage impacted	All locations	Locations in disturbance area	Percentage impacted
<i>Acacia crenulata</i> (P3)	10	0	-	5	0	-	1,380	0	-	139	0	-
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) (P1)	2,740	0	-	48	0	-	2,820	0	-	67	0	-
<i>Banksia arborea</i> (P4)	732	392	53.6%	188	101	53.7%	4,428	575	13.0%	1,747	179	10.2%
<i>Beyeria rostellata</i> (P1)	15	0	-	1	0	-	35	0	-	26	0	-
<i>Calytrix creswellii</i> (P3)	37	1	2.7%	20	1	5.0%	3023	37	1.2%	139	4	2.9%
<i>Gompholobium cinereum</i> (P3)	5	0	-	1	0	-	5	0	-	1	0	-
<i>Grevillea georgeana</i> (P3)	141	2	1.4%	39	1	2.6%	2,404	2	0.1%	621	1	0.2%
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> (P3)	224	0	-	24	0	-	4,753	0	-	756	0	-
<i>Leptospermum macgillivrayi</i>	65	0	-	3	0	-	140	0	-	4	0	-
<i>Melichrus</i> sp. Bungalbin Hill (P3)	26	1	3.8%	10	1	10.0%	52	1	1.9%	16	1	6.3%
<i>Mirbelia ferricola</i> (P3)	25	0	-	9	0	-	1380	0	-	351	0	-
<i>Neurachne annularis</i> (P3)	197,552	89,725	45.4%	646	337	52.2%	341,490	99,722	29.2%	2,507	464	18.5%
<i>Sowerbaea multicaulis</i> (P4)	2	0	-	1	0	-	12	0	-	9	0	-
<i>Stenanthemum newbeyi</i> (P3)	115	0	-	29	0	-	11,040	0	-	3,235	0	-

[^] Values presented for *Neurachne annularis* are under-estimated due to the dominance of this species in many areas and impossibility of recording all locations.

[#] Includes 27 surveys listed in Section 2.7 and additional spatial data supplied by CAD resources on 28 October 2013 as well as the current survey.

5.2 VEGETATION

5.2.1 Conservation Significant Vegetation

The significance of the vegetation of the study area has been assessed at four spatial scales: national, state, regional and local.

Vegetation of National and State Significance

No TECs listed under the Commonwealth EPBC Act occur in the vicinity of the study or disturbance area. Therefore, no vegetation units were considered significant at a national scale.

State significance refers to those features of the environment that are recognised under State legislation as being of importance to the Western Australian community, in particular, communities listed as TECs. No TECs listed under the Western Australian WC Act occur within 50 km the disturbance area.

Vegetation of Regional Significance

Broad scale mapping at the bioregion level (Shepherd *et al.* 2001) suggests that the vegetation associations present within the study area are only a small percentage of the regional distribution and are well represented elsewhere with the exception of unit 520 (Table 5.6). When vegetation units are defined at a higher level of resolution they are likely to be less broadly distributed and less well conserved.

Beard mapped the vegetation of Western Australia at a scale of 1:1,000,000 as it would have been prior to European settlement (Beard 1976). Subsequently this dataset was digitised and reinterpreted by the Department of Agriculture to provide an estimate of current distribution of these vegetation units (Shepherd *et al.* 2001). The spatial data provides an insight into the loss of vegetation as a result of European settlement, its preservation within the conservation estate and its natural abundance. It has been used in the evaluation of conservation priorities for vegetation by the Northern Agricultural Region Native Vegetation Management Plan (Department of Environment and Conservation 2008), the Australian National Resources Atlas Biodiversity Assessment (Department of Sustainability Environment Water Population and Communities 2009) and the Biodiversity Audit of Western Australia (Department of Conservation and Land Management 2003).

The extent of these units within the disturbance area, and within land managed by DPaW is provided in Table 5.4. Units 141, 435, 538 and 936 occur extensively in Western Australia, with units 141, 435 and 538 relatively well represented within conservation estates. The area of each unit within the study area compared to the current area in Western Australia ranges between 0.30 and 0.01% of their total extent. Thus they are well represented outside of the study area. Unit 520 (*Acacia* shrubland) is moderately scarce with an area of 392.4 km² within WA, but the potential impact of 0.3% of its total representation is minor.

Table 5.6 – Beard vegetation associations within the State and the disturbance area

Beard/Shepherd Vegetation Association		Extent in WA			Extent within Conservation Reserves (%)	Within the study area	
No.	Description	Pre-European Extent (km ²)	Current Extent (km ²)	% Remaining		Extent* (km ²)	% of Current Extent in WA
141	<i>Eucalyptus</i> woodland/ <i>Acacia</i> mixed open shrubland/ <i>Cephalopterum</i> mixed open forbland	6,768	2,503	37.0	5.8	5.6	0.2
435	<i>Acacia</i> closed shrubland / <i>Astroloma</i> mixed sparse heath	13,769.6	9,693.4	70.4	19.9	1.6	<0.1
520	<i>Acacia</i> shrubland	392.4	360.5	91.9	4.9	1.0	0.3

Beard/Shepherd Vegetation Association		Extent in WA			Extent within Conservation Reserves (%)	Within the study area	
No.	Description	Pre-European Extent (km ²)	Current Extent (km ²)	% Remaining		Extent* (km ²)	% of Current Extent in WA
538	<i>Casuarina</i> mixed isolated trees/ <i>Acacia</i> open shrubland/ <i>Helichrysum</i> open forbland	1,773	1,577	88.9	10.5	0.1	<0.1
936	<i>Casuarina</i> mixed isolated trees/ <i>Acacia</i> open shrubland/ <i>Helichrysum</i> open forbland	10,162.1	9,068.3	89.2	3.7	0.1	<0.1

*The current Native Vegetation Extent dataset may contain some polygon errors such as overlaps (Department of Agriculture and Food).

Ecological communities with insufficient information available to be considered a TEC, or which are rare but not currently threatened, are placed on the Priority list and referred to as PECs. PECs are generally considered to be of regional conservation significance. Nine PECs are known to occur within 50 km of the study area, with two PECs, the Mount Jackson Range vegetation complexes (banded ironstone formation) and the Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation) present within the disturbance area.

ecologia Vegetation Units Identified to be PECs

The study area intersects two Priority 1 PECs; the Mount Jackson Range vegetation complex (banded ironstone formation) at J4 in the west and the Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation) towards the end of the haul road in the east (Figure 2.5). Vegetation units mapped by *ecologia* presented in this report were compared with the known boundaries of the Mount Jackson Range PEC provided by DPaW (search: 151013). Based on this analysis, eight of the 30 vegetation units mapped by *ecologia* from the current survey are considered to be equivalent to elements of the Priority 1 PEC Mount Jackson Range vegetation complex (banded ironstone formation) (Table 5.7, Figure K.2 to K.6 in Appendix K). These eight vegetation units are also the main constituents of the supergroup, rocky midslopes/ridgetops as defined in Appendix K (Figure K.1) and Table 4.4). Of the PEC vegetation units, RMR2 and RMR8 stand to be the most affected (as a proportion of their current known extent) with 12.8% (17.4 ha) and 9.3% (17.7 ha) of the units present within the disturbance area. Collectively, the total area of the vegetation units identified to be constituents of the Mount Jackson Range vegetation complex (banded ironstone formation) PEC equates to 127.4 ha, or 8.0% of the PEC distribution within the study area.

Despite the overlap between the study area and the Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation) PEC buffer zone, this PEC was not matched to any of the vegetation units in the current study. The haul road intersects the buffer zone of this PEC but avoids the range itself, instead passing through a gap in the range, supporting vegetation typical of the surrounding plains. Aerial imagery was used to corroborate that the vegetation units of the study area were not a match to the Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation) PEC.

Table 5.7 – Vegetation Units Considered to be Components of the Mount Jackson PEC

<i>ecologia</i> Unit	Vegetation Description	Mapped area (ha)	Disturbance area (ha)	Percent impacted (%)
RMR1	<i>Brachychiton gregorii</i> low isolated trees, over <i>Eremophila georgei</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> sparse tussock grassland	46.4	1.0	2.2
RMR2	<i>Acacia incurvaneura</i> tall, sparse shrubland, over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> mid, sparse shrubland, over <i>Neurachne</i>	135.9	17.4	12.8

<i>ecologia</i> Unit	Vegetation Description	Mapped area (ha)	Disturbance area (ha)	Percent impacted (%)
	<i>annularis</i> sparse tussock grassland			
RMR3	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Calycopseplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland	24.3	0.0	0.0
RMR4	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Philotheca brucei</i> subsp. <i>brucei</i> , mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	155.6	8.4	5.4
RMR5B	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Ptilotus obovatus</i> and <i>Olearia muelleri</i> , low sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	764.1	63.8	8.4
RMR6	<i>Grevillea zygaloba</i> tall/mid, sparse shrubland, over <i>Dianella revoluta</i> var. <i>divaricata</i> sparse herbland, over <i>Neurachne annularis</i> tussock grassland	250.7	17.8	7.1
RMR7	<i>Eucalyptus longicornis</i> tall, open woodland, over <i>Grevillea zygaloba</i> mid, sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland	23.2	1.3	5.7
RMR8	<i>Eucalyptus corrugata</i> , tall, open woodland, over <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	190.4	17.7	9.3
Total PEC Area:		1,590.7	127.4	8.0

An impact analysis was also conducted on the Mount Jackson Range vegetation complex (banded ironstone formation) PEC extent within the disturbance area with and without the 500 m buffer supplied by DPaW as of September 2013 (Table 5.11). Regardless of which sized buffer was used in the analysis, the impact caused to the Mount Jackson Range vegetation complex (banded ironstone formation) PEC would not exceed 2.2% of its total extent.

Table 5.8 – DPaW Mt Jackson PEC Impact Analysis

Buffer	Total Area (ha)	Area Impacted (ha)	Percent Impacted (%)
500 m	294.6	13,221.0	2.2
No Buffer	116.7	7,072.7	1.7

Sheet Flow Dependent Vegetation

Groved and banded mulga communities growing on relatively flat plains are widely recognised as displaying patterns of surface water flow dependency. Sheet flow carries material (including seeds and other organic and inorganic debris) which is trapped by existing vegetation. This leads to the formation of a mosaic pattern of bands and groves of vegetation with relatively bare areas in between. Thus the development and retention of mulga bands and groves is directly dependent upon sheet flow.

No groved or banded mulga communities were identified as part of the survey. *Acacia incurvaneura* was recorded in vegetation unit RMR2 (*Acacia incurvaneura* tall, sparse shrubland, over *Eremophila latrobei* subsp. *latrobei* mid, sparse shrubland, over *Neurachne annularis* sparse tussock grassland), but this vegetation was observed to not be characteristic of groved or banded communities as it is present predominantly on rocky footslopes.

Vegetation of Local Significance

In a local context, vegetation can be considered significant if it is locally uncommon or provides habitats for species of local significance. Vegetation of local significance is not legislatively protected but is of conservation value if areas are restricted and do not occur outside the disturbance area.

Vegetation units RMR3 (24.3 ha) and RMR7 (23.2 ha) each represent less than 0.1% of vegetation communities mapped within the study area (Table 5.11). Although these units are likely extend beyond the study area boundary, they are expected to have a restricted range because they are confined to slopes and ridgetops of the BIF range. These vegetation types are therefore also considered to be of local significance.

Table 5.9 – Local extent of vegetation units within the study and disturbance areas

Vegetation code	Vegetation unit	Vegetation Description	Study area		Disturbance area	
			Area (ha)	% Total	Area (ha)	% Total
RMR1	BgEgPbbAe	<i>Brachychiton gregorii</i> low isolated trees, over <i>Eremophila georgei</i> and <i>Philotheca brucei</i> subsp. <i>brucei</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> sparse tussock grassland	46.4	0.1	1.0	0.1
RMR2	AiEIIa	<i>Acacia incurvaneura</i> tall, sparse shrubland, over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland	135.9	0.3	17.4	2.1
RMR3	AqCpMnNa	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Calycopeplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland	24.3	0.1	0.0	0.0
RMR4	AqPbbNa	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Philotheca brucei</i> subsp. <i>brucei</i> , mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	155.6	0.4	8.4	1.0
RMR5A	AeNa	<i>Acacia effusifolia</i> over <i>Neurachne annularis</i> tussock grassland	1,039.6	2.6	52.7	6.4
RMR5B	Asp.nPoOmNa	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Ptilotus obovatus</i> and <i>Olearia muelleri</i> , low sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	764.1	1.9	63.8	7.7
RMR6	GzDrdNa	<i>Grevillea zygaloba</i> tall/mid, sparse shrubland, over <i>Dianella revoluta</i> var. <i>divaricata</i> sparse herbland, over <i>Neurachne annularis</i> tussock grassland	250.7	0.6	17.8	2.1
RMR7	ElGzNa	<i>Eucalyptus longicornis</i> tall, open woodland, over <i>Grevillea zygaloba</i> mid, sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland	23.2	0.1	1.3	0.2
RMR8	EcAtSafNa	<i>Eucalyptus corrugata</i> , tall, open woodland, over <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	190.4	0.5	17.7	2.1
SF1	EsAvMtSdSd	<i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> , <i>Maireana trichoptera</i> and <i>Sclerolaena diacantha</i> low sparse shrubland <i>Sclerolaena drummondii</i>	1,663.0	4.2	3.4	0.4
SF2	ErAnAvAe	<i>Eucalyptus ravida</i> mid, woodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	984.3	2.5	24.6	3.0
SF3	EcEaSafAe	<i>Eucalyptus corrugata</i> mid, open woodland, over <i>Eremophila alternifolia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> , mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	1,209.83	3.0	55.5	6.7
SF4	EsEsAvAe	<i>Eucalyptus salubris</i> , tall woodland, over <i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland.	2,353.9	5.9	44.2	5.3

Vegetation code	Vegetation unit	Vegetation Description	Study area		Disturbance area	
			Area (ha)	% Total	Area (ha)	% Total
SF5	EsEsSafAe	<i>Eucalyptus salmonophloia</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	3,103.0	7.8	28.4	3.4
SF6	EcAsp.nEaAe	<i>Eucalyptus corrugata</i> mid, open woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) and <i>Exocarpos aphyllus</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	1,766.9	4.4	84.7	10.2
SF7	ElEsSafOmAeAt	<i>Eucalyptus longicornis</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> and/or <i>A. trichophylla</i> open tussock grassland	1,593.8	4.0	17.9	2.2
SGP1	Asp.nAnOmSf	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Atriplex nummularia</i> and <i>Olearia muelleri</i> mid sparse shrubland, over <i>Sclerolaena fusiformis</i> low, sparse shrubland	393.2	1.0	58.6	7.1
SGP2	Asp.nSafMgNa	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Maireana georgei</i> low sparse shrubland, over <i>Neurachne annularis</i> open hummock grassland	575.0	1.4	42.3	5.1
SGP3	EllAsp.nEddAe	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> mid, open mallee woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall sparse shrubland, over <i>Eremophila decipiens</i> subsp. <i>decipiens</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	3,001.3	7.5	37.6	4.5
SGP4	Asp.nPoAcAe	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, shrubland, over <i>Ptilotus obovatus</i> low, sparse shrubland, over <i>Aristida contorta</i> and <i>Austrostipa elegantissima</i> open tussock grassland	1,542.5	3.9	51.6	6.2
SGP5	OeWcTsAe	<i>Olearia exiguifolia</i> and <i>Westringia cephalantha</i> mid, sparse shrubland, over <i>Triodia scariosa</i> open hummock grassland and/or <i>Austrostipa elegantissima</i> open tussock grassland	939.9	2.4	19.8	2.4
SGP6	EsAeSsOmAe	<i>Eucalyptus sheathiana</i> mid, open woodland, over <i>Acacia erinacea</i> mid, sparse shrubland, over <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	1,119.7	2.8	28.3	3.4
SGP7	ArrPoMgAeAt	<i>Acacia ramulosa</i> var. <i>ramulosa</i> tall, shrubland, over <i>Ptilotus obovatus</i> and <i>Maireana georgei</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>A. trichophylla</i> open tussock grassland	229.8	0.6	0.0	0.0

Vegetation code	Vegetation unit	Vegetation Description	Study area		Disturbance area	
			Area (ha)	% Total	Area (ha)	% Total
YS1	AcAsBAcc	<i>Allocasuarina corniculata</i> low, open woodland and <i>Acacia sibina</i> tall, sparse shrubland, over <i>Baeckea elderiana</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	3,554.7	8.9	24.0	2.9
YS2	AeBsp.Bac	<i>Acacia effusifolia</i> tall, sparse shrubland, over <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586) low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	3,140.0	7.9	20.4	2.5
YS3	ArPcTuAcc	<i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	364.7	0.9	2.3	0.3
YS4	ArPcTuAcc2	<i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	2,894.5	7.2	29.7	3.6
YS5	AePcTuAcc	<i>Acacia effusifolia</i> mid, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> , low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	800.9	2.0	13.1	1.6
YS6	AcPcAcc	<i>Acacia coolgardiensis</i> mid shrubland, over <i>Phebalium canaliculatum</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	311.6	0.8	8.3	1.0
YS7	AaaArTuPc	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> low, open woodland, over <i>Acacia resinimarginea</i> tall shrubland, over <i>Thryptomene urceolaris</i> and <i>Phebalium canaliculatum</i> mid, open shrubland	5,802.0	14.5	55.7	6.7
TOTAL			39,975.5	100.0	830.4	100.0

Note: Blue shading highlights vegetation unit considered to be of local significance.

5.2.2 Comparison with nearby BIF surveys

To assess whether the vegetation units identified during the current survey are likely to occur more widely, they were compared to four other surveys conducted at a similar scale within 40 km of the study area. The four regional surveys identified to be the most relevant are:

- Helena and Aurora Range in spring of 2012 (*ecologia* 2013);
- Helena and Aurora Range in spring of 1995 (Gibson *et al.* 1997);
- Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) in July-September 1995 (Gibson and Lyons 2001a); and
- The unpublished report of the Die Hardy, Mt Jackson, Windarling and Bungalbin survey in August-September 2005 by Gibson and Yates (2005).

Quadrats from the current survey were analysed together with the combined quadrat data from the four listed surveys using an association matrix of the Bray-Curtis coefficient based on the presence of

perennial taxa found in more than one quadrat with the multivariate program PATN™. The resulting dendrogram (Appendix K, Figure K.2) represents an objective means of comparing like quadrats (floristic units) and hence like vegetation units. In Table 5.10, vegetation units from the current survey are aligned with floristic community types from three of the four surveys, the exception being the unpublished report of the Die Hardy, Mt Jackson, Windarling and Bungalbin for which only quadrat and not vegetation data was available.

ecologia conducted a flora and vegetation assessment of the Helena and Aurora Range in spring of 2012 (*ecologia* 2013). Nine vegetation units from the *ecologia* (2013) survey matched well within the combined statistical analysis with vegetation units described in the current survey. The matching units were predominantly vegetation communities that occupy the flat, sandy and gravelly plains of the *ecologia* 2013 survey and current survey. Vegetation units that were mapped on the hilltops and upper hillslopes by *ecologia* (2013) clustered together away from vegetation units found on hillslopes of the current survey. This indicates that the vegetation composition on the hilltops and upper hillslopes for the two surveys are quite dissimilar.

Gibson *et al.* (1997) also conducted a survey of the Helena and aurora range in 1995 in which 55 quadrats were used to define seven vegetation units. Eight vegetation units from the current survey were aligned with six vegetation units from the Gibson *et al.* (1997) survey (Table 5.10). This indicates that the units described by Gibson *et al.* (1997) are broader and, as a result, only loosely match units from the current survey, with few quadrats from their respective vegetation units from each survey aligning on the dendrogram (Appendix K).

In July-September 1995 Gibson and Lyons (2001a) conducted a survey of the Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills). Eight vegetation units were described from 53 quadrats completed during the survey, four of which match units from the current survey (Table 5.10).

Quadrats from the unpublished report of the Die Hardy, Mt Jackson, Windarling and Bungalbin survey in 2005 by Gibson and Yates (2005) were also analysed along with quadrats from the current survey (Appendix K). However, because there are no vegetation units published as yet, only quadrats can be compared in the analysis. Of the 20 quadrats completed at Mt Jackson, quadrats MJ15 and MJ16 were best aligned with vegetation unit RMR4 (*Acacia quadrimarginea* tall, sparse shrubland, over *Philothea brucei* subsp. *brucei*, mid, sparse shrubland, over *Neurachne annularis* tussock grassland).

All surveys in the analysis were conducted under similar seasonal conditions, utilising the same methodology. The data was homogenised by removing annual taxa and singletons to facilitate a meaningful multivariate analysis. Despite these efforts, sixteen of the 30 vegetation units defined in the current survey were not matched to vegetation units from the four regional surveys (Table 5.10). This suggests that these units may be specific assemblages of the J4 study area and are locally restricted.

Table 5.10 – Comparison of *ecologia* and regional vegetation units

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (<i>Gibson and Lyons</i> 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
YS7	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> low, open woodland, over <i>Acacia resinimarginea</i> tall shrubland, over <i>Thryptomene urceolaris</i> and <i>Phebalium canaliculatum</i> mid, open shrubland						
YS1	<i>Allocasuarina corniculata</i> low, open woodland and <i>Acacia sibina</i> tall, sparse shrubland, over <i>Baeckea elderiana</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland						
YS6	<i>Acacia coolgardiensis</i> mid shrubland, over <i>Phebalium canaliculatum</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland	<i>AceLspAcc</i>	<i>Acacia coolgardiensis</i> subsp. <i>effusa</i> tall open shrubland, over <i>Leucopogon</i> sp. Clyde Hill low sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> isolated tussock grassland				
YS2	<i>Acacia effusifolia</i> tall, sparse shrubland, over <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586) low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland						
YS5	<i>Acacia effusifolia</i> mid, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> , low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland						
RMR5A	<i>Acacia effusifolia</i> shrubs over <i>Neurachne annularis</i> sparse tussock						

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (<i>Gibson and Lyons</i> 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
	grassland						
RMR2	<i>Acacia incurvaneura</i> tall, sparse shrubland, over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland						
RMR3	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Calycopeplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland						
RMR4	<i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Philothea brucei</i> subsp. <i>brucei</i> , mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	EeeEgGzNa	Eucalyptus <i>ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Eremophila georgei</i> and <i>Grevillea zygoloba</i> mid sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland	2	Woodlands dominated by Eucalyptus <i>ebbanoensis</i> and/or <i>E. corrugata</i> or <i>E. capillosa</i> subsp. <i>capillosa</i> with <i>Alyxia buxifolia</i> and/or <i>Stenanthemum newbeyi</i> in understorey.	4	Eucalyptus <i>capillosa</i> subsp. <i>capillosa</i> or <i>E. capillosa</i> subsp. <i>polyclada</i> , over <i>Ptilotus helichrysoides</i>
YS3	<i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland			4	Generally dominated by <i>Acacia</i> spp. Or if dominated by eucalypts then with <i>Eremophila clarkei</i> and <i>Grevillea zygoloba</i> present. Almost complete lack of chenopod species		
YS4	<i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland						
SGP7	<i>Acacia ramulosa</i> var. <i>ramulosa</i> tall, shrubland, over <i>Ptilotus obovatus</i>					7	-

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (Gibson and Lyons 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
	and <i>Maireana georgei</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>A. trichophylla</i> open tussock grassland						
SGP1	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Atriplex nummularia</i> and <i>Olearia muelleri</i> mid sparse shrubland, over <i>Sclerolaena fusiformis</i> low, sparse shrubland						
RMR5	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, shrubland, over <i>Ptilotus obovatus</i> low, sparse shrubland, over <i>Aristida contorta</i> and <i>Austrostipa elegantissima</i> open tussock grassland						
SGP4	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Ptilotus obovatus</i> and <i>Olearia muelleri</i> , low sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	EeeNa	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Neurachne annularis</i> sparse tussock grassland	3	Dominated by <i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over <i>Neurachne annularis</i> , chenopods absent		
SGP2	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Maireana georgei</i> low sparse shrubland, over <i>Neurachne annularis</i> open hummock grassland	EcEeeMgPoAeNa	<i>Eucalyptus corrugata</i> and <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> mid open woodland, over <i>Maireana georgei</i> and <i>Ptilotus obovatus</i> low sparse shrubland over <i>Austrostipa elegantissima</i> sparse tussock grassland with or without <i>Neurachne annularis</i>	5a	<i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over chenopods and over <i>Neurachne annularis</i>		
RMR1	<i>Brachychiton gregorii</i> low isolated trees, over <i>Eremophila georgei</i> and <i>Philothea brucei</i> subsp. <i>brucei</i> mid, sparse shrubland, over <i>Austrostipa</i>						

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (Gibson and Lyons 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
	<i>elegantissima</i> sparse tussock grassland						
SF6	<i>Eucalyptus corrugata</i> mid, open woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) and <i>Exocarpos aphyllus</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	EeeEtEaEoaAeSs	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> or <i>Eucalyptus transcontinentalis</i> low open woodland, over <i>Exocarpos aphyllus</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> mid sparse shrubland over low <i>Olearia muelleri</i> and <i>Scaevola spinescens</i> sparse shrubland				
RMR8	<i>Eucalyptus corrugata</i> , tall, open woodland, over <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland	EcEeeOmNa	<i>Eucalyptus corrugata</i> and <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> mid open woodland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland	3	Dominated by <i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over <i>Neurachne annularis</i> , chenopods absent		
				5a	<i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> over chenopods and over <i>Neurachne annularis</i>		
SF3	<i>Eucalyptus corrugata</i> mid, open woodland, over <i>Eremophila alternifolia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> , mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland					3	<i>Eucalyptus transcontinentalis</i> and <i>E. clelandii</i>
SF7	<i>Eucalyptus longicornis</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> and/or <i>A. trichophylla</i> open tussock grassland					2	<i>Eucalyptus ravida</i> or <i>E. longicornis</i>
RMR7	<i>Eucalyptus longicornis</i> tall, open						

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (<i>Gibson and Lyons</i> 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
	woodland, over <i>Grevillea zygoloba</i> mid, sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland						
SGP3	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> mid, open mallee woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall sparse shrubland, over <i>Eremophila decipiens</i> subsp. <i>decipiens</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland	EeeHmAeNa	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> low open woodland, over <i>Hakea minyma</i> mid sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>Neurachne annularis</i> sparse tussock grassland	2	Woodlands dominated by <i>Eucalyptus ebbanoensis</i> and/or <i>E. corrugata</i> or <i>E. capillosa</i> subsp. <i>capillosa</i> with <i>Alyxia buxifolia</i> and/or <i>Stenanthemum newbeyi</i> in understorey.		
SF2	<i>Eucalyptus ravida</i> mid, woodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland						
SGP6	<i>Eucalyptus sheathiana</i> mid, open woodland, over <i>Acacia erinacea</i> mid, sparse shrubland, over <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland						
SF1	<i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> , <i>Maireana trichoptera</i> and <i>Sclerolaena diacantha</i> low sparse shrubland <i>Sclerolaena drummondii</i>	EsAvMtAe	<i>Eucalyptus salmonophloia</i> low open woodland, over <i>Atriplex vesicaria</i> and <i>Maireana triptera</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> isolated tussock grasses	1	Shrublands or woodlands not dominated by eucalypt species.		
SF4	<i>Eucalyptus salubris</i> , tall woodland, over <i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland.	EIEsEvAnAvAe	<i>Eucalyptus longicornis</i> or <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus vittata</i> low open woodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> mid/low sparse	5b	Eucalypt over chenopod shrubland	2	<i>Eucalyptus ravida</i> or <i>E. longicornis</i>

Current Survey		Helena and Aurora (<i>ecologia</i> 2013)		Helena and Aurora (<i>Gibson et al.</i> 1997)		Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) (<i>Gibson and Lyons</i> 2001a)	
Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description	Veg unit	Vegetation description
			shrubland, over <i>Austrostipa elegantissima</i> isolated tussock grassland				
SF5	<i>Eucalyptus salmonophloia</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland						
RMR6	<i>Grevillea zygaloba</i> tall/mid, sparse shrubland, over <i>Dianella revoluta</i> var. <i>divaricata</i> sparse herbland, over <i>Neurachne annularis</i> tussock grassland						
SGP5	<i>Olearia exiguifolia</i> and <i>Westringia cephalantha</i> mid, sparse shrubland, over <i>Triodia scariosa</i> open hummock grassland and/or <i>Austrostipa elegantissima</i> open tussock grassland						

5.2.3 Vegetation supergroups

Compared to other surveys conducted on BIF ranges (Table 5.1) with an average of *ca* 50 quadrats, the 281 quadrats conducted during the current survey is considered of high intensity. The high quadrat intensity increases the likelihood of capturing a higher diversity of vegetation associations at a fine scale. Because the floristics of each quadrat are compared when grouping quadrats to define vegetation units, surveys of high intensity often form fine scale localised vegetation units when compared to boarder scale surveys. This makes comparison of vegetation units between surveys of different scales problematic. In an attempt to counteract this, the 29 vegetation units were divided into four supergroups based on floristic composition, landform and their broader similarity position in the multivariate analysis. These supergroups lie within four broad categories most easily defined as vegetation associations occurring on:

1. Rocky midslopes/ridgetops;
2. Sandy floodplains;
3. Red sandy/gravelly plains; and
4. Yellow sandplains.

Division of the supergroups is depicted in Appendix K (Figure K.1).

For means of comparison the resultant dendrogram from the combined multivariate analysis between the current survey and the following four BIF surveys was also divided into the same four supergroups (Appendix K, Figure K.2):

- Helena and Aurora Range in spring of 2012 (*ecologia* 2013);
- Helena and Aurora Range in spring of 1995 (Gibson *et al.* 1997);
- Jaurdi Uplands (Hunt Range, Yendilberin and Watt Hills) in July-September 1995 (Gibson and Lyons 2001a); and
- The unpublished report of the Die Hardy, Mt Jackson, Windarling and Bungalbin survey in August-September 2005 by Gibson and Yates (2005).

The analysis revealed that two supergroups, sandy floodplains, and red sandy/gravelly plains consist of large, widespread vegetation associations. This observation can be made as many floristic units from four of the five surveys within the two supergroups are shown to be statistically similar within the dendrogram (Appendix K, Figure K.2). The exception being, the Die Hardy, Mt Jackson, Windarling and Bungalbin survey of which the floristic units were confined to the hillslopes and were not statistically similar. In particular, vegetation units SF1, SF2, SF4 and SGP3 from the current survey can be found within the Helena and Aurora Range surveys by *ecologia* (2013) and Gibson *et al.* (1997) and the survey of the Jaurdi Uplands by Gibson and Lyons (2001a).

Floristic units conducted on the BIF of each respective range from all five surveys fell within the rocky midslopes and ridgetops supergroup (Appendix K, Figure K.2). However, unlike the sandy floodplains, and red sandy and gravelly plains supergroups, floristic units from each survey generally clustered together in tight, statistically similar groups on the dendrogram and did not inter disperse between ranges (Appendix K, Figure J2). The exception being the Helena and Aurora Range surveys by *ecologia* (2013) and Gibson *et al.* (1997) which were of the same range and saw some dispersion of floristic units. This indicates that the vegetation associations of each range are somewhat unique to that range, even on a broad scale, and are not statistically comparable. This is a similar finding to the fine scale analysis conducted in section 5.2.2 where fine scale vegetation units on plains more readily matched vegetation units also found on plains in the regional surveys when compared to vegetation units found on hillslopes and ridgetops.

The final supergroup, yellow sandplains, was comprised almost entirely of floristic units from the current survey (Appendix K, Figure K.2) as currently, it is the only survey in the area to have reached this landform and has no comparable floristic units in the regional surveys.

5.2.4 Assessment of Impacts on Floristic Community Types

In the current survey, vegetation associations were mapped beyond the disturbance area (J4 mine and the associated haul road to Carina) to an extent of no greater than two kilometres from the nearest floristic quadrat from the current survey. The total area mapped (39,975.5 ha) represents an area over 40 times the size of the disturbance area (830.4 ha) (producing a proposed disturbance of 2.1% of the total study area). This allows assessments to be made of the consequence of clearing the disturbance area on particular vegetation units in a regional context. Table 5.11 shows the impact on each vegetation unit under the assumption that the disturbance area will be cleared in its entirety.

Table 5.11 – Assessment of Impacts on Vegetation Units

Vegetation code	Vegetation unit	PEC	Total Area Mapped (ha)	Proposed Disturbance (ha)	Proposed Disturbance (%)
RMR1	<i>BgEgPbbAe</i>	✓	46.4	1.0	2.2
RMR2	<i>AiEINa</i>	✓	135.9	17.4	12.8
RMR3	<i>AqCpMnNa</i>	✓	24.3	0.0	0.0
RMR4	<i>AqPbbNa</i>	✓	155.6	8.4	5.4
RMR5A	<i>AeNa</i>		1,039.6	52.7	5.1
RMR5B	<i>Asp.nPoOmNa</i>	✓	764.1	63.8	8.4
RMR6	<i>GzDrdNa</i>	✓	250.7	17.8	7.1
RMR7	<i>ElGzNa</i>	✓	23.2	1.3	5.7
RMR8	<i>EcAtSafNa</i>	✓	190.4	17.7	9.3
SF1	<i>EsAvMtSdSd</i>		1,663.0	3.4	0.2
SF2	<i>ErAnAvAe</i>		984.3	24.5	2.5
SF3	<i>EcEaSafAe</i>		1,209.8	55.5	4.6
SF4	<i>EsEsAvAe</i>		2,353.9	44.2	1.9
SF5	<i>EsEsSafAe</i>		3,103.0	28.4	0.9
SF6	<i>EcAsp.nEaAe</i>		1,766.9	84.7	4.8
SF7	<i>ElEsSafOmAeAt</i>		1,593.8	17.9	1.1
SGP1	<i>Asp.nAnOmSf</i>		393.2	58.6	14.9
SGP2	<i>Asp.nSafMgNa</i>		575.0	42.3	7.4
SGP3	<i>ElIAsp.nEddAe</i>		3,001.3	37.6	1.3
SGP4	<i>Asp.nPoAcAe</i>		1,542.5	51.6	3.4
SGP5	<i>OeWcTsAe</i>		939.9	19.8	2.1
SGP6	<i>EsAeSsOmAe</i>		1,119.7	28.3	2.5
SGP7	<i>ArrPoMgAeAt</i>		229.8	0.0	0.0
YS1	<i>AcAsBAcc</i>		3,554.7	24.0	0.7
YS2	<i>AeBsp.Bac</i>		3,140.0	20.4	0.7
YS3	<i>ArPcTuAcc</i>		364.7	2.3	0.6
YS4	<i>ArPcTuAcc2</i>		2,894.5	29.7	1.0
YS5	<i>AePcTuAcc</i>		800.9	13.1	1.6
YS6	<i>AcPcAcc</i>		311.6	8.3	2.7
YS7	<i>AaaArTuPc</i>		5,802.9	55.7	1.0
	Total		39,975.5	830.4	2.1

Vegetation unit SGP1 has the highest proportional impact, with a proposed disturbance area of 58.6 ha (14.9% of the total area of the vegetation unit). Vegetation unit RMR2, located on BIF, has the next highest proportion of impact; an area of 17.4 ha (12.8% of the total area of the vegetation unit). Vegetation unit RMR8, also located on BIF, has 9.3% proportion of impact; an area of 17.7 ha. Although SGP1 and RMR2 represent the highest proportional impacts, if the proposed disturbance areas were to be cleared in entirety, the currently known area of these two vegetation units remaining would be 334.5 ha and 118.5 ha, respectively. All other proposed disturbance of vegetation units is less than 8.5% of the total area of the vegetation unit in the study area. The sandy floodplain unit SF6, has the largest disturbance area (84.7 ha), but is also relatively well represented

outside the disturbance area (1,766.9 ha), with a total of 4.8% of the known extent of the vegetation impacted. Vegetation units RMR3 and SGP7 do not occur within the disturbance area and will not be impacted.

The degree to which Priority Flora taxa are restricted to particular vegetation units was also assessed (Table 5.12). Priority Flora from all 27 referenced surveys as well as flora recorded during the current survey that fall within the study area were assessed for their specificity to vegetation units also recorded in the current survey. In total, 28 of the 29 vegetation communities described in this study are associated with Priority Flora species.

Beyeria rostellata (P1), *Gompholobium cinereum* (P3), *Leptospermum macgillivrayi* (P1) *Mirbelia ferricola* (P3) and *Sowerbaea multicaulis* (P3) were each observed from a low number of locations across multiple vegetation units in the current survey. Therefore, due to this small sample, the habitat specificity of these taxa is difficult to establish and cannot be accurately assessed.

Baeckea sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586) (P3) and *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (P3) each show a high specificity to vegetation units YS5 and YS4, on yellow sandplains with 66 and 60% of the individuals recorded during this survey present within these units, respectively. Similarly, *Grevillea georgeana* (P3), *Hibbertia lepidocalyx* subsp. *tuberculata* (P3) and *Stenanthemum newbeyi* (P3) show a high specificity of individuals to vegetation units SGP7 (61%), RMR1 (91%) and RMR4 (63%) respectively.

Neurachne annularis (P3) was collected from 23 vegetation units. Although *Neurachne annularis* is widely distributed throughout the area, most of the locations and individuals of this species were recorded fairly evenly from five *Acacia* shrublands (Figure 4.7). From this data, we conclude that *N. annularis* exhibits a slight specificity for this type of vegetation unit, being rarer in *Eucalyptus* woodlands. The assessment of specificity of *N. annularis* is further complicated by the difficulty in recording its occurrence due to the dominance of this species. The values presented in this report for number of locations and individuals are believed to be underestimated.

Twenty-nine of the 30 vegetation units were found to be associated with Priority Flora, four of which contain solely *Neurachne annularis* (P3). Vegetation units RMR4, RMR1 and RMR6 which are all located on the upper rocky mid slopes and hilltops of the study area were found to harbour the most Priority Flora records, each with six Priority Flora species recorded during the survey located within each unit. Collectively, these three vegetation units contain for eight of the priority flora recorded during this survey: *Banksia arborea* (P4), *Grevillea georgeana* (P3), *Hibbertia lepidocalyx* subsp. *tuberculata* (P3), *Leptospermum macgillivrayi* (P1) *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (P3), *Mirbelia ferricola* (P3) *Neurachne annularis* (P3) and *Stenanthemum newbeyi* (P3).

Table 5.12 – Assessment of specificity of Priority Flora species to J4 mine and haul road vegetation units

Taxa	Status	Vegetation Code	Vegetation Units	Individuals		Populations	
				No. of Individuals	% of this Taxon	No. of Populations	% of this Taxon
<i>Acacia crenulata</i>	P3	YS1	AcAsBAcc	2	28.6	1	16.7
		RMR2	AiEllNa	3	42.9	3	50.0
		SF6	EcAsp.nEaAe	1	14.3	1	16.7
		SF5	EsEsSafAe	1	14.3	1	16.7
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586)	P3	YS7	AaaArTuPc	293	10.5	18	29.0
		YS6	AcPcAcc	70	2.5	4	6.5
		YS2	AeBsp.Bac	56	2.0	11	17.7
		YS5	AePcTuAcc	1,842	66.2	14	22.6
		YS3	ArPcTuAcc	30	1.1	1	1.6
		YS4	ArPcTuAcc2	189	6.8	12	19.4
		SGP6	EsAeSsOmAe	2	0.1	1	1.6
		SGP5	OeWcTsAe	300	10.8	1	1.6
<i>Banksia arborea</i>	P4	RMR2	AiEllNa	104	14.1	35	15.1
		RMR4	AqPbbNa	293	39.6	100	43.1
		RMR5B	Asp.nPoOmNa	8	1.1	2	0.9
		SGP2	Asp.nSafMgNa	1	0.1	1	0.4
		RMR1	BgEgPbbAe	76	10.3	19	8.2
		RMR8	EcAtSafNa	25	3.4	13	5.6
		RMR7	ElGzNa	19	2.6	7	3.0
		SF4	EsEsAvAe	25	3.4	8	3.4
<i>Beyeria rostellata</i>	P1	RMR3	AqCpMnNa	16	100.0	2	100.0
<i>Calytrix ?creswellii</i>	P1	YS7	AaaArTuPc	28	37.3	4	44.4
		YS1	AcAsBAcc	46	61.3	4	44.4
		YS5	AePcTuAcc	1	1.3	1	11.1
<i>Gompholobium cinereum</i>	P3	YS4	ArPcTuAcc2	5	100.0	1	100.0
<i>Grevillea georgeana</i>	P3	RMR2	AiEllNa	3	6.1	2	16.7
		SGP7	ArrPoMgAeAt	30	61.2	2	16.7
		RMR1	BgEgPbbAe	10	20.4	4	33.3
		SGP3	EllAsp.nEddAe	3	6.1	3	25.0
		RMR6	GzDrdNa	3	6.1	1	8.3
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	P3	RMR3	AqCpMnNa	7	3.0	3	11.1
		RMR4	AqPbbNa	2	0.9	1	3.7
		RMR5B	Asp.nPoOmNa	5	2.1	1	3.7

Taxa	Status	Vegetation Code	Vegetation Units	Individuals		Populations	
				No. of Individuals	% of this Taxon	No. of Populations	% of this Taxon
<i>Leptospermum macgillivrayi</i>	P1	RMR1	<i>BgEgPbbAe</i>	211	90.6	19	70.4
		RMR6	<i>GzDrdNa</i>	8	3.4	3	11.1
		RMR4	<i>AqPbbNa</i>	80	57.1	2	50.0
		RMR5A	<i>AeNa</i>	60	42.9	2	50.0
		YS7	<i>AaaArTuPc</i>	2	8.0	2	16.7
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)	P3	YS1	<i>AcAsBAcc</i>	1	4.0	1	8.3
		YS5	<i>AePcTuAcc</i>	5	20.0	1	8.3
		YS3	<i>ArPcTuAcc</i>	1	4.0	1	8.3
		YS4	<i>ArPcTuAcc2</i>	15	60.0	6	50.0
		RMR1	<i>BgEgPbbAe</i>	1	4.0	1	8.3
		RMR3	<i>AqCpMnNa</i>	4	66.7	2	50.0
<i>Mirbelia ferricola</i>	P3	RMR4	<i>AqPbbNa</i>	1	16.7	1	25.0
		RMR6	<i>GzDrdNa</i>	1	16.7	1	25.0
		YS6	<i>AcPcAcc</i>	506	0.2	3	0.4
<i>Neurachne annularis</i>	P3	YS2	<i>AeBsp.Bac</i>	20	0.0	1	0.1
		RMR5A	<i>AeNa</i>	17,020	8.1	24	3.0
		YS5	<i>AePcTuAcc</i>	1,120	0.5	4	0.5
		RMR2	<i>AiEllNa</i>	16,903	8.1	77	9.8
		RMR3	<i>AqCpMnNa</i>	1,935	0.9	9	1.1
		RMR4	<i>AqPbbNa</i>	11,213	5.3	91	11.5
		SGP7	<i>ArrPoMgAeAt</i>	1,510	0.7	13	1.6
		SGP1	<i>Asp.nAnOmSf</i>	20,326	9.7	98	12.4
		RMR5B	<i>Asp.nPoOmNa</i>	29,721	14.2	76	9.6
		SGP4	<i>Asp.nPoAcAe</i>	12,190	5.8	29	3.7
		SGP2	<i>Asp.nSafMgNa</i>	14,666	7.0	55	7.0
		RMR1	<i>BgEgPbbAe</i>	4,720	2.3	15	1.9
		SF6	<i>EcAsp.nEaAe</i>	2,320	1.1	24	3.0
		RMR8	<i>EcAtSafNa</i>	31,335	14.9	108	13.7
		SF3	<i>EcEaSafAe</i>	15,134	7.2	27	3.4
		RMR7	<i>ElGzNa</i>	1,342	0.6	11	1.4
		SGP3	<i>EllAsp.nEddAe</i>	4,452	2.1	18	2.3
		SF2	<i>ErAnAvAe</i>	3,650	1.7	11	1.4
		SGP6	<i>EsAeSsOmAe</i>	1,857	0.9	15	1.9
		SF1	<i>EsAvMtSdSd</i>	520	0.2	2	0.3
		SF4	<i>EsEsAvAe</i>	1,788	0.9	10	1.3
SF5	<i>EsEsSafAe</i>	1,050	0.5	2	0.3		

Taxa	Status	Vegetation Code	Vegetation Units	Individuals		Populations	
				No. of Individuals	% of this Taxon	No. of Populations	% of this Taxon
		RMR6	<i>GzDrdNa</i>	14,274	6.8	65	8.2
<i>Sowerbaea multicaulis</i>	P4	YS7	<i>AaaArTuPc</i>	2	100.0	1	100.0
<i>Stenanthemum newbeyi</i>	P3	RMR3	<i>AqCpMnNa</i>	2	10.5	2	28.6
		RMR4	<i>AqPbbNa</i>	12	63.2	2	28.6
		RMR5B	<i>Asp.nPoOmNa</i>	3	15.8	1	14.3
		RMR1	<i>BgEgPbbAe</i>	1	5.3	1	14.3
		RMR6	<i>GzDrdNa</i>	1	5.3	1	14.3

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6 CONCLUSIONS

6.1 SURVEY ADEQUACY

The effort expended in this survey was higher than is observed in most surveys in the BIF ranges. The average survey effort for BIF ranges is of 50 floristic quadrats per survey (although area surveyed is not often specified). This is reflected both in the number of species recorded (the highest in the region; Table 5.1) and the number of Priority Flora species recorded, second only to the survey of Middle and South Ironcap, Digger Rock and Hatter Hill (Gibson 2004).

The resurvey of quadrats previously established allowed for an increased number of taxa in the species inventory, as these quadrats were assessed for floristics in more than one season (the last survey being in spring 2012). Furthermore, the establishment of new quadrats closed any gaps that could have been present in the spatial distribution of quadrats, sample size for each floristically defined vegetation units and thorough assessment of the PEC Mount Jackson Range vegetation complexes.

Targeted searches were performed throughout the study area, focusing on the disturbance area, where transects were traversed in a fine grid to provide fine detail coverage of the ground. Outside the disturbance area, transects were places where suitable habitat for Priority Flora was present and in between quadrats.

Upon communication with DPaW, it was suggested that a minimum of 30% of the survey effort was placed outside of the disturbance area to provide context for the results obtained. In this survey, 83% of the floristic sampling units (quadrats) were placed outside of the disturbance area.

6.2 FLORA

A total of 359 vascular plant taxa were collected in this survey from 179 genera and 57 families.

No Threatened Flora species were recorded during the survey; however, 14 Priority Flora were recorded in the study area in the current study. Of the 14 Priority Flora recorded, nine were present only outside the disturbance area (*Acacia crenulata*; *Baeckea* sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586); *Beyeria rostellata*; *Gompholobium cinereum*; *Hibbertia lepidocalyx* subsp. *tuberculata*; *Leptospermum macgillivrayi*; *Mirbelia ferricola*; *Sowerbaea multicaulis*; and *Stenanthemum newbeyi*). The remaining five Priority Flora which occur both inside and outside the disturbance area were *Banksia arborea* (P4), *Calytrix ?creswellii* (P3), *Grevillea georgeana* (P3), *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) and *Neurachne annularis* (P3). An additional Priority Flora taxon, *Grevillea lissopleura*, has been recorded from the disturbance area in the past, but was not observed during this study. This species is thought to be a misidentification.

Ten range extensions were recorded in the study area; five range extensions of at least 100 km and five bridging extensions. None of the species recorded represent a new record for the Coolgardie bioregion.

6.3 VEGETATION

Thirty vegetation units were described and delineated within the current survey. Eight of the mapped vegetation units (all except one of those in the RMR supergroup) were considered to be components of the Priority 1 the Mount Jackson Range vegetation complex (banded ironstone formation) PEC.

Vegetation units RMR4 (155.6 ha), RMR1 (46.4 ha) and RMR6 (250.7 ha) which were all located on the upper rocky mid slopes and hilltops of the study area were found to support eight of the fourteen priority flora recorded during this survey.

Within the study area, the vegetation units that would be most affected by clearing of the disturbance area was SF6 (84.7 ha), but is relatively widespread outside the disturbance area

(1,766.8 ha). Of the PEC units, RMR5B has the highest impact area (63.8 ha), but is also relatively well represented outside the study area (764.1 ha). Vegetation units SGP1 and RMR8 represent the highest impact proportions (14.9% and 9.3% respectively). If the proposed disturbance areas were to be cleared in entirety, the area of these two vegetation units remaining would be 334.5 ha and 172.7 ha, respectively.

7 RECOMMENDATIONS

BIF ranges are of high conservation value, and the results of species richness and Priority Flora species recorded in the J4 mine and haul road corroborate this. There is, however, considerable scope to reduce the impact on the flora and vegetation values of the disturbance area by avoiding areas of highest conservation value; i.e. vegetation units delineated as the Priority 1 PEC Mount Jackson Range vegetation complex (banded ironstone formation); vegetation units of restricted distribution; and areas where there is denser occurrence of Priority Flora.

The following recommendations are suggested in order to minimise impacts:

- Limit clearing of vegetation to that which is absolutely necessary for safe operation of the project.
 - Vegetation units that are locally restricted (units SGP1 and RMR8).
 - Provided habitat for conservation significant flora (units RMR4, RMR1 and RMR6).
 - Vegetation units that form part of a PEC (units RMR1, RMR2, RMR3, RMR4, RMR5B, RMR6, RMR7 and RMR8) .
- Where possible, avoid clearing of Priority Flora.
 - Locations of Priority Flora that are identified to be of high importance.
 - Priority Flora species where clearing would remove a significant proportion of their known abundance.
- Placement of exclusion zones around:
 - Remnant Priority flora not directly affected by construction of mine infrastructure.
 - Remnant areas of vegetation units which have had a significant portion of their known extent cleared.
- Implement a weed hygiene strategy for clearing activities and the operations phase.
- Implement a dust management strategy for the clearing and operations phases.
- Ensure appropriate handling of cleared vegetation and topsoil for the purposes of potential rehabilitation activities.

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8 STUDY TEAM

The flora and vegetation assessment in this report was planned, coordinated, executed and reported by the following:

Project Staff and Qualifications		
Kellie Bauer-Simpson	B. Sci.	Manager Technical Services/Principal Ecologist
Renee Young	PhD (Botany)	Botany Team Leader/Senior Notanist
Matthew Macdonald	PhD (Botany)	Principal Ecologist
Mariana Campos	PhD (Botany)	Botanist
Andrew Craigie	PhD (Botany)	Taxonomist and Botanist
Chris Parker	B. Sci.	Botanist
Rachel Omodei	B. Sci. (Hons)	Botanist
Jessica Stingemore	B. Sci. (Hons)	Botanist
Cameron Mounsey	B. Sci. (Hons)	Botanist
Christina Birnbaum	PhD (Botany)	Botanist
Chad Hughes	B. Sci	Botanist
Cate Tauss	B. Sci	Botanist

The vegetation and flora assessment described in this report was conducted under the authorisation of the following licences issued by the DPaW:

Field Personnel	Licence to Take Flora for Scientific or Other Prescribed Purposes	
	Permit Number	Valid Until
Kellie Bauer-Simpson	SL 010 694	30/04/2014
Matthew Macdonald	SL 010 540	30/04/2014
Mariana Campos	SL 010 539	30/04/2014
Andrew Craigie	SL 010 544	30/04/2014
Chris Parker	SL 010 537	30/04/2014
Rachel Omodei	SL 010 696	30/04/2014
Jessica Stingemore	SL 010 703	30/04/2014
Cameron Mounsey	SL 010 695	30/04/2014
Christina Birnbaum	SL 010 702	30/04/2014
Chad Hughes	SL 010 698	30/04/2014
Cate Tauss	SL 010 710	30/04/2014
Permit to Take Flora for Scientific Purposes Within Calm Lands (Regulation 4)		
Location	Permit Number	Valid
Mt Manning – Helena – Aurora Range Conservation Park	CE004111	10 September – 30 November 2013

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9 REFERENCES

- Beard, J. S. 1975. The vegetation of the Pilbara region. Explanatory notes to map sheet 5 of vegetation survey of Western Australia: Pilbara. University of Western Australia Press, Perth.
- Beard, J. S. 1976. Vegetation survey of Western Australia - Murchison 1:1 000 000 vegetation series. University of Western Australia Press, Perth.
- Beard, J. S. 1990. Plant life of Western Australia. Kangaroo Press, Kenthurst.
- BOM. 2013. Bureau of Meteorology. Available at: <http://www.bom.gov.au>. Commonwealth of Australia, Canberra.
- BRS. 1991. Digital Atlas of Australian Soils. Spatial Dataset. Australian Soil Resource Information System. Bureau of Rural Sciences.
- CALM. 1999. Environmental Weed Strategy for Western Australia. Department of Conservation and Land Management, Government of Western Australia, Western Australia.
- CALM. 2005. Recommended Interim Protocol for Flora Surveys of Banded Ironstone Formations (BIF) of the Yilgarn Craton. Department of Conservation and Land Management, Government of Western Australia.
- Colwell, R. K. 2009. EstimateS: Statistical estimation of species richness and shared species from samples. Version 8. University of Connecticut, USA, Connecticut.
- Cowan, M., Graham, G., and McKenzie, N. 2001. Coolgardie 2 (COO2 - Southern Cross subregion). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002.
- DAFWA. 2007. Biosecurity and Agriculture Management Act 2007. As at 01 May 2013. Department of Agriculture and Food Western Australia. Government of Western Australia, South Perth.
- DAFWA. 2013. Western Australian Organism List (WAOL) - Declared pest list. Available at <http://www.biosecurity.wa.gov.au/organisms/export/PER-DP>. Department of Agriculture and Food Western Australia. Government of Western Australia., South Perth.
- DEC. 2005. Recommended Interim Protocol for Flora Surveys of Banded Ironstone Formations (BIF) of the Yilgarn Craton. Department of Environment and Conservation, Government of Western Australia.
- Department of Conservation and Land Management, ed. 2003. A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Perth, Western Australia.
- Department of Environment and Conservation. 2008. Native vegetation management plan: Northern Agricultural Region. Department of Environment and Conservation, Perth, Western Australia.
- Department of Environment and Conservation. 2012. Invasive Plant Prioritisation Process for DEC. Accessed 10th of August 2012. <http://dec.wa.gov.au/management-and-protection/plants/invasive-plants/invasive-plant-prioritisation-process.html>.
- Department of Environmental Protection. 2000. Bush Forever Volume 2: Directory of Bush Forever Sites. Western Australia, Department of Environment Protection, Perth.
- Department of Sustainability Environment Water Population and Communities. 2009. Biodiversity Assessment - Western Australia. Accessed November 2011. <http://www.anra.gov.au/topics/vegetation/assessment/wa/index.html>.
- DMP. 2007. Mineral Exploration/Rahabilitation Activities Guidelines. Department of Mines and Petroleum, Western Australia.

- DPaW. 2013. WA's threatened ecological communities. Available at: <http://dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>. Department of Parks and Wildlife. Government of Western Australia.
- DSEWPaC. 2009. National Parks and Reserves Spatial Database. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra.
- DSEWPaC. 2013. Weeds of National Significance (WoNS). Available at www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons. Australian Government Department of Sustainability, Environment, Water, Populations and Communities, Canberra.
- ecologia*. 2013. J5 and Bungalbin East Flora and Vegetation Phase 1. Unpublished report for Polaris Metals Pty Ltd. *ecologia* Environment.
- EPA. 2002. Position Statement No. 3. Terrestrial Biological Surveys as an Element of Biodiversity Protection. Environmental Protection Authority, Perth.
- EPA. 2004a. Environment Protection (Clearing of Native Vegetation) Regulations 2004. As at 17 April 2009. Environment Protection Authority. State Law Publisher, Western Australia.
- EPA. 2004b. Guidance for the Assessment of Environmental Factors. Guidance Statement 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia. Environmental Protection Authority, Western Australia.
- EPA. 2004c. Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia. Guidance for the Assessment of Environmental Factors No. 51. Environmental Protection Authority, Western Australia.
- ESCAVI. 2003. Australian Vegetation Attribute Manual: National Vegetation Information System (NVIS). Executive Steering Committee for Australian Vegetation Information System (ESCAVI), Australian Government Department of Environment and Heritage, Canberra.
- Gibson, N. 2004. Flora and vegetation of the Eastern Goldfields Ranges: Part 7. Middle and South Ironcap, Digger Rock and Hatter Hill. *Journal of the Royal Society of Western Australia*. 87:49-62.
- Gibson, N., Coates, D. J., and Thiele, K. R. 2007. Taxonomic research and the conservation of flora in the Yilgarn Banded Iron Formation ranges. *Nuytsia*. 17:1-12.
- Gibson, N. and Lyons, M. N. 1998a. Flora and Vegetation of the Eastern Goldfields Ranges: Part 2. Bremer Range. *Journal of the Royal Society of Western Australia*. 81:107-117.
- Gibson, N. and Lyons, M. N. 1998b. Flora and Vegetation of the Eastern Goldfields Ranges: Part 3. Parker Range. *Journal of the Royal Society of Western Australia*. 81:119-129.
- Gibson, N. and Lyons, M. N. 2001a. Flora and egetation of the Eastern Goldfields ranges: Part 5. Hunt Range, Yendilberin and Watt Hills. *Journal of the Royal Society of Western Australia*. 84:129-142.
- Gibson, N. and Lyons, M. N. 2001b. Flora and Vegetation of the Eastern Goldfields Ranges: Part 4. Highclere Hills. *Journal of the Royal Society of Western Australia*. 84:71-81.
- Gibson, N. and Lyons, M. N. 2001c. Flora and vegetation of the Eastern Goldfields Ranges: Part 5. Hunt Range, Yendilberin and Watt Hills. *Journal of the Royal Society of Western Australia*. 84:129-143.
- Gibson, N., Lyons, M. N., and Lepschi, B. J. 1997. Flora and vegetation of he eastern goldfields ranges, Part 1: Helena and Aurora Range. *CALMScience*. 2:231-246.
- Gibson, N. and Yates, C. 2005. Flora and egetation of the Eastern Goldfields ranges: Die Hardy Mt Jackson Windarling Bungalbin survey. unpublished report.

- Hussey, B. M. J., Keighery, G. J., Dodd, J., Lloyd, S. G., and Cousens, R. D. 2007. *Western Weeds*. Second Edition. The Plant Protection Society of Western Australia and Agriculture Western Australia, Victoria Park.
- Landgate. 2012. *Pastoral Leases of Western Australia Spatial Database*. Western Australian Land Information Authority, Government of Western Australia, Midland.
- Landgate. 2013. *Mining Tenements of Western Australia Spatial Database*. Western Australian Land Information Authority, Government of Western Australia, Midland.
- Markey, A. S. and Dillon, S. J. 2011. Flora and vegetation of the banded iron formations of the Yilgarn Craton: the Johnston Range, Menzies. *Conservation Science Western Australia*. 8:137-161.
- Mattiske. 2001. Review of vegetation on Portman Iron Ore proposed expansion areas - Koolyanobbing. Mattiske Consulting Pty Ltd.
- Mattiske. 2007a. Carina Chameleon Vela J4 Flora Interm Report. Mattiske Consulting Pty Ltd.
- Mattiske. 2007b. Flora and vegetation survey of drill hole sites in exploration tenement E77/842-I Bungalbin eastern prospect. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2007c. Flora and vegetation survey of drill hole sites in exploration tenement E77/1115 Carina prospect. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2007d. Flora and vegetation survey of drill hole sites in exploration tenements E77/1115 (Carina prospect) E77/946-1 (Chameleon prospect) E77/1076-1 (Vela prospect) E77/1097-1 (J4-Extension & Musca prospects) interim report. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2008a. Carina DH Flora E77-1115. Mattiske Consulting Pty Ltd.
- Mattiske. 2008b. Flora and vegetation survey of proposed drill hole sites in exploration tenement E77/842-I Jackson-5 prospect. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2008c. Flora and vegetation survey of the Carina exploration lease area. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2008d. Flora and vegetation survey of the proposed Carina transport route. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2009a. Carina Mine Tenement M77/1244A Declared Rare and Priority Flora Survey. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.,
- Mattiske. 2009b. Chameleon Flora and Vegetation E77-946-1. Mattiske Consulting Pty Ltd.
- Mattiske Consulting Pty Ltd. 2009c. Flora and vegetation survey of the Chameleon exploration lease area exploration tenement E77/946-1. Unpublished report for Polaris Metals NL.
- Mattiske. 2009d. Flora and vegetation survey of the proposed Carina transport route Carina mine to Mount Walton road siding. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2010. Flora and vegetation survey for the proposed Carina mine rail siding. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2011a. BC Exploration Camp Flora M77-1096. Mattiske Consulting Pty Ltd.
- Mattiske. 2011b. Flora and vegetation survey (infill) Carina and Chameleon prospects tenements E77/1275, E77/946 & E77/3946-1. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.

- Mattiske. 2011c. Flora and vegetation survey for a proposed power line corridor tenement I15/318. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2011d. Threatened and priority flora survey tenement M77/1096 proposed Bungalbin Central exploration camp. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2012a. Flora and vegetation survey for a proposed Carina mine accommodation village area and associated access route. Unpublished report for Polaris Metals NL. Mattiske consulting Pty Ltd.
- Mattiske. 2012b. Threatened and priority flora survey additional proposed drill hole locations tenement E77/1275: Hunt Ranges. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2012c. Threatened and priority flora survey Mount Walton road borrow pit locations. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2012d. Threatened and priority flora survey of the yellow sandplain vegetation - Mt Walton road. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2012e. Threatened and priority flora survey proposed drill hole locations tenement M77/1242-I and E77/1097-I J4 prospect. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2012f. Threatened and priority flora survey tenement M77/1261A Carina extended. Unpublished report for Polaris Metals NL. Mattiske Consulting Pty Ltd.
- Mattiske. 2013. Flora and vegetation survey of the Jackson 4 and Haul road. Unpublished report for Polaris Metals NL. Mattiske consulting Pty Ltd.
- McKenzie, N. L., May, J. E., and McKenna, S., eds. 2002. Bioregional Summary of the Biodiversity Audit for Western Australia. Department of Conservation and Land Management, Kensington, Western Australia.
- Meissner, R. and Owen, G. 2008. Flora and Vegetation of banded iron formations of the Yilgarn Craton: Mt Ida greenstone belt. *In preparation*.
- Meissner, R. and Owen, G. 2010. Flora and vegetation of the banded iron formations of the Yilgarn Craton: Brooking Hills area. *Conservation Science Western Australia*. 7:571-581.
- Meissner, R., Owen, G., and Bayliss, B. 2009. Flora and Vegetation of banded iron formations of the Yilgarn Craton: Mount Forrest - Mount Richardson Range. *Conservation Science Western Australia*. 7:377-389.
- Meissner, R. and Wright, J. 2010. Flora and vegetation of the banded iron formations of the Yilgarn Craton: south Illara Greenstone Belt. *Conservation Science Western Australia*. 7:605-616.
- Shepherd, D. P., Beeston, G. R., and Hopkins, A. J. M. 2001. Native vegetation in Western Australia: Extent, type and status. Technical Report 249. Department of Agriculture, South Perth, Western Australia.
- Western Australian Herbarium. 1998-2013. FloraBase - The Western Australian Flora. Government of Western Australia Department of Parks and Wildlife. Available at: <http://florabase.dpaw.wa.gov.au/>.
- Western Botanical. 2009. Flora and Vegetation of the Western Jackson Range (Mount Jackson Range), Western Australia. Unpublished report for Portman Iron Ore Ltd.

APPENDIX A CONSERVATION CATEGORIES

Table A.1 – Definition of codes for Threatened Ecological Communities

Code	Definition
PD: Presumed Totally Destroyed	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future. An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant
CR: Critically Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated. An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future.
EN: Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future. An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future.
VU: Vulnerable	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range. An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future.

Table A.2 – Definition of codes for Priority Ecological Communities (DPaW)

Code	Definition
P1: Priority One	Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or Pastoral lands, urban areas, active mineral leases) and for which current threats exist. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
P2: Priority Two	Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
P3: Priority Three	<p>(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:</p> <p>(ii) Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;</p> <p>(iii) Communities made up of large, and/or widespread occurrences that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.</p> <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.</p>
P4: Priority Four	<p>Ecological communities that are adequately known, Rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p> <p>Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.</p> <p>Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.</p> <p>Ecological communities that have been removed from the list of threatened communities during the past five years.</p>
P5: Priority Five	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Table A.3 – Definition of Threatened Flora Categories under the EPBC Act 1999 and WC Act 1950

Conservation Code	Definition
Extinct	A species is extinct if there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A species is categorised as extinct in the wild if it is only known to survive in cultivation, in captivity or as a naturalised population well outside its past range; or if it has not been recorded in its known/expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered	The species is facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	The species is likely to become extinct unless the circumstances and factors threatening its abundance, survival or evolutionary development cease to operate; or its numbers have been reduced to such a critical level, or its habitats have been so drastically reduced, that it is in immediate danger of extinction.
Vulnerable	Within the next 25 years, the species is likely to become endangered unless the circumstances and factors threatening its abundance, survival or evolutionary development cease to operate.
Conservation Dependent	The species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of five years.

Table A.4 – Definition of Threatened (Declared Rare) and Priority Flora Categories (DPaW)

Conservation Code	Definition
Threatened (DRF)	Declared Rare Flora-Extant Taxa. Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.
P1: Priority One	Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2: Priority Two	Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P3: Priority Three	Poorly Known Taxa. Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.
P4: Priority Four	Rare Taxa. Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

**APPENDIX B THREATENED AND PRIORITY FLORA RECORDS WITHIN 50
KM OF THE DISTURBANCE AREA**

Cons' Status	Taxon	Family	Source	Bio-region	Habitat (Western Australian Herbarium 2012)	Nearest Localities or Towns	Flowering Period	Likelihood of Occurrence
T	<i>Leucopogon spectabilis</i>	Ericaceae	DPaW, WB, E	COO	Shallow red-brown loam, ironstone. In banded ironstone rock crevices on exposed ridges.	Bungalbin Hill	Sep	Unlikely
T	<i>Ricinocarpos brevis</i>	Euphorbiaceae	M	COO, MUR	Steep rocky hillslopes, rock outcrops.	Windarling, Johnston Range	Jun-Jul	Unlikely
T	<i>Tetradthea aphylla</i> subsp. <i>aphylla</i>	Elaeocarpaceae	DPaW, WB, M, E, C	COO	Red-brown loam, sandy loam, banded ironstone. Crevices in cliffs and outcrops, slopes, valleys, ridges.	Bungalbin Hill, Helena and Aurora Range	Sep-Dec	Unlikely
T	<i>Tetradthea harperi</i>	Elaeocarpaceae	DPaW	COO	Stony loam on rocky outcrops and rock crevices.	Mt Jackson Range, Muddarning Hill	May-Nov	Unlikely
T	<i>Tetradthea paynterae</i>	Elaeocarpaceae	M	COO	Mid-upper slopes of rock crevices, ridges, cliffs and breakaways.	Die Hardy Range, Windarling Peak	Apr-Nov	Unlikely
P1	<i>Grevillea lissopleura</i>	Proteaceae	M	AW, COO, MAL	Stony loam on banded ironstone ridges.	Cheritons Find, Mt Holland	Aug	Recorded
P1	<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	Dilleniaceae	DPaW, WB, M, E	COO	Yellow-orange loam, ironstone gravel.	Menzies	-	Likely
P1	<i>Acacia adinophylla</i>	Fabaceae	DPaW, WB, M, E	COO	Stony loamy or sandy soils, clay. On ironstone ridges and undulating plains.	Helena and Aurora Range	Sep-Nov	Highly likely
P1	<i>Lepidosperma bungalbin</i>	Cyperaceae	DPaW, WB, E	COO	Red loam soils with banded ironstone rock and gravel. On steep mid-slopes.	Helena and Aurora Range	Jul	Highly likely
P1	<i>Leptospermum macgillivrayi</i>	Myrtaceae	M	AW, COO	Loam, deep decaying granite outcrops.	Mt Jackson, Die Hardy Range	Aug-Sep	Highly likely
P1	<i>Acacia</i> sp. <i>Bungalbin Hill</i> (J.J. Alford 1119)	Fabaceae	DPaW, WB, E	COO	Silty sandy loam, banded ironstone on hill slopes, cliffs and along ridges.	Helena and Aurora Range	Sep	Unlikely
P1	<i>Beyeria rostellata</i>	Euphorbiaceae	DPaW, WB	COO	Hillslope, S aspect, clayey silty sand with frequent outcropping of jasperite.	Koolyanobbing Range, Mt Jackson Range	-	Unlikely
P1	<i>Chamaelucium</i> sp. <i>Koolyanobbing</i> (V. Clarke 644)	Myrtaceae	DPaW	COO	Pale yellow sand soil with a pale yellow clay crust.	Bungalbin Hill, Helena and Aurora Range	Sep	Unlikely
P1	<i>Jacksonia jackson</i>	Fabaceae	DPaW, M	COO	Stony loam, clay, ironstone gravel on hills.	Marda, Jackson Range	Jul-Sep	Unlikely

Cons' Status	Taxon	Family	Source	Bio-region	Habitat (Western Australian Herbarium 2012)	Nearest Localities or Towns	Flowering Period	Likelihood of Occurrence
P1	<i>Leucopogon</i> sp. <i>Yellowdine</i> (M. Hislop & F. Hort MH 3194)	Ericaceae	DPaW	AW, COO	-	Yellowdine	-	Unlikely
P1	<i>Persoonia leucopogon</i>	Proteaceae	DPaW	AW, COO, MUR	Yellow sand or sandy clay.	Between Coolgardie & Laverton, Comet Vale, Menzies	Oct-Dec	Unlikely
P1	<i>Phebalium appressum</i>	Rutaceae	DPaW	COO	Yellow sandplain.	Mt Burges, near Mt Dimer	Jul	Unlikely
P2	<i>Spartothamnella puberula</i>	Lamiaceae	DPaW	AW, PIL	Rocky loam, sandy or skeletal soils, clay. On sandplains and hills.	Tom Price, Newman, Mt Meharry	Sep-Nov	Unlikely
P3	<i>Acacia crenulata</i>	Fabaceae	DPaW, M	AW, COO	Clay, sandy clay and yellow sand. On rock rises, granite outcrops and breakaways.	Marvel Loch, Coolgardie, Southern Cross	-	Recorded
P3	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi & L.A. Craven 4586)	Myrtaceae	DPaW, M, E	COO	Yellow-brown sand, laterite, gravel. On moderately exposed flat sand plains.	Bungalbin Hill, near Jackson Ranges	Nov	Recorded
P3	<i>Calytrix creswellii</i>	Myrtaceae	DPaW, M	COO, MUR	Yellow sand, sometimes with lateritic gravel, on sandplains.	Bungalbin Hill, Helena and Aurora Range, Mt Manning Range	Sep-Dec	Recorded
P3	<i>Melichrus</i> sp. <i>Bungalbin Hill</i> (F.H. & M.P. Mollemans 3069)	Ericaceae	DPaW, M	AW, COO, MUR, YAL	-	Helena and Aurora Range, Die Hardy Range, Kiralocka Stn., Jackson Range, Mt Dimer, Diemals Stn.	Jun-Jul	Recorded
P3	<i>Neurachne annularis</i>	Poaceae	DPaW, WB, M, E	COO	Shallow red-brown sandy loam, yellowish-red loam, sometimes with ironstone gravel or stones. Among rocks on tops, sides and bases of banded ironstone ranges.	Bungalbin Hill, Helena & Aurora Range, Mt Manning Range	-	Recorded
P3	<i>Stenanthemum newbeyi</i>	Rhamnaceae	DPaW, WB, M, E	COO	Clayey sand, clay or loam over laterite or ironstone, on hillslopes.	Marda, Bungalbin, Helena and Aurora Range, Jackson Range	Aug-Sep or Dec or Jan	Recorded
P3	<i>Acacia cylindrica</i>	Fabaceae	DPaW	AW, COO	Yellow/brown sand, gravelly soils. On undulating plains and flats.	Mount Jackson, Mt Marshall, Ennuin Stn.	Aug-Oct	Likely

Cons' Status	Taxon	Family	Source	Bio-region	Habitat (Western Australian Herbarium 2012)	Nearest Localities or Towns	Flowering Period	Likelihood of Occurrence
P3	<i>Acacia eremophila</i> var. <i>variabilis</i>	Fabaceae	M	AW, COO, GVD, MUR	Sand or sandy loam.	Plumridge Lakes, Sandy Desert, Lake Moore, Comet Vale	Sep	Likely
P3	<i>Grevillea georgeana</i>	Proteaceae	DPaW, WB, M, E	COO, MUR	Stony loam/clay on ironstone hilltops & slopes.	Menzies, Mt Correll, Die Hardy Range, Bungalbin-Koolyanobbing, Mayfield, Highclere Hills	Jan or Mar or Sep-Nov	Likely
P3	<i>Philotheca deserti</i> subsp. <i>brevifolia</i>	Rutaceae	DPaW	COO, MUR	Red sandy clay.	Diemals Stn., Walling Rock Stn., Windarling Peak	Sep	Likely
P3	<i>Spartothamnella</i> sp. <i>Helena & Aurora Range</i> (P.G. Armstrong 155-109)	Lamiaceae	DPaW, WB, M, E	AW, COO, MUR, YAL	Flat, dry orange sandy loam.	Menzies, Diemals Stn., Lake Giles BIF, Mt Finnerty, Helena and Aurora Range, West Jackson Range	-	Likely
P3	<i>Bossiaea</i> sp. <i>Jackson Range</i> (G. Cockerton & S. McNee LCS 13614)	Fabaceae	DPaW	AW, COO, YAL	Plains of dry white/grey sandy loam or red-brown silty clay loam.	Koolyanobbing, Paynes Find, Muckinbudin	-	Possible
P3	<i>Lepidium genistoides</i>	Brassicaceae	DPaW	AW, COO	Sandy loam.	Doodlakine, Koorda, Muckinbudin, Highclere Hills, Bullfinch	Sep-Oct	Possible
P3	<i>Lepidosperma ferricola</i>	Cyperaceae	DPaW, WB	COO	Well-drained stony loam, silty clay and banded ironstone. On rocky ledges, scree slopes, crevices and ravines.	Marda, Mt Manning Range, Helena and Aurora Range	-	Possible
P3	<i>Mirbelia ferricola</i>	Fabaceae	DPaW, WB, M, E	AW, COO	Skeletal orange-red loamy sand, on steep E aspect, near crest of range.	Helena and Aurora Range, Koolanooka Hills, Perenjori Hills, Mt Geraldine, Die Hardy Range	Sep	Possible
P3	<i>Philotheca coateana</i>	Rutaceae	DPaW, WB, E	COO, MUR	Red sand.	Marda, Pigeon Rocks, Mt Richardson, Windarling Peak	Aug-Sep	Possible
P3	<i>Styphelia</i> sp. <i>Bullfinch</i> (M. Hislop 3574)	Ericaceae	DPaW	COO, YAL	Stony orange sandy clay loam over exposed weathered granite ridge/breakaway.	Marda, Koolyanobbing, Western Jackson Range, Bullfinch	Apr-May	Possible

Cons' Status	Taxon	Family	Source	Bio-region	Habitat (Western Australian Herbarium 2012)	Nearest Localities or Towns	Flowering Period	Likelihood of Occurrence
P3	<i>Acacia formidabilis</i>	Fabaceae	M	AW, COO, YAL	Yellow or red/brown sand on undulating plains, hillsides.	Perenjori, Paynes Find, Southern Cross, Bungalbin Hill, Koolyanobbing, Wanarra	Aug-Sep	Unlikely
P3	<i>Astartea</i> sp. Bungalbin Hill (K.R. Newybey 8989)	Myrtaceae	DPaW, M	COO	Deep yellow sand on sandplains.	Bungalbin Hill, Helena and Aurora Range, Boorabbin, Koolyanobbing, Coolgardie	Sep-Dec or Mar	Unlikely
P3	<i>Austrostipa blackii</i>	Poaceae	DPaW, M	AW, COO, YAL	Very slightly rocky metabasalt outcrop with red-brown shallow sandy clay loam soils.	Coolgardie, Bullabuling, Mt Singleton, Goongarrie Hill, Bullfinch, Yandanoo Hills	Sep-Nov	Unlikely
P3	<i>Banksia lullfitzii</i>	Proteaceae	DPaW	AW, COO, ESP, MAL	Yellow sand on sandplains.	Marvel Loch, Koorarawalyee, Boorabbin, Koolyanobbing, Yellowdine	Mar-May	Unlikely
P3	<i>Gnephosis intonsa</i>	Asteraceae	DPaW	AW, COO, ESP, MAL, MUR	Red/brown clay on stony saline loam.	Marda, Mulline, Goongarrie Hill, North Ironcap, Mount Holland, Ora Banda, Lake Kopi, Bungalbin Hill	Sep-Oct	Unlikely
P3	<i>Homalocalyx grandiflorus</i>	Myrtaceae	DPaW, M	COO, MUR	Yellow sand on sandplains.	Comet Vale, Goongarrie Stn., Coolgardie, Bungalbin, Koolyanobbing	Oct-Dec	Unlikely
P3	<i>Labichea eremaea</i>	Fabaceae	DPaW	COO, GVD, MUR	Red sand.	Barrambie, Sandstone, Beacon	Aug-Sep	Unlikely
P3	<i>Phebalium drummondii</i>	Rutaceae	WB	AW, MAL	Gravelly sand or clayey soils. On flats, roadsides.	Southern Cross, Cunderdin, Dowerin, Hyden, Newdegate, Wongan Hills	Jul-Sep	Unlikely
P3	<i>Phlegmatospermum eremaeum</i>	Brassicaceae	DPaW	AW, COO, HAM, MAL, NUL	Stony loam.	Bruce Rock, Bungalbin Hill, Norseman, Lake King, Boorabbin	Aun or Aug-Oct	Unlikely

Cons' Status	Taxon	Family	Source	Bio-region	Habitat (Western Australian Herbarium 2012)	Nearest Localities or Towns	Flowering Period	Likelihood of Occurrence
P3	<i>Stylidium choreanthum</i>	Stylidiaceae	DPaW	AW, COO	White-yellow or red sand on plains.	Jaurdi Stn., Kambalda, Southern Cross, Bungalbin Hill, Helena and Aurora Range, Bullfinch	Sep-Nov	Unlikely
P3	<i>Verticordia mitodes</i>	Myrtaceae	DPaW	AW, COO	Yellow sand on undulating plains.	Koorarawalyee, Southern Cross, Bodallin, Boran, Chiddarcooping, Bungalbin Hill, Helena and Aurora Range, Moorine Rock	Oct-Dec or Jan	Unlikely
P4	<i>Banksia arborea</i>	Proteaceae	DPaW, WB, M, E	COO, JF, MUR	Stony loam on ironstone hills.	Marda, Johnston Range, Bungalbin, Helena and Aurora Range, Koolyanobbing, Die Hardy Range, Jaurdi Stn.	Mar-May or Sep-Oct	Recorded
P4	<i>Grevillea ?erectiloba</i>	Proteaceae	M	COO, MUR	Gravelly loam on lateritic ridges.	Menzies, Mt Jackson, Mt Dimer, Mt Manning, Mt Elvire, Bungalbin Hill	Sep-Oct	Recorded
P4	<i>Eremophila caerulea</i> subsp. <i>merrallii</i>	Scrophulariaceae	E	SW, COO, MAL	Sand, clay or loam on undulating plains.	Burra Rock, Marvel Loch, Southern Cross, Koolyanobbing, Mt Dimer, Kulin, Mt Manning, Bruce Rock	Oct-Dec	Possible
P4	<i>Grevillea erectiloba</i>	Proteaceae	DPaW, WB, M, E	COO, MUR	Gravelly loam on lateritic ridges.	Menzies, Mt Jackson, Mt Dimer, Mt Manning, Mt Elvire, Bungalbin Hill	Sep-Oct	Possible
P4	<i>Sowerbaea multicaulis</i>	Asparagaceae	DPaW	COO, JF, MAL, MUR	Yellow brown sand.	Southern Cross, Koolyanobbing, Boorabbin, Bullfinch, Coolgardie	Oct-Dec or Jan	Possible
P4	<i>Eucalyptus formanii</i>	Myrtaceae	DPaW, WB	COO, MUR, YAL	Red sand on ironstone slopes.	Mt Jackson, Die Hardy Range, Mt Geraldine, Mulline, Pigeon Rock, Windarling, Mt Dimer	Dec or Jan-Apr	Unlikely
P4	<i>Lepidosperma lyonsii</i>	Cyperaceae	M	COO	Pale orange skeletal sandy loam with banded ironstone gravel and rock, well-drained shallow stony loam with quarts. On gentle hill slopes and upper slopes of large hills.	Boorabbin, Meredin, Tammin, Menzies, Pingrup	-	Unlikely

APPENDIX C COORDINATES OF FLORA QUADRATS

Site	Easting	Northing	Dimensions	Botanist	Date
E301	731684	6647797	20 x 20 m	Matt Macdonald	6/09/2013
E302	731154	6648239	20 x 20 m	Matt Macdonald	6/09/2013
E303	730632	6648492	20 x 20 m	Matt Macdonald	6/09/2013
E304	734759	6646850	20 x 20 m	Chris Parker	8/09/2013
E305	735438	6646938	20 x 20 m	Chris Parker	8/09/2013
E306	737500	6644025	20 x 20 m	Mariana Campos	8/09/2013
E307	737754	6644844	20 x 20 m	Mariana Campos	8/09/2013
E308	738639	6644462	20 x 20 m	Mariana Campos	8/09/2013
E309	741995	6642458	20 x 20 m	Mariana Campos	8/09/2013
E310	742529	6642776	20 x 20 m	Mariana Campos	8/09/2013
E311	742333	6641765	20 x 20 m	Mariana Campos	8/09/2013
E312	733035	6641511	20 x 20 m	Chris Parker	9/09/2013
E313	738290	6634251	20 x 20 m	Andrew Craigie	9/09/2013
E314	739258	6632840	20 x 20 m	Andrew Craigie	9/09/2013
E315	741463	6630289	20 x 20 m	Mariana Campos	9/09/2013
E316	744035	6627227	20 x 20 m	Andrew Craigie	10/09/2013
E317	746965	6624788	20 x 20 m	Mariana Campos	9/09/2013
E319	748362	6621804	20 x 20 m	Rachel Omodei	10/09/2013
E320	761796	6621784	20 x 20 m	Matt Macdonald	12/09/2013
E321	763302	6621448	20 x 20 m	Matt Macdonald	12/09/2013
E322	768589	6621593	20 x 20 m	Mariana Campos	12/09/2013
E323	778071	6621000	20 x 20 m	Andrew Craigie	11/09/2013
E324	781955	6620809	20 x 20 m	Mariana Campos	11/09/2013
E325	783665	6620739	20 x 20 m	Mariana Campos	11/09/2013
E999	753181	6629962	20 x 20 m	Matt Macdonald	14/09/2013
Rockpool	781258	6621221	20 x 20 m	Andrew Craigie	10/09/2013
S001	729146	6648271	20 x 20 m	Matt Macdonald	6/09/2013
S002	729298	6648221	20 x 20 m	Matt Macdonald	6/09/2013
S003	729525	6648142	20 x 20 m	Matt Macdonald	6/09/2013
S004	729706	6648201	20 x 20 m	Matt Macdonald	6/09/2013
S005	755720	6621986	20 x 20 m	Jessica Stingemore	12/09/2013
S006	755947	6621885	20 x 20 m	Jessica Stingemore	12/09/2013
S007	755949	6622017	20 x 20 m	Jessica Stingemore	12/09/2013
S008	756013	6621683	20 x 20 m	Andrew Craigie	12/09/2013
S009	756701	6621588	20 x 20 m	Andrew Craigie	12/09/2013
S010	731656	6646968	20 x 20 m	Chris Parker	6/09/2013
S011	731813	6646782	20 x 20 m	Chris Parker	6/09/2013
S012	731946	6646751	20 x 20 m	Chris Parker	6/09/2013
S013	731235	6647342	20 x 20 m	Chris Parker	6/09/2013
S014	731466	6647154	20 x 20 m	Chris Parker	6/09/2013
S015	731402	6647227	20 x 20 m	Chris Parker	6/09/2013
S016	731463	6647293	20 x 20 m	Chris Parker	6/09/2013
S017	731499	6647216	20 x 20 m	Chris Parker	6/09/2013
S018	731564	6647107	20 x 20 m	Chris Parker	6/09/2013
S019	731801	6647311	20 x 20 m	Chris Parker	6/09/2013
S020	757608	6621554	20 x 20 m	Jessica Stingemore	12/09/2013
S021	732515	6641904	20 x 20 m	Rachel Omodei	9/09/2013
S022	732380	6642160	20 x 20 m	Chris Parker	9/09/2013
S023	732454	6642390	20 x 20 m	Rachel Omodei	9/09/2013
S024	732421	6642940	20 x 20 m	Rachel Omodei	9/09/2013
S025	732515	6642633	20 x 20 m	Chris Parker	9/09/2013
S026	732462	6643542	20 x 20 m	Chris Parker	9/09/2013
S027	732500	6643418	20 x 20 m	Chris Parker	9/09/2013
S028	732602	6643782	20 x 20 m	Jessica Stingemore	5/09/2013
S029	732640	6644061	20 x 20 m	Andrew Craigie	5/09/2013
S030	732640	6644337	20 x 20 m	Andrew Craigie	5/09/2013
S031	732622	6644625	20 x 20 m	Andrew Craigie	5/09/2013
S032	732524	6645673	20 x 20 m	Andrew Craigie	5/09/2013
S033	732653	6645038	20 x 20 m	Andrew Craigie	5/09/2013
S034	732635	6645314	20 x 20 m	Andrew Craigie	5/09/2013
S035	732654	6645911	20 x 20 m	Matt Macdonald	5/09/2013

Site	Easting	Northing	Dimensions	Botanist	Date
S036	732932	6645568	20 x 20 m	Andrew Craigie	5/09/2013
S037	732080	6646623	20 x 20 m	Matt Macdonald	5/09/2013
S038	732190	6646536	20 x 20 m	Matt Macdonald	5/09/2013
S039	732103	6646738	20 x 20 m	Chris Parker	6/09/2013
S040	732471	6646524	20 x 20 m	Matt Macdonald	5/09/2013
S041	732532	6646319	20 x 20 m	Matt Macdonald	5/09/2013
S042	732527	6646735	20 x 20 m	Chris Parker	8/09/2013
S043	732661	6646469	20 x 20 m	Matt Macdonald	5/09/2013
S044	732633	6646595	20 x 20 m	Matt Macdonald	5/09/2013
S045	732627	6646861	20 x 20 m	Jessica Stingemore	8/09/2013
S046	732837	6646215	20 x 20 m	Matt Macdonald	5/09/2013
S047	732833	6646398	20 x 20 m	Matt Macdonald	5/09/2013
S048	732846	6646699	20 x 20 m	Chris Parker	5/09/2013
S049	732960	6646871	20 x 20 m	Chris Parker	5/09/2013
S050	732213	6647536	20 x 20 m	Chris Parker	8/09/2013
S051	732759	6647129	20 x 20 m	Jessica Stingemore	8/09/2013
S052	732748	6647407	20 x 20 m	Chris Parker	5/09/2013
S053	788201	6620884	20 x 20 m	Chris Parker	10/09/2013
S054	788667	6620778	20 x 20 m	Chris Parker	10/09/2013
S055	758003	6621764	20 x 20 m	Jessica Stingemore	12/09/2013
S056	758356	6621781	20 x 20 m	Jessica Stingemore	12/09/2013
S057	758535	6621611	20 x 20 m	Jessica Stingemore	12/09/2013
S058	758630	6621931	20 x 20 m	Jessica Stingemore	13/09/2013
S059	758784	6621598	20 x 20 m	Jessica Stingemore	12/09/2013
S060	758783	6621905	20 x 20 m	Jessica Stingemore	13/09/2013
S061	758883	6621905	20 x 20 m	Rachel Omodei	13/09/2013
S062	758929	6621695	20 x 20 m	Rachel Omodei	13/09/2013
S063	733304	6645846	20 x 20 m	Andrew Craigie	5/09/2013
S064	733545	6645459	20 x 20 m	Andrew Craigie	5/09/2013
S065	733587	6645676	20 x 20 m	Andrew Craigie	5/09/2013
S066	733824	6645972	20 x 20 m	Mariana Campos; Andrew Craigie	5/09/2013
S067	733979	6645781	20 x 20 m	Andrew Craigie	5/09/2013
S068	733067	6646017	20 x 20 m	Andrew Craigie	5/09/2013
S069	733006	6646304	20 x 20 m	Matt Macdonald	5/09/2013
S070	733075	6646535	20 x 20 m	Chris Parker	5/09/2013
S071	733003	6646776	20 x 20 m	Chris Parker	5/09/2013
S072	733117	6646598	20 x 20 m	Chris Parker	5/09/2013
S073	733171	6646713	20 x 20 m	Chris Parker	5/09/2013
S074	733215	6646303	20 x 20 m	Mariana Campos	5/09/2013
S075	733333	6646055	20 x 20 m	Andrew Craigie	5/09/2013
S076	733363	6646179	20 x 20 m	Mariana Campos	5/09/2013
S077	733325	6646289	20 x 20 m	Mariana Campos	5/09/2013
S078	733307	6646441	20 x 20 m	Mariana Campos	6/09/2013
S079	733334	6646579	20 x 20 m	Mariana Campos	6/09/2013
S080	733445	6646049	20 x 20 m	Andrew Craigie	5/09/2013
S081	733492	6646234	20 x 20 m	Mariana Campos	5/09/2013
S082	733425	6646435	20 x 20 m	Mariana Campos	6/09/2013
S083	733494	6646831	20 x 20 m	Rachel Omodei	8/09/2013
S084	733540	6646193	20 x 20 m	Mariana Campos	5/09/2013
S085	733590	6646496	20 x 20 m	Mariana Campos	6/09/2013
S086	733691	6646006	20 x 20 m	Mariana Campos; Andrew Craigie	5/09/2013
S087	733687	6646315	20 x 20 m	Mariana Campos	5/09/2013
S088	733687	6646391	20 x 20 m	Mariana Campos	5/09/2013
S089	733632	6646699	20 x 20 m	Rachel Omodei	6/09/2013
S090	733762	6646120	20 x 20 m	Mariana Campos	5/09/2013
S091	733852	6646518	20 x 20 m	Mariana Campos	6/09/2013
S092	733803	6646991	20 x 20 m	Rachel Omodei	6/09/2013
S093	733956	6646111	20 x 20 m	Mariana Campos	5/09/2013
S094	733999	6646588	20 x 20 m	Rachel Omodei	6/09/2013
S095	733995	6646836	20 x 20 m	Andrew Craigie	6/09/2013
S096	733089	6647056	20 x 20 m	Chris Parker	5/09/2013

Site	Easting	Northing	Dimensions	Botanist	Date
S097	733094	6647182	20 x 20 m	Chris Parker	5/09/2013
S098	733473	6647112	20 x 20 m	Chris Parker	5/09/2013
S099	733426	6647309	20 x 20 m	Chris Parker	5/09/2013
S100	733802	6647381	20 x 20 m	Andrew Craigie	6/09/2013
S101	733993	6647108	20 x 20 m	Andrew Craigie	6/09/2013
S102	733930	6647300	20 x 20 m	Andrew Craigie	6/09/2013
S103	789066	6621002	20 x 20 m	Chris Parker	10/09/2013
S104	759599	6621830	20 x 20 m	Rachel Omodei	12/09/2013
S105	759788	6621789	20 x 20 m	Rachel Omodei	12/09/2013
S106	759877	6621831	20 x 20 m	Rachel Omodei	12/09/2013
S107	734127	6640411	20 x 20 m	Jessica Stingemore	9/09/2013
S108	734363	6640099	20 x 20 m	Jessica Stingemore	9/09/2013
S109	734027	6645542	20 x 20 m	Andrew Craigie	5/09/2013
S110	734083	6645991	20 x 20 m	Mariana Campos	6/09/2013
S111	734108	6645790	20 x 20 m	Mariana Campos	5/09/2013
S112	734290	6645921	20 x 20 m	Mariana Campos	5/09/2013
S113	734347	6645924	20 x 20 m	Mariana Campos	5/09/2013
S114	734058	6646268	20 x 20 m	Mariana Campos	5/09/2013
S115	734027	6646378	20 x 20 m	Mariana Campos	5/09/2013
S116	734034	6646676	20 x 20 m	Andrew Craigie	6/09/2013
S117	734002	6646951	20 x 20 m	Rachel Omodei	6/09/2013
S118	734002	6647195	20 x 20 m	Rachel Omodei	6/09/2013
S119	734082	6647355	20 x 20 m	Rachel Omodei	6/09/2013
S120	786655	6620717	20 x 20 m	Jessica Stingemore	10/09/2013
S122	786835	6620869	20 x 20 m	Jessica Stingemore	10/09/2013
S123	786969	6620962	20 x 20 m	Jessica Stingemore	10/09/2013
S124	760173	6621576	20 x 20 m	Rachel Omodei	12/09/2013
S125	760291	6621740	20 x 20 m	Rachel Omodei	12/09/2013
S126	734667	6639659	20 x 20 m	Jessica Stingemore	9/09/2013
S127	735318	6645436	20 x 20 m	Andrew Craigie	6/09/2013
S128	735395	6645556	20 x 20 m	Rachel Omodei	6/09/2013
S129	735539	6645729	20 x 20 m	Rachel Omodei	6/09/2013
S130	735629	6647381	20 x 20 m	Chris Parker	8/09/2013
S131	787324	6620926	20 x 20 m	Jessica Stingemore	10/09/2013
S132	735353	6638759	20 x 20 m	Jessica Stingemore	9/09/2013
S133	735780	6638116	20 x 20 m	Chad Hughes	9/09/2013
S134	736542	6644610	20 x 20 m	Rachel Omodei	6/09/2013
S135	736509	6644753	20 x 20 m	Rachel Omodei	6/09/2013
S136	736640	6644657	20 x 20 m	Andrew Craigie	6/09/2013
S137	736729	6644597	20 x 20 m	Rachel Omodei	6/09/2013
S138	736058	6645715	20 x 20 m	Rachel Omodei	6/09/2013
S139	736235	6645101	20 x 20 m	Rachel Omodei	6/09/2013
S140	791979	6620981	20 x 20 m	Jessica Stingemore	10/09/2013
S141	792389	6621221	20 x 20 m	Christina Birnbaum	10/09/2013
S142	792482	6621652	20 x 20 m	Christina Birnbaum	10/09/2013
S143	792401	6621856	20 x 20 m	Christina Birnbaum	10/09/2013
S144	792439	6622181	20 x 20 m	Mariana Campos	0/01/1900
S145	736678	6636790	20 x 20 m	Chad Hughes	9/09/2013
S146	736866	6636424	20 x 20 m	Chad Hughes	9/09/2013
S147	736195	6637542	20 x 20 m	Chad Hughes	9/09/2013
S148	737984	6634684	20 x 20 m	Andrew Craigie	0/01/1900
S149	737350	6635667	20 x 20 m	Andrew Craigie	12/09/2013
S150	737517	6635457	20 x 20 m	Andrew Craigie	12/09/2013
S151	737136	6636046	20 x 20 m	Chad Hughes	9/09/2013
S152	738996	6643758	20 x 20 m	Mariana Campos	8/09/2013
S153	764820	6621785	20 x 20 m	Matt Macdonald	12/09/2013
S154	738553	6633936	20 x 20 m	Andrew Craigie	0/01/1900
S155	738196	6634425	20 x 20 m	Andrew Craigie	0/01/1900
S156	739967	6642863	20 x 20 m	Mariana Campos	6/09/2013
S157	739333	6643772	20 x 20 m	Mariana Campos	8/09/2013
S158	739755	6643061	20 x 20 m	Chad Hughes	0/01/1900

Site	Easting	Northing	Dimensions	Botanist	Date
S159	740184	6642844	20 x 20 m	Mariana Campos	6/09/2013
S160	740793	6642491	20 x 20 m	Chad Hughes	6/09/2013
S161	740750	6642663	20 x 20 m	Chad Hughes	6/09/2013
S162	740665	6643156	20 x 20 m	Mariana Campos	6/09/2013
S163	766276	6621292	20 x 20 m	Christina Birnbaum	12/09/2013
S164	766332	6621647	20 x 20 m	Cameron Mounsey	12/09/2013
S165	766609	6621600	20 x 20 m	Christina Birnbaum	12/09/2013
S166	766870	6621348	20 x 20 m	Chris Parker	12/09/2013
S167	766879	6621649	20 x 20 m	Cameron Mounsey	12/09/2013
S168	740137	6631780	20 x 20 m	Andrew Craigie	12/09/2013
S169	740258	6631603	20 x 20 m	Andrew Craigie	12/09/2013
S170	740596	6631217	20 x 20 m	Matt Macdonald	10/09/2013
S171	740525	6631393	20 x 20 m	Andrew Craigie	6/09/2013
S172	741384	6642312	20 x 20 m	Mariana Campos	8/09/2013
S173	767093	6621555	20 x 20 m	Chris Parker	12/09/2013
S174	767152	6621543	20 x 20 m	Chris Parker	12/09/2013
S175	767276	6621574	20 x 20 m	Cameron Mounsey	12/09/2013
S176	767326	6621474	20 x 20 m	Christina Birnbaum	12/09/2013
S177	767576	6621287	20 x 20 m	Cameron Mounsey	12/09/2013
S178	767656	6621299	20 x 20 m	Cameron Mounsey	13/09/2013
S179	768100	6621399	20 x 20 m	Chad Hughes	12/09/2013
S180	768289	6621475	20 x 20 m	Chad Hughes	12/09/2013
S181	768518	6621297	20 x 20 m	Chad Hughes	12/09/2013
S182	768784	6621370	20 x 20 m	Chad Hughes	12/09/2013
S183	768991	6621348	20 x 20 m	Mariana Campos	12/09/2013
S184	742470	6628906	20 x 20 m	Chad Hughes	9/09/2013
S185	742560	6628908	20 x 20 m	Chad Hughes	9/09/2013
S186	769149	6621477	20 x 20 m	Mariana Campos	12/09/2013
S187	769489	6621317	20 x 20 m	Mariana Campos	12/09/2013
S188	769693	6621193	20 x 20 m	Mariana Campos	12/09/2013
S189	770039	6621376	20 x 20 m	Mariana Campos	12/09/2013
S190	770531	6621488	20 x 20 m	Chad Hughes	12/09/2013
S191	770882	6621235	20 x 20 m	Chad Hughes	12/09/2013
S192	771342	6621119	20 x 20 m	Chad Hughes	12/09/2013
S193	745600	6625639	20 x 20 m	Andrew Craigie	9/09/2013
S194	745753	6625492	20 x 20 m	Jessica Stingemore	9/09/2013
S195	745973	6625196	20 x 20 m	Jessica Stingemore	9/09/2013
S196	772763	6621214	20 x 20 m	Jessica Stingemore	12/09/2013
S197	772795	6621384	20 x 20 m	Jessica Stingemore	12/09/2013
S198	773084	6621087	20 x 20 m	Jessica Stingemore	12/09/2013
S199	773112	6621320	20 x 20 m	Jessica Stingemore	12/09/2013
S200	747358	6621892	20 x 20 m	Chris Parker	9/09/2013
S201	773534	6621229	20 x 20 m	Christina Birnbaum	12/09/2013
S202	747949	6621957	20 x 20 m	Chris Parker	9/09/2013
S203	747415	6622129	20 x 20 m	Rachel Omodei	9/09/2013
S204	747734	6622164	20 x 20 m	Rachel Omodei	9/09/2013
S205	774044	6621223	20 x 20 m	Jessica Stingemore	12/09/2013
S206	774370	6621200	20 x 20 m	Jessica Stingemore	11/09/2013
S207	774394	6621374	20 x 20 m	Jessica Stingemore	11/09/2013
S208	774703	6621193	20 x 20 m	Jessica Stingemore	11/09/2013
S209	748181	6622089	20 x 20 m	Andrew Craigie	0/01/1900
S210	748360	6622201	20 x 20 m	Matt Macdonald	10/09/2013
S211	748568	6622061	20 x 20 m	Matt Macdonald	9/09/2013
S212	748900	6622087	20 x 20 m	Matt Macdonald	10/09/2013
S213	748892	6623816	20 x 20 m	Chad Hughes	9/09/2013
S214	775109	6621059	20 x 20 m	Rachel Omodei	12/09/2013
S215	775126	6621250	20 x 20 m	Rachel Omodei	12/09/2013
S216	775452	6621353	20 x 20 m	Rachel Omodei	12/09/2013
S217	775501	6621184	20 x 20 m	Rachel Omodei	12/09/2013
S218	775721	6621043	20 x 20 m	Rachel Omodei	12/09/2013
S219	775890	6621190	20 x 20 m	Rachel Omodei	12/09/2013

Site	Easting	Northing	Dimensions	Botanist	Date
S220	749073	6622006	20 x 20 m	Chris Parker	4/09/2013
S221	749193	6622021	20 x 20 m	Kellie Bauer-Simpson	0/01/1900
S222	749457	6622043	20 x 20 m	Rachel Omodei	10/09/2013
S224	749846	6622062	20 x 20 m	Mariana Campos	9/09/2013
S225	749252	6623679	20 x 20 m	Matt Macdonald	10/09/2013
S226	749320	6623550	20 x 20 m	Jessica Stingemore	9/09/2013
S227	749433	6623556	20 x 20 m	Jessica Stingemore	9/09/2013
S228	749625	6623480	20 x 20 m	Jessica Stingemore	9/09/2013
S229	749752	6623388	20 x 20 m	Rachel Omodei	9/09/2013
S230	749951	6623331	20 x 20 m	Rachel Omodei	9/09/2013
S231	750097	6621983	20 x 20 m	Matt Macdonald	9/09/2013
S232	750412	6621970	20 x 20 m	Matt Macdonald	9/09/2013
S233	750662	6621947	20 x 20 m	Rachel Omodei	10/09/2013
S234	750779	6622032	20 x 20 m	Rachel Omodei	10/09/2013
S235	777831	6620959	20 x 20 m	Andrew Craigie	12/09/2013
S236	777385	6621266	20 x 20 m	Andrew Craigie	12/09/2013
S237	751431	6621882	20 x 20 m	Chad Hughes	10/09/2013
S238	777545	6621051	20 x 20 m	Andrew Craigie	12/09/2013
S239	751690	6621937	20 x 20 m	Kellie Bauer-Simpson	10/09/2013
S240	751774	6622084	20 x 20 m	Chad Hughes	10/09/2013
S241	778217	6620933	20 x 20 m	Andrew Craigie	12/09/2013
S242	778094	6621200	20 x 20 m	Andrew Craigie	12/09/2013
S243	778402	6621118	20 x 20 m	Cate Tauss	12/09/2013
S244	778552	6621099	20 x 20 m	Cate Tauss	12/09/2013
S245	778599	6621046	20 x 20 m	Cate Tauss	12/09/2013
S246	778604	6621234	20 x 20 m	Cate Tauss	12/09/2013
S247	779590	6620926	20 x 20 m	Cate Tauss	11/09/2013
S248	779144	6621021	20 x 20 m	Cate Tauss	12/09/2013
S249	753366	6621995	20 x 20 m	Rachel Omodei	12/09/2013
S250	753430	6621942	20 x 20 m	Rachel Omodei	12/09/2013
S251	753546	6621947	20 x 20 m	Rachel Omodei	12/09/2013
S252	779652	6621168	20 x 20 m	Cate Tauss	11/09/2013
S253	753816	6621897	20 x 20 m	Matt Macdonald	12/09/2013
S254	728715	6648523	20 x 20 m	Matt Macdonald	6/09/2013
S255	754024	6621833	20 x 20 m	Matt Macdonald	0/01/1900

APPENDIX D SITE DESCRIPTIONS FOR QUADRATS IMPLEMENTED IN THIS SURVEY

Site E301

Botanist	Matthew MacDonald
Easting	731684
Northing	6647797
Habitat	Floodplain
Slope	Negligible
Surface Layer	Loose, Gravel
Soil Colour	Orange
Soil Texture	Sandy-Clay
Rock Type	Ironstone
Rock Size	Gravel/Pebble
Rock Abundance	Continuous (>70%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Animal Tracks; Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees, 10%



Stratum	Species List
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Solanum nummularium</i>
Herb	<i>Sida</i> sp.; <i>Zygophyllum eremaeum</i>
Grass	<i>Austrostipa platychaeta</i>

Site E302

Botanist	Matthew MacDonald
Easting	731154
Northing	6648239
Habitat	Plain
Slope	Negligible
Surface Layer	Crust; Gilgai/Crabhole; Gravel;
Soil Colour	Orange
Soil Texture	Sandy-Clay
Rock Type	BIF
Rock Size	Gravel/Pebble; Stones (can pick up);
Rock Abundance	Many (30-70%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Animal Tracks; Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees, 5%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus ?longicornis</i>
Shrub (>2 m)	<i>Acacia prainii</i>
Shrub (1-2 m)	<i>Dodonaea rigida</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Rhagodia drummondii</i> ; <i>Zygophyllum eremaeum</i>
Herb	<i>Podolepis capillaris</i>
Grass	<i>Austrostipa platychaeta</i> ; <i>Austrostipa trichophylla</i>

Site E303

Botanist	Matthew MacDonald
Easting	730632
Northing	6648492
Habitat	Undulating Plain
Slope	Negligible
Surface Layer	Crust; Gravel;
Soil Colour	Orange
Soil Texture	Sandy-Clay
Rock Type	BIF
Rock Size	Gravel/Pebble; Stones (can pick up);
Rock Abundance	Many (30-70%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Animal Tracks; Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees, 15%



Stratum	Species List
Tree (10-20 m)	<i>Eucalyptus</i> sp.
Tree (<10 m)	<i>Eucalyptus yilgarnensis</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Acacia jennerae</i> ; <i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Frankenia interioris</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Zygophyllum ovatum</i>
Herb	<i>Lawrencella rosea</i> ; <i>Ptilotus drummondii</i>

Site E304

Botanist	Christopher Parker
Easting	734759
Northing	6646850
Habitat	Plain
Slope	Negligible
Surface Layer	Gravel;
Soil Colour	Red
Soil Texture	Sandy-Clay
Rock Type	Ironstone; Granite;
Rock Size	Gravel/Pebble; Stones (can pick up);
Rock Abundance	Continuous (>70%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees, 15%



Stratum	Species List
Tree (10-20 m)	<i>Eucalyptus ravida</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana georgei</i> ; <i>Pittosporum angustifolium</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa trichophylla</i>

Site E305

Botanist	Christopher Parker
Easting	735438
Northing	6646938
Habitat	Low rise
Slope	Gentle
Surface Layer	Loose; Rocky/Stony;
Soil Colour	Red
Soil Texture	Sandy-Clay
Rock Type	Ironstone; Granite;
Rock Size	Gravel/Pebble; Stones (can pick up);
Rock Abundance	Continuous (>70%)
Vegetation Condition	Good (low grazing, few weeds)
Disturbance Type	Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees



Stratum	Species List
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus ewartiana</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (<1 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila georgei</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena fusiformis</i>
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium</i> sp.; <i>Lawrencella rosea</i> ; <i>Podolepis canescens</i> ; <i>Stenopetalum filifolium</i> ; <i>Velleia rosea</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site E306

Botanist	Mariana Campos
Easting	737500
Northing	6644025
Habitat	Plain
Slope	Negligible;
Surface Layer	Gravel;
Soil Colour	Dark Red
Soil Texture	Sandy-Clay
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Continuous (>70%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Grazing; Faeces; Rabbit Hole;
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees; Dispersed



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Eremophila rugosa</i>
Shrub (<1 m)	<i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Templetonia ceracea</i>
Herb	? <i>Enchylaena tomentosa</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima</i> / <i>plattchaeta</i>

Site E307

Botanist	Chad Hughes
Easting	737754
Northing	6644844
Habitat	Plain
Slope	Negligible;
Surface Layer	Gravel;
Soil Colour	Red
Soil Texture	Loam
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Continuous (>70%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 10%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus ?horistes</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia ?burkittii</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (<1 m)	<i>Olearia muelleri</i>
Grass	<i>Neurachne annularis</i>

Site E308

Botanist	Chad Hughes
Easting	738639
Northing	6644462
Habitat	Plain; Drainage Line
Slope	Negligible;
Surface Layer	Loose;
Soil Colour	Red
Soil Texture	Clay-Loam
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Animal Tracks; Grazing; Faeces; Rabbit
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Dispersed; 50%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Exocarpos aphyllus</i> ; <i>Melaleuca nematophylla</i> ; <i>Pittosporum angustifolium</i> ; <i>Santalum lanceolatum</i>
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila ?alternifolia</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Rhagodia drummondii</i>
Shrub (<1 m)	<i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Santalum spicatum</i>
Herb	<i>Centaurea melitensis</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Austrostipa</i> sp.

Site E309

Botanist	Mariana Campos
Easting	741995
Northing	6642458
Habitat	Rocky Outcrop
Slope	Moderate;
Surface Layer	Rocky/Stony;
Soil Colour	Brown
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Size	Stones (can pick up); Boulders (can't pick up);
Rock Abundance	Continuous (>70%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 20%



Stratum	Species List
Shrub (>2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Acacia tetragonophylla</i> ; <i>Allocasuarina eriochlamys</i> ; <i>Grevillea zygoloba</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	? <i>Cheiranthra filifolia</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Philothea brucei</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site E310

Botanist	Mariana Campos
Easting	742529
Northing	6642776
Habitat	Plain
Slope	Negligible;
Surface Layer	Gravel;
Soil Colour	Dark Red
Soil Texture	Clay-Loam
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Continuous (>70%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Dispersed; 15%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Acacia eremophila</i> var. <i>eremophila</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Grevillea acuarina</i>
Shrub (<1 m)	<i>Eremophila ionantha</i> ; <i>Exocarpos aphyllus</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Olearia muelleri</i>
Grass	<i>Neurachne annularis</i>

Site E311

Botanist	Mariana Campos
Easting	742333
Northing	6641765
Habitat	Plain
Slope	Negligible;
Surface Layer	Loose;
Soil Colour	Red
Soil Texture	Clay
Rock Type	No Rocks
Rock Size	No Rocks
Rock Abundance	None (0%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Animal Tracks; Grazing; Faeces; Cattle
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Dispersed; 60%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus longissima</i>
Shrub (>2 m)	<i>Acacia ?burkittii</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Maireana trichoptera</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	? <i>Enchylaena tomentosa</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Austrostipa</i> sp.

Site E312

Botanist	Christopher Parker
Easting	733035
Northing	6641511
Habitat	Plain
Slope	Negligible;
Surface Layer	Gravel;
Soil Colour	Red
Soil Texture	Sandy-Clay;
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Many (30-70%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 8%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus horistes</i> ; <i>Eucalyptus longicornis</i> ; <i>Grevillea nematophylla</i> subsp. <i>nematophylla</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Sclerolaena fusiformis</i>
Herb	<i>Ptilotus drummondii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i> ; <i>Rytidosperma caespitosum</i>

Site E313

Botanist	Andrew Craigie
Easting	738290
Northing	6634251
Habitat	Plain
Slope	Negligible;
Surface Layer	Loose;
Soil Colour	Orange; Brown
Soil Texture	Sandy-Clay;
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Many (30-70%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	2-5 years;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 5%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Allocasuarina</i> sp.
Shrub (<1 m)	<i>Acacia effusifolia</i> ; <i>Hakea ?minyma</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Melaleuca ?uncinata</i> ; <i>Phebalium canaliculatum</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera grylloana</i>
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site E314

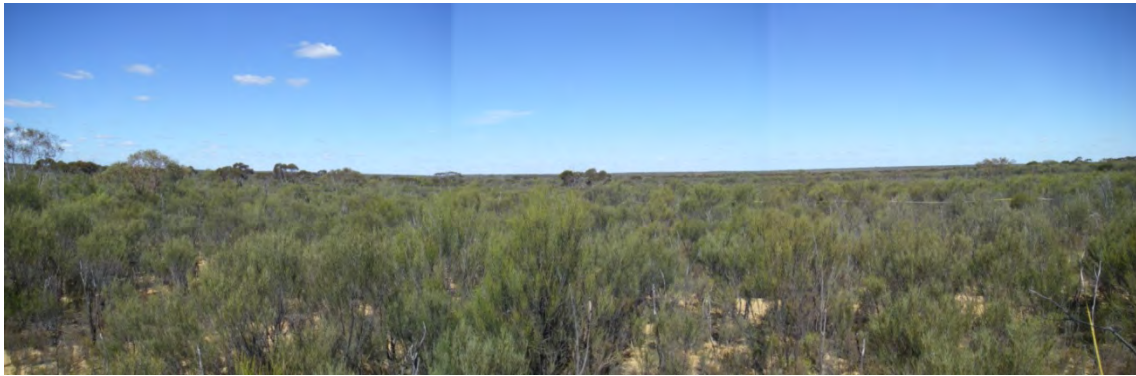
Botanist Andrew Craigie
Easting 739258
Northing 6632840
Habitat Plain
Slope Negligible;
Surface Layer Loose;
Soil Colour Yellow; White;
Soil Texture Sand
Rock Type Ironstone;
Rock Size Gravel/Pebble;
Rock Abundance Few (<10%)
Vegetation Condition Excellent (no obvious disturbance)
Disturbance Type No Disturbance;
Time Since Fire > 5 years;
Leaf Litter Distribution and Cover Dispersed; 10%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Hakea francisiana</i> ; <i>Leptomeria preissiana</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea ?excelsior</i> ; <i>Grevillea paradoxa</i> ; <i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia ?scariosa</i>

Site E315

Botanist	Chad Hughes
Easting	741463
Northing	6630289
Habitat	Plain
Slope	Gentle;
Surface Layer	Loose;
Soil Colour	Yellow;
Soil Texture	Sand
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	No Rocks;
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Vehicle Tracks; Rabbit
Time Since Fire	1-2 years; 2-5 years;
Leaf Litter Distribution and Cover	Dispersed; 20%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus leptopoda</i> ; <i>Malleostemon roseus</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Chamelaucium</i> sp.; <i>Isopogon gardneri</i> ; <i>Thryptomene urceolaris</i>

Site E316

Botanist	Andrew Craigie
Easting	744035
Northing	6627227
Habitat	Plain
Slope	Gentle;
Surface Layer	Loose;
Soil Colour	Orange; Yellow; White;
Soil Texture	Sand
Rock Type	Ironstone;
Rock Size	Gravel/Pebble;
Rock Abundance	Few (<10%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	2-5 years; > 5 years;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 10%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus ?leptopoda</i> subsp. <i>subluta</i> L.A.S.Johnson & K.D.Hill
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Melaleuca ?hamata</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Callitris preissii</i> ; <i>Grevillea paradoxa</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Malleostemon roseus</i> ; <i>Persoonia inconspicua</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia ?scariosa</i>

Site E317

Botanist Chad Hughes
Easting 746965
Northing 6624788
Habitat Plain
Slope Negligible;
Surface Layer Loose; Rocky/Stony;
Soil Colour Yellow;
Soil Texture Sand; Sandy-Clay;
Rock Type Other/Unsure;
Rock Size Stones (can pick up);
Rock Abundance Few (<10%)
Vegetation Condition Excellent (no obvious disturbance)
Disturbance Type No Disturbance;
Time Since Fire No Evidence;
Leaf Litter Distribution and Cover Dispersed



Stratum	Species List
Shrub (>2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina</i> sp.
Shrub (1-2 m)	? <i>Melaleuca</i> sp.; <i>Acacia sibina</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i> ; <i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus</i> ? <i>patersonii</i>

Site E318

Botanist Matthew Macdonald
Easting 753181
Northing 6629962
Habitat Plain
Slope Negligible;
Surface Layer Other; Leaf litter
Soil Colour Brown
Soil Texture Clay;
Rock Type Ironstone;
Rock Size Gravel/Pebble;
Rock Abundance Few (<10%)
Vegetation Condition Very Good (slight disturbance)
Disturbance Type Litter;
Time Since Fire No Evidence;
Leaf Litter Distribution and Cover Dispersed; 60%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> ;
Shrub (>2 m)	<i>Santalum acuminatum</i>
Shrub (<1 m)	<i>Acacia andrewsii</i> ; <i>Atriplex vesicaria</i> ; <i>Grevillea acuaria</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ;
Grass	<i>Austrostipa elegantissima</i>

Site E319

Botanist	Rachel Omodei
Easting	748362
Northing	6621804
Habitat	Low Rise
Slope	Gentle;
Surface Layer	Crust;
Soil Colour	Orange;
Soil Texture	Sand;
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None (0%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 30%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus ?sheathiana</i> ; <i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Daviesia ?purpurascens</i>
Shrub (<1 m)	<i>Cyanostegia angustifolia</i> ; <i>Dodonaea lobulata</i> ; <i>Eremophila drummondii</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Westringia cephalantha</i>
Climber	<i>Thysanotus speckii</i>
Herb	<i>Brunonia australis</i> ; <i>Calandrinia eremaea</i> ; <i>Calotis hispidula</i> ; <i>Lawrencella rosea</i> ; <i>Podolepis canescens</i> ; <i>Podolepis capillaris</i> ; <i>Trachymene pilosa</i> ; <i>Waitzia acuminata</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site E320

Botanist Matthew Macdonald;
Easting 761796
Northing 6621784
Habitat Plain
Slope Negligible;
Surface Layer Loose;
Soil Colour Yellow;
Soil Texture Sand;
Rock Type No Rocks;
Rock Size No Rocks;
Rock Abundance None (0%)
Vegetation Condition Excellent (no obvious disturbance)
Disturbance Type No Disturbance;
Time Since Fire > 5 years;
Leaf Litter Distribution and Cover Under Shrubs/Trees; 20%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus leptopoda</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Hakea ?francisiana</i> ; <i>Leptomeria preissiana</i>
Shrub (1-2 m)	<i>Acacia quadrimarginea</i> ; <i>Callitris preissii</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	? <i>Baeckea</i> sp.; <i>Beyeria sulcata</i> ; <i>Chamelaucium pauciflorum</i> ; <i>Euryomyrtus maidenii</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Thryptomene urceolaris</i>

Site E321

Botanist Matthew Macdonald;
Easting 763302
Northing 6621448
Habitat Plain
Slope Negligible;
Surface Layer Loose;
Soil Colour Yellow;
Soil Texture Sand;
Rock Type Other/Unsure; Laterite
Rock Size Gravel/Pebble;
Rock Abundance Common (10-30%)
Vegetation Condition Excellent (no obvious disturbance)
Disturbance Type No Disturbance;
Time Since Fire 2-5 years;
Leaf Litter Distribution and Cover Dispersed; 2%



Stratum	Species List
Shrub (>2 m)	<i>Grevillea ?excelsior</i>
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Allocasuarina</i> sp.; <i>Hakea ?francisiana</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Cyanostegia angustifolia</i> ; <i>Dampiera stenostachya</i> ; <i>Grevillea paradoxa</i> ; <i>Hibbertia glomerosa</i> ; <i>Keraudrenia velutina</i> ; <i>Phebalium microphyllum</i> complex; <i>Shrub A</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Stylidium limbatum</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site E322

Botanist	Chad Hughes
Easting	768589
Northing	6621593
Habitat	Plain
Slope	Negligible;
Surface Layer	Crust;
Soil Colour	Orange;
Soil Texture	Sandy-Clay;
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None (0%)
Vegetation Condition	Very Good (slight disturbance)
Disturbance Type	Faeces; Rabbit
Time Since Fire	No Evidence;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 70%



Stratum	Species List
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i> ; <i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Eremophila ionantha</i> ; <i>Eremophila rugosa</i> ; <i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i>
Grass	<i>Austrostipa elegantissima</i>

Site E323

Botanist	Andrew Craigie
Easting	778071
Northing	6621000
Habitat	Plain
Slope	Negligible;
Surface Layer	Loose;
Soil Colour	Orange; Yellow;
Soil Texture	Sandy
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None (0%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	> 5 years;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 20%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus platycorys</i>
Shrub (>2 m)	<i>Melaleuca hamata</i>
Shrub (1-2 m)	<i>Melaleuca eleuterostachya</i>
Shrub (<1 m)	<i>Acacia hemiteles</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Callitris preissii</i> ; <i>Olearia muelleri</i> ; <i>Phebalium megaphyllum</i> ; <i>Westringia cephalantha</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>

Site E324

Botanist	Chad Hughes
Easting	781955
Northing	6620809
Habitat	Plain
Slope	Negligible; Gentle;
Surface Layer	Loose;
Soil Colour	Yellow; White;
Soil Texture	Sand
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None (0%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence;
Leaf Litter Distribution and Cover	Under Shrubs/Trees;



Stratum	Species List
Shrub (>2 m)	<i>Acacia effusifolia</i> ; <i>Thryptomene urceolaris</i>
Shrub (1-2 m)	<i>Allocasuarina</i> sp.; <i>Persoonia coriacea</i>
Shrub (<1 m)	<i>Acacia</i> sp.; <i>Phebalium laevigatum</i>
Grass	<i>Austrostipa</i> sp.

Site E325

Botanist	Chad Hughes
Easting	783665
Northing	6620739
Habitat	Plain
Slope	Negligible; Gentle;
Surface Layer	Loose;
Soil Colour	Yellow;
Soil Texture	Sand
Rock Type	No Rocks;
Rock Size	No Rocks;
Rock Abundance	None (0%)
Vegetation Condition	Excellent (no obvious disturbance)
Disturbance Type	No Disturbance;
Time Since Fire	No Evidence;
Leaf Litter Distribution and Cover	Under Shrubs/Trees; 60%



Stratum	Species List
Tree (<10 m)	<i>Eucalyptus eremophila</i>
Shrub (<1 m)	<i>Eremophila rugosa</i> ; <i>Westringia cephalantha</i>
Climber	<i>Thysanotus manglesianus</i>

Site S001

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	729146 mE, 6648271 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Banksia arborea</i> ; <i>Brachychiton gregorii</i>
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Calycopeplus paucifolius</i> ; <i>Melaleuca leiocarpa</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Dodonaea lobulata</i> ; <i>Grevillea zygoloba</i>
Shrub (<1 m)	<i>Eremophila georgei</i> ; <i>Hibbertia eatoniae</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Olearia humilis</i> ; <i>Philotheca brucei</i> ; <i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260) PN; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Climber	<i>Rhyncharrhena linearis</i> ; <i>Thysanotus manglesianus</i>
Herb	<i>Asteraceae</i> sp.; <i>Brachyscome ciliaris</i> ; <i>Cheilanthes adiantoides</i> ; <i>Crassula exserta</i> ; <i>Daucus glochidiatus</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lawrencella rosea</i> ; <i>Parietaria debilis</i> ; <i>Pterostylis</i> sp.; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Epiphyte	<i>Amyema benthamii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa</i> sp.; <i>Pentameris airoides</i> ; <i>Vulpia myuros</i>

Site S002

Quadrat Size 20 x 20 m
NW Corner Coordinates 729298 mE, 6648221 mN

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Banksia arborea</i> ; <i>Brachychiton gregorii</i>
Shrub (>2 m)	<i>Dodonaea</i> sp.
Shrub (1-2 m)	<i>Acacia incurvaneura</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Calycopeplus paucifolius</i> ; <i>Eremophila georgei</i> ; <i>Exocarpos aphyllus</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Philothea brucei</i> ; <i>Psydrax suaveolens</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Climber	<i>Thysanotus manglesianus</i>
Herb	<i>Asteraceae</i> sp.; <i>Cheilanthes adiantoides</i> ; <i>Cheilanthes lasiophylla</i> ; <i>Crassula colorata</i> ; <i>Daucus glochidiatus</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Herb</i> ; <i>Hydrocotyle</i> sp.; <i>Lawrencella rosea</i> ; <i>Parietaria debilis</i> ; <i>Pterostylis</i> sp.; <i>Sida spodochroma</i> ; <i>Stenopetalum filifolium</i> ; <i>Stenopetalum lineare</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S003

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/20/2013
NW Corner Coordinates 729525 mE, 6648142 mN
Habitat and Waterway Mid-Slope
Aspect Southeast
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 25 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?corrugata</i>
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Allocasuarina helmsii</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Allocasuarina dielsiana</i> ; <i>Grevillea zygoloba</i>
Herb	<i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S004

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	729706 mE, 6648201 mN
Habitat and Waterway	Lower Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?corrugata</i> ; <i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia resinimarginea</i> ; <i>Exocarpos aphyllus</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32); <i>Solanum nummularium</i>
Herb	<i>Goodenia</i> sp.; <i>Herb</i> ; <i>Zygophyllum eremaeum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S005

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	755720 mE, 6621986 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia coolgardiensis</i> ; <i>Hakea ?minyma</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Eremophila metallicorum</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera campbellii</i>
Climber	<i>Thysanotus patersonii</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S006

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	755947 mE, 6621885 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Shrub (>2 m)	<i>Acacia effusifolia</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila granitica</i> ; <i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Eremophila metallicorum</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Mirbelia ?depressa</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera campbellii</i> ; <i>Solanum nummularium</i>
Herb	<i>Dianella revoluta</i> ; <i>Velleia rosea</i>
Grass	? <i>Austrostipa</i> sp.; <i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Monachather paradoxus</i>

Site S007

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	755949 mE, 6622017 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	90 %

Stratum	Species
Shrub (1-2 m)	<i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i>
Shrub (<1 m)	<i>Eremophila metallicorum</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera campbellii</i> ; <i>Solanum nummularium</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Asteraceae</i> sp.; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Aurolastipia elegantissima</i>

Site S008

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	756013 mE, 6621683 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Solanum nummularium</i>
Herb	<i>Bulbine semibarbata</i> ; <i>Erodium cygnorum</i> ; Herb ; <i>Lawrencella rosea</i> ; <i>Ptilotus holosericeus</i> ; <i>Sonchus oleraceus</i> ; <i>Stenopetalum filifolium</i> ; <i>Waitzia acuminata</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i> ; <i>Monachather paradoxus</i>

Site S009

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	756701 mE, 6621588 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Scaevola spinescens</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila granitica</i> ; <i>Philothea brucei</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera semiteres</i> subsp. <i>semiteres</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Austrostipa elegantissima</i>

Site S010

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731656 mE, 6646968 mN
Habitat and Waterway	Lower Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone
Rock Outcrop	Calcrete
Time since Fire	>10 years
Bare ground	15 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Calycopeplus paucifolius</i>
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Grass	<i>Neurachne annularis</i>

Site S011

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731813 mE, 6646782 mN
Habitat and Waterway	Upper Slope
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea zygaloba</i> ; <i>Philotheca brucei</i>
Climber	<i>Thysanotus manglesianus</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Herb</i> ; <i>Lawrencella rosea</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S012

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731946 mE, 6646751 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila latrobei</i> ; <i>Grevillea paradoxa</i> ; <i>Grevillea zygoloba</i> ; <i>Philothea brucei</i>
Shrub (<1 m)	<i>Acacia incurvaneura</i> ; <i>Hibbertia eatoniae</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Waitzia acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S013

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731235 mE, 6647342 mN
Habitat and Waterway	Lower Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia incurvaneura</i> ; <i>Acacia quadrimarginea</i> ; <i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Eremophila georgei</i> ; <i>Eremophila granitica</i> ; <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> ; <i>Prostanthera althoferi</i>
Shrub (<1 m)	<i>Mirbelia microphylla</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Climber	<i>Rhyncharrhena linearis</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Ptilotus drummondii</i> ; <i>Waitzia acuminata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Digitaria ammophila</i> ; <i>Neurachne annularis</i>

Site S014

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731466 mE, 6647154 mN
Habitat and Waterway	Upper Slope
Aspect	South
Soil Colour	Not Applicable
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Eremophila georgei</i> ; <i>Philotheca brucei</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Herb	<i>Chrysocephalum puteale</i> ; <i>Goodenia occidentalis</i> ; <i>Lawrencella rosea</i> ; <i>Stenopetalum filifolium</i> ; <i>Waitzia acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i> ; <i>Pentameris airoides</i> subsp. <i>airoides</i>

Site S015

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731402 mE, 6647227 mN
Habitat and Waterway	Upper Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Casuarina pauper</i> ; <i>Santalum spicatum</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera magnifica</i>
Shrub (<1 m)	<i>Dodonaea rigida</i> ; <i>Olearia humilis</i> ; <i>Sida</i> sp. dark green fruits (<i>S. van Leeuwen 2260</i>); <i>Sida</i> sp. Golden calyces glabrous (<i>H.N. Foote 32</i>)
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Waitzia acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S016

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 731463 mE, 6647293 mN
Habitat and Waterway Lower Slope
Aspect North
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type BIF
Rock Outcrop BIF
Time since Fire >10 years
Bare ground 20 %

Stratum	Species
Shrub (>2 m)	<i>Acacia incurvaneura</i>
Shrub (1-2 m)	<i>Eremophila latrobei</i> subsp. ? <i>latrobei</i> ; <i>Grevillea zygoloba</i>
Shrub (<1 m)	<i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Climber	<i>Thysanotus</i> ? <i>patersonii</i>
Herb	<i>Brunonia australis</i>
Grass	? <i>Monachather paradoxus</i> ; <i>Neurachne annularis</i>

Site S017

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731499 mE, 6647216 mN
Habitat and Waterway	Mid-Slope
Aspect	Northeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	15 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i> ; <i>Brachychiton gregorii</i>
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia incurvaneura</i> ; <i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Philotheca brucei</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Olearia humilis</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Climber	<i>Thysanotus manglesianus</i>
Grass	<i>Neurachne annularis</i>

Site S018

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731564 mE, 6647107 mN
Habitat and Waterway	Upper Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Brachychiton gregorii</i> ; <i>Santalum acuminatum</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Eremophila georgei</i> ; <i>Grevillea zygoloba</i> ; <i>Philothea brucei</i>
Shrub (<1 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Olearia humilis</i> ; <i>Prostanthera magnifica</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i> ; <i>Lawrencella rosea</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Epiphyte	<i>Amyema benthamii</i>
Grass	<i>Neurachne annularis</i>

Site S019

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	731801 mE, 6647311 mN
Habitat and Waterway	Minor Channel
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Solanum nummularium</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S020

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	757608 mE, 6621554 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Not Applicable
Soil Texture	Not Applicable
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus platycorys</i>
Shrub (1-2 m)	<i>Callitris preissii</i> ; <i>Grevillea ?excelsior</i> ; <i>Westringia cephalantha</i>
Shrub (<1 m)	<i>Acacia effusifolia</i> ; <i>Acacia eremophila</i> var. <i>eremophila</i> ; <i>Dodonaea lobulata</i> ; <i>Halgania andromedifolia</i> ; <i>Scaevola spinescens</i> ; <i>Westringia rigida</i>
Herb	<i>Dianella revoluta</i>
Hummock grass	<i>Triodia ?scariosa</i>

Site S021

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/19/2013
NW Corner Coordinates 732515 mE, 6641904 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 5 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus celastroides</i> subsp. <i>celastroides</i> ; <i>Eucalyptus ravida</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i>

Site S022

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732380 mE, 6642160 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	55 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ravidia</i>
Shrub (1-2 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena fusiformis</i>
Herb	<i>Lawrencia repens</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i>

Site S023

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732454 mE, 6642390 mN
Habitat and Waterway	Mid-Slope
Aspect	West
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Calcrete
Time since Fire	>10 years
Bare ground	1 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila ?rugosa</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Austrostipa platychaeta</i> ; <i>Neurachne annularis</i>

Site S024

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732421 mE, 6642940 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite; Calcrete
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	8,5 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila ?rugosa</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Eremophila ?alternifolia</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i>
Grass	<i>Austrostipa ?scabra</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S025

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732515 mE, 6642633 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	8 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ravidia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila rugosa</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Ptilotus nobilis</i> subsp. <i>nobilis</i>
Herb	<i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima</i>

Site S026

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732462 mE, 6643542 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila ?alternifolia</i> ; <i>Eremophila granitica</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Solanum nummularium</i>
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>
Grass	<i>Austrostipa ?scabra</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S027

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732500 mE, 6643418 mN
Habitat and Waterway	Minor Channel
Aspect	West
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> ; <i>Eucalyptus ravida</i>
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus yilgarnensis</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Santalum spicatum</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Eremophila granitica</i> ; <i>Pittosporum angustifolium</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Maireana georgei</i> ; <i>Maireana triptera</i> ; <i>Pimelea microcephala</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sida</i> sp. <i>dark green fruits</i> (S. van Leeuwen 2260); <i>Solanum nummularium</i> ; <i>Solanum terraneum</i>
Herb	<i>Goodenia havilandii</i> ; <i>Lawrencella rosea</i> ; <i>Rhyncharrhena linearis</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Digitaria ammophila</i>

Site S028

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732602 mE, 6643782 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite; Quartz; Granite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Eremophila alternifolia</i> ; <i>Eremophila interstans</i> subsp. <i>interstans</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Acacia tetragonophylla</i> ; <i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana trichoptera</i> ; <i>Maireana triptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Solanum nummularium</i>
Grass	<i>Austrostipa elegantissima</i>

Site S029

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732640 mE, 6644061 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (>2 m)	<i>Acacia jennerae</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Pimelea microcephala</i>
Shrub (<1 m)	<i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Sida spodochroma</i> ; <i>Solanum nummularium</i> ; <i>Zygophyllum eremaeum</i>
Herb	<i>Stenopetalum filifolium</i>
Grass	<i>Austrostipa trichophylla</i>

Site S030

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/17/2013
NW Corner Coordinates	732640 mE, 6644337 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Shrub (>2 m)	<i>Abutilon cryptopetalum</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila granitica</i>
Shrub (<1 m)	<i>Abutilon oxycarpum</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Maireana triptera</i> ; <i>Ptilotus drummondii</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	<i>Calandrinia</i> sp.; <i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa trichophylla</i> ; POACEAE sp. 1

Site S031

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/17/2013
NW Corner Coordinates	732622 mE, 6644625 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Chert
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila drummondii</i>
Shrub (<1 m)	<i>Acacia ?burkittii</i> ; <i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana triptera</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sida ?sp. dark green fruit (S. van Leeuwen 2260)</i> ; <i>Solanum nummularium</i>
Climber	<i>Thysanotus patersonii</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium crinitum</i>
Grass	<i>Austrostipa elegantissima</i>

Site S032

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	732524 mE, 6645673 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Eremophila interstans</i> subsp. <i>interstans</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila rugosa</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Pittosporum angustifolium</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena fusiformis</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa elegantissima</i>

Site S033

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/17/2013
NW Corner Coordinates	732653 mE, 6645038 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longissima</i>
Tree (<10 m)	<i>Eucalyptus loxophleba</i>
Shrub (1-2 m)	<i>Acacia ?ramulosa; Atriplex nummularia; Eremophila granitica</i>
Shrub (<1 m)	<i>Atriplex vesicaria; Maireana georgei; Maireana trichoptera; Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida ?sp. dark green fruit (S. van Leeuwen 2260)</i>
Climber	<i>Thysanotus ?patersonii</i>
Grass	<i>Austrostipa elegantissima; Neurachne annularis</i>

Site S034

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/17/2013
NW Corner Coordinates 732635 mE, 6645314 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 10 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus sheathiana</i>
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Pittosporum angustifolium</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena fusiformis</i>
Herb	<i>Leucochrysum fitzgibbonii</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site S035

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/19/2013
NW Corner Coordinates 732654 mE, 6645911 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type None
Rock Outcrop None
Time since Fire >10 years
Bare ground 5 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ravidia</i>
Shrub (>2 m)	<i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Atriplex nummularia; Eremophila rugosa; Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Atriplex vesicaria; Maireana trichoptera; Ptilotus obovatus; Rhagodia drummondii</i>
Grass	<i>Austrostipa elegantissima</i>

Site S036

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/17/2013
NW Corner Coordinates 732932 mE, 6645568 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Sand
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 80 %

Stratum	Species
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila caperata</i>
Shrub (<1 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus drummondii</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Austrostipa</i> sp.

Site S037

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	732080 mE, 6646623 mN
Habitat and Waterway	Upper Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Eremophila georgei</i> ; <i>Grevillea zygodoba</i> ; <i>Melaleuca leiocarpa</i> ; <i>Philotheca brucei</i>
Shrub (<1 m)	<i>Cheilanthes adiantoides</i> ; <i>Eremophila serrulata</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Mirbelia ?depressa</i> ; <i>Olearia humilis</i> ; <i>Stenanthemum stipulosum</i>
Climber	<i>Thysanotus manglesianus</i>
Herb	<i>Crassula colorata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Goodenia berardiana</i> ; <i>Lawrencella rosea</i> ; <i>Stenopetalum filifolium</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S038

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	732190 mE, 6646536 mN
Habitat and Waterway	Mid-Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Grevillea zygoloba</i>
Shrub (<1 m)	<i>Hibbertia eatoniae</i> ; <i>Olearia humilis</i> ; <i>Philotheca brucei</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Lawrencella rosea</i> ; <i>Velleia cycnopotamica</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S039

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	732103 mE, 6646738 mN
Habitat and Waterway	Upper Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	35 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia incurvaneura</i>
Shrub (1-2 m)	<i>Calycopeplus paucifolius</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera campbellii</i>
Shrub (<1 m)	<i>Olearia humilis</i> ; <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S040

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732471 mE, 6646524 mN
Habitat and Waterway	Mid-Slope
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	BIF
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (<1 m)	<i>Maireana planifolia</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Grass	<i>Austrostipa ?elegantissima</i> ; <i>Neurachne annularis</i>

Site S041

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732532 mE, 6646319 mN
Habitat and Waterway	Lower Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	BIF
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Pittosporum angustifolium</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia quadrimarginea</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S042

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732527 mE, 6646735 mN
Habitat and Waterway	Mid-Slope
Aspect	Northeast
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Eremophila ?deciens</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Dodonaea lobulata</i> ; <i>Maireana tomentosa</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa platychaeta</i> ; <i>Neurachne annularis</i>

Site S043

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732661 mE, 6646469 mN
Habitat and Waterway	Mid-Slope
Aspect	Southeast
Soil Colour	Not Applicable
Soil Texture	Not Applicable
Rock Type	BIF
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	55 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i>
Shrub (1-2 m)	<i>Daviesia purpurascens</i> ; <i>Melaleuca nematophylla</i>
Shrub (<1 m)	<i>Eremophila georgei</i> ; <i>Olearia muelleri</i> ; <i>Philotheca brucei</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i> ; <i>Neurachne annularis</i>

Site S044

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732633 mE, 6646595 mN
Habitat and Waterway	Upper Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Laterite
Rock Outcrop	Laterite
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (<1 m)	<i>Eremophila ?decipiens</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera campbellii</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Brunonia australis</i> ; <i>Cheilanthes adiantoides</i> ; <i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Stenopetalum lineare</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S045

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	732627 mE, 6646861 mN
Habitat and Waterway	Mid-Slope
Aspect	North-northeast
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	15 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Grevillea zygaloba</i>
Shrub (<1 m)	<i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Grass	<i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i>

Site S046

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/18/2013
NW Corner Coordinates 732837 mE, 6646215 mN
Habitat and Waterway Lower Slope
Aspect Southwest
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 10 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ravida</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Maireana georgei</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i>
Grass	<i>Austrostipa elegantissima</i>

Site S047

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732833 mE, 6646398 mN
Habitat and Waterway	Ridge
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	2 %

Stratum	Species
Tree (<10 m)	<i>Brachychiton gregorii</i> ; <i>Casuarina pauper</i> ; <i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila georgei</i> ; <i>Melaleuca nematophylla</i> ; <i>Philotheca brucei</i> subsp. <i>brucei</i> ; <i>Psyrax suaveolens</i>
Shrub (<1 m)	<i>Dodonaea lobulata</i> ; <i>Pittosporum angustifolium</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	? <i>Senecio</i> sp.; <i>Calandrinia eremaea</i> ; <i>Cheilanthes adiantoides</i> ; <i>Crassula colorata</i> ; <i>Cyanicula amplexans</i> ; <i>Daucus glochidiatus</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Erymophyllum ramosum</i> subsp. <i>ramosum</i> ; <i>Hypoxis glabella</i> ; <i>Isoetopsis graminifolia</i> ; <i>Lawrencella rosea</i> ; <i>Parietaria debilis</i> ; <i>Sida spodochroma</i> ; <i>Thelymitra petrophila</i> ; <i>Trachymene ornata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i> ; <i>Pentameris airoides</i> subsp. <i>airoides</i> ; <i>Rytidosperma caespitosum</i> ; <i>Vulpia myuros</i>

Site S048

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	732846 mE, 6646699 mN
Habitat and Waterway	Mid-Slope
Aspect	East
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i>
Grass	<i>Austrostipa ?elegantissima</i> ; <i>Neurachne annularis</i>

Site S049

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	732960 mE, 6646871 mN
Habitat and Waterway	Mid-Slope
Aspect	Northeast
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Calcrete
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus longicornis</i>
Shrub (1-2 m)	<i>Acacia acanthoclada</i> subsp. <i>glaucescens</i>
Shrub (<1 m)	<i>Eremophila ?decipiens</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Zygophyllum eremaeum</i>
Herb	<i>Brunonia australis</i> ; <i>Ptilotus drummondii</i> ; <i>Ptilotus holosericeus</i>
Epiphyte	<i>Amyema miquelii</i>
Grass	<i>Austrostipa platychaeta</i> ; <i>Austrostipa trichophylla</i> ; <i>Monachather paradoxus</i> ; <i>Neurachne annularis</i>

Site S050

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 732213 mE, 6647536 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone; Quartz
Rock Outcrop None
Time since Fire >10 years
Bare ground 85 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Tree (<10 m)	<i>Eucalyptus yilgarnensis</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Eremophila scoparia</i> ; <i>Santalum acuminatum</i>
Shrub (<1 m)	? <i>Erichiton</i> ; <i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i>
Herb	<i>Asteraceae</i> sp.
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S051

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/13/2012
NW Corner Coordinates 732759 mE, 6647129 mN
Habitat and Waterway Lower Slope
Aspect North
Soil Colour Orange-Brown
Soil Texture Clay
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Grass	<i>Austrostipa scabra</i> ; <i>Neurachne annularis</i>

Site S052

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	732748 mE, 6647407 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Cyanostegia angustifolia</i> ; <i>Eremophila granitica</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Keraudrenia velutina</i> subsp. <i>velutina</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Solanum nummularium</i>
Herb	<i>Erodium cygnorum</i> ; <i>Rhyncharhena linearis</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Austrostipa eremophila</i> ; <i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i>

Site S053

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	212368 mE, 6620900 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Calcrete; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i> ; <i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Acacia merrallii</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Atriplex vesicaria</i> ; <i>Exocarpos aphyllus</i> ; <i>Olearia muelleri</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Zygophyllum glaucum</i>
Grass	<i>Austrostipa elegantissima/playtchaeta</i> ; <i>Austrostipa nitida</i>

Site S054

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	212839 mE, 6620819 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Calcrete; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Eremophila scoparia</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Eremophila caperata</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Atriplex vesicaria</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Exocarpos aphyllus</i> ; <i>Olearia muelleri</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida spodochroma</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S055

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758003 mE, 6621764 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Not Applicable
Soil Texture	Not Applicable
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (1-2 m)	<i>Baeckea elderiana</i> ; <i>Callitris preissii</i> ; <i>Hakea ?minyma</i>
Shrub (<1 m)	? <i>Calytrix</i> sp. 1; <i>Acacia effusifolia</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Leptospermum fastigiatum/roei</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia</i> sp.
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S056

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758356 mE, 6621781 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?horistes</i>
Shrub (>2 m)	<i>Codonocarpus cotinifolius</i>
Shrub (1-2 m)	<i>Grevillea ?excelsior; Hakea ?minyma</i>
Shrub (<1 m)	<i>?Petrophile sp.; Acacia effusifolia; Duboisia hopwoodii; Grevillea ?incrassata; Phebalium canaliculatum; Prostanthera campbellii; Prostanthera grylloana</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus var. caricinus; Austrostipa sp.</i>

Site S057

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758535 mE, 6621611 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?horistes</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Callitris preissii</i> ; <i>Grevillea ?excelsior</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Acacia effusifolia</i> ; <i>Baeckea elderiana</i> ; <i>Beyeria sulcata</i> ; <i>Cyanostegia angustifolia</i> ; <i>Duboisia hopwoodii</i> ; <i>Eremophila ?drummondii</i> ; <i>Hakea ?minyma</i> ; <i>Hannafordia bissillii</i> subsp. <i>latifolia</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Melichrus</i> sp. <i>Bungalbin Hill (F.H. & M.P. Mollemans 3069)</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Dampiera</i> sp. <i>A</i>
Hummock grass	<i>Triodia ?scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S058

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/12/2012
NW Corner Coordinates 758630 mE, 6621931 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Not Applicable
Soil Texture Not Applicable
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 60 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Baeckea elderiana</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Prostanthera campbellii</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Stylidium ?arenicola</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S059

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758784 mE, 6621598 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina ?acutivalvis</i> ; <i>Eucalyptus ?rigidula</i>
Shrub (>2 m)	<i>Grevillea ?excelsior</i> ; <i>Hakea ?francisiana</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Baeckea elderiana</i> ; <i>Grevillea paradoxa</i> ; <i>Prostanthera campbellii</i>
Shrub (<1 m)	<i>Acacia coolgardiensis</i> ; <i>Callitris preissii</i> ; <i>Cyanostegia angustifolia</i> ; <i>Dampiera stenostachya</i> ; <i>Duboisia hopwoodii</i> ; <i>Hannafordia bissillii</i> subsp. <i>latifolia</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptomeria preissiana</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Melichrus</i> sp. <i>Bungalbin Hill (F.H. & M.P. Mollemans 3069)</i> ; <i>Olearia exiguifolia</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium tuberculosum</i> ; <i>Shrub B</i> ; <i>Thryptomene urceolaris</i> ; <i>Westringia cephalantha</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S060

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758783 mE, 6621905 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (1-2 m)	<i>Duboisia hopwoodii</i>
Shrub (<1 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila ionantha</i> ; <i>Hakea francisiana</i> ; <i>Hannafordia bissillii</i> subsp. <i>latifolia</i> ; <i>Phebalium canaliculatum</i> ; <i>Pittosporum angustifolium</i> ; <i>Prostanthera campbellii</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Thryptomene urceolaris</i> ; <i>Westringia cephalantha</i>
Herb	<i>Podolepis capillaris</i> ; <i>Stylidium ?arenicola</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S061

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/12/2012
NW Corner Coordinates 758883 mE, 6621905 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Light Orange
Soil Texture Clay-Sand
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Duboisia hopwoodii</i> ; <i>Hakea ?minyma</i> ; <i>Keraudrenia velutina</i> ; <i>Prostanthera campbellii</i>
Shrub (<1 m)	<i>Acacia coolgardiensis</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Phebalium canaliculatum</i> ; <i>Scaevola spinescens</i>
Herb	<i>Herb</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Aristida contorta</i> ; <i>Auistrostipa trichophylla</i> ; <i>Monachather paradoxus</i>

Site S062

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	758929 mE, 6621695 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Shrub (1-2 m)	<i>Duboisia hopwoodii</i> ; <i>Hakea ?minyma</i> ; <i>Keraudrenia velutina</i> ; <i>Melaleuca hamata</i> ; <i>Prostanthera campbellii</i>
Shrub (<1 m)	<i>Acacia ?coolgardiensis</i> ; <i>Acacia resinimarginea</i> ; <i>Callitris preissii</i> ; <i>Dampiera stenostachya</i> ; <i>Grevillea</i> sp.; <i>Hannafordia bissillii</i> subsp. <i>latifolia</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Phebalium canaliculatum</i> ; <i>Shrub A</i> ; <i>Thryptomene ?kochii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S063

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733304 mE, 6645846 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus transcontinentalis</i>
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus sheathiana</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Daviesia purpurascens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Austrostipa platychaeta</i>

Site S064

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/17/2013
NW Corner Coordinates	733545 mE, 6645459 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	BIF
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia aneura</i> ; <i>Melaleuca ?uncinata</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena fusiformis</i> ; <i>Zygophyllum apiculatum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S065

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/17/2013
NW Corner Coordinates	733587 mE, 6645676 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Grass	<i>Neurachne annularis</i>

Site S066

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733824 mE, 6645972 mN
Habitat and Waterway	Upper Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Calcrete
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	25 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Grass	<i>Neurachne annularis</i>

Site S067

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733979 mE, 6645781 mN
Habitat and Waterway	Upper Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	Ironstone; Laterite
Time since Fire	>10 years
Bare ground	93 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus transcontinentalis</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i> ; <i>Melaleuca leiocarpa</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Grevillea haplantha</i> subsp. <i>haplantha</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena fusiformis</i> ; <i>Westringia cephalantha</i>
Herb	<i>Drosera macrantha</i> subsp. <i>macrantha</i>
Grass	<i>Neurachne annularis</i>

Site S068

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733067 mE, 6646017 mN
Habitat and Waterway	Mid-Slope
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite; Calcrete
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	90 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Eremophila alternifolia</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Maireana trichoptera</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Austrostipa elegantissima</i>

Site S069

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	733006 mE, 6646304 mN
Habitat and Waterway	Ridge
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	8 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i> ; <i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Philotheca brucei</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Daviesia purpurascens</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Ptilotus obovatus</i>
Climber	<i>Thysanotus ? patersonii</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Herb</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S070

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/18/2013
NW Corner Coordinates 733075 mE, 6646535 mN
Habitat and Waterway Lower Slope
Aspect Northwest
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 70 %

Stratum	Species
Shrub (>2 m)	<i>Acacia mulganeura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera campbellii</i>
Herb	<i>Brunonia australis</i> ; <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Hyalosperma glutinosum</i> ; <i>Velleia rosea</i>
Grass	<i>Monachather paradoxus</i> ; <i>Neurachne annularis</i>

Site S071

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733003 mE, 6646776 mN
Habitat and Waterway	Flat/Floodplain
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Laterite; Calcrete
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Ptilotus obovatus</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lawrencella rosea</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Monachather paradoxus</i> ; <i>Neurachne annularis</i>

Site S072

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/20/2013
NW Corner Coordinates 733117 mE, 6646598 mN
Habitat and Waterway Mid-Slope
Aspect Northwest
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone; Laterite
Rock Outcrop BIF
Time since Fire >10 years
Bare ground 75 %

Stratum	Species
Shrub (>2 m)	<i>Acacia mulganeura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Philotheca brucei</i>
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>
Grass	<i>Neurachne annularis</i>

Site S073

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733171 mE, 6646713 mN
Habitat and Waterway	Mid-Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus longissima</i>
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Daviesia purpurascens</i> ; <i>Grevillea zygodoba</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Ptilotus drummondii</i>
Grass	<i>Neurachne annularis</i>

Site S074

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/18/2013
NW Corner Coordinates	733215 mE, 6646303 mN
Habitat and Waterway	Mid-Slope
Aspect	West
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus longicornis</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea zygodoba</i>
Shrub (<1 m)	<i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Lawrencella rosea</i> ; <i>Leucochrysum fitzgibbonii</i> ; <i>Ptilotus drummondii</i> ; <i>Velleia hispida</i>
Grass	<i>Austrostipa elegantissima/playtchaeta</i> ; <i>Neurachne annularis</i>

Site S075

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733333 mE, 6646055 mN
Habitat and Waterway	Lower Slope
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	85 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus sheathiana</i> ; <i>Eucalyptus yilgarnensis</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Herb	<i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S076

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/19/2013
NW Corner Coordinates 733363 mE, 6646179 mN
Habitat and Waterway Mid-Slope
Aspect Southwest
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 90 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus transcontinentalis</i>
Tree (<10 m)	<i>Eucalyptus longissima</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Daviesia purpurascens</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena fusiformis</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Grass	<i>Austrostipa elegantissima</i>

Site S077

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733325 mE, 6646289 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Allocasuarina ?dielsiana</i> ; <i>Alyxia buxifolia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Philothea brucei</i> subsp. <i>brucei</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Lawrencella rosea</i> ; <i>Trachymene ornata</i>
Grass	<i>Neurachne annularis</i> ; <i>Pentameris airoides</i> subsp. <i>airoides</i>

Site S078

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/20/2013
NW Corner Coordinates 733307 mE, 6646441 mN
Habitat and Waterway Minor Channel
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 5 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Eremophila oldfieldii</i>
Shrub (1-2 m)	<i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Maireana triptera</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Grass	<i>Neurachne annularis</i>

Site S079

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/20/2013
NW Corner Coordinates 733334 mE, 6646579 mN
Habitat and Waterway Mid-Slope
Aspect Northwest
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop BIF
Time since Fire >10 years
Bare ground 30 %

Stratum	Species
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia incurvaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Cheiranthra filifolia</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Herb	<i>Cheilanthes adiantoides</i>
Grass	<i>Neurachne annularis</i>

Site S080

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733445 mE, 6646049 mN
Habitat and Waterway	Lower Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Scaevola spinescens</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S081

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733492 mE, 6646234 mN
Habitat and Waterway	Upper Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (1-2 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Solanum nummularium</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Erodium crinitum</i> ; Herb
Grass	<i>Neurachne annularis</i>

Site S082

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733425 mE, 6646435 mN
Habitat and Waterway	Minor Channel
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i> ; <i>Eremophila oldfieldii</i> ; <i>Scaevola spinescens</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Solanum terraneum</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Goodenia occidentalis</i> ; <i>Podolepis canescens</i> ; <i>Pterostylis</i> sp.; <i>Ptilotus drummondii</i> ; <i>Ptilotus gaudichaudii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S083

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/13/2012
NW Corner Coordinates 733494 mE, 6646831 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 40 %

Stratum	Species
Shrub (<1 m)	<i>Acacia caesaneura</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Grevillea nematophylla</i> subsp. <i>nematophylla</i> ; <i>Sida</i> sp. <i>dark green fruits</i> (<i>S. van Leeuwen 2260</i>)
Grass	<i>Austrostipa trichophylla</i> ; <i>Rytidosperma caespitosum</i>

Site S084

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733540 mE, 6646193 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Philotheca brucei</i> subsp. <i>brucei</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Solanum terraneum</i>
Herb	<i>Asteraceae</i> sp.; <i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lawrencella rosea</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i> ; <i>Pentameris airoides</i> subsp. <i>airoides</i>

Site S085

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733590 mE, 6646496 mN
Habitat and Waterway	Upper Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	None
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Cheilanthes adiantoides</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Grevillea zygaloba</i> ; <i>Philothea brucei</i> subsp. <i>brucei</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Solanum nummularium</i>
Herb	<i>Brunonia</i> sp. <i>Goldfields (K.R. Newbey 6044)</i> ; <i>Cheilanthes</i> sp.; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S086

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733691 mE, 6646006 mN
Habitat and Waterway	Lower Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i> ; <i>Eremophila</i> ? <i>caperata</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex nummularia</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Climber	<i>Thysanotus</i> ? <i>patersonii</i> ; <i>Thysanotus manglesianus</i>
Herb	<i>Ptilotus drummondii</i> ; <i>Stenopetalum filifolium</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S087

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733687 mE, 6646315 mN
Habitat and Waterway	Minor Channel
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	15 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Pittosporum angustifolium</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Asteraceae</i> sp.; <i>Crassula colorata</i> ; <i>Goodenia occidentalis</i> ; <i>Lawrencella rosea</i> ; <i>Ptilotus drummondii</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i> ; <i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S088

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733687 mE, 6646391 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Acacia quadrimarginea</i> ; <i>Banksia arborea</i>
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia mulganeura</i>
Shrub (1-2 m)	<i>Calothamnus gilesii</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Grevillea georgeana</i>
Shrub (<1 m)	<i>Hibbertia eatoniae</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Philotheca brucei</i> subsp. <i>brucei</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S089

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733632 mE, 6646699 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Granite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus longissima</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia acanthoclada</i>
Shrub (<1 m)	? <i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i>
Climber	<i>Thysanotus manglesianus</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Epiphyte	<i>Amyema</i> sp.
Grass	<i>Neurachne annularis</i>

Site S090

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733762 mE, 6646120 mN
Habitat and Waterway	Ridge
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Acacia tetragonophylla</i> ; <i>Alyxia buxifolia</i> ; <i>Grevillea zygoloba</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Casuarina obesa</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Lawrencella rosea</i> ; <i>Ptilotus drummondii</i> ; <i>Stenopetalum filifolium</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S091

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733852 mE, 6646518 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	95 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Grevillea nematophylla</i> subsp. <i>nematophylla</i>
Shrub (<1 m)	<i>Acacia tetragonophylla</i> ; <i>Maireana triptera</i> ; <i>Olearia exiguifolia</i> ; <i>Ptilotus obovatus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Ptilotus drummondii</i>
Grass	<i>Monachather paradoxus</i> ; <i>Neurachne annularis</i>

Site S092

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	733803 mE, 6646991 mN
Habitat and Waterway	Ridge
Aspect	East
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone; Laterite
Rock Outcrop	Ironstone; Laterite
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina helmsii</i> ; <i>Melaleuca hamata</i>
Shrub (1-2 m)	<i>Acacia acanthoclada</i> subsp. <i>glaucescens</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (<1 m)	<i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Stackhousia</i> sp.; <i>Trachymene ornata</i> ; <i>Zygophyllum eremaeum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i>

Site S093

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	733956 mE, 6646111 mN
Habitat and Waterway	Mid-Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus corrugata</i>
Tree (<10 m)	<i>Casuarina obesa</i>
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia quadrimarginea</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Epiphyte	<i>Amyema miquelii</i>
Grass	<i>Neurachne annularis</i>

Site S094

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733999 mE, 6646588 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	95 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Ptilotus drummondii</i>
Epiphyte	<i>Amyema mackayensis</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S095

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733995 mE, 6646836 mN
Habitat and Waterway	Minor Channel
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Maireana triptera</i> ; <i>Olearia muelleri</i> ; <i>Pittosporum angustifolium</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida</i> sp. dark green fruits (<i>S. van Leeuwen</i> 2260)
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site S096

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733089 mE, 6647056 mN
Habitat and Waterway	Minor Channel
Aspect	East-southeast
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Hypochaeris glabra</i>
Shrub (<1 m)	<i>Keraudrenia velutina</i> subsp. <i>velutina</i> ; <i>Maireana georgei</i> ; <i>Ptilotus obovatus</i> ; <i>Sida</i> sp.; <i>Solanum nummularium</i>
Herb	<i>Brachyscome ciliocarpa</i> ; <i>Calandrinia eremaea</i> ; <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Herb</i> ; <i>Hyalosperma glutinosum</i> ; <i>Lawrencella rosea</i> ; <i>Pterostylis</i> sp.; <i>Schoenia cassiniana</i> ; <i>Stenopetalum filifolium</i> ; <i>Velleia rosea</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa eremophila</i> ; <i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i>

Site S097

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733094 mE, 6647182 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (<1 m)	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Keraudrenia velutina</i> subsp. <i>velutina</i>
Herb	<i>Brachyscome ciliocarpa</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Monachather paradoxus</i>

Site S098

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/1/2013
NW Corner Coordinates 733473 mE, 6647112 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone; Calcrete
Rock Outcrop None
Time since Fire >10 years
Bare ground 10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ?sheathiana</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Acacia erinacea</i> ; <i>Acacia tetragonophylla</i> ; <i>Maireana georgei</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Epiphyte	<i>Amyema miquelii</i>
Grass	<i>Austrostipa platychaeta</i>

Site S099

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/1/2013
NW Corner Coordinates	733426 mE, 6647309 mN
Habitat and Waterway	Lower Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Senna cardiosperma</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Salsola australis</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa trichophylla</i>

Site S100

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/13/2012
NW Corner Coordinates 733802 mE, 6647381 mN
Habitat and Waterway Mid-Slope
Aspect North
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type BIF; Ironstone; Chert
Rock Outcrop None
Time since Fire >10 years
Bare ground 25 %

Stratum	Species
Shrub (1-2 m)	<i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Lawrencella rosea</i> ; <i>Ptilotus obovatus</i>
Herb	? <i>Haloragis</i> sp.; <i>Brunonia australis</i> ; <i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Erodium cygnorum</i> ; <i>Podolepis canescens</i> ; <i>Stackhousia muricata</i> ; <i>Stenopetalum filifolium</i> ; <i>Zygophyllum ovatum</i>
Grass	<i>Aristida contorta</i> ; <i>Neurachne annularis</i>

Site S101

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733993 mE, 6647108 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ravida</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Eremophila ionantha</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Dodonaea inaequifolia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i>
Herb	? <i>Menkea australis</i> ; <i>Erodium</i> sp.; <i>Lawrencella rosea</i> ; <i>Ptilotus carlsonii</i> ; <i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa elegantissima</i>

Site S102

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	733930 mE, 6647300 mN
Habitat and Waterway	Mid-Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Chert
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (<1 m)	<i>Allocasuarina</i> sp.; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i>
Climber	<i>Comesperma integerrimum</i> ; <i>Thysanotus ?patersonii</i>
Herb	<i>Brunonia australis</i> ; <i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Goodenia havilandii</i> ; <i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i> ; <i>Lawrencella rosea</i> ; <i>Stackhousia muricata</i> ; <i>Stenopetalum filifolium</i> ; <i>Velleia rosea</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S103

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/15/2012
NW Corner Coordinates 213225 mE, 6621063 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Calcrete; Quartz
Rock Outcrop None
Time since Fire >10 years
Bare ground 10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Calotis hispidula</i> ; <i>Ptilotus holosericeus</i>

Site S104

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	759599 mE, 6621830 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	80 %

Stratum	Species
Shrub (1-2 m)	<i>Keraudrenia velutina</i>
Shrub (<1 m)	<i>Acacia ?coolgardiensis; Acacia effusifolia; Acacia resinimarginea; Baeckea elderiana; Baeckea sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586); Beyeria sulcata; Chamelaucium sp.; Cyanostegia angustifolia; Dampiera stenostachya; Grevillea ?excelsior; Hannafordia bissilli subsp. latifolia; Homalocalyx thryptomenoides; Persoonia coriacea; Phebalium canaliculatum; Shrub A; Thryptomene urceolaris</i>
Hummock grass	<i>Triodia sp.</i>
Grass	<i>Amphipogon caricinus var. caricinus</i>

Site S105

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	759788 mE, 6621789 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	80 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina</i> sp.
Shrub (1-2 m)	<i>Leptomeria preissiana</i>
Shrub (<1 m)	<i>Chamelaucium</i> sp.; <i>Hakea ?minyma</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Keraudrenia velutina</i> ; <i>Melaleuca hamata</i> ; <i>Phebalium</i> sp.; <i>Prostanthera campbellii</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S106

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	759877 mE, 6621831 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?rigidula</i>
Shrub (>2 m)	<i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Callitris preissii</i>
Shrub (<1 m)	<i>Acacia ?coolgardiensis; Eremophila drummondii; Keraudrenia velutina; Phebalium canaliculatum; Westringia cephalantha</i>
Sedge	<i>Schoenus hexandrus</i>
Hummock grass	<i>Triodia tomentosa</i>

Site S107

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	734127 mE, 6640411 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Eremophila ionantha</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima/playtchaeta</i> ; <i>Austrostipa trichophylla</i>

Site S108

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	734363 mE, 6640099 mN
Habitat and Waterway	Mid-Slope
Aspect	Northeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ?griffithsii</i> ; <i>Eucalyptus</i> sp.
Tree (<10 m)	<i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Bossiaea walkeri</i> ; <i>Eremophila alternifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena diacantha</i> ; <i>Solanum nummularium</i>
Grass	<i>Austrostipa elegantissima</i>

Site S109

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	734027 mE, 6645542 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Laterite; Calcrete
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	95 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus yilgarnensis</i>
Tree (<10 m)	<i>Eucalyptus sheathiana</i>
Shrub (>2 m)	<i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>

Site S110

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	734083 mE, 6645991 mN
Habitat and Waterway	Upper Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	5 %

Stratum	Species
Tree (<10 m)	<i>Casuarina pauper</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Grevillea zygoloba</i>
Shrub (1-2 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Melaleuca leiocarpa</i>
Shrub (<1 m)	<i>Eremophila georgei</i> ; <i>Scaevola spinescens</i>
Herb	<i>Sida</i> sp. <i>dark green fruits</i> (<i>S. van Leeuwen 2260</i>)
Grass	<i>Neurachne annularis</i>

Site S111

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/19/2013
NW Corner Coordinates 734108 mE, 6645790 mN
Habitat and Waterway Lower Slope
Aspect South
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Laterite; Calcrete
Rock Outcrop None
Time since Fire >10 years
Bare ground 90 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ravidia</i>
Shrub (>2 m)	<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana tomentosa</i> ; <i>Maireana trichoptera</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i> ; <i>Solanum nummularium</i>
Herb	<i>Lawrencia repens</i>

Site S112

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	734290 mE, 6645921 mN
Habitat and Waterway	Ridge
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus salubris</i> ; <i>Eucalyptus</i> sp.
Shrub (>2 m)	<i>Acacia colletioides</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Santalum spicatum</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Atriplex nummularia</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Exocarpos aphyllus</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i>
Herb	<i>Stenopetalum filifolium</i>
Grass	<i>Austrostipa elegantissima</i>

Site S113

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/19/2013
NW Corner Coordinates	734347 mE, 6645924 mN
Habitat and Waterway	Ridge
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Philotheca brucei</i> ; <i>Westringia cephalantha</i>
Shrub (<1 m)	<i>Eremophila georgei</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Sida</i> ?sp. <i>dark green fruit</i> (<i>S. van Leeuwen</i> 2260); <i>Trachymene ornata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S114

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/20/2013
NW Corner Coordinates 734058 mE, 6646268 mN
Habitat and Waterway Mid-Slope
Aspect East
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone; Laterite
Rock Outcrop Ironstone
Time since Fire >10 years
Bare ground 50 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus</i> sp.
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Grevillea zygaloba</i>
Shrub (<1 m)	<i>Scaevola spinescens</i>
Epiphyte	<i>Amyema miquelii</i>
Grass	<i>Neurachne annularis</i>

Site S115

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	734027 mE, 6646378 mN
Habitat and Waterway	Lower Slope
Aspect	Northeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Laterite; Calcrete
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (<1 m)	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> ; <i>Maireana georgei</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S116

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	734034 mE, 6646676 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	82 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus longissima</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Ptilotus obovatus</i> ; <i>Sida</i> sp. dark green fruits (<i>S. van Leeuwen 2260</i>)
Herb	<i>Cheilanthes</i> sp.; <i>Ptilotus drummondii</i>
Grass	<i>Aristida contorta</i> ; <i>Neurachne annularis</i>

Site S117

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	734002 mE, 6646951 mN
Habitat and Waterway	Lower Slope
Aspect	South
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus griffithsii</i> ; <i>Eucalyptus salmonophloia</i>
Shrub (>2 m)	<i>Exocarpos aphyllus</i> ; <i>Pittosporum angustifolium</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i> ; <i>Rhagodia drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Atriplex vesicaria</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena diacantha</i> ; <i>Sida spodochroma</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa platychaeta</i>

Site S118

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	734002 mE, 6647195 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Dark Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ravidia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila alternifolia</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i> ; <i>Zygophyllum ovatum</i>
Herb	<i>Asteraceae</i> sp.; <i>Haloragis trigonocarpa</i> ; <i>Ptilotus aervoides</i> ; <i>Ptilotus carlsonii</i> ; <i>Rhodanthe rubella</i> ; <i>Schoenia cassiniana</i> ; <i>Sonchus</i> sp.
Grass	<i>Aristida contorta</i> ; <i>Austrostipa</i> sp.

Site S119

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	734082 mE, 6647355 mN
Habitat and Waterway	Mid-Slope
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone; Chert
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	25 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina dielsiana</i> ; <i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Lawrencella rosea</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Zygophyllum ovatum</i>
Herb	<i>Brunonia australis</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Goodenia occidentalis</i> ; <i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i> ; <i>Podolepis canescens</i> ; <i>Stackhousia muricata</i> ; <i>Stenopetalum filifolium</i> ; <i>Velleia rosea</i>
Grass	<i>Aristida contorta</i> ; <i>Neurachne annularis</i>

Site S120

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/9/2012
NW Corner Coordinates	786655 mE, 6620717 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i> ; <i>Leptospermum fastigiatum</i>
Shrub (1-2 m)	<i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Homalocalyx thryptomenoides</i> ; <i>Prostanthera campbellii</i> ; <i>Rinzia carnososa</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Austrostipa elegantissima</i>

Site S121

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	214746 mE, 6620962 mN
Habitat and Waterway	Mid-Slope
Aspect	South
Soil Colour	Yellow
Soil Texture	Clay-Loam
Rock Type	Laterite; Calcrete
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Not resurveyed in Spring 2013

Site S122

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/9/2012
NW Corner Coordinates	786835 mE, 6620869 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?longicornis</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Exocarpos aphyllus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia merrallii</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila ionantha</i> ; <i>Grevillea acuaria</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Phebalium tuberosum</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i>
Climber	<i>Rhyncharrhena linearis</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S123

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	786969 mE, 6620962 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Calcrete; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Acacia merrallii</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Eremophila interstans</i> subsp. <i>interstans</i> ; <i>Eremophila ionantha</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila maculata</i> subsp. <i>brevifolia</i> ; <i>Eriochiton sclerolaenoides</i> ; <i>Grevillea acuaria</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	? <i>ASTERACEAE</i> sp.; <i>Asteridea athrixoides</i> ; <i>Erodium</i> sp.; <i>Goodenia mimuloides</i> ; <i>Haloragis ?gossei</i> ; <i>Ptilotus carlsonii</i> ; <i>Zygophyllum eremaeum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S124

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	760173 mE, 6621576 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	25 %

Stratum	Species
Shrub (>2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Baeckea elderiana</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i> ; <i>Leptospermum roei</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Hannafordia bissillii</i> subsp. <i>latifolia</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Keraudrenia velutina</i> ; <i>Melaleuca hamata</i> ; <i>Philotheca tomentella</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S125

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	760291 mE, 6621740 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	80 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina</i> sp.
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Duboisia hopwoodii</i> ; <i>Grevillea ?juncifolia</i> ; <i>Keraudrenia velutina</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586); <i>Callitris preissii</i> ; <i>Chamelaucium</i> sp.; <i>Cyanostegia angustifolia</i> ; <i>Dampiera stenostachya</i> ; <i>Hakea ?minyma</i> ; <i>Hakea invaginata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Melaleuca hamata</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium megaphyllum</i> ; <i>Phebalium</i> sp.; <i>Philothea tomentella</i> ; <i>Prostanthera campbellii</i> ; Shrub A; <i>Stylidium limbatum</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus ?patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S126

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	734667 mE, 6639659 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus salubris</i> ; <i>Santalum acuminatum</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Atriplex nummularia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Pittosporum angustifolium</i> ; <i>Rhagodia drummondii</i> ; <i>Sida spodochroma</i> ; <i>Solanum nummularium</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S127

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	735318 mE, 6645436 mN
Habitat and Waterway	Ridge
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	Ironstone
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Banksia arborea</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Eremophila georgei</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Hibbertia eatoniae</i> ; <i>Hibbertia exasperata</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Trachymene ornata</i>
Grass	<i>Neurachne annularis</i>

Site S128

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 735395 mE, 6645556 mN
Habitat and Waterway Lower Slope
Aspect North
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop Ironstone
Time since Fire >10 years
Bare ground 15 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Grevillea zygoloba</i>
Shrub (1-2 m)	<i>Acacia hemiteles</i> ; <i>Acacia incurvaneura</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Olearia muelleri</i>
Grass	<i>Neurachne annularis</i>

Site S129

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 735539 mE, 6645729 mN
Habitat and Waterway Breakaway
Aspect Southwest
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Quartz
Rock Outcrop Quartz; Schist
Time since Fire >10 years
Bare ground 15 %

Stratum	Species
Shrub (>2 m)	<i>Melaleuca leiocarpa</i>
Shrub (1-2 m)	<i>Acacia quadrimarginea</i> ; <i>Eremophila georgei</i> ; <i>Philotheca brucei</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Olearia pimeleoides</i> ; <i>Sida</i> sp. dark green fruits (<i>S. van Leeuwen 2260</i>)
Herb	<i>Cheilanthes adiantoides</i> ; <i>Cheilanthes sieberi</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Lawrencella rosea</i> ; <i>Trachymene ornata</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa platychaeta</i> ; <i>Neurachne annularis</i>

Site S130

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/13/2012
NW Corner Coordinates	732629 mE, 6647381 mN
Habitat and Waterway	Minor Channel
Aspect	East-southeast
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Acacia tetragonophylla</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (<1 m)	<i>Abutilon cryptopetalum</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Lawrencella rosea</i> ; <i>Maireana georgei</i> ; <i>Ptilotus divaricatus</i> ; <i>Ptilotus obovatus</i> ; <i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260); <i>Solanum nummularium</i>
Herb	? <i>Enchylaena tomentosa</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium</i> sp.; <i>Podolepis canescens</i> ; <i>Stellaria filiformis</i> ; <i>Velleia rosea</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa eremophila</i> ; <i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i> ; <i>Poaceae</i> sp.

Site S131

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	787324 mE, 6620926 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	88 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (>2 m)	<i>Acacia prainii</i> ; <i>Exocarpos aphyllus</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia merrallii</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Grevillea acuaria</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida spodochroma</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S132

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	735353 mE, 6638759 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Tree (<10 m)	<i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Pittosporum angustifolium</i> ; <i>Ptilotus divaricatus</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Sida spodochroma</i> ; <i>Solanum nummularium</i>
Grass	<i>Austrostipa</i> sp.

Site S133

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 735780 mE, 6638116 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 0 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (>2 m)	<i>Acacia merrallii</i> ; <i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Atriplex vesicaria</i> ; <i>Dodonaea viscosa</i> subsp. ? <i>angustissima</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena diacantha</i>

Site S134

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 736542 mE, 6644610 mN
Habitat and Waterway Mid-Slope
Aspect South
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 55 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus griffithsii</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Daviesia purpurascens</i>
Shrub (<1 m)	<i>Eremophila oppositifolia</i> ; <i>Eremophila rugosa</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S135

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	736509 mE, 6644753 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Calycopeplus paucifolius</i>
Shrub (<1 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Hibbertia eatoniae</i> ; <i>Prostanthera magnifica</i>
Herb	<i>Calandrinia</i> sp.; <i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Waitzia acuminata</i>
Grass	<i>Neurachne annularis</i>

Site S136

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	736640 mE, 6644657 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Not Applicable
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	55 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i> ; <i>Grevillea zygoloba</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Eremophila georgei</i>
Shrub (<1 m)	<i>Hibbertia eatoniae</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S137

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	736729 mE, 6644597 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Not Applicable
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Calycopeplus paucifolius</i> ; <i>Eremophila georgei</i> ; <i>Grevillea zygoloba</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Olearia humilis</i> ; <i>Philotheca brucei</i> ; <i>Prostanthera magnifica</i> ; <i>Stenanthemum stipulosum</i>
Herb	<i>Calandrinia eremaea</i> ; <i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Stellaria filiformis</i> ; <i>Trachymene ornata</i>
Grass	<i>Neurachne annularis</i>

Site S138

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	736058 mE, 6645715 mN
Habitat and Waterway	Breakaway
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Laterite
Rock Outcrop	Laterite
Time since Fire	>10 years
Bare ground	3 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Grevillea zygaloba</i>
Shrub (1-2 m)	<i>Eremophila georgei</i> ; <i>Philothea brucei</i>
Shrub (<1 m)	<i>Acacia ?andrewsii</i> ; <i>Acacia tetragonophylla</i> ; <i>Grevillea haplantha</i> subsp. <i>haplantha</i> ; <i>Leptospermum macgillivrayi</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Trachymene ornata</i>
Grass	<i>Eriachne pulchella</i> subsp. <i>pulchella</i> ; <i>Neurachne annularis</i>

Site S139

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	736235 mE, 6645101 mN
Habitat and Waterway	Ridge
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone; Laterite
Rock Outcrop	Ironstone; Laterite
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i>
Shrub (>2 m)	<i>Acacia longispinea</i>
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Eremophila georgei</i> ; <i>Grevillea zygoloba</i>
Shrub (<1 m)	? <i>Prostanthera</i> sp. A; <i>Hibbertia exasperata</i>
Climber	<i>Thysanotus</i> sp.
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S140

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	216135 mE, 6621197 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i> ; <i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i> ; <i>Grevillea nematophylla</i> subsp. <i>nematophylla</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Eremophila ionantha</i>
Shrub (<1 m)	<i>Acacia prainii</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Solanum nummularium</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa elegantissima</i>

Site S141

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	216532 mE, 6621459 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Exocarpos aphyllus</i>
Shrub (1-2 m)	<i>Acacia prainii</i>
Shrub (<1 m)	<i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena fusiformis</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Grass	<i>Austrostipa elegantissima</i>

Site S142

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	216602 mE, 6621894 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Not Applicable
Soil Texture	Clay
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia crenulata</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Exocarpos aphyllus</i> ; <i>Phebalium microphyllum</i> complex; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Daviesia purpurascens</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i> ; <i>Grevillea acuaria</i> ; LAMIACEAE sp.; <i>Olearia pimeleoides</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Climber	<i>Marsdenia australis</i>
Grass	<i>Austrostipa elegantissima</i>

Site S143

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	216510 mE, 6622094 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus griffithsii</i> ; <i>Eucalyptus longicornis</i>
Shrub (1-2 m)	<i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena diacantha</i>
Herb	<i>Eriochiton sclerolaenoides</i>
Grass	<i>Austrostipa trichophylla</i>

Site S144

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/15/2012
NW Corner Coordinates	216531 mE, 6622420 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	2 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?griffithsii</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Alyxia buxifolia</i> ; <i>Exocarpos aphyllus</i> ; <i>Grevillea acuaria</i> ; <i>Hibbertia exasperata</i> ; <i>Hybanthus floribundus</i> subsp. <i>curvifolius</i> ; <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Westringia cephalantha</i>
Climber	<i>Thysanotus ?patersonii</i>

Site S145

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	736678 mE, 6636790 mN
Habitat and Waterway	Upper Slope
Aspect	Southwest
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone; Quartz; Granite
Rock Outcrop	Granite
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Allocasuarina helmsii</i>
Shrub (1-2 m)	<i>Acacia tetragonophylla</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Eremophila georgei</i>
Herb	<i>Brunonia australis</i> ; <i>Cheilanthes sieberi</i> ; <i>Goodenia havilandii</i> ; <i>Lawrencella rosea</i> ; <i>Podolepis canescens</i> ; <i>Velleia rosea</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S146

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 736866 mE, 6636424 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Granite
Rock Outcrop Granite
Time since Fire >10 years
Bare ground 55 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Eremophila interstans</i> subsp. <i>interstans</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site S147

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 736195 mE, 6637542 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Quartz
Rock Outcrop None
Time since Fire >10 years
Bare ground 80 %

Stratum	Species
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i>
Shrub (<1 m)	<i>Maireana trichoptera</i> ; <i>Ptilotus obovatus</i> ; <i>Salsola australis</i> ; <i>Sclerolaena diacantha</i> ; <i>Solanum nummularium</i>
Herb	<i>Cephalopterum drummondii</i> ; <i>Goodenia havilandii</i> ; <i>Sida spodochroma</i> ; <i>Zygophyllum ovatum</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa ?elegantissima</i>

Site S148

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 737984 mE, 6634684 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Sand
Rock Type Ironstone; Quartz
Rock Outcrop None
Time since Fire >10 years
Bare ground 70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana trichoptera</i> ; <i>Maireana triptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i>

Site S149

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 737350 mE, 6635667 mN
Habitat and Waterway Mid-Slope
Aspect West
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Quartz
Rock Outcrop None
Time since Fire >10 years
Bare ground 0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Acacia erinacea</i> ; <i>Atriplex nummularia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila alternifolia</i> ; <i>Eremophila interstans</i> subsp. <i>interstans</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	<i>Austrostipa elegantissima</i>

Site S150

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 737517 mE, 6635457 mN
Habitat and Waterway Upper Slope
Aspect Southeast
Soil Colour Orange
Soil Texture Clay
Rock Type Ironstone; Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus longissima</i>
Shrub (>2 m)	<i>Melaleuca ?uncinata</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (<1 m)	<i>Acacia ?coolgardiensis</i>
Herb	<i>Goodenia ?mimuloides</i> ; <i>Goodenia mimuloides</i>
Grass	<i>Neurachne annularis</i>

Site S151

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	737136 mE, 6636046 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Quartz; Granite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila scoparia</i>
Shrub (1-2 m)	<i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Zygophyllum ovatum</i>
Grass	? <i>Austrostipa</i> sp.

Site S152

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/21/2013
NW Corner Coordinates	738996 mE, 6643758 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?horistes</i> ; <i>Eucalyptus sheathiana</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oldfieldii</i> ; <i>Philothea brucei</i> ; <i>Senna cardiosperma</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i>
Climber	<i>Thysanotus manglesianus</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Epiphyte	<i>Amyema</i> sp.
Grass	<i>Neurachne annularis</i>

Site S153

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	764820 mE, 6621785 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?leptopoda</i>
Shrub (>2 m)	<i>Grevillea ?excelsior</i>
Shrub (1-2 m)	<i>Acacia resinimarginea; Allocasuarina sp.; Leptomeria preissiana</i>
Shrub (<1 m)	<i>Beyeria sulcata; Cyanostegia angustifolia; Dampiera stenostachya; Duboisia hopwoodii; Hakea ?francisiana; Hannafordia bissillii subsp. latifolia; Homalocalyx thryptomenoides; Keraudrenia velutina; Lachnostachys coolgardiensis; Melaleuca ?hamata; Melaleuca cordata; Phebalium canaliculatum; Philotheca tomentella; Thryptomene urceolaris</i>
Herb	<i>Dampiera sp. A; Halgania sp. A; Stylidium limbatum</i>
Grass	<i>Amphipogon caricinus var. caricinus</i>

Site S154

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	738553 mE, 6633936 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Sand
Rock Type	Ironstone; Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Allocasuarina</i> sp.; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Acacia effusifolia</i> ; <i>Phebalium canaliculatum</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S155

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	738196 mE, 6634425 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Not Applicable
Soil Texture	Clay-Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia coolgardiensis</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Eremophila caperata</i> ; <i>Prostanthera grylloana</i> ; <i>Westringia cephalantha</i>

Site S156

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	739967 mE, 6642863 mN
Habitat and Waterway	Mid-Slope
Aspect	South
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Calycopeplus paucifolius</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> ; <i>Melaleuca hamata</i> ; <i>Mirbelia ferricola</i> ; <i>Stenanthemum newbeyi</i>
Shrub (<1 m)	<i>Philothea brucei</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Grass	<i>Neurachne annularis</i>

Site S157

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/21/2013
NW Corner Coordinates 739333 mE, 6643772 mN
Habitat and Waterway Lower Slope
Aspect South
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type Ironstone; Calcrete
Rock Outcrop Calcrete
Time since Fire >10 years
Bare ground 50 %

Stratum	Species
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Eucalyptus corrugata</i>
Shrub (1-2 m)	<i>Eremophila oldfieldii</i> ; <i>Grevillea zygoloba</i> ; <i>Santalum spicatum</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Olearia muelleri</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium crinitum</i>
Grass	<i>Neurachne annularis</i>

Site S158

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	739755 mE, 6643061 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Calycopeplus paucifolius</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea zygaloba</i> ; <i>Melaleuca nematophylla</i> ; <i>Mirbelia ferricola</i> ; <i>Philothea brucei</i>
Shrub (<1 m)	<i>Dodonaea</i> sp. <i>B</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Prostanthera magnifica</i> ; <i>Stenanthemum newbeyi</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lawrencella rosea</i>
Grass	<i>Neurachne annularis</i>

Site S159

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	740184 mE, 6642844 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (<10 m)	<i>Brachychiton gregorii</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Calycopeplus paucifolius</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>
Shrub (<1 m)	<i>Beyeria rostellata</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Philotheca brucei</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Calandrinia</i> sp.; <i>Cheilanthes lasiophylla</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S160

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/22/2013
NW Corner Coordinates 740793 mE, 6642491 mN
Habitat and Waterway Lower Slope
Aspect South
Soil Colour Orange
Soil Texture Clay-Loam
Rock Type BIF
Rock Outcrop BIF
Time since Fire >10 years
Bare ground 5 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus horistes</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Daviesia purpurascens</i> ; <i>Philotheca brucei</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Olearia pimeleoides</i> ; <i>Ptilotus obovatus</i>
Climber	<i>Drosera macrantha</i> subsp. <i>macrantha</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Herb</i> ; <i>Lawrencella rosea</i> ; <i>Trachymene ornata</i>
Grass	<i>Neurachne annularis</i>

Site S161

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	740750 mE, 6642663 mN
Habitat and Waterway	Ridge
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Shrub (>2 m)	<i>Acacia quadrimarginea</i> ; <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> ; <i>Calycopeplus paucifolius</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Prostanthera magnifica</i> ; <i>Stenanthemum newbeyi</i>
Herb	<i>Cheilanthes</i> sp.; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Trachymene ornata</i>
Grass	<i>Neurachne annularis</i>

Site S162

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	740665 mE, 6643156 mN
Habitat and Waterway	Ridge
Aspect	North
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (<10 m)	<i>Casuarina pauper</i>
Shrub (>2 m)	<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Mirbelia ferricola</i> ; <i>Philothea brucei</i>
Shrub (<1 m)	<i>Acacia quadrimarginea</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Neurachne annularis</i>

Site S163

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	766276 mE, 6621292 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow-Brown
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	2-5 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (>2 m)	<i>Melaleuca hamata</i>
Shrub (1-2 m)	<i>Callitris preissii</i> ; Shrub A; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Acacia resinimarginea</i> ; <i>Baeckea elderiana</i> ; <i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586); <i>Hakea invaginata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Keraudrenia velutina</i> subsp. <i>velutina</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium lepidotum</i>
Herb	<i>Dampiera</i> sp.; <i>Halgania</i> sp. A
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S164

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	766332 mE, 6621647 mN
Habitat and Waterway	Mid-Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	80 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?loxophleba</i> ; <i>Eucalyptus sheathiana</i>
Shrub (>2 m)	<i>Acacia colletioides</i> ; <i>Melaleuca eleuterostachya</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Callitris preissii</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	? <i>Commersonia</i> sp.; <i>Acacia hemiteles</i> ; <i>Dodonaea lobulata</i> ; <i>Eremophila caperata</i> ; <i>Eremophila drummondii</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Phebalium lepidotum</i>
Herb	<i>Ptilotus holosericeus</i>

Site S165

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	766609 mE, 6621600 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?rigidula</i>
Shrub (1-2 m)	<i>Acacia resinimarginea; Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Callitris preissii</i> ; <i>Hakea ?minyma</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Philotheca tomentella</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S166

Quadrat Size 20 x 20 m
NW Corner Coordinates 766870 mE, 6621348 mN

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ?gracilis</i>
Shrub (>2 m)	<i>Acacia hemiteles</i>
Shrub (<1 m)	<i>Acacia prainii</i> ; <i>Beyeria sulcata</i> ; <i>Hakea ?minyma</i> ; <i>Hakea invaginata</i> ; <i>Keraudrenia velutina</i> subsp. <i>velutina</i> ; <i>Leptomeria preissiana</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S167

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	766879 mE, 6621649 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	5-10 years
Bare ground	55 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?moderata</i>
Shrub (>2 m)	<i>Eremophila caperata</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia hemiteles</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila scoparia</i> ; <i>Phebalium microphyllum</i> complex; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Acacia merrallii</i> ; <i>Acacia</i> sp.; <i>Dodonaea lobulata</i> ; <i>Grevillea acuaria</i> ; <i>Olearia muelleri</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Grass	<i>Austrostipa elegantissima</i>

Site S168

Quadrat Size 20 x 20 m
Date of quadrat implementation 4/16/2013
NW Corner Coordinates 740137 mE, 6631780 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Yellow
Soil Texture Sand
Rock Type None
Rock Outcrop None
Time since Fire 5-10 years
Bare ground 50 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Grevillea paradoxa</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Beyeria sulcata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium filifolium</i> ; <i>Philotheca tomentella</i>

Site S169

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	740258 mE, 6631603 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	5-10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Allocasuarina acutivalvis</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Grevillea paradoxa</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Beyeria sulcata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Philothea tomentella</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S170

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	740596 mE, 6631217 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	5-10 years
Bare ground	80 %

Stratum	Species
Shrub (>2 m)	<i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (<1 m)	<i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Phebalium filifolium</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S171

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/1/2013
NW Corner Coordinates	740525 mE, 6631393 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	5-10 years
Bare ground	80 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum roei</i> ; <i>Phebalium microphyllum</i> complex; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S172

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/22/2013
NW Corner Coordinates	741384 mE, 6642312 mN
Habitat and Waterway	Mid-Slope
Aspect	Southeast
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Shrub (>2 m)	<i>Acacia incurvaneura</i> ; <i>Acacia quadrimarginea</i> ; <i>Allocasuarina ?eriochlamys</i> ; <i>Calycopeplus paucifolius</i> ; <i>Grevillea zygoloba</i> ; <i>Melaleuca nematophylla</i>
Shrub (1-2 m)	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ; <i>Philotheca brucei</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>
Herb	<i>Cheilanthes adiantoides</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Drosera macrantha</i> subsp. <i>macrantha</i> ; <i>Lawrencella rosea</i>
Grass	<i>Austrostipa</i> sp.; <i>Neurachne annularis</i>

Site S173

Quadrat Size 20 x 20 m
NW Corner Coordinates 767093 mE, 6621555 mN

Stratum	Species
Shrub (>2 m)	<i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Leptospermum fastigiatum</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium lepidotum</i>
Shrub (<1 m)	<i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>

Site S174

Quadrat Size 20 x 20 m
NW Corner Coordinates 767152 mE, 6621543 mN

Stratum	Species
Shrub (>2 m)	<i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Hakea ?minyma</i> ; <i>Leptospermum fastigiatum</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S175

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/11/2012
NW Corner Coordinates 767276 mE, 6621574 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange-Yellow
Soil Texture Sand
Rock Type Laterite
Rock Outcrop None
Time since Fire 2-5 years
Bare ground 85 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus</i> sp.
Shrub (<1 m)	<i>Acacia resinimarginea</i> ; <i>Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Brachysola coerulea</i> ; <i>Hakea ?minyma</i> ; <i>Homalocalyx thryptomenoides</i> ; LAMIACEAE sp.; <i>Melaleuca eleuterostachya</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S176

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	767326 mE, 6621474 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	<2 years
Bare ground	70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus ?gracilis</i>
Shrub (1-2 m)	<i>Acacia ?burkittii</i> ; <i>Acacia resinimarginea</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium tuberosum</i> ; <i>Prostanthera grylloana</i> ; <i>Santalum acuminatum</i>
Shrub (<1 m)	<i>?Baeckea</i> sp.; <i>Eremophila glabra</i> subsp. <i>glabra</i> ; <i>Olearia pimeleoides</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia tomentosa</i>

Site S177

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	767576 mE, 6621287 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Phebalium canaliculatum</i> ; <i>Phebalium tuberosum</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Acacia resinimarginea</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Olearia pimeleoides</i> ; <i>Rinzia carnosae</i> ; <i>Thryptomene urceolaris</i> ; <i>Waitzia acuminata</i>
Herb	<i>Brunonia australis</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Austrostipa</i> sp.; <i>Austrostipa trichophylla</i>

Site S178

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	767656 mE, 6621299 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Hakea ?minyma</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Leptospermum fastigiatum/roei</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium tuberculosum</i> ; <i>Rinzia carnosae</i> ; <i>Westringia cephalantha</i>
Shrub (<1 m)	<i>Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia pimeleoides</i> ; <i>Philotheca tomentella</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Stenopetalum filifolium</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Austrostipa scabra</i>

Site S179

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	768100 mE, 6621399 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i> ; <i>Eucalyptus salubris</i>
Tree (<10 m)	<i>Eucalyptus yilgarnensis</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Templetonia ceracea</i>
Herb	<i>Eriochiton sclerolaenoides</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i>

Site S180

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	768289 mE, 6621475 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Atriplex vesicaria</i> ; <i>Eremophila ionantha</i> ; <i>Eremophila rugosa</i>
Shrub (<1 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Maireana georgei</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Cephalopterum drummondii</i> ; <i>Ptilotus carlsonii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa nitida</i> ; <i>Austrostipa scabra</i>

Site S181

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/11/2012
NW Corner Coordinates 768518 mE, 6621297 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange-Brown
Soil Texture Clay
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (>2 m)	<i>Eremophila ionantha</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Rhagodia drummondii</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i>

Site S182

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/11/2012
NW Corner Coordinates	768784 mE, 6621370 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Shrub (>2 m)	<i>Eremophila ionantha</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Atriplex nummularia</i> ; <i>Exocarpos aphyllus</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Olearia muelleri</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i>

Site S183

Quadrat Size 20 x 20 m
NW Corner Coordinates 768991 mE, 6621348 mN

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Tree (<10 m)	<i>Eucalyptus celastroides</i> subsp. <i>celastroides</i>
Shrub (>2 m)	<i>Eremophila ionantha</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Eremophila caperata</i> ; <i>Olearia muelleri</i>
Herb	<i>Actinobole uliginosum</i>
Grass	<i>Austrostipa trichophylla</i>

Site S184

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	742470 mE, 6628906 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Homalocalyx thryptomenoides</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium filifolium</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S185

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	742560 mE, 6628908 mN
Habitat and Waterway	Upper Slope
Aspect	Northwest
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	5-10 years
Bare ground	80 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Chamelaucium</i> sp.; <i>Grevillea ?juncifolia</i> ; <i>Leptomeria preissiana</i> ; <i>Melaleuca hamata</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Callitris preissii</i> ; <i>Malleostemon roseus</i> ; <i>Melaleuca cordata</i>

Site S186

Quadrat Size 20 x 20 m
NW Corner Coordinates 769149 mE, 6621477 mN

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Eremophila ?caperata</i> ; <i>Olearia muelleri</i> ; <i>Santalum acuminatum</i> ; <i>Zygophyllum eremaeum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa scabra</i>

Site S187

Quadrat Size 20 x 20 m
NW Corner Coordinates 769489 mE, 6621317 mN

Stratum	Species
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Rhagodia drummondii</i>
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea acuaria</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera grylloana</i> ; <i>Rinzia carnos</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	? <i>Austrostipa</i> sp.

Site S188

Quadrat Size 20 x 20 m
NW Corner Coordinates 769693 mE, 6621193 mN

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?corrugata</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia colletioides</i> ; <i>Exocarpos aphyllus</i> ; <i>Grevillea acuaria</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i>
Grass	<i>Austrostipa elegantissima</i>

Site S189

Quadrat Size 20 x 20 m
NW Corner Coordinates 770039 mE, 6621193 mN

Stratum	Species
Shrub (>2 m)	<i>Acacia prainii</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Exocarpos aphyllus</i> ; <i>Grevillea ?didymobotrya</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila granitica</i> ; <i>Olearia pimeleoides</i> ; <i>Prostanthera grylloana</i> ; <i>Westringia cephalantha</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lawrencella rosea</i> ; <i>Waitzia acuminata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Aurolastipa elegantissima</i>

Site S190

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	770531 mE, 6621488 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Loam-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?corrugata</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (1-2 m)	<i>Acacia colletioides</i> ; <i>Eremophila caperata</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila rugosa</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Westringia cephalantha</i>
Herb	? <i>Aluta maisonneuvei</i> ; <i>Lomandra effusa</i> ; <i>Podolepis capillaris</i> ; <i>Stenopetalum filifolium</i> ; <i>Velleia cycnopotamica</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa</i> sp.

Site S191

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	770882 mE, 6621235 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Loam-Sand
Rock Type	Ironstone
Rock Outcrop	Laterite
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia effusifolia</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Callitris preissii</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Olearia pimeleoides</i> ; <i>Rinzia carnosa</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S192

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	771342 mE, 6621119 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Loam-Sand
Rock Type	Ironstone
Rock Outcrop	Laterite
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> ; <i>Eucalyptus</i> sp.
Shrub (>2 m)	<i>Acacia effusifolia</i>
Shrub (1-2 m)	<i>Baeckea elderiana</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Rinzia carnos</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Lepidosperma</i> sp. <i>A</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Neurachne annularis</i>

Site S193

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	745600 mE, 6625639 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus oldfieldii</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i>
Shrub (1-2 m)	<i>Allocasuarina corniculata</i> ; <i>Beaufortia interstans</i> ; <i>Callitris preissii</i> ; <i>Cryptandra aridicola</i>
Shrub (<1 m)	<i>Beyeria lechenaultii</i> ; <i>Cassytha</i> sp.; <i>Drummondita hassellii</i> ; <i>Malleostemon roseus</i> ; <i>Melaleuca sheathiana</i> ; <i>Melaleuca cordata</i> ; <i>Persoonia inconspicua</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia scariosa</i>

Site S194

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	745753 mE, 6625492 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea ?incrassata</i>
Shrub (<1 m)	<i>Chamelaucium</i> sp.; <i>Malleostemon roseus</i> ; <i>Melaleuca cordata</i> ; <i>Rinzia carnos</i>
Grass	<i>Neurachne annularis</i>

Site S195

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/16/2013
NW Corner Coordinates	745973 mE, 6625196 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (1-2 m)	<i>Acacia stereophylla</i> var. <i>stereophylla</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Chamelaucium</i> sp.; <i>Malleostemon roseus</i> ; <i>Thryptomene urceolaris</i>

Site S196

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	772763 mE, 6621214 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone; Calcrete; Quartz
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Dodonaea lobulata</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Exocarpos aphyllus</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Acacia tetragonophylla</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Sclerolaena diacantha</i>
Herb	<i>Asteraceae</i> sp.; <i>Podolepis capillaris</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S197

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	772795 mE, 6621384 mN
Habitat and Waterway	Ridge
Aspect	South
Soil Colour	Grey-Cream
Soil Texture	Sand
Rock Type	Ironstone; Laterite; Granite; Sandstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	10 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus sheathiana</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Allocasuarina</i> sp.; <i>Atriplex vesicaria</i> ; <i>Dodonaea inaequifolia</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Eremophila ?decepiens</i> ; <i>Eremophila granitica</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Westringia cephalantha</i>
Herb	<i>Calandrinia</i> sp.; <i>Lomandra effusa</i>
Grass	<i>Amhipogon caricinus</i> var. <i>caricinus</i> ; <i>Auistrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S198

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 773084 mE, 6621087 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay
Rock Type Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 75 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Acacia ?effusifolia</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Allocasuarina ?acutivalvis</i> ; <i>Scaevola spinescens</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207)
Herb	<i>Lawrencella rosea</i>
Grass	<i>Neurachne annularis</i>

Site S199

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	773112 mE, 6621320 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia ?effusifolia</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Goodenia mimuloides</i> ; <i>Lawrencella rosea</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Neurachne annularis</i>

Site S200

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	747358 mE, 6621892 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia colletioides</i> ; <i>Dodonaea viscosa</i> subsp. <i>angustissima</i>
Shrub (1-2 m)	<i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Olearia exiguifolia</i> ; <i>Scaevola spinescens</i> ; <i>Westringia cephalantha</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Dampiera latealata</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Podolepis capillaris</i> ; <i>Ptilotus drummondii</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site S201

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	773534 mE, 6621229 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Tree (<10 m)	<i>Eucalyptus griffithsii</i> ; <i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Callitris preissii</i> ; <i>Eremophila ?caperata</i> ; <i>Eremophila drummondii</i> ; <i>Prostanthera campbellii</i> ; <i>Santalum acuminatum</i>
Shrub (<1 m)	<i>Allocasuarina ?acutivalvis</i> ; <i>Exocarpos aphyllus</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Phebalium megaphyllum</i> ; <i>Scaevola spinescens</i> ; <i>Westringia cephalantha</i>
Herb	<i>Podolepis capillaris</i> ; <i>Waitzia acuminata</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Austrostipa elegantissima</i>

Site S202

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	747949 mE, 6621957 mN
Habitat and Waterway	Not Applicable
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i>
Shrub (1-2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i>
Shrub (<1 m)	<i>Chamelaucium pauciflorum</i> subsp. <i>Perenjori</i> (B.J. Conn 2181); <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i> ; <i>Waitzia acuminata</i>
Climber	<i>Thysanotus patersonii</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S203

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	747415 mE, 6622129 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586); Rinzia carnosa</i>
Shrub (<1 m)	<i>Olearia pimeleoides; Prostanthera campbellii; Waitzia acuminata</i>
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S204

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	747734 mE, 6622164 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Shrub (>2 m)	<i>Melaleuca hamata</i>
Shrub (1-2 m)	<i>Acacia coolgardiensis</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i>
Shrub (<1 m)	<i>Olearia pimeleoides</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium microphyllum</i> complex; <i>Prostanthera incurvata</i> ; <i>Thryptomene urceolaris</i> ; <i>Waitzia acuminata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S205

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 774044 mE, 6621223 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Sand
Rock Type None
Rock Outcrop None
Time since Fire >10 years
Bare ground 0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?platycorys</i> ; <i>Eucalyptus</i> sp. A
Shrub (>2 m)	<i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Acacia hemiteles</i> ; <i>Callitris preissii</i> ; <i>Eremophila ?caperata</i> ; <i>Santalum spicatum</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Beyeria sulcata</i> ; <i>Dodonaea lobulata</i> ; <i>Olearia muelleri</i> ; <i>Scaevola spinescens</i> ; <i>Westringia cephalantha</i>
Hummock grass	<i>Triodia tomentosa</i>

Site S206

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	774370 mE, 6621200 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Clay-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Acacia ramulosa</i> var. <i>ramulosa</i> ; <i>Baeckea elderiana</i> ; <i>Grevillea paradoxa</i> ; <i>Phebalium tuberculosum</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Hibbertia eatoniae</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Prostanthera grylloana</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S207

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 774394 mE, 6621374 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange
Soil Texture Clay-Sand
Rock Type None
Rock Outcrop None
Time since Fire >10 years
Bare ground 0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus eremophila</i>
Shrub (1-2 m)	<i>Acacia hemiteles</i> ; <i>Eremophila ?caperata</i> ; <i>Westringia cephalantha</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i>

Site S208

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 774703 mE, 6621193 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Yellow
Soil Texture Sand
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 35 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia sibina</i> ; <i>Alyxia buxifolia</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Climber	<i>Thysanotus ?patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S209

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/14/2012
NW Corner Coordinates 748181 mE, 6622089 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Yellow
Soil Texture Sand
Rock Type Ironstone
Rock Outcrop None
Time since Fire >10 years
Bare ground 60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus horistes</i>
Shrub (>2 m)	<i>Hakea ?minyma</i>
Shrub (<1 m)	<i>Alyxia buxifolia; Callitris preissii; Eremophila rugosa; Phebalium canaliculatum</i>
Herb	<i>Lepidosperma sp. A; Podolepis capillaris</i>
Hummock grass	<i>Triodia scariosa</i>

Site S210

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	748360 mE, 6622201 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i>
Shrub (1-2 m)	<i>Acacia coolgardiensis</i> ; <i>Allocasuarina corniculata</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Grevillea paradoxa</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Phebalium canaliculatum</i> ; <i>Waitzia acuminata</i>
Herb	<i>Gilberta tenuifolia</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S211

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	748568 mE, 6622061 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ewartiana</i> ; <i>Eucalyptus leptopoda</i>
Shrub (>2 m)	<i>Acacia sibina</i>
Shrub (1-2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586)</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Euryomyrtus maidenii</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Lepidosperma</i> sp. A
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S212

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	748900 mE, 6622087 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586)
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Calytrix creswellii</i> ; <i>Casuarina pauper</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Phebalium canaliculatum</i> ; <i>Prostanthera semiteres</i> subsp. <i>semiteres</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Gilberta tenuifolia</i> ; <i>Pterostylis</i> sp.
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S213

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	748892 mE, 6623816 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Prostanthera semiteres</i> subsp. <i>semiteres</i> ; <i>Thryptomene urceolaris</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Gilberta tenuifolia</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S214

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775109 mE, 6621059 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina corniculata</i> ; <i>Leptospermum fastigiatum</i>
Shrub (1-2 m)	<i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Euryomyrtus maidenii</i> ; <i>Homalocalyx thryptomenoides</i>
Climber	<i>Thysanotus ?patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S215

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775126 mE, 6621250 mN
Habitat and Waterway	Mid-Slope
Aspect	Northwest
Soil Colour	Yellow
Soil Texture	Not Applicable
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i> ; <i>Eucalyptus moderata</i>
Shrub (>2 m)	<i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Acacia hemiteles</i> ; <i>Allocasuarina corniculata</i> ; <i>Baeckea elderiana</i> ; <i>Grevillea paradoxa</i> ; <i>Leptospermum fastigiatum/roei</i>
Shrub (<1 m)	<i>Alyxia buxifolia</i> ; <i>Calytrix creswellii</i> ; <i>Malleostemon roseus</i> ; <i>Olearia muelleri</i> ; <i>Phebalium tuberosum</i> ; <i>Thryptomene urceolaris</i> ; <i>Westringia cephalantha</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S216

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775452 mE, 6621353 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Baeckea elderiana</i> ; <i>Grevillea paradoxa</i> ; <i>Leptomeria preissiana</i>
Shrub (<1 m)	<i>Acacia sibina</i> ; <i>Callitris preissii</i> ; <i>Leptospermum roei</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Persoonia coriacea</i> ; <i>Phebalium tuberosum</i> ; <i>Philotheca tomentella</i> ; <i>Rinzia carnosae</i> ; <i>Thryptomene ?kochii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S217

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775501 mE, 6621184 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Acacia sibina</i> ; <i>Baeckea elderiana</i>
Shrub (<1 m)	? <i>Grevillea</i> sp.; <i>Acacia effusifolia</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene ?kochii</i>
Sedge	<i>Schoenus hexandrus</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S218

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775721 mE, 6621043 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Acacia resinimarginea</i> ; <i>Baeckea elderiana</i>
Shrub (<1 m)	<i>Callitris preissii</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S219

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	775890 mE, 6621190 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	75 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus platycorys</i>
Shrub (>2 m)	<i>Allocasuarina corniculata</i>
Shrub (1-2 m)	? <i>Persoonia saundersiana</i> ; <i>Callitris preissii</i> ; <i>Dodonaea lobulata</i> ; <i>Dodonaea</i> sp. A; <i>Exocarpos aphyllus</i> ; <i>Grevillea paradoxa</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Melaleuca ?hamata</i>
Shrub (<1 m)	<i>Beyeria sulcata</i> ; <i>Olearia exiguifolia</i> ; <i>Phebalium tuberosum</i> ; <i>Prostanthera campbellii</i> ; <i>Rinzia carnosa</i> ; <i>Westringia cephalantha</i>
Herb	<i>Poranthera microphylla</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Auistrostipa</i> sp.

Site S220

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749073 mE, 6622006 mN
Habitat and Waterway	Upper Slope
Aspect	West
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus longicornis</i>
Tree (<10 m)	<i>Eucalyptus ?oleosa; Eucalyptus aequioperta; Eucalyptus oleosa subsp. oleosa; Eucalyptus sp.</i>
Shrub (>2 m)	<i>Eremophila caperata</i>
Shrub (1-2 m)	<i>Melaleuca zeteticorum</i>
Shrub (<1 m)	<i>Olearia exiguifolia; Olearia muelleri</i>
Climber	<i>Thysanotus patersonii</i>
Herb	<i>Podolepis capillaris; Stenopetalum filifolium</i>
Grass	<i>Austrostipa elegantissima</i>

Site S221

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749193 mE, 6622021 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Shrub (>2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (1-2 m)	<i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Euryomyrtus maidenii</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207); <i>Prostanthera semiteres</i> subsp. <i>semiteres</i>
Climber	<i>Thysanotus ?patersonii</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Gilberta tenuifolia</i> ; <i>Lawrencella rosea</i> ; <i>Pterostylis</i> sp.; <i>Stylidium arenicola</i> ; <i>Waitzia acuminata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S222

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	749457 mE, 6622043 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus ?moderata</i> ; <i>Eucalyptus transcontinentalis</i>
Shrub (>2 m)	<i>Eremophila caperata</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Olearia exiguifolia</i> ; <i>Olearia muelleri</i> ; <i>Sclerolaena parviflora</i> ; <i>Westringia rigida</i>
Herb	<i>Podolepis canescens</i> ; <i>Podolepis capillaris</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i>

Site S223

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	749596 mE, 6622093 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Quadrat not resurveyed in spring 2013

Site S224

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	749846 mE, 6622062 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay-Loam-Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Rhagodia drummondii</i> ; <i>Scaevola spinescens</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i> ; <i>Senna cardiosperma</i> ; <i>Solanum nummularium</i>
Herb	<i>Calandrinia</i> sp.
Grass	<i>Austrostipa elegantissima</i> ; <i>Monachather paradoxus</i>

Site S225

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749252 mE, 6623679 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (>2 m)	<i>Acacia effusifolia</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera semiteres</i> subsp. <i>semiteres</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Comesperma ?integerrimum</i> ; <i>Thysanotus ?patersonii</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S226

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749320 mE, 6623550 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus horistes</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Allocasuarina</i> sp.; <i>Eremophila ?drummondii</i> ; <i>Grevillea paradoxa</i> ; <i>Prostanthera grylloana</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Phebalium canaliculatum</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S227

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749433 mE, 6623556 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus horistes</i>
Shrub (>2 m)	<i>Acacia effusifolia</i>
Shrub (1-2 m)	<i>Baeckea elderiana</i> ; <i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Alyxia buxifolia</i> ; <i>Prostanthera semiteres</i> subsp. <i>semiteres</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S228

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749625 mE, 6623480 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus</i> sp.
Shrub (>2 m)	<i>Acacia coolgardiensis</i>
Shrub (1-2 m)	<i>Homalocalyx thryptomenoides</i> ; <i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Eremophila ?drummondii</i> ; <i>Phebalium canaliculatum</i> ; <i>Waitzia acuminata</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S229

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749752 mE, 6623388 mN
Habitat and Waterway	Mid-Slope
Aspect	Northwest
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (>2 m)	<i>Acacia coolgardiensis</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Callitris preissii</i> ; <i>Phebalium canaliculatum</i> ; <i>Prostanthera grylloana</i> ; <i>Thryptomene urceolaris</i>
Shrub (<1 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Olearia pimeleoides</i>
Herb	<i>Herb</i> ; <i>Lawrencella rosea</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Hummock grass	<i>Triodia rigidissima</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa</i> sp.

Site S230

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	749951 mE, 6623331 mN
Habitat and Waterway	Mid-Slope
Aspect	Southeast
Soil Colour	Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>
Shrub (>2 m)	<i>Alyxia buxifolia</i>
Shrub (1-2 m)	<i>Callitris preissii</i>
Shrub (<1 m)	<i>Acacia coolgardiensis</i> ; <i>Phebalium canaliculatum</i> ; <i>Westringia cephalantha</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>
Hummock grass	<i>Triodia rigidissima</i>

Site S231

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	750097 mE, 6621983 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	20 %

Stratum	Species
Tree (<10 m)	<i>Casuarina pauper</i>
Shrub (1-2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Atriplex nummularia</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila granitica</i> ; <i>Exocarpos aphyllus</i>
Shrub (<1 m)	<i>Acacia ?burkittii</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Rhagodia drummondii</i> ; <i>Scaevola spinescens</i> ; <i>Solanum nummularium</i>
Herb	<i>Zygophyllum apiculatum</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Neurachne annularis</i>

Site S232

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	750412 mE, 6621970 mN
Habitat and Waterway	Upper Slope
Aspect	Southwest
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Granite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Acacia tetragonophylla</i> ; <i>Alyxia buxifolia</i> ; <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Eremophila granitica</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Herb	<i>Cheilanthes sieberi</i> ; <i>Erymophyllum ramosum</i> subsp. <i>ramosum</i> ; <i>Zygophyllum apiculatum</i>
Grass	<i>Austrostipa trichophylla</i> ; <i>Neurachne annularis</i>

Site S233

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/14/2012
NW Corner Coordinates	750662 mE, 6621947 mN
Habitat and Waterway	Upper Slope
Aspect	Southwest
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone; Granite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i> ; <i>Eucalyptus loxophelba</i> subsp. <i>?lissopholia</i>
Shrub (>2 m)	<i>Santalum spicatum</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Acacia erinacea</i> ; <i>Maireana georgei</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus obovatus</i> ; <i>Scaevola spinescens</i> ; <i>Sclerolaena fusiformis</i>
Grass	<i>Neurachne annularis</i>

Site S234

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/14/2012
NW Corner Coordinates 750779 mE, 6622032 mN
Habitat and Waterway Mid-Slope
Aspect South
Soil Colour Light Orange
Soil Texture Clay-Loam
Rock Type Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 40 %

Stratum	Species
Shrub (>2 m)	<i>Acacia effusifolia</i>
Shrub (<1 m)	<i>Prostanthera campbellii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Neurachne annularis</i>

Site S235

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	777831 mE, 6620959 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i> ; <i>Callitris preissii</i> ; <i>Melaleuca cordata</i> ; <i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Hibbertia eatoniae</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Malleostemon roseus</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium tuberculosum</i> ; <i>Thryptomene urceolaris</i>

Site S236

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	777385 mE, 6621266 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Allocasuarina corniculata</i> ; <i>Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Callitris preissii</i> ; <i>Calytrix ?creswelli</i> ; <i>Euryomyrtus maidenii</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum</i> ; <i>Melaleuca cordata</i> ; <i>Melichrus</i> sp. <i>Bungalbin Hill (F.H. & M.P. Mollemans 3069; Phebalium megaphyllum</i>

Site S237

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	751431 mE, 6621882 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Shrub (>2 m)	<i>Acacia ?coolgardiensis</i>
Shrub (1-2 m)	<i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Leucopogon</i> sp. <i>Clyde Hill (M.A. Burgman 1207)</i>
Herb	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i> ; <i>Auistrostipa elegantissima</i>

Site S238

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	777545 mE, 6621051 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>
Shrub (>2 m)	<i>Acacia resinimarginea</i>
Shrub (1-2 m)	<i>Allocasuarina corniculata</i> ; <i>Callitris preissii</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Beyeria sulcata</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum</i> ; <i>Phebalium lepidotum</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus patersonii</i>

Site S239

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	751690 mE, 6621937 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	None
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (<10 m)	<i>Callitris preissii</i> ; <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831); <i>Exocarpos aphyllus</i>
Shrub (1-2 m)	<i>Alyxia buxifolia</i> ; <i>Phebalium canaliculatum</i> ; <i>Santalum acuminatum</i> ; <i>Santalum spicatum</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila granitica</i> ; <i>Olearia muelleri</i> ; <i>Olearia pimeleoides</i> ; <i>Scaevola spinescens</i>
Herb	<i>Comesperma integerrimum</i>
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S240

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	751774 mE, 6622084 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Yellow
Soil Texture	Loam-Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	0 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i>
Shrub (>2 m)	<i>Hakea ?minyma</i>
Shrub (1-2 m)	<i>Acacia effusifolia</i> ; <i>Prostanthera campbellii</i>
Shrub (<1 m)	<i>Baeckea</i> sp. <i>Bungalbin Hill</i> (B.J. Lepschi, L.A. Craven 4586); <i>Exocarpos aphyllus</i>
Herb	<i>Dianella revoluta</i> var. <i>divaricata</i>

Site S241

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	778217 mE, 6620933 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	40 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Hakea ?erecta</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Allocasuarina corniculata</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Grevillea paradoxa</i> ; <i>Hibbertia eatoniae</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Phebalium canaliculatum</i> ; <i>Thryptomene urceolaris</i>
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S242

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	778094 mE, 6621200 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus corrugata</i>
Shrub (>2 m)	<i>Hakea pectinata</i> ; <i>Melaleuca eleuterostachya</i> ; <i>Melaleuca hamata</i>
Shrub (1-2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Callitris preissii</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Calytrix creswellii</i> ; <i>Euryomyrtus maidenii</i> ; <i>Grevillea paradoxa</i> ; <i>Hibbertia eatoniae</i> ; <i>Melaleuca conothamnoides</i> ; <i>Melaleuca cordata</i> ; <i>Microcorys obovata</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium lepidotum</i> ; <i>Phebalium megaphyllum</i> ; <i>Thryptomene urceolaris</i>

Site S243

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 778402 mE, 6621118 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange-Yellow
Soil Texture Sand
Rock Type Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 40 %

Stratum	Species
Shrub (>2 m)	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>
Shrub (1-2 m)	<i>Acacia sibina</i> ; <i>Callitris preissii</i> ; <i>Calothamnus gilesii</i> ; <i>Melaleuca ?hamata</i> ; <i>Melaleuca hamata</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Hibbertia eatoniae</i> ; <i>Leptospermum fastigiatum</i> ; <i>Phebalium canaliculatum</i> ; <i>Phebalium tuberculosum</i>
Climber	<i>Thysanotus manglesianus</i> ; <i>Thysanotus patersonii</i>

Site S244

Quadrat Size 20 x 20 m
Date of quadrat implementation 10/10/2012
NW Corner Coordinates 778552 mE, 6621099 mN
Habitat and Waterway Flat/Floodplain
Aspect Not Applicable
Soil Colour Orange-Yellow
Soil Texture Sand
Rock Type Laterite
Rock Outcrop None
Time since Fire >10 years
Bare ground 30 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i> ; <i>Hakea ?erecta</i> ; <i>Melaleuca cordata</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Hibbertia eatoniae</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S245

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	778599 mE, 6621046 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	57 %

Stratum	Species
Shrub (>2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Grevillea paradoxa</i>
Shrub (<1 m)	<i>Hibbertia eatoniae</i> ; <i>Phebalium tuberculosum</i>
Climber	<i>Thysanotus patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S246

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	778604 mE, 6621234 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Laterite
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Shrub (1-2 m)	<i>Acacia sibina</i> ; <i>Allocasuarina corniculata</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Hibbertia eatoniae</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S247

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/9/2012
NW Corner Coordinates	779590 mE, 6620926 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (>2 m)	<i>Leptomeria preissiana</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i> ; <i>Beyeria sulcata</i> var. <i>sulcata</i> ; <i>Callitris preissii</i> ; <i>Leptospermum fastigiatum/roei</i> ; <i>Melaleuca hamata</i> ; <i>Phebalium laevigatum</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Malleostemon roseus</i> ; <i>Melaleuca cordata</i> ; <i>Philothea tomentella</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus patersonii</i> ; <i>Thysanotus</i> sp.
Hummock grass	<i>Triodia scariosa</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S248

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/10/2012
NW Corner Coordinates	779144 mE, 6621021 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	30 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> ; <i>Allocasuarina corniculata</i> ; <i>Phebalium canaliculatum</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Homalocalyx thryptomenoides</i> ; <i>Leptospermum fastigiatum</i> ; <i>Phebalium laevigatum</i> ; <i>Rinzia carnosae</i> ; <i>Thryptomene urceolaris</i>
Climber	<i>Thysanotus patersonii</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S249

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	753366 mE, 6621995 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	45 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus yilgarnensis</i>
Shrub (>2 m)	<i>Acacia ?coolgardiensis</i> ; <i>Santalum acuminatum</i>
Shrub (1-2 m)	<i>Prostanthera campbellii</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Olearia exiguifolia</i> ; <i>Olearia pimeleoides</i> ; <i>Ptilotus obovatus</i> ; <i>Solanum nummularium</i>
Herb	<i>Caladenia</i> sp.; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium</i> sp.; <i>Lomandra effusa</i> ; <i>Podolepis capillaris</i> ; <i>Ptilotus drummondii</i>
Hummock grass	<i>Triodia tomentosa</i>
Grass	<i>Aristida contorta</i> ; <i>Austrostipa elegantissima</i> ; <i>Brachyscome</i> sp.; <i>Eriachne pulchella</i> subsp. <i>pulchella</i>

Site S250

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	753430 mE, 6621942 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus moderata</i>
Tree (<10 m)	<i>Eucalyptus ?longicornis; Eucalyptus ?yilgarnesis</i>
Shrub (1-2 m)	<i>Eremophila scoparia</i>
Shrub (<1 m)	<i>Atriplex vesicaria; Maireana trichoptera; Olearia muelleri; Pittosporum angustifolium</i>
Grass	<i>Austrostipa elegantissima; Austrostipa trichophylla</i>

Site S251

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	753546 mE, 6621947 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Light Orange
Soil Texture	Clay-Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	65 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i> ; <i>Eucalyptus salubris</i>
Tree (<10 m)	<i>Eucalyptus ?moderata</i> ; <i>Eucalyptus yilgarnensis</i>
Shrub (>2 m)	<i>Acacia tetragonophylla</i> ; <i>Exocarpos aphyllus</i>
Shrub (1-2 m)	<i>Eremophila ionantha</i> ; <i>Eremophila scoparia</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Olearia muelleri</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Ptilotus obovatus</i> ; <i>Rhagodia drummondii</i> ; <i>Scaevola spinescens</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	<i>Caladenia</i> sp.; <i>Lysiana casuarinae</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i>

Site S252

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/9/2012
NW Corner Coordinates	779652 mE, 6621168 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Yellow
Soil Texture	Sand
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	50 %

Stratum	Species
Tree (<10 m)	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i> ; <i>Eucalyptus platycorys</i>
Shrub (>2 m)	<i>Leptomeria preissiana</i>
Shrub (1-2 m)	<i>Acacia resinimarginea</i> ; <i>Allocasuarina corniculata</i> ; <i>Callitris preissii</i>
Shrub (<1 m)	<i>Baeckea elderiana</i> ; <i>Calytrix creswellii</i> ; <i>Chamelaucium</i> sp.; <i>Malleostemon roseus</i> ; <i>Phebalium lepidotum</i> ; <i>Thryptomene urceolaris</i>
Grass	<i>Amphipogon caricinus</i> var. <i>caricinus</i>

Site S253

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	753816 mE, 6621897 mN
Habitat and Waterway	Flat/Floodplain
Aspect	Not Applicable
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	70 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i> ; <i>Eucalyptus salubris</i>
Shrub (1-2 m)	<i>Pittosporum angustifolium</i> ; <i>Santalum acuminatum</i>
Shrub (<1 m)	<i>Acacia tetragonophylla</i> ; <i>Atriplex vesicaria</i> ; <i>Eremophila scoparia</i> ; <i>Maireana georgei</i> ; <i>Maireana trichoptera</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Sclerolaena drummondii</i>
Herb	<i>Asteridea athrixioides</i> ; <i>Bulbine semibarbata</i> ; <i>Erodium</i> sp.; <i>Goodenia mimuloides</i> ; <i>Lawrencia repens</i> ; <i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i> ; <i>Paspalidium constrictum</i>

Site S254

Quadrat Size	20 x 20 m
Date of quadrat implementation	4/20/2013
NW Corner Coordinates	728715 mE, 6648523 mN
Habitat and Waterway	Upper Slope
Aspect	Northwest
Soil Colour	Orange
Soil Texture	Clay-Loam
Rock Type	BIF; Ironstone; Granite
Rock Outcrop	BIF
Time since Fire	>10 years
Bare ground	55 %

Stratum	Species
Tree (<10 m)	<i>Brachychiton gregorii</i> ; <i>Eucalyptus ewartiana</i>
Shrub (>2 m)	<i>Acacia caesaneura</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>
Shrub (1-2 m)	<i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Grevillea zygodoba</i> ; <i>Philotheca brucei</i>
Shrub (<1 m)	<i>Hibbertia eatoniae</i> ; <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> ; <i>Sida</i> sp. dark green fruits (<i>S. van Leeuwen 2260</i>) PN; <i>Sida</i> sp. Golden calyces glabrous (<i>H.N. Foote 32</i>); <i>Sida spodochroma</i>
Climber	<i>Rhyncharrhena linearis</i> ; <i>Thysanotus manglesianus</i>
Herb	<i>Asteraceae</i> sp.; <i>Calandrinia eremaea</i> ; <i>Cheilanthes adiantoides</i> ; <i>Chrysocephalum apiculatum</i> ; <i>Crassula colorata</i> ; <i>Daucus glochidiatus</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i> ; <i>Erodium cygnorum</i> ; <i>Lawrencella rosea</i> ; <i>Nicotiana occidentalis</i> ; <i>Stenopetalum lineare</i> ; <i>Trachymene ornata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa</i> sp.; <i>Pentameris airoides</i>

Site S255

Quadrat Size	20 x 20 m
Date of quadrat implementation	10/12/2012
NW Corner Coordinates	754024 mE, 6621833 mN
Habitat and Waterway	Minor Channel
Aspect	South
Soil Colour	Orange-Brown
Soil Texture	Clay
Rock Type	Ironstone
Rock Outcrop	None
Time since Fire	>10 years
Bare ground	60 %

Stratum	Species
Tree (10-20 m)	<i>Eucalyptus salmonophloia</i> ; <i>Eucalyptus salubris</i>
Shrub (>2 m)	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)
Shrub (1-2 m)	<i>Acacia prainii</i> ; <i>Eremophila decipiens</i> subsp. <i>decipiens</i> ; <i>Eremophila scoparia</i> ; <i>Exocarpos aphyllus</i> ; <i>Pimelea microcephala</i> ; <i>Santalum acuminatum</i> ; <i>Santalum spicatum</i> ; <i>Senna artemisioides</i> subsp. <i>filifolia</i>
Shrub (<1 m)	<i>Atriplex vesicaria</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> ; <i>Eremophila alternifolia</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i> ; <i>Sclerolaena diacantha</i> ; <i>Solanum nummularium</i>
Climber	<i>Rhyncharrhena linearis</i>
Herb	<i>Bulbine semibarbata</i> ; <i>Ptilotus holosericeus</i>
Grass	<i>Austrostipa elegantissima</i> ; <i>Austrostipa trichophylla</i> ; <i>Paspalidium constrictum</i>

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APPENDIX E FLORA SPECIES RECORDED AT THE STUDY AREA

Family	Taxon	Status
Aizoaceae	<i>*Cleretum papulosum</i> subsp. <i>papulosum</i>	Introduced
Amaranthaceae	<i>Ptilotus aervoides</i>	
Amaranthaceae	<i>Ptilotus carlsonii</i>	
Amaranthaceae	<i>Ptilotus divaricatus</i>	
Amaranthaceae	<i>Ptilotus drummondii</i>	
Amaranthaceae	<i>Ptilotus gaudichaudii</i>	
Amaranthaceae	<i>Ptilotus holosericeus</i>	
Amaranthaceae	<i>Ptilotus nobilis</i> subsp. <i>nobilis</i>	
Amaranthaceae	<i>Ptilotus obovatus</i>	
Apiaceae	<i>Daucus glochidiatus</i>	
Apocynaceae	<i>Alyxia buxifolia</i>	
Apocynaceae	<i>Marsdenia australis</i>	
Apocynaceae	<i>Rhyncharrhena linearis</i>	
Araliaceae	<i>Hydrocotyle</i> sp. (indet.)	
Araliaceae	<i>Trachymene ornata</i>	
Araliaceae	<i>Trachymene pilosa</i>	
Asparagaceae	<i>Arthropodium</i> sp. (indet.)	
Asparagaceae	<i>Dianella revoluta</i> var. <i>divaricata</i>	
Asparagaceae	<i>Lomandra collina</i>	
Asparagaceae	<i>Lomandra effusa</i>	
Asparagaceae	<i>Sowerbaea multicaulis</i>	P4
Asparagaceae	<i>Thysanotus</i> ? <i>patersonii</i>	
Asparagaceae	<i>Thysanotus manglesianus</i>	
Asparagaceae	<i>Thysanotus patersonii</i>	
Asparagaceae	<i>Thysanotus</i> sp. (indet.)	
Asparagaceae	<i>Thysanotus</i> sp. Twining Wheatbelt (N.H. Brittan 81/29)	
Asparagaceae	<i>Thysanotus speckii</i>	
Asphodelaceae	<i>Bulbine semibarbata</i>	
Asteraceae	<i>*Centaurea melitensis</i>	Introduced
Asteraceae	<i>*Hypochaeris glabra</i>	Introduced
Asteraceae	<i>*Sonchus asper</i>	Introduced
Asteraceae	<i>*Sonchus oleraceus</i>	Introduced
Asteraceae	? <i>Senecio</i> sp. (indet.)	
Asteraceae	<i>Actinobole uliginosum</i>	
Asteraceae	Asteraceae sp. (indet.)	
Asteraceae	<i>Asteridea athrixoides</i>	
Asteraceae	<i>Bellida graminea</i>	
Asteraceae	<i>Brachyscome ciliaris</i>	
Asteraceae	<i>Brachyscome ciliocarpa</i>	
Asteraceae	<i>Brachyscome</i> sp. (indet.)	
Asteraceae	<i>Calotis hispidula</i>	
Asteraceae	<i>Cephalipterum drummondii</i>	
Asteraceae	<i>Chrysocephalum apiculatum</i>	
Asteraceae	<i>Erymophyllum ramosum</i> subsp. <i>ramosum</i>	
Asteraceae	<i>Gilberta tenuifolia</i>	

Family	Taxon	Status
Asteraceae	<i>Hyalosperma glutinosum</i>	
Asteraceae	<i>Isoetopsis graminifolia</i>	
Asteraceae	<i>Lawrencella rosea</i>	
Asteraceae	<i>Leucochrysum fitzgibbonii</i>	
Asteraceae	<i>Millotia myosotidifolia</i>	
Asteraceae	<i>Olearia exiguifolia</i>	
Asteraceae	<i>Olearia humilis</i>	
Asteraceae	<i>Olearia muelleri</i>	
Asteraceae	<i>Olearia pimeleoides</i>	
Asteraceae	<i>Podolepis canescens</i>	
Asteraceae	<i>Podolepis capillaris</i>	
Asteraceae	<i>Podotheca</i> sp. (indet.)	
Asteraceae	<i>Rhodanthe heterantha</i>	
Asteraceae	<i>Rhodanthe oppositifolia</i>	
Asteraceae	<i>Rhodanthe rubella</i>	
Asteraceae	<i>Schoenia cassiniana</i>	
Asteraceae	<i>Senecio glossanthus</i>	
Asteraceae	<i>Sonchus</i> sp. (indet.)	
Asteraceae	<i>Streptoglossa liatroides</i>	
Asteraceae	<i>Vittadinia cuneata</i>	
Asteraceae	<i>Waitzia acuminata</i> var. <i>acuminata</i>	
Boraginaceae	<i>Halgania andromedifolia</i>	
Boraginaceae	<i>Halgania cyanea</i>	
Boraginaceae	<i>Halgania gustafsenii</i> var. Mid West (G. Perry 370)	
Brassicaceae	? <i>Menkea australis</i>	
Brassicaceae	<i>Stenopetalum filifolium</i>	
Brassicaceae	<i>Stenopetalum lineare</i>	
Campanulaceae	Campanulaceae sp. 1 (submitted for identification)	
Caryophyllaceae	<i>Stellaria filiformis</i>	
Casuarinaceae	<i>Allocasuarina</i> ? <i>acutivalvis</i>	
Casuarinaceae	<i>Allocasuarina</i> ? <i>campestris</i>	
Casuarinaceae	<i>Allocasuarina</i> ? <i>dielsiana</i>	
Casuarinaceae	<i>Allocasuarina</i> ? <i>eriochlamys</i>	
Casuarinaceae	<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>	
Casuarinaceae	<i>Allocasuarina corniculata</i>	
Casuarinaceae	<i>Allocasuarina dielsiana</i>	
Casuarinaceae	<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i>	
Casuarinaceae	<i>Allocasuarina</i> sp. (indet.)	
Casuarinaceae	<i>Casuarina obesa</i>	
Casuarinaceae	<i>Casuarina pauper</i>	
Celastraceae	<i>Stackhousia muricata</i>	
Chenopodiaceae	? <i>Enchylaena tomentosa</i>	
Chenopodiaceae	? <i>Eriochiton sclerolaenoides</i>	
Chenopodiaceae	? <i>Maireana trichoptera</i>	
Chenopodiaceae	<i>Atriplex nummularia</i>	

Family	Taxon	Status
Chenopodiaceae	<i>Atriplex vesicaria</i>	
Chenopodiaceae	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	
Chenopodiaceae	<i>Eriochiton sclerolaenoides</i>	
Chenopodiaceae	<i>Maireana georgei</i>	
Chenopodiaceae	<i>Maireana tomentosa</i>	
Chenopodiaceae	<i>Maireana trichoptera</i>	
Chenopodiaceae	<i>Maireana triptera</i>	
Chenopodiaceae	<i>Rhagodia drummondii</i>	
Chenopodiaceae	<i>Salsola australis</i>	
Chenopodiaceae	<i>Sclerolaena diacantha</i>	
Chenopodiaceae	<i>Sclerolaena drummondii</i>	
Chenopodiaceae	<i>Sclerolaena fusiformis</i>	
Chenopodiaceae	<i>Sclerolaena parviflora</i>	
Chenopodiaceae	<i>Tecticornia halocnemoides</i>	
Crassulaceae	<i>Crassula colorata</i>	
Crassulaceae	<i>Crassula exserta</i>	
Crassulaceae	<i>Crassula</i> sp. (indet.)	
Cupressaceae	<i>Callitris preissii</i>	
Cyperaceae	<i>Lepidosperma</i> sp. [AIC 1555.0139] (submitted for identification)	
Cyperaceae	<i>Lepidosperma</i> sp. [RAO1555] (submitted for identification)	
Cyperaceae	<i>Schoenus hexandrus</i>	
Dilleniaceae	<i>Hibbertia eatoniae</i>	
Dilleniaceae	<i>Hibbertia exasperata</i>	
Dilleniaceae	<i>Hibbertia glomerosa</i> var. <i>glomerosa</i>	
Dilleniaceae	<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	P3
Droseraceae	<i>Drosera macrantha</i> subsp. <i>macrantha</i>	
Ericaceae	<i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207)	
Ericaceae	<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)	P3
Euphorbiaceae	<i>Beyeria brevifolia</i>	
Euphorbiaceae	<i>Beyeria rostellata</i>	P1
Euphorbiaceae	<i>Beyeria sulcata</i>	
Euphorbiaceae	<i>Beyeria sulcata</i> var. <i>sulcata</i>	
Euphorbiaceae	<i>Calycopeplus paucifolius</i>	
Fabaceae	<i>Acacia</i> ? <i>andrewsii</i>	
Fabaceae	<i>Acacia</i> ? <i>burkittii</i>	
Fabaceae	<i>Acacia</i> ? <i>coolgardiensis</i>	
Fabaceae	<i>Acacia</i> ? <i>effusifolia</i>	
Fabaceae	<i>Acacia</i> ? <i>ramulosa</i>	
Fabaceae	<i>Acacia acanthoclada</i> subsp. <i>glaucescens</i>	
Fabaceae	<i>Acacia adinophylla</i>	P1
Fabaceae	<i>Acacia andrewsii</i>	
Fabaceae	<i>Acacia aneura</i>	
Fabaceae	<i>Acacia caesaneura</i>	
Fabaceae	<i>Acacia colletioides</i>	
Fabaceae	<i>Acacia coolgardiensis</i>	

Family	Taxon	Status
Fabaceae	<i>Acacia crenulata</i>	P3
Fabaceae	<i>Acacia effusifolia</i>	
Fabaceae	<i>Acacia eremophila</i> var. <i>eremophila</i>	
Fabaceae	<i>Acacia erinacea</i>	
Fabaceae	<i>Acacia hemiteles</i>	
Fabaceae	<i>Acacia incurvaneura</i>	
Fabaceae	<i>Acacia jennerae</i>	
Fabaceae	<i>Acacia leptopetala</i>	
Fabaceae	<i>Acacia longispinea</i>	
Fabaceae	<i>Acacia merrallii</i>	
Fabaceae	<i>Acacia mulganeura</i>	
Fabaceae	<i>Acacia prainii</i>	
Fabaceae	<i>Acacia quadrimarginea</i>	
Fabaceae	<i>Acacia ramulosa</i> var. <i>ramulosa</i>	
Fabaceae	<i>Acacia resinimarginea</i>	
Fabaceae	<i>Acacia sibina</i>	
Fabaceae	<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)	
Fabaceae	<i>Acacia stereophylla</i> var. <i>stereophylla</i>	
Fabaceae	<i>Acacia tetragonophylla</i>	
Fabaceae	<i>Bossiaea walkeri</i>	
Fabaceae	<i>Daviesia</i> ? <i>purpurascens</i>	
Fabaceae	<i>Daviesia purpurascens</i>	
Fabaceae	<i>Dillwynia</i> sp. Coolgardie (V.E. Sands 637.3. 1)	
Fabaceae	<i>Gompholobium cinereum</i>	P3
Fabaceae	<i>Indigofera australis</i>	
Fabaceae	<i>Mirbelia</i> ? <i>microphylla</i>	
Fabaceae	<i>Mirbelia ferricola</i>	P3
Fabaceae	<i>Mirbelia microphylla</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Fabaceae	<i>Senna cardiosperma</i>	
Fabaceae	<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>	
Fabaceae	<i>Swainsona canescens</i>	
Fabaceae	<i>Templetonia ceracea</i>	
Frankeniaceae	<i>Frankenia desertorum</i> (sparsely hirtellous variant)	
Frankeniaceae	<i>Frankenia interioris</i>	
Geraniaceae	* <i>Erodium aureum</i>	Introduced
Geraniaceae	<i>Erodium cygnorum</i>	
Geraniaceae	<i>Erodium</i> sp. (indet.)	
Goodeniaceae	<i>Brunonia australis</i>	
Goodeniaceae	<i>Brunonia</i> sp. Goldfields (K.R. Newbey 6044)	
Goodeniaceae	<i>Dampiera eriocephala</i>	
Goodeniaceae	<i>Dampiera latealata</i>	
Goodeniaceae	<i>Dampiera stenostachya</i>	
Goodeniaceae	<i>Goodenia</i> ? <i>mimuloides</i>	
Goodeniaceae	<i>Goodenia</i> ? <i>pinifolia</i>	

Family	Taxon	Status
Goodeniaceae	<i>Goodenia berardiana</i>	
Goodeniaceae	<i>Goodenia havilandii</i>	
Goodeniaceae	<i>Goodenia mimuloides</i>	
Goodeniaceae	<i>Goodenia occidentalis</i>	
Goodeniaceae	<i>Goodenia</i> sp. 1 (indet.)	
Goodeniaceae	<i>Goodenia</i> sp. 2 (indet.)	
Goodeniaceae	<i>Scaevola spinescens</i>	
Goodeniaceae	<i>Velleia cycnopotamica</i>	
Goodeniaceae	<i>Velleia discophora</i>	
Goodeniaceae	<i>Velleia hispida</i>	
Goodeniaceae	<i>Velleia rosea</i>	
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	
Gyrostemonaceae	<i>Gyrostemon ramulosus</i>	
Haloragaceae	? <i>Haloragis</i> sp. (indet.)	
Haloragaceae	<i>Haloragis</i> ? <i>gossei</i>	
Haloragaceae	<i>Haloragis</i> ? <i>trigonocarpa</i>	
Haloragaceae	<i>Haloragis trigonocarpa</i>	
Hypoxidaceae	<i>Hypoxis glabella</i>	
Juncaceae	<i>Juncus subsecundus</i>	
Lamiaceae	<i>Brachysola coerulea</i>	
Lamiaceae	<i>Cyanostegia angustifolia</i>	
Lamiaceae	<i>Cyanostegia microphylla</i>	
Lamiaceae	<i>Dicrastylis parvifolia</i>	
Lamiaceae	<i>Hemiphora elderi</i>	
Lamiaceae	<i>Lachnostachys coolgardiensis</i>	
Lamiaceae	Lamiaceae sp. 1 (submitted for identification)	
Lamiaceae	Lamiaceae sp. 2 (submitted for identification)	
Lamiaceae	<i>Physopsis viscida</i>	
Lamiaceae	<i>Pityrodia lepidota</i>	
Lamiaceae	<i>Pityrodia loricata</i>	
Lamiaceae	<i>Prostanthera althoferi</i>	
Lamiaceae	<i>Prostanthera campbellii</i>	
Lamiaceae	<i>Prostanthera grylloana</i>	
Lamiaceae	<i>Prostanthera incurvata</i>	
Lamiaceae	<i>Prostanthera magnifica</i>	
Lamiaceae	<i>Prostanthera semiteres</i> subsp. <i>semiteres</i>	
Lamiaceae	<i>Westringia cephalantha</i> var. <i>cephalantha</i>	
Lamiaceae	<i>Westringia rigida</i>	
Lauraceae	<i>Cassytha</i> sp.	
Loganiaceae	<i>Phyllangium sulcatum</i>	
Loranthaceae	<i>Amyema benthamii</i>	
Loranthaceae	<i>Amyema miquelii</i>	
Loranthaceae	<i>Amyema</i> sp. (indet.)	
Loranthaceae	<i>Lysiana casuarinae</i>	
Malvaceae	<i>Abutilon cryptopetalum</i>	

Family	Taxon	Status
Malvaceae	<i>Abutilon oxycarpum</i>	
Malvaceae	<i>Androcalva luteiflora</i>	
Malvaceae	<i>Brachychiton gregorii</i>	
Malvaceae	<i>Commersonia craurophylla</i>	
Malvaceae	<i>Hannafordia bissillii</i> subsp. <i>latifolia</i>	
Malvaceae	<i>Keraudrenia velutina</i>	
Malvaceae	<i>Keraudrenia velutina</i> subsp. <i>velutina</i>	
Malvaceae	<i>Lawrenzia repens</i>	
Malvaceae	<i>Malva weinmanniana</i>	
Malvaceae	<i>Sida</i> ?sp. dark green fruit (S. van Leeuwen 2260)	
Malvaceae	<i>Sida calyxhymenia</i>	
Malvaceae	<i>Sida</i> sp. (indet.)	
Malvaceae	<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260)	
Malvaceae	<i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32)	
Malvaceae	<i>Sida spodochroma</i>	
Myrtaceae	? <i>Baeckea</i> sp. 1 (submitted for identification)	
Myrtaceae	? <i>Calytrix</i> sp. (indet.)	
Myrtaceae	? <i>Euryomyrtus</i> sp. 1 (submitted for identification)	
Myrtaceae	? <i>Melaleuca</i> sp. (indet.)	
Myrtaceae	<i>Baeckea elderiana</i>	
Myrtaceae	<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi, L.A. Craven 4586)	P1
Myrtaceae	<i>Beaufortia interstans</i>	
Myrtaceae	<i>Calothamnus gilesii</i>	
Myrtaceae	<i>Calothamnus</i> sp. (indet.)	
Myrtaceae	<i>Calytrix</i> ? <i>creswelli</i>	
Myrtaceae	<i>Chamelaucium pauciflorum</i> subsp. <i>pauciflorum</i>	
Myrtaceae	<i>Chamelaucium pauciflorum</i> subsp. <i>Perenjori</i> (B.J. Conn 2181)	
Myrtaceae	<i>Eucalyptus</i> ? <i>corrugata</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>cylindrocarpa</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>gracilis</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>griffithsii</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>horistes</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>leptopoda</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>leptopoda</i> subsp. <i>subluta</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>longicornis</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>loxophleba</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>moderata</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>oleosa</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>platycorys</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>rigidula</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>sheathiana</i>	
Myrtaceae	<i>Eucalyptus</i> ? <i>yilgarnesis</i>	
Myrtaceae	<i>Eucalyptus aequioperta</i>	
Myrtaceae	<i>Eucalyptus celastroides</i> subsp. <i>celastroides</i>	
Myrtaceae	<i>Eucalyptus corrugata</i>	

Family	Taxon	Status
Myrtaceae	<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i>	
Myrtaceae	<i>Eucalyptus eremophila</i>	
Myrtaceae	<i>Eucalyptus ewartiana</i>	
Myrtaceae	<i>Eucalyptus griffithsii</i>	
Myrtaceae	<i>Eucalyptus horistes</i>	
Myrtaceae	<i>Eucalyptus leptopoda</i>	
Myrtaceae	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>	
Myrtaceae	<i>Eucalyptus longicornis</i>	
Myrtaceae	<i>Eucalyptus longissima</i>	
Myrtaceae	<i>Eucalyptus loxophleba</i>	
Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>?lissopholia</i>	
Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>	
Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>	
Myrtaceae	<i>Eucalyptus moderata</i>	
Myrtaceae	<i>Eucalyptus oldfieldii</i>	
Myrtaceae	<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>	
Myrtaceae	<i>Eucalyptus platycorys</i>	
Myrtaceae	<i>Eucalyptus ravida</i>	
Myrtaceae	<i>Eucalyptus salmonophloia</i>	
Myrtaceae	<i>Eucalyptus salubris</i>	
Myrtaceae	<i>Eucalyptus sheathiana</i>	
Myrtaceae	<i>Eucalyptus</i> sp. (indet.)	
Myrtaceae	<i>Eucalyptus transcontinentalis</i>	
Myrtaceae	<i>Eucalyptus yilgarnensis</i>	
Myrtaceae	<i>Euryomyrtus maidenii</i>	
Myrtaceae	<i>Homalocalyx thryptomenoides</i>	
Myrtaceae	<i>Leptospermum fastigiatum</i>	
Myrtaceae	<i>Leptospermum fastigiatum/roei</i>	
Myrtaceae	<i>Leptospermum macgillivrayi</i>	P1
Myrtaceae	<i>Leptospermum roei</i>	
Myrtaceae	<i>Malleostemon roseus</i>	
Myrtaceae	<i>Melaleuca ?hamata</i>	
Myrtaceae	<i>Melaleuca ?sheathiana</i>	
Myrtaceae	<i>Melaleuca ?uncinata</i>	
Myrtaceae	<i>Melaleuca conothamnoides</i>	
Myrtaceae	<i>Melaleuca cordata</i>	
Myrtaceae	<i>Melaleuca eleuterostachya</i>	
Myrtaceae	<i>Melaleuca hamata</i>	
Myrtaceae	<i>Melaleuca leiocarpa</i>	
Myrtaceae	<i>Melaleuca nematophylla</i>	
Myrtaceae	<i>Melaleuca</i> sp. (indet.)	
Myrtaceae	<i>Melaleuca zeteticorum</i>	
Myrtaceae	<i>Micromyrtus obovata</i>	
Myrtaceae	<i>Micromyrtus</i> sp. (indet.)	
Myrtaceae	Myrtaceae sp. 1 (submitted for identification)	

Family	Taxon	Status
Myrtaceae	<i>Rinzia carnosa</i>	
Myrtaceae	<i>Thryptomene ?kochii</i>	
Myrtaceae	<i>Thryptomene kochii</i>	
Myrtaceae	<i>Thryptomene urceolaris</i>	
Orchidaceae	<i>Caladenia</i> sp. (indet.)	
Orchidaceae	<i>Cyanicula amplexans</i>	
Orchidaceae	<i>Pterostylis picta</i>	
Orchidaceae	<i>Pterostylis</i> sp. (indet.)	
Orchidaceae	<i>Thelymitra petrophila</i>	
Phyllanthaceae	<i>Poranthera microphylla</i>	
Pittosporaceae	<i>Cheiranthra filifolia</i>	
Pittosporaceae	<i>Pittosporum angustifolium</i>	
Plantaginaceae	<i>Plantago cunninghamii</i>	
Poaceae	* <i>Vulpia myuros</i>	Introduced
Poaceae	? <i>Austrostipa</i> sp. (indet.)	
Poaceae	? <i>Monachather paradoxus</i>	
Poaceae	<i>Amphipogon caricinus</i> var. <i>caricinus</i>	
Poaceae	<i>Aristida contorta</i>	
Poaceae	<i>Austrostipa ?elegantissima</i>	
Poaceae	<i>Austrostipa ?scabra</i>	
Poaceae	<i>Austrostipa elegantissima</i>	
Poaceae	<i>Austrostipa elegantissima/platychaeta</i>	
Poaceae	<i>Austrostipa eremophila</i>	
Poaceae	<i>Austrostipa hemipogon</i>	
Poaceae	<i>Austrostipa nitida</i>	
Poaceae	<i>Austrostipa platychaeta</i>	
Poaceae	<i>Austrostipa scabra</i>	
Poaceae	<i>Austrostipa</i> sp. (indet.)	
Poaceae	<i>Austrostipa trichophylla</i>	
Poaceae	<i>Digitaria ammophila</i>	
Poaceae	<i>Eragrostis dielsii</i>	
Poaceae	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	
Poaceae	<i>Monachather paradoxus</i>	
Poaceae	<i>Neurachne annularis</i>	P3
Poaceae	<i>Paspalidium constrictum</i>	
Poaceae	<i>Pentameris ?airoides</i>	
Poaceae	<i>Pentameris airoides</i> subsp. <i>airoides</i>	
Poaceae	Poaceae sp. (indet.)	
Poaceae	<i>Rytidosperma caespitosum</i>	
Poaceae	<i>Triodia ?scariosa</i>	
Poaceae	<i>Triodia rigidissima</i>	
Poaceae	<i>Triodia scariosa</i>	
Poaceae	<i>Triodia</i> sp. (indet.)	
Poaceae	<i>Triodia tomentosa</i>	
Polygalaceae	<i>Comesperma ?integerrimum</i>	

Family	Taxon	Status
Polygalaceae	<i>Comesperma integerrimum</i>	
Portulacaceae	<i>Calandrinia eremaea</i>	
Portulacaceae	<i>Calandrinia</i> sp. (indet.)	
Proteaceae	? <i>Petrophile</i> sp. (indet.)	
Proteaceae	<i>Banksia arborea</i>	P4
Proteaceae	<i>Banksia elderiana</i>	
Proteaceae	<i>Grevillea</i> ? <i>acacioides</i>	
Proteaceae	<i>Grevillea</i> ? <i>excelsior</i>	
Proteaceae	<i>Grevillea</i> ? <i>haplantha</i> subsp. <i>haplantha</i>	
Proteaceae	<i>Grevillea</i> ? <i>juncifolia</i>	
Proteaceae	<i>Grevillea</i> ? <i>obliquistigma</i> subsp. <i>obliquistigma</i>	
Proteaceae	<i>Grevillea acuarua</i>	
Proteaceae	<i>Grevillea excelsior</i>	
Proteaceae	<i>Grevillea georgeana</i>	P3
Proteaceae	<i>Grevillea haplantha</i> subsp. <i>haplantha</i>	
Proteaceae	<i>Grevillea juncifolia</i> subsp. <i>temulenta</i>	
Proteaceae	<i>Grevillea nematophylla</i> subsp. <i>nematophylla</i>	
Proteaceae	<i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i>	
Proteaceae	<i>Grevillea paradoxa</i>	
Proteaceae	<i>Grevillea</i> sp.	
Proteaceae	<i>Grevillea zygoloba</i>	
Proteaceae	<i>Hakea</i> ? <i>erecta</i>	
Proteaceae	<i>Hakea</i> ? <i>francisiana</i>	
Proteaceae	<i>Hakea francisiana</i>	
Proteaceae	<i>Hakea invaginata</i>	
Proteaceae	<i>Hakea minyma</i>	
Proteaceae	<i>Isopogon</i> sp.	
Proteaceae	<i>Persoonia coriacea</i>	
Proteaceae	<i>Persoonia saundersiana</i>	
Proteaceae	<i>Petrophile seminuda</i>	
Pteridaceae	<i>Cheilanthes adiantoides</i>	
Pteridaceae	<i>Cheilanthes lasiophylla</i>	
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	
Pteridaceae	<i>Cheilanthes</i> sp. (indet.)	
Rhamnaceae	<i>Cryptandra aridicola</i>	
Rhamnaceae	<i>Stenanthemum newbeyi</i>	P3
Rhamnaceae	<i>Stenanthemum stipulosum</i>	
Rubiaceae	<i>Psydrax suaveolens</i>	
Rutaceae	<i>Drummondita hassellii</i>	
Rutaceae	<i>Phebalium canaliculatum</i>	
Rutaceae	<i>Phebalium filifolium</i>	
Rutaceae	<i>Phebalium laevigatum</i>	
Rutaceae	<i>Phebalium megaphyllum</i>	
Rutaceae	<i>Phebalium microphyllum</i> complex	
Rutaceae	<i>Phebalium</i> sp. (indet.)	

Family	Taxon	Status
Rutaceae	<i>Phebalium tuberculosum</i>	
Rutaceae	<i>Philotheca brucei</i> subsp. <i>brucei</i>	
Rutaceae	<i>Philotheca tomentella</i>	
Santalaceae	<i>Exocarpos aphyllus</i>	
Santalaceae	<i>Leptomeria preissiana</i>	
Santalaceae	<i>Santalum acuminatum</i>	
Santalaceae	<i>Santalum spicatum</i>	
Sapindaceae	<i>Dodonaea ?microzyga</i>	
Sapindaceae	<i>Dodonaea amblyophylla</i>	
Sapindaceae	<i>Dodonaea inaequifolia</i>	
Sapindaceae	<i>Dodonaea lobulata</i>	
Sapindaceae	<i>Dodonaea pinifolia</i>	
Sapindaceae	<i>Dodonaea rigida</i>	
Sapindaceae	<i>Dodonaea stenozyga</i>	
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>?angustissima</i>	
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	
Scrophulariaceae	<i>Eremophila ?alternifolia</i>	
Scrophulariaceae	<i>Eremophila ?caperata</i>	
Scrophulariaceae	<i>Eremophila ?decepiens</i>	
Scrophulariaceae	<i>Eremophila ?drummondii</i>	
Scrophulariaceae	<i>Eremophila ?rugosa</i>	
Scrophulariaceae	<i>Eremophila alternifolia</i>	
Scrophulariaceae	<i>Eremophila caerulea</i> subsp. <i>merrallii</i>	P4
Scrophulariaceae	<i>Eremophila caperata</i>	
Scrophulariaceae	<i>Eremophila clarkei</i>	
Scrophulariaceae	<i>Eremophila decepiens</i> subsp. <i>decepiens</i>	
Scrophulariaceae	<i>Eremophila drummondii</i>	
Scrophulariaceae	<i>Eremophila georgei</i>	
Scrophulariaceae	<i>Eremophila glabra</i> subsp. <i>glabra</i>	
Scrophulariaceae	<i>Eremophila granitica</i>	
Scrophulariaceae	<i>Eremophila interstans</i> subsp. <i>interstans</i>	
Scrophulariaceae	<i>Eremophila ionantha</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>?latrobei</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
Scrophulariaceae	<i>Eremophila maculata</i>	
Scrophulariaceae	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	
Scrophulariaceae	<i>Eremophila metallicorum</i>	
Scrophulariaceae	<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>	
Scrophulariaceae	<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>	
Scrophulariaceae	<i>Eremophila rugosa</i>	
Scrophulariaceae	<i>Eremophila scoparia</i>	
Scrophulariaceae	<i>Eremophila serrulata</i>	
Solanaceae	<i>Duboisia hopwoodii</i>	
Solanaceae	<i>Nicotiana occidentalis</i>	
Solanaceae	<i>Solanum hoplopetalum</i>	

Family	Taxon	Status
Solanaceae	<i>Solanum nummularium</i>	
Solanaceae	<i>Solanum terraneum</i>	
Stylidiaceae	<i>Stylidium ?arenicola</i>	
Stylidiaceae	<i>Stylidium arenicola</i>	
Stylidiaceae	<i>Stylidium limbatum</i>	
Thymelaeaceae	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	
Urticaceae	<i>Parietaria cardiostegia</i>	
Violaceae	<i>Hybanthus floribundus</i> subsp. <i>curvifolius</i>	
Zygophyllaceae	<i>Zygophyllum apiculatum</i>	
Zygophyllaceae	<i>Zygophyllum eremaeum</i>	
Zygophyllaceae	<i>Zygophyllum glaucum</i>	
Zygophyllaceae	<i>Zygophyllum ovatum</i>	

APPENDIX F SAC ANALYSIS BY SUPERGROUP

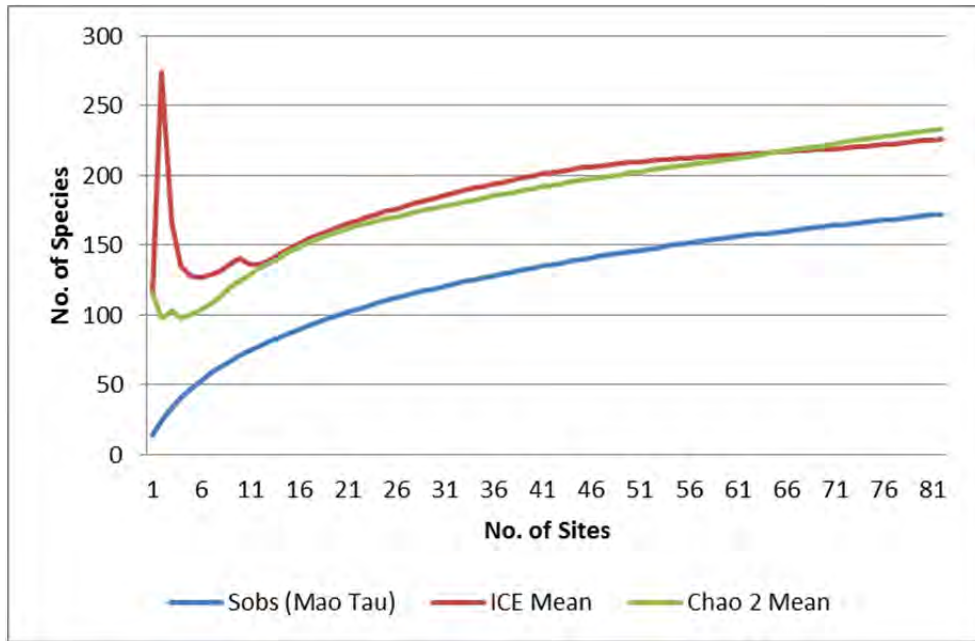


Figure F.1 - SAC of rocky misflopes and ridgetops

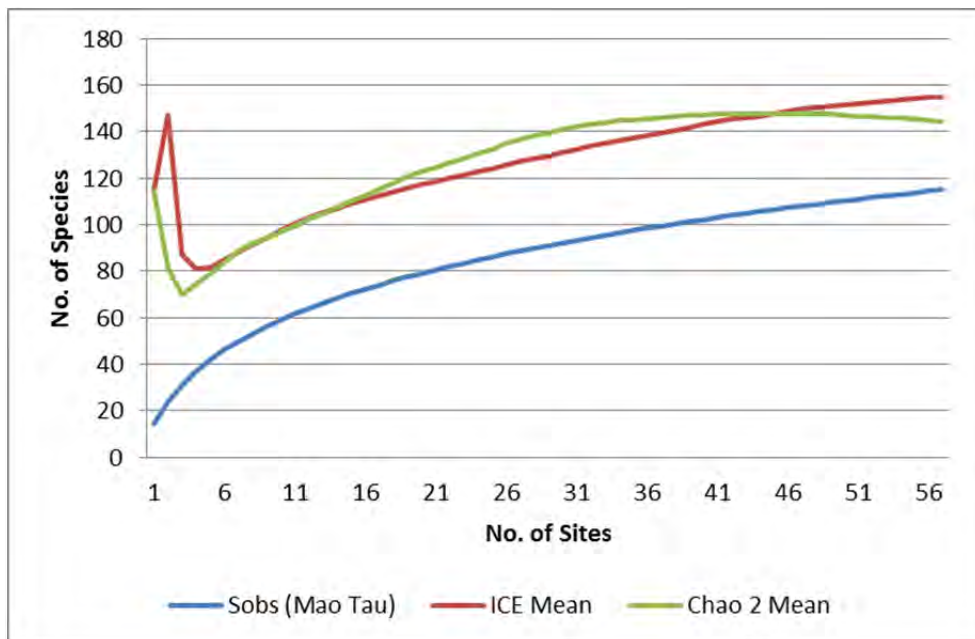


Figure F.2 - SAC of sandy floodplains

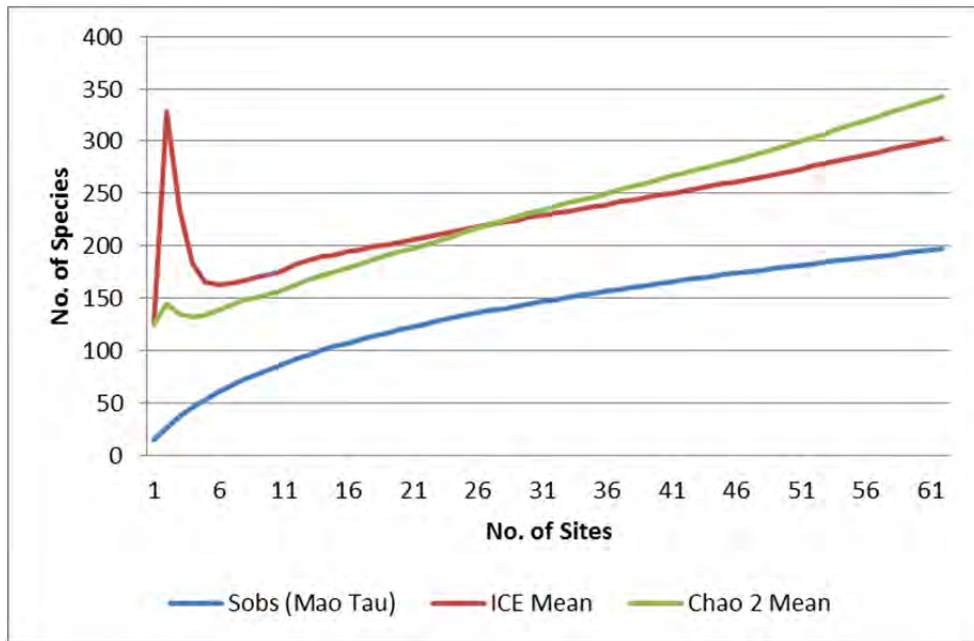


Figure F.3 - SAC of red sandy/gravelly plains

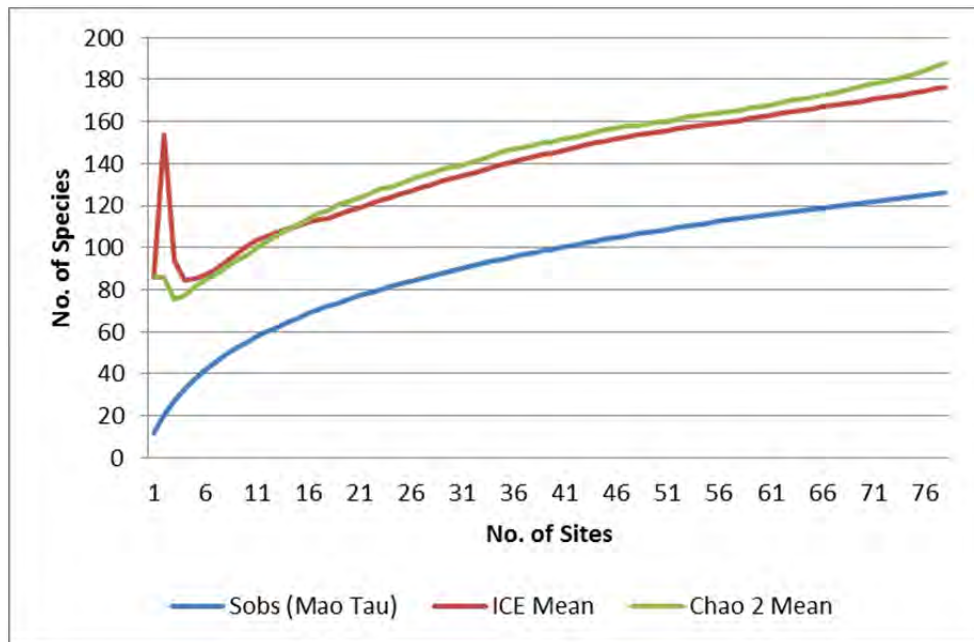


Figure F.4 - SAC of yellow sandplains

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APPENDIX G THREATENED AND PRIORITY FLORA LOCATIONS

Species	Easting	Northing	Number of individuals
<i>Acacia crenulata</i> - Fabaceae (P3)	784789	6621517	2
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	738016	6634089	10
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	738016	6634089	10
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	739258	6632840	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	739577	6632510	100
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	739660	6632361	100
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	740258	6631603	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	740525	6631393	10
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	740596	6631217	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	741463	6630289	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	742470	6628906	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	742560	6628908	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	744035	6627227	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	745753	6625492	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	745973	6625196	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	746965	6624788	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	747949	6621957	30
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748148	6622047	300
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748339	6622042	1000
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748360	6622201	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748442	6622122	30
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748568	6622061	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748663	6621961	100
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748736	6622081	100
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748761	6622086	300
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748845	6622080	300
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748900	6622087	30
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748940	6622007	40
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	748991	6621972	1
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	749193	6622021	20
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	751774	6622084	20
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	758003	6621764	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	758939	6622161	30
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	759599	6621830	1
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	760173	6621576	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	760291	6621740	5
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	760634	6621643	10
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	762440	6621636	10
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	765853	6621677	2
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	766276	6621292	1
<i>Baeckea</i> sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) - Myrtaceae (P1)	767093	6621555	30
<i>Banksia arborea</i> - Proteaceae (P4)	728990	6648296	5
<i>Banksia arborea</i> - Proteaceae (P4)	729022	6648274	3
<i>Banksia arborea</i> - Proteaceae (P4)	729033	6648351	2
<i>Banksia arborea</i> - Proteaceae (P4)	729047	6648340	5
<i>Banksia arborea</i> - Proteaceae (P4)	729086	6648316	4
<i>Banksia arborea</i> - Proteaceae (P4)	729090	6648244	3
<i>Banksia arborea</i> - Proteaceae (P4)	729134	6648278	1
<i>Banksia arborea</i> - Proteaceae (P4)	729178	6648269	6
<i>Banksia arborea</i> - Proteaceae (P4)	729203	6648250	6
<i>Banksia arborea</i> - Proteaceae (P4)	729231	6648228	4
<i>Banksia arborea</i> - Proteaceae (P4)	729332	6648155	5
<i>Banksia arborea</i> - Proteaceae (P4)	729385	6648146	8
<i>Banksia arborea</i> - Proteaceae (P4)	729427	6648211	2
<i>Banksia arborea</i> - Proteaceae (P4)	729435	6648116	7
<i>Banksia arborea</i> - Proteaceae (P4)	731499	6647216	1
<i>Banksia arborea</i> - Proteaceae (P4)	731866	6646694	5
<i>Banksia arborea</i> - Proteaceae (P4)	731946	6646751	1
<i>Banksia arborea</i> - Proteaceae (P4)	731950	6646799	2

Species	Easting	Northing	Number of individuals
<i>Banksia arborea</i> - Proteaceae (P4)	731959	6646701	1
<i>Banksia arborea</i> - Proteaceae (P4)	732016	6646606	1
<i>Banksia arborea</i> - Proteaceae (P4)	732115	6646605	4
<i>Banksia arborea</i> - Proteaceae (P4)	732131	6646589	4
<i>Banksia arborea</i> - Proteaceae (P4)	732150	6646705	2
<i>Banksia arborea</i> - Proteaceae (P4)	732158	6646603	7
<i>Banksia arborea</i> - Proteaceae (P4)	732192	6646604	3
<i>Banksia arborea</i> - Proteaceae (P4)	732232	6646597	1
<i>Banksia arborea</i> - Proteaceae (P4)	732267	6646598	3
<i>Banksia arborea</i> - Proteaceae (P4)	732333	6646649	1
<i>Banksia arborea</i> - Proteaceae (P4)	733006	6646304	1
<i>Banksia arborea</i> - Proteaceae (P4)	733325	6646289	3
<i>Banksia arborea</i> - Proteaceae (P4)	733375	6646481	5
<i>Banksia arborea</i> - Proteaceae (P4)	733492	6646234	1
<i>Banksia arborea</i> - Proteaceae (P4)	733540	6646193	1
<i>Banksia arborea</i> - Proteaceae (P4)	733687	6646391	1
<i>Banksia arborea</i> - Proteaceae (P4)	734031	6646221	5
<i>Banksia arborea</i> - Proteaceae (P4)	734162	6646177	2
<i>Banksia arborea</i> - Proteaceae (P4)	734185	6646165	5
<i>Banksia arborea</i> - Proteaceae (P4)	734284	6646135	10
<i>Banksia arborea</i> - Proteaceae (P4)	734347	6645924	2
<i>Banksia arborea</i> - Proteaceae (P4)	735318	6645436	3
<i>Banksia arborea</i> - Proteaceae (P4)	750148	6639174	6
<i>Banksia arborea</i> - Proteaceae (P4)	750153	6639303	6
<i>Banksia arborea</i> - Proteaceae (P4)	750178	6639126	5
<i>Banksia arborea</i> - Proteaceae (P4)	750230	6639098	6
<i>Banksia arborea</i> - Proteaceae (P4)	750278	6639193	1
<i>Beyeria rostellata</i> - Euphorbiaceae (P1)	740184	6642844	15
<i>Calytrix ?creswelli</i> - Myrtaceae (P3)	748900	6622087	1
<i>Calytrix ?creswelli</i> - Myrtaceae (P3)	775126	6621250	1
<i>Calytrix ?creswelli</i> - Myrtaceae (P3)	779652	6621168	1
<i>Gompholobium cinereum</i> - Fabaceae (P3)	763482	6621474	5
<i>Grevillea georgeana</i> - Proteaceae (P3)	728720	6648452	3
<i>Grevillea georgeana</i> - Proteaceae (P3)	729596	6648146	10
<i>Grevillea georgeana</i> - Proteaceae (P3)	729634	6648158	20
<i>Grevillea georgeana</i> - Proteaceae (P3)	733687	6646391	2
<i>Grevillea georgeana</i> - Proteaceae (P3)	750148	6639174	2
<i>Grevillea georgeana</i> - Proteaceae (P3)	750178	6639126	4
<i>Grevillea georgeana</i> - Proteaceae (P3)	750230	6639098	5
<i>Grevillea georgeana</i> - Proteaceae (P3)	750278	6639193	2
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728642	6648494	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728689	6648471	2
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728705	6648465	2
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728715	6648523	5
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728757	6648502	20
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728765	6648496	50
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728781	6648481	30
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728787	6648437	10
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728799	6648475	50
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728803	6648430	5
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	728822	6648425	3
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729134	6648278	5
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729146	6648271	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729203	6648250	3
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729231	6648228	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729298	6648221	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729385	6648146	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	729435	6648116	15
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	731946	6646751	5

Species	Easting	Northing	Number of individuals
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	739755	6643061	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	740665	6643156	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	740750	6642663	1
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> - Dilleniaceae (P3)	741384	6642312	5
<i>Leptospermum macgillivrayi</i> - Myrtaceae (?P1)	734310	6644069	10
<i>Leptospermum macgillivrayi</i> - Myrtaceae (?P1)	734316	6643999	50
<i>Leptospermum macgillivrayi</i> - Myrtaceae (P1)	736058	6645715	5
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	728787	6648437	1
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	758535	6621611	1
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	758784	6621598	1
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	770738	6621311	5
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	777385	6621266	1
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069 - Ericaceae (P3)	779517	6621006	1
<i>Mirbelia ferricola</i> - Fabaceae (P3)	739755	6643061	1
<i>Mirbelia ferricola</i> - Fabaceae (P3)	739967	6642863	1
<i>Mirbelia ferricola</i> - Fabaceae (P3)	740665	6643156	1
<i>Neurachne annularis</i> - Poaceae (P3)	728563	6648580	20
<i>Neurachne annularis</i> - Poaceae (P3)	728765	6648496	100
<i>Neurachne annularis</i> - Poaceae (P3)	728799	6648475	200
<i>Neurachne annularis</i> - Poaceae (P3)	728926	6648407	200
<i>Neurachne annularis</i> - Poaceae (P3)	728967	6648366	200
<i>Neurachne annularis</i> - Poaceae (P3)	729033	6648351	100
<i>Neurachne annularis</i> - Poaceae (P3)	729047	6648340	50
<i>Neurachne annularis</i> - Poaceae (P3)	729298	6648221	120
<i>Neurachne annularis</i> - Poaceae (P3)	729373	6648200	500
<i>Neurachne annularis</i> - Poaceae (P3)	729385	6648146	1000
<i>Neurachne annularis</i> - Poaceae (P3)	729427	6648211	1000
<i>Neurachne annularis</i> - Poaceae (P3)	729435	6648116	1000
<i>Neurachne annularis</i> - Poaceae (P3)	729525	6648142	450
<i>Neurachne annularis</i> - Poaceae (P3)	731235	6647342	150
<i>Neurachne annularis</i> - Poaceae (P3)	731402	6647227	225
<i>Neurachne annularis</i> - Poaceae (P3)	731463	6647293	300
<i>Neurachne annularis</i> - Poaceae (P3)	731466	6647154	150
<i>Neurachne annularis</i> - Poaceae (P3)	731499	6647216	75
<i>Neurachne annularis</i> - Poaceae (P3)	731532	6645106	100
<i>Neurachne annularis</i> - Poaceae (P3)	731549	6645900	50
<i>Neurachne annularis</i> - Poaceae (P3)	731564	6647107	300
<i>Neurachne annularis</i> - Poaceae (P3)	731601	6646299	50
<i>Neurachne annularis</i> - Poaceae (P3)	731606	6645198	100
<i>Neurachne annularis</i> - Poaceae (P3)	731614	6645298	1000
<i>Neurachne annularis</i> - Poaceae (P3)	731656	6646968	600
<i>Neurachne annularis</i> - Poaceae (P3)	731676	6645105	100
<i>Neurachne annularis</i> - Poaceae (P3)	731692	6645202	500
<i>Neurachne annularis</i> - Poaceae (P3)	731708	6646403	100
<i>Neurachne annularis</i> - Poaceae (P3)	731711	6645597	1000
<i>Neurachne annularis</i> - Poaceae (P3)	731727	6646209	10
<i>Neurachne annularis</i> - Poaceae (P3)	731756	6645102	500
<i>Neurachne annularis</i> - Poaceae (P3)	731773	6646301	100
<i>Neurachne annularis</i> - Poaceae (P3)	731801	6647311	600
<i>Neurachne annularis</i> - Poaceae (P3)	731813	6646782	525
<i>Neurachne annularis</i> - Poaceae (P3)	731845	6645205	500
<i>Neurachne annularis</i> - Poaceae (P3)	731866	6646694	100
<i>Neurachne annularis</i> - Poaceae (P3)	731871	6646193	20
<i>Neurachne annularis</i> - Poaceae (P3)	731878	6645696	1000
<i>Neurachne annularis</i> - Poaceae (P3)	731893	6646397	500
<i>Neurachne annularis</i> - Poaceae (P3)	731896	6646304	100
<i>Neurachne annularis</i> - Poaceae (P3)	731900	6646749	500
<i>Neurachne annularis</i> - Poaceae (P3)	731938	6645096	500
<i>Neurachne annularis</i> - Poaceae (P3)	731939	6645909	100

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	731946	6646751	525
<i>Neurachne annularis</i> - Poaceae (P3)	731950	6646799	500
<i>Neurachne annularis</i> - Poaceae (P3)	731959	6646701	200
<i>Neurachne annularis</i> - Poaceae (P3)	731969	6650012	2
<i>Neurachne annularis</i> - Poaceae (P3)	732000	6646850	500
<i>Neurachne annularis</i> - Poaceae (P3)	732008	6645486	10
<i>Neurachne annularis</i> - Poaceae (P3)	732019	6646706	500
<i>Neurachne annularis</i> - Poaceae (P3)	732024	6646297	100
<i>Neurachne annularis</i> - Poaceae (P3)	732057	6645206	100
<i>Neurachne annularis</i> - Poaceae (P3)	732059	6646406	500
<i>Neurachne annularis</i> - Poaceae (P3)	732067	6645794	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732079	6649896	41
<i>Neurachne annularis</i> - Poaceae (P3)	732080	6646623	150
<i>Neurachne annularis</i> - Poaceae (P3)	732088	6646198	50
<i>Neurachne annularis</i> - Poaceae (P3)	732091	6645677	100
<i>Neurachne annularis</i> - Poaceae (P3)	732095	6645723	10
<i>Neurachne annularis</i> - Poaceae (P3)	732096	6644910	500
<i>Neurachne annularis</i> - Poaceae (P3)	732100	6646899	500
<i>Neurachne annularis</i> - Poaceae (P3)	732101	6645433	50
<i>Neurachne annularis</i> - Poaceae (P3)	732102	6646849	500
<i>Neurachne annularis</i> - Poaceae (P3)	732103	6646738	225
<i>Neurachne annularis</i> - Poaceae (P3)	732110	6645757	20
<i>Neurachne annularis</i> - Poaceae (P3)	732135	6645114	100
<i>Neurachne annularis</i> - Poaceae (P3)	732150	6646705	500
<i>Neurachne annularis</i> - Poaceae (P3)	732179	6645717	100
<i>Neurachne annularis</i> - Poaceae (P3)	732185	6645874	100
<i>Neurachne annularis</i> - Poaceae (P3)	732187	6646894	500
<i>Neurachne annularis</i> - Poaceae (P3)	732190	6646536	600
<i>Neurachne annularis</i> - Poaceae (P3)	732197	6646802	500
<i>Neurachne annularis</i> - Poaceae (P3)	732200	6646999	500
<i>Neurachne annularis</i> - Poaceae (P3)	732222	6646750	500
<i>Neurachne annularis</i> - Poaceae (P3)	732222	6646151	100
<i>Neurachne annularis</i> - Poaceae (P3)	732223	6646020	50
<i>Neurachne annularis</i> - Poaceae (P3)	732224	6645198	50
<i>Neurachne annularis</i> - Poaceae (P3)	732255	6646199	50
<i>Neurachne annularis</i> - Poaceae (P3)	732261	6645107	100
<i>Neurachne annularis</i> - Poaceae (P3)	732262	6646858	500
<i>Neurachne annularis</i> - Poaceae (P3)	732271	6645999	20
<i>Neurachne annularis</i> - Poaceae (P3)	732275	6646401	500
<i>Neurachne annularis</i> - Poaceae (P3)	732276	6646707	500
<i>Neurachne annularis</i> - Poaceae (P3)	732297	6646300	100
<i>Neurachne annularis</i> - Poaceae (P3)	732305	6645336	50
<i>Neurachne annularis</i> - Poaceae (P3)	732317	6646062	50
<i>Neurachne annularis</i> - Poaceae (P3)	732324	6646348	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732329	6647005	100
<i>Neurachne annularis</i> - Poaceae (P3)	732344	6646801	500
<i>Neurachne annularis</i> - Poaceae (P3)	732356	6645951	20
<i>Neurachne annularis</i> - Poaceae (P3)	732359	6646898	500
<i>Neurachne annularis</i> - Poaceae (P3)	732370	6646437	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732375	6646278	100
<i>Neurachne annularis</i> - Poaceae (P3)	732378	6645772	20
<i>Neurachne annularis</i> - Poaceae (P3)	732390	6646749	500
<i>Neurachne annularis</i> - Poaceae (P3)	732391	6645816	500
<i>Neurachne annularis</i> - Poaceae (P3)	732399	6643800	50
<i>Neurachne annularis</i> - Poaceae (P3)	732400	6643683	10
<i>Neurachne annularis</i> - Poaceae (P3)	732421	6642940	5
<i>Neurachne annularis</i> - Poaceae (P3)	732426	6642339	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732439	6646201	200
<i>Neurachne annularis</i> - Poaceae (P3)	732442	6646700	500

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	732454	6642390	45
<i>Neurachne annularis</i> - Poaceae (P3)	732457	6642819	200
<i>Neurachne annularis</i> - Poaceae (P3)	732462	6643542	120
<i>Neurachne annularis</i> - Poaceae (P3)	732462	6645276	50
<i>Neurachne annularis</i> - Poaceae (P3)	732464	6646402	200
<i>Neurachne annularis</i> - Poaceae (P3)	732467	6646749	500
<i>Neurachne annularis</i> - Poaceae (P3)	732471	6646524	75
<i>Neurachne annularis</i> - Poaceae (P3)	732482	6645198	100
<i>Neurachne annularis</i> - Poaceae (P3)	732484	6642529	800
<i>Neurachne annularis</i> - Poaceae (P3)	732488	6646092	100
<i>Neurachne annularis</i> - Poaceae (P3)	732504	6642253	800
<i>Neurachne annularis</i> - Poaceae (P3)	732506	6646259	200
<i>Neurachne annularis</i> - Poaceae (P3)	732508	6646850	500
<i>Neurachne annularis</i> - Poaceae (P3)	732513	6642949	50
<i>Neurachne annularis</i> - Poaceae (P3)	732513	6643000	50
<i>Neurachne annularis</i> - Poaceae (P3)	732519	6645011	500
<i>Neurachne annularis</i> - Poaceae (P3)	732521	6646087	50
<i>Neurachne annularis</i> - Poaceae (P3)	732525	6646900	500
<i>Neurachne annularis</i> - Poaceae (P3)	732527	6646735	225
<i>Neurachne annularis</i> - Poaceae (P3)	732527	6646184	100
<i>Neurachne annularis</i> - Poaceae (P3)	732532	6646319	20
<i>Neurachne annularis</i> - Poaceae (P3)	732559	6647000	500
<i>Neurachne annularis</i> - Poaceae (P3)	732559	6642950	100
<i>Neurachne annularis</i> - Poaceae (P3)	732577	6642999	50
<i>Neurachne annularis</i> - Poaceae (P3)	732585	6645245	300
<i>Neurachne annularis</i> - Poaceae (P3)	732589	6646830	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732597	6646350	100
<i>Neurachne annularis</i> - Poaceae (P3)	732606	6642951	100
<i>Neurachne annularis</i> - Poaceae (P3)	732621	6646948	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732627	6646861	600
<i>Neurachne annularis</i> - Poaceae (P3)	732629	6643002	50
<i>Neurachne annularis</i> - Poaceae (P3)	732633	6646595	225
<i>Neurachne annularis</i> - Poaceae (P3)	732644	6644911	500
<i>Neurachne annularis</i> - Poaceae (P3)	732644	6645097	100
<i>Neurachne annularis</i> - Poaceae (P3)	732650	6645205	200
<i>Neurachne annularis</i> - Poaceae (P3)	732652	6643051	50
<i>Neurachne annularis</i> - Poaceae (P3)	732653	6645038	105
<i>Neurachne annularis</i> - Poaceae (P3)	732653	6642947	50
<i>Neurachne annularis</i> - Poaceae (P3)	732657	6647033	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732659	6644860	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732661	6646469	10
<i>Neurachne annularis</i> - Poaceae (P3)	732687	6646309	200
<i>Neurachne annularis</i> - Poaceae (P3)	732696	6645104	200
<i>Neurachne annularis</i> - Poaceae (P3)	732704	6642996	50
<i>Neurachne annularis</i> - Poaceae (P3)	732716	6646914	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732716	6647142	30
<i>Neurachne annularis</i> - Poaceae (P3)	732748	6647407	5
<i>Neurachne annularis</i> - Poaceae (P3)	732759	6647129	5
<i>Neurachne annularis</i> - Poaceae (P3)	732760	6643045	50
<i>Neurachne annularis</i> - Poaceae (P3)	732776	6646274	500
<i>Neurachne annularis</i> - Poaceae (P3)	732792	6646956	800
<i>Neurachne annularis</i> - Poaceae (P3)	732793	6646874	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732799	6645105	200
<i>Neurachne annularis</i> - Poaceae (P3)	732807	6647117	20
<i>Neurachne annularis</i> - Poaceae (P3)	732811	6645124	200
<i>Neurachne annularis</i> - Poaceae (P3)	732833	6646398	600
<i>Neurachne annularis</i> - Poaceae (P3)	732846	6646699	150
<i>Neurachne annularis</i> - Poaceae (P3)	732849	6646252	200
<i>Neurachne annularis</i> - Poaceae (P3)	732881	6646843	1000

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	732888	6647104	50
<i>Neurachne annularis</i> - Poaceae (P3)	732922	6645103	100
<i>Neurachne annularis</i> - Poaceae (P3)	732930	6646880	800
<i>Neurachne annularis</i> - Poaceae (P3)	732951	6646675	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732954	6646044	100
<i>Neurachne annularis</i> - Poaceae (P3)	732960	6646871	300
<i>Neurachne annularis</i> - Poaceae (P3)	732963	6646198	20
<i>Neurachne annularis</i> - Poaceae (P3)	732968	6646802	1000
<i>Neurachne annularis</i> - Poaceae (P3)	732972	6645071	200
<i>Neurachne annularis</i> - Poaceae (P3)	732974	6646991	400
<i>Neurachne annularis</i> - Poaceae (P3)	732981	6645980	60
<i>Neurachne annularis</i> - Poaceae (P3)	732998	6645495	100
<i>Neurachne annularis</i> - Poaceae (P3)	733003	6646776	525
<i>Neurachne annularis</i> - Poaceae (P3)	733006	6646304	375
<i>Neurachne annularis</i> - Poaceae (P3)	733012	6645773	20
<i>Neurachne annularis</i> - Poaceae (P3)	733021	6646841	600
<i>Neurachne annularis</i> - Poaceae (P3)	733035	6641511	50
<i>Neurachne annularis</i> - Poaceae (P3)	733042	6644903	500
<i>Neurachne annularis</i> - Poaceae (P3)	733049	6646945	800
<i>Neurachne annularis</i> - Poaceae (P3)	733056	6646151	100
<i>Neurachne annularis</i> - Poaceae (P3)	733064	6645043	500
<i>Neurachne annularis</i> - Poaceae (P3)	733065	6645316	80
<i>Neurachne annularis</i> - Poaceae (P3)	733074	6644803	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733075	6646535	150
<i>Neurachne annularis</i> - Poaceae (P3)	733089	6647056	30
<i>Neurachne annularis</i> - Poaceae (P3)	733103	6646739	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733108	6646004	500
<i>Neurachne annularis</i> - Poaceae (P3)	733112	6645497	500
<i>Neurachne annularis</i> - Poaceae (P3)	733114	6646130	500
<i>Neurachne annularis</i> - Poaceae (P3)	733117	6646598	225
<i>Neurachne annularis</i> - Poaceae (P3)	733118	6645479	200
<i>Neurachne annularis</i> - Poaceae (P3)	733120	6645748	50
<i>Neurachne annularis</i> - Poaceae (P3)	733127	6645537	500
<i>Neurachne annularis</i> - Poaceae (P3)	733132	6646796	200
<i>Neurachne annularis</i> - Poaceae (P3)	733137	6645008	500
<i>Neurachne annularis</i> - Poaceae (P3)	733149	6645650	100
<i>Neurachne annularis</i> - Poaceae (P3)	733169	6646097	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733171	6646713	180
<i>Neurachne annularis</i> - Poaceae (P3)	733188	6646894	200
<i>Neurachne annularis</i> - Poaceae (P3)	733191	6647028	20
<i>Neurachne annularis</i> - Poaceae (P3)	733215	6646303	300
<i>Neurachne annularis</i> - Poaceae (P3)	733221	6647147	500
<i>Neurachne annularis</i> - Poaceae (P3)	733227	6646685	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733233	6645932	100
<i>Neurachne annularis</i> - Poaceae (P3)	733238	6645496	300
<i>Neurachne annularis</i> - Poaceae (P3)	733250	6644954	500
<i>Neurachne annularis</i> - Poaceae (P3)	733264	6644697	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733268	6645977	100
<i>Neurachne annularis</i> - Poaceae (P3)	733284	6645422	100
<i>Neurachne annularis</i> - Poaceae (P3)	733286	6645980	400
<i>Neurachne annularis</i> - Poaceae (P3)	733295	6645450	500
<i>Neurachne annularis</i> - Poaceae (P3)	733298	6644798	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733299	6645164	150
<i>Neurachne annularis</i> - Poaceae (P3)	733301	6644902	500
<i>Neurachne annularis</i> - Poaceae (P3)	733304	6646059	50
<i>Neurachne annularis</i> - Poaceae (P3)	733307	6646441	270
<i>Neurachne annularis</i> - Poaceae (P3)	733308	6646654	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733312	6645462	500
<i>Neurachne annularis</i> - Poaceae (P3)	733316	6645575	200

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	733325	6646289	225
<i>Neurachne annularis</i> - Poaceae (P3)	733333	6646055	20
<i>Neurachne annularis</i> - Poaceae (P3)	733334	6646579	300
<i>Neurachne annularis</i> - Poaceae (P3)	733335	6646827	500
<i>Neurachne annularis</i> - Poaceae (P3)	733335	6644921	500
<i>Neurachne annularis</i> - Poaceae (P3)	733339	6642954	100
<i>Neurachne annularis</i> - Poaceae (P3)	733352	6646689	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733359	6645409	500
<i>Neurachne annularis</i> - Poaceae (P3)	733369	6644604	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733374	6645960	200
<i>Neurachne annularis</i> - Poaceae (P3)	733375	6646481	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733384	6646624	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733385	6645358	100
<i>Neurachne annularis</i> - Poaceae (P3)	733387	6645424	300
<i>Neurachne annularis</i> - Poaceae (P3)	733395	6646796	2
<i>Neurachne annularis</i> - Poaceae (P3)	733404	6642949	100
<i>Neurachne annularis</i> - Poaceae (P3)	733415	6645864	200
<i>Neurachne annularis</i> - Poaceae (P3)	733417	6645526	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733421	6642994	50
<i>Neurachne annularis</i> - Poaceae (P3)	733425	6646435	675
<i>Neurachne annularis</i> - Poaceae (P3)	733438	6645008	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733443	6644877	300
<i>Neurachne annularis</i> - Poaceae (P3)	733445	6646049	300
<i>Neurachne annularis</i> - Poaceae (P3)	733453	6646651	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733459	6647056	500
<i>Neurachne annularis</i> - Poaceae (P3)	733459	6645884	50
<i>Neurachne annularis</i> - Poaceae (P3)	733459	6646582	500
<i>Neurachne annularis</i> - Poaceae (P3)	733461	6646916	10
<i>Neurachne annularis</i> - Poaceae (P3)	733470	6645388	500
<i>Neurachne annularis</i> - Poaceae (P3)	733476	6645962	50
<i>Neurachne annularis</i> - Poaceae (P3)	733490	6645491	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733492	6646234	300
<i>Neurachne annularis</i> - Poaceae (P3)	733492	6646758	800
<i>Neurachne annularis</i> - Poaceae (P3)	733502	6645874	100
<i>Neurachne annularis</i> - Poaceae (P3)	733519	6645273	200
<i>Neurachne annularis</i> - Poaceae (P3)	733520	6644852	500
<i>Neurachne annularis</i> - Poaceae (P3)	733525	6642997	50
<i>Neurachne annularis</i> - Poaceae (P3)	733525	6646888	200
<i>Neurachne annularis</i> - Poaceae (P3)	733540	6646193	300
<i>Neurachne annularis</i> - Poaceae (P3)	733541	6642953	500
<i>Neurachne annularis</i> - Poaceae (P3)	733545	6645459	180
<i>Neurachne annularis</i> - Poaceae (P3)	733554	6645468	500
<i>Neurachne annularis</i> - Poaceae (P3)	733558	6645350	500
<i>Neurachne annularis</i> - Poaceae (P3)	733559	6644968	500
<i>Neurachne annularis</i> - Poaceae (P3)	733562	6646614	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733564	6645041	800
<i>Neurachne annularis</i> - Poaceae (P3)	733565	6646546	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733569	6643049	100
<i>Neurachne annularis</i> - Poaceae (P3)	733570	6645971	200
<i>Neurachne annularis</i> - Poaceae (P3)	733572	6645573	500
<i>Neurachne annularis</i> - Poaceae (P3)	733578	6644695	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733587	6645676	375
<i>Neurachne annularis</i> - Poaceae (P3)	733587	6645847	500
<i>Neurachne annularis</i> - Poaceae (P3)	733588	6642952	500
<i>Neurachne annularis</i> - Poaceae (P3)	733590	6646496	300
<i>Neurachne annularis</i> - Poaceae (P3)	733597	6646841	500
<i>Neurachne annularis</i> - Poaceae (P3)	733609	6644817	500
<i>Neurachne annularis</i> - Poaceae (P3)	733612	6646695	800
<i>Neurachne annularis</i> - Poaceae (P3)	733615	6645943	50

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	733619	6645302	200
<i>Neurachne annularis</i> - Poaceae (P3)	733622	6642992	200
<i>Neurachne annularis</i> - Poaceae (P3)	733632	6646699	375
<i>Neurachne annularis</i> - Poaceae (P3)	733635	6645012	500
<i>Neurachne annularis</i> - Poaceae (P3)	733635	6646382	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733637	6645334	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733639	6645426	500
<i>Neurachne annularis</i> - Poaceae (P3)	733648	6644917	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733659	6645758	300
<i>Neurachne annularis</i> - Poaceae (P3)	733663	6646582	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733664	6644796	500
<i>Neurachne annularis</i> - Poaceae (P3)	733664	6646497	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733665	6645410	500
<i>Neurachne annularis</i> - Poaceae (P3)	733670	6643050	100
<i>Neurachne annularis</i> - Poaceae (P3)	733671	6643002	100
<i>Neurachne annularis</i> - Poaceae (P3)	733674	6645519	500
<i>Neurachne annularis</i> - Poaceae (P3)	733683	6645214	300
<i>Neurachne annularis</i> - Poaceae (P3)	733685	6642849	100
<i>Neurachne annularis</i> - Poaceae (P3)	733687	6646315	450
<i>Neurachne annularis</i> - Poaceae (P3)	733687	6646391	80
<i>Neurachne annularis</i> - Poaceae (P3)	733691	6646006	10
<i>Neurachne annularis</i> - Poaceae (P3)	733698	6646800	500
<i>Neurachne annularis</i> - Poaceae (P3)	733700	6645761	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733703	6642950	500
<i>Neurachne annularis</i> - Poaceae (P3)	733707	6645298	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733726	6645860	500
<i>Neurachne annularis</i> - Poaceae (P3)	733728	6645046	500
<i>Neurachne annularis</i> - Poaceae (P3)	733736	6644799	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733737	6646464	500
<i>Neurachne annularis</i> - Poaceae (P3)	733740	6642798	100
<i>Neurachne annularis</i> - Poaceae (P3)	733740	6643004	100
<i>Neurachne annularis</i> - Poaceae (P3)	733743	6643047	100
<i>Neurachne annularis</i> - Poaceae (P3)	733747	6645378	100
<i>Neurachne annularis</i> - Poaceae (P3)	733755	6646533	800
<i>Neurachne annularis</i> - Poaceae (P3)	733759	6642891	200
<i>Neurachne annularis</i> - Poaceae (P3)	733762	6646120	375
<i>Neurachne annularis</i> - Poaceae (P3)	733763	6645462	50
<i>Neurachne annularis</i> - Poaceae (P3)	733764	6642946	200
<i>Neurachne annularis</i> - Poaceae (P3)	733776	6645672	150
<i>Neurachne annularis</i> - Poaceae (P3)	733777	6642848	50
<i>Neurachne annularis</i> - Poaceae (P3)	733782	6645248	500
<i>Neurachne annularis</i> - Poaceae (P3)	733799	6644729	500
<i>Neurachne annularis</i> - Poaceae (P3)	733801	6645703	600
<i>Neurachne annularis</i> - Poaceae (P3)	733802	6647381	825
<i>Neurachne annularis</i> - Poaceae (P3)	733803	6646991	450
<i>Neurachne annularis</i> - Poaceae (P3)	733803	6646346	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733811	6645248	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733816	6646433	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733818	6644997	700
<i>Neurachne annularis</i> - Poaceae (P3)	733824	6645972	450
<i>Neurachne annularis</i> - Poaceae (P3)	733824	6642846	50
<i>Neurachne annularis</i> - Poaceae (P3)	733824	6646756	500
<i>Neurachne annularis</i> - Poaceae (P3)	733826	6644694	500
<i>Neurachne annularis</i> - Poaceae (P3)	733829	6645836	500
<i>Neurachne annularis</i> - Poaceae (P3)	733833	6642746	10
<i>Neurachne annularis</i> - Poaceae (P3)	733838	6643055	100
<i>Neurachne annularis</i> - Poaceae (P3)	733845	6643000	100
<i>Neurachne annularis</i> - Poaceae (P3)	733852	6646518	18
<i>Neurachne annularis</i> - Poaceae (P3)	733853	6644850	1000

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	733857	6646602	300
<i>Neurachne annularis</i> - Poaceae (P3)	733860	6645198	500
<i>Neurachne annularis</i> - Poaceae (P3)	733865	6645606	150
<i>Neurachne annularis</i> - Poaceae (P3)	733877	6642796	200
<i>Neurachne annularis</i> - Poaceae (P3)	733882	6642944	500
<i>Neurachne annularis</i> - Poaceae (P3)	733886	6645318	100
<i>Neurachne annularis</i> - Poaceae (P3)	733886	6645631	200
<i>Neurachne annularis</i> - Poaceae (P3)	733888	6644953	200
<i>Neurachne annularis</i> - Poaceae (P3)	733891	6646397	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733898	6645062	60
<i>Neurachne annularis</i> - Poaceae (P3)	733898	6645101	500
<i>Neurachne annularis</i> - Poaceae (P3)	733901	6642853	200
<i>Neurachne annularis</i> - Poaceae (P3)	733904	6642696	100
<i>Neurachne annularis</i> - Poaceae (P3)	733907	6645422	10
<i>Neurachne annularis</i> - Poaceae (P3)	733911	6643055	100
<i>Neurachne annularis</i> - Poaceae (P3)	733912	6643000	100
<i>Neurachne annularis</i> - Poaceae (P3)	733914	6645322	50
<i>Neurachne annularis</i> - Poaceae (P3)	733917	6645800	50
<i>Neurachne annularis</i> - Poaceae (P3)	733921	6645700	500
<i>Neurachne annularis</i> - Poaceae (P3)	733930	6647300	60
<i>Neurachne annularis</i> - Poaceae (P3)	733945	6640095	500
<i>Neurachne annularis</i> - Poaceae (P3)	733949	6642809	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733949	6646470	200
<i>Neurachne annularis</i> - Poaceae (P3)	733949	6642845	200
<i>Neurachne annularis</i> - Poaceae (P3)	733956	6646111	270
<i>Neurachne annularis</i> - Poaceae (P3)	733963	6642748	50
<i>Neurachne annularis</i> - Poaceae (P3)	733963	6643003	50
<i>Neurachne annularis</i> - Poaceae (P3)	733964	6646711	300
<i>Neurachne annularis</i> - Poaceae (P3)	733965	6642899	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733969	6644870	2000
<i>Neurachne annularis</i> - Poaceae (P3)	733979	6645781	15
<i>Neurachne annularis</i> - Poaceae (P3)	733979	6644798	1000
<i>Neurachne annularis</i> - Poaceae (P3)	733982	6643047	50
<i>Neurachne annularis</i> - Poaceae (P3)	733982	6645522	60
<i>Neurachne annularis</i> - Poaceae (P3)	733986	6644887	60
<i>Neurachne annularis</i> - Poaceae (P3)	733987	6642956	500
<i>Neurachne annularis</i> - Poaceae (P3)	733999	6646588	3
<i>Neurachne annularis</i> - Poaceae (P3)	734003	6644956	50
<i>Neurachne annularis</i> - Poaceae (P3)	734009	6645555	200
<i>Neurachne annularis</i> - Poaceae (P3)	734011	6643002	50
<i>Neurachne annularis</i> - Poaceae (P3)	734014	6642751	100
<i>Neurachne annularis</i> - Poaceae (P3)	734016	6642847	500
<i>Neurachne annularis</i> - Poaceae (P3)	734019	6642697	50
<i>Neurachne annularis</i> - Poaceae (P3)	734019	6644985	20
<i>Neurachne annularis</i> - Poaceae (P3)	734027	6646378	150
<i>Neurachne annularis</i> - Poaceae (P3)	734027	6645022	40
<i>Neurachne annularis</i> - Poaceae (P3)	734028	6640194	500
<i>Neurachne annularis</i> - Poaceae (P3)	734031	6646221	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734034	6646676	600
<i>Neurachne annularis</i> - Poaceae (P3)	734036	6642900	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734037	6644492	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734042	6646423	100
<i>Neurachne annularis</i> - Poaceae (P3)	734045	6644405	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734057	6642949	500
<i>Neurachne annularis</i> - Poaceae (P3)	734058	6646268	525
<i>Neurachne annularis</i> - Poaceae (P3)	734071	6642808	100
<i>Neurachne annularis</i> - Poaceae (P3)	734082	6647355	825
<i>Neurachne annularis</i> - Poaceae (P3)	734082	6646309	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734082	6643047	100

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	734083	6645991	600
<i>Neurachne annularis</i> - Poaceae (P3)	734087	6645195	50
<i>Neurachne annularis</i> - Poaceae (P3)	734088	6644623	200
<i>Neurachne annularis</i> - Poaceae (P3)	734099	6642848	500
<i>Neurachne annularis</i> - Poaceae (P3)	734100	6644674	200
<i>Neurachne annularis</i> - Poaceae (P3)	734103	6644300	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734116	6646630	200
<i>Neurachne annularis</i> - Poaceae (P3)	734123	6646493	300
<i>Neurachne annularis</i> - Poaceae (P3)	734123	6644727	200
<i>Neurachne annularis</i> - Poaceae (P3)	734128	6642997	50
<i>Neurachne annularis</i> - Poaceae (P3)	734144	6644752	100
<i>Neurachne annularis</i> - Poaceae (P3)	734153	6643050	100
<i>Neurachne annularis</i> - Poaceae (P3)	734154	6644691	200
<i>Neurachne annularis</i> - Poaceae (P3)	734154	6642799	100
<i>Neurachne annularis</i> - Poaceae (P3)	734155	6642849	500
<i>Neurachne annularis</i> - Poaceae (P3)	734155	6642949	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734156	6642999	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734162	6642900	500
<i>Neurachne annularis</i> - Poaceae (P3)	734171	6646363	300
<i>Neurachne annularis</i> - Poaceae (P3)	734179	6646271	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734185	6646165	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734191	6644593	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734253	6644872	100
<i>Neurachne annularis</i> - Poaceae (P3)	734254	6644993	200
<i>Neurachne annularis</i> - Poaceae (P3)	734256	6644807	300
<i>Neurachne annularis</i> - Poaceae (P3)	734258	6646573	200
<i>Neurachne annularis</i> - Poaceae (P3)	734258	6644913	100
<i>Neurachne annularis</i> - Poaceae (P3)	734284	6646135	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734289	6646229	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734293	6644885	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734303	6646309	500
<i>Neurachne annularis</i> - Poaceae (P3)	734322	6646408	400
<i>Neurachne annularis</i> - Poaceae (P3)	734326	6644696	250
<i>Neurachne annularis</i> - Poaceae (P3)	734345	6645688	100
<i>Neurachne annularis</i> - Poaceae (P3)	734347	6645924	300
<i>Neurachne annularis</i> - Poaceae (P3)	734348	6644501	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734355	6646190	500
<i>Neurachne annularis</i> - Poaceae (P3)	734407	6646259	300
<i>Neurachne annularis</i> - Poaceae (P3)	734408	6646473	200
<i>Neurachne annularis</i> - Poaceae (P3)	734426	6646051	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734437	6646161	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734445	6644406	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734460	6645571	100
<i>Neurachne annularis</i> - Poaceae (P3)	734467	6645627	200
<i>Neurachne annularis</i> - Poaceae (P3)	734495	6646316	200
<i>Neurachne annularis</i> - Poaceae (P3)	734532	6646125	10
<i>Neurachne annularis</i> - Poaceae (P3)	734533	6646212	20
<i>Neurachne annularis</i> - Poaceae (P3)	734541	6645996	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734575	6646104	5
<i>Neurachne annularis</i> - Poaceae (P3)	734627	6644685	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734649	6646200	30
<i>Neurachne annularis</i> - Poaceae (P3)	734662	6644605	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734667	6644491	1000
<i>Neurachne annularis</i> - Poaceae (P3)	734803	6644709	500
<i>Neurachne annularis</i> - Poaceae (P3)	735318	6645436	375
<i>Neurachne annularis</i> - Poaceae (P3)	735395	6645556	300
<i>Neurachne annularis</i> - Poaceae (P3)	735438	6646938	50
<i>Neurachne annularis</i> - Poaceae (P3)	735539	6645729	225
<i>Neurachne annularis</i> - Poaceae (P3)	735629	6647381	30

Species	Easting	Northing	Number of individuals
<i>Neurachne annularis</i> - Poaceae (P3)	736058	6645715	180
<i>Neurachne annularis</i> - Poaceae (P3)	736235	6645101	225
<i>Neurachne annularis</i> - Poaceae (P3)	736509	6644753	375
<i>Neurachne annularis</i> - Poaceae (P3)	736542	6644610	525
<i>Neurachne annularis</i> - Poaceae (P3)	736640	6644657	375
<i>Neurachne annularis</i> - Poaceae (P3)	736678	6636790	100
<i>Neurachne annularis</i> - Poaceae (P3)	736729	6644597	225
<i>Neurachne annularis</i> - Poaceae (P3)	737517	6635457	450
<i>Neurachne annularis</i> - Poaceae (P3)	737607	6635289	500
<i>Neurachne annularis</i> - Poaceae (P3)	737652	6635218	500
<i>Neurachne annularis</i> - Poaceae (P3)	737754	6644844	150
<i>Neurachne annularis</i> - Poaceae (P3)	737866	6634948	500
<i>Neurachne annularis</i> - Poaceae (P3)	737911	6634861	100
<i>Neurachne annularis</i> - Poaceae (P3)	737929	6634793	500
<i>Neurachne annularis</i> - Poaceae (P3)	738996	6643758	600
<i>Neurachne annularis</i> - Poaceae (P3)	739333	6643772	600
<i>Neurachne annularis</i> - Poaceae (P3)	739755	6643061	225
<i>Neurachne annularis</i> - Poaceae (P3)	739967	6642863	105
<i>Neurachne annularis</i> - Poaceae (P3)	740184	6642844	15
<i>Neurachne annularis</i> - Poaceae (P3)	740665	6643156	450
<i>Neurachne annularis</i> - Poaceae (P3)	740750	6642663	300
<i>Neurachne annularis</i> - Poaceae (P3)	740793	6642491	750
<i>Neurachne annularis</i> - Poaceae (P3)	741384	6642312	225
<i>Neurachne annularis</i> - Poaceae (P3)	741995	6642458	100
<i>Neurachne annularis</i> - Poaceae (P3)	742529	6642776	100
<i>Neurachne annularis</i> - Poaceae (P3)	745753	6625492	20
<i>Neurachne annularis</i> - Poaceae (P3)	747815	6637527	500
<i>Neurachne annularis</i> - Poaceae (P3)	747815	6637527	200
<i>Neurachne annularis</i> - Poaceae (P3)	748150	6638330	100
<i>Neurachne annularis</i> - Poaceae (P3)	749325	6621905	500
<i>Neurachne annularis</i> - Poaceae (P3)	749526	6623516	2
<i>Neurachne annularis</i> - Poaceae (P3)	750097	6621983	5
<i>Neurachne annularis</i> - Poaceae (P3)	750321	6622014	500
<i>Neurachne annularis</i> - Poaceae (P3)	750412	6621970	375
<i>Neurachne annularis</i> - Poaceae (P3)	750662	6621947	75
<i>Neurachne annularis</i> - Poaceae (P3)	750779	6622032	120
<i>Neurachne annularis</i> - Poaceae (P3)	751329	6621857	4
<i>Neurachne annularis</i> - Poaceae (P3)	758770	6630750	200
<i>Neurachne annularis</i> - Poaceae (P3)	759149	6628083	500
<i>Neurachne annularis</i> - Poaceae (P3)	759572	6627904	500
<i>Neurachne annularis</i> - Poaceae (P3)	770738	6621311	1000
<i>Neurachne annularis</i> - Poaceae (P3)	771342	6621119	20
<i>Neurachne annularis</i> - Poaceae (P3)	772763	6621214	75
<i>Neurachne annularis</i> - Poaceae (P3)	772795	6621384	15
<i>Neurachne annularis</i> - Poaceae (P3)	773084	6621087	300
<i>Neurachne annularis</i> - Poaceae (P3)	773112	6621320	300
<i>Neurachne annularis</i> - Poaceae (P3)	773124	6621174	1000
<i>Sowerbaea multicaulis</i> - Asparagaceae (P4)	777896	6621173	2
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	729385	6648146	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	731986	6650055	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	739755	6643061	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	739967	6642863	2
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	740750	6642663	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	748523	6639491	9
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750108	6639526	3
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750148	6639174	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750173	6639527	2
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750178	6639126	7
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750230	6639098	5

Species	Easting	Northing	Number of individuals
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	750278	6639193	3
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	760036	6638395	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	760036	6638395	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	760149	6638411	1
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	760427	6638276	2
<i>Stenanthemum newbeyi</i> - Rhamnaceae (P3)	760471	6638357	2

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APPENDIX H THREATENED AND PRIORITY FLORA REPORT FORMS

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Acacia crenulata</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>10/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Mariana Campos</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

Reserve No.: _____

DEC DISTRICT: _____ **LGA:** _____ Land manager present:

DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6621517</u> Long / Easting: <u>784789</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	

LAND TENURE:

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey Partial survey Full survey Area observed (m²): _____

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual Extrapolation Estimate Count method: _____
(Refer to field manual for list)

WHAT COUNTED: Plants Clumps Clonal stems

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m ²): _____ <small>Note: Pls record count as numbers (not percentages) for database.</small>
Alive	2			2	
Dead					

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

Summary Quad. Totals: Alive _____

REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Flower
 Immature fruit Fruit Dehisced fruit Percentage in flower: _____ %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>		Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	30-50% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____	50-100% <input type="checkbox"/>	Specify other: _____	Specify other: _____	
Drainage line <input checked="" type="checkbox"/>				<u>Orange</u>	
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>	Specific Landform Element: _____ (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. Eucalyptus corrugata mid, open woodland, over Acacia sp. narrow phyllode (B.R. Maslin 7831) and Exocarpos aphyllus mid, sparse shrubland, over Austrostipa elegantissima open tussock grassland

2.

3.

4.

ASSOCIATED SPECIES:

Other (non-dominant) spp

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MC 1555-S142.02 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Submitter of Record: _____

Role: _____

Signed: _____

Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ **Sheet No.:** _____ **Record Entered in Database**

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Baeckea sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586)</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>07/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Andrew Craigie</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM's <input checked="" type="checkbox"/> Lat / Northing: <u>6631603</u> Long / Easting: <u>740258</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	5		5
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: AIC 1555-S169.20 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Banksia arborea (C.A. Gardner) A.R. Mast & K.R. Thiele</u>		TPFL Pop. No.: _____
OBSERVATION DATE: <u>06/09/2013</u>	CONSERVATION STATUS: <u>P4</u>	New population <input type="checkbox"/>
OBSERVER/S: <u>Christopr Parker</u>		PHONE: <u>(08) 93221944</u>
ROLE: <u>consultant</u>	ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

Reserve No.: _____

DEC DISTRICT: _____ **LGA:** _____ Land manager present:

DATUM: GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6647216</u> Long / Easting: <u>731499</u> ZONE: <u>50J</u>	METHOD USED: GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____
--	---	---

LAND TENURE:

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey Partial survey Full survey Area observed (m²): _____

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual Extrapolation Estimate Count method: _____
(Refer to field manual for list)

WHAT COUNTED: Plants Clumps Clonal stems

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m ²): _____ <small>Note: Pls record count as numbers (not percentages) for database.</small>
Alive	2			2	
Dead					

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

Summary Quad. Totals: Alive

REPRODUCTIVE STATE:	Clonal <input type="checkbox"/>	Vegetative <input type="checkbox"/>	Flowerbud <input type="checkbox"/>	Flower <input type="checkbox"/>
	Immature fruit <input type="checkbox"/>	Fruit <input type="checkbox"/>	Dehisced fruit <input type="checkbox"/>	Percentage in flower: _____ %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input checked="" type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other:		Specify other:	Specify other:	
Drainage line <input type="checkbox"/>	<u>BIF</u>		_____	_____	
Closed depression <input type="checkbox"/>	Specific Landform Element:		_____		
Wetland <input type="checkbox"/>	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: CWP 1555-S017.002 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: ____/____/____

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Beyeria rostellata</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>06/09/2013</u>		CONSERVATION STATUS: <u>P1</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Mariana Campos</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM's <input checked="" type="checkbox"/> Lat / Northing: <u>6642844</u> Long / Easting: <u>740184</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input checked="" type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	15		15
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input checked="" type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input checked="" type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input checked="" type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input checked="" type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other:		Specify other:	Specify other:	
Drainage line <input type="checkbox"/>	<u>BIF</u>			<u>Orange</u>	
Closed depression <input type="checkbox"/>	Specific Landform Element:				
Wetland <input type="checkbox"/>	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. Acacia quadrimarginea tall, sparse shrubland, over Calycopeplus paucifolius and Melaleuca nematophylla mid, sparse shrubland, over Neurachne annularis sparse tussock grassland

2.

3.

4.

ASSOCIATED SPECIES:

Other (non-dominant) spp

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MC 1555-S159.05 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Submitter of Record: _____

Role: _____

Signed: _____

Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ **Sheet No.:** _____ **Record Entered in Database**

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Calytrix creswellii (F.Muell.) B.D.Jacks.</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>14/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Cate Tuass</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM's <input checked="" type="checkbox"/> Lat / Northing: <u>6621168</u> Long / Easting: <u>779652</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		UCL <input type="checkbox"/> SLK/Pole _____ to _____	
				Rail reserve <input type="checkbox"/>	
				MRWA road reserve <input type="checkbox"/>	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	5		
Dead			
			5
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: CT 1555-S252.01 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Gompholobium cinereum</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>12/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Matthew Macdonald</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6621474</u> Long / Easting: <u>763482</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		UCL <input type="checkbox"/> SLK/Pole _____ to _____	
				Rail reserve <input type="checkbox"/>	
				MRWA road reserve <input type="checkbox"/>	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input checked="" type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	5		5
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input checked="" type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input checked="" type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>	<u>No rocks</u>				
Closed depression <input type="checkbox"/>	Specific Landform Element: _____				
Wetland <input type="checkbox"/>	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. Acacia resinimarginea tall, sparse shrubland, over Phebalium canaliculatum and Thryptomene urceolaris mid, sparse shrubland, over Amphipogon caricinus var. caricinus open tussock grassland
2. _____
3. _____
4. _____

ASSOCIATED SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MJM 1555-1039 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Submitter of Record: _____

Role: _____

Signed: _____

Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ **Sheet No.:** _____ **Record Entered in Database**

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Grevillea erectiloba F.Muell.</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>11/09/2013</u>	CONSERVATION STATUS: <u>P4</u> New population <input type="checkbox"/>
OBSERVER/S: <u>Andrew Craigie</u>	PHONE: <u>(08) 93221944</u>
ROLE: <u>consultant</u>	ORGANISATION: <u>ecologia environment</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____	LGA: _____	Reserve No.: _____	Land manager present: <input type="checkbox"/>
DATUM: GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6634069</u> Long / Easting: <u>752652</u> ZONE: <u>50J</u>	METHOD USED: GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:			
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/> Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/> SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>	Area observed (m ²): _____															
EFFORT: Time spent surveying (minutes): _____	No. of minutes spent / 100 m ² : _____															
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>	Count method: _____ (Refer to field manual for list)															
WHAT COUNTED: Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td>1</td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive	1			1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive	1			1												
Dead																
	Area of pop (m ²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT: No. _____ Size _____ Data attached <input type="checkbox"/>	Total area of quadrats (m ²): _____															
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>																
Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/>	Percentage in flower: _____ %															

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: AIC 1555-OC165 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ **Sheet No.:** _____ **Record Entered in Database**

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Grevillea georgeana McGill.</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>6/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Matthew MacDonald</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6648452</u> Long / Easting: <u>728720</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	3		3
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MJM 1555-OC029 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: ____ / ____ / ____

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Hibbertia lepidocalyx subsp. tuberculata J.R. Wheeler</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>6/09/2013</u>	CONSERVATION STATUS: <u>P3</u> <input type="checkbox"/> New population
OBSERVER/S: <u>Matthew MacDonald</u>	PHONE: <u>(08) 93221944</u>
ROLE: <u>consultant</u>	ORGANISATION: <u>ecologia environment</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____	LGA: _____	Reserve No.: _____	Land manager present: <input type="checkbox"/>
DATUM: GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6648523</u> Long / Easting: <u>728715</u> ZONE: <u>50J</u>	METHOD USED: GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:			
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/> Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/> SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>	Area observed (m ²): _____															
EFFORT: Time spent surveying (minutes): _____	No. of minutes spent / 100 m ² : _____															
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>	Count method: _____ (Refer to field manual for list)															
WHAT COUNTED: Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td>10</td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive	10			10	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive	10			10												
Dead																
	Area of pop (m ²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT: No. _____ Size _____ Data attached <input type="checkbox"/>	Total area of quadrats (m ²): _____															
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %															

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input checked="" type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MJM 1555-S254.02 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Melichrus sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)</u>		TPFL Pop. No.: _____
OBSERVATION DATE: <u>12/09/2013</u>	CONSERVATION STATUS: <u>P3</u>	New population <input type="checkbox"/>
OBSERVER/S: <u>Andrew Craigie</u>		PHONE: <u>(08) 93221944</u>
ROLE: <u>consultant</u>	ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

Reserve No.: _____

DEC DISTRICT: _____ **LGA:** _____ Land manager present:

DATUM: GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6621266</u> Long / Easting: <u>777385</u> ZONE: <u>50J</u>	METHOD USED: GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____
--	---	---

LAND TENURE:

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey Partial survey Full survey Area observed (m²): _____

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual Extrapolation Estimate Count method: _____
(Refer to field manual for list)

WHAT COUNTED: Plants Clumps Clonal stems

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m ²): _____ <small>Note: Pls record count as numbers (not percentages) for database.</small>
Alive	1			1	
Dead					

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

Summary Quad. Totals: Alive

REPRODUCTIVE STATE:	Clonal <input type="checkbox"/>	Vegetative <input type="checkbox"/>	Flowerbud <input type="checkbox"/>	Flower <input type="checkbox"/>
	Immature fruit <input type="checkbox"/>	Fruit <input type="checkbox"/>	Dehisced fruit <input type="checkbox"/>	Percentage in flower: _____ %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input checked="" type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: AIC 1555-S236.04 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ **Sheet No.:** _____ **Record Entered in Database**

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Mirbelia ferricola R. Butcher</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>8/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Mariana Campos</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM's <input checked="" type="checkbox"/> Lat / Northing: <u>6643061</u> Long / Easting: <u>739755</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED:		Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	1		
Dead			
			1
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT:		No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:		Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>	
Immature fruit <input type="checkbox"/>		Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input checked="" type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other:		Specify other:	Specify other:	
Drainage line <input type="checkbox"/>	<u>BIF</u>			<u>orange</u>	
Closed depression <input type="checkbox"/>	Specific Landform Element:				
Wetland <input type="checkbox"/>	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MC 1555-S158.02 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Neurachne annularis T.Macfarlane</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>09/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Jessica Stingemore</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6625492</u> Long / Easting: <u>745753</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/> Area observed (m ²): _____					
EFFORT: Time spent surveying (minutes): _____			No. of minutes spent / 100 m ² : _____		
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/> Count method: _____ <small>(Refer to field manual for list)</small>					
WHAT COUNTED: Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>					
TOTAL POP'N STRUCTURE:					
	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m ²): _____ Note: Pls record count as numbers (not percentages) for database.
Alive	100			100	
Dead					
QUADRATS PRESENT: No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____					
Summary Quad. Totals: Alive					
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>					
Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: _____ %					

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input checked="" type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: JAS 1555-S194.12 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Sowerbaea multicaulis E.Pritz.</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>/09/2013</u>		CONSERVATION STATUS: <u>P4</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Andrew Craigie</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6621173</u> Long / Easting: <u>777896</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		UCL <input type="checkbox"/> SLK/Pole _____ to _____	
				Rail reserve <input type="checkbox"/>	
				MRWA road reserve <input type="checkbox"/>	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED: Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>			
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	2		2
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT: No. _____ Size _____		Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>			
Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/>		Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					
	Specific Landform Element: (Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: AIC 1555-OC178 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

Please complete as much of the form as possible, with emphasis on those sections bordered in black.

TAXON: <u>Stenanthemum newbeyi Rye</u>		TPFL Pop. No.: _____	
OBSERVATION DATE: <u>08/09/2013</u>		CONSERVATION STATUS: <u>P3</u> New population <input type="checkbox"/>	
OBSERVER/S: <u>Mariana Campos</u>		PHONE: <u>(08) 93221944</u>	
ROLE: <u>consultant</u>		ORGANISATION: <u>ecologia environment</u>	

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
Jackson Range, c. 100 km NNE of Southern Cross, W.A.

DEC DISTRICT: _____		LGA: _____		Reserve No.: _____	
		Land manager present: <input type="checkbox"/>			
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> Lat / Northing: <u>6643061</u> Long / Easting: <u>739755</u> ZONE: <u>50J</u>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
LAND TENURE:					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Rail reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		MRWA road reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>		SLK/Pole _____ to _____	
				Shire road reserve <input type="checkbox"/>	
				Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>		Area observed (m ²): _____	
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____	
		(Refer to field manual for list)	
WHAT COUNTED: Plants <input type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>			
TOTAL POP'N STRUCTURE:			
	Mature:	Juveniles:	Seedlings:
Alive	>1		>1
Dead			
		Area of pop (m ²): _____	
		Note: Pls record count as numbers (not percentages) for database.	
QUADRATS PRESENT: No. _____ Size _____		Data attached <input type="checkbox"/> Total area of quadrats (m ²): _____	
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE: Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input type="checkbox"/> Flower <input type="checkbox"/>			
Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/>		Percentage in flower: _____ %	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

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

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Threatened and Priority Flora Report Form

Version 1.0 January 2010

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input checked="" type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other:		Specify other:	Specify other:	
Drainage line <input type="checkbox"/>	<u>BIF</u>			<u>Orange</u>	
Closed depression <input type="checkbox"/>	Specific Landform Element:				
Wetland <input type="checkbox"/>	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry <input type="checkbox"/>	Moist <input type="checkbox"/>	Waterlogged <input type="checkbox"/>	Inundated <input type="checkbox"/>	

VEGETATION

CLASSIFICATION*:

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

1. _____
2. _____
3. _____
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

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

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

COMMENT:

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

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

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

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

see attachment for additional locations

SPECIMEN: Collectors No: MC 1555-S158.09 WA Herb. Regional Herb. District Herb. Other: _____

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

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: _____ Role: _____ Signed: _____ Date: / /

Please return completed form to DEC, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983

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

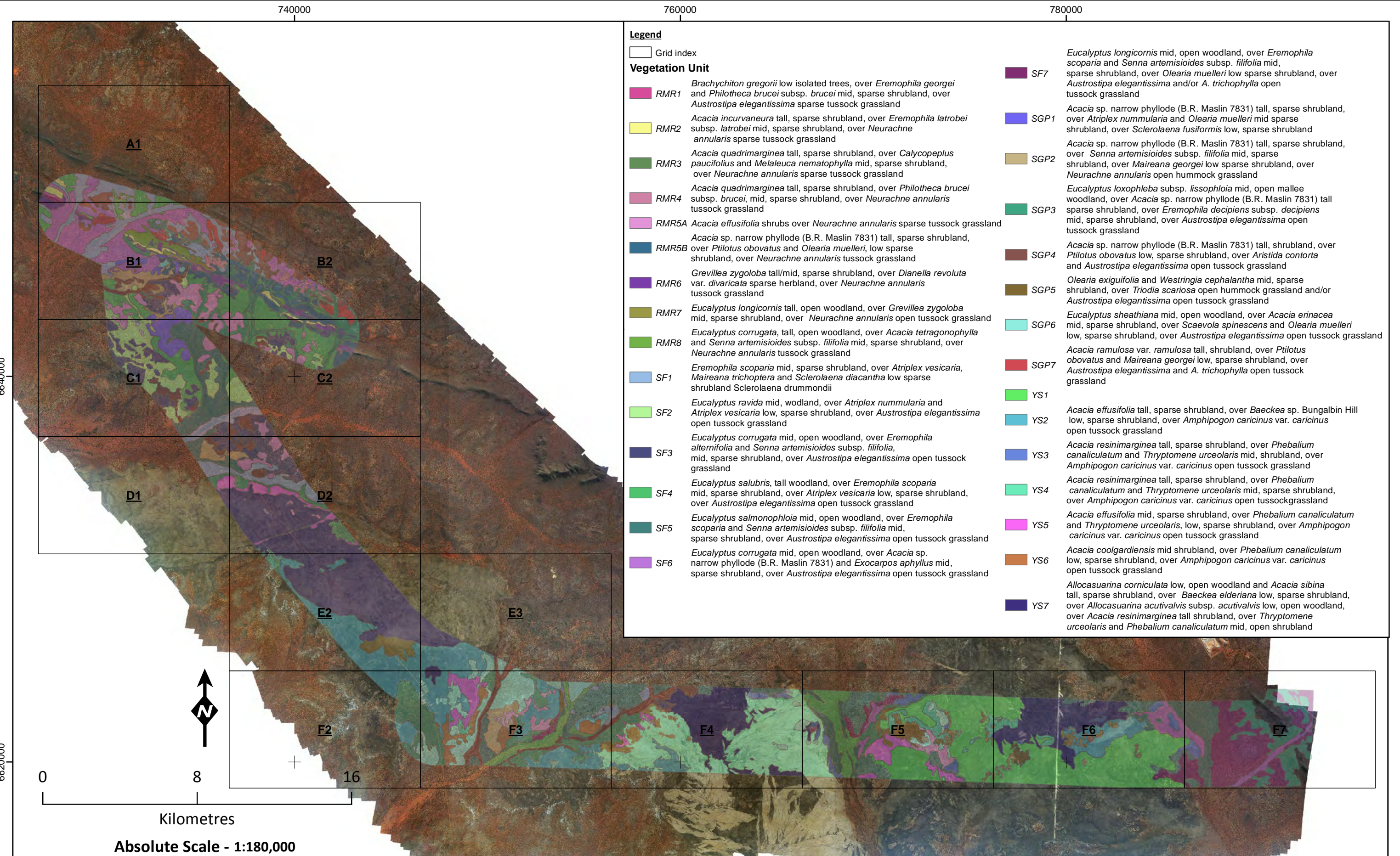
Record entered by: _____ Sheet No.: _____ Record Entered in Database

APPENDIX I LOCATION OF WEEDS RECORDED IN THE STUDY AREA

Name	Family	Status (DAFWA 2013)	Easting	Northing	Number of individuals
<i>Centaurea melitensis</i>	Asteraceae	Permitted	738639	6644462	1
<i>Cleretum papulosum</i> subsp. <i>papulosum</i>	Aizoaceae	Permitted	733492	6646234	1
<i>Erodium aureum</i>	Geraniaceae	Permitted	733414	6647069	1
<i>Hypochaeris glabra</i>	Asteraceae	Permitted	733089	6647056	1
<i>Sonchus asper</i>	Asteraceae	Permitted	732205	6645702	1
<i>Sonchus oleraceus</i>	Asteraceae	Permitted	753716	6621926	30
<i>Sonchus oleraceus</i>	Asteraceae	Permitted	754020	6621840	10
<i>Sonchus oleraceus</i>	Asteraceae	Permitted	756013	6621683	2
<i>Vulpia myuros</i>	Poaceae	Permitted	729146	6648271	1
<i>Vulpia myuros</i>	Poaceae	Permitted	732833	6646398	1

APPENDIX J VEGETATION UNITS MAPPED DURING THE CURRENT SURVEY

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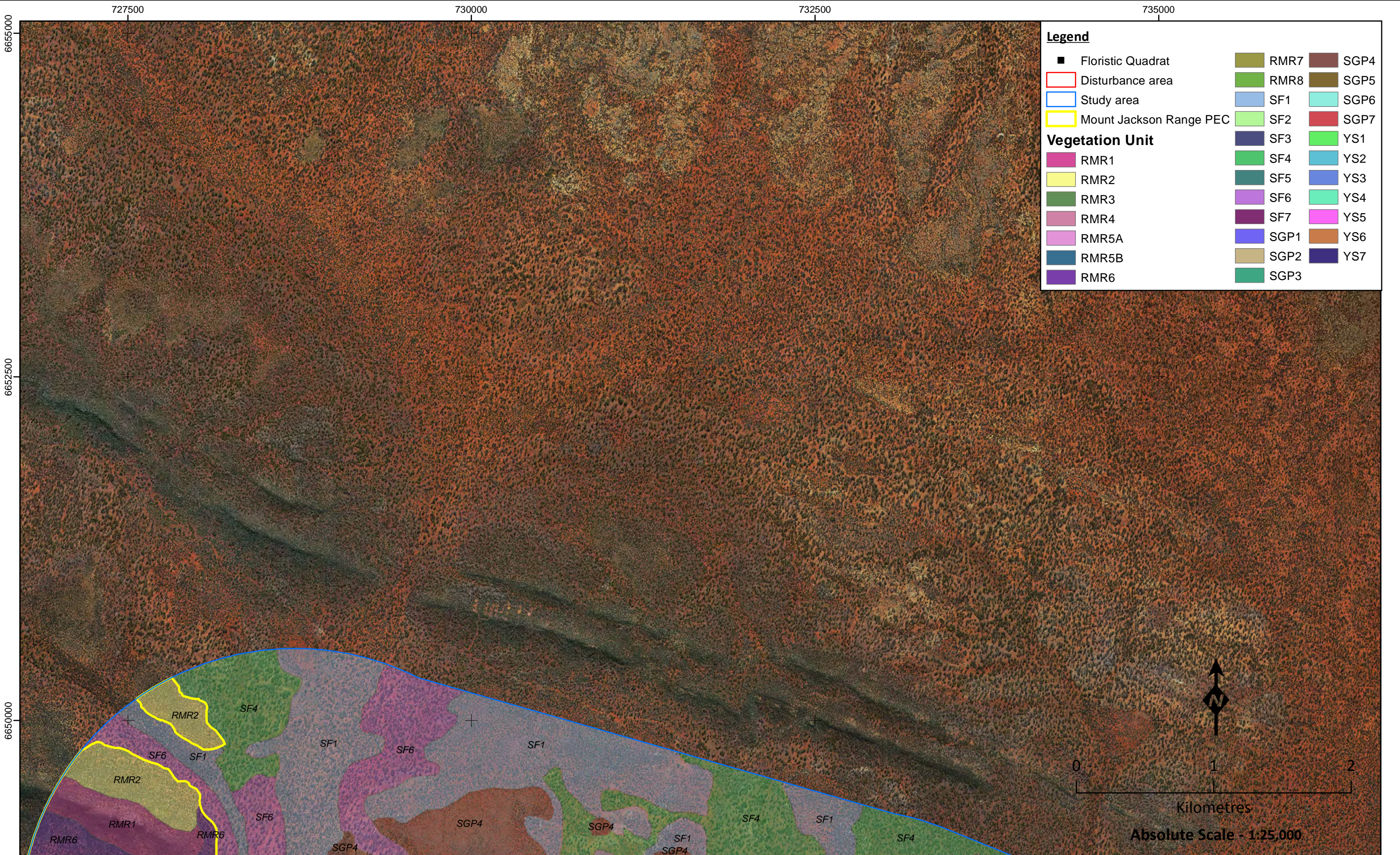


Legend	
	Grid index
Vegetation Unit	
	RMR1 <i>Brachychiton gregorii</i> low isolated trees, over <i>Eremophila georgei</i> and <i>Philotheca brucei</i> subsp. <i>brucei</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> sparse tussock grassland
	RMR2 <i>Acacia incurvaneura</i> tall, sparse shrubland, over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland
	RMR3 <i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Calycopseplus paucifolius</i> and <i>Melaleuca nematophylla</i> mid, sparse shrubland, over <i>Neurachne annularis</i> sparse tussock grassland
	RMR4 <i>Acacia quadrimarginea</i> tall, sparse shrubland, over <i>Philotheca brucei</i> subsp. <i>brucei</i> , mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland
	RMR5A <i>Acacia effusifolia</i> shrubs over <i>Neurachne annularis</i> sparse tussock grassland
	RMR5B <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Ptilotus obovatus</i> and <i>Olearia muelleri</i> , low sparse shrubland, over <i>Neurachne annularis</i> tussock grassland
	RMR6 <i>Grevillea zygodoba</i> tall/mid, sparse shrubland, over <i>Dianella revoluta</i> var. <i>divaricata</i> sparse herbland, over <i>Neurachne annularis</i> tussock grassland
	RMR7 <i>Eucalyptus longicornis</i> tall, open woodland, over <i>Grevillea zygodoba</i> mid, sparse shrubland, over <i>Neurachne annularis</i> open tussock grassland
	RMR8 <i>Eucalyptus corrugata</i> , tall, open woodland, over <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Neurachne annularis</i> tussock grassland
	SF1 <i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> , <i>Maireana trichoptera</i> and <i>Sclerolaena diacantha</i> low sparse shrubland <i>Sclerolaena drummondii</i>
	SF2 <i>Eucalyptus ravida</i> mid, wodland, over <i>Atriplex nummularia</i> and <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SF3 <i>Eucalyptus corrugata</i> mid, open woodland, over <i>Eremophila alternifolia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> , mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SF4 <i>Eucalyptus salubris</i> , tall woodland, over <i>Eremophila scoparia</i> mid, sparse shrubland, over <i>Atriplex vesicaria</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SF5 <i>Eucalyptus salmonophloia</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SF6 <i>Eucalyptus corrugata</i> mid, open woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) and <i>Exocarpos aphyllus</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SF7 <i>Eucalyptus longicornis</i> mid, open woodland, over <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Olearia muelleri</i> low sparse shrubland, over <i>Austrostipa elegantissima</i> and/or <i>A. trichophylla</i> open tussock grassland
	SGP1 <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Atriplex nummularia</i> and <i>Olearia muelleri</i> mid sparse shrubland, over <i>Sclerolaena fusiformis</i> low, sparse shrubland
	SGP2 <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, sparse shrubland, over <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid, sparse shrubland, over <i>Maireana georgei</i> low sparse shrubland, over <i>Neurachne annularis</i> open hummock grassland
	SGP3 <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i> mid, open mallee woodland, over <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall sparse shrubland, over <i>Eremophila decipiens</i> subsp. <i>decipiens</i> mid, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SGP4 <i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831) tall, shrubland, over <i>Ptilotus obovatus</i> low, sparse shrubland, over <i>Aristida contorta</i> and <i>Austrostipa elegantissima</i> open tussock grassland
	SGP5 <i>Olearia exiguiifolia</i> and <i>Westringia cephalantha</i> mid, sparse shrubland, over <i>Triodia scariosa</i> open hummock grassland and/or <i>Austrostipa elegantissima</i> open tussock grassland
	SGP6 <i>Eucalyptus sheathiana</i> mid, open woodland, over <i>Acacia erinacea</i> mid, sparse shrubland, over <i>Scaevola spinescens</i> and <i>Olearia muelleri</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> open tussock grassland
	SGP7 <i>Acacia ramulosa</i> var. <i>ramulosa</i> tall, shrubland, over <i>Ptilotus obovatus</i> and <i>Maireana georgei</i> low, sparse shrubland, over <i>Austrostipa elegantissima</i> and <i>A. trichophylla</i> open tussock grassland
	YS1 <i>Acacia effusifolia</i> tall, sparse shrubland, over <i>Baeckea</i> sp. Bungalbin Hill low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS2 <i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS3 <i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS4 <i>Acacia resinimarginea</i> tall, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> mid, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS5 <i>Acacia effusifolia</i> mid, sparse shrubland, over <i>Phebalium canaliculatum</i> and <i>Thryptomene urceolaris</i> , low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS6 <i>Acacia coolgardiensis</i> mid shrubland, over <i>Phebalium canaliculatum</i> low, sparse shrubland, over <i>Amphipogon caricinus</i> var. <i>caricinus</i> open tussock grassland
	YS7 <i>Allocasuarina corniculata</i> low, open woodland and <i>Acacia sibina</i> tall, sparse shrubland, over <i>Baeckea elderiana</i> low, sparse shrubland, over <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> low, open woodland, over <i>Acacia resinimarginea</i> tall shrubland, over <i>Thryptomene urceolaris</i> and <i>Phebalium canaliculatum</i> mid, open shrubland



Vegetation units of the current survey Overview map

Figure: J.1 Project ID: 1555	Drawn: CP Date: 01/11/2013
<small>Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994</small>	
<small>Unique Map ID: 367</small>	
A3	



Legend

- Floristic Quadrat
- Disturbance area
- Study area
- Mount Jackson Range PEC

Vegetation Unit

RMR1	RMR2	RMR3	RMR4	RMR5A	RMR5B	RMR6	RMR7	RMR8	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SGP1	SGP2	SGP3	SGP4	SGP5	SGP6	SGP7	YS1	YS2	YS3	YS4	YS5	YS6	YS7
------	------	------	------	-------	-------	------	------	------	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	-----	-----	-----	-----	-----	-----	-----



Vegetation units of the current survey
Map: A1

Figure: J.2
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 353

727500

730000

732500

735000

6647500

6645000



Legend

- Floristic Quadrat
- ▭ Disturbance area
- ▭ Study area
- ▭ Mount Jackson Range PEC

Vegetation Unit

RMR1	SGP1
RMR2	SGP2
RMR3	SGP3
RMR4	SGP4
RMR5A	SGP5
RMR5B	SGP6
RMR6	SGP7
RMR7	YS1
RMR8	YS2
SF1	YS3
SF2	YS4
SF3	YS5
SF4	YS6
	YS7



Vegetation units of the current survey

Map: B1

Figure: J.3
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
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Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 354

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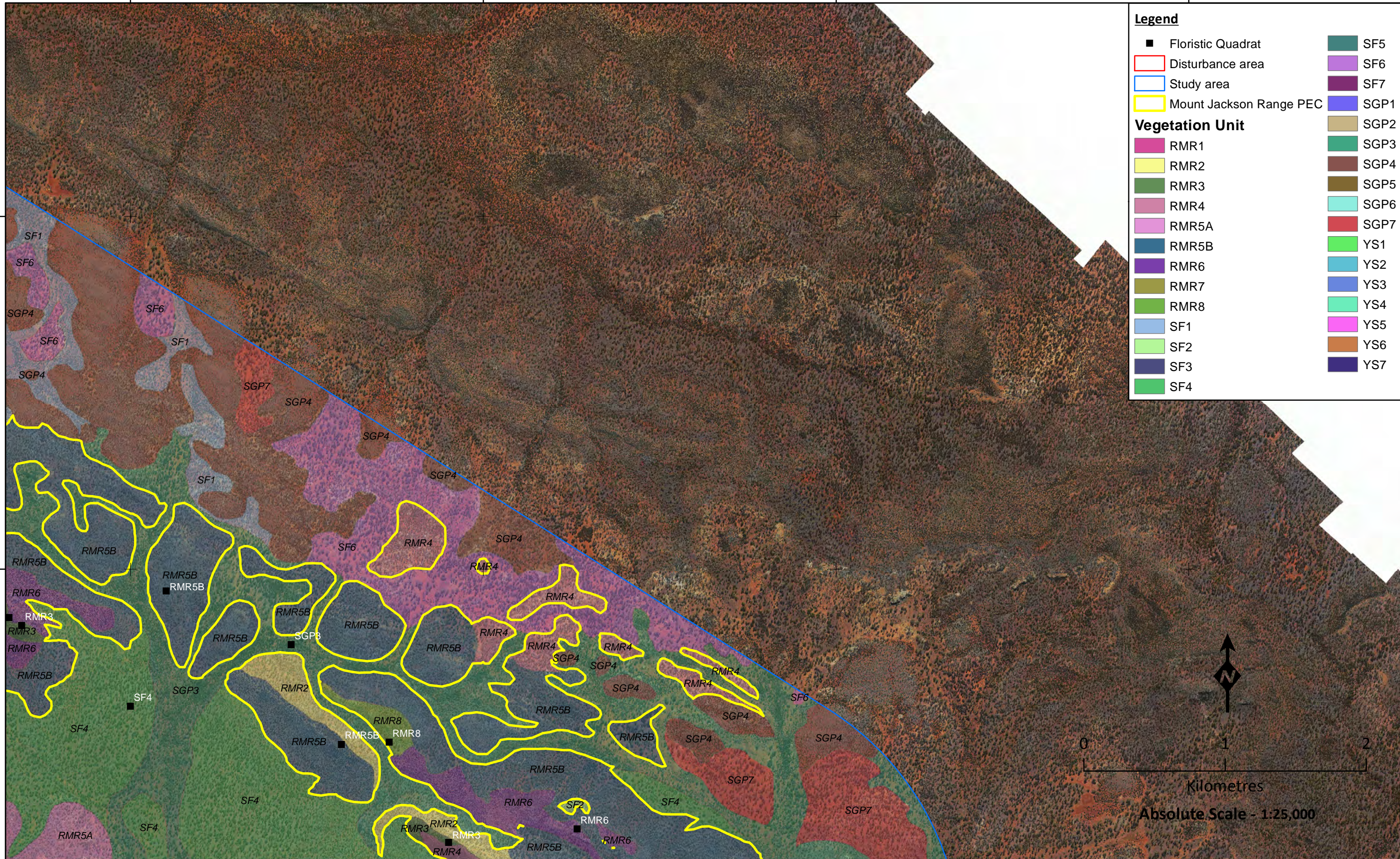
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742500

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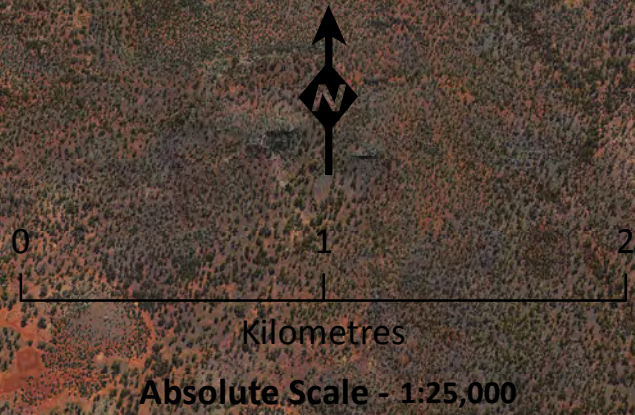
6647500

6645000



Legend

- Floristic Quadrat
- Disturbance area
- Study area
- Mount Jackson Range PEC
- Vegetation Unit**
- RMR1
- RMR2
- RMR3
- RMR4
- RMR5A
- RMR5B
- RMR6
- RMR7
- RMR8
- SF1
- SF2
- SF3
- SF4
- SF5
- SF6
- SF7
- SGP1
- SGP2
- SGP3
- SGP4
- SGP5
- SGP6
- SGP7
- YS1
- YS2
- YS3
- YS4
- YS5
- YS6
- YS7



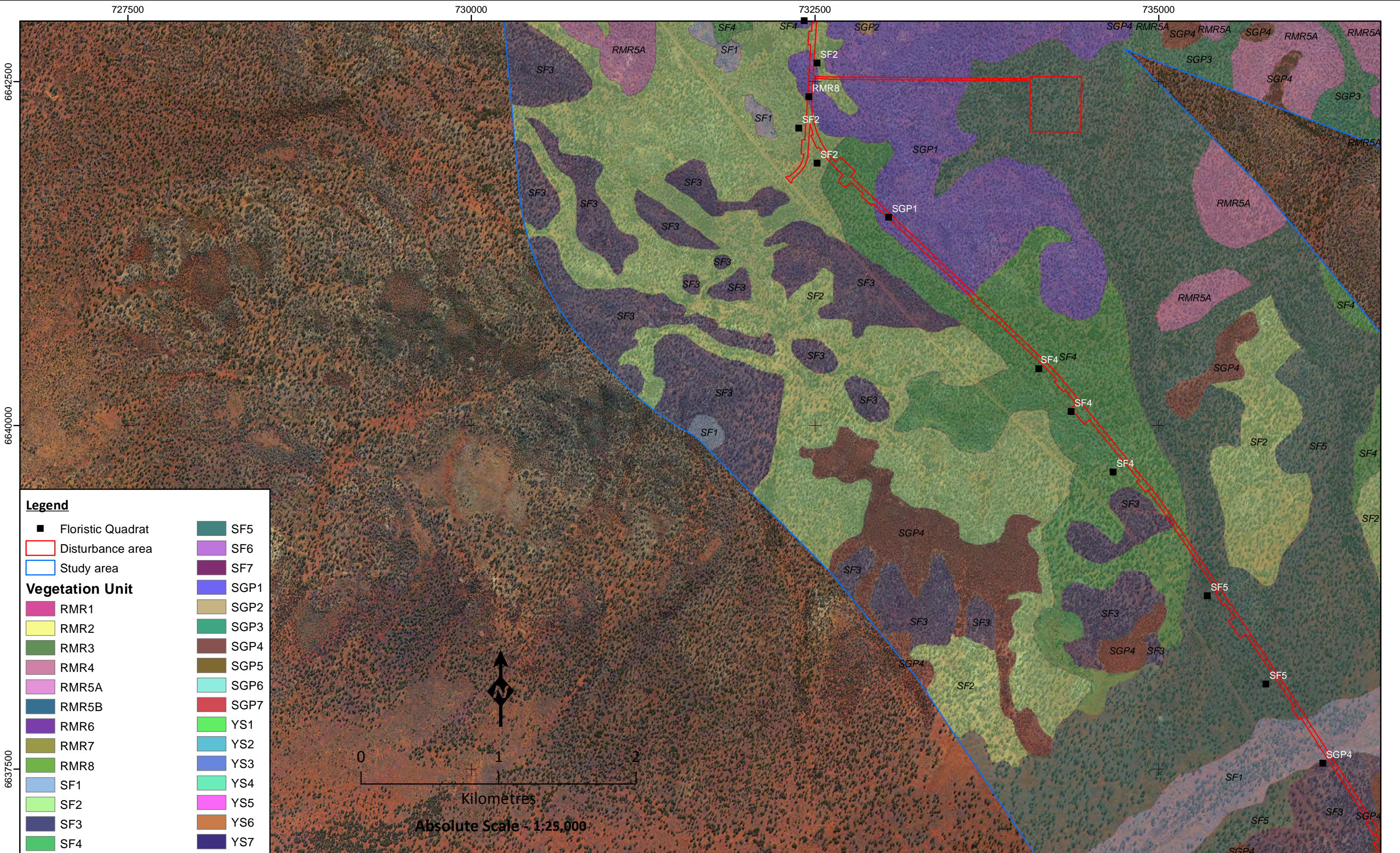
Vegetation units of the current survey
Map: B2

Figure: J.4
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
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 Datum: GDA 1994

Unique Map ID: 355

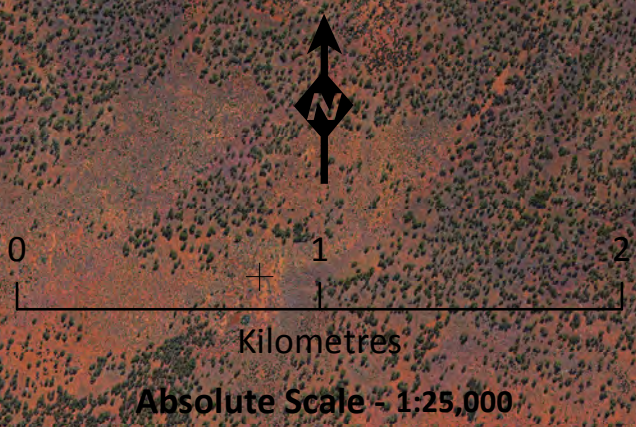


Legend

- Floristic Quadrat
- ▭ Disturbance area
- ▭ Study area

Vegetation Unit

■ RMR1	■ SGP1
■ RMR2	■ SGP2
■ RMR3	■ SGP3
■ RMR4	■ SGP4
■ RMR5A	■ SGP5
■ RMR5B	■ SGP6
■ RMR6	■ SGP7
■ RMR7	■ YS1
■ RMR8	■ YS2
■ SF1	■ YS3
■ SF2	■ YS4
■ SF3	■ YS5
■ SF4	■ YS6
	■ YS7



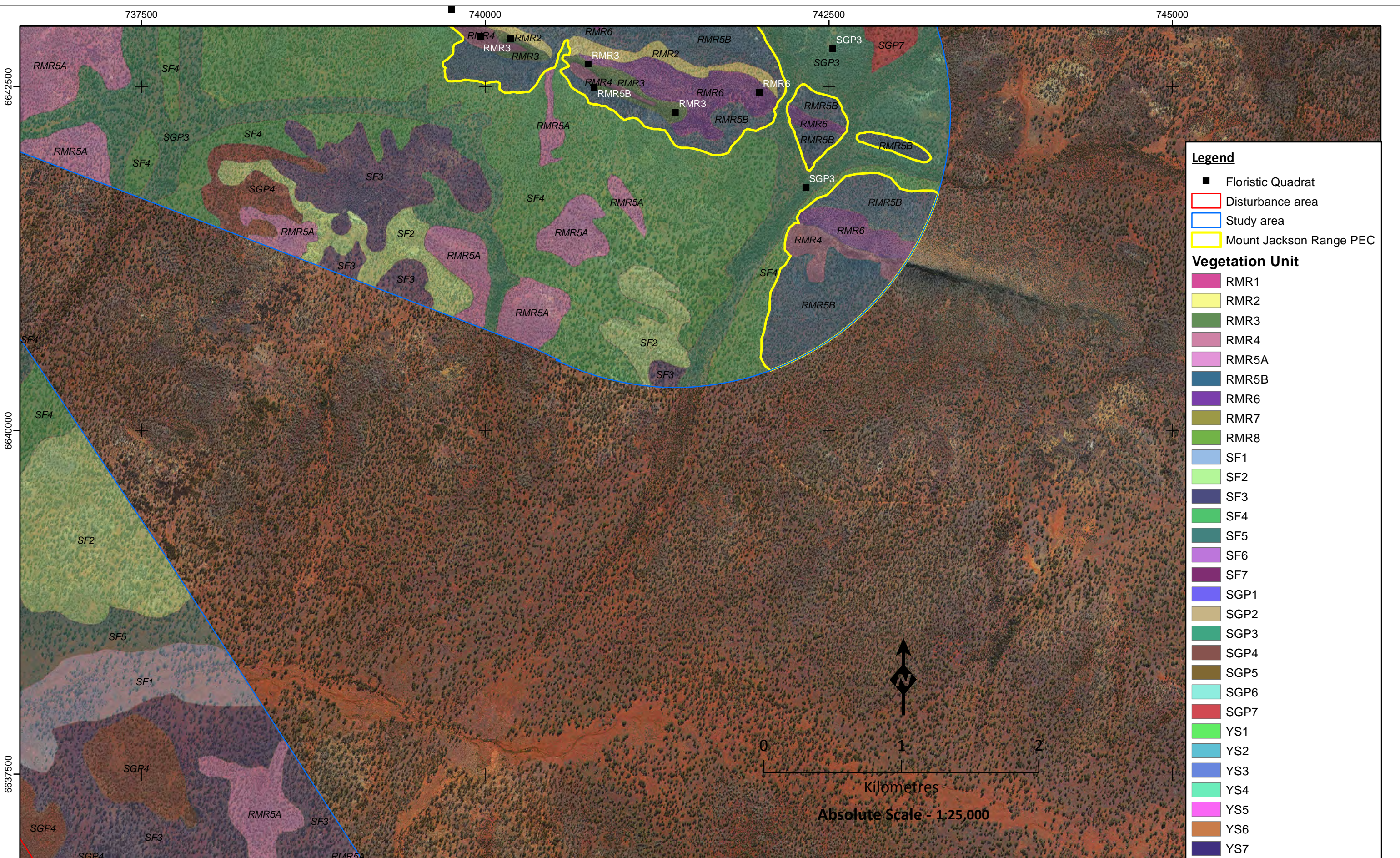
Vegetation units of the current survey
Map: C1

Figure: J.5
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
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 Datum: GDA 1994

Unique Map ID: 356



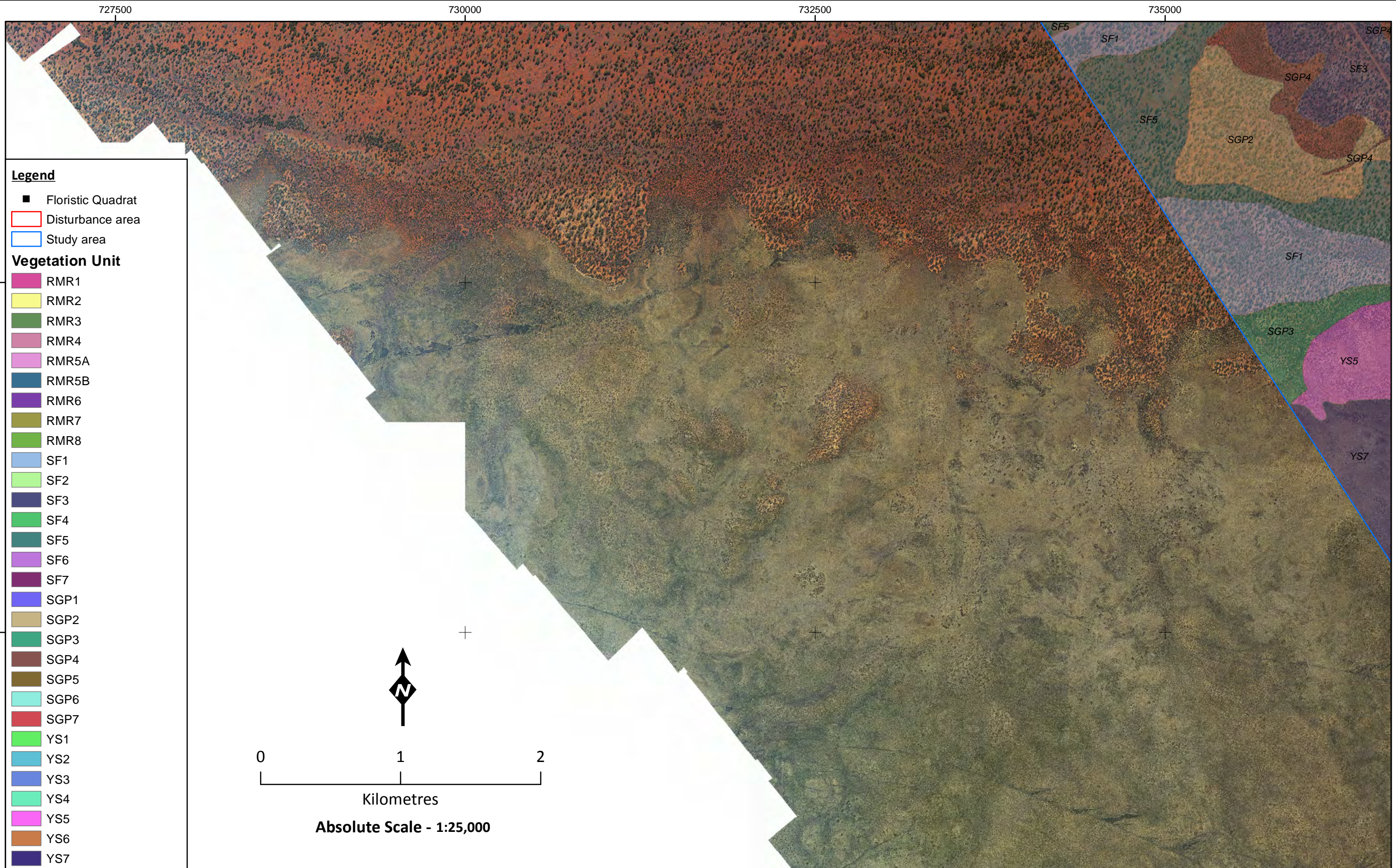
Vegetation units of the current survey
Map: C2

Figure: J.6
Project ID: 1555

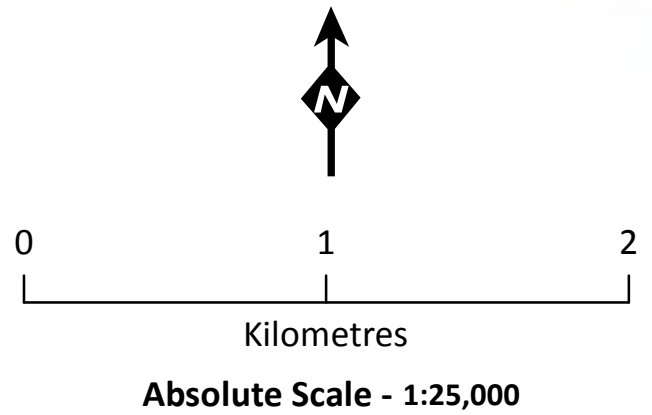
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Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 357



- Legend**
- Floristic Quadrat
 - ▭ Disturbance area
 - ▭ Study area
- Vegetation Unit**
- RMR1
 - RMR2
 - RMR3
 - RMR4
 - RMR5A
 - RMR5B
 - RMR6
 - RMR7
 - RMR8
 - SF1
 - SF2
 - SF3
 - SF4
 - SF5
 - SF6
 - SF7
 - SGP1
 - SGP2
 - SGP3
 - SGP4
 - SGP5
 - SGP6
 - SGP7
 - YS1
 - YS2
 - YS3
 - YS4
 - YS5
 - YS6
 - YS7



Vegetation units of the current survey
Map: D1

Figure: J.7
Project ID: 1555

Drawn: CP
Date: 01/11/2013

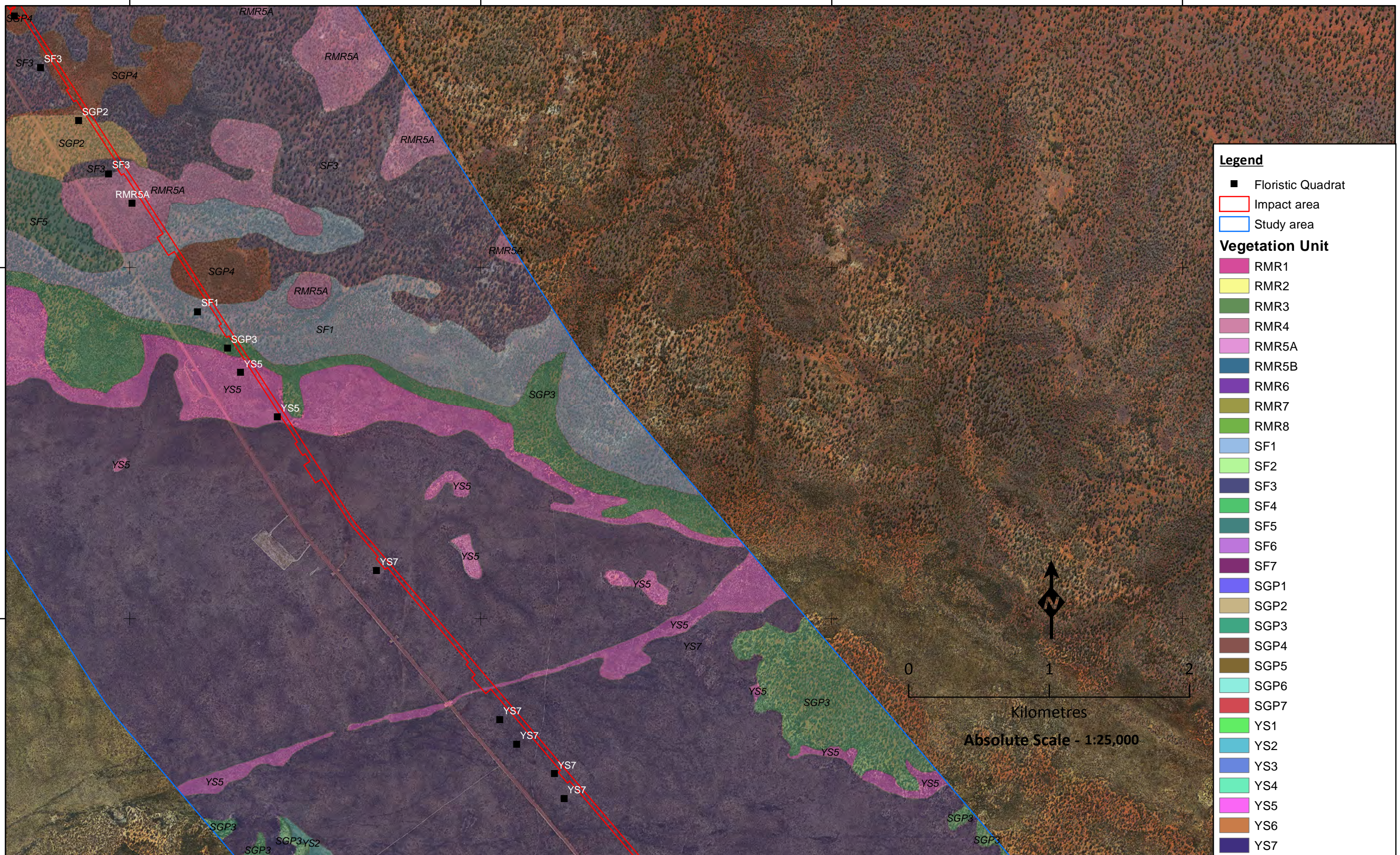
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6635000

6632500

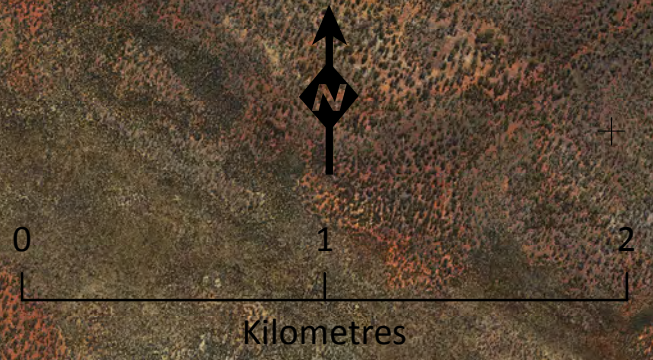


Legend

- Floristic Quadrat
- ▭ Impact area
- ▭ Study area

Vegetation Unit

- RMR1
- RMR2
- RMR3
- RMR4
- RMR5A
- RMR5B
- RMR6
- RMR7
- RMR8
- SF1
- SF2
- SF3
- SF4
- SF5
- SF6
- SF7
- SGP1
- SGP2
- SGP3
- SGP4
- SGP5
- SGP6
- SGP7
- YS1
- YS2
- YS3
- YS4
- YS5
- YS6
- YS7



Vegetation units of the current survey
Map: D2

Figure: J.8
Project ID: 1555

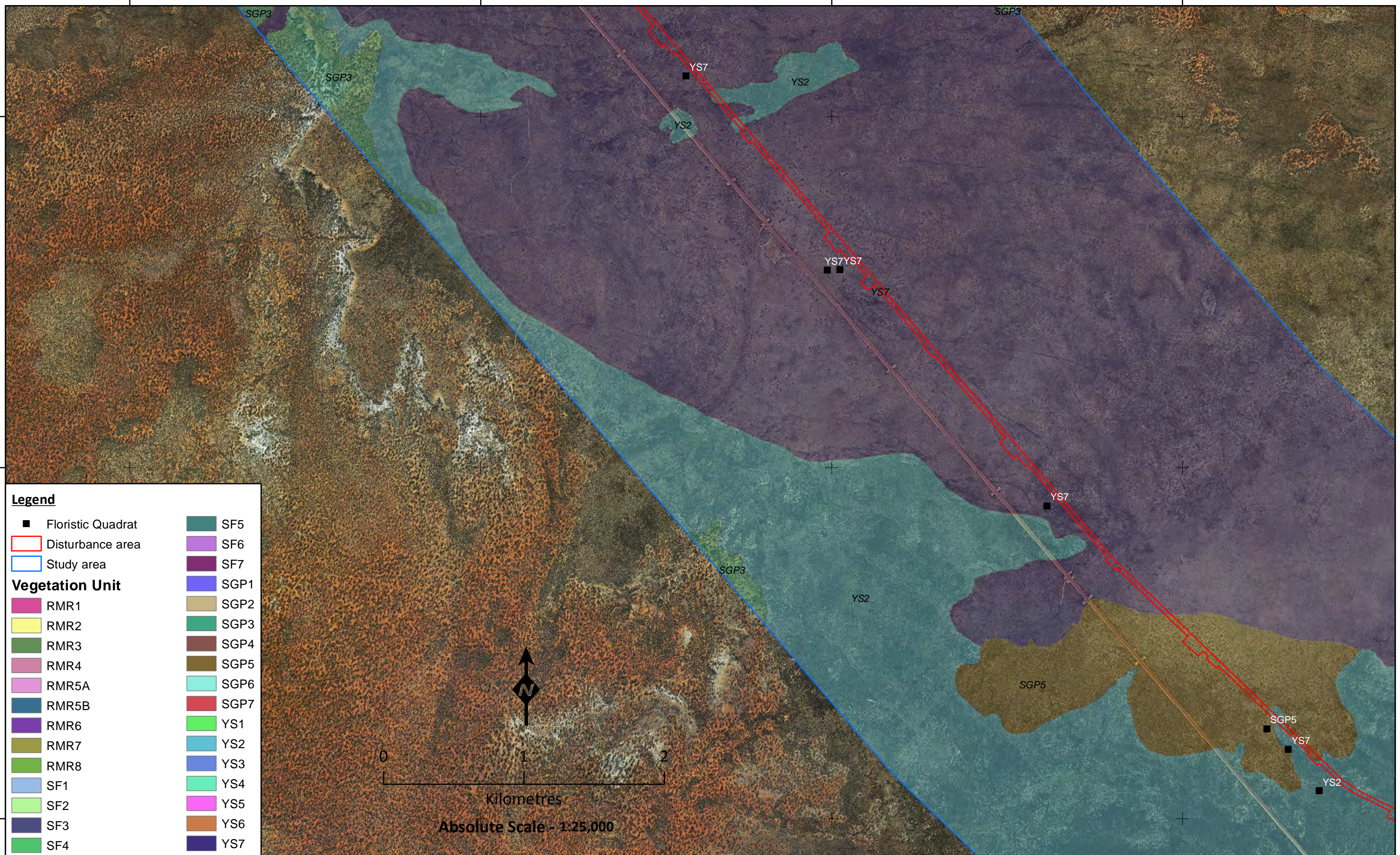
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Unique Map ID: 359

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6627500
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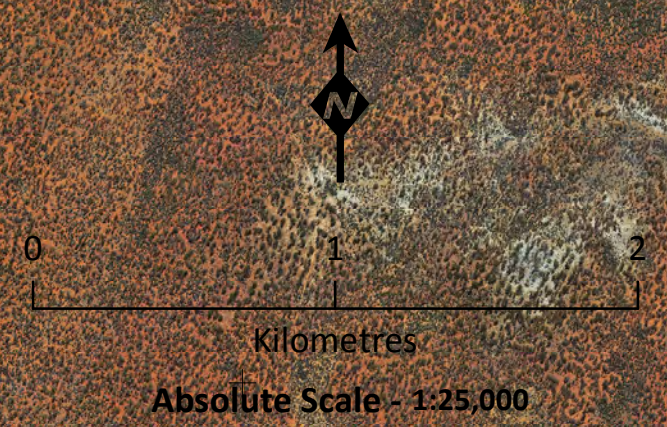


Legend

- Floristic Quadrat
- ▭ Disturbance area
- ▭ Study area

Vegetation Unit

■ RMR1	■ SGP1
■ RMR2	■ SGP2
■ RMR3	■ SGP3
■ RMR4	■ SGP4
■ RMR5A	■ SGP5
■ RMR5B	■ SGP6
■ RMR6	■ SGP7
■ RMR7	■ YS1
■ RMR8	■ YS2
■ SF1	■ YS3
■ SF2	■ YS4
■ SF3	■ YS5
■ SF4	■ YS6
	■ YS7



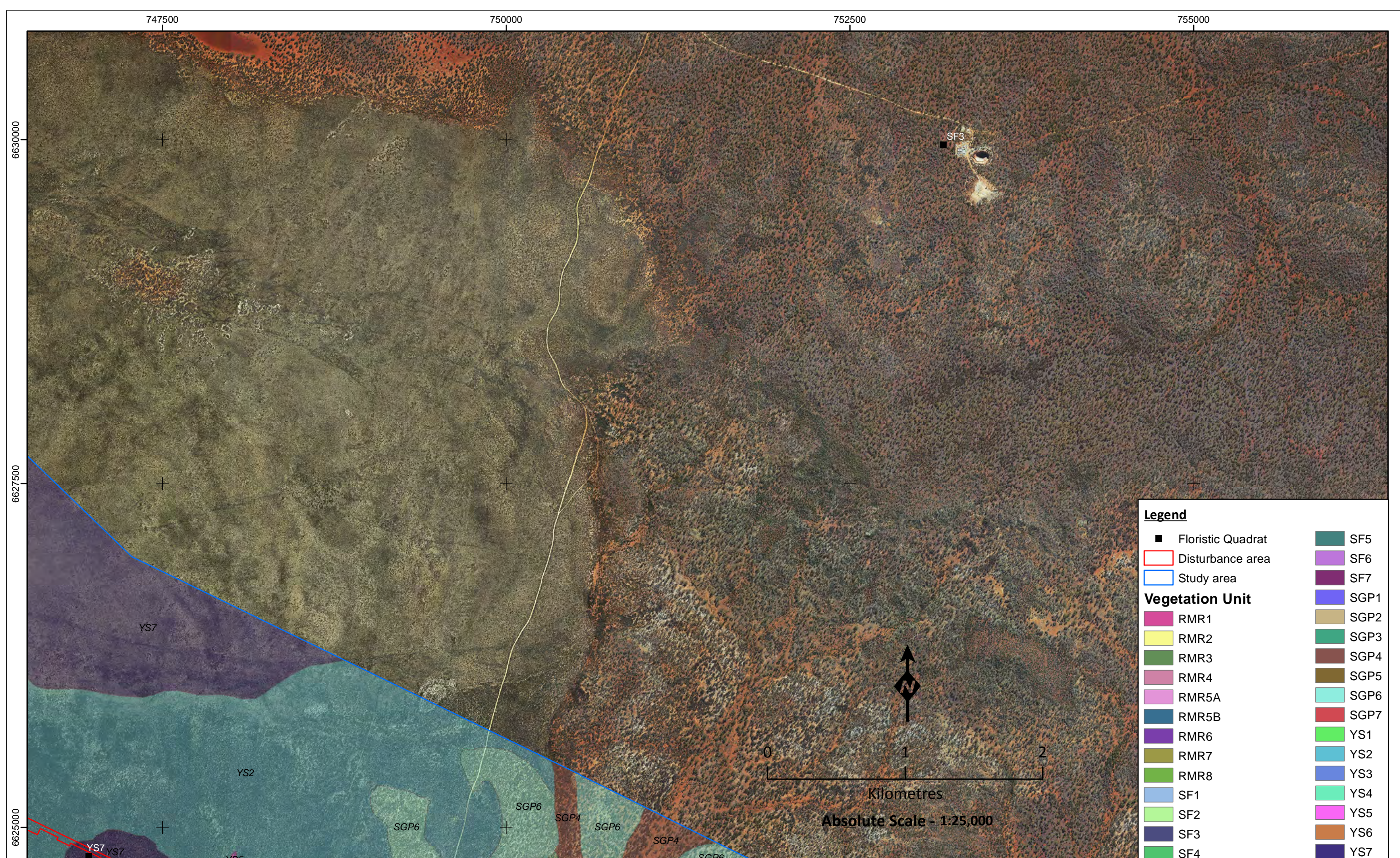
Vegetation units of the current survey
Map: E2

Figure: J.9
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 360



Legend	
■ Floristic Quadrat	SF5
▭ Disturbance area	SF6
▭ Study area	SF7
Vegetation Unit	
■ RMR1	■ SGP1
■ RMR2	■ SGP2
■ RMR3	■ SGP3
■ RMR4	■ SGP4
■ RMR5A	■ SGP5
■ RMR5B	■ SGP6
■ RMR6	■ SGP7
■ RMR7	■ YS1
■ RMR8	■ YS2
■ SF1	■ YS3
■ SF2	■ YS4
■ SF3	■ YS5
■ SF4	■ YS6
	■ YS7



Vegetation units of the current survey
Map: E3

Figure: J.10
Project ID: 1555

Drawn: CP
Date: 01/11/2013

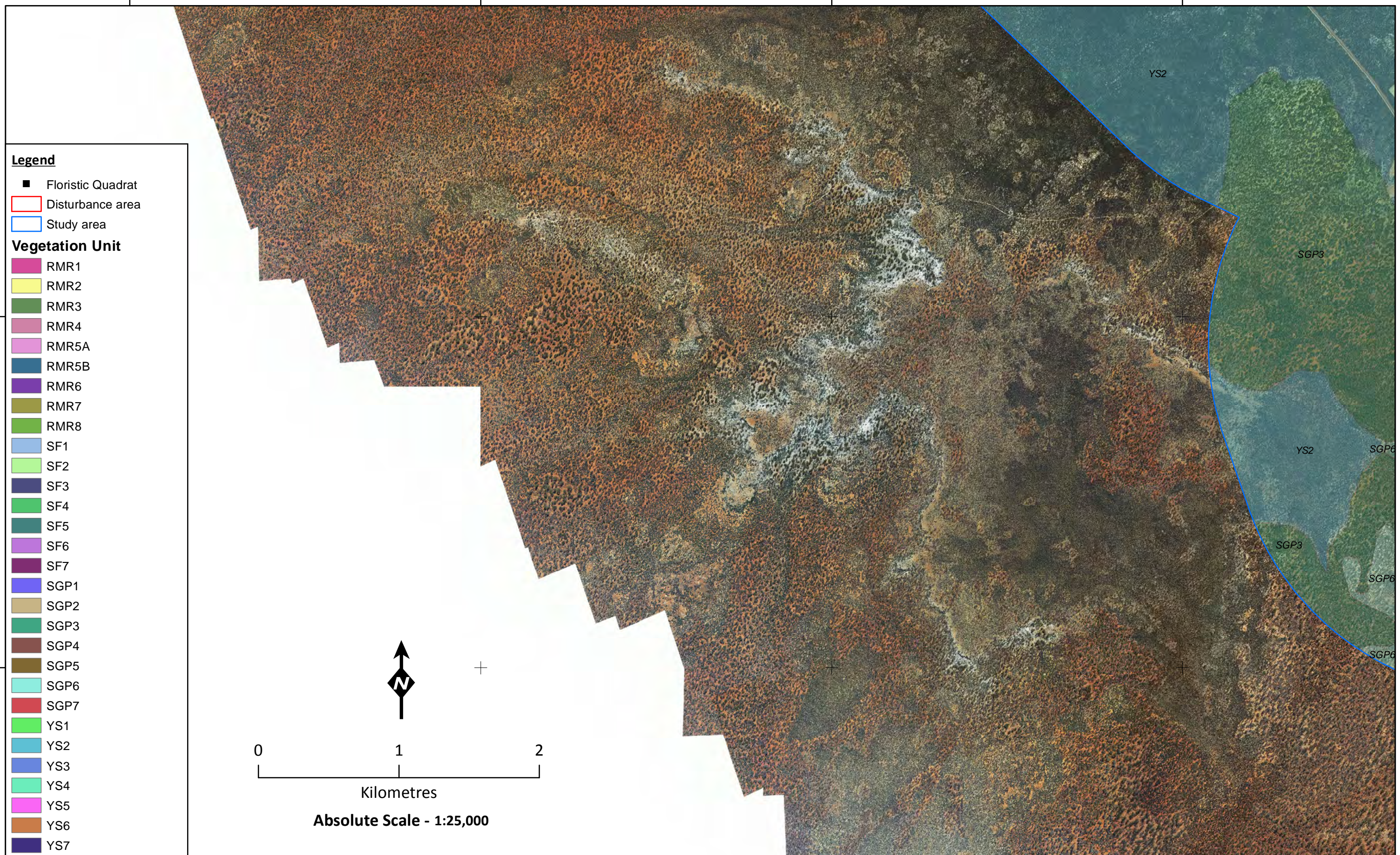
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Unique Map ID: 361
A3

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6622500

6620000

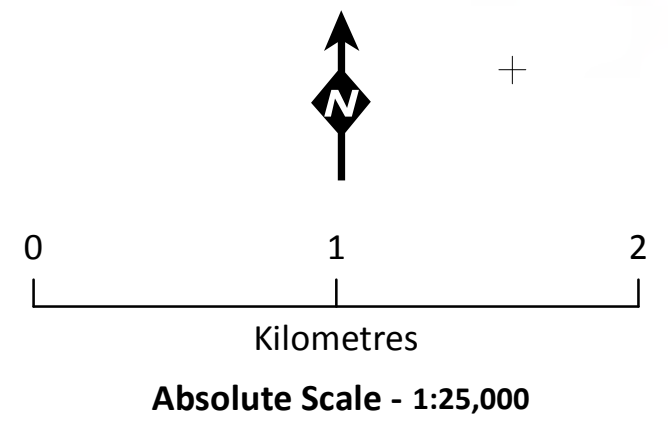


Legend

- Floristic Quadrat
- Disturbance area
- Study area

Vegetation Unit

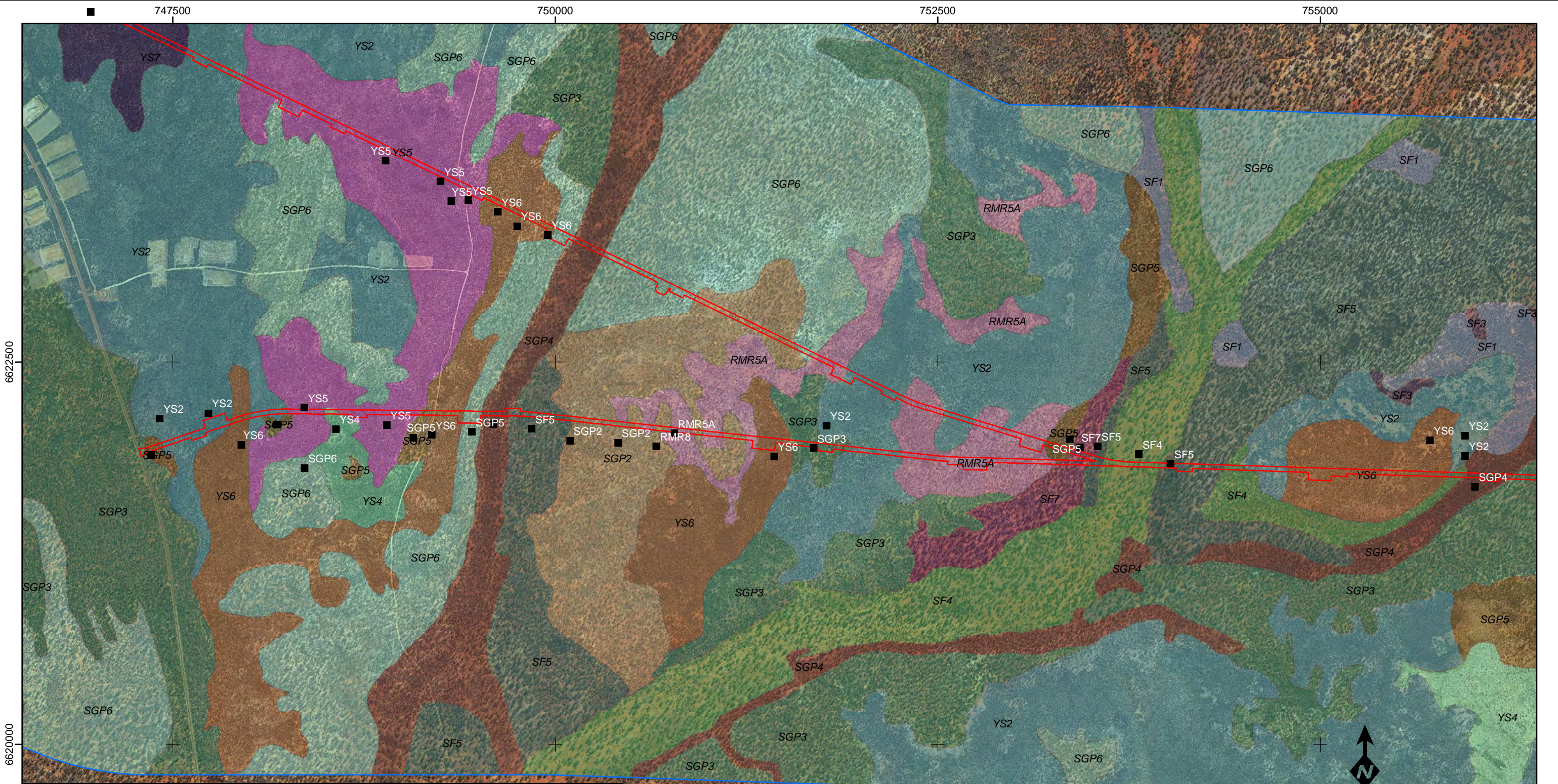
- RMR1
- RMR2
- RMR3
- RMR4
- RMR5A
- RMR5B
- RMR6
- RMR7
- RMR8
- SF1
- SF2
- SF3
- SF4
- SF5
- SF6
- SF7
- SGP1
- SGP2
- SGP3
- SGP4
- SGP5
- SGP6
- SGP7
- YS1
- YS2
- YS3
- YS4
- YS5
- YS6
- YS7



Vegetation units of the current survey
Map: F2

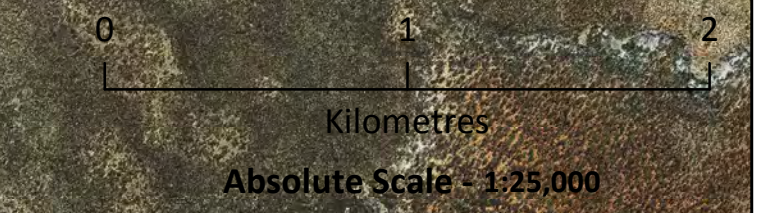
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<small>Coordinate System Name: GDA 1994 MGA Zone 50 Projection: Transverse Mercator Datum: GDA 1994</small>	<small>Unique Map ID: 362</small>
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Legend

■ Floristic Quadrat	RMR3	RMR8	SF6	SGP5	YS4
Disturbance area	RMR4	SF1	SF7	SGP6	YS5
Study area	RMR5A	SF2	SGP1	SGP7	YS6
Vegetation Unit	RMR5B	SF3	SGP2	YS1	YS7
RMR1	RMR6	SF4	SGP3	YS2	
RMR2	RMR7	SF5	SGP4	YS3	



Vegetation units of the current survey
Map: F3

Figure: J.12
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
 Name: GDA 1994 MGA Zone 50
 Projection: Transverse Mercator
 Datum: GDA 1994

Unique Map ID: 363

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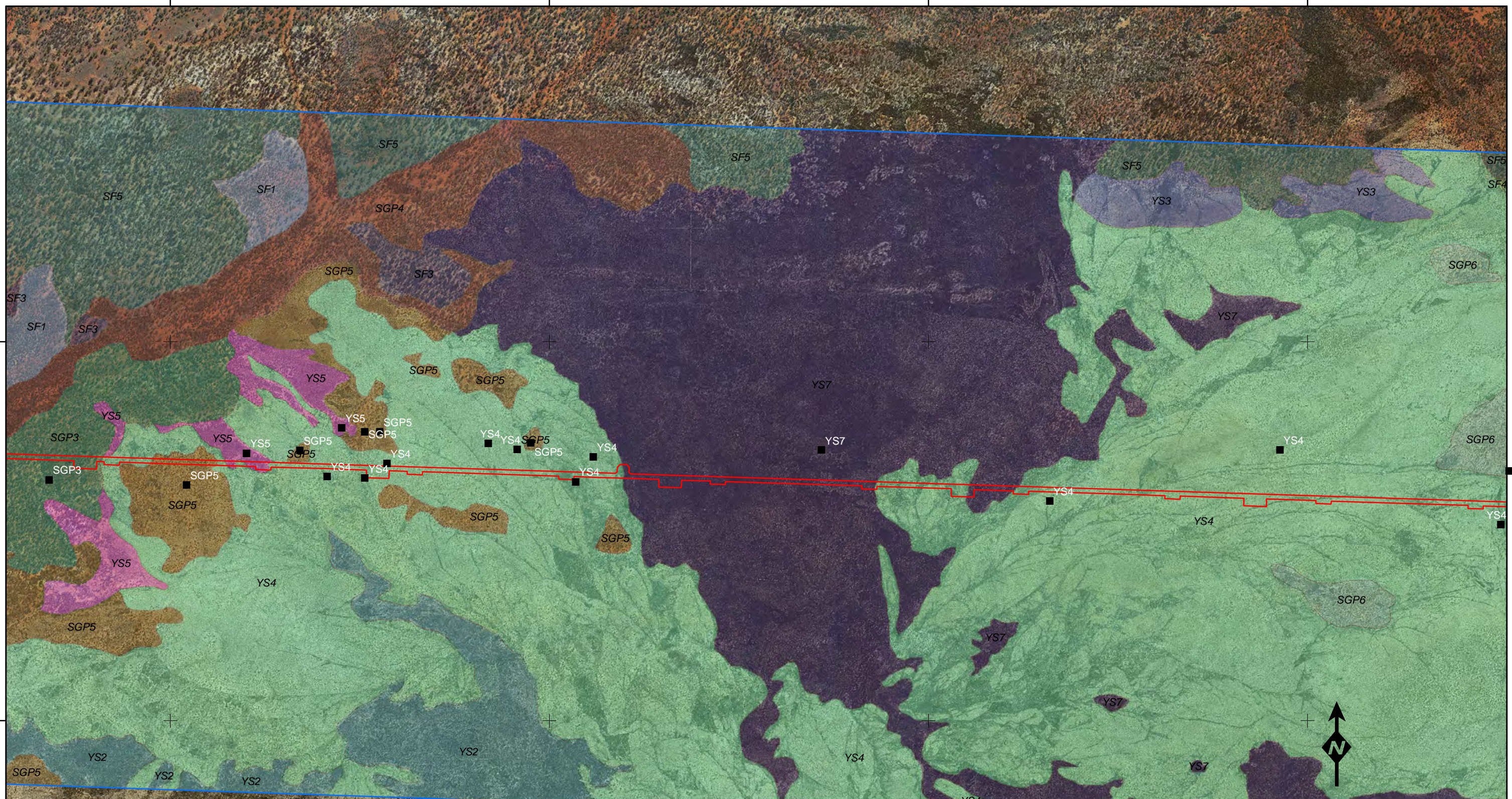
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762500

765000

6622500

6620000



Legend

- Floristic Quadrat
- ▭ Disturbance area
- ▭ Study area

Vegetation Unit

RMR1	RMR5A	RMR8	SF4	SGP1	SGP5	YS2	YS6
RMR2	RMR5B	SF1	SF5	SGP2	SGP6	YS3	YS7
RMR3	RMR6	SF2	SF6	SGP3	SGP7	YS4	
RMR4	RMR7	SF3	SF7	SGP4	YS1	YS5	

0 1 2
Kilometres
Absolute Scale - 1:25,000



Vegetation units of the current survey
Map: F4

Figure: J.13
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 364

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772500

775000

Legend

- Floristic Quadrat
 - ▭ Disturbance area
 - ▭ Study area
- | | | | | | | | |
|------|-------|------|-----|------|------|-----|-----|
| RMR1 | RMR5A | RMR8 | SF4 | SGP1 | SGP5 | YS2 | YS6 |
| RMR2 | RMR5B | SF1 | SF5 | SGP2 | SGP6 | YS3 | YS7 |
| RMR3 | RMR6 | SF2 | SF6 | SGP3 | SGP7 | YS4 | |
| RMR4 | RMR7 | SF3 | SF7 | SGP4 | YS1 | YS5 | |

Vegetation Unit



Absolute Scale - 1:25,000



Vegetation units of the current survey
Map: F5

Figure: J.14
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
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Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 365

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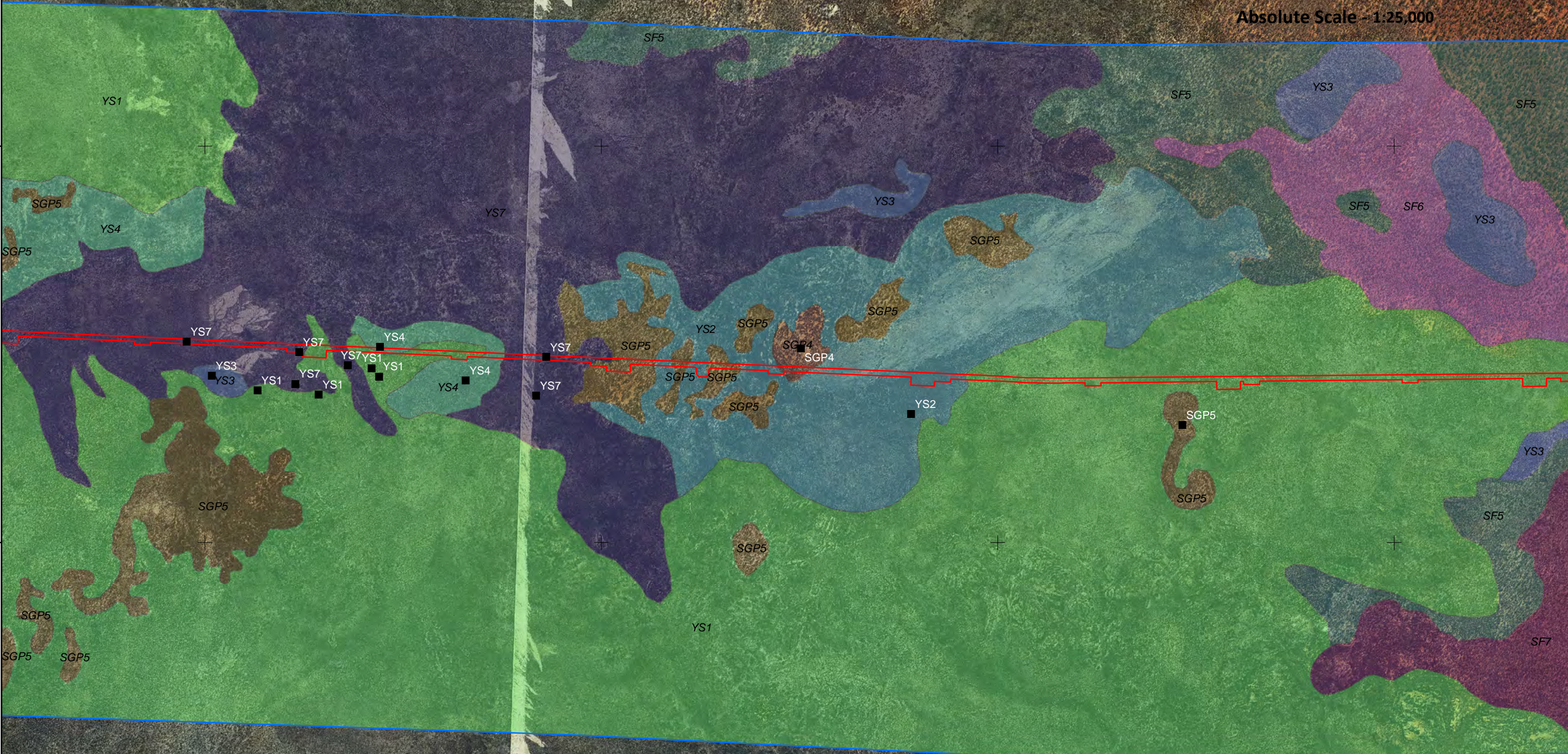
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Legend

- Floristic Quadrat
 - ▭ Disturbance area
 - ▭ Study area
- Vegetation Unit**
- | | | | | |
|-------|------|------|------|-----|
| RMR3 | RMR8 | SF6 | SGP5 | YS4 |
| RMR4 | SF1 | SF7 | SGP6 | YS5 |
| RMR5A | SF2 | SGP1 | SGP7 | YS6 |
| RMR5B | SF3 | SGP2 | YS1 | YS7 |
| RMR6 | SF4 | SGP3 | YS2 | |
| RMR7 | SF5 | SGP4 | YS3 | |



Kilometres
Absolute Scale - 1:25,000



6622500

6620000



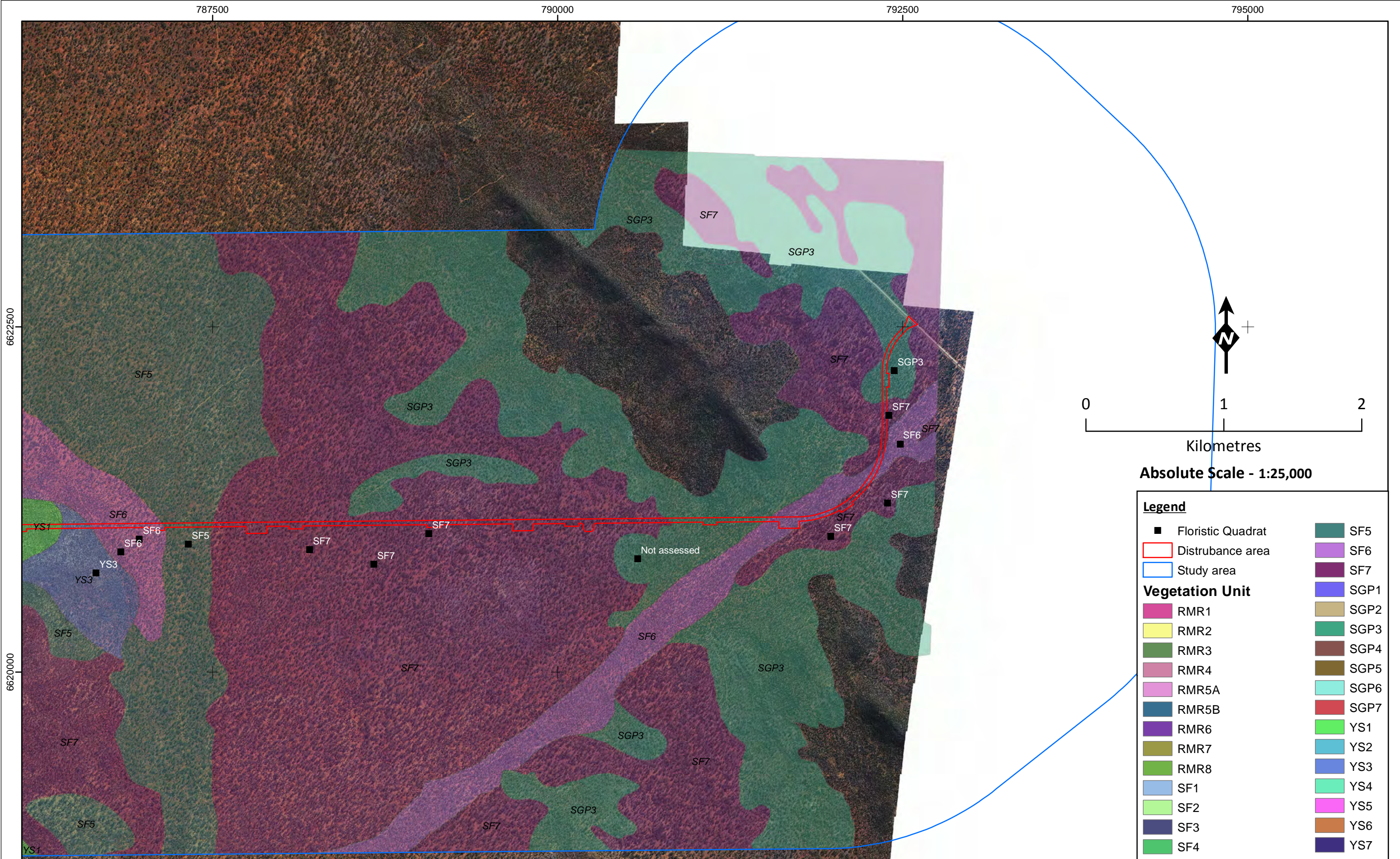
Vegetation units of the current survey Map: F6

Figure: J.15
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 366



Legend

- Floristic Quadrat
 - ▭ Disturbance area
 - ▭ Study area
- Vegetation Unit**
- | | |
|---------|--------|
| ■ RMR1 | ■ SGP1 |
| ■ RMR2 | ■ SGP2 |
| ■ RMR3 | ■ SGP3 |
| ■ RMR4 | ■ SGP4 |
| ■ RMR5A | ■ SGP5 |
| ■ RMR5B | ■ SGP6 |
| ■ RMR6 | ■ SGP7 |
| ■ RMR7 | ■ YS1 |
| ■ RMR8 | ■ YS2 |
| ■ SF1 | ■ YS3 |
| ■ SF2 | ■ YS4 |
| ■ SF3 | ■ YS5 |
| ■ SF4 | ■ YS6 |
| | ■ YS7 |



Vegetation units of the current survey
Map: F7

Figure: I.16
Project ID: 1555

Drawn: CP
Date: 01/11/2013

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: 367

APPENDIX K DENDROGRAM OF DPAW, *ECOLOGIA* AND MATTISKE QUADRATS

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Vegetation code	Vegetation unit	Landform	Site
RMR1	BgEgPbbAe	Rocky Upper slopes and Ridgetops	S043
RMR1	BgEgPbbAe	Rocky Upper slopes and Ridgetops	S047
RMR1	BgEgPbbAe	Rocky Upper slopes and Ridgetops	S002
RMR1	BgEgPbbAe	Rocky Upper slopes and Ridgetops	S001
RMR1	BgEgPbbAe	Rocky Upper slopes and Ridgetops	S254
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S088
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S044
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S085
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S079
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S016
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S013
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S039
RMR2	AiEiINa	Rocky Upper slopes and Ridgetops	S017
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S015
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S018
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S137
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S161
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S135
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S158
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S172
RMR3	AqCpMnNa	Rocky Upper slopes and Ridgetops	S159
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S156
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S087
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S090
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S138
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S127
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S129
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S113
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S084
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S077
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S037
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S011
RMR4	AqPbbNa	Rocky Upper slopes and Ridgetops	S014
RMR5A	AeNa	Rocky Low Rises	S234
RMR5A	AeNa	Rocky Low Rises	S199
RMR5A	AeNa	Rocky Low Rises	S198
RMR5A	AeNa	Rocky Low Rises	S150
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S119
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S100
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S092
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S134
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S066
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S065
RMR5B	Asp.nPoOmNa	Rocky Midslopes	E307
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S010
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S114
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S045
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S152
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S160
RMR5B	Asp.nPoOmNa	Rocky Midslopes	S080
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S110
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S139
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S136
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S038
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S012
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S162
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	E309
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S070
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S072
RMR6	GzDrdNa	Rocky Upper slopes and Ridgetops	S071
RMR7	ElGzNa	Rocky Midslopes	S049
RMR7	ElGzNa	Rocky Midslopes	S128
RMR7	ElGzNa	Rocky Midslopes	S069
RMR7	ElGzNa	Rocky Midslopes	S074
RMR8	EcAtSafNa	Rocky Midslopes	S091
RMR8	EcAtSafNa	Rocky Midslopes	S081
RMR8	EcAtSafNa	Rocky Midslopes	S116
RMR8	EcAtSafNa	Rocky Midslopes	S115
RMR8	EcAtSafNa	Rocky Midslopes	S078
RMR8	EcAtSafNa	Rocky Midslopes	S019
RMR8	EcAtSafNa	Rocky Midslopes	S073
RMR8	EcAtSafNa	Rocky Midslopes	S094
RMR8	EcAtSafNa	Rocky Midslopes	S093
RMR8	EcAtSafNa	Rocky Midslopes	S157
RMR8	EcAtSafNa	Rocky Midslopes	S082
RMR8	EcAtSafNa	Rocky Midslopes	S089
RMR8	EcAtSafNa	Rocky Midslopes	S003
RMR8	EcAtSafNa	Rocky Midslopes	S048
RMR8	EcAtSafNa	Rocky Midslopes	S233
RMR8	EcAtSafNa	Rocky Midslopes	S023
RMR8	EcAtSafNa	Rocky Midslopes	S051
RMR8	EcAtSafNa	Rocky Midslopes	S042
SF1	EsAvMTsDsd	Sandy Floodplains	E302
SF1	EsAvMTsDsd	Sandy Floodplains	E303
SF1	EsAvMTsDsd	Sandy Floodplains	S148
SF1	EsAvMTsDsd	Sandy Floodplains	E304
SF2	ErAnAvAe	Sandy Floodplains	S101
SF2	ErAnAvAe	Sandy Floodplains	S118
SF2	ErAnAvAe	Sandy Floodplains	S046
SF2	ErAnAvAe	Sandy Floodplains	S111
SF2	ErAnAvAe	Sandy Floodplains	S022
SF2	ErAnAvAe	Sandy Floodplains	S021
SF2	ErAnAvAe	Sandy Floodplains	S025
SF2	ErAnAvAe	Sandy Floodplains	S035
SF3	EcEaSafAe	Sandy Floodplains	S026
SF3	EcEaSafAe	Sandy Floodplains	S024
SF3	EcEaSafAe	Sandy Floodplains	S068
SF3	EcEaSafAe	Sandy Floodplains	S028
SF3	EcEaSafAe	Sandy Floodplains	S149
SF3	EcEaSafAe	Sandy Floodplains	S146
SF3	EcEaSafAe	Sandy Floodplains	E318
SF4	EsEsAvAe	Sandy Floodplains	S180
SF4	EsEsAvAe	Sandy Floodplains	S179
SF4	EsEsAvAe	Sandy Floodplains	E322
SF4	EsEsAvAe	Sandy Floodplains	S253
SF4	EsEsAvAe	Sandy Floodplains	S107
SF4	EsEsAvAe	Sandy Floodplains	E306
SF4	EsEsAvAe	Sandy Floodplains	S032
SF4	EsEsAvAe	Sandy Floodplains	S112
SF4	EsEsAvAe	Sandy Floodplains	S126
SF4	EsEsAvAe	Sandy Floodplains	S050
SF4	EsEsAvAe	Sandy Floodplains	S108
SF5	EsEsSafAe	Sandy Floodplains	S029
SF5	EsEsSafAe	Sandy Floodplains	S255
SF5	EsEsSafAe	Sandy Floodplains	S186
SF5	EsEsSafAe	Sandy Floodplains	S131
SF5	EsEsSafAe	Sandy Floodplains	S117
SF5	EsEsSafAe	Sandy Floodplains	S133
SF5	EsEsSafAe	Sandy Floodplains	S099
SF5	EsEsSafAe	Sandy Floodplains	S181
SF5	EsEsSafAe	Sandy Floodplains	S132
SF5	EsEsSafAe	Sandy Floodplains	S251
SF5	EsEsSafAe	Sandy Floodplains	S224
SF6	EcAsp.nEaAe	Sandy Floodplains	E301
SF6	EcAsp.nEaAe	Sandy Floodplains	S004
SF6	EcAsp.nEaAe	Sandy Floodplains	S188

Rocky Midslopes/Ridgetops

Sandy Floodplains

SF6	EcAsp.nEaAe	Sandy Floodplains	S142	
SF6	EcAsp.nEaAe	Sandy Floodplains	S122	
SF6	EcAsp.nEaAe	Sandy Floodplains	S123	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S140	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S141	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S143	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S183	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S103	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S182	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S054	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S053	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S250	
SF7	EIEsSafOmAeAt	Sandy Floodplains	S167	
SGP1	Asp.nAnOmSf	Gravelly Ironstone Plains	S076	
SGP1	Asp.nAnOmSf	Gravelly Ironstone Plains	S067	
SGP1	Asp.nAnOmSf	Gravelly Ironstone Plains	E312	
SGP1	Asp.nAnOmSf	Gravelly Ironstone Plains	S036	
SGP1	Asp.nAnOmSf	Gravelly Ironstone Plains	S034	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S030	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S027	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S033	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S064	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S041	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S232	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S196	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S231	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	S151	
SGP2	Asp.nSafMgNa	Gravelly Ironstone Plains	C001	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S144	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S239	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S009	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S189	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S187	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	E311	
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SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S086	
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SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	E310	
SGP3	EIIAsp.nEddAe	Sandy Plains/Floodplains	S155	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S147	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S095	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S031	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S008	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	SOCKPOOL	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S102	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	S145	
SGP4	Asp.nPoAcAe	Sandy Plains/Floodplains	E305	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S200	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S190	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S222	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S220	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S201	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S205	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S207	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	E325	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S020	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S219	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S060	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S056	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S061	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S106	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S209	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S193	
SGP5	OeWcTsAe	Sandy Plains/Floodplains	S249	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S109	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S075	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S164	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S098	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S063	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	E319	
SGP6	EsAeSsOmAe	Sandy Plains/Floodplains	S197	
SGP7	ArrPoMgAeAt	Gravelly Ironstone Plains	S052	
SGP7	ArrPoMgAeAt	Gravelly Ironstone Plains	S130	
SGP7	ArrPoMgAeAt	Gravelly Ironstone Plains	S096	
SGP7	ArrPoMgAeAt	Gravelly Ironstone Plains	S097	
SGP7	ArrPoMgAeAt	Gravelly Ironstone Plains	S083	
YS1	AcAsBAcc	Yellow Sandy Plains	S245	
YS1	AcAsBAcc	Yellow Sandy Plains	S244	
YS1	AcAsBAcc	Yellow Sandy Plains	S241	
YS1	AcAsBAcc	Yellow Sandy Plains	S235	
YS1	AcAsBAcc	Yellow Sandy Plains	S218	
YS1	AcAsBAcc	Yellow Sandy Plains	S217	
YS1	AcAsBAcc	Yellow Sandy Plains	S216	
YS1	AcAsBAcc	Yellow Sandy Plains	S208	
YS1	AcAsBAcc	Yellow Sandy Plains	S206	
YS1	AcAsBAcc	Yellow Sandy Plains	S215	
YS2	AeBsp.Bac	Yellow Sandy Plains	S195	
YS2	AeBsp.Bac	Yellow Sandy Plains	S204	
YS2	AeBsp.Bac	Yellow Sandy Plains	S203	
YS2	AeBsp.Bac	Yellow Sandy Plains	S240	
YS2	AeBsp.Bac	Yellow Sandy Plains	S006	
YS2	AeBsp.Bac	Yellow Sandy Plains	E324	
YS2	AeBsp.Bac	Yellow Sandy Plains	S007	
YS3	ArPcTuAcc	Yellow Sandy Plains	S178	
YS3	ArPcTuAcc	Yellow Sandy Plains	S177	
YS3	ArPcTuAcc	Yellow Sandy Plains	S176	
YS3	ArPcTuAcc	Yellow Sandy Plains	S174	
YS3	ArPcTuAcc	Yellow Sandy Plains	S173	
YS3	ArPcTuAcc	Yellow Sandy Plains	S238	
YS3	ArPcTuAcc	Yellow Sandy Plains	S120	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S105	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S166	
YS4	ArPcTuAcc2	Yellow Sandy Plains	E321	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S059	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S057	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S104	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S153	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S125	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S062	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S211	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S163	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S124	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S248	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S214	
YS4	ArPcTuAcc2	Yellow Sandy Plains	S246	
YS5	AePcTuAcc	Yellow Sandy Plains	S058	
YS5	AePcTuAcc	Yellow Sandy Plains	S225	
YS5	AePcTuAcc	Yellow Sandy Plains	S213	
YS5	AePcTuAcc	Yellow Sandy Plains	S055	
YS5	AePcTuAcc	Yellow Sandy Plains	S191	
YS5	AePcTuAcc	Yellow Sandy Plains	S192	
YS5	AePcTuAcc	Yellow Sandy Plains	S227	
YS5	AePcTuAcc	Yellow Sandy Plains	S226	
YS5	AePcTuAcc	Yellow Sandy Plains	E313	
YS5	AePcTuAcc	Yellow Sandy Plains	S154	
YS5	AePcTuAcc	Yellow Sandy Plains	S212	
YS5	AePcTuAcc	Yellow Sandy Plains	S210	
YS6	AcPcAcc	Yellow Sandy Plains	S202	

Red Sandy/Gravelly Plains

Yellow Sandy Plains

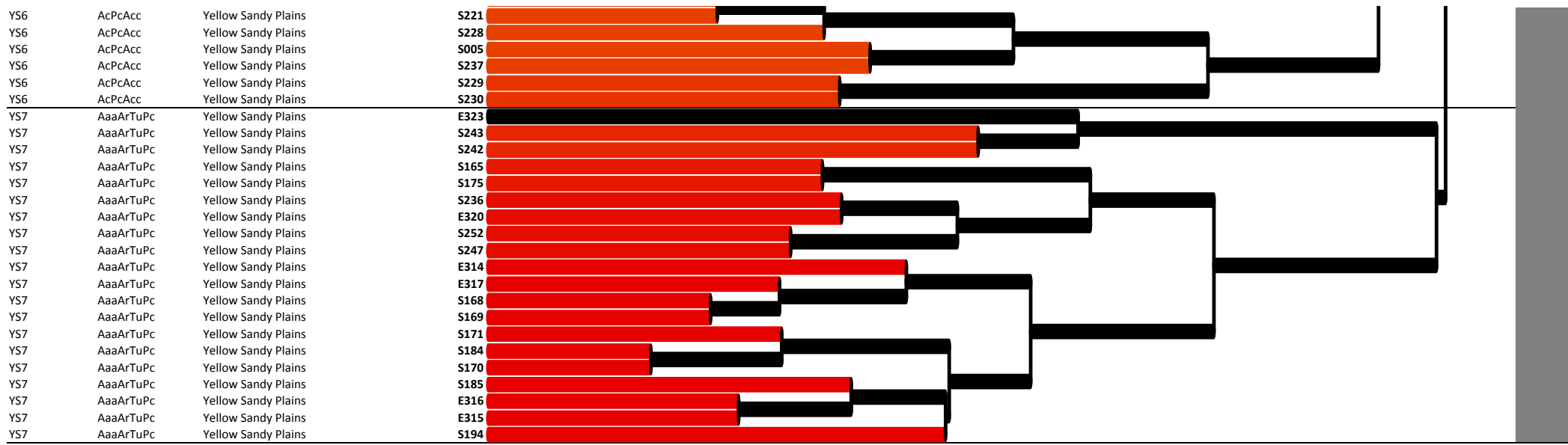
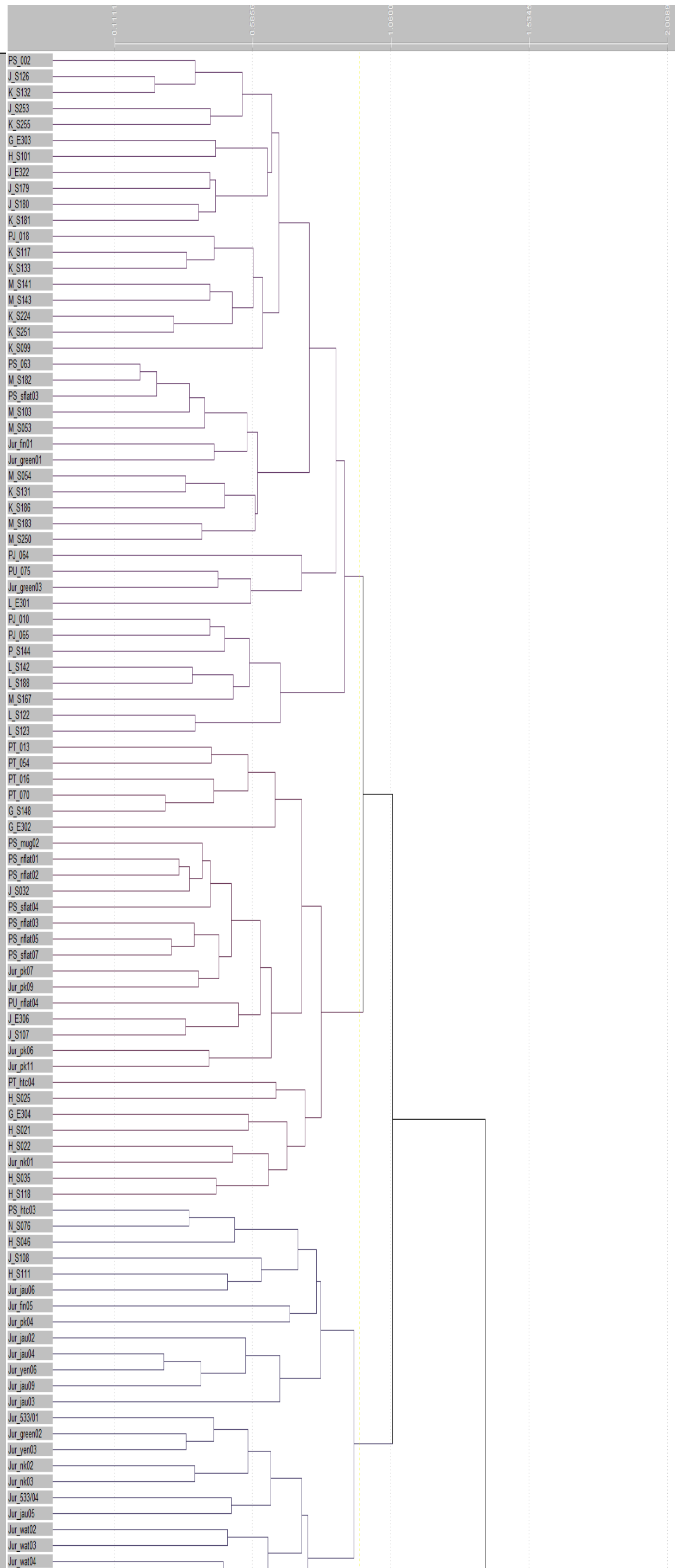


Figure K.1 - Dendrogram of similarity between floristic units sampled in the current survey

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Survey	Vegetation unit	Landform
Helena and Aurora ecologia (2013)	EIEsEvAnAvAe	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF1	Sandy Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
Helena and Aurora ecologia (2013)	EeeEtEaEoaAeSs	Gravelly Ironstine Plains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
Helena and Aurora ecologia (2013)	EIEsEvAnAvAe	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF5	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
Helena and Aurora ecologia (2013)	EeeEtEaEoaAeSs	Gravelly Ironstine Plains
Helena and Aurora ecologia (2013)	EsOm	Sandy Plains/Floodplains
Gibson, N & Lyons, M. N (2001)	J3	-
ecologia J4 and haul road (2013)	SF6	Sandy Floodplains
Helena and Aurora ecologia (2013)	EeeEtEaEoaAeSs	Gravelly Ironstine Plains
Helena and Aurora ecologia (2013)	EeeEtEaEoaAeSs	Gravelly Ironstine Plains
ecologia J4 and haul road (2013)	SGP3	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF6	Sandy Floodplains
ecologia J4 and haul road (2013)	SF6	Sandy Floodplains
ecologia J4 and haul road (2013)	SF7	Sandy Floodplains
ecologia J4 and haul road (2013)	SF6	Sandy Floodplains
ecologia J4 and haul road (2013)	SF6	Sandy Floodplains
Helena and Aurora ecologia (2013)	EsAvMtAe	Sandy Plains/Floodplains
Helena and Aurora ecologia (2013)	EsAvMtAe	Sandy Plains/Floodplains
Helena and Aurora ecologia (2013)	EsAvMtAe	Sandy Plains/Floodplains
Helena and Aurora ecologia (2013)	EsAvMtAe	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF1	Sandy Floodplains
ecologia J4 and haul road (2013)	SF1	Sandy Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Helena and Aurora Gibson et al. (1997)	H6	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Helena and Aurora Gibson et al. (1997)	H6	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
ecologia J4 and haul road (2013)	SF1	Sandy Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
Helena and Aurora Gibson et al. (1997)	HSB	Sandy Plains/Floodplains
ecologia J4 and haul road (2013)	SGP1	Gravelly Ironstone Plains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
ecologia J4 and haul road (2013)	SF4	Sandy Floodplains
ecologia J4 and haul road (2013)	SF2	Sandy Floodplains
Gibson, N & Lyons, M. N (2001)	J2	Low Plains
Gibson, N & Lyons, M. N (2001)	J3	-
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1B	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J1A	Low Plains
Gibson, N & Lyons, M. N (2001)	J6	Ridgetops/Hilltops
Gibson, N & Lyons, M. N (2001)	J6	Ridgetops/Hilltops
Gibson, N & Lyons, M. N (2001)	J6	Ridgetops/Hilltops

Sandy Floodplains



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Species	RMR								SF							SGP							YS						
	1	2;	3	4	5; 6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6; 7	1; 2	3	4	5	6	7			
<i>Solanum nummularium</i>				+			+													+									
<i>Comesperma integerrimum</i>	+			+																									
<i>Paspalidium constrictum</i>	+			+																									
<i>Thryptomene urceolaris</i>	+	+		+	+		+															+					+		
<i>Goodenia mimuloides</i>				+	+		+																						
<i>Melaleuca hamata</i>	+			+	+																+								
<i>Hibbertia eatoniae</i>				+	+																	+							
<i>Grevillea acuaria</i>				+																		+							
<i>Leptospermum fastigiatum/roei</i>							+															+							
<i>Acacia acanthoclada subsp. glaucescens</i>					+		+																						
<i>Amyema miquelii</i>					+		+	+																			+		
<i>Austrostipa platychaeta</i>				+			+	+					+	+													+		
<i>Daucus glochidiatus</i>	+				+		+	+														+					+		
<i>Aristida contorta</i>				+	+		+		+	+												+	+	+	+	+	+		
<i>Stenanthemum stipulosum</i>	+			+	+							+	+												+				
<i>Brachyscome ciliocarpa</i>		+			+		+																	+					
<i>Eucalyptus eremophila</i>	+	+			+																				+				
<i>Pittosporum angustifolium</i>					+		+																+	+	+				
<i>Velleia cynopotamica</i>					+																		+	+					
<i>Mirbelia ferricola</i>					+		+	+					+										+	+	+	+	+		
<i>Senna cardiosperma</i>		+	+		+		+															+	+	+					
<i>Erodium crinitum</i>	+				+																			+	+				
<i>Homalocalyx thryptomenoides</i>		+			+																			+	+				
<i>Solanum terraneum</i>					+																			+					
<i>Austrostipa eremophila</i>																											+		
<i>Brachychiton gregorii</i>																											+		
<i>Keraudrenia velutina</i>																										+			
<i>Calothamnus gilesii</i>																											+		
<i>Grevillea haplantha subsp. haplantha</i>							+																+	+					
<i>Rinzia carnosia</i>	+																										+		
<i>Ptilotus carlsonii</i>													+														+		
<i>Stackhousia muricata</i>		+																									+		
<i>Eucalyptus salubris</i>					+																			+			+		
<i>Eucalyptus sheathiana</i>																								+		+	+		
<i>Sclerolaena drummondii</i>							+		+	+	+												+	+	+		+		
<i>Maireana georgei</i>							+		+																				
<i>Scaevola spinescens</i>									+																		+		
<i>Acacia eremophila var. eremophila</i>																									+	+			
<i>Cheiranthra filifolia</i>																									+	+			
<i>Eremophila georgei</i>		+																							+	+	+		
<i>Hyalosperma glutinosum subsp. glutinosum</i>																									+	+	+		
<i>Allocasuarina helmsii</i>					+		+																		+				
<i>Eriochiton sclerolaenoides</i>							+																		+				
<i>Eucalyptus loxophleba subsp. lissophloia</i>																									+				
<i>Gilberta tenuifolia</i>																									+	+			
<i>Brunonia australis</i>													+	+											+				
<i>Casuarina pauper</i>																									+				
<i>Parietaria debilis</i>																										+	+		
<i>Rytidosperma caespitosum</i>																										+			
<i>Asteridea athrixioides</i>														+	+														
<i>Ptilotus carinatus</i>													+	+	+														
<i>Goodenia havilandii</i>					+									+	+														
<i>Lawrencella rosea</i>													+	+															
<i>Pterostylis sp.</i>													+	+															
<i>Austrostipa elegantissima/playtchaeta</i>							+							+															
<i>Austrostipa nitida</i>															+												+		
<i>Stylidium limbatum</i>														+															
<i>Enchylaena tomentosa var. tomentosa</i>													+	+	+	+									+				
<i>Eremophila granitica</i>														+	+	+													
<i>Eucalyptus corrugata</i>													+																
<i>Acacia colletioides</i>													+	+	+	+	+								+				

Species	RMR								SF							SGP							YS						
	1	2;	3	4	5;	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6;	7	1;	2	3	4	5	6	7
<i>Acacia effusifolia</i>				+			+									+				+			+		+	+	+		
<i>Eucalyptus griffithsii</i>																+					+					+	+		
<i>Eucalyptus longissima</i>				+	+		+	+									+	+	+	+					+		+		
<i>Eremophila alternifolia</i>													+		+	+				+	+								
<i>Neurachne annularis</i>				+			+	+												+	+				+	+			
<i>Podolepis canescens</i>									+							+				+	+								
<i>Triodia rigidissima</i>																	+			+			+	+	+	+	+		
<i>Waitzia acuminata</i> var. <i>acuminata</i>				+												+	+			+	+		+	+	+	+	+		
<i>Acacia resinimarginea</i>				+									+							+			+	+	+		+		
<i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>				+	+	+														+			+	+	+	+	+		
<i>Allocasuarina corniculata</i>																				+	+	+	+	+	+	+	+		
<i>Amphipogon caricinus</i> var. <i>caricinus</i>				+		+														+	+	+	+	+	+	+	+		
<i>Persoonia inconspicua</i>																				+	+		+	+	+	+	+		
<i>Thryptomene ?kochii</i>																				+			+	+	+	+	+		
<i>Baeckea elderiana</i>																							+	+	+	+	+		
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>																							+	+	+	+	+		
<i>Acacia sibina</i>											+												+	+	+	+	+		
<i>Eucalyptus horistes</i>																							+	+	+	+	+		
<i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i>							+																+	+	+	+	+		
<i>Calandrinia eremaea</i>																				+	+	+	+	+	+	+	+		
<i>Melaleuca eleuterostachya</i>					+	+		+													+		+	+	+	+	+		
<i>Acacia stereophylla</i> var. <i>stereophylla</i>																					+		+				+		
<i>Maireana triptera</i>																					+		+		+	+	+		
<i>Banksia arborea</i>																					+		+	+	+	+	+		
<i>Leptomeria preissiana</i>																					+		+	+	+	+	+		
<i>Hakea francisiana</i>																								+			+		
<i>Eucalyptus yilgarnensis</i>																								+		+	+		
<i>Lawrenzia repens</i>																							+	+	+	+	+		
<i>Philotheca brucei</i> subsp. <i>brucei</i>																							+	+	+	+	+		
<i>Melaleuca ?uncinata</i>																							+	+	+	+	+		
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>																							+			+	+		
<i>Melichrus</i> sp. <i>Bungalbin Hill</i>					+																		+				+		
<i>Grevillea zygaloba</i>																							+			+	+		
<i>Pentameris airoides</i> subsp. <i>airoides</i>																							+	+	+	+	+		
<i>Templetonia ceracea</i>																							+	+	+	+	+		
<i>Crassula colorata</i>																								+	+	+	+		
<i>Cyanostegia angustifolia</i>																									+	+	+		
<i>Hakea invaginata</i>																								+	+	+	+		
<i>Drosera macrantha</i> subsp. <i>macrantha</i>																								+	+	+	+		
<i>Goodenia occidentalis</i>																								+	+	+	+		
<i>Hybanthus floribundus</i> subsp. <i>curvifolius</i>																								+	+	+	+		
<i>Hakea ?erecta</i>																								+	+	+	+		
<i>Melaleuca nematophylla</i>																								+	+	+	+		
<i>Hakea ?francisiana</i>																								+	+	+	+		
<i>Stylidium ?arenicola</i>																								+	+	+	+		
<i>Acacia hemiteles</i>								+															+	+	+	+	+		
<i>Eremophila decipiens</i> subsp. <i>decipiens</i>																								+	+	+	+		
<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i>																								+	+	+	+		
<i>Westringia cephalantha</i>																								+	+	+	+		
<i>Leucopogon</i> sp. <i>Clyde Hill</i>																								+	+	+	+		
<i>Dodonaea rigida</i>													+											+	+	+	+		
<i>Eremophila scoparia</i>																								+	+	+	+		
<i>Schoenia cassiniana</i>																								+	+	+	+		
<i>Stenopetalum lineare</i>																								+	+	+	+		
<i>Triodia scariosa</i>																								+	+	+	+		
<i>Grevillea ?excelsior</i>																								+	+	+	+		
<i>Hakea ?minyma</i>																								+	+	+	+		
<i>Persoonia coriacea</i>																								+	+	+	+		
<i>Calycopeplus paucifolius</i>																								+	+	+	+		
<i>Phebalium canaliculatum</i>																								+	+	+	+		

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APPENDIX L SPECIES X SITE MATRIX

(refer to attached disc)

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**APPENDIX M COMPARISON BETWEEN FLORA INVENTORIES OF THREE
SURVEYS OF J4 MINE AND HAUL ROAD**

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Abutilon cryptopetalum</i>			✓
<i>Abutilon oxycarpum</i>			✓
<i>Acacia acanthoclada</i> subsp. <i>glaucescens</i>		✓	✓
<i>Acacia acanthoclada</i> subsp. <i>acanthoclada</i>	✓		
<i>Acacia adinophylla</i>			✓
<i>Acacia andrewsii</i>		✓	✓
<i>Acacia aneura</i>	✓	✓	✓
<i>Acacia ayersiana</i>	✓		
<i>Acacia burkittii</i>	✓	✓	
<i>Acacia caesaneura</i>		✓	✓
<i>Acacia colletioides</i>	✓		✓
<i>Acacia consanguinea</i>	✓		
<i>Acacia coolgardiensis</i>	✓	✓	✓
<i>Acacia crenulata</i> (P3)	✓		✓
<i>Acacia effusifolia</i>			✓
<i>Acacia eremophila</i> var. <i>eremophila</i>			✓
<i>Acacia erinacea</i>	✓	✓	✓
<i>Acacia hemiteles</i>	✓	✓	✓
<i>Acacia incurvaneura</i>		✓	✓
<i>Acacia jennerae</i>	✓	✓	✓
<i>Acacia leptopetala</i>			✓
<i>Acacia longispinea</i>		✓	✓
<i>Acacia merrallii</i>	✓		✓
<i>Acacia mulganeura</i>			✓
<i>Acacia neurophylla</i> subsp. <i>erugata</i>	✓		
<i>Acacia prainii</i>	✓	✓	✓
<i>Acacia pteraneura</i>		✓	
<i>Acacia quadrimarginea</i>		✓	✓
<i>Acacia ramulosa</i> ; <i>Acacia ramulosa</i> var. <i>ramulosa</i>	✓	✓	✓
<i>Acacia resinimarginea</i>	✓	✓	✓
<i>Acacia rigens</i>	✓	✓	
<i>Acacia sibina</i>	✓	✓	✓
<i>Acacia sibirica</i>	✓		
<i>Acacia</i> sp. narrow phyllode (B.R. Maslin 7831)	✓		✓
<i>Acacia stereophylla</i> var. <i>stereophylla</i>		✓	✓
<i>Acacia tetragonophylla</i>	✓	✓	✓
<i>Actinobole uliginosum</i>			✓
<i>Allocasuarina acutivalvis</i> ; <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>	✓	✓	✓
<i>Allocasuarina campestris</i>		✓	
<i>Allocasuarina corniculata</i>	✓	✓	✓
<i>Allocasuarina dielsiana</i>	✓	✓	✓
<i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i>		✓	✓
<i>Alyxia buxifolia</i>	✓	✓	✓
<i>Amphipogon caricinus</i> ; <i>Amphipogon caricinus</i> var. <i>caricinus</i>	✓	✓	✓
<i>Amyema benthamii</i>		✓	✓
<i>Amyema miquelii</i>	✓	✓	✓
<i>Androcalva luteiflora</i>			✓
<i>Aristida contorta</i>	✓	✓	✓
<i>Aristida holathera</i>		✓	
<i>Arthropodium</i> sp. (indet.)			✓
<i>Asteridea athrixioides</i>			✓
<i>Atriplex bunburyana</i>	✓	✓	
<i>Atriplex nana</i>	✓		
<i>Atriplex nummularia</i>	✓	✓	✓
<i>Atriplex vesicaria</i>	✓	✓	✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Austrostipa elegantissima</i>	✓	✓	✓
<i>Austrostipa eremophila</i>	✓		✓
<i>Austrostipa hemipogon</i>			✓
<i>Austrostipa nitida</i>	✓		✓
<i>Austrostipa platychaeta</i>	✓	✓	✓
<i>Austrostipa puberula</i>	✓		
<i>Austrostipa scabra</i>			✓
<i>Austrostipa trichophylla</i>	✓		✓
<i>Austrostipa tuckeri</i>	✓	✓	
<i>Baeckea elderiana</i>	✓		✓
<i>Baeckea</i> sp.(P3)sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586) (P3)	✓		✓
<i>Banksia arborea</i> (P4)		✓	✓
<i>Banksia elderiana</i>			✓
<i>Beaufortia interstans</i>		✓	✓
<i>Bellida graminea</i>			✓
<i>Beyeria brevifolia</i>			✓
<i>Beyeria lechenaultii</i>		✓	
<i>Beyeria rostellata</i> (P1)		✓	✓
<i>Beyeria sulcata</i> ; <i>Beyeria sulcata</i> var. <i>sulcata</i>	✓	✓	
<i>Bossiaea walkeri</i>		✓	✓
<i>Brachychiton gregorii</i>		✓	✓
<i>Brachyscome ciliaris</i>	✓		✓
<i>Brachyscome ciliocarpa</i>			✓
<i>Brachysola coerulea</i>	✓		✓
<i>Brunonia australis</i>	✓		✓
<i>Brunonia</i> sp. Goldfields (K.R. Newbey 6044)			✓
<i>Bulbine semibarbata</i>	✓		✓
<i>Calandrinia eremaea</i>			✓
<i>Callitris preissii</i>	✓	✓	✓
<i>Calocephalus multiflorus</i>	✓		
<i>Calothamnus gilesii</i>		✓	✓
<i>Calothamnus</i> sp. (indet.)			✓
<i>Calotis hispidula</i>	✓		✓
<i>Calycopeplus paucifolius</i>		✓	✓
<i>Calytrix creswellii</i> (P3)	✓		
<i>Campanulaceae</i> sp.sp. 1 (submitted for identification)			✓
<i>Cassutha</i> sp.		✓	✓
<i>Casuarina obesa</i>			✓
<i>Casuarina pauper</i>	✓	✓	✓
<i>Centaurea melitensis</i>			✓
<i>Cephalopterum drummondii</i>	✓		✓
<i>Chamaexeros fimbriata</i>	✓		
<i>Chamelaucium pauciflorum</i> subsp. <i>pauciflorum</i>			✓
<i>Chamelaucium pauciflorum</i> subsp. <i>Perenjori</i> (B.J. Conn 2181)	✓		✓
<i>Cheilanthes adiantoides</i>			✓
<i>Cheilanthes lasiophylla</i>			✓
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>		✓	✓
<i>Cheiranthera filifolia</i>		✓	✓
<i>Chenopodium curvispicatum</i>		✓	
<i>Chrysocephalum apiculatum</i>			✓
<i>Cleretum papulosum</i> subsp. <i>papulosum</i>			✓
<i>Codonocarpus cotinifolius</i>	✓		✓
<i>Comesperma integerrimum</i>	✓		✓
<i>Commersonia craurophylla</i>	✓		✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Coopernookia strophiolata</i>	✓		
<i>Crassula colorata</i>			✓
<i>Crassula exserta</i>			✓
<i>Cryptandra aridicola</i>		✓	✓
<i>Cyanicula amplexans</i>			✓
<i>Cyanostegia angustifolia</i>	✓		✓
<i>Cyanostegia microphylla</i>			✓
<i>Dampiera eriocephala</i>	✓		✓
<i>Dampiera latealata</i>			✓
<i>Dampiera lavandulacea</i>	✓		
<i>Dampiera stenostachya</i>	✓		✓
<i>Dampiera wellsiana</i>	✓		
<i>Daucus glochidiatus</i>			✓
<i>Daviesia benthamii</i> subsp. <i>acanthoclona</i>		✓	
<i>Daviesia purpurascens</i>	✓	✓	✓
<i>Dianella revoluta</i> ; <i>Dianella revoluta</i> var. <i>divaricata</i>	✓	✓	✓
<i>Dicrasyliis parvifolia</i>			✓
<i>Digitaria ammophila</i>		✓	✓
<i>Dillwynia</i> sp. Coolgardie (V.E. Sands 637.3. 1)			✓
<i>Dodonaea amblyophylla</i>	✓		✓
<i>Dodonaea inaequifolia</i>	✓		✓
<i>Dodonaea lobulata</i>	✓	✓	✓
<i>Dodonaea pinifolia</i>		✓	✓
<i>Dodonaea rigida</i>		✓	✓
<i>Dodonaea stenozyga</i>	✓		✓
<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	✓	✓	✓
<i>Drosera macrantha</i> subsp. <i>macrantha</i>			✓
<i>Drummondita hassellii</i>		✓	✓
<i>Duboisia hopwoodii</i>	✓		✓
<i>Enchylaena tomentosa</i> ; <i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	✓	✓	✓
<i>Eragrostis dielsii</i>			✓
<i>Eremophila alternifolia</i>		✓	✓
<i>Eremophila caerulea</i> subsp. <i>merrallii</i>			✓
<i>Eremophila caperata</i>	✓		✓
<i>Eremophila clarkei</i>			✓
<i>Eremophila compacta</i> subsp. <i>compacta</i>		✓	
<i>Eremophila decipiens</i> subsp. <i>decipiens</i>	✓	✓	✓
<i>Eremophila drummondii</i>			✓
<i>Eremophila georgei</i>			✓
<i>Eremophila glabra</i> subsp. <i>glabra</i>			✓
<i>Eremophila granitica</i>	✓	✓	✓
<i>Eremophila interstans</i> subsp. <i>interstans</i>		✓	✓
<i>Eremophila interstans</i> subsp. <i>virgata</i>	✓		
<i>Eremophila ionantha</i>	✓	✓	✓
<i>Eremophila latrobei</i> ; <i>Eremophila latrobei</i> subsp. <i>latrobei</i>		✓	✓
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>			✓
<i>Eremophila metallicorum</i>	✓		✓
<i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>	✓	✓	✓
<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>	✓	✓	✓
<i>Eremophila rugosa</i>	✓		✓
<i>Eremophila scoparia</i>	✓	✓	✓
<i>Eremophila serrulata</i>		✓	✓
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>			✓
<i>Eriochiton sclerolaenoides</i>			✓
<i>Erodium aureum</i>			✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Erodium cygnorum</i>			✓
<i>Erymophyllum ramosum</i> subsp. <i>ramosum</i>	✓		✓
<i>Eucalyptus ?hypolaena</i>	✓		
<i>Eucalyptus aequioperta</i>	✓		✓
<i>Eucalyptus celastroides</i> subsp. <i>celastroides</i>		✓	✓
<i>Eucalyptus corrugata</i>	✓	✓	✓
<i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i>			✓
<i>Eucalyptus eremophila</i>	✓		✓
<i>Eucalyptus ewartiana</i>	✓	✓	✓
<i>Eucalyptus gracilis</i>	✓		
<i>Eucalyptus griffithsii</i>	✓	✓	✓
<i>Eucalyptus horistes</i>	✓	✓	✓
<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>	✓	✓	✓
<i>Eucalyptus longicornis</i>	✓	✓	✓
<i>Eucalyptus longissima</i>		✓	✓
<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>	✓	✓	✓
<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>			✓
<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>	✓	✓	
<i>Eucalyptus moderata</i>	✓		✓
<i>Eucalyptus myriadena</i>	✓		
<i>Eucalyptus oldfieldii</i>		✓	✓
<i>Eucalyptus oleosa</i> subsp. <i>oleosa</i>	✓	✓	✓
<i>Eucalyptus platycorys</i>	✓		✓
<i>Eucalyptus ravida</i>	✓	✓	✓
<i>Eucalyptus rigidula</i>	✓		
<i>Eucalyptus salmonophloia</i>	✓	✓	✓
<i>Eucalyptus salubris</i>	✓	✓	✓
<i>Eucalyptus sheathiana</i>	✓	✓	✓
<i>Eucalyptus transcontinentalis</i>		✓	✓
<i>Eucalyptus yilgarnensis</i>	✓	✓	✓
<i>Euryomyrtus maidenii</i>	✓	✓	✓
<i>Exocarpos aphyllus</i>	✓	✓	✓
<i>Frankenia desertorum</i> (sparsely hirtellous variant)			✓
<i>Frankenia interioris</i>			✓
<i>Gilberta tenuifolia</i>			✓
<i>Glischrocaryon aureum</i>	✓		
<i>Gnephosis tridens</i>	✓		
<i>Gompholobium cinereum</i> (P3)			✓
<i>Goodenia berardiana</i>	✓		✓
<i>Goodenia havilandii</i>			✓
<i>Goodenia helmsii</i>	✓		
<i>Goodenia mimuloides</i>			✓
<i>Goodenia occidentalis</i>			✓
<i>Grevillea acacioides</i>	✓	✓	
<i>Grevillea acuaria</i>	✓		✓
<i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i>		✓	
<i>Grevillea excelsior</i>	✓		✓
<i>Grevillea georgeana</i> (P3)			✓
<i>Grevillea haplantha</i> subsp. <i>haplantha</i>			✓
<i>Grevillea juncifolia</i> ; <i>Grevillea juncifolia</i> subsp. <i>temulenta</i>	✓		✓
<i>Grevillea lissopleura</i> (P1)		✓	
<i>Grevillea nematophylla</i> subsp. <i>nematophylla</i>	✓	✓	✓
<i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i>			✓
<i>Grevillea paradoxa</i>	✓	✓	✓
<i>Grevillea zygaloba</i>	✓	✓	✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Gyrostemon ramulosus</i>			✓
<i>Hakea francisiana</i>	✓	✓	✓
<i>Hakea invaginata</i>			✓
<i>Hakea minyma</i>			✓
<i>Hakea multilineata</i>	✓		
<i>Halgania andromedifolia</i>	✓		✓
<i>Halgania cyanea</i>			✓
<i>Halgania gustafsenii</i> var. Mid West (G. Perry 370)	✓		✓
<i>Haloragis trigonocarpa</i>			✓
<i>Hannafordia bissillii</i> subsp. <i>latifolia</i>	✓		✓
<i>Hemiphora elderi</i>			✓
<i>Hibbertia eatoniae</i>	✓	✓	✓
<i>Hibbertia exasperata</i>	✓	✓	✓
<i>Hibbertia glomerosa</i> var. <i>glomerosa</i>			✓
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i> (P3)		✓	✓
<i>Homalocalyx thryptomenoides</i>	✓	✓	✓
<i>Hyalosperma glutinosum</i>			✓
<i>Hybanthus floribundus</i> subsp. <i>curvifolius</i>	✓		✓
<i>Hydrocotyle</i> sp. (indet.)			✓
<i>Hypochoeris glabra</i>			✓
<i>Hypoxis glabella</i>			✓
<i>Indigofera australis</i>			✓
<i>Isoetopsis graminifolia</i>			✓
<i>Isopogon</i> sp.			✓
<i>Juncus subsecundus</i>			✓
<i>Keraudrenia velutina</i> ; <i>Keraudrenia velutina</i> subsp. <i>velutina</i>	✓	✓	✓
<i>Lachnostachys coolgardiensis</i>	✓		✓
<i>Lawrencella rosea</i>	✓		✓
<i>Lawrencia repens</i>			✓
<i>Lepidosperma</i> aff. <i>resinosum</i>	✓		
<i>Leptomeria preissiana</i>	✓	✓	✓
<i>Leptospermum fastigiatum</i>	✓		✓
<i>Leptospermum macgillvrayi</i> (P1)		✓	✓
<i>Leptospermum roei</i>	✓	✓	✓
<i>Leucochrysum fitzibbonii</i>	✓		✓
<i>Leucopogon</i> sp. Clyde Hill (M.A. Burgman 1207)	✓	✓	✓
<i>Lobelia winfridae</i>	✓		
<i>Lomandra collina</i>			✓
<i>Lomandra effusa</i>	✓		✓
<i>Lysiana casuarinae</i>	✓		✓
<i>Maireana carnosa</i>	✓	✓	
<i>Maireana georgei</i>	✓	✓	✓
<i>Maireana tomentosa</i>	✓	✓	✓
<i>Maireana trichoptera</i>	✓	✓	✓
<i>Maireana triptera</i>		✓	✓
<i>Malleostemon peltiger</i>		✓	
<i>Malleostemon roseus</i>			✓
<i>Malva weinmanniana</i>			✓
<i>Marsdenia australis</i>	✓		✓
<i>Melaleuca ?sheathiana</i>			✓
<i>Melaleuca ?uncinata</i>			✓
<i>Melaleuca conothamnoides</i>	✓		✓
<i>Melaleuca cordata</i>	✓	✓	✓
<i>Melaleuca eleuterostachya</i>	✓		✓
<i>Melaleuca hamata</i>	✓	✓	✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Melaleuca leiocarpa</i>		✓	✓
<i>Melaleuca nematophylla</i>		✓	✓
<i>Melaleuca zeteticorum</i>	✓		✓
<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (P3)	✓		✓
? <i>Menkea australis</i>			✓
<i>Microcorys</i> sp.		✓	
<i>Micromyrtus obovata</i>			✓
<i>Millotia myosotidifolia</i>	✓		✓
<i>Mirbelia ferricola</i> (P3)		✓	✓
<i>Mirbelia microphylla</i>	✓	✓	✓
<i>Monachather paradoxus</i>	✓	✓	✓
<i>Neurachne annularis</i> (P3)	✓	✓	✓
<i>Nicotiana occidentalis</i>			✓
<i>Olearia exiguifolia</i>	✓	✓	✓
<i>Olearia humilis</i>		✓	✓
<i>Olearia muelleri</i>	✓	✓	✓
<i>Olearia pimeleoides</i>	✓	✓	✓
<i>Olearia subspicata</i>	✓		
<i>Ozothamnus cassiope</i>	✓		
<i>Parietaria cardiostegia</i>			✓
<i>Paspalidium constrictum</i>			✓
<i>Pentameris airoides</i> ; <i>Pentameris airoides</i> subsp. <i>airoides</i>	✓	✓	✓
<i>Persoonia coriacea</i>			✓
<i>Persoonia saundersiana</i>	✓		✓
<i>Petrophile seminuda</i>			✓
<i>Phebalium canaliculatum</i>	✓	✓	✓
<i>Phebalium filifolium</i>	✓	✓	✓
<i>Phebalium laevigatum</i>			✓
<i>Phebalium megaphyllum</i>	✓		✓
<i>Phebalium tuberculosum</i>	✓		✓
<i>Philothea brucei</i> ; <i>Philothea brucei</i> subsp. <i>brucei</i>	✓	✓	✓
<i>Philothea tomentella</i>	✓	✓	✓
<i>Phyllangium sulcatum</i>			✓
<i>Physopsis viscida</i>			✓
<i>Pimelea microcephala</i> ; <i>Pimelea microcephala</i> subsp. <i>microcephala</i>	✓	✓	✓
<i>Pittosporum angustifolium</i>	✓	✓	✓
<i>Pityrodia lepidota</i>			✓
<i>Pityrodia loricata</i>			✓
<i>Plantago cunninghamii</i>			✓
<i>Platysace trachymenioides</i>	✓		
<i>Podolepis canescens</i>	✓		✓
<i>Podolepis capillaris</i>	✓		✓
<i>Podotrochea</i> sp. (indet.)			✓
<i>Poranthera microphylla</i>			✓
<i>Prostanthera althoferi</i>		✓	✓
<i>Prostanthera campbellii</i>	✓	✓	✓
<i>Prostanthera grylloana</i>	✓	✓	✓
<i>Prostanthera incurvata</i>	✓		✓
<i>Prostanthera magnifica</i>		✓	✓
<i>Prostanthera semiteres</i> subsp. <i>semiteres</i>	✓		✓
<i>Psydrax suaveolens</i>		✓	✓
<i>Pterostylis picta</i>			✓
<i>Ptilotus aevoides</i>			✓
<i>Ptilotus carsonii</i>	✓		✓

Species	spring 2012 (Mattiske 2013)	autumn 2013 (Mattiske 2013)	spring 2013 (current study)
<i>Ptilotus divaricatus</i>			✓
<i>Ptilotus drummondii</i> ; <i>Ptilotus drummondii</i> var. <i>minor</i>	✓	✓	✓
<i>Ptilotus gaudichaudii</i>	✓		✓
<i>Ptilotus holosericeus</i>	✓		✓
<i>Ptilotus nobilis</i> ; <i>Ptilotus nobilis</i> subsp. <i>nobilis</i>	✓	✓	✓
<i>Ptilotus obovatus</i>	✓	✓	✓
<i>Ptilotus spathulatus</i>	✓		
<i>Rhagodia drummondii</i>	✓	✓	✓
<i>Rhodanthe heterantha</i>			✓
<i>Rhodanthe oppositifolia</i>			✓
<i>Rhodanthe rubella</i>			✓
<i>Rhyncharrhena linearis</i>		✓	✓
<i>Rinzia carnosa</i>	✓		✓
<i>Rytidosperma caespitosum</i>		✓	✓
<i>Rytidosperma setaceum</i>	✓		
<i>Salsola australis</i>		✓	✓
<i>Santalum acuminatum</i>	✓	✓	✓
<i>Santalum spicatum</i>	✓	✓	✓
<i>Scaevola spinescens</i>	✓	✓	✓
<i>Schoenia cassiniana</i>	✓		✓
<i>Schoenus hexandrus</i>	✓		✓
<i>Sclerolaena diacantha</i>	✓	✓	✓
<i>Sclerolaena drummondii</i>	✓		✓
<i>Sclerolaena fusiformis</i>	✓	✓	✓
<i>Sclerolaena parviflora</i>			✓
? <i>Senecio</i> sp. (indet.)			✓
<i>Senecio glossanthus</i>			✓
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	✓	✓	✓
<i>Senna cardiosperma</i>			✓
<i>Senna charlesiana</i>	✓		
<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>			✓
<i>Senna stowardii</i>		✓	
<i>Sida calyxhymentia</i>		✓	✓
<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260)			✓
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	✓		
<i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32)		✓	✓
<i>Sida spodochroma</i>		✓	✓
<i>Solanum hoplopetalum</i>			✓
<i>Solanum nummularium</i>	✓	✓	✓
<i>Solanum terraneum</i>		✓	✓
<i>Sonchus asper</i>			✓
<i>Sonchus oleraceus</i>			✓
<i>Sowerbaea multicaulis</i> (P4)			✓
<i>Stackhousia muricata</i>	✓		✓
<i>Stellaria filiformis</i>			✓
<i>Stenanthemum newbeyi</i> (P3)		✓	✓
<i>Stenanthemum stipulosum</i>		✓	✓
<i>Stenopetalum filifolium</i>	✓		✓
<i>Stenopetalum lineare</i>			✓
<i>Streptoglossa liatroides</i>			✓
<i>Stylidium arenicola</i>		✓	✓
<i>Stylidium limbatum</i>	✓		✓
<i>Stylidium yilgarnense</i>	✓		
<i>Swainsona canescens</i>			✓
<i>Tecticornia halocnemoides</i>			✓

Species	spring 2012 (Matiske 2013)	autumn 2013 (Matiske 2013)	spring 2013 (current study)
<i>Templetonia ceracea</i>			✓
<i>Templetonia sulcata</i>	✓		
<i>Thelymitra petrophila</i>			✓
<i>Thelymitra sargentii</i>	✓		
<i>Thryptomene kochii</i>	✓	✓	✓
<i>Thryptomene urceolaris</i>	✓	✓	✓
<i>Thysanotus manglesianus</i>			✓
<i>Thysanotus patersonii</i>	✓		✓
<i>Thysanotus rectantherus</i>	✓		
<i>Thysanotus</i> sp. Twining Wheatbelt (N.H. Brittan 81/29)			✓
<i>Thysanotus speckii</i>			✓
<i>Trachymene ornata</i>			✓
<i>Trachymene pilosa</i>			✓
<i>Triodia desertorum</i>	✓		
<i>Triodia rigidissima</i>	✓		✓
<i>Triodia scariosa</i>	✓		✓
<i>Triodia tomentosa</i>	✓	✓	✓
<i>Tripogon loliiformis</i>		✓	
<i>Velleia cynopotamica</i>			✓
<i>Velleia discophora</i>			✓
<i>Velleia hispida</i>			✓
<i>Velleia rosea</i>	✓		✓
<i>Verticordia eriocephala</i>		✓	
<i>Verticordia helmsii</i>	✓		
<i>Vittadinia cuneata</i>			✓
<i>Vittadinia eremaea</i>	✓		
<i>Vulpia myuros</i>			✓
<i>Waitzia acuminata</i> ; <i>Waitzia acuminata</i> var. <i>acuminata</i>	✓		✓
<i>Westringia cephalantha</i> ; <i>Westringia cephalantha</i> var. <i>cephalantha</i>	✓	✓	✓
<i>Westringia rigida</i>	✓		✓
<i>Zygophyllum apiculatum</i>	✓		✓
<i>Zygophyllum compressum</i>	✓		
<i>Zygophyllum eremaeum</i>			✓
<i>Zygophyllum glaucum</i>			✓
<i>Zygophyllum ovatum</i>	✓		✓

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