Midwest and Remote Towns - Yalgoo

Biological assessment

Horizon Power

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→ The Power of Commitment

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Executive Summary

Horizon Power is proposing to develop renewable energy projects for eight sites in the Murchison, Pilbara and Gascoyne regions of Western Australia (WA). GHD Pty Ltd (GHD) was commissioned to undertake Detailed (single season) flora and vegetation survey, targeted flora survey and a Basic and Targeted fauna survey of a site located directly north of the Yalgoo townsite. The site (survey area) covered 17.40 ha.

The outcomes of the survey and information supplied in this biological survey report will be used to inform the project design and provide information to support a native vegetation clearing permit application under Part V of the *Environmental Protection Act 1986*.

Key findings

Flora and vegetation

One broad vegetation type was identified in the survey area which is broadly described as an *Acacia* Tall Open Shrubland on stony plain/broad drainage area. This vegetation type is considered to be well represented in the local and regional area and not confined to the survey area. The vegetation condition within the survey area was rated as Very Good. The vegetation structure was generally intact however obvious disturbances have impacted on the condition of the vegetation such as previous clearing, vehicle tracks, grazing, and pressure of drought.

No Threatened Ecological Communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) or Priority Ecological Communities listed by the Department of Biodiversity Conservation and Attractions (DBCA) were identified within the survey area during the field survey.

No significant flora listed under the EPBC Act and/or BC Act or Priority flora listed by the DBCA was recorded from the survey area. Of the nine significant flora taxa identified in the desktop searches, post-survey two are considered possible to occur within the survey area with the remaining seven considered unlikely to occur in the survey area. The two Priority listed species considered possibly occurring are *Goodenia neogoodenia* (P4) and *Gunniopsis divisa* (P3). These species are annual herbs which can be somewhat cryptic in nature. In favourable conditions there is potential suitable habitat for *Gunniopsis divisa* and limited possible habitat for *Goodenia neogoodenia* within the survey area, however, it is marginal with no areas that would be semi-permanently wet under suitable conditions. The survey was undertaken during the flowering period for both species and the survey area was considered to be adequately searched.

Fauna

One broad fauna habitat type (excluding cleared areas) was identified across the survey area based on the predominant landforms, soil and vegetation structure in the area. No Threatened fauna listed under the EPBC Act or BC Act was recorded during the survey. The survey area supports habitat for two significant fauna species (that were identified as likely to occur post-survey), in the form of opportunistic foraging habitat and dispersal. These species are the Grey Falcon (Vulnerable under EPBC Act and BC Act) and Peregrine Falcon (Other Specially Protected, BC Act/DBCA). Transect searches were undertaken for *Idiosoma clypteatum* (Priority 3) burrows, but none were located. The habitat in the survey area is considered marginally suitable for *Idiosoma clypeatum*.

Contents

Table index

Appendices

1. Introduction

1.1 Project background

Horizon Power is proposing to develop a renewable energy project at Yalgoo in the Murchison region of Western Australia (WA).

GHD Pty Ltd (GHD) was commissioned to undertake a Detailed (single season) flora and vegetation survey and a Basic and Targeted fauna survey of the proposed site (the survey area).

1.2 Purpose of this report

The purpose of this report is to describe the methods and results of the study and field assessment undertaken at Yalgoo for Horizon Power.

The flora, vegetation and fauna assessment was undertaken to define sensitive environmental values, in particular their spatial location and conservation significance, to inform approvals and works to be undertaken. The outcomes of the assessment will be used to inform the project design and provide information to support a native vegetation clearing permit application under Part V of the *Environmental Protection Act 1986* (EP Act).

1.3 Location

1.3.1 Survey area

The survey area is located along Yalgoo North Road, directly north of the Yalgoo townsite which is approximately 479 kilometres (km) north of Perth. The survey area is 17.40 hectares (ha) in size (Figure 1, Appendix A).

1.3.2 Study area

A study area was defined for the desktop-based searches of the assessment and comprised a 40 km buffer of the survey area for fauna (DBCA data only), and a 20 km buffer of the survey area for vegetation and flora. The larger fauna study area is due to the limited records returned based on the 20 km buffer.

1.4 Scope of works

The scope of works included the following:

– A desktop assessment of relevant literature, databases and spatial datasets to determine the environmental values that may be present within or in close proximity to the survey area
– A Detailed and Targeted flora and vegetation survey
– A Basic and Targeted fauna survey
– A concise technical report (this document) outlining the method and results of the assessment.

1.5 Relevant legislation, conservation codes and background information

In WA significant communities, and flora and fauna are listed and/or protected under both Federal and State Government legislation, including the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), EP Act, *Biodiversity Conservation Act 2016* (BC Act) and the *Biosecurity and Agriculture Management Act 2007* (BAM Act).

In addition, regulatory bodies also provide a range of guidance and information on expected standards and protocols for environmental surveys. An overview of key legislation and guidelines, conservation codes and background information relevant to this assessment are provided in Appendix B.

1.6 Report limitations and assumptions

This report has been prepared by GHD for Horizon Power and may only be used and relied on by Horizon Power for the purpose agreed between GHD and Horizon Power as set out in section 1.2 of this report. GHD otherwise disclaims responsibility to any person other than Horizon Power arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Horizon Power and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points. Site conditions may change after the date of this report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

This report has assessed the flora and fauna values within the survey area, as shown in Figure 1, Appendix A. Should the survey area change or be refined, further assessment may be required.

2. Methodology

2.1 Desktop assessment

Prior to the commencement of the field survey, a desktop assessment of the study areas to identify environmental values and constraints was undertaken by viewing geographic information system (GIS) spatial files largely sourced from Government of Western Australia (GoWA) (2023) and reviewing publicly available, government managed databases. The information sources utilised in this assessment are presented in Table 1.

Table 1 Desktop information sources

Aspect	Information source
Climate	Bureau of Meteorology (BoM) Climate Data Online (2023)
Geology, landforms and soil	1:500 000 State linear structures layer (DMIRS-015) Soil Landscape Mapping – Systems (DPIRD-064)
Environmentally Sensitive Areas (ESAs)	Clearing Regulations - Environmentally Sensitive Areas (DWER-046)
Conservation reserves and areas	DBCA – Legislated Lands and Waters (DBCA-011) DBCA – Lands of Interest (DBCA-012)
Hydrology	Public Drinking Water Source Areas (DWER-033) RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037) RIWI Act, Groundwater Areas (DWER-034) RIWI Act, Rivers (DWER-036) Waterways Conservation Act Management Areas (DWER-072) Ramsar Sites (DBCA-010) Directory of Important Wetlands in Australia - Western Australia (DBCA-045)
Vegetation	Pre-European Vegetation (DPIRD-006) Native Vegetation Extent (DPIRD-005) Statewide Vegetation Statistics (GoWA 2019)
Threatened and Priority Ecological Communities (TECs and PECs)	DBCA Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) spatial dataset. Priority Ecological Communities for Western Australia Version 28 (DBCA 2023a)
Conservation significant flora and fauna	DBCA *NatureMap* database (DBCA 2007–) DBCA Threatened and Priority Flora database (TPFL) and WA Herbarium database (WAHERB) (DBCA 2023b)
Matters of National Environmental Significance	EPBC Act Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water ((DCCEEW) 2023)

2.1.1 Flora and vegetation

The flora and vegetation desktop assessment included a review of:

– The DCCEEW PMST to identify communities and species listed under the EPBC Act potentially occurring within the study area (DCCEEW 2023) (Appendix C)

– The DBCA Threatened and Priority Ecological Community (TECs and PECs) database for conservation significant communities present in the study area (DBCA 2023a)

– The DBCA Threatened and Priority Flora and WA Herbarium databases for Threatened flora listed under the BC Act and listed Priority by the DBCA previously recorded in the study area (DBCA 2023b)

– The DBCA *NatureMap* database for flora and fauna species previously recorded within the study area (DBCA 2007-) (Appendix C)

– Aerial photography, geology/soils, land systems and hydrology information to provide background information on the variability of the environment and likely vegetation and habitat types present
– A flora likelihood of occurrence assessment (Appendix D).

2.1.2 Fauna

The fauna desktop assessment included a review of:

– DCCEEW PMST database to identify fauna species listed under the EPBC Act potentially occurring within the study area (DCCEEW 2023) (Appendix C)
– The DBCA Threatened and Priority Fauna database for the study area (DBCA 2023c)
– The DBCA *NatureMap* (DBCA 2007–) database for fauna species previously recorded within the study area (Appendix C). This database comprises the following composite datasets:
  - Atlas of Australian birds
  - Bird data – Birdlife Australia
  - Fauna Survey Returns Database
  - WA Museum (WAM) databases (mammals, birds, reptiles)
– Aerial photography, geology/soils, land systems and hydrology information to provide background information on the variability of the environment and likely habitat types present
– A fauna likelihood of occurrence assessment. For the purpose of this study, exclusively marine animals (fish, whales, turtles etc.) were excluded from the likelihood of occurrence assessment as they are not expected to interact with the survey areas (Appendix E).

2.2 Field survey

2.2.1 Survey timing and personnel

The post-wet single season Detailed and Targeted flora and vegetation survey and Basic and Targeted fauna survey was undertaken between 21-22 September 2023 by Senior botanist/ecologist Erin Lynch (flora license no. FB62000081-3) and zoologist/ecologist Sarah Flemington.

2.2.2 Guiding documents

The survey methodology and data collection that GHD employed was consistent with:

– Environmental Protection Authority (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a)
– EPA *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020)
– *EPA Technical Guidance – Sampling of short range endemic invertebrate fauna* (EPA 2016b)
– Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) *Survey Guidelines for Australia's Threatened Mammals* (DSEWPC 2011a)
– DSEWPC *Survey Guidelines for Australia's Threatened Reptiles* (DSEWPC 2011b)
– DBCA Guidelines for surveys to detect the presence of bilbies, and assess the importance of habitat in Western Australia (DBCA 2017)
– Verifying Bilby presence and the systematic sampling of wild populations using sign based protocols – with notes on aerial and ground based techniques and asserting absence (Southgate et al 2018).

2.2.3 Data collection and storage

Field data collection for the flora, vegetation and fauna survey was undertaken using GPS enabled tablets using electronic forms in Collector and tailored to IBSA spatial data requirements. Data was synced to the cloud at the

conclusion of each field day. Field photographs were stored and where applicable have been provided as part of the deliverables.

2.2.4 Detailed and Targeted flora and vegetation survey

The field survey was undertaken to identify and describe the broad dominant vegetation types, assess vegetation condition, and high intensity sampling of vascular flora taxa present at the time of survey. Searches for significant ecological communities and flora species were also undertaken during the field survey.

Field survey methods involved a combination of quadrat sampling and traversing the survey area by foot. Five 20 x 20 m quadrats were conducted to describe the broad-scale vegetation and physical features. A minimum of three quadrats were located in each identified vegetation type. Opportunistic sampling was undertaken across the survey area to develop a comprehensive species list. Vegetation types were identified and boundaries delineated using a combination of aerial photography, topographical features and field data/observations.

Field data at each quadrat site was recorded on a pro-forma data sheet and included the parameters detailed in Table 2. Survey effort including quadrat locations are presented in Figure 3, Appendix A. Survey and quadrat data are provided in Appendix D.

Table 2 Data collected during the field survey

Aspect	Measurement
Collection attributes	Site code, personnel/recorder, date, photograph of the site.
Physical features	Landform, slope, aspect, soil attributes, ground surface cover
Location	Coordinates recorded in Geocentric Datum of Australia (GDA) 20 datum using a GPS enabled tablet with approximately 3-5 m accuracy.
Vegetation condition	Broad-scale vegetation condition using the condition rating scale adapted by EPA (2016) for the region. The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the Eremaean Botanical Provinces devised by Trudgen (1988) and adapted by EPA (2016). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is outlined in Appendix B. Areas devoid of vegetation were mapped as cleared (e.g. roads, infrastructure) and not assigned a vegetation condition rating.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, infrastructure development activities).
Flora	List of dominant flora from each structural layer, list of all species at each quadrat including stratum, average height and cover using National Vegetation Information System (NVIS Technical Working Group 2017).
Vegetation	Vegetation types are consistent with NVIS Level V (Association) and are grouped within NVIS Level III (Broad Floristic Formation). At Level V up to three taxa per stratum are used to describe the association (NVIS 2017).

Targeted flora survey

The Targeted survey was undertaken concurrently with the Detailed flora and vegetation survey. Based on the significant flora identified in the desktop searches, GHD employed a sampling method that involved walking traverses across the survey area. Where significant flora taxa were identified the locations and number of plants present were recorded using Samsung Tablets on a mapping application (accuracy 2-5 m). Threatened and Priority 1 flora were mapped with a GPS with an accuracy of +/- 0.5 m. Additional data was collected to support the lodgement of a Threatened and Priority Flora Report Form. Survey effort for the Targeted flora survey is shown in Figure 3, Appendix A.

2.2.5 Basic and Targeted fauna survey

The Basic fauna and Targeted fauna survey was completed in conjunction with the flora and vegetation survey. The survey area was traversed by foot to identify and describe dominant fauna habitat types present, and their condition, and to assess habitat for significant fauna.

Habitat assessment

A fauna habitat assessment was undertaken to document the type, value and extent of habitats within the survey area. The following information was recorded:

- Habitat structure (e.g. vegetation type, presence/absence of structural layers such as ground cover and mid-storey)
- Presence/absence of refuge including density of ground covers, fallen timber (course woody debris), rocks/boulder piles, and the type and extent of each refuge
- Presence/absence of waterways including type, extent and habitat quality within waterway
- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area
- Current land use and disturbance history
- Evaluation of key habitat features and types identified during the desktop assessment relevant to significant fauna
- Evaluation of the likelihood of occurrence of significant fauna within the habitat (based on presence of suitable habitat)
- A representative photograph of each habitat-type.

Opportunistic fauna searches

Opportunistic fauna searches were conducted across the survey area. This included:

- Searching the survey area for tracks, scats, bones, diggings and feeding areas for native and feral species
- Searching through microhabitats including examining termite mounds, tree hollows and hollow logs and turning over leaf litter
- Visual and aural surveys, which accounted for all the bird species recorded utilising the habitats of the survey area at that time
- Recording GPS locations of significant fauna species.

Targeted SRE Invertebrate searches

A Short Range Endemic (SRE) invertebrate fauna targeted survey was undertaken at the survey area in conjunction with the vegetation, flora and fauna surveys. An assessment of conservation significant invertebrates identified only one species, the Northern Shield-backed Trapdoor Spider *Idiosoma clypeatum* (Priority 3) that has potential habitat in the region. *Idiosoma clypeatum* was previously known by the WAM identification code 'MYG018' and prior to the taxonomic revision of Rix et al. (2018) was often incorporated into *Idiosoma nigrum* that is now known to only occur in the northern Wheatbelt region of Western Australia (Rix et al. 2018).

The Murchison region is poorly surveyed for invertebrates and an absence of previously recorded species does not necessarily indicate an absence of potential SRE species. Therefore, targeted searches for this species was undertaken in suitable habitats during the survey.

The opportunistic SRE survey was undertaken in accordance with the Technical Guidance Sampling of short range endemic invertebrate fauna (EPA 2016) for undertaking transects for Shield-backed trapdoor spiders to record opportunistic/visual records. No trapping was completed as part of the SRE sampling.

2.3 Limitations

2.3.1 Desktop limitations

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the survey area. The records from the DBCA searches of Threatened and Priority flora and fauna provide more accurate information for the general area and local occurrence. However, some collections, sighting or trapping records cannot be dated and often misrepresent the current range of Threatened and Priority species.

2.3.2 Field survey limitations

The EPA (2016, 2020) Technical Guidance states that flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 3. Based on this assessment, the survey effort has not been subject to any constraints, which affect the thoroughness of the assessment or conclusions formed.

Table 3 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	Adequate information is available for the survey area which includes: – Broad scale (1:1,000,000) pre-European vegetation mapping of the area by Beard (1974; 1977) and digitised by Shepherd et al. (2002) – *NatureMap* (DBCA 2007-).
Scope (what life forms were sampled etc.)	Nil	Vascular flora and terrestrial vertebrate fauna were sampled during the survey. Non-vascular flora, invertebrate and aquatic fauna were not surveyed, however, targeted searches were undertaken for SRE invertebrate, *Idiosoma clypeatum.*
Proportion of flora and fauna collected and identified (based on sampling, timing and intensity)	Minor	The single season Detailed flora and vegetation and Basic/Targeted fauna surveys were undertaken in September 2023. This is within the recommended timing for vegetation and flora surveys in the Eremaean Province (EPA 2016). The flora recorded is detailed in the Vegetation and flora sections and full flora species lists are provided in Appendix D. The proportion of flora collected and identified was considered suitable for the purposes of the assessment of the survey area. The basic fauna surveys were undertaken to identify habitat types and terrestrial vertebrate fauna utilising the survey area. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a basic survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all were identified to species level.
Flora determination	Minor	Flora determination was undertaken by GHD botanists in the field and by GHD Senior botanist/taxonomist Pali Jayasekara. Specimens were also submitted to the WA Herbarium for professional ID where they were significant. Majority of flora were able to be identified to species level, and some only at genus level due to lack of flowering and/or fruiting material required for identification. None of these species are considered likely to be significant flora. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time of report development, but it should be noted this may change in response to ongoing research and review of the International Union for Conservation Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed	Nil	The survey area was accessed by vehicle and on foot. The survey area was adequately surveyed during the field survey in line with the scope. An adequate number of floristic sampling sites were done for a detailed flora and vegetation survey. Habitats considered suitable for significant flora and fauna were traversed by foot.
Mapping reliability	Nil	The vegetation types were mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1977; 1974) and field data.

Aspect	Constraint	Comment
		Data was recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin ® GPS units and Android ® tablets used for this survey are accurate to within ±5 m on average. Therefore, the data points consisting of coordinates recorded from the GPS may contain inaccuracies. However, the aerial imagery displayed on the interactive tablet surface allowed for greater accuracy as field staff could use key visual indicators (such as tree canopy's, cleared areas, fence line etc.) to more accurately locate points.
Timing/weather/ season/cycle	Minor	The field survey was undertaken in spring 2023 which is considered to be during the optimal season to undertake flora and vegetation surveys in the regions. In the three months prior to the survey (Jun-Aug) the Mount Magnet aero (#7600) (Bureau of Meteorology 2023) recorded the following total rainfall: - June – 10.2 mm - July – 4.2 mm - August – 9.8 mm. This is below the recorded long-term average for Mount Magnet for the same months: - June – 21.2 mm - July – 25.5 mm - August – 16.6 mm.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	No disturbance had an impact on the results of the survey.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016) and terrestrial fauna sampled in accordance with EPA (2020). The survey area was sufficiently covered by the field ecologists during the survey.
Resources	Nil	Adequate resources were employed during the field survey. Four person days were spent undertaking the survey using two ecologists.
Access restrictions	Nil	The survey area was accessible by vehicle and traversed on foot. There were no access restrictions.
Experience levels	Nil	All survey staff are suitably qualified and experienced: – Senior ecologist Erin Lynch - over 15 years' experience – Zoologist Sarah Flemington – 6 years' experience

3. Desktop assessment

3.1 Climate

The survey area is located within the Yalgoo subregion of Western Australia. The climate of this region is classified as Mediterranean, semi-arid to arid and warm, with two distinct seasons: a hot and dry summer (December to February) and a mild wet winter (June to August) (Payne et al. 1998; Markey and Dillon 2006).

The region is characterised by moderately variable rainfall, with rainfall events being restricted to local areas rather than being widespread (Markey and Dillon 2006). The majority of all rainfall received occurs during winter months and is a result of low pressure system associated with the westerly wind system. Summer rainfall occurs as a result of thunderstorms and heavy downpours associated with remnant tropical cyclones (Markey and Dillon 2006). The closest current weather station to the site is in Mount Magnet (Station ID: 007600) located approximately 115 km east north-east of the Yalgoo town site (Bureau of Meteorology 2023). Climate data from this station indicates:

– Mean maximum temperature ranges from 18.8 °C in July to 37.9 °C in January
– Mean minimum temperature ranges from 7.0 °C in July to 23.5 °C in February
– Mean annual rainfall is 217.1 mm with average of 56 rain days/year (WeatherZone 2018).

3.2 Land systems and soil

The study area is located within the Karrara Hills, Plains and Lakes, and Yalgoo Plains soil landscape zones in the Murchison Province. The survey area intersects both of the zones. The Karrara Hills Plains and Lake Zone is described as “Hills and ranges, sandy plains, hardpan wash plains, stony plains and salt lakes (with some mesas and plains) on greenstone and granitic rocks of the Yilgarn Craton. Red shallow loams, Red loam earths, Red deep sands and Salt lake soils with some Red shallow sands, Stony soil and Red shallow sandy duplexes” (Tille 2006).

The Yalgoo Plain Zone is described as “Hardpan wash plains (with some sandplains, stony plains, mesas and granite outcrops) on granitic rocks (with some greenstone) of the Yilgarn Craton (Murchison Domain). Red loamy earths and Red shallow loams (often with hardpans) with Red deep sands and Red shallow sands and some shallow sandy complexes” (Tille 2006).

3.3 Land use

No DBCA managed conservation areas occur within the survey area or wider study area. A single conservation state and territory reserve was identified as occurring approximately 19 km north of the survey area, within the 20km study area, that being Dalgaranga and Noongal Pastoral Leases, under state jurisdiction.

No ESAs are located within the survey area or study area.

3.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 4. The survey area intersects the Greenough River and Tributaries Catchment Area, and the Yalgoo Water Reserve (PDWSA).

There are no wetlands of significance located within in the survey area or study area.

Table 4 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	Study area intersects the

Aspect	Details	Results
		Eastern Murchison Groundwater Area
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	Study area intersects the Greenough River and Tributaries Catchment Area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	Greenough River and Tributaries Catchment Area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Yalgoo Water Reserve

3.5 Vegetation and flora

3.5.1 Regional biogeography

The study area is situated in the Eremaean Botanical Province, within the Yalgoo bioregion and Tallering sub-region as described by the Interim Biogeographic Regionalisation of Australia (IBRA).

The Yalgoo bioregion represents an interzone between south western bioregions and the Murchison bioregion. The bioregion is characterised by low woodlands to open woodlands of *Eucalyptus*, *Acacia* and *Callitris* on red sandy plains of the Western Yilgarn Craton and Southern Carnarvon Basin. The Western Yilgarn Craton comprises mulga, *Callitris-E. salubris*, and Bowgada open woodlands and scrubs on earth to sandy-earth plains. The Southern Carnarvon Basin has a basement of Phanerozoic sediments. The subregion is particularly rich in ephemerals (Desmond & Chant 2001).

3.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1977) at an association level. The mapping indicates that one vegetation association is present within the survey area, Scrub with open woodland or scattered trees (*Acacia* spp. with *Eucalyptus loxophleba*, *Allocasuarina* spp. *Acacia aneura*) (association 361).

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations has been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 5, the current extent remaining of vegetation association 361 is greater than 99% of its calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and Local Government Area (LGA)). This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 5 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
361	State: Western Australia	87,511.09	87,484.57	99.97	26.67
	IBRA bioregion: Yalgoo	76,479.74	76,453.22	99.97	27.31
	IBRA Subregion: Tallering	76,456.96	76,430.44	99.97	27.32
	LGA: Shire of Yalgoo	77,518.54	77,492.03	99.97	27.87

3.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area.

The DBCA TEC/PEC database results identified the following PEC buffers as intersecting the survey area:

- Wagga Wagga and Yalgoo calcrete groundwater assemblage type on Yalgoo palaeodrainage on Wagga Wagga Station and Moore Palaeodrainage on Yoweragabbie Station
- Yalgoo vegetation complexes (banded ironstone formation).

The locations of significant communities registered on the DBCA databases are mapped in Figure 2, Appendix A.

3.5.4 Flora diversity

The *NatureMap* database identified 380 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

3.5.5 Significant flora

The EPBC Act PMST and *NatureMap* and DBCA WAHERB and TPFL databases identified the presence/potential presence of 9 significant flora taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– One (1) Priority 1 taxon
– Four (4) Priority 3 taxa and
– Four (4) Priority 4 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 2, Appendix A.

The list of significant species relevant to the study area is provided in the likelihood of occurrence table presented in Appendix D. These taxa were the focus of the targeted flora searches when completing the field survey.

3.6 Fauna

3.6.1 Fauna diversity

The *NatureMap* database identified 181 fauna species previously recorded within 20 km of the survey area. This total comprised 121 birds, 43 reptiles, 10 mammals and 7 amphibians with an additional 10 specific terrestrial invertebrate species also identified. The *NatureMap* database search is provided in Appendix C.

3.6.2 Significant fauna

The EPBC Act PMST, *NatureMap* and DBCA Threatened Fauna databases identified the presence/potential presence of 17 conservation significant fauna within the study area (20 – 40 km). This total comprised 15 birds, one reptile species and a single terrestrial invertebrate spider species (Appendix C):

– 1 EPBC Act-listed Critically Endangered species
– 2 EPBC Act-listed Endangered Species
– 4 EPBC Act-listed Vulnerable species
– 7 EPBC/BC Act-listed Migratory species under International Agreement (IA)
– One DBCA Priority 3 species
– One DBCA Priority 4 species
– One DBCA Other Specially Protected (OS) species.

The locations of significant fauna registered on the DBCA databases are mapped in Figure 2, Appendix A.

The list of significant species relevant to the study area is provided in the likelihood of occurrence table presented in Appendix E. These species were considered when completing the field survey with regards to suitability of fauna habitat and opportunistic observations.

4. Field survey results

4.1 Flora and vegetation

4.1.1 Vegetation types

One broad vegetation type aligning with broad landforms was identified and described in the survey area, not including cleared areas. The vegetation type is broadly described as an *Acacia* tall open shrubland on stony plain/broad drainage area. This vegetation type was variable (in vegetation structure and cover) with pockets of dense *Acacia* shrubland, open shrubland and sparsely vegetated areas distributed across the survey area with an understorey dominated by *Eremophila*, *Ptilotus* and chenopod species.

The vegetation type is described in 6 and mapped in Figure 4, Appendix A.

Table 6 Description of the vegetation type present within the survey area

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Photograph
VT16 - *Acacia* Tall Open Shrubland	*Acacia tetragonophylla, Acacia acuminata* and *Eremophila platycalyx* tall open shrubland to scattered tall shrubs over *Eremophila fraseri*, *Senna* sp. Meekatharra and *Eremophila deserti* scattered shrubs over *Ptilotus* spp., *Sclerolaena eriacantha* and *Maireana* spp. scattered low shrubs on stony plain/broad drainage area.	14.20 ha (81.6 %)	
Cleared	Areas devoid of native vegetation, such as tracks and historically cleared areas.	3.20 ha (18.4 %)	

4.1.2 Significant vegetation communities

No TECs listed under the EPBC Act or BC Act were identified in the desktop study. Two PECs listed by the DBCA were identified in the desktop study. The survey area intersects the boundary of the Yalgoo Banded Ironstone Formation (BIF) Priority 1 PEC mapped by DBCA, and the Wagga Wagga and Yalgoo calcrete groundwater assemblage type on Yalgoo palaeodrainage Priority 1 PEC mapped by DBCA. The vegetation and landforms

present within the survey area are not representative of either of these PECs, as no vegetation communities and/or geology associated with these PECs were recorded in the survey area.

4.1.3 Vegetation condition

The vegetation condition within the survey area was rated as Very Good, with cleared areas (i.e. dirt vehicle tracks) not rated. The vegetation structure was generally intact however obvious disturbances have impacted on the condition of the vegetation such as previous clearing, vehicle tracks, grazing, and pressure of drought.

The vegetation condition extents are detailed in Table 7 below.

Table 7 Vegetation condition extent in the Yalgoo survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Very Good	14.20 ha	81.6 %
Cleared	3.20 ha	18.4 %
Total	17.40 ha	**100%**

4.1.4 Flora diversity

Sixty-two flora taxa (including subspecies and varieties) representing 16 families and 32 genera were recorded from the survey area during the field survey. This total comprised of 60 native taxa and two introduced flora taxa.

Dominant families recorded from the survey area included:

– Fabaceae (12 taxa)
– Chenopodiaceae (9 taxa)
– Asteraceae (8 taxa)
– Scrophulariaceae (6 taxa).

The full list of flora identified within the survey area is provided in Appendix D.

4.1.5 Introduced flora

Two introduced flora taxa were recorded in the survey area:

– **Carrichtera annua*
– **Rumex vesicarius*

None of the weeds recorded are listed as a Declared Pest under the BAM Act or a Weed of National Significance (WoNS).

4.1.6 Significant flora

No significant flora listed under the EPBC Act and/or BC Act or listed as Priority flora by the DBCA was recorded from the survey area.

No flora taxa recorded from the survey area represented flora of interest, such as undescribed species or taxonomic anomalies.

Likelihood of occurrence

The likelihood of occurrence assessment was reviewed and updated post-field survey for all significant flora taxa identified in the desktop assessment (Appendix D). This updated assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species.

Of the nine significant flora taxa identified in the desktop searches none are considered likely to occur in the survey area. Two significant flora taxa are considered possible to occur in the survey area and the remaining

seven are considered unlikely to occur in the survey area. The two Priority listed species considered possibly occurring are *Goodenia neogoodenia* (P4) and *Gunniopsis divisa* (P3). These species are annual herbs which can be somewhat cryptic in nature. In favourable conditions there is potential suitable habitat for *Gunniopsis divisa* and limited possible habitat for *Goodenia neogoodenia* within the survey area, however, it is marginal with no areas that would be semi-permanently wet under suitable conditions. The survey was undertaken during the flowering period for both species and the survey area was considered to be adequately searched.

4.2 Fauna

4.2.1 Fauna habitats

One broad fauna habitat type (excluding cleared/disturbed areas) was identified across the survey area based on the predominant landforms, soil and vegetation structure in the area. The fauna habitat is described in Table 8.

Table 8 Fauna habitat types within the survey area

Habitat name	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Acacia shrubland on stony plain	Acacia tall open shrubland to scattered tall shrubs over stony plain and broad drainage area. Disturbances in the habitat type include previous clearing, vehicle tracks, grazing, and pressure of drought, causing patches of open areas lacking understorey. Many arid scrub-favouring birds were recorded utilising the area, however only one reptile was recorded (*Gehyra variegata)* despite active searching under tin and other microhabitat. The survey area provides little refugia for small mammals, or reptiles, and the habitat is likely to be utilised as a corridor for species traversal in the environment, rather than core habitat for foraging/breeding. **Significant fauna** The Grey Falcon (VU) and Peregrine Falcon (OS) are likely to utilise the survey area opportunistically for foraging over the open plain, as there are previous records of both species occurring in the area.	14.20 ha (81.6 %)	
Cleared areas	Areas devoid of native vegetation, such as tracks and historically cleared areas.	3.20 ha (18.3 %)	

4.2.2 Fauna diversity

Twenty nine fauna species were identified in the survey area from the survey. This total comprised:

– 25 birds
– 3 mammals
– 1 reptile.

Two of the mammals are introduced species (Cow and European Rabbit).

4.2.3 Significant fauna

No Threatened fauna listed under the EPBC Act or BC Act were recorded during the surveys. The full species list has been provided in Appendix E.

Targeted survey for *Northern Shield-backed Trapdoor Spider (Idiosoma clypeatum)*

The Northern Shield-backed Trapdoor Spider *(Idiosoma clypeatum)* (P3) has a widespread distribution in the Yalgoo and Murchison bioregions of Western Australia's inland arid zone. *Idiosoma* spiders typically inhabit clay soils of eucalypt woodlands and acacia vegetation and relies heavily on leaf-litter and twigs to build its burrow (Main, 1996; 2003) which are adorned with a 'moustache-like' arrangement of twig-line (Rix et al. 2018).

Based on previous DBCA records of the species around Yalgoo, the habitat preferences appear to align with gravelly hillslopes or plains, with saline/halophytic shrublands or greenstone hills with lower saline stony plains and broad drainage tracts supporting Mulga and other Acacias (GoWA 2023).

The habitat within the survey area is marginally suitable for *Idiosoma clypeatum*, and no evidence (burrows) of the species was located during the survey.

Likelihood of occurrence

The likelihood of occurrence assessment was reviewed and updated post-field survey for significant fauna species identified in the desktop assessment. This assessment was based on species biology, habitat requirements, the quality and availability of suitable habitat (based on habitat types present within the survey area) and previous records of species in the study area. No assumptions were made on the transient potential of these species. The complete likelihood of assessment is provided in Appendix E.

Fauna assessed as Likely to occur in the survey area (post-survey) include:

– Grey Falcon (Vulnerable under EPBC Act and BC Act)
– Peregrine Falcon (Other Specially Protected, BC Act/DBCA).

These species may utilise the habitat within the survey area on an opportunistic basis for foraging, however no breeding habitat is present in the survey area.

5. Conclusions

The vegetation within the survey area forms part of a large continuous tract of vegetation and has a high degree of connectivity with surrounding vegetation. One broad vegetation type was identified in the survey area which is broadly described as an *Acacia* Tall Open Shrubland on stony plain/broad drainage area. This vegetation type is considered to be well represented in the local and regional area and not confined to the survey area. Overall, the vegetation was in very good condition with some areas impacted to some degree by vehicle tracks, previous clearing, grazing and pressure of drought.

No TECs listed under the EPBC Act or BC Act or PECs listed by the DBCA were identified within the survey area during the field survey.

Sixty-two flora taxa (including subspecies and varieties) representing 16 families and 32 genera were recorded from the survey area. All of the flora taxa recorded have been previously recorded in region. No Declared Pests listed under the BAM Act or WoNS were recorded from the survey area. No significant flora listed under the EPBC Act and/or BC Act or Priority flora listed by the DBCA was recorded from the survey area. Of the nine significant flora taxa identified in the desktop searches two Priority flora are considered possible to occur with the remaining seven taxa considered unlikely to occur in the survey area.

One broad fauna habitat type (excluding cleared and disturbed areas) was identified at the survey area (Acacia shrubland on stony plain) based on the predominant landforms, soil and vegetation structure in the area. No Threatened fauna listed under the EPBC Act or BC Act were recorded during the survey. The survey area supports habitat for two significant fauna species (that were identified as likely to occur post-survey), in the form of opportunistic foraging habitat and dispersal. These species are the Grey Falcon (Vulnerable under EPBC and BC Acts) and Peregrine Falcon (Other Specially Protected, BC Act/DBCA).

Transect searches were undertaken for the Northern Shield-backed Trapdoor Spider (*Idiosoma clypteatum*) burrows in suitable habitat in the survey area. This species was identified as unlikely to occur post-survey due to a lack of optimal habitat, and no evidence (burrows) recorded.

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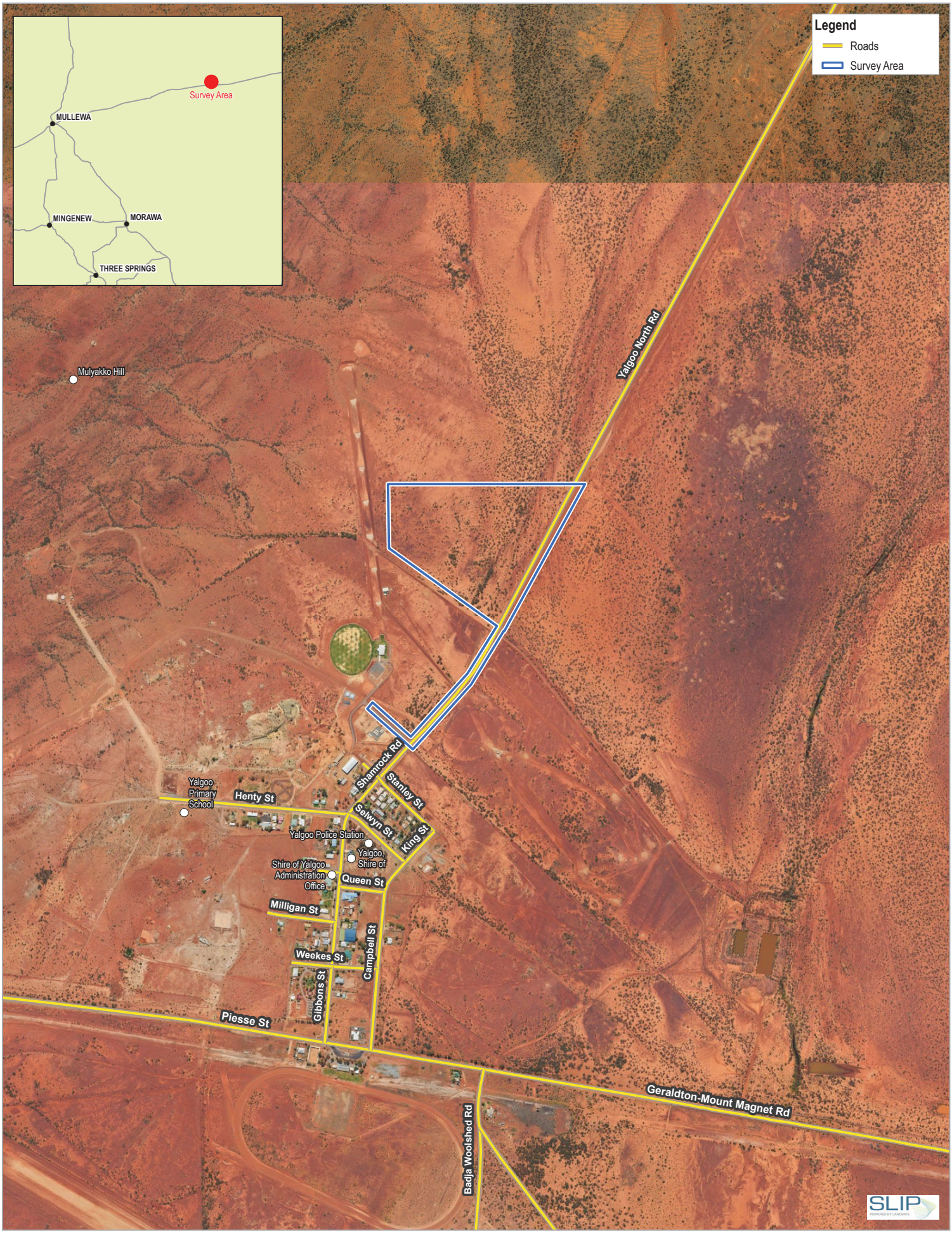
Appendices

Appendix A

Figures



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Kilometers

Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Locality - Yalgoo

Project No. 12611848
Revision No. 0
Date 21/11/2023

FIGURE 1

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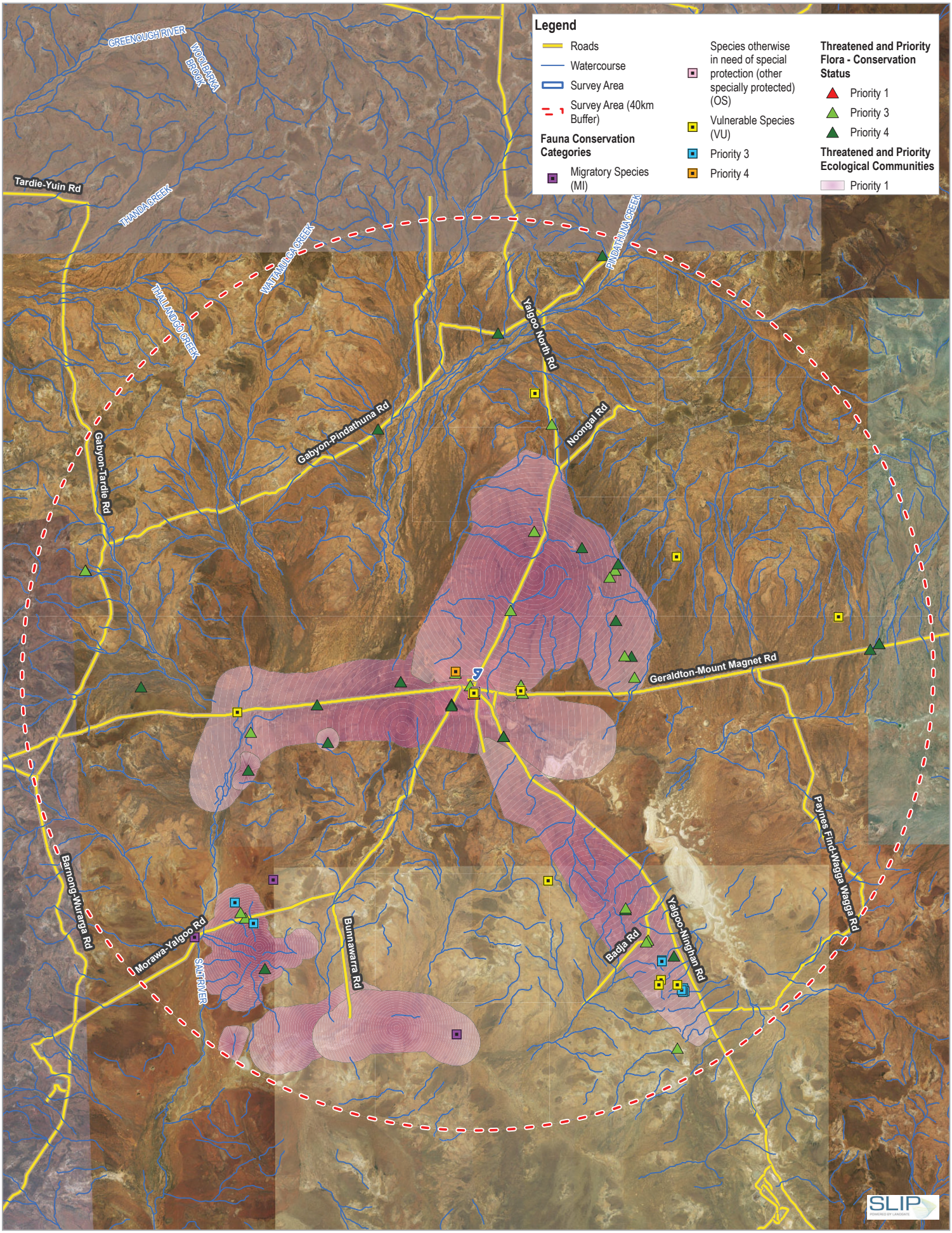

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Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Environmental Constraints - Yalgoo

Project No. **12611848**
Revision No. **0**
Date **21/11/2023**

FIGURE 2

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Map Projection: Transverse Mercator
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Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Project No. **12611848**
Revision No. **0**
Date **21/11/2023**

Survey Effort - Yalgoo

FIGURE 3

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Meters

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Map Projection: Transverse Mercator
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Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Vegetation Types - Yalgoo

Project No. **12611848**
Revision No. **0**
Date **21/11/2023**

FIGURE 4

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Meters

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Map Projection: Transverse Mercator
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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Vegetation Condition - Yalgoo

Project No.	**12611848**
Revision No.	**0**
Date	**21/11/2023**

FIGURE 5

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Meters

N

Map Projection: Transverse Mercator
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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Fauna Habitat - Yalgoo

Project No. **12611848**
Revision No. **0**
Date **21/11/2023**

FIGURE 6

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Appendix B

Relevant legislation, conservation codes and background information

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

– Nationally threatened flora and fauna species and ecological communities
– Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
3. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
7. 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.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
9. 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.

10. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

– Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
– If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
– The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
– The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
– Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State *Biosecurity and Agriculture Management Act 2007*

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976.* The main purposes of the BAM Act and its regulations are to:

– Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
– Manage the impact and spread of those pests already present in the state
– Safely manage the use of agricultural and veterinary chemicals
– Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

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

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in "Bush Forever" Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
The areas covered by the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002.*
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are "sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity … because of their ecological, botanical, zoological, limnological or hydrological importance" (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use.

Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

– It is a good example of a wetland type occurring within a biogeographic region in Australia
– It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
– It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
– The wetland supports one percent or more of the national populations of any native plant or animal taxa
– The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
– The wetland is of outstanding historical or cultural significance.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating and scale for the South West and Interzone Botanical Provinces

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

Condition	South West and Interzone Botanical Provinces description
Completely Degraded	The structure of 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 or shrubs.

Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered (EN)	An ecological community if, at that time: – is 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 (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: – is 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 (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
Threatened Ecological Communities	
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Categories	Definition
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
Collapsed ecological communities	
An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time – – there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or – the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – • its species composition or structure; or • its species composition and structure. Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.	

Categories and definitions for PECs as listed by the DBCA

Category	
Priority 1	Poorly known ecological communities. Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2	Poorly known ecological communities. Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3	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 with 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 may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
Priority 4	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. – Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.

Category	
	– Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	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.

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to the DCCEEW and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet 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 or Extinct species under the BC Act cannot also be listed as Specially Protected 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 flora or fauna.

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.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora and fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	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.
Endangered (EN)	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.
Vulnerable (VU)	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.
Extinct species	
Extinct (EX)	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).
Extinct in the Wild (EW)	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).
Specially protected species	
Migratory (MI)	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). 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.
Species of special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	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).

Codes for DBCA listed Priority flora and fauna

Priority category	Definition
Priority 1	Poorly-known taxa 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

Priority category	Definition
	of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	Poorly-known taxa 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.
Priority 3	Poorly-known taxa 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.
Priority 4	Rare, Near Threatened and other taxa in need of monitoring – Rare: Taxa 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 taxa are usually represented on conservation lands. – Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

– A keystone role in a particular habitat for Threatened or Priority flora or fauna species, or large populations representing a considerable proportion of the local or regional total population of a species
– Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
– New species or anomalous features that indicate a potential new species
– Being 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
– Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007.*

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

– Invasiveness
– Impacts
– Potential for spread
– Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

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Appendix C

Desktop searches

Terrestrial Fauna NatureMap Search Result

Terrestrial Flora NatureMap Search Result

Terrestrial Fauna Nature Map Desktop Result for Yalgoo

TAXON	CLASS	CONS
Acanthagenys rufogularis	BIRD	
Acanthiza apicalis	BIRD	
Acanthiza chrysorrhoa	BIRD	
Acanthiza robustirostris	BIRD	
Acanthiza uropygialis	BIRD	
Accipiter cirrocephalus	BIRD	
Accipiter fasciatus	BIRD	
Amytornis textilis subsp. textilis	BIRD	P4
Anas gracilis	BIRD	
Anas superciliosa	BIRD	
Aphelocephala leucopsis	BIRD	
Aphelocephala leucopsis subsp. castaneiventris	BIRD	
Apus pacificus	BIRD	
Aquila audax	BIRD	
Ardea pacifica	BIRD	
Ardeotis australis	BIRD	
Artamus cinereus	BIRD	
Artamus personatus	BIRD	
Aythya australis	BIRD	
Barnardius zonarius	BIRD	
Biziura lobata	BIRD	
Burhinus grallarius	BIRD	
Cacomantis pallidus	BIRD	
Calyptorhynchus banksii	BIRD	
Calyptorhynchus banksii subsp. samueli	BIRD	
Certhionyx variegatus	BIRD	
Chenonetta jubata	BIRD	
Chrysococcyx basalis	BIRD	
Chrysococcyx osculans	BIRD	
Cincloramphus cruralis	BIRD	
Cincloramphus mathewsi	BIRD	
Cinclosoma castaneothorax	BIRD	
Cinclosoma marginatum	BIRD	
Climacteris affinis subsp. superciliosa	BIRD	
Climacteris rufa	BIRD	
Colluricincla harmonica	BIRD	
Coracina maxima	BIRD	
Coracina novaehollandiae	BIRD	
Coracina novaehollandiae subsp. novaehollandiae	BIRD	

TAXON	CLASS	CONS
Corvus bennetti	BIRD	
Corvus coronoides	BIRD	
Corvus orru	BIRD	
Cracticus nigrogularis	BIRD	
Cracticus tibicen	BIRD	
Cracticus torquatus	BIRD	
Cygnus atratus	BIRD	
Daphoenositta chrysoptera	BIRD	
Dicaeum hirundinaceum	BIRD	
Dromaius novaehollandiae	BIRD	
Egretta novaehollandiae	BIRD	
Elanus axillaris	BIRD	
Elanus caeruleus subsp. axillaris	BIRD	
Elseyornis melanops	BIRD	
Eolophus roseicapillus	BIRD	
Epthianura albifrons	BIRD	
Epthianura tricolor	BIRD	
Erythrogonys cinctus	BIRD	
Eurostopodus argus	BIRD	
Falco berigora	BIRD	
Falco cenchroides	BIRD	
Falco cenchroides subsp. cenchroides	BIRD	
Falco longipennis	BIRD	
Falco peregrinus	BIRD	OS
Fulica atra	BIRD	
Gallinula ventralis	BIRD	
Geopelia cuneata	BIRD	
Gerygone fusca	BIRD	
Grallina cyanoleuca	BIRD	
Haliastur sphenurus	BIRD	
Hirundo neoxena	BIRD	
Lacustroica whitei	BIRD	
Lalage tricolor	BIRD	
Leipoa ocellata	BIRD	VU
Lichenostomus virescens	BIRD	
Lichmera indistincta	BIRD	
Malacorhynchus membranaceus	BIRD	
Malurus lamberti	BIRD	
Malurus lamberti subsp. assimilis	BIRD	
Malurus leucopterus	BIRD	
Malurus leucopterus subsp. leuconotus	BIRD	

TAXON	CLASS	CONS
Malurus sp.	BIRD	
Malurus splendens	BIRD	
Manorina flavigula	BIRD	
Melanodryas cucullata	BIRD	
Melopsittacus undulatus	BIRD	
Ninox novaeseelandiae subsp. boobook	BIRD	
Nymphicus hollandicus	BIRD	
Ocyphaps lophotes	BIRD	
Oreoica gutturalis	BIRD	
Pachycephala rufiventris	BIRD	
Pachycephala rufiventris subsp. rufiventris	BIRD	
Pardalotus striatus	BIRD	
Pardalotus striatus subsp. westraliensis	BIRD	
Petrochelidon ariel	BIRD	
Petrochelidon nigricans	BIRD	
Petroica goodenovii	BIRD	
Phaps chalcoptera	BIRD	
Platycercus varius	BIRD	
Podiceps cristatus	BIRD	
Poliocephalus poliocephalus	BIRD	
Pomatostomus superciliosus	BIRD	
Pomatostomus temporalis	BIRD	
Psophodes occidentalis	BIRD	
Ptilotula plumulus	BIRD	
Purnella albifrons	BIRD	
Pyrrholaemus brunneus	BIRD	
Rhipidura albiscapa	BIRD	
Rhipidura fuliginosa subsp. preissi	BIRD	
Rhipidura leucophrys	BIRD	
Sericornis frontalis	BIRD	
Smicrornis brevirostris	BIRD	
Streptopelia senegalensis	BIRD	
Sugomel niger	BIRD	
Tachybaptus novaehollandiae	BIRD	
Tadorna tadornoides	BIRD	
Taeniopygia guttata	BIRD	
Threskiornis spinicollis	BIRD	
Todiramphus pyrrhopygius	BIRD	
Tribonyx ventralis	BIRD	
Vanellus tricolor	BIRD	
Zosterops lateralis	BIRD	

TAXON	CLASS	CONS
Chalinolobus gouldii	MAMMAL	
Chalinolobus morio	MAMMAL	
Macropus robustus subsp. erubescens	MAMMAL	
Macropus rufus	MAMMAL	
Notomys alexis	MAMMAL	
Sminthopsis crassicaudata	MAMMAL	
Sminthopsis dolichura	MAMMAL	
Sminthopsis sp.	MAMMAL	
Taphozous hilli	MAMMAL	
Vespadelus finlaysoni	MAMMAL	
Anidiops villosus	INVERT	
Asadipus phaleratus	INVERT	
Holconia nigrigularis	INVERT	
Idiommata blackwalli	INVERT	
Isometroides vescus	INVERT	
Nicodamus mainae	INVERT	
Scolopendra laeta	INVERT	
Scolopendra morsitans	INVERT	
Thereuopoda lesueurii	INVERT	
Urodacus hoplurus	INVERT	
Brachyurophis approximans	REPTILE	
Ctenophorus nuchalis	REPTILE	
Ctenophorus reticulatus	REPTILE	
Ctenophorus salinarum	REPTILE	
Ctenophorus scutulatus	REPTILE	
Ctenotus leonhardii	REPTILE	
Ctenotus schomburgkii	REPTILE	
Ctenotus severus	REPTILE	
Ctenotus uber subsp. uber	REPTILE	
Delma tincta	REPTILE	
Demansia psammophis subsp. reticulata	REPTILE	
Egernia depressa	REPTILE	
Egernia formosa	REPTILE	
Egernia stokesii	REPTILE	
Egernia stokesii subsp. badia	REPTILE	VU
Eremiascincus richardsonii	REPTILE	
Furina ornata	REPTILE	
Gehyra punctata	REPTILE	
Gehyra variegata	REPTILE	
Heteronotia binoei	REPTILE	
Lerista nichollsi	REPTILE	

TAXON	CLASS	CONS
Lerista timida	REPTILE	
Lucasium squarrosum	REPTILE	
Menetia greyii	REPTILE	
Morelia spilota subsp. imbricata	REPTILE	
Nephrurus vertebralis	REPTILE	
Oedura marmorata	REPTILE	
Parasuta monachus	REPTILE	
Pseudechis butleri	REPTILE	
Pseudonaja mengdeni	REPTILE	
Pseudonaja modesta	REPTILE	
Pygopus nigriceps	REPTILE	
Ramphotyphlops waitii	REPTILE	
Rhynchoedura ornata	REPTILE	
Simoselaps bertholdi	REPTILE	
Strophurus assimilis	REPTILE	
Strophurus strophurus	REPTILE	
Tympanocryptis cephalus	REPTILE	
Varanus caudolineatus	REPTILE	
Varanus giganteus	REPTILE	
Varanus gouldii	REPTILE	
Varanus panoptes	REPTILE	
Varanus panoptes subsp. rubidus	REPTILE	
Cyclorana platycephala	AMPHIBIAN	
Neobatrachus kunapalari	AMPHIBIAN	
Neobatrachus pelobatoides	AMPHIBIAN	
Neobatrachus sutor	AMPHIBIAN	
Neobatrachus wilsmorei	AMPHIBIAN	
Platyplectrum spenceri	AMPHIBIAN	
Pseudophryne occidentalis	AMPHIBIAN	

Terrestrial Flora Nature Map Desktop Result for Yalgoo

TAXON	CLASS	CONS
Abutilon cryptopetalum	DICOT	
Abutilon oxycarpum	DICOT	
Acacia acuminata	DICOT	
Acacia aff. ulicina (AM & SD 5553)	DICOT	
Acacia aneura group	DICOT	
Acacia aneura var. alata (Fairman 238)	DICOT	
Acacia aneura var. aneura	DICOT	
Acacia aneura var. argentea	DICOT	
Acacia aneura var. intermedia	DICOT	
Acacia aneura var. macrocarpa	DICOT	
Acacia aneura var. microcarpa	DICOT	
Acacia aneura var. tenuis	DICOT	
Acacia aneura var. tenuis/aneura intergrade (AM & SD 5407)	DICOT	
Acacia aneura x craspedocarpa (AM & SD 5090)	DICOT	
Acacia aptaneura	DICOT	
Acacia aulacophylla	DICOT	
Acacia burkittii	DICOT	
Acacia caesaneura	DICOT	
Acacia caesaneura (narrow phyllodes variant)	DICOT	
Acacia cf. effusifolia	DICOT	
Acacia cf. incognita	DICOT	
Acacia craspedocarpa	DICOT	
Acacia craspedocarpa hybrid	DICOT	
Acacia effusifolia	DICOT	
Acacia eremaea	DICOT	
Acacia exocarpoides	DICOT	
Acacia fuscaneura	DICOT	
Acacia fuscaneura / pteraneura group	DICOT	
Acacia grasbyi	DICOT	
Acacia incognita	DICOT	
Acacia incurvaneura	DICOT	
Acacia ligulata	DICOT	
Acacia longispinea	DICOT	
Acacia masliniana	DICOT	
Acacia mulganeura	DICOT	
Acacia pteraneura	DICOT	
Acacia ramulosa	DICOT	
Acacia ramulosa hybrid	DICOT	
Acacia ramulosa var. ramulosa	DICOT	
Acacia sclerosperma subsp. sclerosperma	DICOT	

TAXON	CLASS	CONS
Acacia sp.	DICOT	
Acacia speckii	DICOT	P4
Acacia subsessilis	DICOT	P3
Acacia tenuissima	DICOT	
Acacia tetragonophylla	DICOT	
Acacia tysonii	DICOT	
Acacia ulicina	DICOT	
Acacia umbraculiformis	DICOT	
Acacia victoriae	DICOT	
Acacia victoriae subsp. victoriae	DICOT	
Actinobole cf. uliginosum	DICOT	
Actinobole uliginosum	DICOT	
Alectryon oleifolius subsp. oleifolius	DICOT	
Allocasuarina acutivalvis	DICOT	
Aluta aspera subsp. hesperia	DICOT	
Alyogyne huegelii var. huegelii	DICOT	
Amyema fitzgeraldii	DICOT	
Amyema nestor	DICOT	
Androcalva luteiflora	DICOT	
Asteridea athrixioides	DICOT	
Atriplex amnicola	DICOT	
Atriplex codonocarpa	DICOT	
Atriplex semilunaris	DICOT	
Bellida graminea	DICOT	
Bergia perennis subsp. exigua	DICOT	
Blennospora drummondii	DICOT	
Brachychiton gregorii	DICOT	
Brachyscome ciliaris	DICOT	
Brachyscome ciliocarpa	DICOT	
Brachyscome lineariloba	DICOT	
Brachyscome sp.indet	DICOT	
Calandrinia cf. creethae	DICOT	
Calandrinia creethiae	DICOT	
Calandrinia crispisepala	DICOT	
Calandrinia eremaea	DICOT	
Calandrinia eremaea complex (RM & JW 2414)	DICOT	
Calandrinia sp. indet	DICOT	
Calandrinia sp. Truncate capsules (A. Markey & S. Dillon 3474)	DICOT	
Calotis hispidula	DICOT	
Calotis multicaulis	DICOT	
Calytrix uncinata	DICOT	

TAXON	CLASS	CONS
Cephalipterum drummondii	DICOT	
Cheiranthera simplicifolia	DICOT	
Chthonocephalus pseudevax	DICOT	
Cleretum papulosum subsp. papulosum	DICOT	
Codonocarpus cotinifolius	DICOT	
Comesperma integerrimum	DICOT	
Convolvulus clementii	DICOT	
Cotula cotuloides	DICOT	
Crassula colorata	DICOT	
Crassula colorata var. acuminata	DICOT	
Crassula colorata var. colorata	DICOT	
Cullen cinereum	DICOT	
Cuscuta epithymum	DICOT	
Cuscuta sp. indet	DICOT	
Cyanostegia angustifolia	DICOT	
Dampiera eriocephala	DICOT	
Dampiera wellsiana	DICOT	
Daucus glochidiatus	DICOT	
Dielitzia tysonii	DICOT	
Dodonaea amplisemina	DICOT	P4
Dodonaea inaequifolia	DICOT	
Dodonaea petiolaris	DICOT	
Dodonaea rigida	DICOT	
Drosera macrantha subsp. macrantha	DICOT	
Duma florulenta	DICOT	
Duperreya commixta	DICOT	
Dysphania glandulosa	DICOT	
Dysphania glomulifera subsp. eremaea	DICOT	
Dysphania melanocarpa forma melanocarpa	DICOT	
Dysphania rhadinostachya subsp. inflata	DICOT	
Dysphania saxatilis	DICOT	
Emex australis	DICOT	
Enchylaena lanata	DICOT	
Enchylaena lanata/tomentosa	DICOT	
Enekbatus dualis	DICOT	P1
Eremophila clarkei	DICOT	
Eremophila clarkei/georgei	DICOT	
Eremophila compacta	DICOT	
Eremophila compacta subsp. compacta	DICOT	
Eremophila exilifolia	DICOT	
Eremophila forrestii	DICOT	

TAXON	CLASS	CONS
Eremophila forrestii subsp. forrestii	DICOT	
Eremophila forrestii x latrobei	DICOT	
Eremophila fraseri subsp. fraseri	DICOT	
Eremophila galeata	DICOT	
Eremophila georgei	DICOT	
Eremophila glandulifera	DICOT	
Eremophila granitica	DICOT	
Eremophila latrobei	DICOT	
Eremophila latrobei subsp. latrobei	DICOT	
Eremophila longifolia	DICOT	
Eremophila maculata subsp. brevifolia	DICOT	
Eremophila oldfieldii subsp. oldfieldii	DICOT	
Eremophila oppositifolia subsp. angustifolia	DICOT	
Eremophila platycalyx subsp. Granites (D.J. Edinger & G. Marsh DJE 4782)	DICOT	
Eremophila platycalyx subsp. Yalgoo (A. Markey & S. Dillon 3337)	DICOT	
Eremophila punicea	DICOT	
Eremophila spuria	DICOT	
Eremophila youngii subsp. youngii	DICOT	
Eriochiton sclerolaenoides	DICOT	
Erodium cicutarium	DICOT	
Erodium cygnorum	DICOT	
Erodium sp. indet	DICOT	
Eucalyptus victrix	DICOT	
Euphorbia boophthona	DICOT	
Euphorbia boophthonia/tannensis	DICOT	
Euphorbia porcata	DICOT	
Euphorbia tannensis subsp. eremophila	DICOT	
Exocarpos aphyllus	DICOT	
Feldstonia nitens	DICOT	
Gnephosis arachnoidea	DICOT	
Goodenia berardiana	DICOT	
Goodenia corynocarpa	DICOT	
Goodenia mimuloides	DICOT	
Goodenia neogoodenia	DICOT	P4
Goodenia occidentalis	DICOT	
Goodenia pinnatifida	DICOT	
Goodenia sp. indet	DICOT	
Grevillea deflexa	DICOT	
Grevillea hakeoides subsp. stenophylla	DICOT	
Grevillea obliquistigma subsp. obliquistigma	DICOT	
Grevillea pityophylla	DICOT	

TAXON	CLASS	CONS
Gunniopsis divisa	DICOT	P3
Hakea francisiana	DICOT	
Hakea lorea subsp. lorea	DICOT	
Hakea preissii	DICOT	
Hakea recurva subsp. arida	DICOT	
Hakea recurva subsp. recurva	DICOT	
Haloragis odontocarpa	DICOT	
Haloragis sp. indet	DICOT	
Helipterum craspedioides	DICOT	
Hemigenia macphersonii	DICOT	
Hibbertia glomerosa var. glomerosa	DICOT	
Hibiscus aff. solanifolius (R. Meissner & B. Bayliss 923)	DICOT	
Hibiscus solanifolius	DICOT	
Homalocalyx aureus	DICOT	
Hypochaeris glabra	DICOT	
Indigofera kingiana	DICOT	
Isoetopsis graminifolia	DICOT	
Isotoma petraea	DICOT	
Lawrencella rosea	DICOT	
Lemooria burkittii	DICOT	
Lepidium oxytrichum	DICOT	
Lotus cruentus	DICOT	
Lysiana casuarinae	DICOT	
Maireana carnosa	DICOT	
Maireana convexa	DICOT	
Maireana planifolia	DICOT	
Maireana sp. indet	DICOT	
Maireana suaedifolia	DICOT	
Maireana thesioides	DICOT	
Maireana tomentosa subsp. tomentosa	DICOT	
Maireana trichoptera	DICOT	
Maireana triptera	DICOT	
Malleostemon tuberculatus	DICOT	
Marsdenia australis	DICOT	
Marsdenia graniticola	DICOT	
Melaleuca acutifolia	DICOT	
Melaleuca eleuterostachya	DICOT	
Melaleuca stereophloia	DICOT	
Menkea australis	DICOT	
Micromyrtus sulphurea	DICOT	
Millotia myosotidifolia	DICOT	

TAXON	CLASS	CONS
Millotia perpusilla	DICOT	
Monotaxis bracteata	DICOT	
Myriocephalus guerinae	DICOT	
Myriocephalus oldfieldii	DICOT	
Myriocephalus pygmaeus	DICOT	
Nicotiana occidentalis subsp. occidentalis	DICOT	
Nicotiana rosulata subsp. rosulata	DICOT	
Olearia humilis	DICOT	
Omphalolappula concava	DICOT	
Peplidium sp.	DICOT	
Persoonia manotricha	DICOT	
Philotheca brucei subsp. brucei	DICOT	
Philotheca sericea	DICOT	
Phyllanthus erwinii	DICOT	
Pimelea angustifolia	DICOT	
Pimelea forrestiana	DICOT	
Plantago debilis	DICOT	
Plantago drummondii	DICOT	
Plantago turrifera	DICOT	
Podolepis canescens	DICOT	
Podolepis capillaris	DICOT	
Podolepis kendallii	DICOT	
Podolepis lessonii	DICOT	
Pogonolepis stricta	DICOT	
Portulaca oleracea	DICOT	
Prostanthera patens	DICOT	
Psydrax latifolia	DICOT	
Psydrax suaveolens	DICOT	
Ptilotus aervoides	DICOT	
Ptilotus drummondii var. minor	DICOT	
Ptilotus eremita	DICOT	
Ptilotus exaltatus	DICOT	
Ptilotus gaudichaudii var. parviflorus	DICOT	
Ptilotus helipteroides	DICOT	
Ptilotus macrocephalus	DICOT	
Ptilotus obovatus	DICOT	
Ptilotus schwartzii	DICOT	
Ptilotus schwartzii/drummondii	DICOT	
Rhagodia eremaea	DICOT	
Rhagodia eremaea / drummondii	DICOT	
Rhodanthe battii	DICOT	

TAXON	CLASS	CONS
Rhodanthe chlorocephala subsp. splendida	DICOT	
Rhodanthe citrina	DICOT	
Rhodanthe humboldtiana	DICOT	
Rhodanthe maryonii	DICOT	
Rhodanthe propinqua	DICOT	
Rhodanthe stricta	DICOT	
Rhyncharrhena linearis	DICOT	
Roebuckiella ciliocarpa	DICOT	
Roepera eremaea	DICOT	
Rumex hypogaeus	DICOT	
Sagina procumbens	DICOT	
Salsola tragus	DICOT	
Santalum spicatum	DICOT	
Scaevola spinescens	DICOT	
Scaevola tomentosa	DICOT	
Schoenia cassiniana	DICOT	
Sclerolaena cf. diacantha	DICOT	
Sclerolaena densiflora	DICOT	
Sclerolaena diacantha	DICOT	
Sclerolaena eriacantha	DICOT	
Sclerolaena gardneri	DICOT	
Sclerolaena sp. indet	DICOT	
Senecio glossanthus	DICOT	
Senna artemisioides	DICOT	
Senna artemisioides subsp. filifolia	DICOT	
Senna artemisioides subsp. helmsii	DICOT	
Senna artemisioides subsp. helmsii x glaucifolia	DICOT	
Senna artemisioides subsp. petiolaris	DICOT	
Senna artemisioides subsp. x helmsii x glaucifolia	DICOT	
Senna artemisioides subsp. x sturtii	DICOT	
Senna charlesiana	DICOT	
Senna glaucifolia	DICOT	
Senna glaucifolia x sp. Meekatharra (E. Bailey 1-26)	DICOT	
Senna glutinosa subsp. chatelainiana	DICOT	
Senna sp. Austin	DICOT	
Senna sp. Austin (A. Strid 20210)	DICOT	
Senna sp. Billabong (J.D. Alonzo 721)	DICOT	
Senna sp. Meekatharra (E. Bailey 1-26)	DICOT	
Seringia hermanniifolia	DICOT	
Seringia velutina	DICOT	
Sida calyxhymenia	DICOT	

TAXON	CLASS	CONS
Sida ectogama	DICOT	
Sida sp. dark green fruits (S. van Leeuwen 2260)	DICOT	
Sida sp. Golden calyces glabrous (H.N. Foote 32)	DICOT	
Sida sp. indet	DICOT	
Sisymbrium orientale	DICOT	
Sisymbrium runcinatum (Glabrous Form)	DICOT	
Sisymbrium runcinatum (Hirsute Form)	DICOT	
Solanum cleistogamum	DICOT	
Solanum ellipticum	DICOT	
Solanum lasiophyllum	DICOT	
Solanum nummularium	DICOT	
Spartothamnella teucriiflora	DICOT	
Stackhousia muricata subsp. annual (W.R. Barker 2172)	DICOT	
Stemodia florulenta	DICOT	
Stenopetalum anfractum	DICOT	
Stenopetalum filifolium	DICOT	
Stenopetalum sp.	DICOT	
Stenopetalum sp. indet	DICOT	
Streptoglossa cylindriceps	DICOT	
Stylidium longibracteatum	DICOT	
Swainsona perlonga	DICOT	
Swainsona rostellata	DICOT	
Synaptantha tillaeacea var. tillaeacea	DICOT	
Tecticornia halocnemoides	DICOT	
Tecticornia peltata	DICOT	
Tecticornia undulata	DICOT	
Tetragonia cristata	DICOT	
Teucrium racemosum	DICOT	
Teucrium teucriiflorum	DICOT	
Thryptomene costata	DICOT	
Thryptomene decussata	DICOT	
Trachymene ceratocarpa	DICOT	
Trachymene cyanopetala	DICOT	
Trachymene ornata	DICOT	
Trachymene pilosa	DICOT	
Trachymene sp. indet	DICOT	
Trichanthodium exilis	DICOT	
Trigonella suavissima	DICOT	
Triptilodiscus pygmaeus	DICOT	
Velleia cycnopotamica	DICOT	
Velleia hispida	DICOT	

TAXON	CLASS	CONS
Velleia rosea	DICOT	
Velleia sp. cycnopotamica/rosea complex	DICOT	
Verticordia auriculata	DICOT	
Verticordia monadelpha var. callitricha	DICOT	
Verticordia penicillaris	DICOT	P4
Waitzia acuminata var. acuminata	DICOT	
Cheilanthes adiantoides	FERN	
Cheilanthes brownii	FERN	
Cheilanthes sieberi subsp. sieberi	FERN	
Marsilea hirsuta	FERN	
Marsilea sp.	FERN	
Aristida contorta	MONOCOT	
Arthropodium dyeri	MONOCOT	
Austrostipa elegantissima	MONOCOT	
Austrostipa nitida	MONOCOT	
Austrostipa scabra	MONOCOT	
Austrostipa sp. indet	MONOCOT	
Austrostipa trichophylla	MONOCOT	
Austrostipa variabilis	MONOCOT	
Bromus arenarius	MONOCOT	
Cymbopogon ambiguus	MONOCOT	
Dianella revoluta var. divaricata	MONOCOT	
Enneapogon caerulescens	MONOCOT	
Eragrostis dielsii	MONOCOT	
Eragrostis eriopoda	MONOCOT	
Eragrostis leptocarpa	MONOCOT	
Eragrostis pergracilis	MONOCOT	
Eragrostis xerophila	MONOCOT	
Eriachne flaccida	MONOCOT	
Eriachne pulchella subsp. dominii	MONOCOT	
Eriochloa pseudoacrotricha	MONOCOT	
Hypoxis glabella var. glabella	MONOCOT	
Monachather paradoxus	MONOCOT	
Pentameris airoides	MONOCOT	
Pentaschistis airoides subsp. airoides	MONOCOT	
Rostraria pumila	MONOCOT	
Setaria dielsii	MONOCOT	
Thyridolepis mitchelliana	MONOCOT	
Thyridolepis multiculmis	MONOCOT	
Thyridolepis sp. indet	MONOCOT	
Thysanotus aff. pyramidalis (AM & SD 5831)	MONOCOT	

TAXON	CLASS	CONS
Thysanotus cf. manglesianus	MONOCOT	
Thysanotus manglesianus	MONOCOT	
Thysanotus pyramidalis	MONOCOT	
Thysanotus sp. indet	MONOCOT	
Thysanotus speckii	MONOCOT	
Tragus australianus	MONOCOT	
Triglochin protuberans	MONOCOT	P3
Tripogon loliiformis	MONOCOT	
Tripogonella loliiformis	MONOCOT	
Wurmbea inframediana	MONOCOT	
Wurmbea sp. indet	MONOCOT	
Wurmbea sp. Paynes Find (C.J. French 1237)	MONOCOT	

Appendix D

Flora survey results

Flora species list

Quadrat/Relevé data

Raw site data

Significant flora raw data

Flora likelihood of occurrence assessment

Flora recorded in the survey area

Family	Taxon	Status
Amaranthaceae	*Ptilotus divaricatus*	
Amaranthaceae	*Ptilotus exaltatus*	
Amaranthaceae	*Ptilotus gaudichaudii*	
Amaranthaceae	*Ptilotus helipteroides*	
Amaranthaceae	*Ptilotus obovatus*	
Asteraceae	*Asteridea athrixioides*	
Asteraceae	*Calotis hispidula*	
Asteraceae	*Cephalipterum drummondii*	
Asteraceae	*Gnephosis sp*	
Asteraceae	*Podolepis aristata*	
Asteraceae	*Rhodanthe battii*	
Asteraceae	*Rhodanthe ?citrina*	
Asteraceae	*Siemssenia capillaris*	
Boraginaceae	*Halgania ?anagalloides*	
Brassicaceae	*Carrichtera annua*	*
Brassicaceae	*Lepidium oxytrichum*	
Brassicaceae	*Stenopetalum anfractum*	
Chenopodiaceae	*Maireana carnosa*	
Chenopodiaceae	*Maireana tomentosa*	
Chenopodiaceae	*Maireana triptera*	
Chenopodiaceae	*Maireana sp.*	
Chenopodiaceae	*Rhagodia drummondii*	
Chenopodiaceae	*Rhagodia eremaea*	
Chenopodiaceae	*Salsola australis*	
Chenopodiaceae	*Sclerolaena eriacantha*	
Chenopodiaceae	*Sclerolaena eurotioides*	
Convolvulaceae	*Duperreya sericea*	
Fabaceae	*Acacia acuminata*	
Fabaceae	*Acacia aptaneura*	
Fabaceae	*Acacia craspedocarpa*	
Fabaceae	*Acacia eremaea*	
Fabaceae	*Acacia grasbyi*	
Fabaceae	*Acacia quadrimarginea*	
Fabaceae	*Acacia ?resinimarginea*	
Fabaceae	*Acacia synchronicia*	
Fabaceae	*Acacia tetragonophylla*	
Fabaceae	*Senna artemisioides* subsp. *helmsii*	
Fabaceae	*Senna artemisioides* subsp. *×petiolaris*	
Fabaceae	*Senna* sp. Meekatharra (E. Bailey 1-26)	

Family	Taxon	Status
Goodeniaceae	*Goodenia mimuloides*	
Goodeniaceae	*Scaevola spinescens*	
Haloragaceae	*Haloragis trigonocarpa*	
Loranthaceae	*Amyema fitzgeraldii*	
Loranthaceae	*Amyema preissii*	
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)	
Malvaceae	*Sida* sp.	
Malvaceae	*Sida calyxhymenia*	
Poaceae	*Aristida contorta*	
Poaceae	*Aristida holathera*	
Poaceae	*Austrostipa elegantissima*	
Poaceae	*Austrostipa nitida*	
Poaceae	*Pentameris airoides*	
Polygonaceae	*Rumex vesicarius*	*
Proteaceae	*Hakea preissii*	
Proteaceae	*Hakea recurva*	
Scrophulariaceae	*Eremophila deserti*	
Scrophulariaceae	*Eremophila fraseri*	
Scrophulariaceae	*Eremophila forrestii*	
Scrophulariaceae	*Eremophila georgei*	
Scrophulariaceae	*Eremophila longifolia*	
Scrophulariaceae	*Eremophila platycalyx*	
Solanaceae	*Solanum lasiophyllum*	

* Introduced species (weed)

Yalgoo Sample Site Data

Site ID:	YAQ01	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	21/09/23	Described by: Erin Lynch
Co-ordinates (51K)		

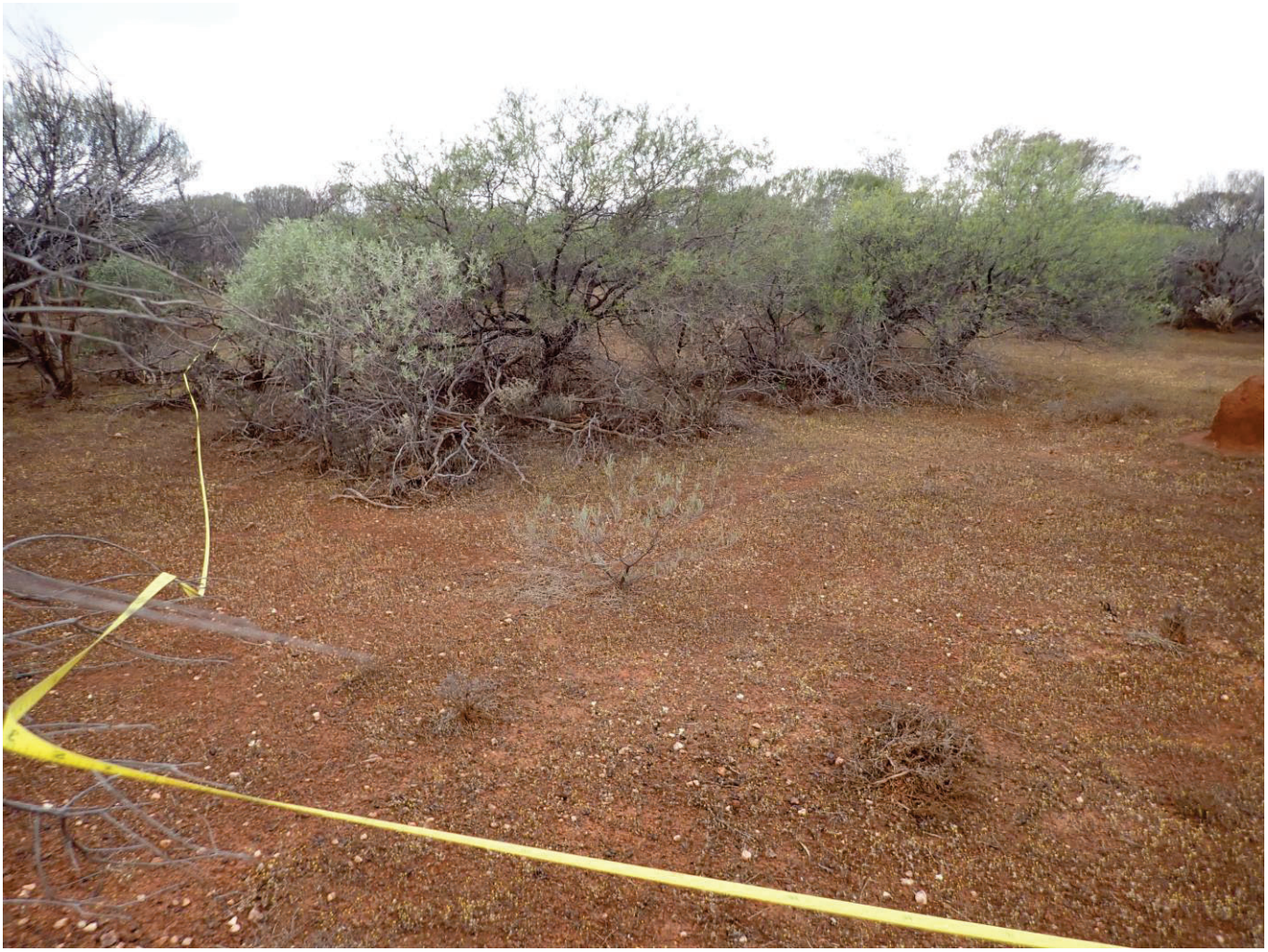
Drainage:	Good	Aspect:	Flat
Soil colour:	Red/brown	Soil type:	Stony sandy loam
Fire age and intensity:	Old >5 yrs	Vegetation condition:	Very Good

Family	Genus	Height (m)	% Cover
Fabaceae	*Acacia tetragonophylla*	2.2	5
Scrophulariaceae	*Eremophila fraseri*	1.4	2
Chenopodiaceae	*Sclerolaena eriacantha*	0.3	3
Chenopodiaceae	*Maireana triptera*	0.4	3
Chenopodiaceae	*Maireana tomentosa*	0.3	2
Brassicaceae	*Stenopetalum anfractum*	0.1	<1
Goodeniaceae	*Goodenia mimuloides*	0.2	<1
Chenopodiaceae	*Sclerolaena eurotioides*	0.2	<1
Asteraceae	*Siemssenia capillaris*	0.2	<1

Family	Genus	Height (m)	% Cover
Scrophulariaceae	*Eremophila platycalyx*	2.3	5
Asteraceae	*Cephalipterum drummondii*	0.3	<1
Asteraceae	*Gnephosis sp*	0.1	<1
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)	0.2	<1
Amaranthaceae	*Ptilotus helipteroides*	0.3	<1
Asteraceae	*Calotis hispidula*	0.1	<1
Amaranthaceae	*Ptilotus exaltatus*	0.3	<1
Brassicaceae	*Lepidium oxytrichum*	0.2	<1
Solanaceae	*Solanum lasiophyllum*	0.2	<1
Asteraceae	*Asteridea athrixioides*	0.05	<1
Fabaceae	*Acacia grasbyi*	2.8	<1
Amaranthaceae	*Ptilotus gaudichaudii*	0.2	<1
Asteraceae	*Podolepis aristata*	0.1	<1

Site ID:	YAQ02	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	21/09/23	Described by: Erin Lynch
Co-ordinates (51K)		

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Red/brown	**Soil type:**	Stony sandy loam
Fire age and intensity:	Old >5 yrs	**Vegetation condition:**	Very Good



Family	Genus	Height (m)	% Cover
Fabaceae	*Acacia acuminata*	3	8
Fabaceae	*Acacia tetragonophylla*	2.4	10
Scrophulariaceae	*Eremophila platycalyx*	2.8	10
Amaranthaceae	*Ptilotus obovatus*	0.4	2
Scrophulariaceae	*Eremophila forrestii*	1.4	<1
Chenopodiaceae	*Maireana tomentosa*	1	<1
Fabaceae	*Senna* sp. Meekatharra (E. Bailey 1-26)	1.2	2
Scrophulariaceae	*Eremophila fraseri*	1.5	<1
Scrophulariaceae	*Eremophila georgei*	1	<1
Fabaceae	*Senna artemisioides* subsp. *×petiolaris*	2	3

Family	Genus	Height (m)	% Cover
Asteraceae	*Rhodanthe battii*	0.1	<1
Scrophulariaceae	*Eremophila longifolia*	2.1	<1
Chenopodiaceae	*Rhagodia eremaea*	1.2	<1
Asteraceae	*Siemssenia capillaris*	0.1	1
Asteraceae	*Cephalipterum drummondii*	0.15	<1
Fabaceae	*Acacia aptaneura*	4	<1
Loranthaceae	*Amyema preissii*	-	<1
Chenopodiaceae	*Maireana triptera*	0.3	<1
Amaranthaceae	*Ptilotus helipteroides*	0.1	<1
Goodeniaceae	*Goodenia mimuloides*	0.1	<1
Asteraceae	*Asteridea athrixioides*	0.08	<1
Fabaceae	*Acacia eremaea*	2	<1

Site ID:	YAQ03	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	21/09/23	Described by: Erin Lynch
Co-ordinates (51K)		

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Red/brown	**Soil type:**	Sandy clay/loam
Fire age and intensity:	Old >5 yrs	**Vegetation condition:**	Very Good

Family	Genus	Height (m)	% Cover
Fabaceae	*Acacia tetragonophylla*	2.2	6
Fabaceae	*Senna* sp. Meekatharra (E. Bailey 1-26)	1.2	5
Amaranthaceae	*Ptilotus exaltatus*	0.2	0.3
Chenopodiaceae	*Maireana triptera*	0.4	2
Chenopodiaceae	*Sclerolaena eurotioides*	0.2	2
Poaceae	*Pentameris airoides*	0.1	<1
Asteraceae	*Siemssenia capillaris*	0.05	<1
Brassicaceae	*Stenopetalum anfractum*	0.2	<1
Asteraceae	*Cephalipterum drummondii*	0.1	<1
Chenopodiaceae	*Maireana* sp	1.2	3

Family	Genus	Height (m)	% Cover
Scrophulariaceae	*Eremophila platycalyx*	2.1	3
Fabaceae	*Acacia grasbyi*	2.1	<1
Fabaceae	*Acacia eremaea*	2	6
Chenopodiaceae	*Rhagodia eremaea*	1.6	<1
Fabaceae	*Acacia quadrimarginea*	2.1	<1
Amaranthaceae	*Ptilotus obovatus*	0.6	1
Poaceae	*Austrostipa nitida*	0.5	<1
Scrophulariaceae	*Eremophila fraseri*	1.4	<1
Fabaceae	*Acacia acuminata*	2.5	2
Scrophulariaceae	*Eremophila longifolia*	2.1	<1
Fabaceae	*Senna artemisioides* subsp. *helmsii*	1.2	<1
Goodeniaceae	*Scaevola spinescens*	1.2	<1
Chenopodiaceae	*Sclerolaena eurotioides*	0.1	<1
Scrophulariaceae	*Eremophila forrestii*	1.8	<1
Convolvulaceae	*Duperreya sericea*	-	<1
Amaranthaceae	*Ptilotus divaricatus*	0.4	<1
Asteraceae	*Siemssenia capillaris*	0.1	<1
Goodeniaceae	*Goodenia mimuloides*	0.05	<1

Site ID:	YAQ04	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	21/09/23	Described by: Erin Lynch
Co-ordinates (51K)		

Drainage:	Good/Poor	**Aspect:**	Flat
Soil colour:	Red/brown	**Soil type:**	Stony clay/loam
Fire age and intensity:	Old >5 yrs	**Vegetation condition:**	Very Good

Family	Genus	Height (m)	% Cover
Scrophulariaceae	*Eremophila deserti*	1.7	10
Chenopodiaceae	*Maireana* sp.	1.5	5
Chenopodiaceae	*Maireana triptera*	0.3	3
Chenopodiaceae	*Maireana tomentosa*	0.6	2
Fabaceae	*Acacia acuminata*	3.3	10
Scrophulariaceae	*Eremophila longifolia*	1.9	2
Fabaceae	*Acacia tetragonophylla*	2.3	8
Chenopodiaceae	*Rhagodia eremaea*	1.2	1
Scrophulariaceae	*Eremophila platycalyx*	2.5	2
Asteraceae	*Siemssenia capillaris*	0.05	5

Family	Genus	Height (m)	% Cover
Amaranthaceae	*Ptilotus helipteroides*	0.2	<1
Fabaceae	*Senna artemisioides* subsp. *×petiolaris*	1.2	<1
Convolvulaceae	*Duperreya sericea*	-	<1
Scrophulariaceae	*Eremophila georgei*	1.7	<1
Asteraceae	*Rhodanthe battii*	0.2	<1
Asteraceae	*Cephalipterum drummondii*	0.2	<1
Amaranthaceae	*Ptilotus obovatus*	0.3	<1
Scrophulariaceae	*Eremophila fraseri*	1.8	<1
Scrophulariaceae	*Eremophila forrestii*	1.8	<1
Poaceae	*Austrostipa elegantissima*	1	<1
Loranthaceae	*Amyema preissii*	-	<1
Malvaceae	*Sida* sp.	0.2	<1
Chenopodiaceae	*Sclerolaena eriacantha*	0.3	<1
Goodeniaceae	*Scaevola spinescens*	1.2	<1
Chenopodiaceae	*Rhagodia drummondii*	1.4	2
Goodeniaceae	*Goodenia mimuloides*	0.01	<1
Proteaceae	*Hakea preissii*	1	<1
Solanaceae	*Solanum lasiophyllum*	0.2	<1
Chenopodiaceae	*Sclerolaena eurotioides*	0.2	<1
Chenopodiaceae	*Salsola australis*	0.2	<1
Chenopodiaceae	*Maireana carnosa*	0.1	<1

Site ID:	YAQ05	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	22/09/23	Described by: Erin Lynch
Co-ordinates (51K)		

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Red/brown	**Soil type:**	Stony sandy clay/loam
Fire age and intensity:	Old >5 yrs	**Vegetation condition:**	Very Good

Family	Genus	Height (m)	% Cover
Fabaceae	*Acacia acuminata*	2.6	3
Fabaceae	*Acacia tetragonophylla*	2	8
Scrophulariaceae	*Eremophila deserti*	1.5	10
Amaranthaceae	*Ptilotus exaltatus*	0.3	<1
Amaranthaceae	*Ptilotus obovatus*	0.4	2
Asteraceae	*Siemssenia capillaris*	0.05	2
Asteraceae	*Cephalipterum drummondii*	0.1	<2
Asteraceae	*Rhodanthe? citrina*	0.05	<1
Amaranthaceae	*Ptilotus helipteroides*	0.2	<1
Chenopodiaceae	*Maireana triptera*	0.4	2

Family	Genus	Height (m)	% Cover
Scrophulariaceae	*Eremophila fraseri*	1.6	<1
Amaranthaceae	*Ptilotus gaudichaudii*	0.15	<1
Chenopodiaceae	*Sclerolaena eriacantha*	0.2	<1
Solanaceae	*Solanum lasiophyllum*	0.2	<1
Goodeniaceae	*Goodenia mimuloides*	0.05	<1
Poaceae	*Austrostipa nitida*	0.2	<1
Chenopodiaceae	*Sclerolaena eurotioides*	0.2	<1
Scrophulariaceae	*Eremophila platycalyx*	1.9	<1
Brassicaceae	*Lepidium oxytrichum*	0.05	<1
Poaceae	*Pentameris airoides*	0.05	<1
Fabaceae	*Acacia synchronicea*	1.9	<1
Poaceae	*Austrostipa elegantissima*	1.6	<1
Convolvulaceae	*Duperreya sericea*	-	<1
Scrophulariaceae	*Eremophila longifolia*	2.1	<1
Scrophulariaceae	*Eremophila forrestii*	1.8	<1
Fabaceae	*Acacia aptaneura*	1.8	<1
Brassicaceae	*Stenopetalum anfractum*	0.05	<1
Malvaceae	*Sida calyxhymenia*	0.4	<1
Fabaceae	*Senna artemisioides* subsp. *×petiolaris*	0.7	<1

Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Recorded	Species recorded in current survey and/or previous recorded from desktop review
Likely	Species previously recorded within the study area and large areas of suitable habitat occur in the survey area.
Possible	Species previously recorded within the study area and areas of suitable habitat occur/may occur in the survey area.
Unlikely	Species previously recorded within the study area, but suitable habitat does not occur in the survey area.
Highly unlikely	Species not previously recorded within the study area, suitable habitat does not occur in the survey area and/or the survey area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Source information - desktop searches
PMST – DEE Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area
DBCA – records of threatened flora from TPFL and WAHERB database searches within the study area
NM – DBCA *NatureMap*

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Yalgoo survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Goodeniaceae	*Goodenia neogoodenia*	P4		This species is a prostrate annual herb with flowers that are quite minute. The flowers are brown to brown & yellow flowering from August to September. Typically found on red loam or clay and near water.	**Possible** Nearest record is approximately 3.1 km south-west of the survey area. There is limited possible habitat within the survey area, however, marginal with no areas that would be semi-permanently wet under suitable conditions. In favourable conditions may occur as the species is cryptic, however, the survey was undertaken during the flowering period for the species and the survey area was considered to be adequately searched.	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Sapindaceae	*Dodonaea amplisemina*	P4		This species is a dioecious, multi-stemmed shrub, measuring 0.3-1 m high. It is found on red-brown sandy clay on basalt and gabbro and banded ironstone or on dolerite and quartzite. It also has a preference for rocky hills.	**Unlikely** Nearest record is approximately 15.4 km northeast of the survey area. No suitable habitat in the survey area.	NM, DBCA
Aizoaceae	*Gunniopsis divisa*	P3		This species is an annual occurring herb, measuring 0.05 to 0.1 m high. Flowers are white, occurring in August, and the species is typically found in Loam soils, or quartz rocks. Can also be found along roadsides.	**Possible** Nearest record is located approximately 14 km northeast of the survey area. Suitable habitat may occur in the survey area, however, the survey was undertaken during the flowering period for the species and the survey area was considered to be adequately searched.	NM, DBCA
Myrtaceae	*Enekbatus dualis*	P1		This is a species of shrub, measuring up to 0.75 m high. Flowers are typically pink in colour occurring around September. The species typically occurs in orange-brown silty sand, brown clayey sand, and granite soils. It can also be found along low hills, gentle mid to upper slopes, and rock outcrops.	**Unlikely** Nearest record is approximately 1.3 km south of the survey area. Habitat within the survey area is not suitable.	NM, DBCA
Droseraceae	*Drosera eremaea*	P3		This is a species of climbing sundew carnivorous plant native to Central and South-Western WA. Previously recorded within Banded Ironstone ridges, and granite outcrops.	**Unlikely** Nearest record is approximately 6 m north of the survey area. No suitable habitat is within the survey area.	NM, DBCA
Myrtaceae	*Verticordia penicillaris*	P4		This is a species of low spreading shrub, measuring 0.15m to 0.3 m high, and up to 1 m wide. Flowers are cream-yellow, occurring September to October. It is typically found along shallow gritty soils and granite outcrops.	**Unlikely** Nearest record is 14.2 km north of the survey area. No suitable habitat in the survey area.	NM, DBCA
Juncaginaceae	*Triglochin protuberans*	P3		This is a species of annually occurring herb, measuring 0.03m to 0.13 m high. It is typically found along red loam and grey mud over clay	**Unlikely** Nearest record is approximately 0.8 km south of	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
				soils. It also prefers winter-wet sites and claypans, near salt lakes and margins of pools.	the survey area. The survey area is not considered suitable habitat for this species.	
Fabaceae	*Acacia speckii*	P4		This is a species of bushy, rounded shrub or tree, measuring between 1.5m to 3 m high. It is found in rocky soils over granite, basalt or dolerite, as well as rocky hills or rises.	**Unlikely** Nearest record is approximately 3.8 km east of the survey area. Limited suitable habitat is present in the survey area. Suitable search effort did not record the species.	NM, DBCA
Fabaceae	*Acacia subsessilis*	P3		This is a species of rounded, straggly, pungent shrub, measuring 1 to 2 m high. Flowers are yellow, occurring July to August. It is typically found in red sand or stony gravel over ironstone and often along rocky hills.	**Unlikely** Nearest record is approximately 1.8 km west of the survey area. There is limited suitable habitat in the survey area. Suitable search effort did not record the species.	NM, DBCA

Appendix E

Fauna survey results

Species list

Likelihood of Occurrence

Yalgoo Species List

Family	Scientific name	Common name	Status
Avifauna			
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-Rumped Thornbill	
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	
Artamidae	*Artamus cinereus*	Black-faced Wood-swallow	
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	
Camephagidae	*Coracina novaehollandiae*	Black-Faced Cuckoo-Shrike	
Casuariidae	*Dromaius novaehollandiae*	Emu	
Columbidae	*Ocyphaps lophotes*	Crested pigeon	
Columbidae	*Geophaps plumifera*	Spinifex Pigeon	
Corvidae	*Corvus coronoides*	Australian Raven	
Estrildidae	*Taeniopygia guttata*	Zebra Finch	
Falconidae	*Falco berigora*	Brown Falcon	
Falconidae	*Falco cenchroides*	Nankeen Kestrel	
Hirundinidae	*Petrochelidon nigricans*	Tree Martin	
Maluridae	*Malurus lamberti*	Variegated fairy-wren	
Maluridae	*Malurus splendens*	Splendid Fairy-wren	
Meliphagidae	*Manorina flavigula*	Yellow-throated miner	
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird	
Meliphagidae	*Epthianura tricolor*	Crimson Chat	
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	
Meliphagidae	*Acanthagenys rufogularis*	Spiny-Cheeked Honeyeater	
Monarchidae	*Grallina cyanoleuca*	Magpie-lark	
Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit	
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird	
Petroicidae	*Petroica boodang*	Scarlet Robin	
Pomatostomidae	*Pomatostomus temporalis*	Grey-Crowned Babbler	
Mammals			
Bovidae	*Bos taurus*	Cow	Introduced
Macropodidae	*Osphranter robustus*	Common Wallaroo	
Leporidae	*Oryctolagus cuniculus*	European Rabbit	Introduced
Reptiles			
Gekkonidae	*Gehyra variegata*	Tree dtella	

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Known	Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area.
Likely	Species are likely to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area.
Unlikely	Species assessed as unlikely include those species previously recorded within 10 km of the survey area however: There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area.
Highly unlikely	Species that are considered highly unlikely to occur in the survey area include: Those species that have no suitable habitat within the survey area. Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area.

Definitions

Term	Description
Study area	A 40 buffer around the survey area
Survey area	The area subject to the current survey

Yalgoo Survey Area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** There is no suitable habitat for this species within the survey area. The species can occur sporadically shortly after major rain events or low-pressure system.	DBCA NatureMap PMST
Amytornis textilis textilis	Western grasswren	P4		The western subspecies of the Thick-billed Grasswren occurs in four types of semi-arid shrubland: (1) Acacia shrublands on coastal dunes, coastal plains and red sandplains, dominated by *Acacia ligulata*, *A. tetragonophylla, A. ramulosa* and *A. sclerosperma*, with chenopods such as *Rhagodia* spp. and Threlkeldia diffusa, other species of shrubs 1-3 m tall with a recumbent growth form that support twining species, and an extensive ground-cover of low shrubs, grasses and herbs. (2) Fire-affected shrublands dominated by *Ptilotus obovatus* and *Solanum orbiculatum*, which have replaced burnt-out Horse Mulga shrublands for at least 40 years following uncontrolled fires. (3) Low (< 1.5 m high) shrublands on calcareous sandplains, dominated by Umbrella Bush, *Exocarpus* spp., and other shrubs such as *Thryptomene* spp., and *Ptilotus* spp., mixed with hummocks of spinifex Triodia spp., and sometimes with Atriplex spp. (4) Dense thickets of *Muehlenbeckia cunninghamii, Atriplex* spp. and *Eremophila* spp. growing in drainage lines (DotE 2016). The species is currently known only from the Shark Bay region (TSSC 2006)	**Highly Unlikely** There is no suitable habitat for this species within the survey area and the nearest known significant populations are in the Shark Bay area. Only historical records exist in the Yalgoo area.	DBCA NatureMap

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers 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 saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	DBCA PMST
Calidris melanotos	Pectoral Sandpiper	IA	IA	In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Calidris ferruginea	Curlew Sandpiper	CR, IA	CR, IA	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and	**Highly Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Higgins & Davies 1996). Curlew Sandpipers forage on mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm, deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated saltflats. Occasionally they forage on wet mats of algae or waterweed, or on banks of beachcast seagrass or seaweed. They rarely forage on exposed reefs (Higgins & Davies 1996). In Roebuck Bay, northern Western Australia, they are also said to feed on part of the mudflats that have been exposed for a longer period, foraging in small groups (Tulp & de Goeij 1994). Curlew Sandpipers generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh (Higgins & Davies 1996). They have also been recorded roosting in mangroves in Inverloch, Victoria (Minton & Whitelaw 2000). "The Shorebird Community occurring on the relict tidal delta sands at Taren Point" has been listed as an Endangered Ecological Community in NSW (NSW DECC 2005d). The Curlew Sandpiper is one of 20 wader species that make up this community.	There is no suitable habitat for this species within the survey area.	
Gelochelidon nilotica	Gull-billed Tern	IA	IA	The Gull-billed Tern can be found on beaches and mudflats in the southwest but has a preference for ephemeral freshwater or brackish lakes. It is highly nomadic and will also disperse to inland lakes. It is uncommon on the Swan Coastal Plain and scare in the southern region (Nevill 2013).	**Highly Unlikely** There is no suitable habitat in the survey area.	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Motacilla cinerea	Grey Wagtail	IA	IA	The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Actitis hypoleucos	Common Sandpiper	IA	IA	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Foraging environments: Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands (Higgins & Davies 1996). Roost sites: Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Higgins & Davies 1996).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Pezoporus occidentalis	Night Parrot	EN	EN	The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen	**Highly Unlikely** There is no suitable habitat for this species within the survey	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	area and no recent nearby records.	
Falco hypoleucos	Grey Falcon	VU	VU	The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sand ridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centered on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely** Favorable habitat exists in the area and the species has been recorded nearby at Mount Magnet.	PMST
Falco peregrinus	Peregrine falcon	OS	OS	The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey and Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	**Likely** Favorable habitat exists in the area and the species has been recorded nearby at Yalgoo.	DBCA NatureMap
Rostratula australis	Australian Painted Snipe	EN	EN	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia, canegrass, or sometimes tea-tree. It sometimes uses areas that are lined with trees, or that have some scattered fallen or washed-up timber (DotE 2016). In the south west it can be found around Carnarvon and wetlands north of Perth, particularly those west of Moora and Gin Gin (Nevill 2013).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of Western Australia, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, paperbark, skheoak, Broombush Melaleuca uncinata vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey and Knight 2012).	**Unlikely** The survey area has a very sparse and open overstory which would reduce suitability for breeding. It is also mostly fenced off and would reduce access to the area.	DBCA NatureMap, PMST
Aphelocephala leucopsis	Southern Whiteface	VU	VU	The Southern Whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Unlikely** The species may occur in the region, however there are no records within the study area, and the habitat is marginally suitable within the survey area.	PMST
Tringa nebularia	Common Greenshank	MI	MI	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	DBCA NatureMap
Reptiles						

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
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. Most records of the brown form Western Spiny-tailed Skink are in York Gum (*Eucalyptus loxophleba*) woodland with some records in Gimlet (*E. salubris*) and Salmon Gum (*E. salmonophloia*) woodland. Populations persist in woodland patches as small as one hectare and completely surrounded by wheatfields. Sites with the greatest number of individuals contain numerous fallen logs and were subjected to low-intensity grazing by domestic stock. Hollow logs are used as refuge sites in woodland habitat. Preferred refuges consist of piles of several, overlapping, hollow logs providing a combination of basking and shelter sites. An increasing number of skinks are being located in altered habitat under piles of wood, scrap metal or under buildings on private property (DotE 2016).	**Unlikely** There are existing records in the area, with the nearest historical record < 1 km south of the survey area. However there is a lack of suitable micro habitat e.g., hollow bearing *Eucalyptus* or *Acacia* or significant exfoliated granite/ basalt rock formations to support this species in the survey area.	DBCA NatureMap, PMST
Invertebrates						
Idiosoma clypeatum *(*previously *Idiosoma nigrum)*	Northern Shield-back Trapdoor Spider	P3		*Idiosoma clypeatum* was previously known by the WAM identification code 'MYG018' and prior to the taxonomic revision of Rix et al. 2018 was often incorporated into *Idiosoma nigrum* that is now known to only occur in the northern Wheatbelt region of Western Australia (Rix et al. 2018). *Idiosoma clypeatum* has a widespread distribution in the Yalgoo and Murchison bioregions of Western Australia's inland arid zone strongly correlated with annual rainfall of less than 250 mm. Like many *Idiosoma* species from the *I. nigrum* complex the burrows are adorned with a moustache like arrangement of twigs. Males have been collected wandering in search of females in late autumn, winter and spring, with a peak of activity in winter (Invertebrate Solutions 2020, Rix et al. 2018).	**Unlikely** There are records of the species' existence within the study area, with the nearest records occurring approximately 30 km southwest of the survey area. The habitat is marginally suitable for the species, in the survey area. The previous disturbances with proximity to the township of Yalgoo, may also have impacted the absence of this species.No evidence (burrows) of trapdoor spiders were recorded in the survey area.	DBCA PMST

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