SOUTH KALGOORLIE OPERATIONS

Detailed Flora/Vegetation Survey and Basic Fauna Assessment

Prepared for Northern Star Resources Limited
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Prepared by

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Cover Photo: Woodland within the SKO survey area. Taken 2 September 2023

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EXECUTIVE SUMMARY

Botanica Consulting Pty Ltd (Botanica) was commissioned by Northern Star Resources Limited (NSR) to undertake a detailed flora and vegetation survey, and a basic fauna assessment of the South Kalgoorlie Operations (referred to as the 'survey area') to support an application to amend a clearing permit (CPS 3851/4). The survey area is approximately 5,288 ha and is located approximately 26 km south of Kalgoorlie-Boulder, Western Australia.

The survey area is located within the Great Western Woodlands, within the Coolgardie Bioregion as defined by the Interim Biogeographic Regionalisation of Australia (IBRA). The survey area is within Location Lease 48 and 50 which are freehold land in the City of Kalgoorlie-Boulder.

Botanica conducted a reconnaissance flora and vegetation survey of the survey area on the 1st to the 3rd September 2023. The area was traversed using a four-wheel drive vehicle and on foot by Jennifer Jackson (Senior Botanist, BSc Environmental Management (Honours)) and Kiefer Millet (Field Technician).

Seven vegetation types were identified within the survey area. These vegetation types were identified within three landform types and comprised of five major vegetation groups, which were represented by a total of 31 families, 59 genera and 125 taxa.

Based on the vegetation condition rating scale specified in the Environmental Protection Authority (EPA) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment – December 2016* (EPA, 2016a), vegetation was rated as 'degraded' to 'excellent'. Disturbances in the area were a result of previous mining/exploration and pastoral land use.

No Threatened Flora or Threatened Ecological Communities as listed under the Western Australian *Biodiversity Conservation* (BC) *Act 2016* or Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* were identified within the survey area.

No Priority Flora taxa were identified within the survey area. No Priority Ecological Communities were identified within the survey area.

Three fauna habitats were identified within the survey area. There was no evidence of conservation significant fauna observed within the survey area.

There are no Ramsar wetlands of international importance or sites listed in the Directory of Important Wetlands (DIWA), wetlands identified as nationally important, within the survey area nor any proposed or gazetted conservation reserves within the survey area.

Based on the outcomes from the survey undertaken, Botanica assessed the results of the desktop and field survey with regards to the native vegetation clearing principles listed under Schedule 5 of

the *Environmental Protection* (EP Act) *1986*. The assessment found that any proposed vegetation clearing activities may be at variance with clearing principle (f).

1.1 Objectives

1.1.1 Detailed Flora and Vegetation Survey

The flora and vegetation assessment was conducted in accordance with the requirements of a detailed survey as defined in *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment – December 2016* (EPA, 2016a). The objectives of the assessment were to:

- Define and map vegetation communities of the survey area to a scale appropriate for the bioregion and described according to the National Vegetation Information System (NVIS) classification (NVIS Level III– Vegetation Association);
- Record the species composition (abundance and diversity) of each vegetation community within the survey area and compile a species list for the survey area by vegetation type;
- Provide quadrat-based data from plots representative of each vegetation type (minimum of three quadrats per vegetation type) according to EPA guidelines;
- Assess the species composition of each quadrat using statistical analysis (PATN analysis);
- Determine the local and regional conservation significance of flora and vegetation within the survey area;
- Identify and record the locations of any conservation significant flora/vegetation within the survey area;
- Identify and record the locations of any introduced flora species (including Declared Plants) within the survey area;
- Provide a map showing the distribution of conservation significant flora/vegetation within the survey area;
- Define and map the condition of vegetation within the survey area in accordance with the vegetation condition rating scale specified in the Technical Guidance (EPA, 2016a);
- Determine the State legislative context of environmental aspects required for the assessment; and
- Assess Matters of National Environmental Significance (MNES) and indicate whether potential impacts on MNES as protected under the EPBC Act are likely to require referral of the project to the Commonwealth Department of (DCCEEW).

1.1.2 Basic Fauna Survey

The fauna assessment was conducted in accordance with the requirements of a basic terrestrial fauna survey as defined in *Technical Guidance - Terrestrial Fauna Surveys for Environmental Impact Assessment – June 2020* (EPA, 2020). The objectives of the assessment were to:

- Undertake a literature review, including map-based information searches of all current and relevant literature sources and databases relating to the survey area;
- Undertake a desktop investigation to identify any previously recorded occurrences of or potentially occurring Threatened and Priority listed fauna within the survey area;
- Undertake searches on available databases for details relating to any Threatened and Priority listed fauna previously identified as occurring or potentially occurring within the survey area;

- Conduct fauna habitat mapping and identify habitat types which are suitable for each significant fauna considered likely or possible to occur, or fauna recorded in the survey area;
- Compile an inventory of fauna species occurrences within the survey area;
- Undertake opportunistic, low intensity sampling of fauna; and
- Report on the conservation status of species present using the Western Australian Museum and EPBC Act databases for presence of Threatened and Priority listed fauna species within the survey area.

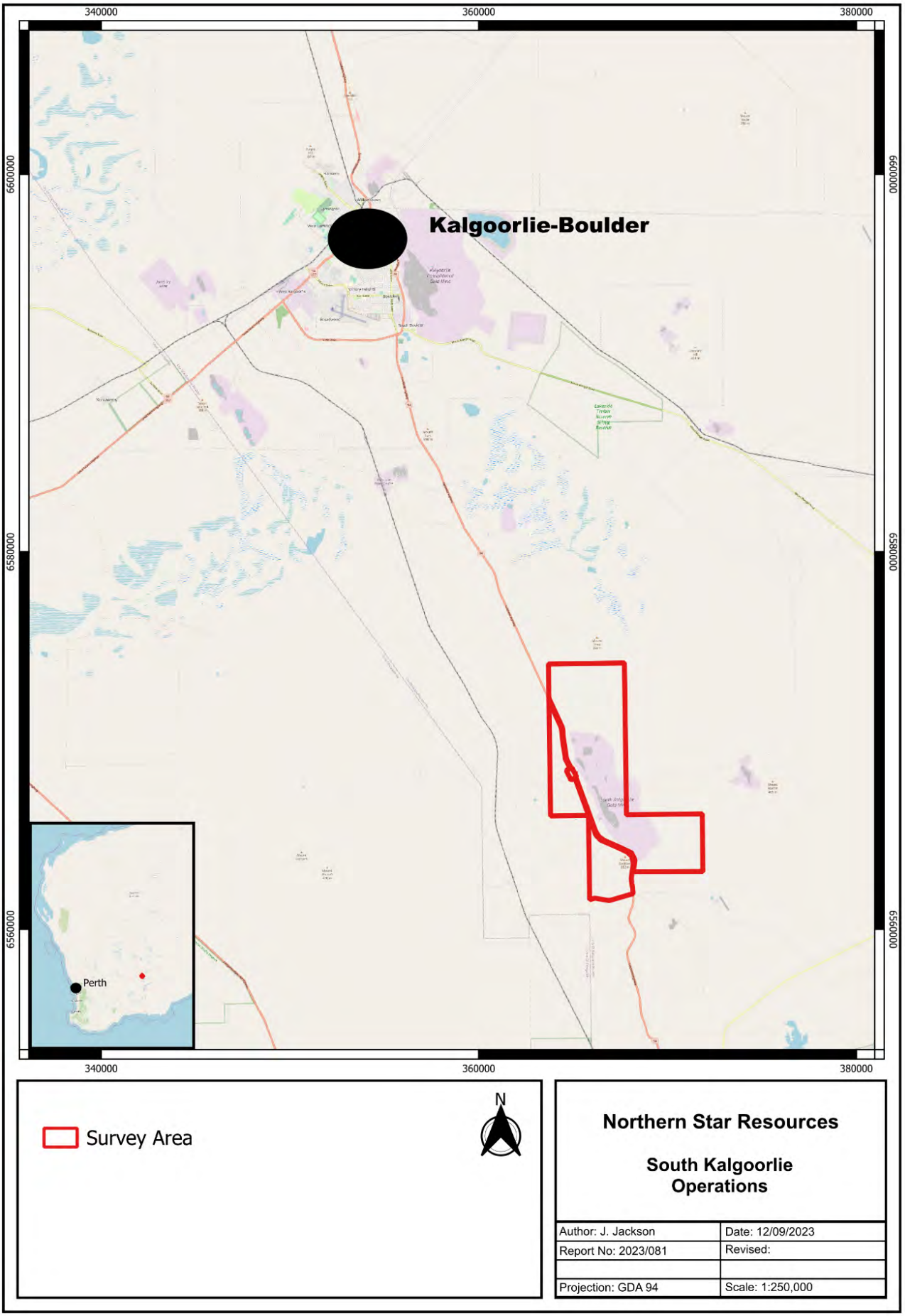


Figure 1: Regional map of the survey area

2 BIOPHYSICAL ENVIRONMENT

2.1 Regional Environment

The survey area lies within the Eastern Goldfields (COO3) subregion of the Coolgardie Bioregion, as defined by the Interim Biogeographic Regionalisation of Australia (IBRA) (Figure 2).

The Eastern Goldfields subregion (5,102,428 ha) lies on the Yilgarn Craton's Eastern Goldfields Terrain, which is described as gently undulating plains with a subdued relief, interrupted in the west with low hills and ridges of Archaean greenstones and in the east by a horst of Proterozoic basic granulite. The underlying geology is of gneisses and granites eroded into a flat plane covered with tertiary soils and with scattered exposures of bedrock. Calcareous earths are the dominant soil group and cover much of the plains and greenstone areas. A series of large playa lakes in the western half are the remnants of an ancient major drainage line (Cowan 2001).

The vegetation consists of Mallees, Acacia thickets and shrub-heaths on sandplains, with diverse *Eucalyptus* woodlands occurring around salt lakes, on ranges, and in valleys. Salt lakes support dwarf shrublands of samphire. Woodlands and *Dodonaea* shrubland occur on basic granulite of the Fraser Range, and the area is rich in endemic Acacias.

In accordance with Beard (1990) the survey area is located in the Coolgardie Botanical District of the Southwestern Interzone Province. The landscape is described as gently undulating with occasional ranges of low hills, with sandplains in the western part and some large playa lakes. Soils are principally brown calcareous earths, which overlays the Proterozoic granite and gneiss of the Fraser Range block and Archaean granite, with infolded volcanics and meta-sediments, of the Yilgarn block. Vegetation is predominately *Eucalyptus* woodlands, with slopes and flats containing *E*. *longicornis* alongside *E. salubris* and *E*. *salmonophloia*. Woodland understories range from tall sclerophyll shrubland dominated by *Melaleuca pauperiflora* to soft-leaved saltbush shrubland of *Atriplex vesicaria* and *A*. *nummularia*. Some hill slopes contain mallees of *E*. *livida* or *E*. *loxophleba*, while ironstone ridges are covered in thickets of *Acacia quadrimarginea*, *Allocasuarina acutivalvis* and *A*. *campestris*. Other vegetation assemblages include species-rich scrub-heaths and *Allocasuarina* thickets on sandplains, merging into *Acacia* thickets and Kwongan vegetation to the north.

2.2 Land Use

The dominant land uses of the Eastern Goldfields subregion includes Unallocated Crown Land (UCL) and Crown reserves and pastoral grazing, with conservation areas and mining leases also present (Cowan, 2001). The survey area is within Location Lease 48 and 50 which are freehold land in the City of Kalgoorlie-Boulder.

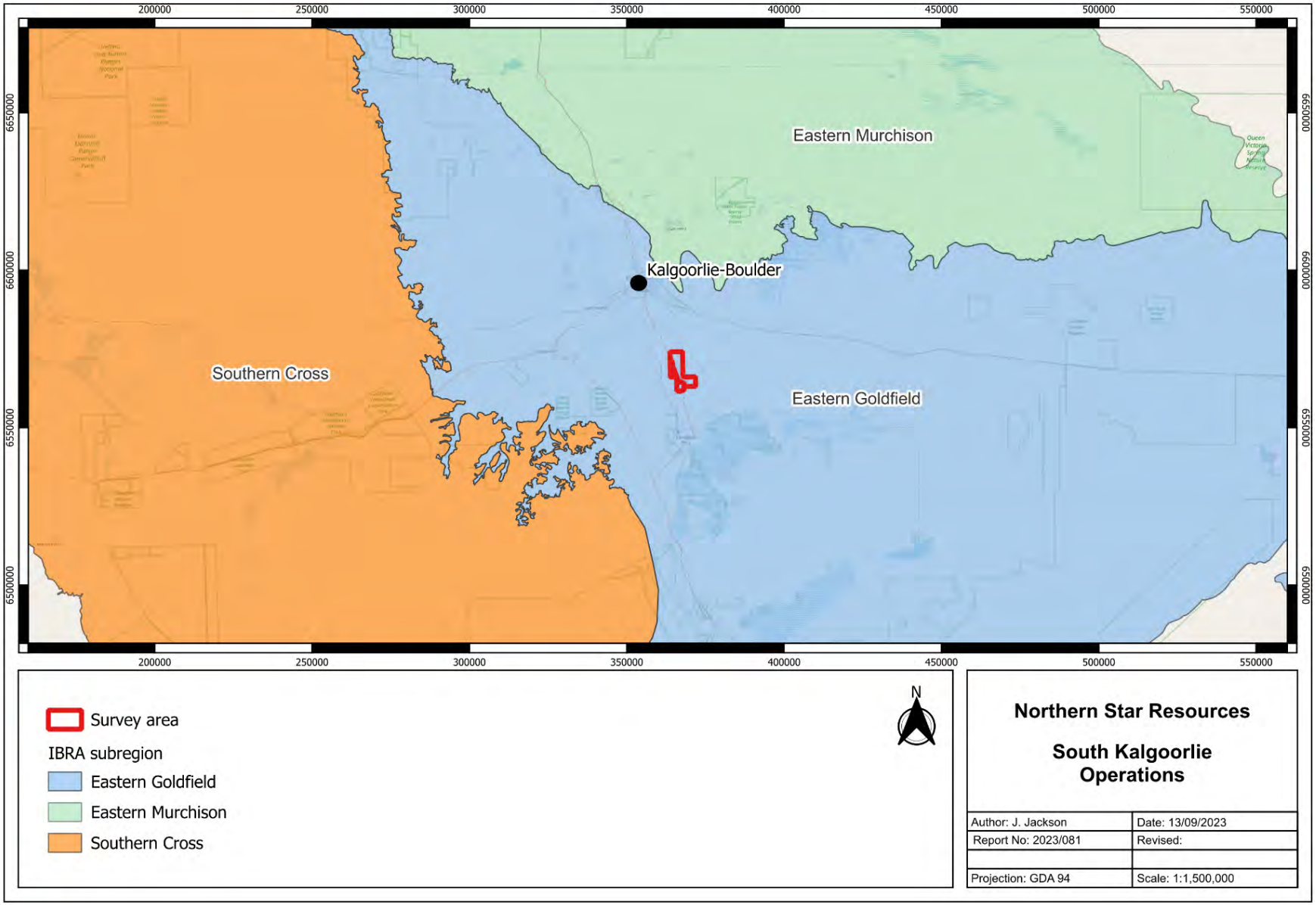


Figure 2: Map of IBRA Bioregion COO3 in relation to the survey area

2.3 Soil Landscape Systems

The survey area lies within the Kalgoorlie Province, located in the southern Goldfields between Paynes Find, Menzies, Southern Cross and Balladonia. The landscape consists of undulating plains (with some sandplains, hills and salt lakes) on the granitic rocks and greenstone of the Yilgarn Craton. Soils range from calcareous loamy earths and red loamy earths with some salt lake soils to red deep sands, yellow sandy earths, shallow loams and loamy duplexes. Vegetation communities are predominately Eucalypt woodlands with some acacia-casuarina thickets, mulga shrublands, halophytic shrublands and spinifex grasslands (Tille, 2006).

The Kalgoorlie Province is further divided into six soil-landscape zones, with the survey area located within the Kambalda Zone (265). This zone is located in the south-eastern Goldfields between Menzies, Norseman and the Fraser Range and contains flat to undulating plains (with hills, ranges and some salt lakes and stony plains) on greenstone and granitic rocks of the Yilgarn Craton. Soils consist of calcareous loamy earths and red loamy earths with salt lakes soils and some red brown hardpan shallow loams and red sandy duplexes. Vegetation includes red mallee, blackbutt-salmon gum-gimlet woodlands with mulga and halophytic shrublands and some spinifex grasslands (Tille, 2006).

The Kambalda Zone is further divided into soil landscape systems (land systems), with the survey area located within five soil landscape systems. These are described in Table 1 and shown in Figure 3.

Table 1: Soil landscape systems within the survey area

Soil Landscape System	Description	Extent within Survey Area
Graves System	Basalt and greenstone rises and low hills supporting eucalypt woodlands with prominent saltbush and bluebush understoreys.	916 ha (17.3%)
Gumland System	Extensive pedeplains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys.	1297 ha (24.5%)
Lefroy System	Salt lakes and fringing saline plains, sandy plains and dunes with chenopod low shrublands.	231 ha (4.4%)
Moriarty System	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.	2723 ha (51.5%)
Red Hill System	Basalt hills and ridges supporting acacia shrublands and patchy eucalypt woodlands with mainly non-halophytic undershrubs.	123 ha (2.3%)
	Total	**5290 ha (100%)**

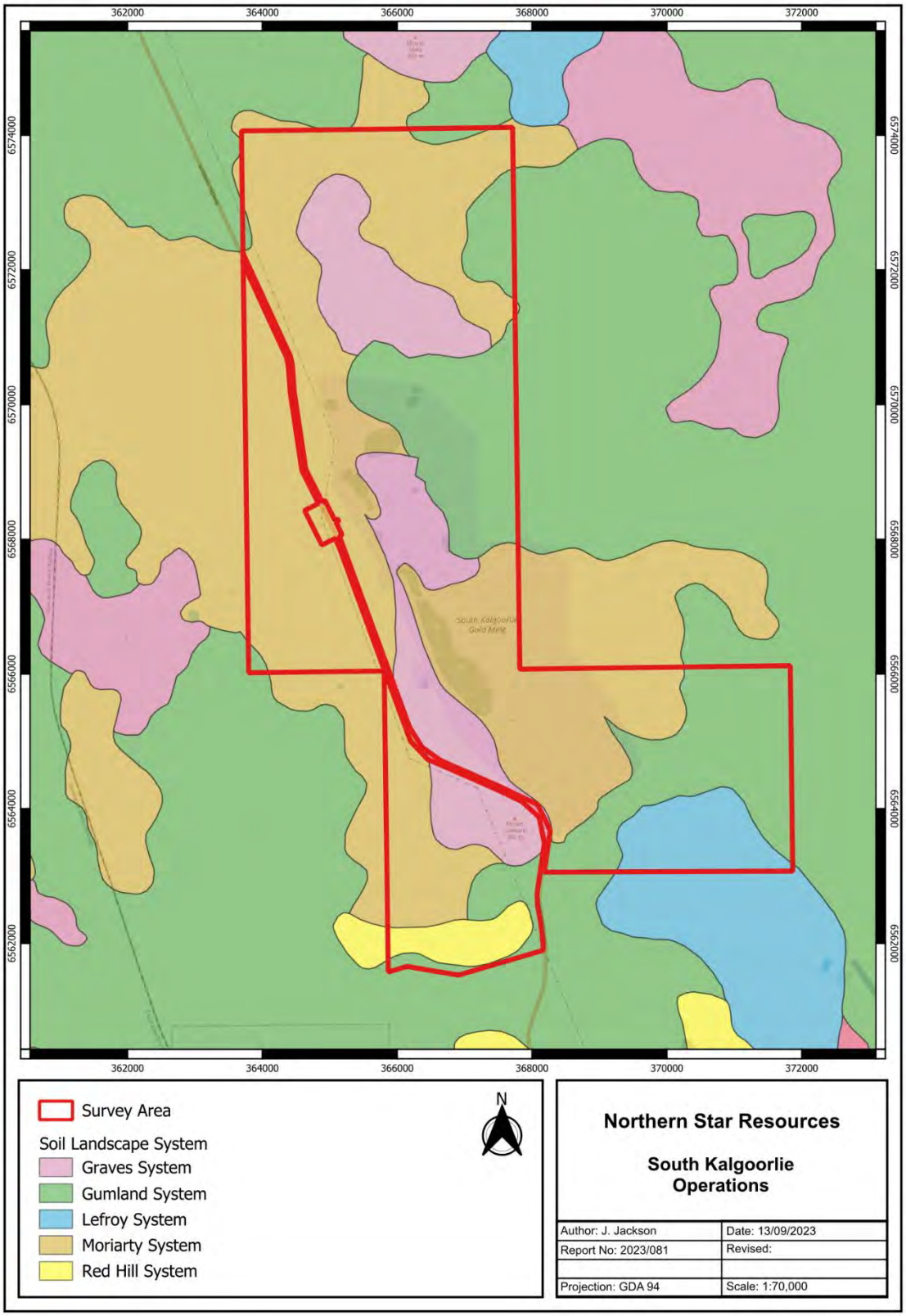


Figure 3: Map of soil landscape systems within the survey area

2.4 Regional Vegetation

In accordance with Tille (2006), the vegetation of the Kambalda Zone is typified by the preponderance of stony plains with acacia shrublands and halophytic shrublands, low hills with eucalypt or acacia woodlands with halophytic undershrubs, stony plains with acacia shrublands and alluvial plains with eucalypt woodlands and halophytic undershrubs rangeland.

More broadly, the vegetation of the Kalgoorlie Province is described by Tille (2006) as woodlands of redwood (*Eucalyptus transcontinentalis*), red mallee (*E. oleosa*), Dundas blackbutt (*E. dundasii*), merrit (*E. flocktoniae*) and salmon gum (*E. salmonophloia*), found on undulating plains over granite. There are also some hummock grasslands with red mallee over spinifex (*Triodia scariosa*) and thickets of Acacia, Casuarina and Melaleuca spp. Plains on greenstone have woodlands of York gum (*E. loxophleba*), salmon gum and gimlet (*E. salubris*). The valley plains have woodlands of salmon gum, red mallee, Goldfields blackbutt (*E. lesouefii*), gimlet, York gum and morrel (*E. longicornis*). These sometimes have an understorey of saltbush (*Atriplex* spp.), pearl bluebush (*Maireana sedifolia*), sago bluebush (*M. pyramidata*) and *Eremophila* spp. There are areas of spinifex grasslands with red mallee, mallees (e.g. *E. youngiana*) and marble gum (*E. gongylocarpa*). Low woodlands of mulga (*Acacia aneura*) and black sheoak (*Casuarina pauper*) over bluebush and saltbush are also present. Apart from the bare salt lake surfaces, saline valley floors have shrublands of samphire (*Tecticornia* spp.) and *Frankenia* spp. in lower areas, shrublands of saltbush and bluebush on red deep sandy duplexes, and woodlands of salmon gum, merrit, red mallee, gimlet and York gum. *Acacia neurophylla, A. beauverdiana* and *A. resinimarginea* thickets grow on gently sloping uplands on granite, with thickets of acacia, casuarina and melaleuca. There are also scrub-heaths and York gum-salmon gum-gimlet woodlands on these uplands. The hilly terrain on greenstone supports woodlands of salmon gum, Goldfields blackbutt, coral gum (*E. torquata*), York gum, gimlet, morrel, Dundas blackbutt and black sheoak. Thickets of granite wattle (*Acacia quadrimarginea*) are also present. The stony plains support scattered woodlands of Goldfields blackbutt, gimlet and salmon gum, along with shrublands of saltbush and bluebush. Sandplains in the west have acacia (*A. coolgardiensis, A. ramulosa, A. aneura, A. burkittii* and *A. tetragonophylla*) shrublands, commonly with patchy native pine (*Callitris columellaris, C. preissii*) and mallees (*E. leptopoda, E. longicornis and E. loxophleba*). Native box (*Bursaria occidentalis*), *Melaleuca uncinata* and *Hakea recurva* may also be present. Hard spinifex (*T. basedowii*) grasslands with mulga, marble gum and mallees (e.g. *E. kingsmillii*) are found on sandplains to the east. The sandy-surfaced plains support acacia, casuarina and melaleuca thickets; woodlands of York gum, cypress pine (*Callitris columellaris*), salmon gum, gimlet and mulga; and shrublands of bowgada (*A. ramulosa*) (Tille, 2006).

2.4.1 Pre-European Vegetation

The Department of Primary Industries and Regional Development GIS file (DPIRD, 2021) indicates that the survey area is located within four pre-European Beard vegetation associations. The extent of these vegetation associations as specified in the *2018 Statewide Vegetation Statistics* (Government of Western Australia, 2019) is provided in Table 2 and shown in Figure 4.

Areas retaining less than 30% of their pre-European vegetation extent generally experience exponentially accelerated species loss, while areas with less than 10% are considered "endangered" (EPA, 2000).

Table 2: Pre-European Vegetation Associations within the survey area

Pre-European Vegetation	Description	Pre-European Extent Remaining (%)	Current Extent Reserved for Conservation (%)	Extent within Survey Area
Binneringe 221	*Atriplex* spp., *Maireana* spp. communities on alkaline soils.	97.77	-	207.5 ha (3.9%)
Binneringe 468	Woodland and other. For the Goldfields; gimlet, redwood etc. (*E. salubris, E. oleosa*).	99.85	-	61.5 ha (1.1%)
Coolgardie 9	Woodland and other. For the Goldfields; gimlet, redwood etc. (*E. salubris, E. oleosa*).	96.88	0.53	3315 ha (62.7%)
Coolgardie 468	Woodland and other. For the Goldfields; gimlet, redwood etc. (*E. salubris, E. oleosa*).	93.6	<0.01	1706 ha (32.3%)
			Total	**5290 ha (100%)**

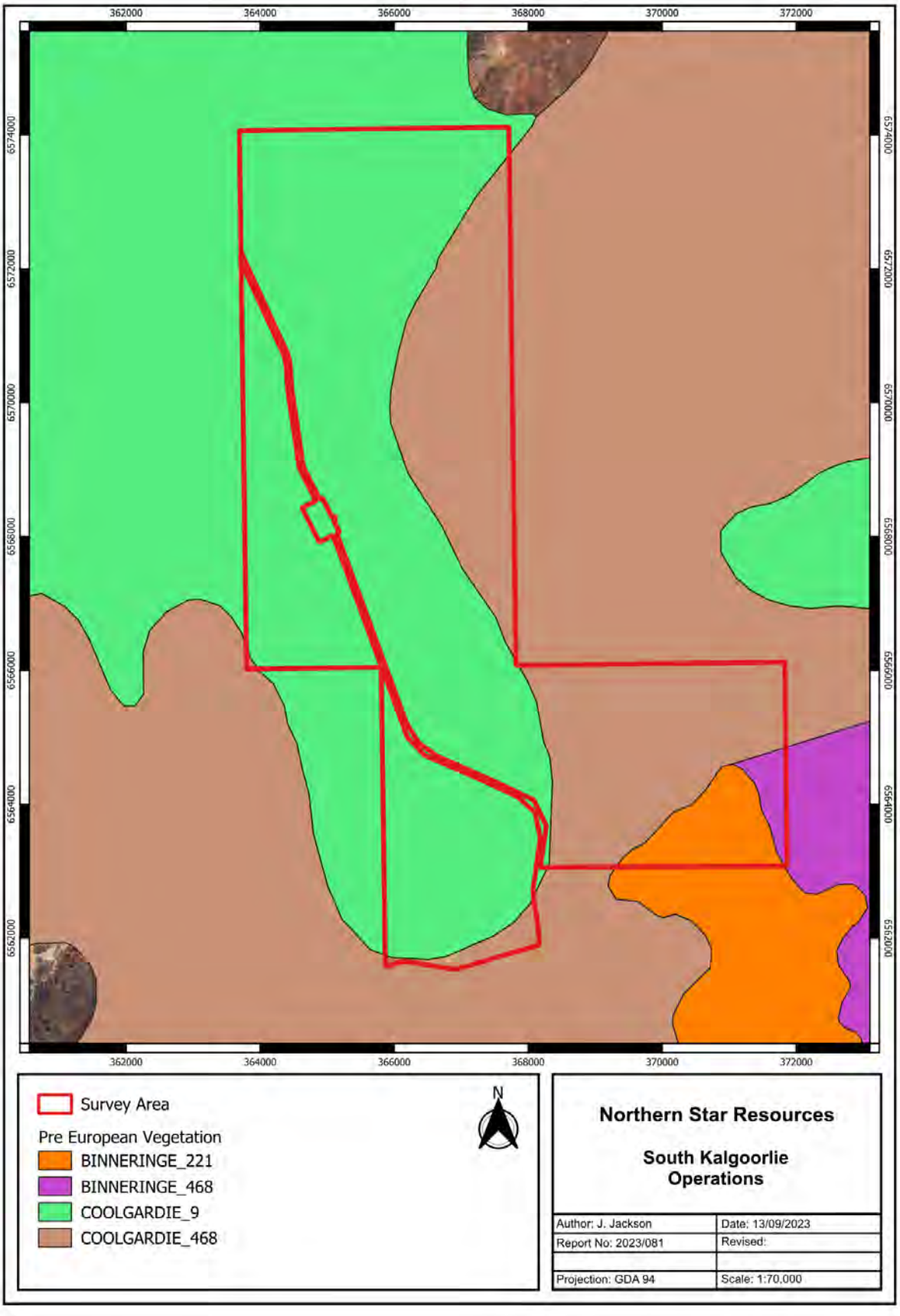
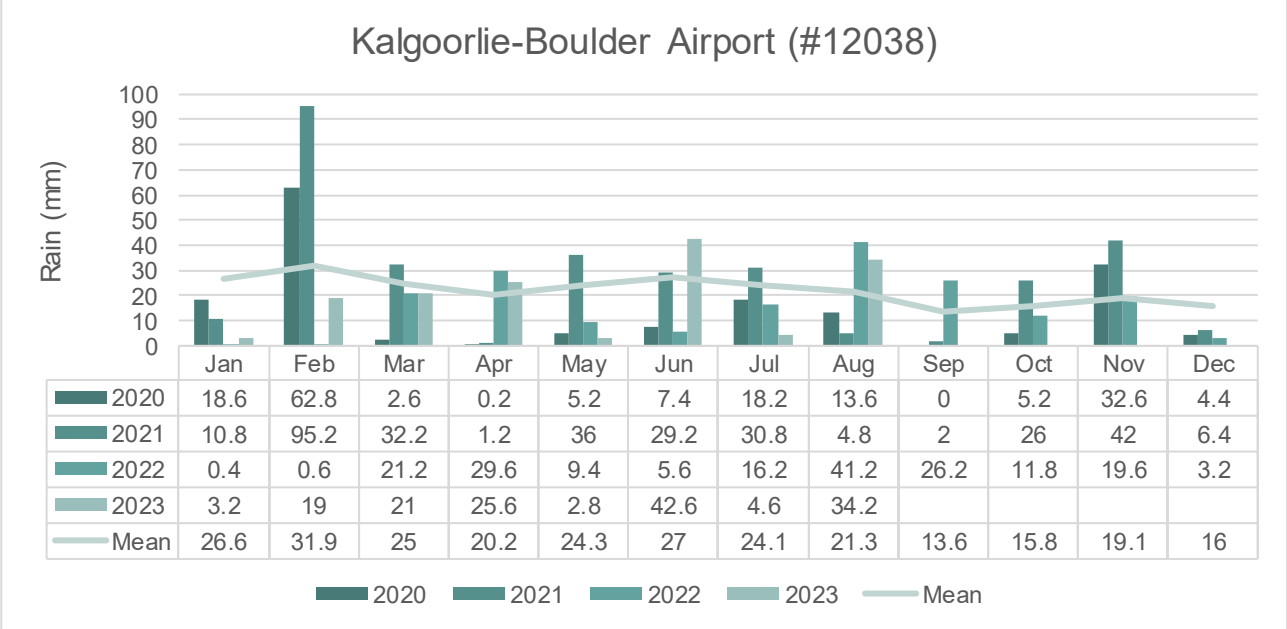


Figure 4: Pre-European vegetation systems within the survey area

2.5 Climate

The climate of the Eastern Goldfield subregion is characterised as arid to semi-arid with 200-300 mm of rainfall, sometimes in summer but usually in winter (Cowan 2001). Rainfall data for the Kalgoorlie-Boulder Airport weather station (#12038), located approximately 24 km north of the survey area, is shown in Figure 5 (BoM, 2023a). Kalgoorlie-Boulder generally receives a mean annual rainfall of 264.6 mm. Rainfall for June and August 2023 were above average.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	18.6	62.8	2.6	0.2	5.2	7.4	18.2	13.6	0	5.2	32.6	4.4
2021	10.8	95.2	32.2	1.2	36	29.2	30.8	4.8	2	26	42	6.4
2022	0.4	0.6	21.2	29.6	9.4	5.6	16.2	41.2	26.2	11.8	19.6	3.2
2023	3.2	19	21	25.6	2.8	42.6	4.6	34.2				
Mean	26.6	31.9	25	20.2	24.3	27	24.1	21.3	13.6	15.8	19.1	16

Figure 5: Monthly rainfall of the Kalgoorlie-Boulder Airport Weather Station #12038 (BoM, 2023a)

2.6 Conservation Values

No Threatened Ecological Communities listed under the Commonwealth EPBC Act, or the Western Australian BC Act are known to occur within the survey area or within 40 km of the survey area. No DBCA listed Priority Ecological Communities (PEC) are known to occur within the survey area or within 40 km of the survey area.

There are no Ramsar wetlands or wetlands of national importance (ANCA Wetlands) within the survey area or within 40 km of the survey area. There are no Environmentally Sensitive Areas (ESA) as listed under the EP Act within the survey area or within 40 km of the survey area.

There are no gazetted conservation reserves within the survey area. The nearest gazetted conservation reserve is the Kambalda Nature Reserve (R33300), located approximately nine km south of the survey area.

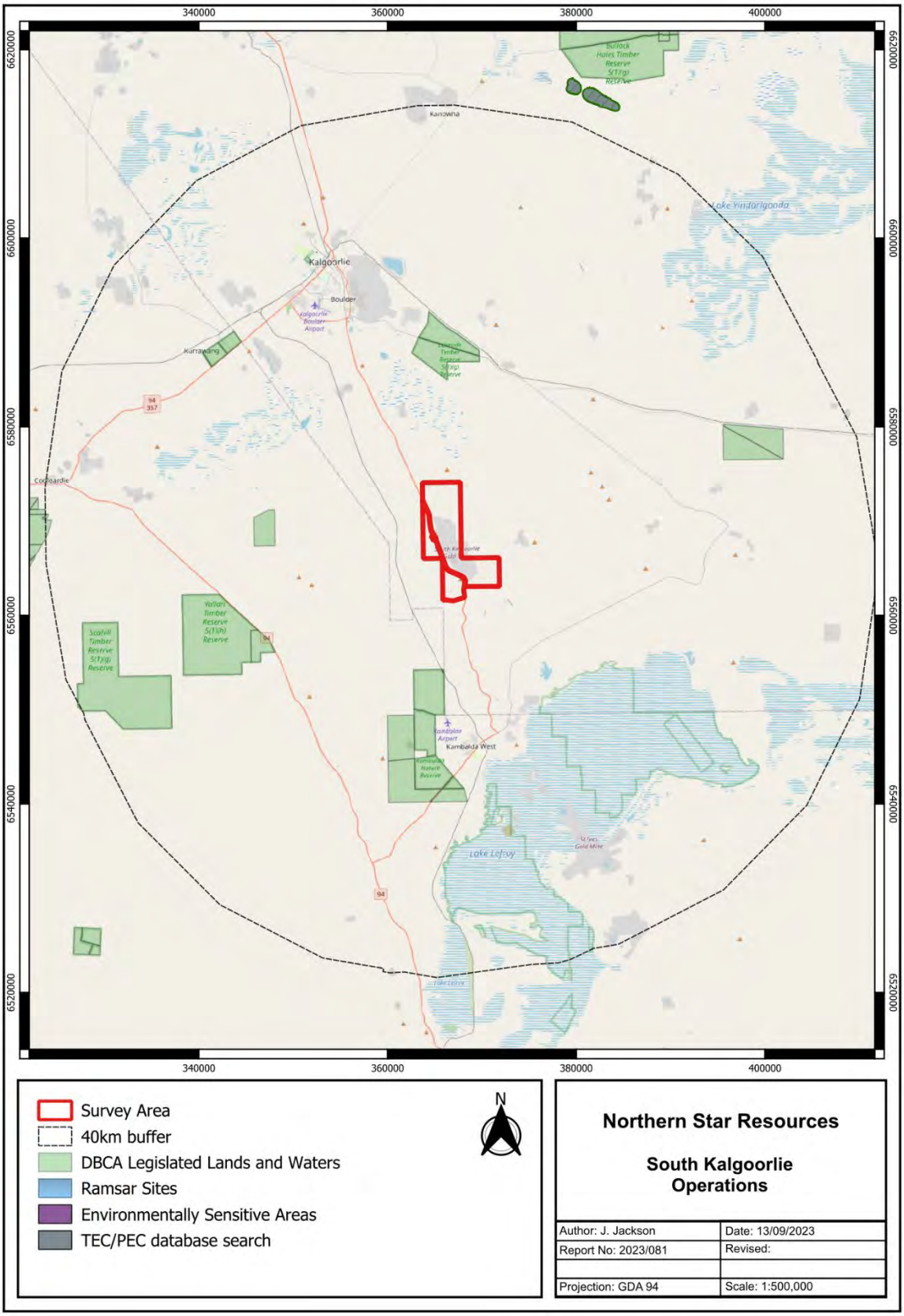


Figure 6: Conservation areas in relation to the survey area

2.7 Hydrology

According to the Geoscience Australia database (2015), there are no permanent/ perennial inland waters or drainage lines within the survey area. There are several minor ephemeral drainage lines occurring through the survey area (Figure 7).

Groundwater Dependent Ecosystems (GDE) includes biological assemblages of species such as wetlands or woodlands that use groundwater either opportunistically or as their primary water source. For the purposes of this report, a GDE is defined as any vegetation community that derives part of its water budget from groundwater and must be assumed to have some degree of groundwater dependency. According to the BoM *Atlas of Groundwater Dependent Ecosystems* database (BoM, 2023b), there are no known or potential aquatic or terrestrial GDEs located within the survey area.

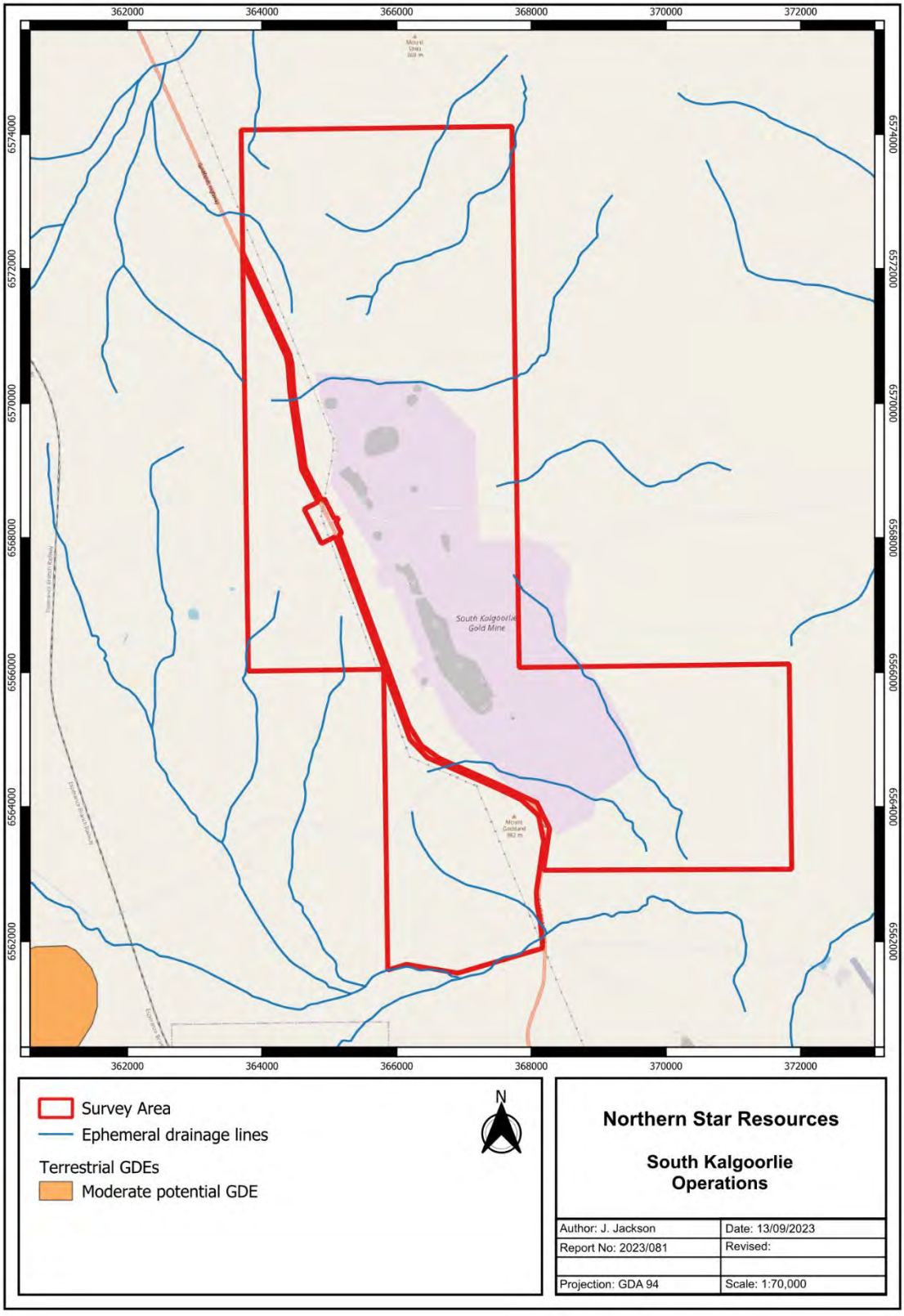


Figure 7: Regional hydrology of the survey area

3 SURVEY METHODOLOGY

3.1 Desktop Assessment

Prior to the field assessment a literature review was undertaken of previous flora and vegetation assessments conducted within the local region. Documents reviewed included:

- Botanica Consulting (2022). *Baker Project: Detailed Flora and Basic Fauna Assessment*. Prepared for Lunnon Metals Ltd. November 2022.
- Botanica Consulting (2022). *Kalgoorlie East Gold Project Powerline – Majestic Timber Reserve Corridor Options and Drill Lines: Reconnaissance Flora and Basic Fauna Assessment*. Prepared for Black Cat Syndicate Ltd. March 2022.
- Botanica Consulting (2023). *Kalgoorlie Nickel Smelter: Reconnaissance Flora/Vegetation and Basic Fauna Assessment*. Prepared for BHP Nickel West Pty Ltd., April 2023.
- Keighery, G.J., Milewski, A.V. and Hnatiuk, R.J. (1992). Vegetation and flora. In: N.L. McKenzie and N.J. Hall (eds) *The Biological Survey of the Eastern Goldfields of Western Australia: Part 8 Kurnalpi-Kalgoorlie Study Area*. Records of the Western Australian Museum, Supplement No. 41.
- Native Vegetation Solutions (2012). *Location Lease 48 and 50. Level 2 Flora and Vegetation Survey*. Prepared for Alacer Gold Corporation, September 2012.

Searches of the following databases were undertaken to aid in the compilation of a list of flora, vegetation and fauna taxa within the survey area:

- Priority/ Threatened Flora Database Search (DBCA, 2022a);
- Priority/ Threatened Fauna Database Search (DBCA, 2022b);
- Priority/ Threatened Ecological Communities Database Search (DBCA, 2022c);
- NatureMap Database (DBCA, 2023); and
- Protected Matters search tool (DCCEEW, 2023).

The NatureMap and Protected Matters Search were conducted for the survey area with a 40 km buffer surrounding this. It should be noted that these lists are based on observations from a broader area than the assessment area (40 km radius) and therefore may include taxa not present. The databases also often include very old records that may be incorrect or in some cases the taxa in question have become locally or regionally extinct. Information from these sources should therefore be taken as indicative only and local knowledge and information also need to be taken into consideration when determining what actual species may be present within the specific area being investigated.

Significant flora species identified by the desktop review were assessed with regards to their population extent and distribution and preferred habitat to determine their likelihood of occurrence within the survey area. The assessment categorised flora species as follows:

- **Unlikely:** Suitable habitat is not expected to occur and/or the survey area is outside the known range of the species.
- **Possible:** Suitable habitat may be present, and the area is within the known range of the species. This option is also used when there is insufficient information to determine the preferred habitat of a species.
- **Previously Recorded:** A record for this species is located within the survey area. Field survey will ground-truth currently occurring individuals and populations.

Significant fauna species identified by the desktop review were assessed with regards to their distribution and preferred habitat to determine their likelihood of occurrence within the survey area. The assessment categorised fauna species as follows:

- **Would Not Occur:** There is no suitable habitat for the species in the survey area and/or there is no documented record of the species in the general area since records have been kept and/or the species is generally accepted as being locally/regionally extinct (supported by a lack of recent records).
- **Unlikely to Occur:** The survey area is outside of the currently documented distribution for the species in question, or no suitable habitat (type, quality and extent) was identified as being present during the field assessment. Individuals of some species may occur occasionally as vagrants/transients especially if suitable habitat is located nearby but the site itself would not support a population or part population of the species.
- **Possibly Occurs:** Survey area is within the known distribution of the species in question and habitat of at least marginal quality was identified as likely to be present during the field survey and literature review, supported in some cases by recent records being documented in literature from within or near the survey area. In some cases, while a species may be classified as possibly being present at times, habitat may be marginal (e.g., poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.
- **Known to Occur:** The species in question has been positively identified as being present (for sedentary species) or as using the survey area as habitat for some other purpose (for non-sedentary/mobile species) during field surveys within or near the survey area. This information may have been obtained by direct observation of individuals or by way of secondary evidence (e.g., tracks, foraging debris, scats). In some cases, while a species may be classified as known to occur, habitat may be marginal (e.g., poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.

The conservation significance of flora and fauna taxa was assessed using data from the following sources:

- *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999*, administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW); *Biodiversity Conservation* (BC) *Act 2016*, administered by the WA Government (DBCA);
- Red List produced by the Species Survival Commission (SSC) of the World Conservation Union (also known as the IUCN Red List – the acronym derived from its former name of the International Union for Conservation of Nature and Natural Resources). The Red List has no legislative power in Australia but is used as a framework for State and Commonwealth categories and criteria; and
- Priority Flora/ Fauna list. A non-legislative list maintained by DBCA for management purposes (fauna list released 7th October 2022; flora list released 6th October 2022).

The EPBC Act also requires the compilation of a list of migratory species that are recognised under international treaties including the:

- Japan Australia Migratory Bird Agreement 1981 (JAMBA)[1];
- China Australia Migratory Bird Agreement 1998 (CAMBA);
- Republic of Korea-Australia Migratory Bird Agreement 2007 (ROKAMBA); and
- Bonn Convention 1979 (The Convention on the Conservation of Migratory Species of Wild Animals).

Most but not all migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as Matters of National Environmental Significance (MNES) under the EPBC Act. Descriptions of conservation significant species and communities are provided in Appendix A.

3.2 Flora and Vegetation Field Assessment

Botanica conducted a detailed flora and vegetation survey on the 1 to 3 September 2023, with the survey undertaken by Jennifer Jackson (Senior Botanist, BSc (Honours) Environmental Management) and Kiefer Millet (Field Technician). The survey area was traversed using a 4WD and on foot.

3.2.1 Vegetation Mapping

Prior to the commencement of field work, aerial photography was inspected and obvious differences in the vegetation assemblages were identified. The different vegetation types identified were then inspected during the field survey to assess their validity. A handheld GPS unit was used to record the coordinates of the boundaries between vegetation types.

[1] Most but not all species listed under JAMBA are also specially protected under Specially Protected Species of the BC Act.

At each sample point, the following information was recorded:

- GPS location;
- Photograph of vegetation;
- Dominant taxa for each stratum (including height and percentage cover of dominant taxa);
- All vascular taxa (including annual taxa);
- Landform classification;
- Vegetation condition rating;
- Collection and documentation of unknown plant specimens; and
- Collection of flora of conservation significance if encountered.

Vegetation types were classified in accordance with the NVIS Level V-Association classification.

3.2.2 Detailed Flora and Vegetation Survey

A total of 24 quadrats (20m x 20m) from the NVS (2012) survey were revisited and another 16 were installed during the current survey, totalling 40 quadrats (Figure 8 and Appendix D). According to the recommended quadrat size specified in the Environmental Protection Authority (EPA) Guidelines, 20m X 20m quadrats are recommended for the Coolgardie Bioregion. The quadrats were established by inserting survey marker pins into the Northwest corner, and measuring the length of the resultant boundaries to verify the quadrats were 20 m X 20 m (square quadrats). The objective was to have at least three quadrats per vegetation type to capture the floristic variations within the survey area. Quadrats were not established within regrowth/ modified vegetation.

Following their establishment and boundary verification, the NW corner of each quadrat was recorded by GPS (Appendix D) and three photographs of the quadrat were taken from the Northwest corner (Appendix H). All vascular plants within the quadrat were recorded (Appendix G). This included recording of dominant taxa from the upper, middle and lower stratum, and sampling of all unknown taxa. Unknown taxa were identified using Botanica's own reference herbarium and relevant taxonomic keys or by a taxonomic consultant. Data on level of disturbance, presence of coarse fragments on surface, topographical position, elevation, aspect, percentage litter, percentage bare ground, percentage surface rock (bedrock and surface deposits), soil types (colour, profile, field texture and surface type), and vegetation structure were collected from each quadrat (Appendix G). Methods of recording data from these quadrats largely follow those outlined in CSIRO's *Australian Soil and Land Survey Field Handbook* (McDonald *et al.* 1998) and in accordance with EPA Guidelines (2016). Presence/absence data of taxa from sample sites were used to compile the representative vegetation types.

3.3 Data Analysis Tools

Following field assessments, vegetation types and condition were mapped using the GIS program QGIS, and the hectare area/ percentage area of each vegetation type and condition within the survey area was calculated. Spatial maps illustrating the location of vegetation types and any significant flora/ vegetation and fauna were generated using QGIS.

3.3.1 PATN Analysis

The PATN software package was used to assess the similarities/ dissimilarities between quadrats based on presence/absence of species. Eighteen annual taxa were recorded during the survey which were excluded from the analysis. A total of 71 taxa recorded within the quadrats were included in the analysis. Six subspecies were reconciled to three single species. 33 singleton taxa were excluded from the analysis.

The analysis produced a quantitative estimate of the relationship between species composition of each quadrat. The classifications were based upon a Bray-Curtis association matrix using a flexible Unweighted Pair Group Arithmetic Mean (UPGMA) method (with a beta value of -0.1) which standardises the data enabling the analysis to be completed. Semi-strong hybrid (SSH) ordination of the quadrat is then undertaken to show spatial relationships between groups and to elucidate possible environmental correlates with the classification.

The analysis also produced a stress value which is a measure of the 'strength' of the analysis (i.e. how well the quadrats are grouped together into the appropriate floristic groups). The lower the stress value the greater the strength of the analysis with a value of less than 0.3 showing that the analysis appropriately grouped quadrats. A stress value greater than 0.3 suggests that the analysis was unable to group quadrats appropriately due to extraneous variables (i.e. other factors influencing differences in floristic groups other than species composition e.g. fire, clearing disturbance etc.).

3.3.2 EstimateS

EstimateS software was used to estimate species richness present using the Chao2 richness estimator. For any number of samples, the estimator uses the existing pattern of species accumulation to estimate the true number of species at a site. The estimators tend to under-estimate species number when sample size is small, hence the estimated number of true species can be seen to increase with sample size. This software was also used to compute Coleman rarefaction curves estimates which were used to calculate species accumulation curves.

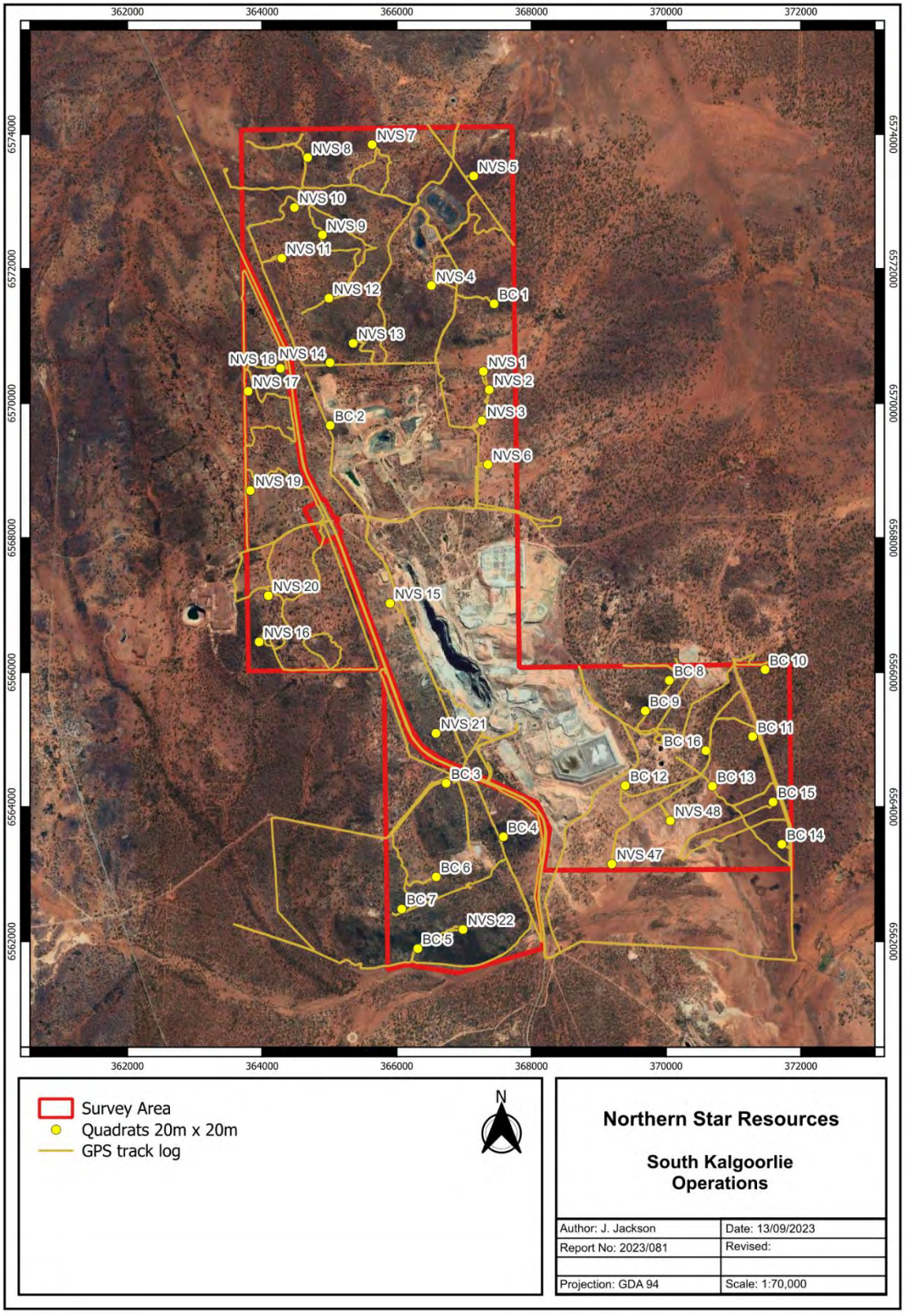


Figure 8: GPS track log of the survey effort and locations of quadrats

3.4 Terrestrial Fauna Field Assessment

Botanica conducted a basic fauna survey of the survey area in conjunction with the reconnaissance flora/ vegetation survey.

Fauna habitat types were identified across the survey area based on broad major vegetation groups and associated landform. A handheld GPS unit was used to record the coordinates of the boundaries between fauna habitats and each habitat was photographed.

The main aim of the fauna habitat assessment was to determine the likelihood of a species of conservation significance utilising habitat within the survey area. The habitat information obtained was also used to aid in finalising the overall potential fauna list.

Available information on the habitat requirements of the species of conservation significance listed as possibly occurring in the area (determined from the desktop assessment) was researched. During the field survey, the habitats within the survey area were assessed and specific elements identified, if present, to determine the likelihood of listed Threatened and Priority species utilising habitat within the survey area.

Opportunistic observations of fauna species were made during all field survey work.

3.5 Scientific Licences

Table 3-1: Scientific Licenses of Botanica Staff coordinating the survey

Licensed Staff	Permit Number	Date of Expiry
Jennifer Jackson	FB62000309 (Licence to take flora for scientific purposes)	11/01/2024

3.6 Survey Limitations and Constraints

It is important to note that flora surveys will entail limitations notwithstanding careful planning and design. Potential limitations are listed in Table 3-2.

The conclusions presented in this report are based upon field data and environmental assessments and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. Also, it should be recognised that site conditions can change with time. Information not available at the time of this assessment which may subsequently become available may alter the conclusions presented.

Some species are reported as potentially occurring based on there being suitable habitat (quality and extent) within the survey area or immediately adjacent. The habitat requirements and ecology of many of the species known to occur in the wider area are however often not well understood or documented. It can therefore be difficult to exclude species from the potential list based on a lack of a specific habitats or microhabitats within the survey area. As a consequence of this limitation, the

potential species list produced is most likely an overestimation of those species that actually utilise the survey area for some purpose.

In recognition of survey limitations, a precautionary approach has been adopted for this assessment. Any flora species that would possibly occur within the survey area (or immediately adjacent), as identified through ecological databases, publications, discussions with local experts/residents and the habitat knowledge of the author, has been listed as having the potential to occur.

Table 3-2: Limitations and constraints associated with the flora and vegetation survey

Variable	Potential Impact on Survey	Details
Access problems	Not a constraint	The survey was conducted using a four wheel drive vehicle and walking. There were no access problems.
Competency/ Experience	Not a constraint	The Botanica personnel that conducted the survey were regarded as suitably qualified and experienced. **Coordinating Staff**: Jennifer Jackson (Senior Botanist (BSc Environmental Management (Honours)) has 20 years' experience doing flora and fauna surveys in WA. **Data Interpretation**: Jennifer Jackson.
Timing of survey, weather & season	Minor constraint	Fieldwork was undertaken in September during the EPA's recommended primary survey time period for the Interzone (i.e., Spring, September to November), the survey was conducted following above average rainfall received in June and August 2023. However, only a few annual species were present.
Area disturbance	Not a constraint	The area has been disturbed from previous mining and exploration, cattle grazing and other human impacts; however, vegetation was mostly intact and comprised of native vegetation.
Survey Effort/ Extent	Not a constraint	Survey intensity was appropriate for the size/significance of the area with a detailed flora survey and basic fauna survey completed to identify vegetation types/ fauna habitats and significant flora, fauna and vegetation.
Availability of contextual information at a regional and local scale	Not a constraint	Conservation significant flora database searches provided by the DBCA were used to identify any potential locations of Threatened/Priority flora species. BoM, DWER, DPIRD, DBCA and DCCEEW databases were reviewed to obtain appropriate regional desktop information on the biophysical environment of the local region. Botanica has conducted numerous surveys within the Murchison bioregion and was also able to obtain information about the area from previous research conducted within the area. Results of previous assessments in the local area were reviewed to provide context on the local environment.
Completeness	Not a constraint	In the opinion of Botanica, the survey area was covered sufficiently to identify vegetation assemblages. Fieldwork was undertaken in September during the EPA's recommended primary survey time period for the Interzone (i.e., Spring), above average rainfall was received in June and August, preceding the survey. As a result all taxa were able to be identified to species level, however only a few annual species were present. The vegetation associations for this study were based on visual descriptions of locations in the field. The distribution of these vegetation associations outside the study area is not known, however vegetation associations identified were categorised via comparison to vegetation distributions throughout WA given on NVIS (DotEE, 2017).

4 RESULTS

4.1 Desktop Assessment

4.1.1 Flora

The NatureMap database search (DBCA, 2023) identified 687 vascular flora species as occurring within 40 km of the survey area. The full list of vascular flora identified by the desktop search is provided in Appendix I.

4.1.1.1 Introduced Flora

The desktop review identified 93 introduced flora (weed) species as known to occur within 40 km of the survey area. Twelve of the species are listed as a Declared Pest on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management* (BAM) *Act 2007*, eight are listed as a Weed of National Significance (WoNS) (Table 4-1). The full list of introduced flora identified by the desktop search is contained in Appendix B.

Table 4-1: Declared and WONs species of introduced flora known to occur within 40 km of the survey area

Taxon	Common Name	Declared	WoNS
Alhagi maurorum	Camel thorn	Y	N
Cylindropuntia fulgida var. *mamillata*	Boxing Glove cactus	Y	Y
Cylindropuntia imbricata	Devils rope	Y	Y
Cylindropuntia kleiniae	Kleins cholla	Y	Y
Cylindropuntia tunicata	Hudson pear	Y	Y
Echium plantagineum	Paterson's Curse	Y	N
Lantana camara	Common lantana	Y	Y
Lycium ferocissimum	African Boxthorn	N	Y
Opuntia elata	Riverian pear	Y	Y
Opuntia ficus-indica	Indian fig, Prickly pear	Y	Y
Proboscidea louisianica	Purple Flower Devil's Claw	Y	N
Tamarix chinensis	Tamarisk	Y	N
Xanthium spinosum	Bathurst burr	Y	N

4.1.1.2 Significant Flora

Assessment of the DBCA's Threatened and Priority Flora database records (Ref: 11-0922FL) (DBCA, 2022a), EPBC Protected Matters (DCCEEW, 2023a), NatureMap database (DBCA, 2023) and previous relevant literature identified no Threatened or Priority Flora were previously recorded within the survey area. Two Threatened Flora have previously been recorded within 40km of the survey area. Forty-four Priority Flora were identified as occurring within a 40 km radius of the survey area.

The EPBC Protected Matters Search Tool identified *Tecticornia flabelliformis* as 'species or species habitat likely to occur within the area', this is listed as Threatened under the EPBC Act, but is listed as Priority 2 in WA. The Native Vegetation Solutions [NVS] (2012) survey identified three Priority flora, but these were outside of the current survey area.

These taxa were assessed for distribution and known habitat to determine their likelihood of occurrence within the survey area as shown in Table 4-2. The locations of DBCA database records for Significant Flora (DBCA, 2022a) and NVS (2012) records in relation to the survey area is shown in Figure 9.

Table 4-2: Significant flora potentially occurring within the survey area.

Taxon	Conservation Status			Habitat Description (WA Herbarium, 1998-)	Likelihood of Occurance
	EPBC Act	BC Act	Priority		
Acacia crenulata			3	Clay, sandy clay, yellow sand. Rocky rises, granite outcrops, breakaways.	Unlikely. No habitat fitting this description within the survey area.
Acacia kerryana			2	Granitic loamy sand, stony clayey loam or clayey sand. Low stony ridges, undulating plains.	Unlikely. No habitat fitting this description within the survey area.
Acacia websteri			1	Red sand, clay or loam. Low-lying areas, flats.	Possible
Allocasuarina eriochlamys subsp. *grossa*			3	Stony loam, laterite clay. Granite outcrops.	Possible
Alyogyne sp. Great Victoria Desert (D.J. Edinger 6212)			3	Sand plain, mallee woodland.	Unlikely. No habitat fitting this description within the survey area.
Alyxia tetanifolia			3	Sandy clay, loam, concretionary gravel. Drainage lines, near lakes.	Possible
Austrostipa blackii			3	Rocky slopes associated with basalt or banded ironstone.	Possible
Austrostipa turbinata			3	Rocky slope with Eucalypt woodland.	Possible
Calandrinia lefroyensis			1	Flat plains with fine quartz, near large salt lakes.	Unlikely. No habitat fitting this description within the survey area.
Chrysocephalum apiculatum subsp. *norsemanense*			3	Sandplain with open mallee or shrubland.	Unlikely. No habitat fitting this description within the survey area.
Cratystylis centralis			3	Red sandy loam with ironstone gravel. Flat plains, breakaway country.	Possible
Cyathostemon divaricatus			1	Rocky hillslope.	Possible
Cyathostemon verrucosus			3	Sandplain with open mallee or shrubland.	Unlikely. No habitat fitting this description within the survey area.
Elachanthus pusillus			2	Clay loam plain, Eucalyptus woodland.	Possible
Eremophila acutifolia			3	Undulating plain. Brown clay loam soil. Eucalyptus woodland	Possible
Eremophila arachnoides subsp. *tenera*			3	Flat plain with calcareous sandy loam soils.	Possible
Eremophila caerulea subsp. merrallii			4	Sand, clay or loam. Undulating plains.	Possible
Eremophila praecox			2	Red/brown sandy loam. Undulating plains.	Possible
Eremophila veronica			3	Stony clay, clay loam. Lateritic breakaways.	Unlikely. No habitat fitting this description within the survey area.
Eremophila xantholaemus			1	Hill slope, Eucalyptus woodland.	Possible
Eucalyptus jutsonii subsp. *jutsonii*			4	Red to pale orange deep sands. Undulating areas and on dunes.	Unlikely. No habitat fitting this description within the survey area.

Taxon	Conservation Status			Habitat Description (WA Herbarium, 1998-)	Likelihood of Occurance
	EPBC Act	BC Act	Priority		
Eucalyptus websteriana subsp. *norsemanica*			1	Rocky slopes, Eucalyptus woodland.	Possible
Eucalyptus x brachyphylla			4	Sandy loam. Granite outcrops.	Unlikely. No habitat fitting this description within the survey area.
Frankenia glomerata			4	White sand. Margins of large salt lakes.	Unlikely. No habitat fitting this description within the survey area.
Gastrolobium graniticum	EN	VU	-	Sand, sandy loam, granite. Margins of large granite rock outcrops.	Unlikely. No habitat fitting this description within the survey area.
Goodenia salina			2	Low gypseous dunes near salt pans.	Unlikely. No habitat fitting this description within the survey area.
Isolepis australiensis			3	Silty sand, sandy clay. Lake margins, pools.	Unlikely. No habitat fitting this description within the survey area.
Lepidium fasciculatum			3	Brown cracking clay plain.	Unlikely. No habitat fitting this description within the survey area.
Lepidium merrallii			2	Clay loam.	Possible
Lepidosperma sp. Kambalda (A.A. Mitchell 5156)			2	Lower footslope of basalt hill.	Possible
Lepidosperma sp. Parker Range (N. Gibson & M. Lyons 2094)			1	Rocky slope, mallee woodland.	Unlikely. No habitat fitting this description within the survey area.
Melaleuca coccinea			3	Sandy loam over granite. Granite outcrops, sandplain, river valleys.	Unlikely. No habitat fitting this description within the survey area.
Notisia intonsa			3	Disturbed areas, drainage lines in clay loam plains.	Possible
Phebalium clavatum			2	Sandy soils. Sandplains.	Unlikely. No habitat fitting this description within the survey area.
Pterostylis xerampelina			1	Rocky areas, granite or ironstone.	Unlikely. No habitat fitting this description within the survey area.
Ptilotus procumbens			1	Red clay.	Possible
Ricinocarpos digynus			1	Rocky hillslope with *Casuarina pauper.*	Possible
Sowerbaea multicaulis			4	Yellow-brown sand.	Unlikely. No habitat fitting this description within the survey area.
Stylidium choreanthum			3	White/yellow or red sand. Plains.	Unlikely. No habitat fitting this description within the survey area.
Styphelia rectiloba			3	Tops and upper slopes of breakaway.	Unlikely. No habitat fitting this description within the survey area.
Tecticornia flabelliformis	VU		2	Clay. Saline flats.	Unlikely. No habitat fitting this description within the survey area.

Taxon	Conservation Status			Habitat Description (WA Herbarium, 1998-)	Likelihood of Occurance
	EPBC Act	BC Act	Priority		
Tecticornia mellarium			1	On edge of salt lake.	Unlikely. No habitat fitting this description within the survey area.
Tetratheca spenceri	-	VU	-	Gentle slope on duricrust breakaway.	Unlikely. No habitat fitting this description within the survey area.
Thryptomene planiflora			1	Sandplain, Acacia shrubland.	Unlikely. No habitat fitting this description within the survey area.
Thryptomene sp. Coolgardie (E. Kelso s.n. 1902)			1	Not available	Not known.
Xanthoparmelia dayiana			3	Lichen, various habitats.	Possible

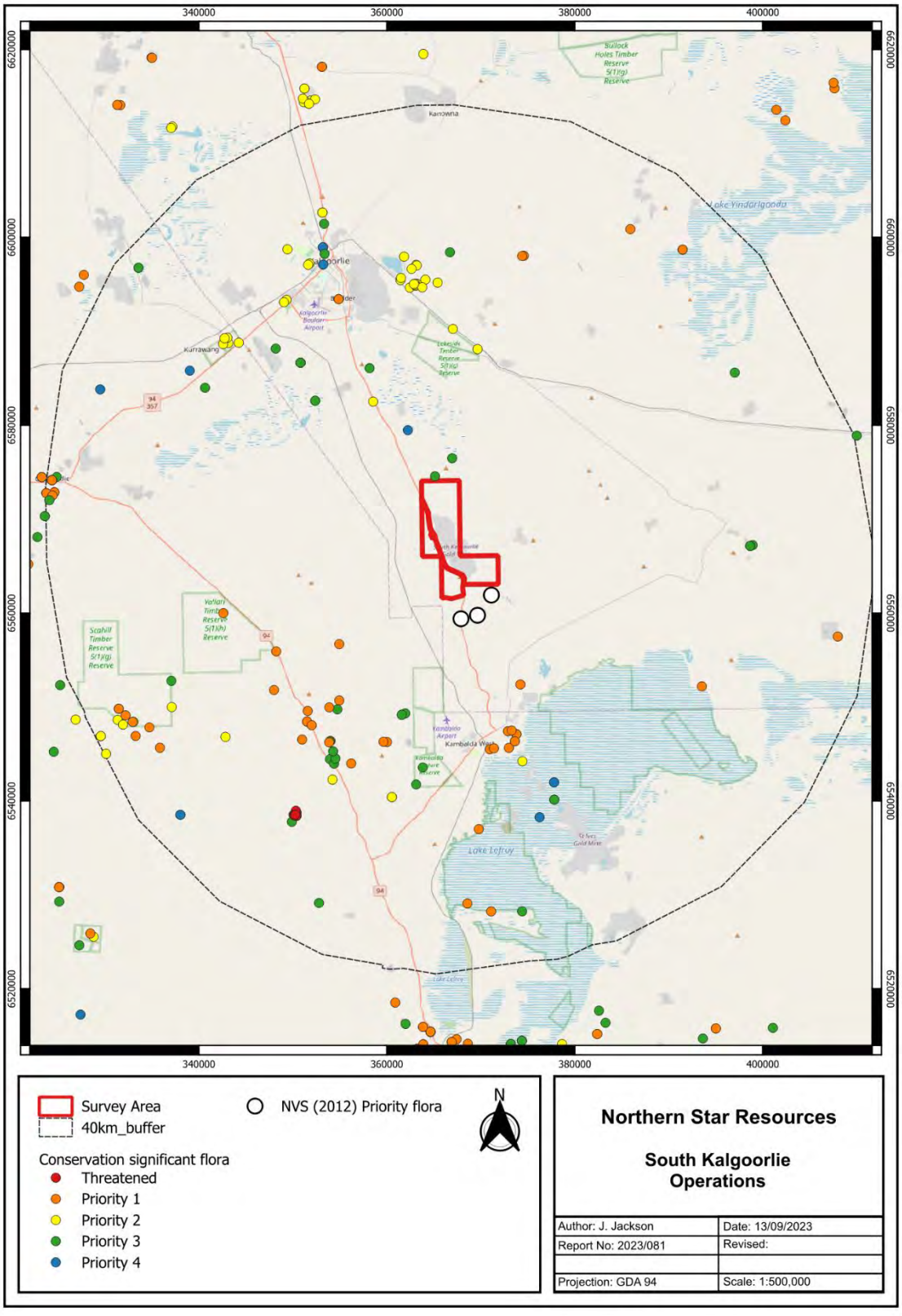


Figure 9: Significant flora records in relation to the survey area

4.1.2 Fauna

The NatureMap database search (DBCA, 2023) identified a total 308 terrestrial vertebrate fauna taxa within 40 km of the survey area, consisting of 172 bird, 35 mammal, 97 reptile and four amphibian taxa. Of these, eight species are introduced (non-native) species:

- *Bos taurus (Cattle)*
- *Canis spp. (Wild Dog);*
- *Capra hircus (Feral Goat);*
- *Felis cattus (Feral Cat);*
- *Mus musculus (House mouse)*
- *Oryctolagus cuniculus (Rabbit);*
- *Ovis spp. (Feral Sheep); and*
- *Vulpes vulpes* (Fox).

The full list of vertebrate fauna identified by the desktop search is contained in Appendix I.

4.1.2.1 Conservation Significant Fauna

The desktop review identified 15 terrestrial fauna species of conservation significance as previously being recorded within 40 km of the survey area, consisting of 12 Threatened species and three Priority listed species. Seven migratory terrestrial avifauna species were also listed. Habitat and distribution data was used to determine the likelihood of occurrence within the survey area (Table 4-3).

Table 4-3: Significant fauna potentially occurring within the survey area

Species	Conservation Status			Habitat Description	Assessment and likelihood
	EPBC	BC Act	DBCA		
Aphelocephala leucopsis Southern Whiteface	VU	-	-	The Southern Whiteface prefers the drier habitats of southern Australia. Found in southern WA except the far south-west corner (Birdlife, 2023).	PMST records state that the species or species habitat may be in the area. Would not occur. No previous records in this area.
Calidris ferruginea Curlew Sandpiper	CR and MI	CR		Inland, where they are rarely seen, around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (DCCEEW, 2023).	Would not occur in the area. No habitat in the survey area.
Calyptorhynchus latirostris Carnaby's cockatoo	EN	EN		Forests and woodlands, also around Perth during autumn-winter. South-western Australia (ALA, 2023).	Would not occur. Considered to be regionally extinct.
Dasyurus geoffroii Chuditch	VU	VU		Deserts, woodlands, eucalypt shrubland, open forests and coastal areas. It is now found only in the southwest corner of Western Australia (ALA, 2023).	Would not occur. Considered to be regionally extinct.
Egernia stokesii badia Western spiny-tailed skink	VU	EN		The Western Spiny-tailed Skink is known to occur in a broad semi-arid area in south-west WA, between Shark Bay and Minnivale and east to Cue (DCCEEW, 2023).	Would not occur. Considered to only occur in the Mid west.
Falco hypoleucos Grey Falcon	VU	VU	-	Occurs at low densities across inland Australia. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (DCCEEW, 2023).	Possible. Survey area may form part of larger home range.
Jalmenus aridus Inland hairstreak			P1	Little is known about this species, but known from an area near Kalgoorlie (ALA, 2023).	Possible, but little is known about this species.
Leipoa ocellata Malleefowl	VU	VU	-	Scrublands and woodlands dominated by mallee and wattle species (DCCEEW, 2022).	Possible. Numerous records within 40 km of survey area.
Macrotis lagotis Bilby	VU	VU		Lives in the desert. It occurs in a number of disjunct locations between south-west Queensland and the Pilbara (DCCEEW, 2023).	Would not occur. Considered to be regionally extinct.

Species	Conservation Status			Habitat Description	Assessment and likelihood
	EPBC	BC Act	DBCA		
Myrmecobius fasciatus Numbat	EN	EN		Numbats were previously widespread before European settlement; they now occupy just a few reserves in the south-west of WA and translocated populations in other parts of Australia (ALA, 2023).	Would not occur. Considered to be regionally extinct.
Ogyris subterrestris petrina Arid bronze azure butterfly	CR	CR		Known to occur within Mature smooth barked Eucalypt woodlands in the Goldfields and Wheatbelt region of WA (DBCA, 2016).	Possible. However, the nearest known population is 20 km to the NW and it hasn't been seen there since 1992.
Pezoporus occidentalis Night Parrot	EN	CR	-	Broad habitat requirements include areas of old-growth spinifex (Triodia) for roosting and nesting, together with foraging habitats that are likely to include various native grasses and herbs, that may or may not contain shrubs or low trees. (DBCA, 2017).	Would not occur in the area. PMST records state that the species or species habitat may be in the area. Considered to be locally extinct. Suitable habitat not present.
Platycercus icterotis xanthogenys western rosella (inland)			P4	Heathland, woodland, forest of the Wheatbelt of WA (Birdlife, 2023).	Would not occur. Known to occur further west in the Wheatbelt.
Polytelis alexandrae Princess Parrot	VU	-	P4	Inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (including E. gongylocarpa, E. chippendalei and mallee species), Casuarina or Allocasuarina trees; an understorey of shrubs such as Acacia (especially A. aneura), Cassia, Eremophila, Grevillea, Hakea and Senna; and a ground cover dominated by Triodia species (DCCEEW, 2023)	Would not occur. Known to occur further east in the Great Victoria Desert.
Thinornis rubricollis Hooded plover			P4	In Western Australia they can occur around salt and freshwater lakes that range from close to the coast to inland area (ALA, 2023).	Would not occur in the area. No habitat in the survey area.
Various wading/shorebird species	MI	MI	-	Inhabit muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland (DCCEEW, 2022).	Would not occur in the area. No habitat in the survey area.

4.2 Field Assessment

4.2.1 Flora

The field survey identified 125 vascular flora taxa within the survey area from 31 families and 59 Genera as occurring in the survey area. Dominant genera include *Eremophila, Eucalyptus, Acacia* and *Maireana.* Eighteen annual species were recorded. The full field species inventory is listed in Appendix B.

4.2.1.1 Introduced Flora

Two species of introduced flora species were recorded within the quadrats. Eight weed species were observed in the survey area, yet these were numerous and their locations were not marked. These were:

- Asphodelus fistulosus -Onion weed,
- Carrichtera annua -Ward's weed,
- Centaurea melitensis -Maltese cockspur,
- Dittrichia graveolens -Stinkwort,
- Mesembryanthemum nodiflorum -Slender iceplant,
- Nicotiana glauca -Tree tobacco,
- Salvia verbenaca -Wild sage,
- Sonchus oleraceus -Common sowthistle.

4.2.1.2 Significant Flora

According to the EPA *Environmental Factor Guideline for Flora and Vegetation* (EPA, 2016b) significant flora includes:

- flora being identified as threatened or priority species;
- locally endemic flora or flora associated with a restricted habitat type (e.g., surface water or groundwater dependent ecosystems);
- new species or anomalous features that indicate a potential new species;
- flora representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- unusual species, including restricted subspecies, varieties or naturally occurring hybrids; and
- flora with relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

No Threatened Flora taxa are previously known to occur or were identified within the survey area.

No Priority Flora taxa are previously known to occur or were identified within the survey area.

4.2.2 Vegetation

4.2.2.1 Vegetation Communities

A total of seven broad-scale vegetation communities were identified within the survey area. These vegetation types were identified within three landform types and comprised of five major vegetation groups. Vegetation community descriptions and extent are listed below in Table 4-4 and illustrated spatially in Figure 10. Vegetation community descriptions and extents were determined from field survey results, aerial imagery interpretation and extrapolation of the communities.

The survey found CLP-EW1 was the most widespread community in the survey area, occupying 2,548 ha (48.2%), while CLP-AFW1 was the most restricted with 23.5 ha (0.4%). The most diverse vegetation type was CLP-EW1 with 73 species.

Table 4-4: Summary of vegetation types within the survey area

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Rocky Hillslope	Eucalypt Woodlands (MVG 5)	RH-EW1	Low woodland of *Eucalyptus torquata* over mid open shrubland of *Eremophila oldfieldii* subsp. *angustifolia* over low open shrubland of *Olearia muelleri* on rocky hillslope.	526.9	9.9	
	Acacia open Woodland (MVG 13)	RH-AOW1	Low open woodland of *Acacia collegialis* over mid open shrubland of *Eremophila georgei* and *Dodonaea lobulata* over low open shrubland of *Ptilotus obovatus* on rocky hillslope.	154.0	2.9	

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Plain	Eucalypt Woodlands (MVG 5)	CLP-EW1	Low woodland of *Eucalyptus salmonophloia* over mid open shrubland of *Eremophila interstans* subsp. *interstans* over low open shrubland of *Maireana sedifolia* on clay loam plain.	2,548.0	48.2	
	Eucalypt Woodlands (MVG 5)	CLP-EW2	Low woodland of mixed *Eucalyptus* sp. over mid open shrubland of *Acacia acuminata* over low open shrubland of *Olearia muelleri* on clay loam plain.	571.5	10.8	

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
	Acacia Woodlands (MVG 6)	CLP-AFW1	Low open woodland of mixed *Eucalyptus* sp. over mid open forest of *Acacia acuminata* over low isolated shrubs of *Dodonaea adenophora* on clay loam plain.	23.5	0.4	
Plain	Casuarina Woodlands (MVG 8)	RP-CW1	Low woodland of *Casuarina pauper* over mid open shrubland of *Eremophila oldfieldii* subsp. *angustifolia* over low open shrubland of *Senna artemisioides* subsp. *filifolia* on rocky plain.	23.7	0.4	

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Open depression	Chenopod shrublands (MVG 22)	OD-CS1	Mid sparse shrubland of *Acacia masliniana* over low chenopod shrubland of *Maireana sedifolia* and *Tecticornia disarticulata* on a sandy clay loam open depression.	167.2	3.2	
Cleared	Cleared (MVG 25)	CV	Cleared areas	1,273.2	24.2	
			Total	**5,288**	**100**	

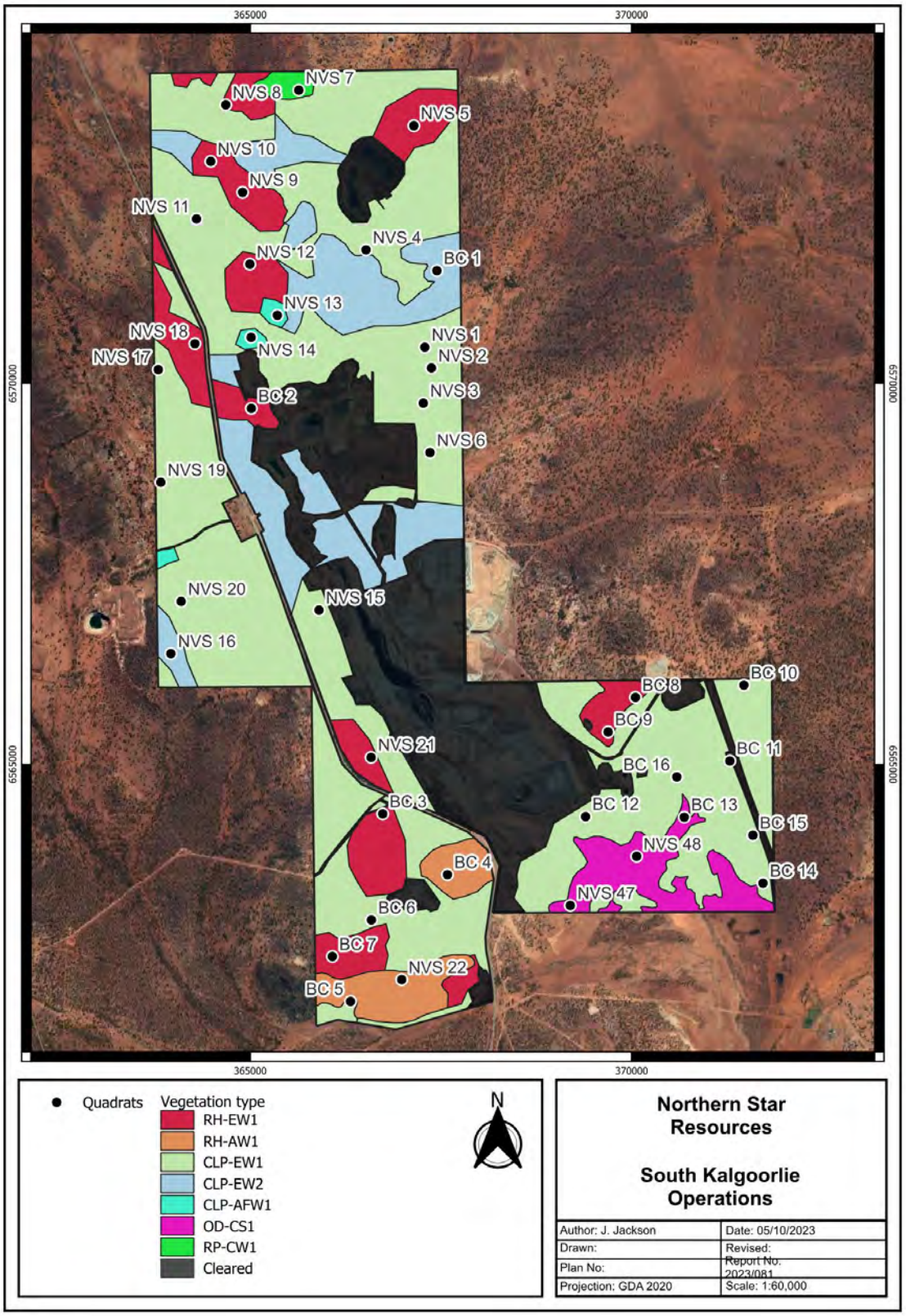


Figure 10: Vegetation types within the survey area

4.2.3 Floristic Composition

Statistical analysis was conducted on quadrat data obtained from the survey to determine the similarities or differences in floristic composition between vegetation associations. The dendrogram, two-way table and ordination graph generated from the PATN statistical analysis is provided in Appendix F. A list of the 40 quadrats and their respective vegetation associations are provided in Table 4-5. The PATN analysis produced a stress value of 0.1876.

Table 4-5: Vegetation communities with corresponding quadrats

Vegetation Type	Vegetation Code	Quadrats
Mixed Eucalypt open woodland over *Acacia acuminata* tall shrubs over *Scaevola spinescens* and *Dodonaea lobulata* mid sparse shrubland over *Ptilotus obovatus* low open shrubland on clay loam plain.	CLP-EW2	BC1, BC4, Q13, Q14,Q16, Q22,
Low open forest of *Acacia acuminata* over mid isolated shrubs of *Acacia tetragonophylla* over low isolated shrubs of *Enchylaena tomentosa* on rocky slope.	RH-AFW1	BC9
Eucalyptus torquata low open woodland over mid sparse shrubland of *Eremophila oldfieldii* subsp. *angustifolia* over low open shrubland of *Olearia muelleri* on rocky hillslope.	RH-EW1	BC, BC3, BC7, Q5, Q7, Q9, Q10, Q12, Q18, Q20, Q21
Mixed Eucalypt open woodland over *Eremophila scoparia, Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* mid sparse shrubland over *Ptilotus obovatus* and *Olearia muelleri* low open shrubland on clay loam plain.	CLP-EW1/2	BC10, BC13, BC14, BC15, BC16, Q47
Eucalyptus salmonophloia open woodland over *Atriplex nummularia* tall sparse shrubs over mixed *Eremophila* and *Senna artemisioides* subsp. *filifolia* mid sparse shrubland over *Atriplex vesicaria, Maireana trichoptera* and *Maireana sedifolia* low open shrubland on clay loam plain.	CLP-EW1	BC5, BC6, BC12, Q1, Q2, Q3, Q4, Q11, Q15, Q17, Q19, Q48
Mixed Eucalypt open woodland over *Atriplex nummularia* and *Eremophila interstans* subsp. *interstans* tall sparse shrubs over *Enchylaena tomentosa, Maireana tomentosa* and *Olearia muelleri* low open shrubland on clay loam plain and/or rocky hillslope.	RH-EW1/ CLP-EW1	BC8, BC11, Q6, Q8

A total of six species groups were identified in the analysis (species group A to F) as shown in the two-way table (Appendix F). Field based observations of vegetation type delineations were mostly supported by the results of the PATN analysis.

The first floristic group was characterised by species groups A and D (see two-way table provided in Appendix F), with an average species richness of 11 taxa per quadrat (ranged from eight to 13 taxa per quadrat).

The second floristic group was characterised by species groups A and D (Appendix F), with only one quadrat, species richness was five.

The third floristic group was characterised by species group D, with an average species richness of 18 taxa per quadrat (ranged from 13 to 24 taxa per quadrat).

The fourth floristic group was characterised by species group D and F, with an average species richness of 18 taxa per quadrat (ranged from 12 to 26 taxa per quadrat).

The fifth floristic group was characterised by species group D and E, with an average species richness of 17 taxa per quadrat (ranged from 13 to 23 taxa per quadrat).

The sixth floristic group was characterised by species group D and E, with an average species richness of 11 taxa per quadrat (ranged from nine to 13 taxa per quadrat).

4.2.4 Species Richness and Accumulation Estimates

A total of 125 species were recorded within the 40 quadrats. The Chao 2 richness estimator provided an estimated species richness of 135 species in 50 sample sites (quadrats). A species accumulation curve was created to display the rate of species accumulation. The R^2 value (0.99) suggests that the data "fits" the species accumulation curve shown in Figure 11. Species accumulation ranged from twelve to three species per quadrat from 1-15 sample sites, two species per quadrat between 16-27 sample sites, and one species for sample sites 28 and beyond. Botanica has determined that according to this data, enough quadrats were established in the survey area to adequately assess the floristic composition of the area.

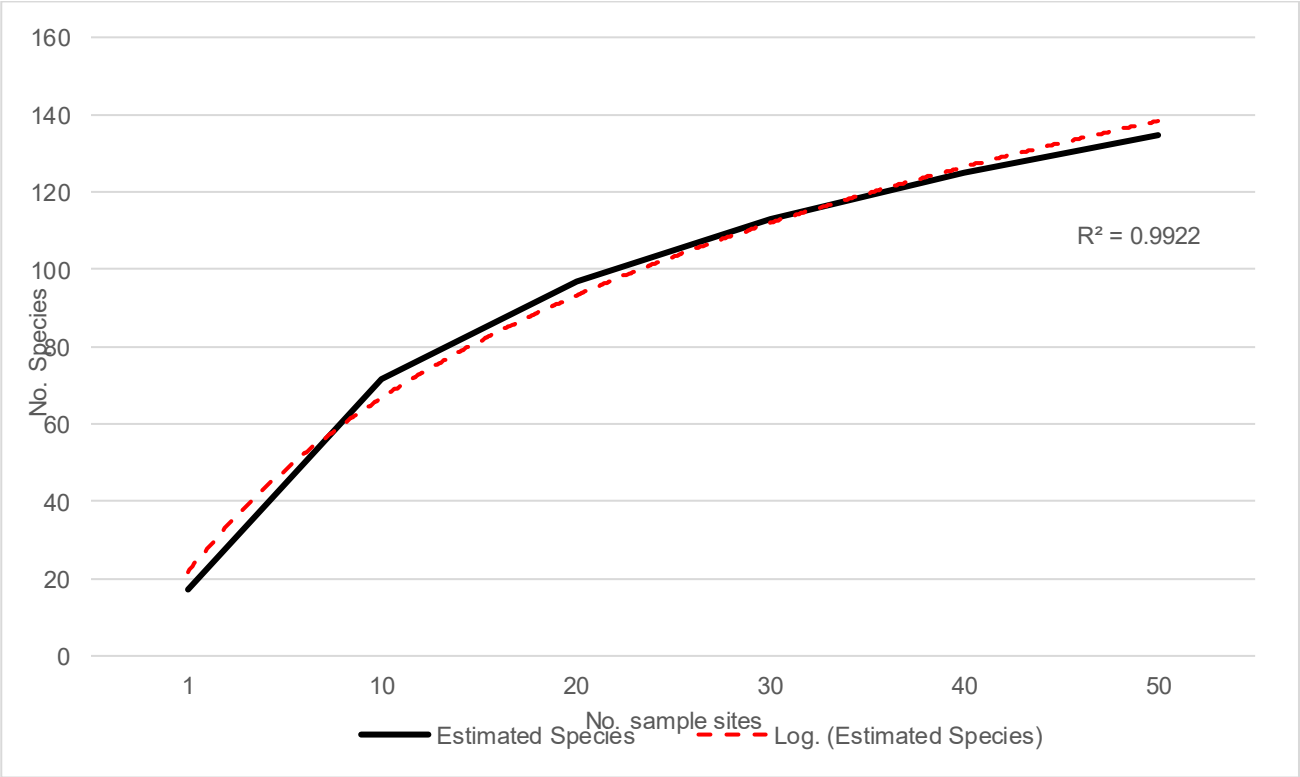


Figure 11: Species accumulation curve

4.2.4.1 Vegetation Condition

Based on the vegetation condition rating scale adapted from Keighery (1994) and Trudgen, (1988), native vegetation within the survey area was rated as 'Excellent' to 'Good' to 'very good', with cleared areas considered 'Completely degraded' (Table 4-6, Figure 12). Vegetation condition rating descriptions are listed in Appendix E. Disturbances within the survey area include previous mining and exploration activities, pastoral land use and occasional weeds and vehicle tracks.

Table 4-6: Vegetation condition rating within the survey area

Condition rating	Description (EPA, 2016a)	Area (ha)	Area (%)
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	485.4	9.2
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.	2,952.3	55.8
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impacts on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.	478.4	9.0
Degraded	Basic vegetation structure impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires and the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	98.7	1.9
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e., areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.	1,273.2	24.1
	Total	**5,288**	**100**

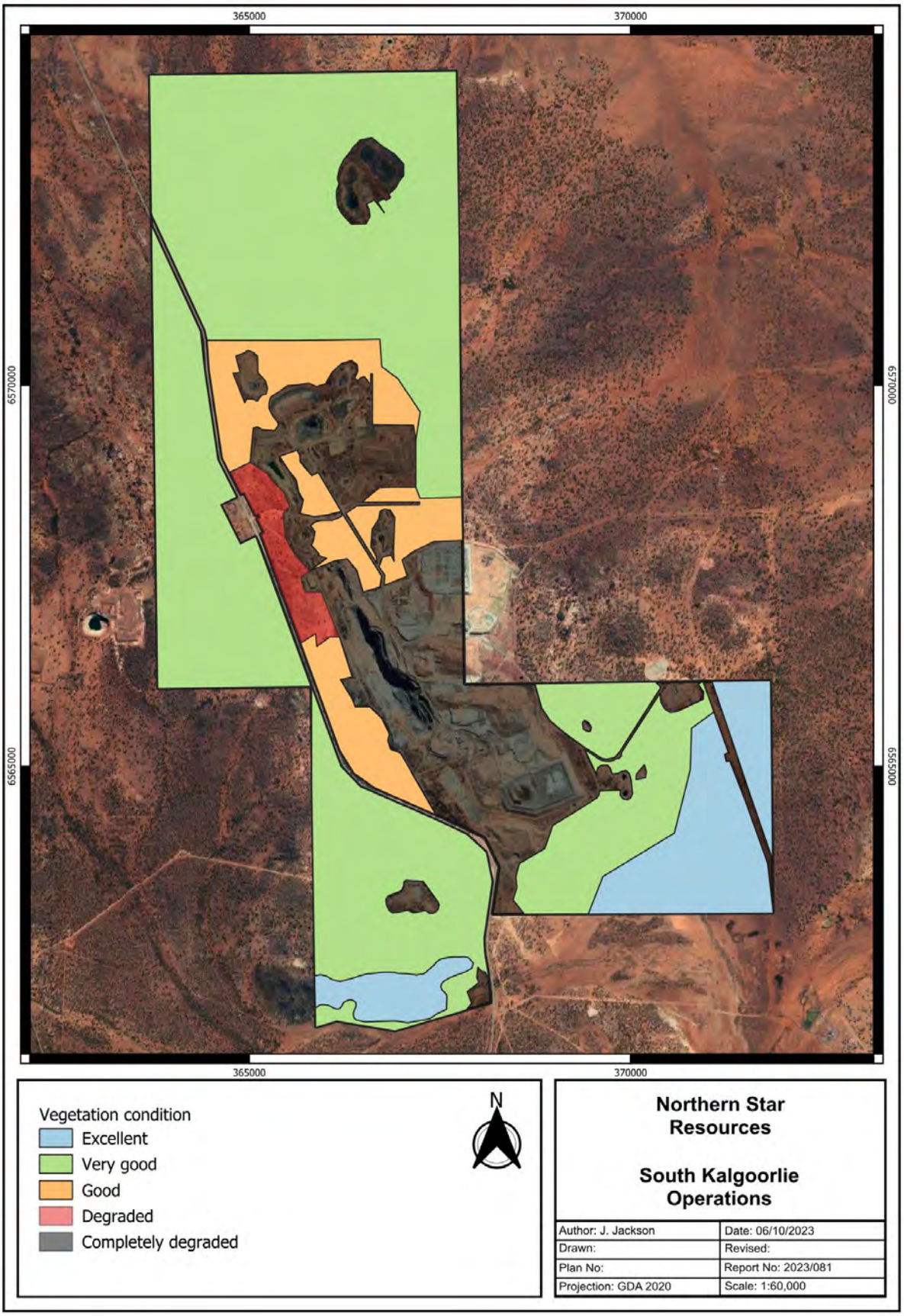


Figure 12: Vegetation condition within the survey area.

4.2.4.2 Significant Vegetation

According to the EPA *Environmental Factor Guideline for Flora and Vegetation* (EPA, 2016b) significant vegetation includes:

- vegetation being identified as threatened or priority ecological communities;
- vegetation with restricted distribution;
- vegetation subject to a high degree of historical impact from threatening processes;
- vegetation which provides a role as a refuge; and
- vegetation providing an important function required to maintain ecological integrity of a significant ecosystem.

No TECs listed under State or Commonwealth legislation were identified within the survey area.

No PECs or other significant vegetation (as described above) was identified within the survey area.

4.2.5 Fauna

4.2.5.1 Fauna Habitat

Based on vegetation and associated landforms identified during the flora and vegetation assessment, three broad scale terrestrial fauna habitats were identified as occurring within the survey area. Table 4-8 provides the area and a visual representation of fauna habitat types, and the extent of fauna habitats are shown spatially in **Error! Reference source not found.**.

No evidence of conservation significant fauna was observed.

4.2.5.2 Opportunistic Fauna Observations

During the field survey opportunistic observations of fauna species were made with thirteen fauna species observed (including three introduced '*' fauna) (Table 4-7).

Table 4-7: Fauna species observed during the field survey

Taxon	Common Name	Comments
Birds		
Anthochaera carunculata	Red wattlebird	Heard
Barnardius zonarius	Australian ringneck	Observed
Cinclosoma castanotum	Chestnut quail-thrush	Observed
Corvus coronoides	Australian raven	Observed
Dromaius novahollandiae	Emu	Tracks observed
Gymnorhina tibicen	Australian magpie	Observed
Malurus splendens	Splendid Fairy-wren	Heard
Pardalotus striatus	Striated pardalote	Heard

Taxon	Common Name	Comments
Pomatostomus superciliosus	White-browed babbler	Heard
Mammals		
*Bos taurus**	Cattle	Tracks observed
*Capra hircus**	Goat	Observed
Macropus fuliginosus	Western grey kangaroo	Observed
Oryctolagus cuniculus *	Rabbit	Scats and burrows seen

Table 4-8: Main terrestrial fauna habitats within the survey area

Fauna Habitat	Description	Representative Fauna Attributes	Example Image
Rocky Hillslope, Low Eucalypt and/or Acacia Woodlands Area= 680.9 ha (14.8%)	Low open Acacia/Eucalyptus woodlands over a mid shrub layer of Eremophila/Melaleuca/Santalum/Senna/Dodonaea/ Acacia over a low open shrubland of Westringia/ Olearia/ Ptilotus on rocky hillslopes.	• Ground not suited to burrowing species. • Moderate diversity vegetation strata supporting avifauna. • Low vegetation density and leaf litter. • Potential refuge for small fauna under rocks.	
Clay loam plain, low open woodlands Area= 3166.7 ha (55.8%)	Low open mixed Eucalyptus and Casuarina woodlands over a mid shrub layer of Atriplex/ Eremophila/ Senna over mixed low shrublands of Ptilotus/ Olearia/ Atriplex on clay-loam plains.	• Ground moderately suited to burrowing species. • Moderate to high diversity vegetation strata supporting avifauna assemblage. • Moderate vegetation density and leaf litter, providing good refuge for reptiles.	

Fauna Habitat	Description	Representative Fauna Attributes	Example Image
Open depression, chenopod shrublands Area= 167.2 ha (5.2%)	Mixed sparse shrublands of Acacia/ Melaleuca over moderate density mid to lower layer of chenopod shrubs in open depression with a sandy clay substrate.	• Ground has moderate suitability to burrowing species. • High potential refuge for small fauna (e.g, reptiles) under shrubs. • Low diversity vegetation strata. • Low vegetation density and leaf litter. • Chenopod shrubs provide a food source to avifauna during drought conditions.	
Cleared Area= 1273.2 ha (24.2%)	N/A	• N/A	

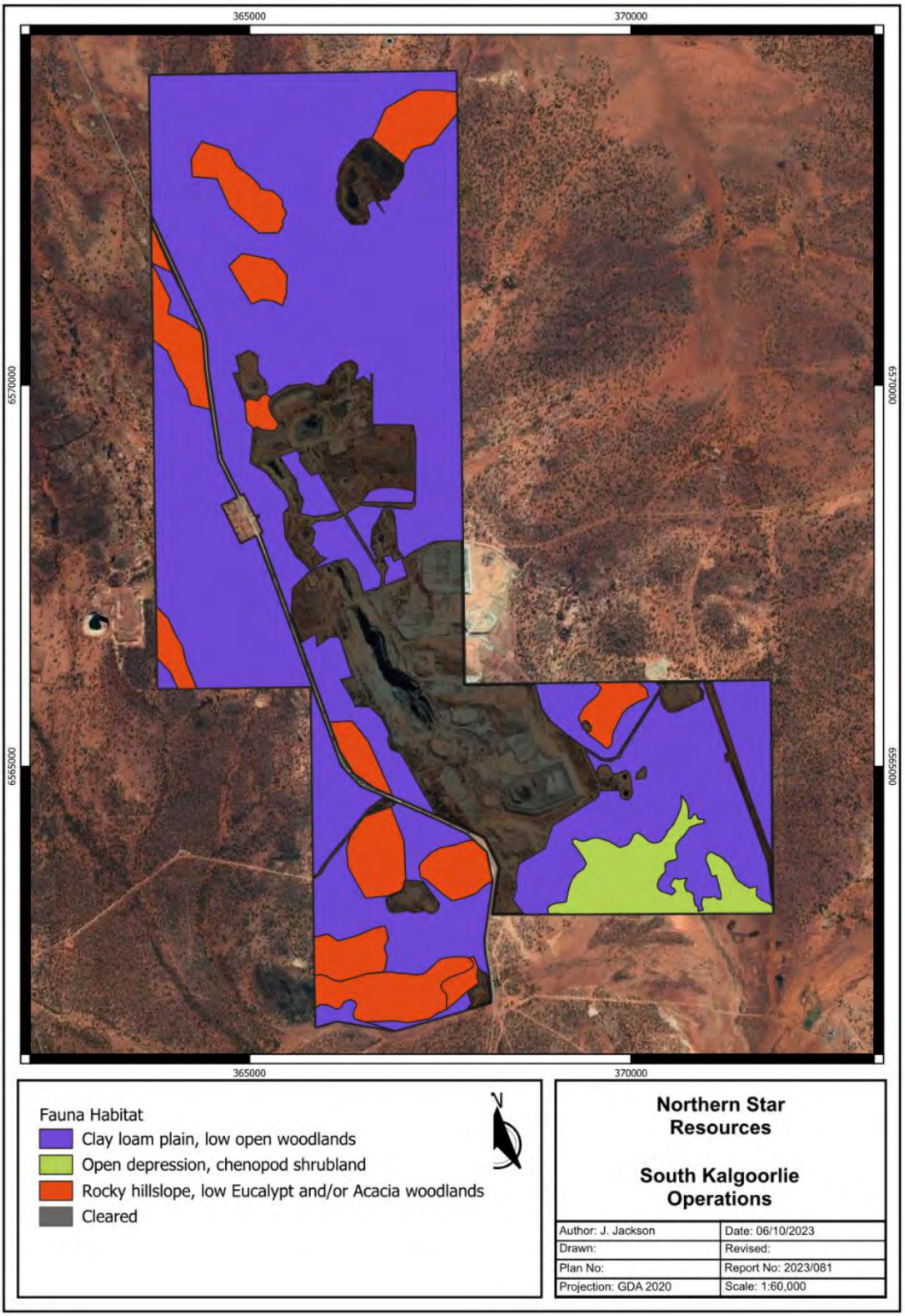


Figure 13: Fauna Habitats within the survey area

4.2.5.3 Significant Fauna

According to the EPA *Environmental Factor Guideline for Terrestrial Fauna* (EPA, 2016c) significant fauna includes:

- Fauna being identified as a Threatened or Priority species;
- Fauna species with restricted distribution;
- Fauna subject to a high degree of historical impact from threatening processes; and
- Fauna providing an important function required to maintain the ecological integrity of a significant ecosystem.

The fauna species of conservation significance that were identified from the desktop review to possibly occur in the survey area were further assessed for the likelihood of them utilising the Survey area based on direct on ground observations.

- **Malleefowl (*Leipoa ocellata*) - Vulnerable (EPBC Act and BC Act)**

  This species is occasionally recorded in the Eastern Goldfields subregion. No evidence of malleefowl was observed, and the majority of habitat within the survey area appears unsuitable for breeding due to the open density of the vegetation and sparse amounts of leaf litter observed.

- **Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act and BC Act)**

  This species is sparsely recorded throughout inland Australia. Suitable habitat may be present but is unlikely to represent critical habitat. Significant impact unlikely.

- **Arid bronze azure butterfly (*Ogyris subterrestris petrina)* -Critically Endangered (EPBC Act and BC Act)**

  The nearest known population is 20 km to the northwest; however, it hasn't been seen there since 1992. Unlikely to be present at the site.

- **Inland Hairstreak (*Jalmenus aridus)* - Priority 1**

  Little is known about this species, therefore it is difficult to determine its presence or otherwise at this site.

4.3 Matters of National Environmental Significance

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act protects Matters of National Environmental Significance (MNES) and is used by the Commonwealth DAWE to list threatened taxa and ecological communities into categories based on the criteria set out in the EPBC Act (www.environment.gov.au/epbc/index.html). The EPBC Act provides a national environmental assessment and approval system for proposed developments and

enforces strict penalties for unauthorised actions that may affect matters of national environmental significance. MNES as defined by the Commonwealth EPBC Act include:

- Nationally threatened flora and fauna species;
- World heritage properties;
- National heritage places;
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed);
- Nationally threatened ecological communities;
- Commonwealth marine area;
- The Great Barrier Reef Marine Park; and
- Nuclear actions (including uranium mining) a water resource, in relation to coal seam gas development and large coal mining development.

No MNES were identified within the survey area.

4.4 Matters of State Environmental Significance

4.4.1 *Environmental Protection Act 1986* (WA)

The EP Act provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment. The Act is administered by The Department of Water and Environment Regulation (DWER), which is the State Government's environmental regulatory agency.

Under Section 51C of the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations (Regulations) 2004* (WA) any clearing of native vegetation in Western Australia that is not eligible for exemption under Schedule 6 of the EP Act or under the Regulations requires a clearing permit from the DWER or the Department of Mines, Industry Regulation and Safety (DMIRS). Under Section 51A of the EP Act native vegetation includes aquatic and terrestrial vegetation indigenous to Western Australia, and intentionally planted vegetation declared by regulation to be native vegetation, but not vegetation planted in a plantation or planted with commercial intent. Section 51A of the EP Act defines clearing as "the killing or destruction of; the removal of; the severing or ringbarking of trunks or stems of; or the doing of substantial damage to some or all of the native vegetation in an area, including the flooding of land, the burning of vegetation, the grazing of stock or an act or activity that results in the above". Exemptions under Schedule 6 of the EP Act and the EP Regulations do not apply in ESAs as declared under Section 51B of the EP Act or TEC listed under State and Commonwealth legislation.

No Environmentally Sensitive Areas were identified within the survey area.

4.4.2 *Biodiversity Conservation Act 2016*

The BC Act is used by the Western Australian DBCA for the conservation and protection of biodiversity and biodiversity components in Western Australia and to promote the ecologically sustainable use of biodiversity components in the State. Taxa are classified as 'Threatened" when their populations are geographically restricted or are threatened by local processes (see following sections for Threatened definitions). Under the BC Act all native flora and fauna are protected throughout the State. Financial penalties are enforced under the BC Act if threatened species are collected without an appropriate licence.

Under Section 54(1) of the BC Act, habitat is eligible for listing as critical habitat if:

a) it is critical to the survival of a threatened species or a threatened ecological community; and
b) its listing is otherwise in accordance with the ministerial guidelines.

No threatened flora species or critical habitat listed under the BC Act were recorded within the survey area.

4.5 Other Areas of Conservation Significance

The DBCA lists 'Priority' species and communities which are under consideration for declaration as 'Threatened' under the BC Act. These Priority species/ communities have no formal legal protection until they are endorsed by the Minister as being Threatened. No Priority flora or PECs were identified in the survey area.

There are no wetlands of international importance (Ramsar Wetlands) or national importance (Australian Nature Conservation Agency Wetlands) within the survey area.

There are no proposed nor gazetted conservation reserves within the survey area. The nearest gazetted conservation reserve is the Kambalda Nature Reserve (R33300), located approximately nine km south of the survey area.

4.6 Native Vegetation Clearing Principles

Based on the outcomes from the survey undertaken, Botanica assessed the results of the desktop and field survey with regards to the native vegetation clearing principles listed under Schedule 5 of the EP Act (Table 4-9). The assessment found that the proposed vegetation clearing activities may be at variance with clearing principle (f).

Table 4-9: Assessment against native vegetation clearing principles

Letter	Principal Native vegetation should not be cleared if it:	Assessment	Outcome
(a)	comprises a high level of biological diversity.	Vegetation identified within the survey area is not considered to be of high biological diversity and is well represented outside of the survey area.	Clearing is not at variance with this principle
(c)	includes, or is necessary for the continued existence of rare flora.	No Threatened Flora taxa, pursuant to the BC Act and the EPBC Act were identified within the survey area.	Clearing is not at variance with this principle
(d)	comprises the whole or part of or is necessary for the maintenance of a threatened ecological community (TEC).	No TEC listed under the EPBC Act or by the BC Act occur within the survey area or within 40 km.	Clearing is not at variance with this principle
(e)	is significant as a remnant of native vegetation in an area that has been extensively cleared	The Vegetation associations within the survey area retain >93% of their pre-European extent, and development within the survey area will not significantly reduce the current extent of these vegetation associations.	Clearing is not at variance with this principle
(f)	is growing, in, or in association with, an environment associated with a watercourse or wetland	There are no permanent/ perennial inland waters or drainage lines within the survey area. There are several minor ephemeral drainage lines occurring through the survey area.	Clearing may be at variance with this principle
(g)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The survey area and surrounding region has not been extensively cleared. Clearing within the survey area is not considered likely to lead to land degradation issues such as salinity, water logging or acidic soils.	Clearing is not at variance with this principle
(h)	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The nearest gazetted conservation reserve is the Kambalda Nature Reserve, located approximately nine km south of the survey area. Clearing within the survey area will not impact this Reserve.	Clearing is not at variance with this principle
(i)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	No surface water bodies are located within the survey area. There are several minor ephemeral drainage lines occurring through the survey area. Clearing within the survey area is not likely to impact underground water.	Clearing is unlikely to be at variance with this principle
(j)	Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	Rainfall in the Eastern Goldfields subregion has an average rainfall of 200 to 300mm. Rainfall events are unlikely to result in localised flooding. Clearing within the survey area is not likely to increase the incidence or intensity of flooding within the survey area or surrounds.	Clearing is unlikely to be at variance with this principle

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APPENDIX A:
CONSERVATION RATINGS BC ACT AND EPBC ACT

Definitions of Conservation Significant Species

Code	Category
State categories of Threatened and Priority species	
Threatened Species (T) Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as Threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act).	
CR	**Critically Endangered** Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
EN	**Endangered** Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
VU	**Vulnerable** Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.
Extinct species Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.	
EX	**Extinct** Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.
EW	**Extinct in the Wild** Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no Threatened fauna or Threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
Specially protected species Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.	
IA	**International Agreement/ Migratory** Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Code	Category
	Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
CD	**Species of special conservation interest** Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as Threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
OS	**Other specially protected species** Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
Priority species Possibly Threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of Priority for survey and evaluation of conservation status so that consideration can be given to their declaration as Threatened Fauna or Flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.	
P1	**Priority 1: Poorly-known species** Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
P2	**Priority 2: Poorly-known species** Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
P3	**Priority 3: Poorly-known species** Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
P4	**Priority 4: Rare, Near Threatened and other species in need of monitoring** (a) Rare. Species 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 species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
Commonwealth categories of Threatened species	

Code	Category
EX	**Extinct** Taxa where there is no reasonable doubt that the last member of the species has died.
EW	**Extinct in the Wild** Taxa where it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CR	**Critically Endangered** Taxa that are facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
EN	**Endangered** Taxa which are not critically endangered and is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
VU	**Vulnerable** Taxa which are not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which are the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.

Definitions of Conservation Significant Communities

Category Code	Category
State categories of Threatened Ecological Communities (TEC)	
PD	**Presumed Totally Destroyed**
	An ecological community will be listed as Presumed Totally Destroyed if there are no recent records of the community being extant and either of the following applies:
	• records within the last 50 years have not been confirmed despite thorough searches or known likely habitats or;
	• all occurrences recorded within the last 50 years have since been destroyed.
CR	**Critically Endangered**
	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, meeting any one of the following criteria:
	The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification;
	The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area;
	The ecological community is highly modified with potential of being rehabilitated in the immediate future.
EN	**Endangered**
	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. The ecological community must meet any one of the following criteria:

Category Code	Category
	The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short-term future, or is unlikely to be substantially rehabilitated in the short-term future due to modification;
	The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area;
	The ecological community is highly modified with potential of being rehabilitated in the short-term future.
VU	**Vulnerable**
	An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet any one of the following criteria:
	The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated;
	The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution;
	The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.
Commonwealth categories of Threatened Ecological Communities (TEC)	
CE	**Critically Endangered** If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
EN	**Endangered** If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
VU	**Vulnerable** If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).
Priority Ecological Communities	
P1	**Poorly-known ecological communities**
	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.
P2	**Poorly-known ecological communities**
	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, un-allocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.
P3	**Poorly known ecological communities**
	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:
	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;
	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 and inappropriate fire regimes.
P4	**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.
P5	**Conservation Dependent ecological communities**
	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.

APPENDIX B:
POTENTIALLY OCCURRING INTRODUCED (WEED) FLORA SPECIES

Scientific name	Common name	Declared	WONS
Agave americana	Century plant	N	N
Alhagi maurorum	Camel thorn	Y	N
Alyssum linifolium	Flax-leaf Alyssum	N	N
Amaranthus viridis	Green Amaranth	N	N
Arctotheca calendula	Cape weed	N	N
Argemone ochroleuca subsp. *ochroleuca*	Mexican Poppy	N	N
Asclepias curassavica	Redhead Cottonbush	N	N
Brassica tournefortii	Mediterranean Turnip	N	N
Bryophyllum delagoense	Mother-of-millions	N	N
Buglossoides arvensis	Corn gromwell	N	N
Capsella bursa-pastoris	Shepherd's purse	N	N
Carduus tenuiflorus	Sheep thistle	N	N
Carrichtera annua	Ward's weed	N	N
Carthamus lanatus	Saffron thistle	N	N
Cenchrus ciliaris	Buffel Grass	N	N
Cenchrus longisetus	feathertop	N	N
Cenchrus setaceus	Fountain Grass	N	N
Centaurea melitensis	Maltese cockspur	N	N
Chenopodium album	Fat hen	N	N
Chenopodium murale	Nettle-leaf Goosefoot	N	N
Cichorium intybus	Chicory	N	N
Citrullus amarus	Citron melon	N	N
Citrullus colocynthis	Bitter apple	N	N
Cucumis myriocarpus subsp. *myriocarpus*	Paddy melon	N	N
Cylindropuntia fulgida var. *mamillata*	Boxing Glove cactus	Y	Y
Cylindropuntia imbricata	Devils rope	Y	Y
Cylindropuntia kleiniae	Kleins cholla	Y	Y
Cylindropuntia tunicata	Hudson pear	Y	Y
Datura innoxia	Downy Thorn-Apple	N	N
Echium plantagineum	Paterson's Curse	Y	N
Ehrharta villosa	Pyp Grass	N	N
Eragrostis curvula	African love grass	N	N
Erigeron bonariensis	Hairy Horseweed	N	N
Erigeron sumatrensis	Fleabane	N	N
Erodium cicutarium	Common storksbill	N	N
Gazania linearis	Treasure Flower	N	N
Glandularia aristigera	Moss verbena	N	N
Helianthus annuus	Sunflower	N	N
Heliotropium europaeum	Common Heliotrope	N	N
Hordeum glaucum	Northern Barley Grass	N	N
Hordeum leporinum	Barely Grass	N	N
Lactuca serriola forma serriola	Prickly lettuce	N	N
Lantana camara	Common Lantana	Y	Y
Leontodon rhagadioloides	Cretan Weed	N	N
Lepidium africanum	Rubble Peppercress	N	N
Limonium sinuatum	Perennial Sea Lavender	N	N
Lycium ferocissimum	African Boxthorn	N	Y
Lysimachia arvensis	Pimpernel	N	N
Lythrum hyssopifolia	Lesser Loosestrife	N	N
Malva parviflora	Marshmallow	N	N
Medicago laciniata	Cutleaf Medic	N	N
Medicago minima	Small burr-medic	N	N
Medicago polymorpha	Burr Medic	N	N
Melia azedarach	White Cedar	N	N
Mesembryanthemum crystallinum	Iceplant	N	N
Mesembryanthemum nodiflorum	Slender Iceplant	N	N

Scientific name	Common name	Declared	WONS
Monoculus monstrosus	Stinking Roger	N	N
Nicotiana glauca	tree tobacco	N	N
Oligocarpus calendulaceus	No common name	N	N
Oncosiphon suffruticosum	Calomba daisy	N	N
Opuntia elata	Riverian pear	Y	Y
Opuntia ficus-indica	Indian fig, Prickly pear	Y	Y
Orbea variegata	Toad plant	N	N
Oxalis bowiei	Bowie Wood Sorrel	N	N
Oxalis pes-caprae	Soursob	N	N
Papaver hybridum	Rough poppy	N	N
Phalaris paradoxa	Paradoxa Grass	N	N
Phyla canescens	Carpet weed	N	N
Polygonum aviculare	Wireweed	N	N
Portulaca oleracea	Purslane	N	N
Portulacaria afra	Elephant bush	N	N
Proboscidea louisianica	Purple Flower Devil's Claw	Y	N
Reseda luteola	Wild mingonette	N	N
Rostraria pumila	Roughtail	N	N
Rumex vesicarius	Ruby dock	N	N
Salvia reflexa	Mintweed	N	N
Salvia verbenaca	Wild Sage	N	N
Schinus molle var. *areira*	Pepper tree	N	N
Schismus arabicus	Araby grass	N	N
Schismus barbatus	Kelch grass	N	N
Sisymbrium erysimoides	smooth mustard	N	N
Sisymbrium irio	London rocket	N	N
Sisymbrium orientale	Indian hedge mustard	N	N
Solanum nigrum	Black Berry Nightshade	N	N
Sonchus oleraceus	Common Sow-thistle	N	N
Sorghum halepense	Johnson Grass	N	N
Spergularia diandra	Lesser sand spurry	N	N
Symphyotrichum squamatum	Bushy starwort	N	N
Tamarix chinensis	Five-stamen Tamarisk	Y	N
Tribulus terrestris	Caltrop	N	N
Urochloa panicoides	Liverseed grass	N	N
Urtica urens	small nettle	N	N
Vicia monantha subsp. *triflora*	No common name	N	N
Xanthium spinosum	Bathurst burr	Y	N

APPENDIX C:
LIST OF SPECIES IDENTIFIED WITHIN THE SURVEY AREA

(W) denotes introduced (weed) species; (A) denotes ephemeral (annual) species.

Genus	Species	RH-EW*	RH-AW*	CLP-EW*	CLP-EW2	CLP-AW*	RP-CW*	OD-CS*
Aizoaceae	*Gunniopsis intermedia*							*
Aizoaceae	*Gunniopsis quadrifida*							*
Aizoaceae	*Mesembryanthemum nodiflorum* (A) (W)			*				
Amaranthaceae	*Ptilotus carlsonii* (A)					*		
Amaranthaceae	*Ptilotus exaltatus* (A)			*				
Amaranthaceae	*Ptilotus obovatus*	*	*	*	*	*	*	*
Apocynaceae	*Vincetoxicum lineare* (A)		*	*				*
Apocynaceae	*Alyxia buxifolia*	*		*	*			
Apocynaceae	*Leichhardtia australis*	*	*	*		*	*	*
Asparagaceae	*Thysanotus manglesianus* (A)					*		*
Asteraceae	*Chrysocephalum puteale*							
Asteraceae	*Cratystylis conocephala*							*
Asteraceae	*Cratystylis microphylla*							*
Asteraceae	*Cratystylis subspinescens*			*				*
Asteraceae	*Olearia muelleri*	*		*	*		*	*
Asteraceae	*Olearia pimeleoides*						*	*
Asteraceae	*Panaetia lessonii*		*					
Asteraceae	*Rhodanthe oppositifolia* subsp. *oppositifolia* (A)			*				
Asteraceae	*Trichanthodium skirrophorum* (A)		*	*				
Asteraceae	*Waitzia acuminata* (A)		*					
Brassicaceae	*Lepidium oxytrichum* (A)			*				
Casuarinaceae	*Casuarina pauper*	*		*			*	
Chenopodiaceae	*Atriplex codonocarpa* (A)			*				
Chenopodiaceae	*Atriplex nummularia* subsp. *spathulata*	*	*	*			*	*
Chenopodiaceae	*Atriplex stipitata*			*				
Chenopodiaceae	*Atriplex vesicaria*	*	*	*				*
Chenopodiaceae	*Chenopodium gaudichaudianum*							*
Chenopodiaceae	*Enchylaena tomentosa*	*		*		*		
Chenopodiaceae	*Eriochiton sclerolaenoides*	*		*				*
Chenopodiaceae	*Maireana amoena*							*
Chenopodiaceae	*Maireana georgei*	*		*	*	*	*	*
Chenopodiaceae	*Maireana glomerifolia*							*
Chenopodiaceae	*Maireana pentatropis*	*		*				*

Genus	Species	RH-EW*	RH-AW*	CLP-EW*	CLP-EW2	CLP-AW*	RP-CW*	OD-CS*
Chenopodiaceae	*Maireana pyramidata*			*				
Chenopodiaceae	*Maireana sedifolia*	*		*				*
Chenopodiaceae	*Maireana thesioides*							*
Chenopodiaceae	*Maireana tomentosa*	*		*				*
Chenopodiaceae	*Maireana trichoptera*	*		*		*	*	*
Chenopodiaceae	*Maireana triptera*	*		*			*	*
Chenopodiaceae	*Rhagodia drummondii*			*				*
Chenopodiaceae	*Rhagodia eremaea*	*						
Chenopodiaceae	*Sclerolaena cuneata*	*		*				
Chenopodiaceae	*Sclerolaena densiflora*	*	*	*				*
Chenopodiaceae	*Sclerolaena diacantha*	*		*		*		*
Chenopodiaceae	*Sclerolaena eurotioides*							*
Chenopodiaceae	*Sclerolaena patenticuspis*			*				
Chenopodiaceae	*Tecticornia disarticulata*			*				*
Disphyma	*Disphyma crassifolium*							*
Fabaceae	*Acacia acuminata*	*		*	*	*		
Fabaceae	*Acacia collegialis*		*					
Fabaceae	*Acacia donaldsonii*			*	*			*
Fabaceae	*Acacia erinacea*	*					*	
Fabaceae	*Acacia hemiteles*	*					*	
Fabaceae	*Acacia masliniana*							*
Fabaceae	*Acacia tetragonophylla*	*		*	*		*	
Fabaceae	*Senna artemisioides* subsp. *artemisioides*			*				
Fabaceae	*Senna artemisioides* subsp. *filifolia*	*	*	*	*	*	*	*
Fabaceae	*Senna cardiosperma*			*				
Frankeniaceae	*Frankenia pauciflora* var. *pauciflora*			*				*
Geraniaceae	*Erodium crinitum* (A)		*	*		*		*
Goodeniaceae	*Dampiera latealata*		*					
Goodeniaceae	*Goodenia beardiana* (A)							
Goodeniaceae	*Goodenia havilandii* (A)		*					
Goodeniaceae	*Scaevola spinescens*	*		*	*	*	*	*
Haloragaceae	*Haloragis odontocarpa* (A)		*					
Hemerocallidaceae	*Dianella revoluta*			*				*
Lamiaceae	*Prostanthera althoferi*							
Lamiaceae	*Salvia verbenaca* (A) (W)			*				*
Lamiaceae	*Westringia rigida*	*			*			
Loranthaceae	*Amyema gibberula*	*						
Loranthaceae	*Amyema miquelii*					*		
Malvaceae	*Sida calyxhymenia*		*					
Malvaceae	*Sida intricata*		*	*				

Genus	Species	RH-EW*	RH-AW*	CLP-EW*	CLP-EW2	CLP-AW*	RP-CW*	OD-CS*
Malvaceae	*Sida spodochroma*			*				
Montiaceae	*Calandrinia eremaea* (A)							
Myrtaceae	*Eucalyptus ewartiana*		*					
Myrtaceae	*Eucalyptus gracilis*			*				
Myrtaceae	*Eucalyptus griffithsii*	*		*	*	*		
Myrtaceae	*Eucalyptus lesouefii*	*		*				
Myrtaceae	*Eucalyptus oleosa*	*		*	*	*		
Myrtaceae	*Eucalyptus ravida*			*				
Myrtaceae	*Eucalyptus salmonophloia*			*				
Myrtaceae	*Eucalyptus salubris*			*				
Myrtaceae	*Eucalyptus torquata*	*						
Myrtaceae	*Eucalyptus transcontinentalis*	*			*			
Myrtaceae	*Melaleuca pauperiflora*	*						
Myrtaceae	*Melaleuca sheathiana*	*						
Poaceae	*Aristida contorta* (A)			*				
Poaceae	*Austrostipa elegantissima*	*		*				
Poaceae	*Austrostipa nitida*	*	*	*				*
Poaceae	*Triodia scariosa*				*			
Proteaceae	*Grevillea nematophylla*	*						
Pteridaceae	*Cheilanthes sieberi*	*	*					
Rhamnaceae	*Cryptandra aridicola*				*			
Rhamnaceae	*Stenanthemum stipulosum*		*					
Rubiaceae	*Psydrax suaveolens*			*				
Santalaceae	*Exocarpos aphyllus*	*		*			*	
Santalaceae	*Santalum acuminatum*			*				
Santalaceae	*Santalum spicatum*	*			*		*	
Sapindaceae	*Dodonaea adenophora*					*	*	
Sapindaceae	*Dodonaea lobulata*	*	*	*	*	*	*	*
Sapindaceae	*Dodonaea viscosa* subsp. *angustissima*							*
Scrophulariaceae	*Eremophila alternifolia*	*						*
Scrophulariaceae	*Eremophila clarkei*							
Scrophulariaceae	*Eremophila decipiens*			*				*
Scrophulariaceae	*Eremophila decipiens* subsp. *decipiens*			*	*			*
Scrophulariaceae	*Eremophila georgei*		*			*		
Scrophulariaceae	*Eremophila glabra* subsp. *glabra*	*		*			*	
Scrophulariaceae	*Eremophila granitica*						*	
Scrophulariaceae	*Eremophila interstans* subsp. *interstans*	*		*				
Scrophulariaceae	*Eremophila interstans* subsp. *virgata*			*				
Scrophulariaceae	*Eremophila ionantha*			*				
Scrophulariaceae	*Eremophila oldfieldii* subsp. *angustifolia*	*	*	*			*	

Genus	Species	RH-EW*	RH-AW*	CLP-EW*	CLP-EW2	CLP-AW*	RP-CW*	OD-CS*
Scrophulariaceae	*Eremophila oppositifolia*	*			*			
Scrophulariaceae	*Eremophila parvifolia* subsp. *auricampa*	*		*				
Scrophulariaceae	*Eremophila pustulata*	*						
Scrophulariaceae	*Eremophila rugosa*			*				
Scrophulariaceae	*Eremophila scoparia*	*		*				*
Scrophulariaceae	*Myoporum montanum*							*
Scrophulariaceae	*Myoporum platycarpum* subsp. *platycarpum*			*	*			
Solanaceae	*Lycium australe*			*				*
Solanaceae	*Solanum nummularium*	*	*	*				*
Violaceae	*Pigea curvifolia*				*			
Zygophyllaceae	*Roepera aurantiaca* (A)	*	*	*				*
Zygophyllaceae	*Roepera eremaea* (A)			*	*			*

RH: rocky hill; RP: rocky plain; CLP: clay loam plain; OD: open depression; AW: Acacia woodland, EW: Eucalypt woodland, CW: Casuarina woodland; CS: chenopod shrublands.

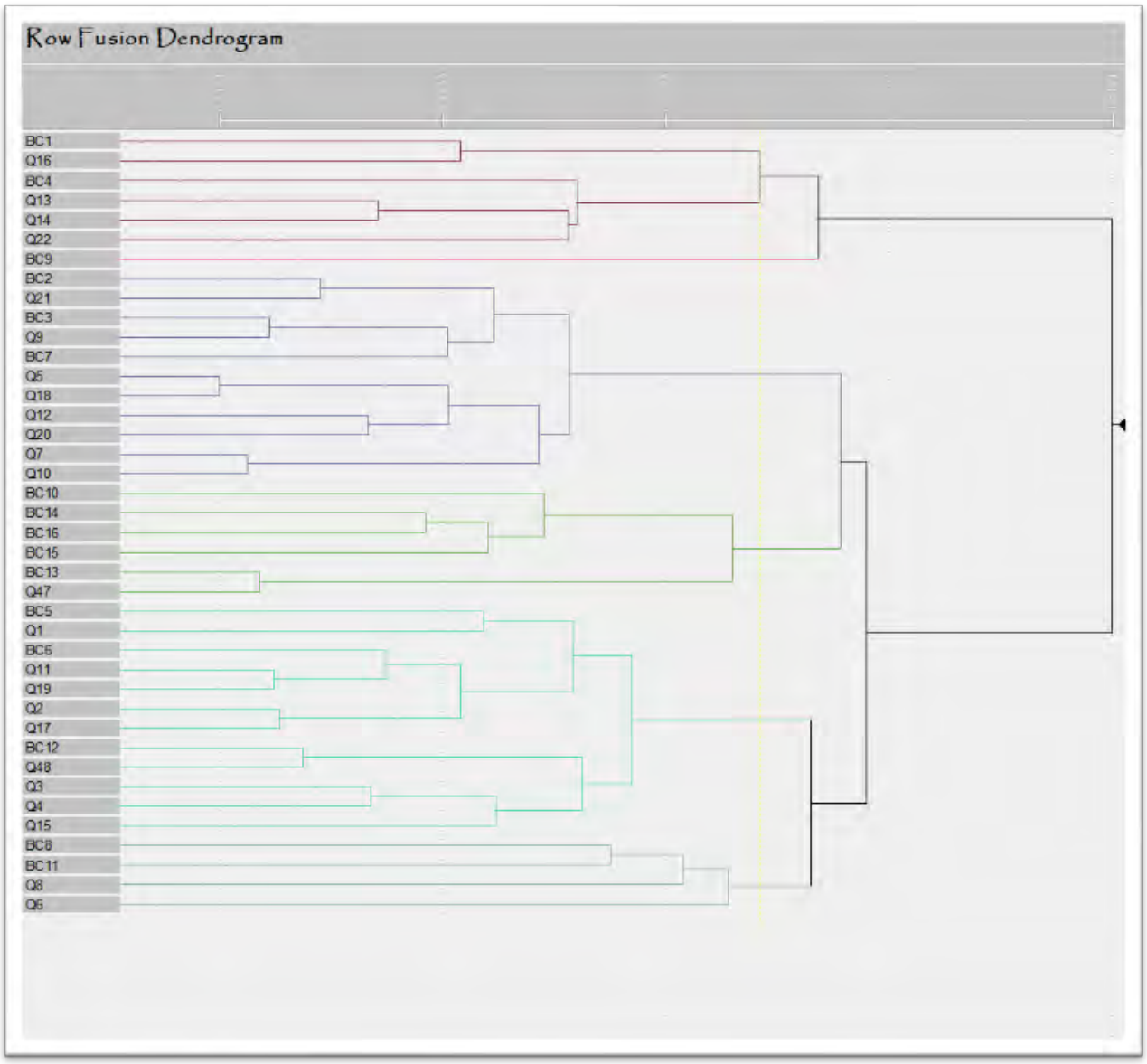
APPENDIX D:
QUADRAT LOCATIONS (GDA2020, ZONE 51)

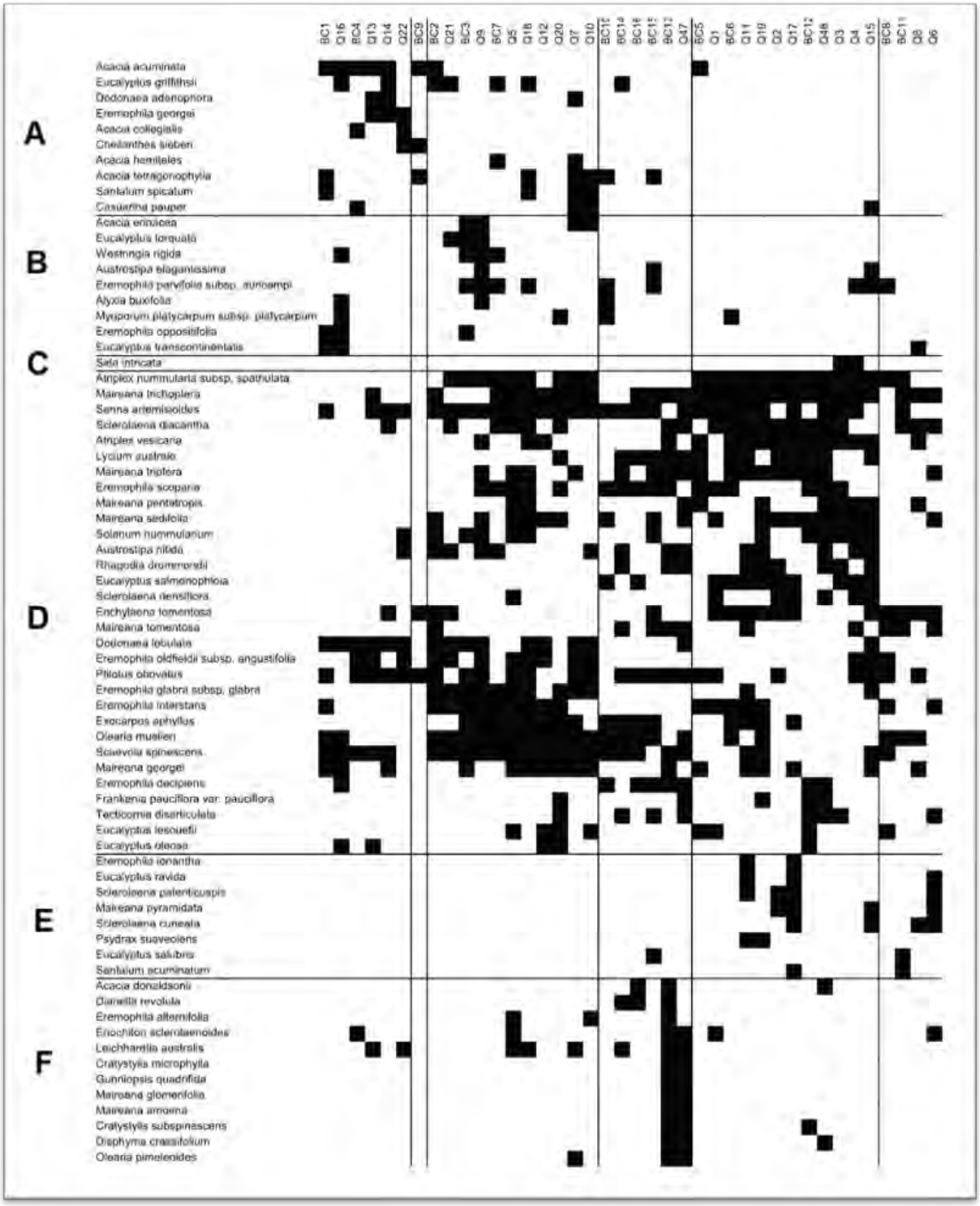
Quadrat	Easting	Northing
NVS 1	367286	6570475
NVS 2	367373	6570202
NVS 3	367266	6569741
NVS 4	366515	6571751
NVS 5	367142	6573380
NVS 6	367354	6569091
NVS 7	365634	6573847
NVS 8	364677	6573654
NVS 9	364897	6572506
NVS 10	364480	6572912
NVS 11	364293	6572158
NVS 12	364992	6571564
NVS 13	365353	6570892
NVS 14	365009	6570604
NVS 15	365899	6567026
NVS 16	363957	6566453
NVS 17	363792	6570180
NVS 18	364272	6570521
NVS 19	363825	6568703
NVS 20	364092	6567140
NVS 21	366582	6565093
NVS 22	366983	6562177
NVS 47	369193	6563150
NVS 48	370063	6563794
BC 1	367445	6571479
BC 2	365012	6569672
BC 3	366734	6564352
BC 4	367583	6563555
BC 5	366312	6561892
BC 6	366586	6562959
BC 7	366074	6562481
BC 8	370047	6565880
BC 9	369689	6565427
BC 10	371469	6566041
BC 11	371285	6565046
BC 12	369393	6564316
BC 13	370687	6564308
BC 14	371719	6563443
BC 15	371587	6564072
BC 16	370590	6564836

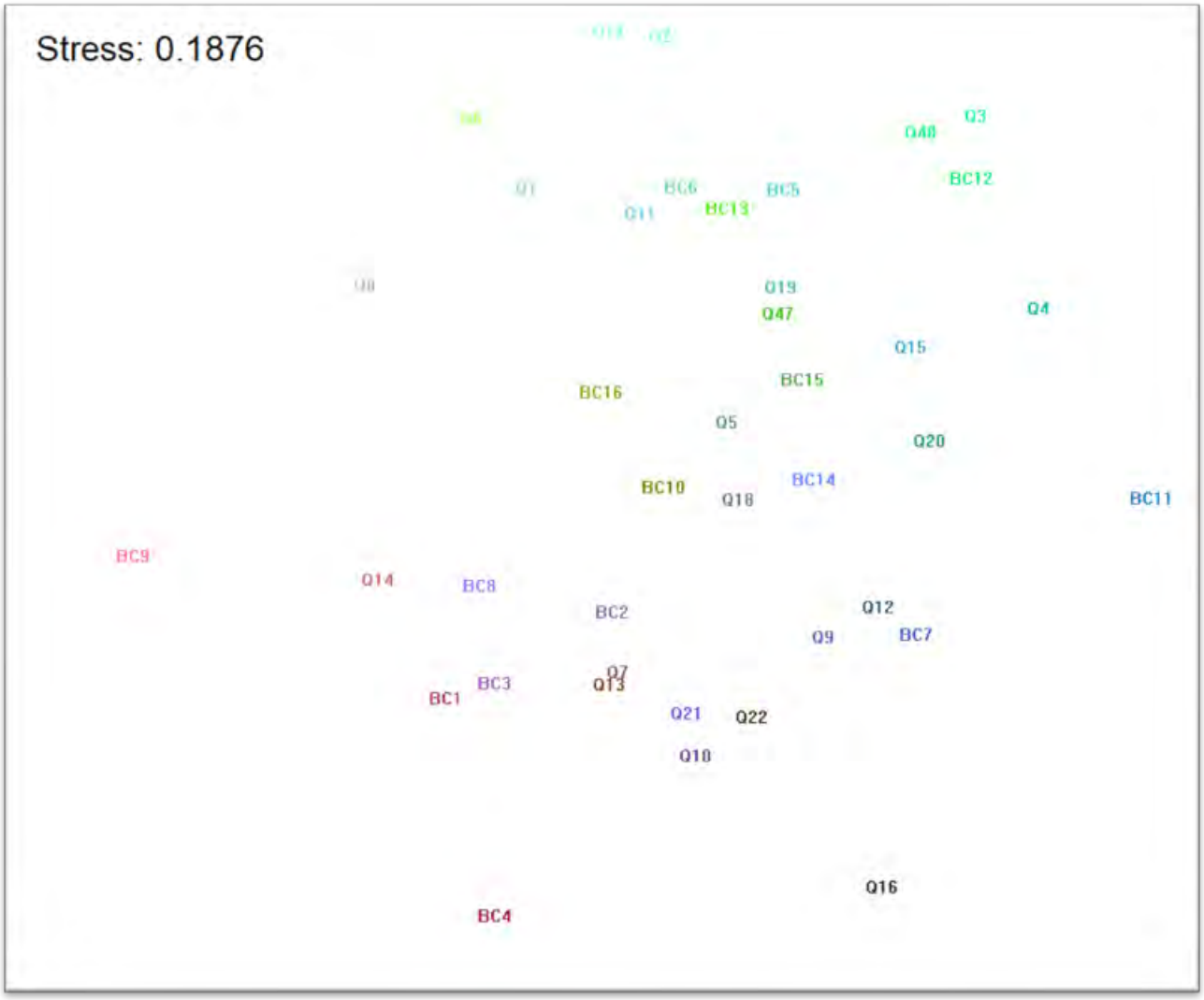
APPENDIX E:
VEGETATION CONDITION RATING

Vegetation Condition Rating	Southwest and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e., areas that are cleared or ‘parkland cleared’ with their flora comprising weed or crop species with isolated native trees or shrubs.

APPENDIX F:
PATN ANALYSIS




BC1 Q16 BC4 Q13 Q14 Q22 BC9 BC7 Q21 BC3 Q9 BC7 Q5 Q18 Q12 Q20 Q7 Q10 BC15 BC14 BC16 BC15 BC12 Q47 BC5 Q1 BC6 Q11 Q19 Q2 Q17 BC12 Q48 Q3 Q4 Q15 BC8 BC11 Q8 Q6
A
Acacia acuminata
Eucalyptus griffithsii
Dodonaea adenophora
Eremophila georgei
Acacia colliegillis
Cheilanthes sieberi
Acacia hemiteles
Acacia tetragonophylla
Santalum spicatum
Casuarina pauper
B
Acacia ennulcea
Eucalyptus torquata
Westringia rigida
Austrostipa elegantissima
Eremophila parvifolia subsp. auriculata
Alyxia buxifolia
Myoporum platycarpum subsp. platycarpum
Eremophila oppositifolia
Eucalyptus transcontinentalis
C
Sida intricata
Atriplex nummularia subsp. spathulata
Maireana trichoptera
Senna artemisioides
Sclerolaena diacantha
Atriplex vesicaria
Lycium australe
Maireana triptera
Eremophila scoparia
Maireana pentatropis
Maireana sedifolia
Solanum nummularium
Austrostipa nitida
Rhagodia drummondii
Eucalyptus salmonophloia
Sclerolaena densiflora
D
Enchylaena tomentosa
Maireana tomentosa
Dodonaea lobulata
Eremophila oldfieldii subsp. angustifolia
Ptilotus obovatus
Eremophila glabra subsp. glabra
Eremophila interstans
Exocarpos aphyllus
Olearia muelleri
Scaevola spinescens
Maireana georgei
Eremophila decipiens
Frankenia pauciflora var. pauciflora
Tecticornia disarticulata
Eucalyptus lesouefii
Eucalyptus oleosa
E
Eremophila ionantha
Eucalyptus ravida
Sclerolaena patenticuspis
Maireana pyramidata
Sclerolaena cuneata
Psydrax suaveolens
Eucalyptus salubris
Santalum acuminatum
F
Acacia donaldsonii
Dianella revoluta
Eremophila alternifolia
Eriochiton sclerolaenoides
Leichhardtia australis
Cratystylis microphylla
Gunniopsis quadrifida
Maireana glomerifolia
Maireana amoena
Cratystylis subspinescens
Disphyma crassifolium
Olearia pimeleoides


Stress: 0.1876
Q3
Q48
BC12
Q1
BC6
BC5
Q11
BC13
Q8
Q19
Q47
Q4
Q15
BC16
BC15
Q5
Q20
BC10
BC14
Q18
BC11
BC9
Q14
BC8
BC2
Q12
Q9
BC7
Q7
BC3
Q13
BC1
Q21
Q22
Q10
Q16
BC4

APPENDIX G:
QUADRAT DATA SHEETS

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 10-12
Quadrat No: NVS Q1	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367286.2E 6570475N		**Accuracy:**
Aspect: south	**Fire (yrs): -**	**Condition rating:** Very good
Landform: Flat**;** Plain**;** No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: No coarse fragments		
Rock outcrop (abundance/runoff): Nil		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Surface crust		
Cover leaf litter: 65%		
Cover bare ground: 30%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 3-6 m	**Height:** 1-3m
Crown cover: 30-70%	**Crown cover:** <10%	**Crown cover:** 30-70%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia *Eucalyptus lesouefii*	*Eremophila interstans* subsp. *interstans*	*Atriplex nummularia* subsp. *spathulata,* *Maireana sedifolia*

ALL TAXA
Atriplex nummularia subsp. *spathulata*
Enchylaena tomentosa
Eremophila interstans subsp. *interstans*
Eremophila scoparia
Eriochiton sclerolaenoides
Eucalyptus lesouefii
Eucalyptus salmonophloia
Maireana sedifolia
Maireana trichoptera
Ptilotus obovatus
Sclerolaena densiflora
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 7-9
Quadrat No: NVS Q2	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):**
Coordinates (GDA94): 367353.5E 6569091N		**Accuracy:**
Aspect:	**Fire (yrs): -**	**Condition rating:** Very good
Landform: Open depression/Drainage depression; no effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: No coarse fragments		
Rock outcrop (abundance/runoff): None exposed/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 15%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Chenopod shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 2-10%	**Crown cover:** 30-70%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila rugosa*	*Sclerolaena diacantha*

ALL TAXA
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Enchylaena tomentosa
Eremophila rugosa
Erodium crinitum (A)
Eucalyptus salmonophloia
Lycium australe
Maireana pyramidata
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Ptilotus obovatus
Rhagodia drummondii
Rhodanthe oppositifolia subsp. *oppositifolia*
Salvia verbenaca (W)
Sclerolaena densiflora
Sclerolaena diacantha
Sclerolaena patenticuspis

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 4-6
Quadrat No: NVS Q3	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):**
Coordinates (GDA94): 366515.2E 6571751N		**Accuracy:**
Aspect:	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly; Coarse gravelly; large pebbles; subrounded		
Rock outcrop (abundance/runoff): None exposed/ very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Surface crust		
Cover leaf litter: 60%		
Cover bare ground: 30%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Forb
Height: 6-12 m	**Height:** 0.5-1 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Maireana sedifolia*	None
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Eremophila scoparia		
Eucalyptus salmonophloia		
Maireana pentatropis		
Maireana sedifolia		
Maireana trichoptera		
Rhagodia drummondii		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Sida intricata		
Solanum nummularium		
Tecticornia disarticulata		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 123
Quadrat No: NVS Q4	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 364896.5E 6572506N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Moderately/ many (20-50%); medium gravelly; subrounded		
Rock outcrop (abundance/runoff): Nil/Very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 10%		
Cover bare ground: 80%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Tussock grass
Height: 6-12 m	**Height:** 1-3 m	**Height:** <0.25
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila oldfieldii* subsp. *angustifolia*, *Atriplex nummularia* subsp. *spathulata*, *Maireana sedifolia*	*Austrostipa nitida*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Austrostipa nitida		
Eremophila oldfieldii subsp. *angustifolia*		
Eremophila parvifolia subsp. *auricampa*		
Eucalyptus salmonophloia		
Maireana pentatropis		
Maireana sedifolia		
Maireana tomentosa		
Maireana trichoptera		
Ptilotus obovatus		
Sclerolaena densiflora		
Senna artemisioides subsp. *filifolia*		
Sida intricata		
Solanum nummularium		
Trichanthodium skirrophorum (A)		
Vincetoxicum lineare (A)		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 13-15
Quadrat No: NVS Q5	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 364293.1E 6572158N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Simple slope/hill slope; grazing by hoofed animals/limited clearing/dry		
Coarse fragments on the surface: Slightly; few/coarse gravelly; subangular		
Rock outcrop (abundance/runoff): Nil/slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 20%		
Cover bare ground: 70%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 3-6 m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Eremophila oldfieldii* subsp. *angustifolia*	*Atriplex nummularia* subsp. *spathulata*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Eremophila alternifolia		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila oldfieldii subsp. *angustifolia*		
Eremophila scoparia		
Eriochiton sclerolaenoides		
Eucalyptus lesouefii		
Exocarpos aphyllus		
Leichhardtia australis		
Maireana georgei		
Maireana pentatropis		
Maireana sedifolia		
Maireana trichoptera		
Maireana triptera		
Olearia muelleri		
Ptilotus obovatus		
Scaevola spinescens		
Sclerolaena densiflora		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 16-18
Quadrat No: NVS Q6	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 364991.9E 6571564N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very abundant/Fine gravelly; small pebbles/Rounded		
Rock outcrop (abundance/runoff): Nil/slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** <10%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus gracilis	*Eremophila interstans* subsp. *virgata*	*Tecticornia disarticulata*

ALL TAXA
Atriplex codonocarpa
Enchylaena tomentosa
Eremophila interstans subsp. *virgata*
Eriochiton sclerolaenoides
Eucalyptus gracilis
Eucalyptus ravida
Maireana pyramidata
Maireana sedifolia
Maireana tomentosa
Maireana trichoptera
Maireana triptera
Sclerolaena cuneata
Sclerolaena diacantha
Sclerolaena patenticuspis
Tecticornia disarticulata

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 51-53
Quadrat No: NVS Q7	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 365353.4E 6570892N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Rocky/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Moderate/many; cobbles (20-60mm); subangular		
Rock outcrop (abundance/runoff): Nil/slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** <1m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Eremophila oldfieldii* subsp. *angustifolia*	*Senna artemisioides* subsp. *filifolia*
ALL TAXA		
Acacia erinacea		
Acacia hemiteles		
Acacia tetragonophylla		
Atriplex nummularia subsp. *spathulata*		
Casuarina pauper		
Dodonaea adenophora		
Dodonaea lobulata		
Eremophila glabra subsp. *glabra*		
Eremophila granitica		
Eremophila oldfieldii subsp. *angustifolia*		
Exocarpos aphyllus		
Leichhardtia australis		
Maireana georgei		
Maireana trichoptera		
Maireana triptera		
Olearia muelleri		
Olearia pimeleoides		
Ptilotus obovatus		
Santalum spicatum		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 51-53
Quadrat No: NVS Q8	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 364272.4E 6570521N		**Accuracy:**
Aspect: South	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Upper slope/Hillslope (top third of the height of the landform element); No effective disturbance except grazing by hoofed animals/tracks and prospecting		
Coarse fragments on the surface: Extremely; Medium gravelly; Rounded		
Rock outcrop (abundance/runoff): Nil/slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 20%		
Cover bare ground: 70%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Forb
Height: 6-12 m	**Height:** 3-6m	**Height:** <0.25m
Crown cover: <10%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus transcontinentalis	*Melaleuca sheathiana*	*Olearia muelleri*
ALL TAXA		
Atriplex vesicaria		
Enchylaena tomentosa		
Eucalyptus transcontinentalis		
Maireana georgei		
Maireana pentatropis		
Maireana trichoptera		
Melaleuca sheathiana		
Olearia muelleri		
Ptilotus obovatus		
Sclerolaena cuneata		
Sclerolaena diacantha		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 45-47
Quadrat No: NVS Q9	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 364092E 6567140N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Upper slope/Hillslope (top third of the height of the landform element); No effective disturbance except grazing by hoofed animals/tracks and prospecting		
Coarse fragments on the surface: Extremely; Medium gravelly; Rounded		
Rock outcrop (abundance/runoff): Nil/slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 35%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height: 1-**3m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus torquata	*Eremophila oldfieldii* subsp. *angustifolia*	*Eremophila glabra* subsp. *glabra*
ALL TAXA		
Acacia erinacea		
Alyxia buxifolia		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Austrostipa elegantissima		
Austrostipa nitida		
Dodonaea lobulata		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila oldfieldii subsp. *angustifolia*		
Eremophila parvifolia subsp. *auricampa*		
Eremophila scoparia		
Eucalyptus torquata		
Exocarpos aphyllus		
Maireana sedifolia		
Maireana triptera		
Olearia muelleri		
Ptilotus obovatus		
Rhagodia eremaea		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		
Westringia rigida		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 45-47
Quadrat No: NVS Q10	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 366581.6E 6565093N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Crest/Hill crest; Limited clearing		
Coarse fragments on the surface: Very; abundant/Coarse gravelly; large pebbles/Subrounded		
Rock outcrop (abundance/runoff): Nil/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 25%		
Cover bare ground: 65%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: <10%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Acacia tetragonophylla*	*Acacia erinacea*
ALL TAXA		
Acacia erinacea		
Acacia tetragonophylla		
Atriplex nummularia subsp. *spathulata*		
Austrostipa nitida		
Casuarina pauper		
Dodonaea lobulata		
Eremophila alternifolia		
Eremophila glabra subsp. *glabra*		
Eremophila oldfieldii subsp. *angustifolia*		
Eremophila pustulata		
Eucalyptus lesouefii		
Maireana georgei		
Maireana trichoptera		
Olearia muelleri		
Ptilotus obovatus		
Santalum spicatum		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 45-47
Quadrat No: NVS Q11	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367901.8E 6559673N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: No qualifier; common/Coarse gravelly; large pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 60%		
Cover bare ground: 30%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila ionantha*	*Atriplex vesicaria*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Austrostipa nitida		
Enchylaena tomentosa		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila ionantha		
Eucalyptus ravida		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Lycium australe		
Maireana georgei		
Maireana tomentosa		
Maireana trichoptera		
Maireana triptera		
Psydrax suaveolens		
Rhagodia drummondii		
Scaevola spinescens		
Sclerolaena diacantha		
Sclerolaena patenticuspis		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 42-44
Quadrat No: NVS Q12	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367754.9E 6559349N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very slightly; very few/Fine gravelly; small pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 60%		
Cover bare ground: 20%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** <10%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Eremophila interstans* subsp. *interstans*	*Scaevola spinescens*

ALL TAXA
Atriplex vesicaria
Dodonaea lobulata
Eremophila interstans subsp. *interstans*
Eremophila oldfieldii subsp. *angustifolia*
Eucalyptus lesouefii
Eucalyptus oleosa
Exocarpos aphyllus
Maireana georgei
Maireana sedifolia
Maireana trichoptera
Olearia muelleri
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 64-66
Quadrat No: NVS Q13	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 366942.4E 6559458N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Midslope/Hillslope; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very abundant/Cobbly/Angular		
Rock outcrop (abundance/runoff): Nil/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 3-6m	**Height:** 1-3m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** 30-70%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Acacia acuminata*	*Dodonaea lobulata*
ALL TAXA		
Acacia acuminata		
Amyema miquelii		
Dodonaea adenophora		
Dodonaea lobulata		
Eremophila georgei		
Eremophila oldfieldii subsp. *angustifolia*		
Eucalyptus oleosa		
Leichhardtia australis		
Maireana trichoptera		
Ptilotus obovatus		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 64-66
Quadrat No: NVS Q14	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367672.2E 6558873N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Open depression (vale)/Drainage depression; No effective disturbance		
Coarse fragments on the surface: Slightly; few/Coarse gravelly; large pebbles/Subangular		
Rock outcrop (abundance/runoff): Nil/Very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Cracking		
Cover leaf litter: 50%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 3-6m	**Height:** 1-3m
Crown cover: <10%	**Crown cover:** 30-70%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Acacia acuminata*	*Pigea curvifolia*

ALL TAXA
Acacia acuminata
Dodonaea adenophora
Dodonaea lobulata
Enchylaena tomentosa
Eremophila georgei
Erodium crinitum (A)
Eucalyptus griffithsii
Leichhardtia australis
Maireana georgei
Maireana trichoptera
Pigea curvifolia
Ptilotus carlsonii (A)
Ptilotus obovatus
Scaevola spinescens
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*
Thysanotus manglesianus (A)

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 80-82
Quadrat No: NVS Q15	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367404.9E 6558589N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/Plain; Limited clearing		
Coarse fragments on the surface: Moderately; many/Fine gravelly; Small pebbles/angular		
Rock outcrop (abundance/runoff): Nil/Very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Cracking		
Cover leaf litter: 25%		
Cover bare ground: 65%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 3-6m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** <1%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila oldfieldii* subsp. *angustifolia*	*Maireana sedifolia*

ALL TAXA
Atriplex nummularia subsp. *spathulata*
Atriplex vesicaria
Austrostipa elegantissima
Austrostipa nitida
Casuarina pauper
Dodonaea lobulata
Enchylaena tomentosa
Eremophila glabra subsp. *glabra*
Eremophila oldfieldii subsp. *angustifolia*
Eremophila parvifolia subsp. *auricampi*
Eucalyptus salmonophloia
Lepidium oxytrichum (A)
Lycium australe
Maireana georgei
Maireana pentatropis
Maireana pyramidata
Maireana sedifolia
Maireana trichoptera
Ptilotus obovatus
Rhagodia drummondii
Roepera eremaea
Scaevola spinescens
Sclerolaena cuneata
Sclerolaena densiflora
Solanum nummularium

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 99-101
Quadrat No: NVS Q16	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 369296E 6557798N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Simple Slope/Hillslope (bottom third of the height of the landform element); No effective disturbance		
Coarse fragments on the surface: Extremely; very abundant/Medium gravelly; medium pebbles/subrounded		
Rock outcrop (abundance/runoff): Nil/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Cracking		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: <10%	**Crown cover:** 30-70%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Eremophila oppositifolia*	*Cryptandra aridicola*
ALL TAXA		
Acacia acuminata		
Alyxia buxifolia		
Cryptandra aridicola		
Dodonaea lobulata		
Eremophila decipiens subsp. *decipiens*		
Eremophila oppositifolia		
Eucalyptus griffithsii		
Eucalyptus oleosa		
Eucalyptus transcontinentalis		
Maireana georgei		
Myoporum platycarpum subsp. *platycarpum*		
Olearia muelleri		
Pigea curvifolia		
Scaevola spinescens		
Triodia scariosa		
Westringia rigida		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 90-92
Quadrat No: NVS Q17	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 370636.2E 6559789N		**Accuracy:**
Aspect: North East	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Moderately; many/Medium gravelly; medium pebbles/Subangular		
Rock outcrop (abundance/runoff): Nil/Very Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Cracking		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 0.5-1m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila ionantha*	*Atriplex vesicaria*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Enchylaena tomentosa		
Eremophila ionantha		
Eucalyptus ravida		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Lycium australe		
Maireana georgei		
Maireana pyramidata		
Maireana sedifolia		
Maireana trichoptera		
Maireana triptera		
Santalum acuminatum		
Sclerolaena cuneata		
Sclerolaena densiflora		
Sclerolaena diacantha		
Sclerolaena patenticuspis		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 93-95
Quadrat No: NVS Q18	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 371064.4E 6557331N		**Accuracy:**
Aspect: North East	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Lower slope; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly; few/Medium gravelly; medium pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/Very Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam sandy/ Cracking		
Cover leaf litter: 50%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Eremophila oldfieldii* subsp. *angustifolia*	*Senna artemisioides* subsp. *filifolia*
ALL TAXA		
Acacia tetragonophylla		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Dodonaea lobulata		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila oldfieldii subsp. *angustifolia*		
Eremophila parvifolia subsp. *auricampi*		
Eremophila scoparia		
Eucalyptus griffithsii		
Exocarpos aphyllus		
Leichhardtia australis		
Maireana georgei		
Maireana pentatropis		
Maireana sedifolia		
Maireana trichoptera		
Maireana triptera		
Olearia muelleri		
Ptilotus obovatus		
Santalum spicatum		
Scaevola spinescens		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 93-95
Quadrat No: NVS Q19	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 371602.1E 6560824N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very slightly; Very few/Medium gravelly; medium pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/Very Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam sandy/ Surface crust		
Cover leaf litter: 90%		
Cover bare ground: 5%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 12-20 m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: <1%	**Crown cover:** <10%	**Crown cover:** 30-70%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Eremophila interstans* subsp. *interstans*	*Maireana sedifolia*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Atriplex stipitata		
Atriplex vesicaria		
Austrostipa nitida		
Enchylaena tomentosa		
Eremophila interstans subsp. *interstans*		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Frankenia pauciflora var. *pauciflora*		
Maireana georgei		
Maireana pentatropis		
Maireana sedifolia		
Maireana trichoptera		
Maireana triptera		
Olearia muelleri		
Psydrax suaveolens		
Rhagodia drummondii		
Scaevola spinescens		
Sclerolaena diacantha		
Senna artemisioides subsp. *artemisioides*		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 96-98
Quadrat No: NVS Q20	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 369102.3E 6561971N		**Accuracy:**
Aspect: South East	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very slightly; Very few/Medium gravelly; medium pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/No runoff		
Soil (profile/field texture/soil surface): Brown/Clay-Loam sandy/ Surface crust		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: <10%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus oleosa	*Eremophila interstans* subsp. *interstans*	*Tecticornia disarticulata*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila scoparia		
Eucalyptus lesouefii		
Eucalyptus oleosa		
Exocarpos aphyllus		
Frankenia pauciflora var. *pauciflora*		
Lycium australe		
Maireana georgei		
Maireana sedifolia		
Maireana trichoptera		
Mesembryanthemum nodiflorum (W)		
Myoporum platycarpum subsp. *platycarpum*		
Olearia muelleri		
Ptilotus exaltatus (A)		
Scaevola spinescens		
Sclerolaena diacantha		
Senna artemisioides subsp. *artemisioides*		
Tecticornia disarticulata		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 84-86
Quadrat No: NVS Q21	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 370430.2E 6562209N		**Accuracy:**
Aspect: East	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/Plain; Limited clearing; grazing		
Coarse fragments on the surface: Very slightly; Very few/Medium gravelly; medium pebbles/Angular		
Rock outcrop (abundance/runoff): Nil/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam sandy/ Surface crust		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** <10%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Eremophila interstans* subsp. *interstans*	*Senna artemisioides* subsp. *filifolia*
ALL TAXA		
Atriplex nummularia subsp. *spathulata*		
Austrostipa nitida		
Dodonaea lobulata		
Enchylaena tomentosa		
Eremophila glabra subsp. *glabra*		
Eremophila interstans subsp. *interstans*		
Eremophila oldfieldii subsp. *angustifolia*		
Eucalyptus griffithsii		
Eucalyptus torquata		
Olearia muelleri		
Scaevola spinescens		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 116-118
Quadrat No: NVS Q22	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 371478.1E 6561917N		**Accuracy:**
Aspect: South	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Crest/Hill; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very abundant; Cobbly/Subrounded		
Rock outcrop (abundance/runoff): Very slightly rocky/Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Surface crust		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Shrub	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: 30-70%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Acacia quadrimarginea	*Eremophila georgei*	*Ptilotus obovatus*

ALL TAXA
Acacia collegialis
Austrostipa nitida
Cheilanthes sieberi
Dampiera latealata
Dodonaea lobulata
Eremophila georgei
Eremophila oldfieldii subsp. *angustifolia*
Erodium crinitum (A)
Eucalyptus ewartiana
Goodenia havilandii
Haloragis odontocarpa (A)
Leichhardtia australis
Panaetia lessonii (A)
Ptilotus obovatus
Roepera aurantiaca (A)
Senna artemisioides subsp. *filifolia*
Sida calyxhymenia
Solanum nummularium
Stenanthemum stipulosum
Waitzia acuminata (A)

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 146-148
Quadrat No: NVS Q47	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367286.2E 6570475N		**Accuracy:**
Aspect:	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Flat/Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly; few/Cobbly/Angular		
Rock outcrop (abundance/runoff): Very slightly rocky/Very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Surface crust		
Cover leaf litter: <5%		
Cover bare ground: 70%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: -	**Growth form:** Shrub	**Growth form:** Shrub
Height: -	**Height:** 1-3m	**Height:** 0.5-1m
Crown cover: -	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
-	*Acacia masliniana*	*Scaevola spinescens*

ALL TAXA
Acacia masliniana
Austrostipa nitida
Cratystylis microphylla
Cratystylis subspinescens
Disphyma crassifolium
Dodonaea lobulata
Eremophila decipiens subsp. decipiens
Eriochiton sclerolaenoides
Erodium crinitum (A)
Frankenia pauciflora var. *pauciflora*
Gunniopsis intermedia
Gunniopsis quadrifida
Leichhardtia australis
Lycium australe
Maireana amoena
Maireana glomerifolia
Maireana pentatropis
Maireana sedifolia
Maireana thesioides
Maireana tomentosa
Maireana trichoptera
Maireana triptera
Olearia muelleri
Olearia pimeleoides
Ptilotus obovatus
Rhagodia drummondii
Roepera eremaea
Scaevola spinescens
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*
Tecticornia disarticulata
Thysanotus manglesianus
Vincetoxicum lineare (A)

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 144-151
Quadrat No: NVS Q48	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):**
Coordinates (GDA94): 367286.9E 6570202N		**Accuracy:**
Aspect: South East	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Simple slope/Bank; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly; few/ Medium gravelly; medium pebbles/Subangular		
Rock outcrop (abundance/runoff): Nil/Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Surface crust		
Cover leaf litter: 10%		
Cover bare ground: 80%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** <1%	**Crown cover:** 30-70%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Myoporum montanum	*Senna artemisioides* subsp. *filifolia*	*Maireana sedifolia*
ALL TAXA		
Acacia donaldsonii		
Atriplex nummularia subsp. *spathulata*		
Atriplex vesicaria		
Austrostipa nitida		
Chenopodium gaudichaudianum		
Cratystylis conocephala		
Disphyma crassifolium		
Eremophila decipiens subsp. *decipiens*		
Eremophila scoparia		
Frankenia pauciflora var. *pauciflora*		
Lycium australe		
Maireana pentatropis		
Maireana sedifolia		
Maireana trichoptera		
Maireana triptera		
Myoporum montanum		
Rhagodia drummondii		
Roepera aurantiaca		
Roepera eremaea		
Salvia verbenaca (W)		
Sclerolaena densiflora		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		
Tecticornia disarticulata		

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 22-24
Quadrat No: BC1	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):** 382m
Coordinates (GDA94): 367445E 6571479N		**Accuracy:**
Aspect: North East	**Fire (yrs): -**	**Condition rating:** Very good
Landform: Flat**;** Plain**;** No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very abundant (50-90%); Medium gravelly (6-20 mm); Subrounded**;** Ironstone pebbles		
Rock outcrop (abundance/runoff): Very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 20%		
Cover bare ground: 70%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** <10
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus transcontinentalis	*Acacia acuminata*	*Olearia muelleri*

ALL TAXA
Acacia acuminata
Acacia tetragonophylla
Dodonaea lobulata
Eremophila interstans subsp. *interstans*
Eremophila oppositifolia
Eucalyptus transcontinentalis
Maireana georgei
Olearia muelleri
Ptilotus obovatus
Roepera eremaea
Santalum spicatum
Scaevola spinescens
Senna artemisioides subsp. *filifolia*

Project Name: SKO September 2023		
Date: 1/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 76-78
Quadrat No: BC2	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 457m
Coordinates (GDA94): 365011.7E 6569672N		**Accuracy:**
Aspect: West	**Fire (yrs): -**	**Condition rating:** Very good
Landform: Mid slope; Hillslope**;** No effective grazing except by hoofed animals/ mining/exploration activities		
Coarse fragments on the surface: No qualifier/common (10%-20%); Coarse gravelly/large pebbles (20-80mm); subangular; greenstone		
Rock outcrop (abundance/runoff): Nil		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 35%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Acacia acuminata*	*Olearia muelleri*

ALL TAXA
Acacia acuminata
Austrostipa nitida
Dodonaea lobulata
Enchylaena tomentosa
Eremophila glabra subsp. *glabra*
Eremophila interstans subsp. *interstans*
Eremophila oldfieldii subsp. *angustifolia*
Eucalyptus griffithsii
Maireana sedifolia
Maireana tomentosa
Maireana trichoptera
Olearia muelleri
Ptilotus obovatus
Scaevola spinescens
Senna artemisioides subsp. *filifolia*
Solanum nummularium

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 614-616
Quadrat No: BC3	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 427m
Coordinates (GDA94): 366734.2E 6564352N		**Accuracy:**
Aspect: East	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Mid slope/hillslope		
Coarse fragments on the surface: Very; abundant (50-90%); Coarse gravelly (20-60 mm); Subangular; Greenstone		
Rock outcrop (abundance/runoff): Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 45%		
Cover bare ground: 45%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 30-70%	**Crown cover:** 10-30%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus torquata	*Eremophila oppositifolia*	*Olearia muelleri*
ALL TAXA		
Acacia erinacea		
Atriplex nummularia		
Dodonaea lobulata		
Eremophila glabra		
Eremophila interstans subsp. *interstans*		
Eremophila oppositifolia		
Eremophila parvifolia		
Eucalyptus torquata		
Exocarpos aphyllus		
Maireana georgei		
Olearia muelleri		
Ptilotus obovatus		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		
Westringia rigida		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 105-107
Quadrat No: BC4	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):** 423m
Coordinates (GDA94): 367582.7E 6563555N		**Accuracy:**
Aspect: South West	**Fire (yrs):** -	**Condition rating:** Very Good
Landform: Hillslope/ Mid slope; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Moderately/ many (20-50%); Cobbly (60-200 mm); Subangular		
Rock outcrop (abundance/runoff): Moderately rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**/ Surface crust**		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Casuarina pauper	*Eremophila clarkei*	*Ptilotus obovatus*
ALL TAXA		
Acacia acuminata		
Acacia collegialis		
Aristida contorta (A)		
Casuarina pauper		
Chrysocephalum puteale		
Calandrinia eremaea (A)		
Dodonaea lobulata		
Eremophila clarkei		
Eremophila oldfieldii subsp. *angustifolia*		
Eriochiton sclerolaenoides		
Goodenia beardiana (A)		
Prostanthera althoferi		
Ptilotus obovatus		
Scaevola spinescens		
Vincetoxicum lineare (A)		
Waitzia acuminata (A)		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 623-625
Quadrat No: BC5	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 406m
Coordinates (GDA94): 366312.1E 6561892N		**Accuracy:**
Aspect: South	**Fire (yrs): -**	**Condition rating:** Very Good
Landform: Open depression (vale); drainage depression; no effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Common (10-20%); Coarse gravelly (20-60 mm); Subangular		
Rock outcrop (abundance/runoff): Slightly rocky (2-10%) in creek; slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Chenopod shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Eremophila scoparia*	*Atriplex vesicaria*
ALL TAXA		
Acacia acuminata		
Atriplex nummularia		
Atriplex vesicaria		
Eremophila interstans subsp. *interstans*		
Eremophila scoparia		
Eucalyptus lesouefii		
Lycium australe		
Maireana georgei		
Maireana pentatropis		
Maireana trichoptera		
Maireana triptera		
Ptilotus obovatus		
Salvia verbenaca (A) (W)		
Senna artemisioides subsp. *filifolia*		
Trichanthodium skirrophorum (A)		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 124-126
Quadrat No: BC6	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 424m
Coordinates (GDA94): 366585.9E 6562959N		**Accuracy:**
Aspect: North East	**Fire (yrs): -**	**Condition rating:** Very Good
Landform: Flat Plain; no effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly (2-10%); Medium gravelly (6-20 mm); Subrounded		
Rock outcrop (abundance/runoff): Nil		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**,** surface crust		
Cover leaf litter: 50%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** <10
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Atriplex nummularia*	*Olearia muelleri*
ALL TAXA		
Atriplex nummularia		
Atriplex vesicaria		
Enchylaena tomentosa		
Eremophila interstans subsp. *interstans*		
Eremophila scoparia		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Lycium australe		
Maireana trichoptera		
Maireana triptera		
Myoporum platycarpum subsp. *platycarpum*		
Olearia muelleri		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 2/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 131-133
Quadrat No: BC7	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):** 428m
Coordinates (GDA94): 366074.4E 6562481N		**Accuracy: -**
Aspect: South East	**Fire (yrs): -**	**Condition rating:** Very Good
Landform: Hillslope/ Mid slope; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very abundant (50-90%); Coarse gravelly (20-60 mm); Subangular		
Rock outcrop (abundance/runoff): Nil/ Rapid		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 35%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Senna artemisioides* subsp. *filifolia*	*Westringia rigida*
ALL TAXA		
Acacia hemiteles		
Atriplex nummularia		
Austrostipa nitida		
Eremophila glabra		
Eremophila interstans subsp. *interstans*		
Eremophila parvifolia		
Eremophila scoparia		
Eucalyptus griffithsii		
Exocarpos aphyllus		
Maireana trichoptera		
Olearia muelleri		
Roepera aurantiaca		
Scaevola spinescens		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		
Westringia rigida		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 134-136
Quadrat No: BC8	**Quadrat size/shape:** 20m x 20m/ Square	**Elevation (m):** 430m
Coordinates (GDA94): 370047.1E 6565880N		**Accuracy:** 2m
Aspect: East	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Mid slope/Hillslope; No effective disturbance except grazing by hoofed animals.		
Coarse fragments on the surface: Abundant (50-90%); Coarse gravelly (20-60 mm); Subangular		
Rock outcrop (abundance/runoff): Nil/ Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3m	**Height:** 0.25-0.5 m
Crown cover: <10%	**Crown cover:** 10-30%	**Crown cover:** <10
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Melaleuca pauperiflora*	*Scaevola spinescens*
ALL TAXA		
Atriplex nummularia		
Enchylaena tomentosa		
Eremophila interstans subsp. interstans		
Eremophila oldfieldii subsp. angustifolia		
Eremophila parvifolia		
Eucalyptus lesouefii		
Maireana tomentosa		
Melaleuca pauperiflora		
Olearia muelleri		
Ptilotus obovatus		
Roepera aurantiaca		
Scaevola spinescens		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 137-139
Quadrat No: BC9	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 421m
Coordinates (GDA94): 369689.3E 6565427N		**Accuracy:**
Aspect: East	**Fire (yrs): -**	**Condition rating:** Very Good
Landform: Upper slope/Hillslope; No effective disturbance except grazing by hoofed animals.		
Coarse fragments on the surface: Moderately (20-50%); Coarse gravelly (20-60 mm); Subangular		
Rock outcrop (abundance/runoff): Nil/ Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**,** Surface crust		
Cover leaf litter: 70%		
Cover bare ground: 20%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Shrub	**Growth form:** Shrub	**Growth form:** Shrub
Height: 3-6m	**Height:** 1-3 m	**Height:**
Crown cover: 30-70%	**Crown cover:** <10%	**Crown cover:**
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Acacia acuminata	*Acacia tetragonophylla*	None
ALL TAXA		
Acacia acuminata		
Acacia tetragonophylla		
Amyema gibberula		
Cheilanthes sieberi		
Enchylaena tomentosa		
Grevillea nematophylla		
Ptilotus obovatus		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 140-142
Quadrat No: BC10	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 419m
Coordinates (GDA94): 371469.3E 6566041N		**Accuracy:**
Aspect: South-East	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Very Few (<2%); Medium gravelly (6-20 mm); Subangular		
Rock outcrop (abundance/runoff): Nil/ Very Slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**,** Surface crust		
Cover leaf litter: 35%		
Cover bare ground: 55%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 12-20 m	**Height:** 1-3 m	**Height:** 0.5-1 m
Crown cover: 10-30%	**Crown cover:** 30-70%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Senna artemisioides* subsp. *filifolia*	*Eremophila decipiens*
ALL TAXA		
Acacia tetragonophylla		
Alyxia buxifolia		
Eremophila decipiens		
Eremophila parvifolia		
Eremophila scoparia		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Maireana sedifolia		
Myoporum platycarpum subsp. *platycarpum*		
Olearia muelleri		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Senna cardiosperma		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 143-145
Quadrat No: BC11	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 410m
Coordinates (GDA94): 371284.8E 6565046N		**Accuracy:**
Aspect: South-East	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly/ Few (2-10%); Fine gravelly (2-6 mm); Subangular		
Rock outcrop (abundance/runoff): Nil/ No runoff		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**,** Surface crust		
Cover leaf litter: 50%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree Mallee (> 8m)	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 30-70%	**Crown cover:** 10-30%	**Crown cover: <**10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Senna artemisioides* subsp. *filifolia*	*Olearia muelleri*
ALL TAXA		
Atriplex nummularia		
Enchylaena tomentosa		
Eucalyptus salubris		
Maireana tomentosa		
Maireana trichoptera		
Olearia muelleri		
Santalum acuminatum		
Sclerolaena diacantha		
Senna artemisioides subsp. *filifolia*		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 152-154
Quadrat No: BC12	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 414m
Coordinates (GDA94): 369392.7E 6564316N		**Accuracy:**
Aspect: North	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat Plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: No coarse fragments		
Rock outcrop (abundance/runoff): Nil/very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm**,** Surface crust		
Cover leaf litter: 50%		
Cover bare ground: 40%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Chenopod Shrub	**Growth form:** Chenopod Shrub
Height: 6-12 m	**Height:** 1-3 m	**Height:** 0.25-0.5 m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus lesouefii	*Atriplex nummularia*	*Atriplex vesicaria*

ALL TAXA
Atriplex nummularia
Atriplex vesicaria
Cratystylis subspinescens
Eremophila decipiens
Eremophila scoparia
Eucalyptus lesouefii
Eucalyptus oleosa
Frankenia pauciflora var. *pauciflora*
Lycium australe
Maireana sedifolia
Maireana trichoptera
Maireana triptera
Roepera aurantiaca
Sida spodochroma
Sclerolaena diacantha
Solanum nummularium
Tecticornia disarticulata

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 131
Quadrat No: BC13	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 407m
Coordinates (GDA94): 370687.1E 6564308N		**Accuracy:**
Aspect: South	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat/open depression (vale); No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Moderately (20-60%); Fine Gravelly (2-6 mm); Subrounded		
Rock outcrop (abundance/runoff): Nil/very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 30%		
Cover bare ground: 60%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Nil	**Growth form:** Shrub	**Growth form:** Chenopod Shrub
Height: Nil	**Height:** 1-3 m	**Height: <**0.25m
Crown cover: Nil	**Crown cover:** 10-30%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Nil	*Atriplex nummularia*	*Atriplex vesicaria*
ALL TAXA		
Acacia donaldsonii		
Atriplex vesicaria		
Austrostipa nitida		
Cratystylis microphylla		
Cratystylis subspinescens		
Dianella revoluta		
Disphyma crassifolium		
Dodonaea viscosa subsp. *angustissima*		
Eremophila alternifolia		
Eremophila decipiens		
Eremophila scoparia		
Eriochiton sclerolaenoides		
Gunniopsis quadrifida		
Leichhardtia australis		
Lycium australe		
Maireana amoena		
Maireana georgei		
Maireana glomerifolia		
Maireana tomentosa		
Maireana trichoptera		
Maireana triptera		
Olearia pimeleoides		
Ptilotus obovatus		
Rhagodia drummondii		
Scaevola spinescens		
Sclerolaena diacantha		
Sclerolaena eurotioides		
Thysanotus manglesianus (A)		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 155-157
Quadrat No: BC14	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 412m
Coordinates (GDA94): 371718.5E 6563443N		**Accuracy:**
Aspect: South	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat plain		
Coarse fragments on the surface: Moderately (20-60%); Fine Gravelly (2-6 mm); Subrounded		
Rock outcrop (abundance/runoff): Nil/very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 40%		
Cover bare ground: 50%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Shrub Mallee (<8m)	**Growth form:** Shrub	**Growth form:** Chenopod Shrub
Height: 6-12m	**Height:** 1-3 m	**Height:** 0.5-1m
Crown cover: 10-30%	**Crown cover:** <10%	**Crown cover:** 10-30%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus griffithsii	*Exocarpos aphyllus*	*Tecticornia disarticulata*
ALL TAXA		
Austrostipa nitida		
Dianella revoluta		
Eremophila scoparia		
Erodium crinitum (A)		
Eucalyptus griffithsii		
Exocarpos aphyllus		
Leichhardtia australis		
Lycium australe		
Maireana tomentosa		
Maireana triptera		
Olearia muelleri		
Ptilotus obovatus		
Rhagodia drummondii		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		
Tecticornia disarticulata		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 158-160
Quadrat No: BC15	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 407m
Coordinates (GDA94): 371587.4E 6564072N		**Accuracy:**
Aspect: South East	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: Slightly (2-10%); Fine Gravelly (2-6 mm); Subrounded		
Rock outcrop (abundance/runoff): Nil/very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm		
Cover leaf litter: 65%		
Cover bare ground: 30%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Shrub Mallee (<8m)	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3 m	**Height:** 0.25-0.5m
Crown cover: 10-30%	**Crown cover:** 10-30%	**Crown cover: <**10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salubris	*Exocarpos aphyllus*	*Olearia muelleri*
ALL TAXA		
Acacia tetragonophylla		
Austrostipa elegantissima		
Enchylaena tomentosa		
Eremophila decipiens		
Eremophila parvifolia		
Eremophila scoparia		
Eucalyptus salubris		
Exocarpos aphyllus		
Lycium australe		
Maireana sedifolia		
Maireana tomentosa		
Maireana trichoptera		
Maireana triptera		
Olearia muelleri		
Ptilotus obovatus		
Senna artemisioides subsp. *filifolia*		
Solanum nummularium		
Tecticornia disarticulata		

Project Name: SKO September 2023		
Date: 3/09/2023	**Botanist:** JJ	**Photo number (NW corner):** 164-166
Quadrat No: BC16	**Quadrat size/shape:** 20m x 20m Square	**Elevation (m):** 403m
Coordinates (GDA94): 370589.6E 6564836N		**Accuracy:**
Aspect: North	**Fire (yrs):**	**Condition rating:** Very Good
Landform: Flat plain; No effective disturbance except grazing by hoofed animals		
Coarse fragments on the surface: No coarse fragments		
Rock outcrop (abundance/runoff): Nil/very slow		
Soil (profile/field texture/soil surface): Brown/Clay-Loam/ Firm/ Surface crust		
Cover leaf litter: 80%		
Cover bare ground: 10%		
Upper stratum	**Mid-stratum**	**Lower stratum**
Growth form: Tree	**Growth form:** Shrub	**Growth form:** Shrub
Height: 6-12m	**Height:** 1-3 m	**Height:** 0.25-0.5m
Crown cover: 30-70%	**Crown cover:** 30-70%	**Crown cover:** <10%
Dominant taxa:	**Dominant taxa:**	**Dominant taxa:**
Eucalyptus salmonophloia	*Senna artemisioides* subsp. *filifolia*	*Eremophila decipiens*
ALL TAXA		
Acacia donaldsonii		
Aristida contorta		
Dianella revoluta		
Eremophila decipiens		
Eremophila scoparia		
Eucalyptus salmonophloia		
Exocarpos aphyllus		
Lycium australe		
Maireana trichoptera		
Olearia muelleri		
Ptilotus obovatus		
Scaevola spinescens		
Senna artemisioides subsp. *filifolia*		

APPENDIX H:
QUADRAT PHOTOS

Appendix H:
Quadrat Photographs

NVS Quadrat 1			
Direction	**East**	**South-East**	**South**
NVS Quadrat 2			
Direction	**East**	**South-East**	**South**
NVS Quadrat 3			
Direction	**East**	**South-East**	**South**

NVS Quadrat 4			
Direction	**East**	**South-East**	**South**
NVS Quadrat 5			
Direction	**East**	**South-East**	**South**
NVS Quadrat 6			
Direction	**East**	**South-East**	**South**

NVS Quadrat 7			
Direction	**East**	**South-East**	**South**
NVS Quadrat 8			
Direction	**East**	**South-East**	**South**
NVS Quadrat 9			
Direction	**East**	**South-East**	**South**

NVS Quadrat 10			
Direction	**East**	**South-East**	**South**
NVS Quadrat 11			
Direction	**East**	**South-East**	**South**
NVS Quadrat 12			
Direction	**East**	**South-East**	**South**

NVS Quadrat 13			
Direction	**East**	**South-East**	**South**
NVS Quadrat 14			
Direction	**East**	**South-East**	**South**
NVS Quadrat 15			
Direction	**East**	**South-East**	**South**

NVS Quadrat 16			
Direction	**East**	**South-East**	**South**
NVS Quadrat 17			
Direction	**East**	**South-East**	**South**
NVS Quadrat 18			
Direction	**East**	**South-East**	**South**

NVS Quadrat 19			
Direction	**East**	**South-East**	**South**
NVS Quadrat 20			
Direction	**East**	**South-East**	**South**
NVS Quadrat 21			
Direction	**East**	**South-East**	**South**

NVS Quadrat 22			
Direction	**East**	**South-East**	**South**
NVS Quadrat 47			
Direction	**East**	**South-East**	**South**
NVS Quadrat 48			
Direction	**East**	**South-East**	**South**

BC Quadrat 1			
Direction	**East**	**South-East**	**South**
BC Quadrat 2			
Direction	**East**	**South-East**	**South**
BC Quadrat 3			
Direction	**East**	**South-East**	**South**

BC Quadrat 4			
Direction	**East**	**South-East**	**South**
BC Quadrat 5			
Direction	**East**	**South-East**	**South**
BC Quadrat 6			
Direction	**East**	**South-East**	**South**

BC Quadrat 7			
Direction	**East**	**South-East**	**South**
BC Quadrat 8			
Direction	**East**	**South-East**	**South**
BC Quadrat 9			
Direction	**East**	**South-East**	**South**

BC Quadrat 10			
Direction	**East**	**South-East**	**South**
BC Quadrat 11			
Direction	**East**	**South-East**	**South**
BC Quadrat 12			
Direction	**East**	**South-East**	**South**

BC Quadrat 13			
Direction	**East**	**South-East**	**South**
BC Quadrat 14			
Direction	**East**	**South-East**	**South**
BC Quadrat 15			
Direction	**East**	**South-East**	**South**

BC Quadrat 16			
Direction	**East**	**South-East**	**South**

APPENDIX I:
NATUREMAP DESKTOP SEARCH (40KM)

- **Animalia**
  - **AMPHI**
    - Litoria moorei
    - Neobatrachus kunapalari
    - Neobatrachus sutor
    - Pseudophryne occidentalis
  - **BIRD**
    - Acanthagenys rufogularis
    - Acanthiza apicalis
    - Acanthiza chrysorrhoa
    - Acanthiza robustirostris
    - Acanthiza uropygialis
    - Accipiter cirrocephalus
    - Accipiter fasciatus
    - Actitis hypoleucos
    - Aegotheles cristatus
    - Anas gracilis
    - Anas platyrhynchos
    - Anas rhynchotis
    - Anas superciliosa
    - Anhinga novaehollandiae
    - Anthochaera carunculata
    - Anthus australis
    - Anthus australis subsp. australis
    - Aphelocephala leucopsis
    - Aphelocephala leucopsis subsp. castaneiventris
    - Aquila audax
    - Ardea modesta
    - Ardea pacifica
    - Ardeotis australis
    - Artamus cinereus
    - Artamus cyanopterus
    - Artamus personatus
    - Aythya australis
    - Barnardius zonarius
    - Biziura lobata
    - Cacatua roseicapilla
    - Cacatua sanguinea
    - Cacomantis flabelliformis
    - Cacomantis pallidus
    - Calidris acuminata
    - Calidris alba (Crocethia alba)
    - Calidris ruficollis
    - Calyptorhynchus latirostris
    - Charadrius ruficapillus
    - Chenonetta jubata
    - Cheramoeca leucosterna
    - Cheramoeca leucosternus
    - Chroicocephalus novaehollandiae
    - Chrysococcyx basalis
    - Chrysococcyx osculans
    - Cincloramphus cruralis
    - Cincloramphus mathewsi
    - Cinclosoma castanotus
    - Cladorhynchus leucocephalus
    - Climacteris rufa
    - Colluricincla harmonica
    - Columba livia
    - Coracina maxima
    - Coracina novaehollandiae
    - Corvus bennetti
    - Corvus coronoides
    - Corvus orru
    - Coturnix pectoralis
    - Coturnix ypsilophora
    - Cracticus nigrogularis
    - Cracticus tibicen
    - Cracticus torquatus
    - Cuculus pallidus
    - Cygnus atratus
    - Daphoenositta chrysoptera
    - Dicaeum hirundinaceum
    - Dromaius novaehollandiae
    - Drymodes brunneopygia
    - Egretta novaehollandiae
    - Elanus axillaris
    - Elanus caeruleus
    - Elanus caeruleus subsp. axillaris
    - Elseyornis melanops
    - Eolophus roseicapillus
    - Eopsaltria australis subsp. griseogularis
    - Epthianura albifrons
    - Epthianura tricolor
    - Erythrogonys cinctus
    - Eurostopodus argus
    - Falco berigora
    - Falco berigora subsp. berigora
    - Falco cenchroides
    - Falco longipennis
    - Fulica atra
    - Gerygone fusca
    - Glossopsitta porphyrocephala

Grallina cyanoleuca
Haliastur sphenurus
Hieraaetus morphnoides
Himantopus himantopus
Himantopus himantopus subsp. leucocephalus
Hirundo neoxena
Hirundo nigricans
Hylacola cauta
Hylacola cauta subsp. whitlocki
Lalage tricolor
Leipoa ocellata
Lichenostomus leucotis
Lichenostomus leucotis subsp. novaenorciae
Lichenostomus ornatus
Lichenostomus plumulus
Lichenostomus virescens
Lichmera indistincta
Lophoictinia isura
Malacorhynchus membranaceus
Malurus leucopterus
Malurus pulcherrimus
Malurus splendens
Manorina flavigula
Melanodryas cucullata
Melithreptus brevirostris
Melopsittacus undulatus
Merops ornatus
Microcarbo melanoleucos
Microeca fascinans
Microeca fascinans subsp. assimilis
Ninox novaeseelandiae
Nycticorax caledonicus subsp. hilli
Nymphicus hollandicus
Ocyphaps lophotes
Oreoica gutturalis
Oreoica gutturalis subsp. gutturalis
Pachycephala inornata
Pachycephala pectoralis
Pachycephala rufiventris
Pardalotus punctatus
Pardalotus striatus
Pardalotus striatus subsp. westraliensis
Petrochelidon ariel
Petrochelidon nigricans
Petroica cucullata
Petroica goodenovii
Phalacrocorax carbo
Phalacrocorax sulcirostris
Phaps chalcoptera
Phylidonyris albifrons
Platalea flavipes
Platycercus varius
Platycercus zonarius
Platycercus zonarius subsp. zonarius
Podargus strigoides
Poliocephalus poliocephalus
Pomatostomus superciliosus
Pomatostomus superciliosus subsp. ashbyi
Porzana fluminea
Ptilotula ornatus
Ptilotula plumulus
Purnella albifrons
Pyrrholaemus brunneus
Recurvirostra novaehollandiae
Rhipidura albiscapa
Rhipidura fuliginosa
Rhipidura leucophrys
Smicrornis brevirostris
Stictonetta naevosa
Strepera versicolor
Streptopelia senegalensis
Sugomel niger
Tachybaptus novaehollandiae
Tadorna tadornoides
Taeniopygia guttata
Thinornis rubricollis
Threskiornis spinicollis
Todiramphus pyrrhopygia
Todiramphus pyrrhopygius
Todiramphus sanctus
Tribonyx ventralis
Tringa brevipes
Tringa glareola
Tringa nebularia
Turnix velox
Tyto alba subsp. delicatula
Vanellus tricolor
Zosterops lateralis

MAMMAL

Bos taurus

Canis lupus subsp. dingo
Capra hircus
Cercartetus concinnus
Chalinolobus gouldii
Chalinolobus morio
Dasyurus geoffroii
Felis catus
Macropus fuliginosus
Macropus robustus subsp. erubescens
Macropus rufus
Macrotis lagotis
Mormopterus planiceps
Mus musculus
Myrmecobius fasciatus
Ningaui yvonneae
Nyctophilus geoffroyi
Nyctophilus timoriensis subsp. timoriensis
Oryctolagus cuniculus
Ovis aries
Pseudomys bolami
Pseudomys hermannsburgensis
Scotorepens balstoni
Sminthopsis crassicaudata
Sminthopsis dolichura
Sminthopsis gilberti
Sminthopsis murina
Sminthopsis ooldea
Sminthopsis sp.
Tachyglossus aculeatus
Tadarida australis
Taphozous hilli
Vespadelus baverstocki
Vespadelus finlaysoni
Vespadelus regulus

REPTILE

Acanthophis pyrrhus
Brachyurophis fasciolata
Brachyurophis fasciolatus subsp. fasciolatus
Brachyurophis semifasciata
Brachyurophis semifasciatus
Chelodina colliei
Crenadactylus ocellatus subsp. ocellatus
Cryptoblepharus buchananii
Cryptoblepharus plagiocephalus
Ctenophorus caudicinctus
Ctenophorus cristatus
Ctenophorus fordi
Ctenophorus nuchalis
Ctenophorus reticulatus
Ctenophorus salinarum
Ctenophorus scutulatus
Ctenotus atlas
Ctenotus leonhardii
Ctenotus schomburgkii
Ctenotus uber
Ctenotus uber subsp. uber
Cyclodomorphus melanops subsp. elongatus
Delma australis
Delma butleri
Delma fraseri
Demansia psammophis
Demansia psammophis subsp. psammophis
Diplodactylus granariensis
Diplodactylus granariensis subsp. granariensis
Diplodactylus maini
Diplodactylus pulcher
Echiopsis curta
Egernia depressa
Egernia formosa
Egernia inornata
Egernia stokesii subsp. badia
Eremiascincus richardsonii
Furina ornata
Gehyra purpurascens
Gehyra variegata
Hemidactylus frenatus
Hemiergis initialis subsp. initialis
Hemiergis peronii subsp. peronii
Hesperoedura reticulata
Heteronotia binoei
Lerista distinguenda
Lerista kingi
Lerista muelleri
Lerista picturata
Lerista rhodonoides
Lerista stictopleura
Lerista timida
Lialis burtonis

Liopholis inornata
Liopholis multiscutata
Lucasium damaeum
Lucasium maini
Menetia greyii
Moloch horridus
Morelia spilota subsp. imbricata
Morethia adelaidensis
Morethia butleri
Morethia obscura
Neelaps bimaculatus
Nephrurus laevissimus
Nephrurus milii
Oedura reticulata
Parasuta gouldii
Parasuta monachus
Pogona minor
Pogona minor subsp. minor
Pseudechis australis
Pseudonaja affinis subsp. affinis
Pseudonaja mengdeni
Pseudonaja modesta
Pseudonaja nuchalis
Pygopus lepidopodus
Pygopus nigriceps
Ramphotyphlops australis
Ramphotyphlops bicolor
Ramphotyphlops bituberculatus
Ramphotyphlops hamatus
Ramphotyphlops waitii
Rhynchoedura ornata
Simoselaps bertholdi
Strophurus assimilis
Strophurus elderi
Strophurus sp.
Suta fasciata
Tiliqua occipitalis
Tiliqua rugosa
Tiliqua rugosa subsp. rugosa
Tympanocryptis cephalus
Tympanocryptis lineata
Underwoodisaurus milii
Varanus caudolineatus
Varanus gouldii
Varanus tristis

Plantae
DICOT
Abutilon cryptopetalum
Acacia acuminata
Acacia ancistrophylla var. ancistrophylla
Acacia andrewsii
Acacia aneura
Acacia aneura group
Acacia aptaneura
Acacia beauverdiana
Acacia burkittii
Acacia calcarata
Acacia camptoclada
Acacia chrysella
Acacia collegialis
Acacia colletioides
Acacia coolgardiensis
Acacia dempsteri
Acacia desertorum var. desertorum
Acacia donaldsonii
Acacia duriuscula
Acacia effusifolia
Acacia enervia subsp. explicata
Acacia eremophila var. eremophila
Acacia erinacea
Acacia gibbosa
Acacia hemiteles
Acacia inaequiloba
Acacia inceana subsp. inceana
Acacia jennerae
Acacia jensenii
Acacia kalgoorliensis
Acacia kerryana
Acacia lasiocalyx
Acacia ligulata
Acacia longispinea
Acacia masliniana
Acacia merrallii
Acacia mulganeura
Acacia multispicata
Acacia murrayana
Acacia nyssophylla

Acacia oswaldii

Acacia oswaldii (Narrow phyllode variant)

Acacia pachypoda

Acacia Plurinerves - Microneurae Phyllodes 8-nerved, terete (Miscellaneous)

Acacia prainii

Acacia pritzeliana

Acacia pycnantha

Acacia rendlei

Acacia resinimarginea

Acacia resinistipulea

Acacia resinosa

Acacia sclerosperma subsp. sclerosperma

Acacia sp.

Acacia sp. narrow phyllode (B.R. Maslin 7831)

Acacia sp. Norseman (B. Archer 1554)

Acacia synchronicia

Acacia tetragonophylla

Acacia warramaba

Acacia websteri

Acacia xerophila var. brevior

Acacia yorkrakinensis subsp. acrita

Actinobole uliginosum

Aizoon pubescens

Alectryon oleifolius subsp. canescens

Alhagi camelorum

Alhagi maurorum

Allocasuarina acutivalvis subsp. acutivalvis

Allocasuarina acutivalvis subsp. acutivalvis / prinsepiana

Allocasuarina campestris

Allocasuarina campestris / eriochlamys subsp. grossa

Allocasuarina cf. campestris

Allocasuarina eriochlamys subsp. eriochlamys

Allocasuarina eriochlamys subsp. grossa

Allocasuarina helmsii

Alternanthera denticulata

Alternanthera nodiflora

Aluta aspera subsp. aspera

Alyogyne pinoniana var. leptochlamys

Alyssum linifolium

Alyxia buxifolia

Alyxia tetanifolia

Amaranthus viridis

Amyema benthamii

Amyema gibberula var. gibberula

Amyema miquelii

Amyema preissii

Androcalva aphrix

Androcalva luteiflora

Angianthus tomentosus

Anthotroche pannosa

Arabidella chrysodema

Arabidella trisecta

Arctotheca calendula

Argemone ochroleuca subsp. ochroleuca

Asclepias curassavica

Asteridea athrixioides

Asteridea chaetopoda

Atriplex acutibractea

Atriplex acutibractea subsp. acutibractea

Atriplex acutibractea subsp. karoniensis

Atriplex amnicola

Atriplex codonocarpa

Atriplex eardleyae

Atriplex holocarpa

Atriplex nana

Atriplex nummularia

Atriplex nummularia subsp. spathulata

Atriplex pumilio

Atriplex quadrivalvata var. quadrivalvata

Atriplex semibaccata

Atriplex sp.

Atriplex spongiosa

Atriplex stipitata

Atriplex suberecta

Atriplex vesicaria

Baeckea elderiana

Baeckea sp.

Banksia elderiana

Bertya dimerostigma

Beyeria lechenaultii

Beyeria sulcata var. brevipes

Beyeria sulcata var. sulcata

Boerhavia coccinea
Boronia coerulescens subsp. spinescens
Bossiaea cucullata
Brachychiton gregorii
Brachyscome ciliaris
Brachyscome lineariloba
Brachyscome perpusilla
Brassica sp.
Brassica tournefortii
Brunonia australis
Brunonia sp. Goldfields (K.R. Newbey 6044)
Bryophyllum delagoense
Buglossoides arvensis
Calandrinia calyptrata
Calandrinia eremaea
Calandrinia lefroyensis
Calandrinia polyandra
Calandrinia sculpta
Calandrinia sp. Blackberry (D.M. Porter 171)
Calandrinia translucens
Calothamnus gilesii
Calotis breviradiata
Calotis hispidula
Calotis multicaulis
Calytrix amethystina
Calytrix birdii
Capsella bursa-pastoris
Carduus tenuiflorus
Carrichtera annua
Carthamus lanatus
Casuarina pauper
Centaurea melitensis
Cephalipterum drummondii
Ceratogyne obionoides
Chamelaucium ciliatum
Chenopodium album
Chenopodium curvispicatum
Chenopodium murale
Chorizema racemosum
Chrysocephalum apiculatum subsp. norsemanense
Chrysocephalum puteale
Cichorium intybus
Citrullus amarus
Citrullus colocynthis
Codonocarpus cotinifolius
Comesperma drummondii
Comesperma scoparium
Commersonia craurophylla
Convolvulus clementii
Convolvulus remotus
Conyza bonariensis
Conyza sumatrensis
Coopernookia strophiolata
Cotula australis
Craspedia haplorrhiza
Crassula colorata var. acuminata
Crassula colorata var. colorata
Cratystylis conocephala
Cratystylis conocephala x microphylla
Cratystylis microphylla
Cratystylis subspinescens
Cryptandra aridicola
Cryptandra graniticola
Cryptandra pungens
Cryptandra recurva
Cryptandra sp.
Cucumis myriocarpus subsp. myriocarpus
Cullen cinereum
Cullen discolor
Cullen leucanthum
Cyanostegia angustifolia
Cyanostegia microphylla
Cyathostemon divaricatus
Cyathostemon heterantherus
Cyathostemon verrucosus
Cylindropuntia fulgida var. mamillata
Cylindropuntia imbricata
Cylindropuntia kleiniae
Cylindropuntia tunicata
Dampiera eriocephala
Dampiera latealata
Dampiera lavandulacea
Dampiera luteiflora
Dampiera stenostachya
Dampiera tenuicaulis var. curvula
Dampiera tenuicaulis var. tenuicaulis
Darwinia sp. Karonie (K. Newbey 8503)
Dasymalla terminalis
Datura inoxia

Daucus glochidiatus
Daviesia aphylla
Daviesia croniniana
Daviesia grahamii
Daviesia pachyloma
Dicrastylis brunnea
Dicrastylis parvifolia
Didymanthus roei
Dillwynia sp.
Dillwynia sp. Coolgardie (V.E. Sands 637.3.1)
Diocirea acutifolia
Diocirea violacea
Diocirea x Eremophila violacea x clavata
Disphyma crassifolium subsp. clavellatum
Dissocarpus paradoxus
Dodonaea adenophora
Dodonaea amblyophylla
Dodonaea boroniifolia
Dodonaea cf. microzyga/adenophora
Dodonaea lobulata
Dodonaea lobulata x microzyga
Dodonaea microzyga
Dodonaea microzyga var. acrolobata
Dodonaea stenozyga
Dodonaea viscosa subsp. angustissima
Drosera sp. Branched styles (S.C. Coffey 193)
Drummondita hassellii
Duboisia hopwoodii
Dysphania cristata
Dysphania kalpari
Dysphania pumilio
Echium plantagineum
Einadia nutans subsp. eremaea
Elachanthus pusillus
Enchylaena tomentosa
Enchylaena tomentosa var. tomentosa
Enekbatus eremaeus
Eremaea zonospila
Eremophila alternifolia
Eremophila arachnoides subsp. tenera
Eremophila caerulea subsp. caerulea
Eremophila caerulea subsp. merrallii
Eremophila caperata
Eremophila cf. deserti
Eremophila clarkei
Eremophila clavata
Eremophila decipiens
Eremophila decipiens subsp. decipiens
Eremophila dempsteri
Eremophila deserti
Eremophila drummondii
Eremophila georgei
Eremophila gibbosa
Eremophila glabra subsp. glabra
Eremophila granitica
Eremophila interstans subsp. interstans
Eremophila interstans subsp. virgata
Eremophila ionantha
Eremophila ionantha x scoparia
Eremophila longifolia
Eremophila maculata subsp. brevifolia
Eremophila miniata
Eremophila oblonga
Eremophila oldfieldii subsp. angustifolia
Eremophila oppositifolia subsp. angustifolia
Eremophila pantonii
Eremophila parvifolia subsp. auricampa
Eremophila parvifolia x scoparia
Eremophila praecox
Eremophila psilocalyx
Eremophila pustulata
Eremophila rugosa
Eremophila saligna
Eremophila scoparia
Eremophila serrulata
Eremophila sp.
Eremophila subfloccosa subsp. lanata
Eremophila xantholaema
Ericomyrtus serpyllifolia
Eriochiton sclerolaenoides
Erodium cicutarium
Erodium crinitum
Erodium cygnorum
Erymophyllum glossanthus

Erymophyllum ramosum
Erymophyllum ramosum subsp. ramosum
Erythrostemon gilliesii
Eucalyptus calycogona subsp. calycogona
Eucalyptus campaspe
Eucalyptus celastroides subsp. celastroides
Eucalyptus ceratocorys
Eucalyptus cf. ravida
Eucalyptus clelandiorum
Eucalyptus clelandiorum x torquata
Eucalyptus comitae-vallis
Eucalyptus concinna
Eucalyptus concinna / planipes
Eucalyptus corrugata
Eucalyptus cylindrocarpa
Eucalyptus eremophila
Eucalyptus eremophila subsp. eremophila
Eucalyptus flocktoniae
Eucalyptus fraseri subsp. fraseri
Eucalyptus gracilis
Eucalyptus griffithsii
Eucalyptus horistes
Eucalyptus hypolaena
Eucalyptus incrassata
Eucalyptus jutsonii subsp. jutsonii
Eucalyptus leptophylla
Eucalyptus leptopoda subsp. subluta
Eucalyptus lesouefii
Eucalyptus livida
Eucalyptus longicornis
Eucalyptus longissima
Eucalyptus loxophleba subsp. lissophloia
Eucalyptus oleosa
Eucalyptus oleosa subsp. oleosa
Eucalyptus oleosa var. obtusa
Eucalyptus petraea
Eucalyptus pileata
Eucalyptus planipes
Eucalyptus platycorys
Eucalyptus prolixa
Eucalyptus ravida
Eucalyptus rigidula
Eucalyptus salicola
Eucalyptus salmonophloia
Eucalyptus salubris
Eucalyptus stricklandii
Eucalyptus tenera
Eucalyptus torquata
Eucalyptus transcontinentalis
Eucalyptus trichopoda
Eucalyptus urna
Eucalyptus vittata
Eucalyptus websteriana
Eucalyptus websteriana subsp. norsemanica
Eucalyptus websteriana subsp. websteriana
Eucalyptus x brachyphylla
Eucalyptus yilgarnensis
Euphorbia drummondii
Euphorbia multifaria
Euphorbia porcata
Euphorbia tannensis subsp. eremophila
Euryomyrtus maidenii
Exocarpos aphyllus
Frankenia cinerea
Frankenia desertorum
Frankenia glomerata
Frankenia interioris
Frankenia interioris var. interioris
Frankenia interioris var. parviflora
Frankenia pauciflora
Frankenia setosa
Gastrolobium graniticum
Gazania linearis
Gilberta tenuifolia
Glandularia aristigera
Glischrocaryon angustifolium
Glischrocaryon flavescens
Glycyrrhiza acanthocarpa
Gnephosis brevifolia
Gnephosis tenuissima
Gompholobium gompholobioides
Gonocarpus confertifolius var. helmsii
Goodenia cf. xanthosperma
Goodenia concinna
Goodenia elderi
Goodenia havilandii
Goodenia mimuloides

Goodenia pusilliflora
Goodenia salina
Goodenia xanthosperma
Grevillea acacioides
Grevillea acuaria
Grevillea beardiana
Grevillea didymobotrya subsp. didymobotrya
Grevillea excelsior
Grevillea georgeana
Grevillea haplantha subsp. haplantha
Grevillea hookeriana subsp. apiciloba
Grevillea hookeriana subsp. hookeriana
Grevillea huegelii
Grevillea nematophylla subsp. nematophylla
Grevillea obliquistigma subsp. obliquistigma
Grevillea oligomera
Grevillea oncogyne
Grevillea paniculata
Grevillea sarissa subsp. bicolor
Grevillea sarissa subsp. sarissa
Grevillea teretifolia
Grevillea uncinulata
Gunniopsis quadrifida
Gyrostemon racemiger
Hakea erecta
Hakea francisiana
Hakea minyma
Hakea preissii
Halgania andromedifolia
Halgania cyanea var. Allambi Stn (B.W. Strong 676)
Halgania cyanea var. Charleville (R.W. Purdie +111)
Halgania integerrima
Haloragis gossei
Haloragis maierae
Haloragis trigonocarpa
Hannafordia bissillii subsp. latifolia
Helianthus annuus
Heliotropium curassavicum
Heliotropium europaeum
Heliotropium supinum
Hemiphora elderi
Hibbertia ancistrophylla
Hibbertia glomerosa var. glomerosa
Hibiscus solanifolius
Homalocalyx thryptomenoides
Hovea acanthoclada
Hyalosperma demissum
Hyalosperma glutinosum
Hyalosperma glutinosum subsp. glutinosum
Hyalosperma zacchaeus
Hybanthus epacroides
Hybanthus floribundus subsp. curvifolius
Hydrocotyle pilifera var. glabrata
Hypertelis cerviana
Hysterobaeckea petraea
Ipomoea calobra
Isoetopsis graminifolia
Isotoma petraea
Jacksonia arida
Kennedia prorepens
Kippistia suaedifolia
Lachnostachys coolgardiensis
Lactuca serriola forma serriola
Lantana camara
Lawrencella rosea
Lawrencia chrysoderma
Lawrencia glomerata
Lawrencia helmsii
Lawrencia repens
Lawrencia squamata
Lechenaultia brevifolia
Leiocarpa websteri
Lemooria burkittii
Leontodon rhagadioloides
Lepidium africanum
Lepidium fasciculatum
Lepidium merrallii
Lepidium oxytrichum
Lepidium papillosum
Leptosema cervicorne
Leptosema daviesioides
Leptospermum fastigiatum
Leptospermum subtenue
Leucochrysum fitzgibbonii
Leucopogon sp. Boorabbin (K.R. Newbey 8374)
Leucopogon sp. Coolgardie (M. Hislop & F. Hort MH 3197)

Leucopogon sp. Kambalda (J. Williams s.n. PERTH 07305028)
Limonium sinuatum
Lobelia cf. winfrindae
Lotus cruentus
Lycium australe
Lycium ferocissimum
Lysiana casuarinae
Lysimachia arvensis
Lythrum hyssopifolia
Maireana aff. planifolia
Maireana amoena
Maireana appressa
Maireana atkinsiana
Maireana brevifolia
Maireana carnosa
Maireana erioclada
Maireana eriosphaera
Maireana georgei
Maireana glomerifolia
Maireana integra
Maireana marginata
Maireana oppositifolia
Maireana pentagona
Maireana pentatropis
Maireana platycarpa
Maireana pyramidata
Maireana radiata
Maireana sedifolia
Maireana suaedifolia
Maireana tomentosa subsp. tomentosa
Maireana trichoptera
Maireana triptera
Maireana turbinata
Malleostemon roseus
Malleostemon tuberculatus
Malva parviflora
Malva preissiana
Malva weinmanniana
Marsdenia australis
Medicago laciniata
Medicago minima
Medicago polymorpha
Melaleuca acuminata subsp. acuminata
Melaleuca coccinea
Melaleuca cordata
Melaleuca elliptica
Melaleuca fulgens / radula subsp. fulgens
Melaleuca fulgens subsp. fulgens
Melaleuca hamata
Melaleuca lanceolata
Melaleuca lateriflora
Melaleuca macronychia subsp. macronychia
Melaleuca pauperiflora subsp. fastigiata
Melaleuca sheathiana
Melaleuca uncinata
Melaleuca zeteticorum
Melia azedarach
Mesembryanthemum crystallinum
Mesembryanthemum nodiflorum
Micromyrtus erichsenii
Micromyrtus monotaxis
Micromyrtus stenocalyx
Minuria cunninghamii
Mirbelia depressa
Mirbelia microphylla
Mirbelia ramulosa
Mirbelia seorsifolia
Monoculus monstrosus
Monotaxis grandiflora var. obtusifolia
Monotaxis luteiflora
Myoporum montanum
Myoporum platycarpum
Myoporum platycarpum subsp. platycarpum
Myosurus australis
Nicotiana glauca
Nicotiana occidentalis subsp. obliqua
Nicotiana rotundifolia
Nitraria billardierei
Notisia intonsa
Olearia exiguifolia
Olearia homolepis
Olearia incana
Olearia muelleri
Olearia pimeleoides
Olearia rudis
Olearia sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)
Olearia subspicata

Oligocarpus calendulaceus
Omphalolappula concava
Oncosiphon suffruticosum
Opercularia vaginata
Opuntia elata
Opuntia ficus-indica
Opuntia sp.
Orbea variegata
Oxalis bowiei
Oxalis pes-caprae
Oxalis sp.
Ozothamnus cassiope
Papaver hybridum
Persicaria prostrata
Persoonia helix
Persoonia saundersiana
Petalostylis cassioides
Petrophile arcuata
Phebalium canaliculatum
Phebalium canaliculatum (hybrid)
Phebalium canaliculatum / tuberculosum
Phebalium clavatum
Phebalium clavatum - filifolium ?
Phebalium filifolium
Phebalium filifolium - tuberculosum
Phebalium lepidotum
Phebalium tuberculosum
Philotheca tomentella
Phlegmatospermum eremaeum
Phyla canescens
Phyllangium sulcatum
Physopsis viscida
Pimelea angustifolia
Pimelea microcephala subsp. microcephala
Pittosporum angustifolium
Pityrodia lepidota
Plantago debilis
Plantago drummondii
Plantago sp. Mt Magnet (A.S. George 6793)
Platysace effusa
Platysace trachymenioides
Podolepis aristata subsp. affinis
Podolepis capillaris
Podolepis lessonii
Podolepis rugata
Podotheca wilsonii
Polygonum aviculare
Pomaderris forrestiana
Portulaca oleracea
Portulacaria afra
Proboscidea louisianica
Prostanthera althoferi subsp. althoferi
Prostanthera campbellii
Prostanthera grylloana
Prostanthera incurvata
Psammomoya choretroides
Pterocaulon sphacelatum
Ptilotus aervoides
Ptilotus carlsonii
Ptilotus eremita
Ptilotus exaltatus
Ptilotus exaltatus var. villosus
Ptilotus gaudichaudii var. parviflorus
Ptilotus grandiflorus
Ptilotus helichrysoides
Ptilotus holosericeus
Ptilotus obovatus
Ptilotus procumbens
Pultenaea sp.
Radyera farragei
Reseda luteola
Rhagodia drummondii
Rhagodia eremaea
Rhagodia sp.
Rhodanthe battii
Rhodanthe charsleyae
Rhodanthe chlorocephala subsp. rosea
Rhodanthe chlorocephala subsp. splendida
Rhodanthe floribunda
Rhodanthe haigii
Rhodanthe laevis
Rhodanthe manglesii
Rhodanthe nullarborensis
Rhodanthe oppositifolia subsp. oppositifolia
Rhodanthe pygmaea
Rhodanthe rubella
Rhodanthe stricta

Ricinocarpos sp. Eastern Goldfields (A. Williams 3)

Ricinocarpos stylosus

Ricinocarpos velutinus

Roepera aurantiaca subsp. aurantiaca

Roepera compressa

Roepera eremaea

Roepera glauca

Roepera ovata

Roepera reticulata

Rumex vesicarius

Salsola australis

Salvia reflexa

Salvia verbenaca

Salvia verbenaca (cleistogamous form)

Salvia verbenaca (typical form)

Santalum acuminatum

Santalum spicatum

Scaevola spinescens

Schinus molle var. areira

Schoenia cassiniana

Schoenia filifolia subsp. filifolia

Sclerolaena brevifolia

Sclerolaena cuneata

Sclerolaena diacantha

Sclerolaena drummondii

Sclerolaena eurotioides

Sclerolaena fusiformis

Sclerolaena gardneri

Sclerolaena intricata

Sclerolaena obliquicuspis

Sclerolaena parviflora

Senecio dolichocephalus

Senecio glossanthus

Senecio lacustrinus

Senecio magnificus

Senna artemisioides

Senna artemisioides subsp. filifolia

Senna artemisioides subsp. x artemisioides

Senna cardiosperma

Senna pleurocarpa

Senna pleurocarpa var. angustifolia

Senna pleurocarpa var. pleurocarpa

Senna sp.

Senna stowardii

Seringia velutina

Sida calyxhymenia

Sida intricata

Sida sp.

Sida spodochroma

Sisymbrium erysimoides

Sisymbrium irio

Sisymbrium orientale

Solanum cleistogamum

Solanum esuriale

Solanum hoplopetalum

Solanum lasiophyllum

Solanum nigrum

Solanum nummularium

Solanum petrophilum

Solanum plicatile

Solanum simile

Sonchus oleraceus

Spartothamnella sp. Helena & Aurora Range (P.G. Armstrong 155-109)

Spergularia diandra

Spergularia marina

Stackhousia sp. Mt Keith (G. Cockerton & G. O'Keefe 11017)

Stenanthemum stipulosum

Stenopetalum filifolium

Stenopetalum lineare

Stenopetalum lineare var. lineare

Stenopetalum pedicellare

Streptoglossa liatroides

Stylidium arenicola

Stylidium choreanthum

Stylidium dielsianum

Stylidium induratum

Styphelia sp.

Surreya diandra

Swainsona affinis

Swainsona beasleyana

Swainsona canescens

Swainsona colutoides

Swainsona gracilis

Swainsona incei

Swainsona kingii

Swainsona leeana

Swainsona oliveri

Swainsona oroboides

Swainsona purpurea

Swainsona rostellata
Symphyotrichum squamatum
Tamarix chinensis
Tecticornia arborea
Tecticornia disarticulata
Tecticornia doliiformis
Tecticornia flabelliformis
Tecticornia indica subsp. bidens
Tecticornia lepidosperma
Tecticornia mellarium
Tecticornia peltata
Tecticornia pergranulata subsp. pergranulata
Tecticornia pruinosa
Tecticornia pterygosperma subsp. pterygosperma
Tecticornia sp.
Tecticornia syncarpa
Tecticornia triandra
Tecticornia undulata
Templetonia ceracea
Templetonia incrassata
Tetragonia eremaea
Tetratheca efoliata
Tetratheca spenceri
Teucrium sessiliflorum
Thiseltonia gracillima
Thryptomene australis subsp. brachyandra
Thryptomene kochii
Thryptomene sp. Coolgardie (E. Kelso s.n. 1902)
Thryptomene sp. Londonderry (R.H. Kuchel 1763)
Thryptomene urceolaris
Trachymene cyanopetala
Trachymene ornata
Tribulus terrestris
Trichanthodium skirrophorum
Trichodesma zeylanicum
Triptilodiscus pygmaeus
Trymalium myrtillus subsp. myrtillus
Urtica urens
Velleia rosea
Verticordia chrysantha
Verticordia picta
Verticordia pritzelii
Vicia monantha subsp. triflora
Vincetoxicum lineare
Vittadinia cervicularis var. cervicularis
Vittadinia dissecta var. hirta
Vittadinia humerata
Vittadinia sp.
Vittadinia sulcata
Wahlenbergia gracilenta
Waitzia acuminata var. acuminata
Waitzia fitzgibbonii
Westringia cephalantha
Westringia rigida
Xanthium spinosum
Zygophyllum apiculatum
Zygophyllum aurantiacum
Zygophyllum compressum
Zygophyllum eremaeum
Zygophyllum fruticulosum
Zygophyllum glaucum
Zygophyllum ovatum
Zygophyllum reticulatum

FERN

Cheilanthes adiantoides
Cheilanthes austrotenuifolia
Cheilanthes sieberi subsp. sieberi

GYMNO

Callitris columellaris
Callitris preissii
Callitris verrucosa

LIVERWORT

Riccia crinita

MONOCOT

Agave americana
Aristida contorta
Austrostipa blackii
Austrostipa drummondii
Austrostipa elegantissima
Austrostipa eremophila
Austrostipa nitida
Austrostipa nodosa
Austrostipa platychaeta
Austrostipa scabra
Austrostipa sp. Carlingup Road (S. Kern & R. Jasper LCH 18459)
Austrostipa sp. indet.
Bromus arenarius
Bromus catharticus
Bromus diandrus

Bulbine semibarbata
Caladenia roei
Cenchrus ciliaris
Cenchrus setaceus
Chloris truncata
Chrysitrix distigmatosa
Dactyloctenium radulans
Danthonia caespitosa
Dichanthium sericeum subsp. sericeum
Digitaria ammophila
Digitaria brownii
Ehrharta villosa
Eleocharis acutangula
Elymus scaber
Enneapogon avenaceus
Enneapogon caerulescens
Enneapogon cylindricus
Enteropogon acicularis
Enteropogon ramosus
Eragrostis curvula
Eragrostis dielsii
Eragrostis falcata
Eragrostis setifolia
Eragrostis xerophila
Eriachne pulchella
Gahnia deusta
Hordeum glaucum
Hordeum leporinum
Hordeum sp.
Isolepis australiensis
Lepidobolus chaetocephalus
Lepidobolus deserti
Lepidosperma aff. diurnum
Lepidosperma diurnum
Lepidosperma sp.
Lepidosperma sp. Kambalda (A.A. Mitchell 5156)
Lepidosperma sp. Parker Range (N. Gibson & M. Lyons 2094)
Leptochloa digitata
Mesomelaena preissii
Monachather paradoxus
Panicum decompositum
Panicum effusum
Paspalidium constrictum
Paspalidium gracile
Paspalidium reflexum
Pennisetum villosum
Phalaris paradoxa
Pterostylis sp. dainty brown (N. Gibson & M. Lyons 3690)
Pterostylis sp. inland (A.C. Beauglehole 11880)
Pterostylis tryphera
Rostraria pumila
Ruppia polycarpa
Rytidosperma acerosum
Rytidosperma caespitosum
Rytidosperma setaceum
Schismus arabicus
Schismus barbatus
Schoenus hexandrus
Schoenus subaphyllus
Setaria dielsii
Sorghum halepense
Sowerbaea multicaulis
Stipa eremophila
Stipa nitida
Stipa puberula
Stipa sp.
Thelymitra antennifera
Thysanotus manglesianus
Thysanotus sp.
Triodia irritans
Triodia scariosa
Typha orientalis
Urochloa panicoides
Wurmbea tenella

APPENDIX J:
EPBC PROTECTED MATTERS SEARCH (40KM BUFFER)

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Sep-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	10
Listed Migratory Species:	7

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	80
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	8
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
Goldfields Water Supply Scheme, Western Australia	WA	Listed place	In buffer area only

Listed Threatened Species			[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos			
Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata			
Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis			
Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area
Polytelis alexandrae			
Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area	In buffer area only
INSECT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ogyris subterrestris petrina Arid Bronze Azure [77743]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
Tecticornia flabelliformis Bead Glasswort, Bead Samphire [82664]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - AIRTC KALGOORLIE [50110]	WA	In buffer area only
Defence - AIRTC KALGOORLIE [50111]	WA	In buffer area only
Defence - KALGOORLIE RIFLE RANGE [50156]	WA	In buffer area only
Defence - KALGOORLIE TRAINING DEPOT [50198]	WA	In buffer area only
Defence - KALGOORLIE TRAINING DEPOT [50199]	WA	In buffer area only
Unknown		
Commonwealth Land - [51060]	WA	In buffer area only
Commonwealth Land - [51063]	WA	In buffer area only
Commonwealth Land - [51779]	WA	In buffer area only
Commonwealth Land - [51062]	WA	In buffer area only
Commonwealth Land - [51759]	WA	In buffer area only
Commonwealth Land - [51758]	WA	In buffer area only
Commonwealth Land - [51959]	WA	In buffer area only
Commonwealth Land - [51958]	WA	In buffer area only
Commonwealth Land - [51782]	WA	In buffer area only
Commonwealth Land - [51795]	WA	In buffer area only
Commonwealth Land - [51794]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51783]	WA	In buffer area only
Commonwealth Land - [51791]	WA	In buffer area only
Commonwealth Land - [51790]	WA	In buffer area only
Commonwealth Land - [51793]	WA	In buffer area only
Commonwealth Land - [51792]	WA	In buffer area only
Commonwealth Land - [51953]	WA	In buffer area only
Commonwealth Land - [51780]	WA	In buffer area only
Commonwealth Land - [51773]	WA	In buffer area only
Commonwealth Land - [51949]	WA	In buffer area only
Commonwealth Land - [51952]	WA	In buffer area only
Commonwealth Land - [51784]	WA	In buffer area only
Commonwealth Land - [52233]	WA	In buffer area only
Commonwealth Land - [51765]	WA	In buffer area only
Commonwealth Land - [51766]	WA	In buffer area only
Commonwealth Land - [52230]	WA	In buffer area only
Commonwealth Land - [51760]	WA	In buffer area only
Commonwealth Land - [51761]	WA	In buffer area only
Commonwealth Land - [51763]	WA	In buffer area only
Commonwealth Land - [51950]	WA	In buffer area only
Commonwealth Land - [51772]	WA	In buffer area only
Commonwealth Land - [51762]	WA	In buffer area only
Commonwealth Land - [51770]	WA	In buffer area only
Commonwealth Land - [51764]	WA	In buffer area only
Commonwealth Land - [50334]	WA	In buffer area only
Commonwealth Land - [50310]	WA	In buffer area only
Commonwealth Land - [50329]	WA	In buffer area only
Commonwealth Land - [51985]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51430]	WA	In buffer area only
Commonwealth Land - [52184]	WA	In buffer area only
Commonwealth Land - [52211]	WA	In buffer area only
Commonwealth Land - [51061]	WA	In buffer area only
Commonwealth Land - [51785]	WA	In buffer area only
Commonwealth Land - [51963]	WA	In buffer area only
Commonwealth Land - [51961]	WA	In buffer area only
Commonwealth Land - [51960]	WA	In buffer area only
Commonwealth Land - [51789]	WA	In buffer area only
Commonwealth Land - [51962]	WA	In buffer area only
Commonwealth Land - [50333]	WA	In buffer area only
Commonwealth Land - [51788]	WA	In buffer area only
Commonwealth Land - [51059]	WA	In buffer area only
Commonwealth Land - [50332]	WA	In buffer area only
Commonwealth Land - [50331]	WA	In buffer area only
Commonwealth Land - [51769]	WA	In buffer area only
Commonwealth Land - [50337]	WA	In buffer area only
Commonwealth Land - [50336]	WA	In buffer area only
Commonwealth Land - [50335]	WA	In buffer area only
Commonwealth Land - [51787]	WA	In buffer area only
Commonwealth Land - [51406]	WA	In buffer area only
Commonwealth Land - [51771]	WA	In buffer area only
Commonwealth Land - [51951]	WA	In buffer area only
Commonwealth Land - [51775]	WA	In buffer area only
Commonwealth Land - [51786]	WA	In buffer area only
Commonwealth Land - [51781]	WA	In buffer area only
Commonwealth Land - [52244]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51774]	WA	In buffer area only
Commonwealth Land - [51955]	WA	In buffer area only
Commonwealth Land - [51954]	WA	In buffer area only
Commonwealth Land - [51957]	WA	In buffer area only
Commonwealth Land - [51956]	WA	In buffer area only
Commonwealth Land - [51777]	WA	In buffer area only
Commonwealth Land - [51767]	WA	In buffer area only
Commonwealth Land - [51778]	WA	In buffer area only
Commonwealth Land - [51768]	WA	In buffer area only
Commonwealth Land - [51776]	WA	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bullock Holes Timber Reserve	5(1)(g) Reserve	WA	In buffer area only
Kalgoorlie Arboretum	5(1)(h) Reserve	WA	In buffer area only
Kambalda	Nature Reserve	WA	In buffer area only
Kurrawang	Nature Reserve	WA	In buffer area only
Lakeside Timber Reserve	5(1)(g) Reserve	WA	In buffer area only
Ngadju	Indigenous Protected Area	WA	In buffer area only
Scahill Timber Reserve	5(1)(g) Reserve	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Yallari Timber Reserve	5(1)(h) Reserve	WA	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Goldfields Water Supply Scheme Project	2019/8547	Controlled Action	Post-Approval	In buffer area only
Nava-1 Cable System	2001/510	Controlled Action	Completed	In buffer area only
Not controlled action				
Focus, Greenfields and Carins Intersection Upgrade,Great Eastern Highway, WA	2014/7171	Not Controlled Action	Completed	In buffer area only
Gold Mining Developments on Lake Lefroy	2010/5402	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Lynas Kalgoorlie Rare Earths Processing Facility	2020/8719	Not Controlled Action	Completed	In buffer area only
Sale of Post Office, Hannan Street	2006/3084	Not Controlled Action	Completed	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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