

Title of Proposal - Meteor Downs South Rail Loop

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Transport - Land

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Run of Mine (ROM) Coal from the Meteor Downs South Mine (MDS) is currently transported using road trains approximately 80 kilometres (km) along the Dawson Highway, through the Springsure township, to Minerva Mine where it is loaded onto trains and transported to Gladstone coal export facilities. The Proponents (Endocoal Limited and Sojitz Coal Mining Pty Ltd) propose to develop a rail loop, stockpiling and loading facilities for the purpose of loading trains near to the MDS Mine operation (Figure 1) for transport to Gladstone port facilities. The rail loop will be located approximately 3 km from the MDS access road intersection with the Dawson Highway (Figure 2) and will significantly reduce road train movements on Dawson Highway from MDS to Minerva. Road trains will only be required to travel approximately 3 km (one way) along the Dawson Highway between the MDS intersection and proposed Rail Loop access road.

Transport of product coal from the MDS to Gladstone port facilities is currently restricted to 500,000 tonnes per annum (tpa). The Project will develop the infrastructure necessary to transport of up to 2 million t per annum (mtpa) of coal from MDS Mine to the Gladstone export facilities. Product coal will be transported from the MDS Mine Infrastructure Area (MIA) using side tipping AB Triple road train configuration trucks (approximately 35.4 metres (m) long) on a continuous (24 hour) basis. The route will be north east along the Mine Access Road to the Dawson Highway intersection, southeast along the Dawson Highway for approximately 3 km to the Project access road and north east to the coal stockpile adjacent to the rail loop for unloading and return to the MDS MIA (Figure 3).

Construction of the Project will commence in late 2019/early 2020 following the receipt of Development Approval and is scheduled to take between 6 to 9 months. The construction roster is expected to be based on a 5 on 2 off shift roster and activities will generally be limited to daylight hours.

The life of the operating phase is estimated at 10 years consistent with the current MDS Mine schedule. However, the life of the facility may be extended by further economic coal discovery at MDS or use by an alternate operator post MDS Mine closure.

The main construction features are; (1) A rail loop will be constructed off the exiting Blackwater rail system (Figure 4). The loop will accommodate trains with approximately 100 wagons and a nominal length of 1.7 km so that through rail traffic is not impeded. Approximately four (4) trains per week will be loaded at the facility. Based on an approximate loading rate of 1,600 t per hour,

loading will take in the order of five hours. The rail loop will be operated in a clockwise direction with entry to and exit from the loop to the northeast of the Project site; (2) A coal stockpile pad and train loading facilities.

The stockpile pad will be approximately 3.5 ha and have a storage capacity of 110,000 m³. Product coal will be loaded to the trains using up to three-wheeled loaders (nominally Caterpillar 992 or equivalent). The loading facilities will include a weighbridge installed within the rail loop to reconcile the quantity of coal loaded to each wagon. A coal veneering (chemical sealing) unit will be included at the loading facility. Loaded wagons will be veneered prior to exit to aid in dust control along the route to the port facilities; (3) buildings including an office, crib room, control room and ablutions Block (temporary demountable style structures); (4) general cut and fill and borrow areas. Cut and fill quantities have been estimated to total approximately 102,000 m³.

A borrow area is planned for excavation of foundation materials required for the Project facilities. This borrow area was identified through a material sampling and geotechnical analysis program and is located within the disturbance footprint (Figure 5). Approximately, 35,000 m³ of material is expected to be required additional to the material won from cuttings. Material will be excavated as required for use as general fill in foundations of the infrastructure including, the rail loop, access road, stockpile, industrial area and building footings. Unsuitable material excavated from the infrastructure footprint will be temporarily stockpiled for backfilling to the borrow pits as excavation from them is completed. Materials to be excavated will be free dug and no blasting will be undertaken during construction.

Other key construction features are; a purpose-built dual carriage access road off the Dawson Highway; a workshop; sediment dam; industrial area for power generators (diesel), water storage tanks, fire suppression equipment and a car park.

The operational phase will likely be based on a 5 on 2 off shift roster over a 24 hr shift cycle to meet the variable train scheduling and loading requirements. The life of the operating phase is estimated at 10 years consistent with the current MDS Mine schedule. However, the life of the facility may be extended by further economic coal discovery at MDS or use by an alternate operator post MDS Mine closure.

If no alternate operator continues use of the facility, decommissioning and rehabilitation would commence after the cessation of MDS Mine operations and is expected to take in the order of 6 to 9 months. The rehabilitation strategy discussed in Section 4.1.1 for the site is proposed to return the site to pre-project status.

Multiple ecological surveys have been undertaken (report attached) within the Project area and it has been determined that clearing associated with the proposal is likely to significantly impact Matters of National Environmental Significance (MNES), including:

- Threatened ecological community - Natural Grasslands of the Queensland Central Highlands and Northern Fitzroy Basin. The proposed action is likely to have a significant impact on this TEC. Environmental offsets will be required to compensate for significant residual impacts; and
- Threatened species - King Blue-grass (*Dichanthium queenslandicum*) has been identified in the project area. The proposed action is likely to have a significant impact on this species. Environmental offsets will be required to compensate for significant residual impacts.

An Offset Management Plan (OMP) will be prepared to satisfy relevant requirements for offset delivery under the relevant Queensland and Commonwealth Government offset policies. The

proponent has commissioned assessments to identify suitable land for delivery offset requirements for the proposed action on land in the local area. Detailed field surveys of potential offset sites are currently being undertaken to assess the extent and condition of MNES and MSES offset values to locate a suitable area for inclusion in an overall environmental offset strategy for the project. The OMP will be implemented to preserve the offset areas values and to prescribe relevant management and monitoring requirements. The aim of this OMP will be to improve the condition and connectivity of species habitat and vegetation communities for MNES and MSES within the offset areas. Suitable offset areas will be legally secured as required under Queensland and Commonwealth Legislation.

It is anticipated that assessment of this action would be achieved via the Assessment on Referral Information pathway.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

| Area | Point | Latitude | Longitude |
|---------------|-------|------------------|-----------------|
| MDS Rail Loop | 1 | -24.370231544146 | 148.45547148315 |
| MDS Rail Loop | 2 | -24.37001028945 | 148.45530926189 |
| MDS Rail Loop | 3 | -24.384097332225 | 148.44267756618 |
| MDS Rail Loop | 4 | -24.379155822559 | 148.43449961566 |
| MDS Rail Loop | 5 | -24.379155822559 | 148.43344647144 |
| MDS Rail Loop | 6 | -24.37657437364 | 148.42956006059 |
| MDS Rail Loop | 7 | -24.375321163777 | 148.43069388587 |
| MDS Rail Loop | 8 | -24.376279646122 | 148.43271776973 |
| MDS Rail Loop | 9 | -24.374140634585 | 148.43490473924 |
| MDS Rail Loop | 10 | -24.371559092825 | 148.43862892883 |
| MDS Rail Loop | 11 | -24.370600574702 | 148.44138237878 |
| MDS Rail Loop | 12 | -24.370674061921 | 148.44729354312 |
| MDS Rail Loop | 13 | -24.37001028945 | 148.45190865044 |
| MDS Rail Loop | 14 | -24.369863304654 | 148.45506636482 |
| MDS Rail Loop | 15 | -24.37001028945 | 148.45514789978 |
| MDS Rail Loop | 16 | -24.370231544146 | 148.45547148315 |

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Project site is in Central Queensland approximately 240 km southwest of Rockhampton and 21 km west northwest of the Rolleston township (Figure 1 - Project Location). The Project site is within the Central Highlands Regional Council (CHRC) Local Government Area. Emerald is the

nearest major centre, approximately 100 km north of the Project site. Land use in the area of the Project is dominated by agricultural and coal mining activities (Figure 2 – Regional Location). The proposed load out facility is located immediately to the north of the Dawson Highway crossing of the Blackwater Rail system approximately 8.5 km to the north northeast of the MDS MIA (MIA) located on ML70452 (Figure 2 – Regional Location).

The property on which the project will be located is freehold title (Lot 56 on DSN808) and is currently utilised as a grazing property. A DA application has been made for a Development Application for a Material Change of Use (MCU) and Reconfiguration of a Lot (RoL) excising the project area from the current title, with the RoL expected to create a lot comprising 386 hectares (ha).

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

77.0 hectares

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Lot 56 on DSN808

1.8 Primary Jurisdiction.

Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes

1.10.1 Is there a local government area and council contact for the proposal?

Yes

1.10.1.0 Council contact officer details

1.10.1.1 Name of relevant council contact officer.

Sarah Ronnfeldt

1.10.1.2 E-mail

tplanning@chrc.qld.gov.au

1.10.1.3 Telephone Number

(07) 4982 8372

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 11/2019

End date 11/2040

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The site is located within the Rural Zone under the CHRC Planning Scheme 2016, the project is considered impact assessable development and triggers the following applications:

- Material Change of Use (MCU);
- Reconfiguration of a Lot (RoL);
- Environmentally Relevant Activity (ERA) 50 (1)(a) -Bulk material handling; and
- Operational Works.

A DA has been lodged with the CHRC for the project. Due to the above DA requirements, including State interests, the DA has been referred to relevant State Agencies through the State Assessment and Referral Agency (SARA) process.

In addition to the development approvals process the project also triggers potential MNES under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the subject of this Referral.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

The proponent has engaged the Current Landholder of Lot 56 DSN808 on which the project is to take place relative to consents required. The required consents have been obtained for the combined DA (the MCU and RoL). Consultation with the regulatory stakeholders is ongoing through the Queensland and Commonwealth approvals processes. Public consultation will be completed as required by these approval processes.

The Federal Court has determined that Native Title does not exist with respect to an area that includes the Project area (Wyman on behalf of the Bidjara People v State of Queensland (No 2) [2013] FCA 1229 as confirmed in Wyman on behalf of the Bidjara People v State of Queensland [2015] FCAFC 108).

In relation to Aboriginal cultural heritage, the Project Proponent will comply with its duty of care under the Aboriginal Cultural Heritage Act 2003. This will include consulting with the former Karingbal registered claimant (being a relevant Aboriginal party for the area) and following a similar process to that outlined in the existing approved Cultural Heritage Management Plan with the former Karingbal registered claimant (as varied) in place for the MDS Mine.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

A DA for the Meteor Downs South Rail Loop has been prepared by SLR Consulting (2019). The DA is supported by risk assessments of potential impacts to air, noise, land, ecology and rehabilitation, and water (ground and surface water). The key impacts of the proposed action relevant to this referral are in relation to threatened species and ecological communities.

The primary impacts to significant environmental values which may result from the Project include:

- Clearing of the listed Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin Threatened Environmental Community (TEC); and
- Direct disturbance to the listed threatened species, King Bluegrass (*Dichanthium queenslandicum*) and associated habitat.

Baseline habitat assessment for MNES was undertaken at the proposed rail loop on 14 - 19 May 2018, 5 - 10 November 2018, and 25 February to 2 March 2019. These assessments included:

- Systematic baseline fauna surveys, including trapping, bird surveys, active diurnal and nocturnal searches, acoustic bat detection and use of infra-red game cameras;
- Targeted surveys and habitat quality assessment for threatened fauna species including the Golden tailed Gecko, Yakka Skink, Ornamental Snake, Squatter pigeon, Koala and Greater Glider;
- Verification of regional ecosystem mapping, including extent and remnant status;
- Surveys for threatened flora species including threatened grass species (especially *Dichanthium queenslandicum* and *D. setosum*);
- Compiling a comprehensive flora and fauna list for the site; and
- Determining the presence, extent and condition of the listed Natural Grasslands of the Queensland Central Highlands and Fitzroy Basin TEC using methods for determining grass regional ecosystems, descriptions, key indicator species and condition thresholds for determining the Commonwealth listed TEC.

These assessments provided a substantial dataset for assessing the presence, likely

occurrence and potential for impacts to threatened species and communities. However, climatic conditions prevented comprehensive assessment of the listed Natural Grasslands of the Queensland Central Highlands and Fitzroy Basin and the potential occurrence of threatened grass species.

Following a late wet season in March/April 2019, conditions on site significantly improved for undertaking comprehensive flora surveys. In response to inconclusive data obtained in earlier assessments with respect to the presence, extent and quality of TEC habitat and occurrence of threatened grass species, SLR conducted additional field assessments for these matters once conditions became optimal to assess them and to take advantage of these favourable conditions. These targeted field-based surveys conducted during May 2019 (in addition to the baseline surveys described above) were necessary to determine the size and nature of any impact to the threatened (grassland) ecological community protected under the EPBC Act. The habitat suitability and population extent of threatened flora species was also assessed. The outcomes of these surveys are discussed in Section 2.4.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

The proposed action is related to the approved Meteor Downs South Coal Project, Qld proposed action (EPBC 2013/6799). The proposed development will load coal from the Meteor Downs South Coal Project to the railway line for transportation to port and market. The proposed development is however on a separate Lot and DP, not on the MDS mining lease and is being approved as a Development Application by CHRC by delegation to SARA (i.e. as a separate application).

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The [interactive map tool](#) can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

- [Profiles of relevant species/communities](#) (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- [Significant Impact Guidelines 1.1 – Matters of National Environmental Significance](#);
- [Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies](#).

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

| Species | Impact |
|---|---|
| Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin TEC | The presence of the Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin Threatened Ecological |

| Species | Impact |
|--|--|
| King Bluegrass (<i>Dichanthium queenslandicum</i>) | <p>Community (TEC) was assessed using the methodology described in the Commonwealth Listing Advice (TSSC, 2009) for this community. The TEC assessments were conducted after suitable rainfall providing optimal conditions for the assessment. These assessments were conducted in 0.1 ha plots (50 x 20 m) within the proposed disturbance area and surrounding areas in May and June 2019. The purpose of the assessments was to evaluate habitat within the proposed project area with respect to the 'key diagnostic characteristics' and 'condition thresholds' for the listed community. A total of 32 TEC assessment sites were completed within the proposed project area. The majority of TEC assessments revealed the grassland community present was consistent with the 'key diagnostic characteristics' and 'condition thresholds' for the listed community. The three assessment sites within the road corridor assessment unit revealed this unit is not consistent with the listed community. The road corridor unit (2.44 ha assessment area, but proposed disturbance is less than this total assessment area value) is the only proposed disturbance area identified as not supporting a vegetation community consistent with the listed TEC. The remaining 29 TEC assessment sites confirmed the presence of the listed community with some variation in the condition classes observed. Of the 29 sites confirmed as supporting the listed TEC within the proposed disturbance area, 26 (90 %) had a 'best quality' condition class and three (10 %) had a 'good quality' condition class. The TEC habitat area, assessment sites and condition classes derived from the May and June 2019 survey are depicted in Figure 7 and Figure 8. The total impact area for the Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin TEC determined through the field-based assessments will be 77 ha.</p> <p>This endangered flora species is endemic to central and southern Queensland where it occurs in three disjunct populations: 1) Hughenden district; 2) from Nebo to Monto and west to Clermont and Rolleston; and 3) Dalby district, Darling Downs. Its area of occupancy is</p> |

| Species | Impact |
|---------|---|
| | <p>unknown, however based on the extent of occurrence it is likely to be restricted. King Bluegrass is found on black cracking clay soils mainly in association with other <i>Dichanthium</i> species and in natural grassland communities. This species has been recorded within the within the proposed disturbance area through TEC assessments, habitat quality assessments and targeted surveys. Through these various survey techniques, King Bluegrass was recorded in various parts of the proposed disturbance area, but no individuals were recorded in areas of significant existing disturbance, such as those highly modified for <i>Leucaena</i> (<i>Leucaena leucocephala</i>) plantation and areas adjacent stock water points. In general, King Bluegrass was restricted to areas of more intact native grassland habitat with little modification and likely subject to lower grazing pressure. The population of this species was quantified through the establishment of 50 x 20 m assessment plots. Once an individual tussock of this species was located a radial (5 m) search was performed for the area around surrounding that tussock. All tussocks for each point were added up for a total amount recorded within each assessment plot. To quantify the impact to the local population, the project area was divided into units based on spatial distribution within the project area and similarities in habitat. The total number of tussocks recorded within each 0.1 ha assessment site was averaged for each unit and then extrapolated to the total number of hectares for that unit. The combined total across all assessment units gives a total habitat impact area of 15.96 ha and a total estimated population impact of 10,000 individual tussocks (Figure 7 and 8).</p> |

2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of

any listed migratory species, or their habitat?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

3.1.1 FLORA

A total of 59 flora species from 23 families were identified in the study area during recent flora and fauna surveys, including 20 grass species and 15 pest or introduced species. The identified species are considered common and widespread throughout the region and floristic composition is generally typical of the mapped RE units.

One threatened flora species was identified during the vegetation surveys, being King Blue Grass, which listed as 'Vulnerable' under the NC Act and 'Endangered' under the EPBC Act. Targeted searches and quantification surveys were performed as part of the most recent field surveys May/ June 2019) described in Section 2.4. This species was found to occur in areas of intact habitat that were not subject to disturbance from grazing practices (e.g. disturbance from *Leucaena* plantation).

Pest flora species identified included introduced pasture species Red Natal Grass (*Melinis repens*) and Buffel Grass (*Cenchrus ciliaris*) and *Leucaena* which has been cultivated as cattle fodder. The restricted invasive plants (Queensland Biosecurity Act 2014) weeds *Parthenium* (*Parthenium hysterophorus*) and Prickly Pear (*Opuntia tomentosa*) were recorded.

3.1.2 FAUNA

Six amphibian species from three families were recorded within the study area, all of which are common and widespread in the local area and none listed as near threatened or threatened were identified during surveys.

Ten reptile species from five families were observed within the study area, all of these are common and widespread throughout similar habitats within the broader region and none are listed as near threatened or threatened.

A total of 60 species of bird were observed within the study area during the field surveys. The November 2018 (Spring) survey detected 90 % of the birds, however, the February/ March (Summer) survey only accounted for 45 % of the total species observed. This is an indicator of the number of species that only utilise the site seasonally. Most species observed are common in similar habitats throughout the region and no threatened or near threatened bird species were observed during the survey program.

Twenty-two mammal species were recorded during the field surveys and the assemblage typical of open woodland and grassland habitats within the region and recorded species are generally

common. Bats showed the greatest diversity of all mammal groups, with at least 13 and as many as 14 species identified from call data collected during the surveys. No mammals listed as near threatened or threatened were observed within the study area. However, there was evidence (carcass remains) of the Short-beaked (*Echidna Tachyglossus aculeatus aculeatus*), which is listed as 'Special Least Concern' under the NC Act. Domestic cattle were abundant in the study area.

Although no threatened fauna was identified on site, species with potential to occur include the Squatter Pigeon (*Geophaps scripta scripta*) and Ornamental Snake (*Denisonia maculata*). However, there are no relevant habitat values for these species within the project area and therefore it is unlikely there will be a significant impact to these species.

Pest species identified during the field surveys included Cane Toad (*Rhinella marinus*), Wild Pig (*Sus scrofa*), House Mouse (*Mus musculus*), Black Rat (*Rattus rattus*) and Feral Cat (*Felis catus*).

3.2 Describe the hydrology relevant to the project area (including water flows).

A flood study and stormwater management plan has been undertaken for the proposed development.

An assessment of the pre-development scenario indicates that there are three main flow paths which traverse the allotment which the development is located. Aldebaran Creek is located to the north of the proposed development whilst tributaries of Meteor Creek traverse to the south. The Aldebaran Creek catchment which is 404 km² was modelled to represent the tail water conditions during coincident flows from the two creeks.

The assessment has determined that the proposed development has small localised impacts on flood levels for the surrounding locality, with very limited impact propagating past the property boundary. The 1 % AEP flood extent associated with these creeks do not impact the development area.

Surface water runoff from the proposed development is proposed to be captured in two sedimentation basins (A and B), to prevent any increase in discharge and to manage water quality leaving the site. The basin capacities are sufficient to capture the 1 % 24 hr AEP flood event without overtopping.

Specific advice relating the hydraulic nature of the development is provided below:

- The proposed development has limited interference with overland flow. The proposed Sedimentation Basin A has a capacity of 32 ML and Sedimentation Basin B a capacity of 20 ML (Figure 11); and
- The Flood Impact Assessment and Stormwater Management Plan both showed no impact, actionable nuisance, or worsening of stormwater, flooding or drainage to the state-controlled road (Dawson Highway), railway corridor and/or conveyance through existing drainage lines (Figure 12).

Storm water management throughout all phases of the Project will generally focus on two classes of water, being:

- Clean runoff from undisturbed or stabilised areas; and
- Potentially sediment laden runoff from disturbed and operational areas.

3.2.1 Potentially Sediment Laden Runoff – Construction Phase

Construction phase runoff will be managed in accordance with an Erosion and Sediment Control Plan (ESCP) which is expected to include temporary erosion control measures. The ESCP is being developed in accordance with international best practice (IECA 2008).

Runoff generated from disturbed areas within the operational zone during rainfall has the potential to contain sediment. Such areas include the bulk of the IA, coal stockpile and loadout pad and the adjacent weighbridge and veneering pad. As shown (Figure 11) runoff from these areas will be directed to the Sediment Dam for containment and treatment prior to discharge.

3.2.2 Groundwater

There are no registered bores located within the Project area however there are four within 2 km of the Project boundary Table 4. The bore reports for each bore were accessed through Queensland Globe links (01 April 2019 - <http://resources.information.qld.gov.au/groundwater/reports/>). No publicly available detailed water quality information was located for any of the bores, however there is reference to quality in two of the bore reports (Table 4).

Potential impacts to groundwater resulting from the Project may include:

- Release of hydrocarbons and chemicals to land and subsequent infiltration into underlying groundwaters; and
- Depletion of groundwater resources for raw water supply.

The Project will not involve significant excavation depth (generally less than 5 m) that would intersect groundwater resources. Groundwater extraction bores are not required for the project as operations water will be sourced from the MDS Mine and potable water delivered by commercial operators.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

Baseline soils information was established by:

- A desktop review of existing soils and landform information relevant to the study area;
- A field assessment (conducted by Cardno) broadly in accordance with McKenzie et al. (2008) for sampling intensities and AS1726 Geotechnical Site Investigations for core log profile descriptions. Field logs were then interpreted against NCST (2009) for soil profile description,

and Isbell and NCST (2016) for soil classification; and

- Laboratory analysis of physical and chemical properties of soil samples by a laboratory (ALS Environmental) with NATA certification for most of the analyses required.

The Project Site is located regionally in the Bowen Basin where the solid geology is Permian age sedimentary rock (Baralaba Coal Measures) comprising sandstone, mudstone, coal, tuff and conglomerate (QG, 2019). Surface geology is Tertiary volcanics (Tv), comprising stratified, mixed mafites and felsites (mainly volcanics – basaltic lavas with local rhyolite and trachyte with some plugs) (QG, 2019).

The soil type for the project area is described as: Kb10. Black self-mulching cracking clays. Agricultural Land Class, A1 – Crop Land – Broadacre and horticulture (Qld Gov 2019). The Project site is located outside of the extent of the acid sulphate soil mapping layer (Qld Gov 2019); therefore, Acid Sulphate Soils are not considered to be of concern in the area of the proposed development.

Soil sampling at 6 sites across the Project Site showed no obvious signs of erosion, saline groundwater percolation and resultant accumulation on the surface, or scalding activities. The only notable surface disturbances were from livestock, vehicle traffic or farming infrastructure.

Soils of the Project site include a Brown Vertisol/Dermosol (mapped soil unit 1 (MSU 1)) and a Black or Grey Vertisol (MSU 2). From an erosion perspective the soils are considered to present a low risk. Soils encountered on the property consisted of extremely high plasticity silt (~0.0?0.02 m BGL), overlying extremely high plasticity black clay (~0.02 ? 0.05 m BGL). Cracking emanated < 100 mm below surface at the time of the investigation and cracks were approximately a maximum 10 mm width. Underlying black clays were generally clayey, gravely sands (residual soils becoming extremely weathered rock) with moderate to high plasticity due to basaltic nature of the regions rock strata.

Government mapping resources identified two Regional Ecosystems: (1) 11.8.11 - *Dichanthium sericeum* grassland on Cainozoic igneous rocks and (2) 11.3.3 - *Eucalyptus coolabah* woodland on alluvial plains.

Field surveys identified the three Regional Ecosystems: (1) 11.8.11 - *Dichanthium sericeum* grassland on Cainozoic igneous rocks, (2) 11.3.3a – *Melaleuca bracteata* woodlands on alluvial plains, and (3) 11.8.5 *Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks.

The primary vegetation characteristics relevant to the project area are native grassland with areas that have been modified for grazing. The status and condition of this community are detailed in the following sections.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The project area does not support any outstanding natural features or unique values. The project area has been modified to support grazing land use and is characteristic of open pasture

grazing land of the Central Highlands. There are no values associated with the project area beyond those described for vegetation communities and flora species.

3.5 Describe the status of native vegetation relevant to the project area.

The field surveys found no areas of Weeping Myall Woodlands TEC or Brigalow TEC habitats within the study area. The extent and condition of the native grassland TEC was specifically assessed in the May 2019 studies. The full extent of the proposed disturbance area supports vegetation consistent with the key diagnostic criteria and condition thresholds for the native grassland TEC. This includes an area of non-remnant vegetation (as shown on Queensland regional ecosystem mapping) corresponding with the Leucaena plantation area.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The slope of the project area is relatively flat (1 - 2 % slopes) with the maximum grade being 10 %. The depth of the action will reach approximately 5 m for the construction of footings and foundations.

The action will not take place in a marine area.

3.7 Describe the current condition of the environment relevant to the project area.

The primary habitat type across the proposed project area is native grassland that has been modified in some areas to support a Leucaena plantation. The Leucaena plantation represents significant modification to the community and the values it supports, but native grass species persist within this area and overall the community continues to meet key diagnostic criteria and condition thresholds for the listed TEC. Outside the Leucaena plantation, the general condition of the Native grassland varies across the Project site with some small areas heavily impacted by cattle, however, most of the areas are minimally impacted by cattle and invasive flora.

The February/ March 2019 field survey was affected by the exceptionally dry conditions which had prevailed throughout the wet season and the widespread cattle-grazing across the study area, which, combined with and dormant grasses, made grass identification particularly difficult.

The May 2019 survey was designed to assess the condition of the community during optimal conditions for assessing against key diagnostic criteria and condition thresholds for the listed TEC. A total of 32 TEC assessment sites were completed within the proposed project area. The majority of TEC assessments revealed the grassland community present was consistent with the 'key diagnostic characteristics' and 'condition thresholds' for the listed community. The three assessment sites within the road corridor assessment unit revealed this unit is not consistent with the listed community. The road corridor unit (2.44 ha assessment area, but proposed disturbance is less than this total assessment area value) is the only proposed disturbance area identified as not supporting a vegetation community consistent with the listed TEC. The remaining 29 TEC assessment sites confirmed the presence of the listed community with some variation in the condition classes observed. Of the 29 sites confirmed as supporting

the listed TEC within the proposed disturbance area, 26 (90 %) had a 'best quality' condition class and three (10 %) had a 'good quality' condition class.

Habitat condition assessments have been performed within the proposed project area for the purposes of developing an environmental offset strategy. The outcomes of these assessments are designed especially for comparison with habitat condition assessments in potential offset areas for determining offset ratio values.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

No Commonwealth Heritage Places as relevant to the project based on a search of the Commonwealth Heritage Register.

3.9 Describe any Indigenous heritage values relevant to the project area.

In relation to Aboriginal cultural heritage, the Project Proponent will comply with its duty of care under the *Aboriginal Cultural Heritage Act 2003*. This will include consulting with the former Karingbal registered claimant (being a relevant Aboriginal party for the area) and following a similar process to that outlined in the existing approved Cultural Heritage Management Plan with the former Karingbal registered claimant (as varied) in place for the MDS Mine.

A search of the Queensland Government Database and Register was undertaken to identify any known Aboriginal Cultural Heritage values. The search report concluded that no Aboriginal cultural heritage is recorded on the Cultural Heritage Database and Register for Lot 56 DSN808.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The tenure of the action area is freehold title (Lot 56 on DSN808) and is currently utilised as a grazing property. A DA submitted with the CHRC is current for the action and a Material Change of Use (MCU) and Reconfiguration of a Lot (RoL) excising the project area from the current title, with the RoL expected to create a lot comprising 386 hectares (ha).

3.11 Describe any existing or any proposed uses relevant to the project area.

The existing use of Lot 56 DSN808 is for cattle grazing and the proposed use is as outlined in this EPBC Act Referral and the associated Development Application.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

4.1.1 LAND

The construction process will include, vegetation clearing, topsoil (A and B horizon) stripping and stockpiling for replacement during rehabilitation, subsoil and parent material excavation as necessary (cut), borrow material excavation as required and backfilling of areas to grade (fill) as required for infrastructure foundation preparation. In addition, there will be off project disturbance associated with the road and rail intersections within the respective easements. Disturbance is expected to be less than 77 ha in total.

Clearing of Vegetation

Vegetation clearing will be undertaken using a bulldozer where tree clearing is required and grader and or tractor and slasher where vegetation stripping of grassland is required. Alternatively, no clearing of grassland may be necessary if heavily grazed and in this event grass will be stripped with topsoil.

The primary mechanism for reducing impacts to MNES from the proposed action will be to avoid higher value areas of habitat by design. The proposed disturbance area has been located, as much as possible, within areas subject to previous disturbance. This pre-existing disturbance is in the form of a Leucaena plantation and high grazing pressure (near stock water points). While these areas still support vegetation consistent with the key diagnostic criteria and condition thresholds for the listed native grasslands TEC, they have significantly reduced habitat values. This is primarily demonstrated by the absence of the listed threatened grass species, King Bluegrass. Through the proposed project design, impacts to habitat for this threatened species have been avoided to the full extent possible.

Additional Mitigation Measures

- No clearing of remnant vegetation associated with the Meteor Creek tributary and Alderbaran Creek tributary is proposed;
- The extent of the vegetation clearing footprint will be defined using surveyed pegs and flagging tape in advance of commencing clearing activities;

- A Permit to Disturb system will be implemented to ensure that specific clearing only occurs within allowed areas, the extent of clearing is restricted to the minimum necessary and cleared vegetation management is understood by all involved;
- As the vegetation to be cleared has been confirmed as the listed native grasslands TEC and habitat for King Bluegrass, offset requirements are expected to be applicable. Offsets will be planned and delivered in accordance with the State and Commonwealth requirements; and
- Disturbed area, rehabilitation will focus on re-establishment of the pre-existing vegetation species and communities during the medium term (during operational life of the Project) and post decommissioning.

Topsoil/ Subsoil/ Parent Material Stripping

Topsoil recovery from the A and B horizons will be undertaken in advance of all infrastructure footprint preparation and excavation. Recovery will be undertaken using scrapers, dozers or graders and material stockpiled specific to the horizon at nearby locations. Stockpiles will be retained for rehabilitation of disturbed areas post construction and post decommissioning rehabilitation. All topsoil stockpiles will be constructed and maintained in line with industry best practice.

Subsoils and parent material (where required) will be stripped separately and stockpiled in nearby locations for later backfilling as part of the rehabilitation process.

Mitigation Measures

- Construction machinery will be inspected prior to entry to use on site and be required to have a current weed declaration certificate;
- Topsoil stripping depth will be:
 - > A1 Horizon (MSU 1) will be stripped/excavated between 250-300 mm; and
 - > A2 Horizon (MSU 2) will be stripped/excavated between 300-350 mm.
- Topsoil Stockpiles will be created out of drainage lines and low areas and surface runoff will be directed around them and a site inventory kept;
- Topsoil Stockpiles will be constructed < 2 m height and stabilised as soon as practicable following development;
- Topsoil to be retained long term > 6 months will be stabilised with an application of sterile cover crop; and
- Subsoils and parent material will be stockpiled separately, away from drainage lines and with stockpile heights < 3 m and < 5 m respectively.

Borrow Material Excavation

Approximately 35,000 m³ of material is expected to be required from within the infrastructure footprint. Excavation is expected to be undertaken post vegetation and topsoil stripping using standard construction machinery including graders, scrapers, excavators, dozers and or loaders.

Mitigation Measures

- Material (topsoil, subsoil) management will be in accordance with the measures outlined above in Topsoil/ Subsoil/ Parent Material stripping;
- Borrow areas will be graded to maintain safe site trafficking and stabilised to prevent erosion; and
- Surface runoff will be directed away from borrow areas to prevent long term water accumulation.

Post decommissioning rehabilitation will involve re-instatement of the Project area contours similar to pre-disturbance levels via backfilling of cuts including sequential placement of materials.

Operational Activities

Operational activities are not expected to result in any further land disturbance. Storage and handling of chemicals, hydrocarbons and waste will be undertaken which has the potential for land impacts and regular vehicle movements will also be a part of operations having potential land impacts relative to weed movement.

Mitigation Measures

- A waste management strategy will be developed focused on containment and removal by licenced contractors;
- Minor quantities of hydrocarbons and chemicals (other than diesel) will be stored onsite in accordance with sound practice focused on container quality and location to protect from damage;
- Storage of diesel will be with AS1940 compliant secondary containment;
- Vehicles and machinery will be refuelled in a designated area with hardstand and drainage to an oil water separator;
- Spill clean-up equipment and procedures will be developed and implemented;
- Containment of Sewage effluent in storage tank(s) for offsite disposal by licenced contractor;
- Employees will be trained regarding significant flora and fauna species (including endangered and weed) and their management; and
- Weed treatment will be undertaken as deemed necessary following routine inspections.

Rehabilitation and Decommissioning

Once the Project is no longer required to support the MDS Mine, an alternate operator may continue operation of the facility. If no alternate operator is located the Project will be decommissioned and the site rehabilitated. The rehabilitation strategy for the site is proposed to return the site to pre-Project status of grazing on agricultural class A1 land, return the potential of the areas mapped as Strategic Cropping Land and maximise the re-establishment of EPBC Act listed flora species, King Blue Grass. Detailed planning for the decommissioning and rehabilitation will be prepared as the Project approaches closure. Detailed planning will include:

- Determining sources for reusable and recyclable infrastructure and components;
- Prepare inventories of all topsoil, subsoil, unweathered parent material and imported foundation material which will be scheduled for cutting and excavation backfill to achieve near original contours;
- Design the final landform contours; and
- Develop the detailed decommissioning and rehabilitation schedule.

The decommissioning and rehabilitation process will involve:

- Dismantling of all buildings and infrastructure with resulting materials and wastes managed in accordance with the waste hierarchy and waste management strategy;
- Imported material from roads, hardstands, stockpile, bases, and water management infrastructure will be excavated and either backfilled in cuttings and borrow areas where capacity is available or removed from site for reuse or disposal;
- The Sediment Dams will be desilted with the material removed from site for appropriate burial in MDS Mine overburden or alternative licenced disposal;
- Remaining carboniferous material from the coal stockpile pad will be scraped and removed from site for appropriate burial in MDS Mine overburden or alternative licenced disposal;
- Subsoil and topsoil stockpiles will be sampled and analysed for physical and chemical properties to determine any amelioration required during the replacement process;
- Parent materials, subsoils and topsoil will be sequentially replaced as near to its source as possible at similar depths to pre-stripping and appropriately ameliorated;
- A seed mix consisting of species as representative of the pre-disturbance grassland as possible will be sown to rehabilitated areas;
- Weed management will be undertaken to selectively support the growth of King Blue Grass; and
- Ongoing monitoring of rehabilitation success will be undertaken until the post Project

landholder consents to accept the rehabilitated land.

By implementing the above practices, the objectives and outcomes stated above are expected to be achieved.

4.1.2 WATER

Water modelling indicates the development will have a minor impact on flooding and pondage around the project site. Eight culverts placed in existing drainage lines have been designed into the infrastructure plan and sized to minimise flooding in a 1 % AEP event.

The construction of Sediment Ponds A and B which due to site topography are designed to be constructed greater than twice the size required for a 1 % AEP event.

Construction phase runoff will be managed in accordance with an ESCP which is expected to include temporary erosion control measures. The ESCP is being developed in accordance with international best practice (IECA 2008).

4.1.3 DUST

Despite the dust assessment finding that even in the absence of control measures construction (and decommissioning and rehabilitation) activities would have negligible impacts on sensitive receivers, the following control/ mitigation measures will be applied to reduce near project dust and reduce impacts on surrounding sensitive species:

- Water truck will be maintained on site for dust suppression of construction activities as required;
- The designated site speed limit will be a maximum 40 km/hr;
- Construction topsoil, subsoil and parent material stockpiles will be retained in a tidy condition and reused or stabilised as soon as practical;
- Detailed project planning which limits ground disturbance to only that necessary and within the proposed disturbance footprint;
- Development and implementation of a Permit to disturb system which required supervisory sign off prior to clearing and surface disturbance;
- Visual monitoring of dust and prevailing weather conditions and appropriate direction of water trucks as necessary or modification of certain construction activities in extreme circumstances; and
- Development and implementation of a complaints management and investigation system through which legitimate complaints will be managed.

4.1.4 OFFSET AREAS AND MANAGEMENT

An Offset Management Plan (OMP) will be prepared to satisfy relevant requirements for offset

delivery under the relevant Queensland and Commonwealth Government offset policies. Environmental offsets will be required for significant residual impacts of the project on the MNES outlined in the previous sections of this referral and are expected to wholly overlap with any requirements for impacts to matters of state environmental significance (MSES) outlined.

Environmental offsets required to meet the project's significant residual impacts on MNES and MSES will be delivered as proponent-driven offsets (land-based offsets). The proponent has commissioned assessments to identify suitable land for delivery offset requirements for the proposed action on land in the local area. Detailed field surveys of potential offset sites are currently being undertaken to assess the extent and condition of MNES and MSES offset values to locate a suitable area for inclusion in an overall environmental offset strategy for the project.

The OMP will be implemented to preserve the offset areas values and to prescribe relevant management and monitoring requirements. The aim of this OMP will be to improve the condition and connectivity of species habitat and vegetation communities for MNES and MSES within the offset areas. Suitable offset areas will be legally secured as required under Queensland and Commonwealth Legislation.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

The proposed environmental outcomes for the habitat relevant to the native grassland TEC and King Bluegrass will be to avoid impacts through design by locating infrastructure, wherever possible, in areas of existing disturbance. Areas of habitat for these species will be retained in the landscape wherever possible. Where these matters occur in close proximity to the proposed action, indirect impacts will be managed through the implementation of an MNES Management Plan (MNESMP). The MNESMP will be based on an adaptive management approach and will involve:

1. Implementation of mitigation and management measures to minimise the impact of the Project on MNES and their habitat
2. Monitoring to:
 - Evaluate performance of the MNESMP against performance criteria;
 - Identify triggers for further action;
 - Develop contingency plans and corrective actions if required;
 - Capture learnings from plan implementation and assess the effectiveness of the management Framework; and
 - Inform subsequent reviews and amendments to the MNESMP.

The primary mechanism for ensuring no net loss of MNES values will be the development and implementation of an OMP. The proponent has commissioned assessments to identify suitable land for delivery offset requirements for the proposed action on land in the local area. Detailed

field surveys of potential offset sites are currently being undertaken to assess the extent and condition of MNES and MSES offset values to locate a suitable area for inclusion in an overall environmental offset strategy for the project. The aim of this OMP will be to improve the condition and connectivity of species habitat and vegetation communities for MNES and MSES within the offset areas.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not applicable.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

The project proponents, are Endocoal Limited (Endocoal (a subsidiary of U & D Coal Limited)) and Sojitz Coal Mining Pty Ltd (Sojitz) in a joint venture arrangement. Both Endocoal and Sojitz have multiple mining interests within the Bowen Basin. Neither of the companies has been the subject of any environmental legal proceedings that have resulted in fines or prosecution.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

No past proceedings - Not Applicable.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

See attachments (Section 6.3.2).

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

EPBC 2013/6799 – Endocoal Limited – Meteor Downs South Coal Project.

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

| Reference Source | Reliability | Uncertainties |
|---|-------------|---|
| SLR (2019), Meteor Downs South Rail Loop Development Application - Environmental Authority Application-supporting documentation for ERA 50(1)(a) & (b). | High | Nil. |
| SLR (2019), Meteor Downs South Rail Loop Development Application - Flood Impact Assessment and Stormwater Management Plan | High | Nil. |
| SLR (2019), Meteor Downs South Rail Loop – Ecological Assessment | High | Native grassland condition and status uncertain due to suboptimal climatic conditions. Threatened species population uncertain due to suboptimal climatic conditions. |
| SLR (2019 – in prep), Meteor Downs South Rail Loop – Native Grassland Threatened Ecological Community and Threatened Flora Species Technical Report | High | Nil – Survey completed to resolve above uncertainties. Report currently being prepared. Data and mapping relied upon in this referral for impact assessment. |

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

The only feasible alternative to the proposed development is to maintain current haulage arrangements and not build the MDS Rail Unloading Facility.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Environment & Community Mgr

9.2.2 First Name

Patrick

9.2.3 Last Name

Stewart

9.2.4 E-mail

pstewart@sojitzcoal.com.au

9.2.5 Postal Address

GPO Box 126
Brisbane QLD 4001
Australia

9.2.6 ABN/ACN

ACN

099442556 - SOJITZ COAL MINING PTY LTD

9.2.7 Organisation Telephone

+61 7 3054 6901

9.2.8 Organisation E-mail

admin@sojitzcoal.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date:

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, Pat Stewart, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:..... Date: 1/7/19

I, Sojitz Coal Mining, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 1/7/19

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Environment & Community Mgr

9.5.2 First Name

Patrick

9.5.3 Last Name

Stewart

9.5.4 E-mail

pstewart@sojitzcoal.com.au

9.5.5 Postal Address

GPO Box 126
Brisbane QLD 4001
Australia

9.5.6 ABN/ACN

ACN

099442556 - SOJITZ COAL MINING PTY LTD

9.5.7 Organisation Telephone

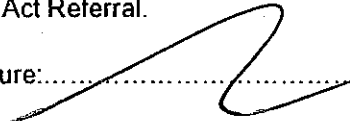
+61 7 3054 6901

9.5.8 Organisation E-mail

admin@sojitzcoal.com.au

Proposed designated proponent - Declaration

I, Pat Stewart, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:  Date: 1/7/12

9.6 Is the Referring Party an Organisation or Individual?

~~Individual~~ organisation

9.8 Organisation

9.8.1 Job Title

Technical Discipline Manager

9.8.2 First Name

Brad

9.8.3 Last Name

Radloff

9.8.4 E-mail

bradloff@slrconsulting.com

9.8.5 Postal Address

GPo Box 5051
Mackay Mail Centre QLD 4741
Australia

9.8.6 ABN/ACN

ACN

001584612 - SLR CONSULTING AUSTRALIA PTY LTD

9.8.7 Organisation Telephone

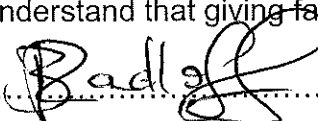
+61 2 9427 8100

9.8.8 Organisation E-mail

auswebenquiry@slrconsulting.com

Referring Party - Declaration

I, BRADLEY JOHN RADLOFF, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:  Date: 05/07/19

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 630.17200-R01-v2.1-MeteorDowns RailSiding FF-GC_Final_Revised Part 1.pdf
2. 630.17200-R01-v2.1-MeteorDowns RailSiding FF-GC_Final_Revised Part 2.pdf
3. 20190702_Sojitz_MDSRailLoop_ProposedRoLBoundary.zip
4. Appendix A - Additional Information and Tables (2019_8482).pdf
5. Environmental Policy _ Sojitz Corporation.pdf
6. Fig 1 SLR62317200_ProjectLocation.pdf
7. Fig 2 SLR62317200_Regional Location.pdf
8. Fig 3 SLR62317200_ProjectOverview.pdf
9. Fig 4 SLR62317200_ProjectLayout.pdf
10. Fig 5 SLR62317200_DisturbancePlan.pdf
11. Fig 6 SLR62317200_Tenure.pdf
12. Fig 7 MNES_TEC_Northern_Grasslands_Assessment..pdf
13. Fig 8 MNES_Dichanthium_Queenslandicum_Observations..pdf
14. Fig 9_and_10_Flora_Fauna_Survey_Sites.pdf
15. Fig 11 SLR62317200_Conceptual_ESC_Plan..pdf
16. Fig 11 SurfaceWaterMonitoringLocations.pdf
17. Fig 12 CatchmentPlan.pdf
18. Fig 12 SLR62017200_Peak_Flood_Level_Impacts_AEP.pdf
19. Reference Tables.pdf
20. UDM 2.2 - Environment and Community Policy.pdf

METEOR DOWNS RAIL SIDING

Ecological Assessment

Prepared for:

Sojitz Coal Mining Pty Ltd / Endocoal Limited
Level 34, Central Plaza One
345 Queen St
BRISBANE QLD 4001

SLR Ref: 623.17200-R02
Version No: -v1.3
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PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
12 Cannan Street
South Townsville QLD 4810
(PO Box 1012 Townsville QLD 4810 Australia)
T: 07 4772 6500
E: townsville@slrconsulting.com

BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Sojitz Coal Mining Pty Ltd / Endocoal Limited (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

| Reference | Date | Prepared | Checked | Authorised |
|-------------------------|--------------------------|--------------|--------------|------------|
| 623.17200-R02-v1.3 | 8 April 2019 | Greg Calvert | Fiona Iolini | Dave Hall |
| 623.17200-R01-v1.3-v1.2 | 8 April 20193 April 2019 | Greg Calvert | Fiona Iolini | Dave Hall |
| 623.17200-R01-v1.2 | 3 April 2019 | Greg Calvert | Fiona Iolini | Dave Hall |
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1 INTRODUCTION

SLR Consulting Pty Ltd (‘SLR’), has been engaged by Sojitz Coal to prepare and submit relevant documentation, including this Environmental Assessment, in relation to the approvals process for establishing a rail loadout facility at a site north of the Dawson Highway, approximately 20 kilometres (km) north-west of Rolleston. The study area covers approximately 167 hectares (ha) and is depicted in **Figure 1**.

Two options are being explored for this development:

1. A direct crossing of the highway and private road down to the loadout facility.
2. Construction of slip and turning lanes at the Meteor Downs South (MDS) and rail loadout entries.

The site has been identified as having several potential ecological constraints including remnant vegetation, State and Commonwealth listed threatened species and threatened ecological communities, strategic cropping areas, flood hazard areas and watercourses.

This report details the results of two seasonal flora and fauna assessments conducted by SLR within the study area including:

- Results of desktop assessments examining the potential ecological constraints.
- Methodologies employed for assessing terrestrial flora and fauna biodiversity values within the study area.
- The presence and status of species and communities within the local area.
- Potential ecological impacts of the project and recommendations for mitigating impacts, with a focus on species and communities of conservation concern, such as those listed under State and Commonwealth legislation.

Figure 1 Site Location









ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

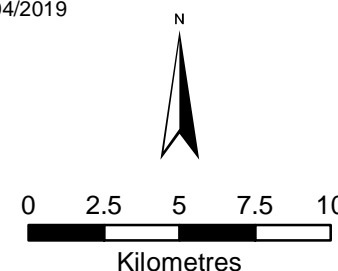
LOCATION MAP

Legend

-  Town
-  Major Road
-  Minor Road
-  Watercourse
-  Protected Areas
-  Site Location

Data Sources:
Queensland Colour Location Basemap: the State of Queensland (Department of Natural Resources, Mines, and Energy) 2019; Proposed Extent of Site Disturbance: client data on file (March 2019).

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:250,000 at A3



2 REGULATORY FRAMEWORK

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Australian Government Department of the Environment and Energy (DEE). The EPBC Act 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 MNES listed in the EPBC Act that are relevant to this report are:

- nationally threatened species and ecological communities
- migratory species.

2.2 State Legislation

2.2.1 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) regulates environmentally relevant activities (ERAs). The Queensland Department of Environment and Science (DES) assesses applications to undertake ERAs, and issues environmental authorities (EAs) that identify environmental conditions to be met to ensure the prevention or minimisation of environmental harm caused by the authorised ERAs. An assessment of environmental impacts on identified environmental values is required as part of the EA application.

2.2.2 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act) is administered by the Queensland Department of Natural Resources, Mines and Energy (DNRME).

Queensland's vegetation management framework regulates the clearing of certain native vegetation by incorporating the RE classification scheme. REs are remnant vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Remnant vegetation is defined under the VM Act as vegetation where the dominant canopy layer has greater than 70% of the height and greater than 50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.

The Queensland Herbarium has mapped the remnant extent of REs for most of Queensland using a combination of satellite imagery, aerial photography and on-ground studies (ground-truthing). RE maps published by DNRME describe the extent and conservation status of remnant vegetation as REs. REs are classified in the following vegetation management class and biodiversity status categories depending on the percentage of original cover remaining and extent of degradation:

- 'Endangered'
- 'Of Concern'
- 'Least Concern' / 'Not of Concern'.

The classification of REs is relevant to identifying vegetation communities of conservation significance in a regional context and potential environmental offset requirements under the Queensland environmental offsets framework.

In association with the VM Act, essential habitat mapping is available for protected flora and fauna, encompassing areas that the chief executive reasonably believes are areas of essential habitat. Mapped areas are usually characterised by a 2.5 km radius buffer around a reported location of a threatened species within areas of remnant vegetation containing essential habitat factors for protected flora and fauna. To be deemed essential habitat for protected flora and fauna, an area must contain at least three essential habitat parameters determined as mandatory for a species at any stage of its life cycle. Essential habitat factors for protected flora and fauna incorporate components of a species habitat and can be characterised by a landform, RE, vegetation structure, soil type and water body that is necessary or desirable for the species at any stage of its life cycle.

2.2.3 Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) is administered by DES and provides the framework for the declaration and management of protected areas, and protection of wildlife listed under the Nature Conservation (Wildlife) Regulation 2006 (NC Regulation).

Protected areas

Protected areas are declared under the NC Act for the conservation of Queensland's natural and cultural resources. Classes of protected areas under the NC Act include national parks, regional parks and nature refuges. An environmental offset may be required for actions resulting in significant residual impacts within a protected area.

Under the Queensland environmental offsets framework, an impact on a protected area is significant if a prescribed activity results, or is likely to result, in one or more of the following:

- Authorised clearing or inundation of all or part of the protected area for the construction of private or publicly owned infrastructure on the area.
- The exclusion of, or reduction in, public use or enjoyment of all or part of the protected area.
- A reduction in the natural or cultural values of all or part of the protected area.

Protected wildlife

The purpose of the NC Regulation is to prescribe wildlife as one of the following classes of wildlife:

- extinct in the wild
- endangered
- vulnerable
- near threatened
- least concern.

Threatened wildlife under the NC Act is wildlife that is prescribed as extinct in the wild, endangered or vulnerable. Additional levels of protection are also given to near threatened species. All native flora and fauna species are protected under the NC Act and 'permits to take' protected wildlife are required from DES.

DES provides the Wildlife Online (WO) database, which can be searched to generate a list of all species recorded within a specified area. This tool is useful for determining the presence or likelihood of occurrence of threatened species in an area.

A Protected Plants Flora Survey Trigger Map is available, which shows high-risk areas for protected plants (those considered to be endangered, vulnerable and near threatened (EVNT) species) and is used to help determine flora survey and clearing permit requirements for a specified area. If the study area is located within a high-risk area, a comprehensive flora survey must be undertaken before any clearing of protected plants can occur. This survey will need to comply with Queensland's *Flora Survey Guidelines—Protected Plants* (Department of Environment and Heritage Protection (EHP), 2016).

If threatened plants are found to occur within the high-risk area during the field survey, and these are likely to be cleared or impacted by the proposed project, an application for a clearing permit from DES will be required. This application will need to be accompanied by the flora survey results and potential impact management options for the protected plants that include appropriate avoidance, mitigation and/or offsetting measures.

In addition to this, if threatened plants are found outside a high-risk area during the field survey, and these plants are likely to be cleared or impacted by the proposed project, a clearing permit will also be required. Where a flora survey identifies that there are no protected plants present or impacts can be avoided, clearing will be exempt from requiring a permit under the NC Act.

2.2.4 Biosecurity Act 2014

The *Biosecurity Act 2014* commenced on 1 July 2016, with the aim to ensure a consistent, modern, risk-based and less prescriptive approach to biosecurity in Queensland. The *Biosecurity Act 2014* replaced the many separate pieces of legislation that were previously applied to manage biosecurity, particularly the *Land Protection (Pest and Stock Route Management) Act 2002*. The Biosecurity Regulation 2016 sets out how the *Biosecurity Act 2014* is implemented and applied.

Under the *Biosecurity Act 2014*, there are three types of invasive flora and fauna species:

- prohibited invasive species
- restricted invasive species
- invasive species.

Invasive animals are classified in a similar manner to plants and include prohibited and restricted classifications. Prohibited invasive species are not considered to be present in Queensland; however, if they were, they would seriously threaten Queensland's primary industries, natural environment, livestock, human health and people's livelihoods. If a prohibited invasive species is found in Queensland, it must be reported to Biosecurity Queensland within 24h of the sighting.

Restricted invasive species also seriously threaten Queensland's primary industries, natural environment, livestock, human health and people's livelihoods, but are already established in Queensland. Under the *Biosecurity Act 2014*, restricted invasive species may fall into one or more categories, each with different restrictions:

- Category 2: the invasive species must be reported within 24h to Biosecurity Queensland.
- Category 3: the invasive species must not be distributed or released into the environment.
- Category 4: the invasive species must not be moved.

- Category 5: the invasive species must not be kept.

Landholder responsibilities and restrictions pertaining to these classifications are specific for each category and an invasive species may be listed under multiple categories. Invasive species include those that are not listed as prohibited or restricted invasive species, but that have, or are likely to have, an adverse impact on a biosecurity consideration because of the introduction, spread or increase in population size of the species in an area. Everyone is obligated to take all reasonable and practical steps to minimise the risks associated with invasive species under their control. Local governments and Biosecurity Queensland provide weed control support services but may also enforce landowner responsibilities if necessary.

2.2.5 Queensland Environmental Offsets Framework

The Queensland environmental offsets framework includes the *Environmental Offsets Act 2014*, Environmental Offsets Regulation 2014 and Queensland Environmental Offsets Policy (Version 1.6), which replaces the five previous single-issue policies.

The Environmental Offsets Regulation 2014 provides details of the prescribed activities regulated under legislation and of the prescribed environmental matters (known as Matters of State Environmental Significance or MSES) to which the framework applies. Examples of MSES include:

- Wetlands and watercourses.
- 'Endangered' and 'Of Concern' REs.
- Connectivity areas.
- Protected wildlife habitat.

For any new development, all impacts to MSES must be avoided or minimised where possible. Where there is a *significant residual impact* to MSES, an environmental offset may be required in accordance with the Queensland Environmental Offsets Policy.

3 FLORA AND FAUNA ASSESSMENT METHODOLOGY

3.1 Overall Assessment Methodology

SLR employed a joint approach of desktop analysis and field surveys in this study. The desktop analysis and scoping phase encompassed:

- Project planning and definition of objectives.
- Detailed desktop studies.
- Review of previous studies, particularly:
 - collation of existing records; and
 - literature review of species and potential threats and impacts.

The field survey phase was undertaken over two separate times, including:

- 5 to 10 November 2018.
- 25 February to 2 March 2019.

These surveys encompassed:

- Systematic, targeted and incidental flora surveys.
- Vegetation community mapping and assessments.
- Systematic, targeted and incidental fauna surveys.

3.1.1 Staff Roles and Qualifications

SLR is a registered scientific user with Queensland ethics approval to conduct fauna studies from the Department of Agriculture and Fisheries Animal Ethics Committee. The survey work involved in this report was conducted under Scientific Purposes Permit number WISP14046014.

The study team implemented best practice recommendations from sources such as:

- Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre *et al.*, 2014).
- Methodology for Survey and Mapping of REs and Vegetation Communities in Queensland (Neldner *et al.*, 2017).
- Flora Survey Guidelines – Protected Plants (EHP, 2016).

The roles and qualifications of all staff responsible for preparation of this assessment are listed in **Table 1**.

Table 1 Staff Roles and Qualifications

| Personnel | Qualifications and Training | Role |
|--|--|--|
| Greg Calvert Principal Ecologist | Doctor of Philosophy (PhD), James Cook University, Townsville, Queensland Bachelor of Science, 1st Class Honours, James Cook University, Townsville, Queensland | Project management, field investigations, data analysis and report preparation |

| Personnel | Qualifications and Training | Role |
|---|--|--|
| Cameron DeJong Project Consultant - Ecology | Bachelor of Science, James Cook University, Townsville, Queensland | Field investigations, data analysis and report preparation |
| Fiona Iolini Associate Ecologist | Bachelor of Environmental Science and Management, University of Newcastle NSW Cert III Conservation and Land Management, TAFE NSW Biodiversity Assessment Methodology (BAM) Training NSW OEH | Report QA review |
| Andrew Jolly CAD/GIS Technical Officer | Bachelor of Science (Geography, Geology and Economic Geology), James Cook University, Townsville, Queensland Bachelor of Laws, James Cook University, Townsville, Queensland | GIS data management and figure preparation |

3.2 Desktop Analysis

3.2.1 Literature Review and Previous Studies

There are no known previous flora and fauna studies of the study area, however, there are several other studies within the local area. Ecological assessments were undertaken at nearby Meteor Downs South Coal Project, located 2.6 km south west of the current survey area, culminating in an EPBC referral (EPBC 2013/6799) and a subsequent 'Matters of National Environmental Significance Management Plan' (CO2 Australia, 2018a). Studies were also conducted on the nearby Rolleston Coal Mine h prior to lodgement of EPBC referral 2011/5965. A description on environmental values, including threatened flora, fauna and ecosystems is also available for the 7,360 ha Albinia National Park (DNPRSR, 2013), which is located to the immediately south of the study area.

Field guides and scientific publications were also reviewed prior to field surveys to determine species likely to be present within the study area and to identify habitat requirements, recommended survey methods and seasonal variation in presence. Focus was given to threatened species identified as having a high potential to occur within the study area. Given the lack of previous studies relevant to the study area, the desktop assessment relied primarily on database searches to determine species, communities and habitats relevant to the study area. These are described in Section 3.2.2 below.

3.2.2 Database Searches

The DEE Protected Matters Search Tool and the Queensland Government WO database were utilised to determine species, communities and areas of conservation significance with potential relevance to the proposed action. Each search included a 30 km buffer around a central co-ordinate within the study area (-24.3735° S, 148.4408° E), which includes the entire study area and a large buffer incorporating similar habitat in the surrounding landscape.

The results of the database searches and their relevance to the proposed development are discussed in the Desktop Analysis Results section (**Section 4**) of this report. SLR has developed an approach for ranking threatened species recorded from the desktop searches in terms of their likelihood of occurring within the study area. This approach is based on the presence of local records and the habitat requirements for each species, which are recommended criteria for desktop impact assessments in state-published survey guideline documents such as Eyre *et al.* (2014). Details of the criteria used to assess the likelihood of occurrence for threatened and near threatened species are provided in **Table 2** Error! Reference source not found.. The potential impacts to threatened species that may occur within the study area are discussed in the Impact Assessment and Management section (**Section 7**) of this report.

It is possible that some locally occurring near threatened or threatened species may not be recorded in the State and Commonwealth databases. The comprehensive field survey component of this assessment is therefore an important aspect of the impact assessment process to determine the presence of any threatened species that have not been previously recorded in the local area.

Table 2 Key Assessment Criteria for Likelihood of Occurrence

| Likelihood of Occurring | Key Criteria | Definition |
|-------------------------|--|--|
| Present | Present during survey or historical records in the study area | <ul style="list-style-type: none"> Species was recorded during field surveys or a historical record of the species was located in the study area |
| High | <ul style="list-style-type: none"> Known records (<30 km) or within species known range; AND Suitable habitat of high quality is present | <ul style="list-style-type: none"> Historical records of the species occur within a 30 km radius of the study area or the study area is within the species known range. Suitable habitat of high quality exists with the study area. |
| Moderate | <ul style="list-style-type: none"> Known records (<30 km) or within species known range; AND Suitable habitat is present, but degraded | <ul style="list-style-type: none"> Historical records of the species occur within a 30 km radius of the study area or the study area is within the species known range. Suitable habitat is present but is significantly degraded or fragmented. |
| Low | <ul style="list-style-type: none"> No records (<30 km) and not within species known range; OR Habitat present is unsuitable, absent, or highly degraded | <ul style="list-style-type: none"> No historical records of this species occur within a 30 km radius of the study area or within the known range for this species or: OR The habitat within the study area is not suitable and/or is in extremely poor condition, or is absent for the species |

3.2.3 Mapping

The following mapping sources were reviewed as part of the desktop analysis:

- Regulated Vegetation Management Map (DNRME, 2019).
- ESAs Map (DES, 2019a).
- Referable wetlands (DES, 2019b).
- Protected Plants Flora Survey Trigger Map (DES, 2019c).
- Essential habitat mapping as shown on the Regulated Vegetation Management Map (DNRME, 2019).

- Geoscience Australia (GA) online interactive maps—Australian and Region Surface Geology (GA, 2019).

3.3 Nomenclature and Taxonomy

Except for technical descriptions and tables, all flora and fauna species are referred to by their common names throughout this report, followed by italicised scientific names. Scientific names for flora species within this report follow the Census of the Queensland Flora 2018 (DES 2019e). Where no common name is provided in reference texts, a search was conducted for other accepted common names and, if none were found, then the species name only was used. An asterisk is used to denote species that are not native to Australia.

The use of scientific and common names for fauna species is in accordance with the following references:

- Birds: Pizzey and Knight (2012).
- Amphibians: Vanderduys (2012).
- Reptiles: Wilson (2015).
- Mammals (except bats): Van Dyck *et al.* (2013).
- Bats: Reardon *et al.* (2015).

3.4 Fauna Survey Methodology

3.4.1 Survey Timing and Environmental Conditions

The fauna surveys incorporated survey timing and effort recommendations outlined in the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (Eyre *et al.*, 2014). One survey was conducted between 5 and 10 November 2018, which coincided with the timing for a spring to early summer survey period (September to mid-November) as recommended in Eyre *et al.* (2014) for the Brigalow Belt bioregion. The second survey was conducted between 14 and 19 May 2018, which coincided with the timing for an autumn survey period (March to mid-May) as recommended in Eyre *et al.* (2014) for the Brigalow Belt bioregion. The third survey from 25 February to 2 March 2019 was timed primarily for vegetation surveys but was considered to be the ideal time for surveys of migratory species, amphibians, and the Ornamental Snake *Denisonia maculata*, listed as vulnerable under the EPBC Act.

Climate data relevant to the fauna surveys were obtained from multiple weather stations reported by the Bureau of Meteorology (BoM) due to incomplete data available from some weather stations. Minimum temperature data were incomplete or unavailable at all relevant stations. Maximum temperature data were obtained from BoM Rolleston Airport (035129) weather station. Rainfall and minimum temperature data were obtained from the Springsure Comet St (035065) weather station.

Weather conditions before and during the spring survey period were characterised by warm to hot days and cool nights. Maximum and minimum temperatures increased gradually during the weeks prior to the survey but fluctuated during the survey period. Minimum temperatures during the survey were largely unavailable but indicated a decrease to below 10°C. Conversely, maximum temperatures were higher than in preceding weeks, reaching 37°C early in the survey before dropping due to rainfall and overcast conditions. A slight drop in minimum temperature was recorded throughout the fauna survey and small amounts of precipitation were recorded. Rainfall noted on site was not corroborated by BoM data, likely due to the scattered nature of rainfall in the region.

Overall, weather conditions during the November-December survey period were considered favourable for detecting most vertebrate fauna groups: cool morning temperatures were optimum for bird activity, moderate to warm daytime temperatures were favourable for reptiles, and warm evenings were suitable for nocturnal reptiles and amphibians.

In contrast, weather conditions during the February-March survey did not meet expectations for a wet season. No rain had fallen for 14 days prior to the survey, and there had only been 17.4 mm rain since the previous survey in December 2018. Consequently, conditions were very dry, and there was no new growth of fresh reproductive material on any of the grasses. The survey site was subject to cattle grazing, which, when combined with the dry weather and subsequent dormancy of the grasses, made identification of most grass tussocks impossible. The absence of any flower or visible grasses reduced the likelihood of encountering threatened granivorous birds such as the Squatter Pigeon *Geophaps scripta scripta* and Southern Black-throated Finch *Poephila cincta cincta*. In contrast with the November survey when pools of water persisted within the creek at the northern boundary, the only water on site in February-March was within the artificial watering points provided for cattle.

A summary of weather conditions during the survey periods is presented in **Table B1** below.

Table 3 Weather Conditions Relevant to the Survey Periods

| Period | Date | Rainfall (mm) | Min Temperature (°C) | Max Temperature (°C) |
|---|------------|---------------|----------------------|----------------------|
| Pre-survey conditions, dry season 2018 | 29/10/2018 | 4.4 | 16.3 | 34.3 |
| | 30/10/2018 | 0.0 | 15.1 | 27.4 |
| | 31/10/2018 | 17.0 | 14.0 | 29.3 |
| | 01/11/2018 | 0.0 | 20.9 | 31.3 |
| | 02/11/2018 | 0.0 | 18.3 | 30.9 |
| | 03/11/2018 | 0.0 | 16.0 | 32.4 |
| | 04/11/2018 | 0.0 | 14.7 | 34.5 |
| Conditions during survey, dry season 2018 | 05/11/2018 | 0.0 | No Data | 37.1 |
| | 06/11/2018 | 0.0 | No Data | 36.8 |
| | 07/11/2018 | 0.0 | No Data | 36.1 |
| | 08/11/2018 | 0.0 | No Data | 26.5 |
| | 09/11/2018 | 0.0 | 10.9 | 31.1 |
| | 10/11/2018 | 0.0 | 9.8 | 31.3 |
| Conditions prior to and during supplementary <i>Dichanthium queenslandicum</i> survey dry season 2018 | 18/12/2018 | 0.0 | 18.3 | 39.6 |
| | 19/12/2018 | 0.0 | 23.2 | 37.3 |
| | 20/12/2018 | 0.0 | 21.9 | 39.9 |
| | 21/12/2018 | 0.0 | 23.5 | 41.4 |
| | 22/12/2018 | 0.0 | 25.1 | 39.5 |
| Pre-survey conditions, wet season 2019 | 18/02/2019 | 0.0 | 22.1 | 37.2 |
| | 19/02/2019 | 0.0 | 22.2 | 40.3 |
| | 20/02/2019 | 0.0 | 21.6 | 42.4 |
| | 21/02/2019 | 0.0 | 21.0 | 39.6 |
| | 22/02/2019 | 0.0 | 24.1 | 37.0 |
| | 23/02/2019 | 0.0 | 22.7 | 35.1 |
| | 24/02/2019 | 0.0 | 22.5 | 35.2 |
| Conditions during survey, wet season 2019 | 25/02/2019 | 0.0 | 21.2 | 33.7 |
| | 26/02/2019 | 0.0 | 20.1 | No Data |
| | 27/02/2019 | 0.0 | No Data | 33.1 |
| | 28/02/2019 | 0.0 | 17.2 | 32.6 |
| | 01/03/2019 | 0.0 | 19.9 | 32.6 |
| | 02/03/2019 | 0.0 | 20.1 | 32.6 |




3.4.2 Systematic Survey Sites

During the survey undertaken on 5 - 10 November 2018, three systematic survey sites were established with an additional two sites established in February-March 2019. An array of fauna trapping and survey techniques were employed at the systematic surveys, with additional and opportunistic placement of additional game cameras and bat echolocation detectors at supplementary sites.

The systematic survey sites were positioned to provide an appropriate spatial distribution within the study area while incorporating the different habitat types. A description of the habitat present at each systematic survey site is provided in **Table 4**. The location of each systematic trapping site is depicted in the Fauna Survey Map in **Figure 3**.

Table 4 Fauna Site Numbers and Corresponding Habitat Conditions

| Site | Site Location and Habitat Description | Photograph of Site |
|------|---|--|
| 1 | Northeast corner of the study area RE 11.3.3: <i>Melaleuca bracteata</i> riverine woodland, adjacent to creekline. |  |
| 2 | Eastern section of study area RE 11.8.5 In open woodland with rocky granite soil and open understorey. |  |

| Site | Site Location and Habitat Description | Photograph of Site |
|------|---|--|
| 3 | Northern section of study area RE 11.8.11 Native Grassland adjacent to creekline riparian vegetation; gilgai. |  |
| 4 | Southern third of the study area RE 11.8.11 Native Grassland with scattered <i>Corymbia erythrophloia</i> ; spread along a 440m line |  |
| 5 | Southeast corner of the study area RE 11.3.3: <i>Melaleuca bracteata</i> riverine woodland, adjacent to creekline. |  |

3.4.3 Survey Techniques

The survey techniques employed at each systematic survey site are detailed in **Table 5**.

Table 5 Fauna Survey Methods Employed at Systematic Survey Sites

| Survey Method | Description |
|--------------------------|---|
| Elliott traps | At each trapping site, 20 Type A Elliott style traps were placed on the ground approximately 5–10 m apart in a straight line for 4 nights. At site 4, traps were spread further apart along a 440 m distance as heavy cattle grazing required traps to be placed in protected sites. All traps were baited with a mixture of rolled oats, peanut butter and honey. |
| Pitfall and funnel traps | Drift fence lines incorporating pitfall and funnel traps were established for four nights at systematic survey sites 1-3. Three pitfall traps (20 L buckets) were buried flush with the ground surface with the drift fence intersecting the centre of each bucket at each site. Six funnel traps were located along the drift fencing at each site. A shade cloth covering each funnel trap was deployed to protect trapped species from exposure. |
| Cage traps | Three cage traps were placed at each site and baited with a mixture of rolled oats and a variety of meats. |
| Bat detectors | Two bat call detectors (Wildlife Acoustics SM4BAT FS—full-spectrum recorder and Wildlife Acoustics SM2+) were deployed for one night at each site. Additionally, the bat call detectors were placed in flyway zones within pastureland and water sources for additional nights within the study area. |
| Active diurnal searches | Active diurnal searches were undertaken within each of the sites. This technique involved intensive investigation of ground layer habitat features (such as under logs, rocks and leaf litter) and low vegetation (under bark and tree stumps) for cryptic fauna, particularly reptiles. Searches were focused during the times of day when reptile activity was likely to be at its peak. |
| Diurnal bird surveys | Birds were surveyed within each vegetation community for a total of at least one hour at multiple periods throughout the day, but with a focus during peak activity in the morning. Incidental observations made whilst conducting other survey techniques were also recorded. Birds were identified from either direct observation, presence of feathers or nests, or by their calls. |
| Nocturnal surveys | High-powered spotlights were used to survey nocturnal mammals (flying, arboreal and terrestrial), birds (active nocturnal species and roosting diurnal species), reptiles and frogs in each of the main trapping sites, and other locations throughout the study area. |

3.4.4 Additional Survey Areas and Techniques

The fauna survey of the study area employed numerous survey techniques within the systematic survey sites and in additional locations. Survey techniques utilised during the baseline study included the use of bat detectors, active diurnal searches, diurnal bird surveys and nocturnal survey techniques. The locations of each fauna survey site are depicted in **Figure 3**.

In addition to the techniques outlined previously, camera traps (motion-sensing infrared cameras) were deployed at multiple locations within the study area to target fauna that may be too large or ‘shy’ to be detected by other trapping techniques, or that utilised areas outside the main trapping sites. Camera traps were baited with the rolled oat mixture and a variety of meats or placed at watering points.

Targeted nocturnal searches for arboreal mammals, nocturnal predatory birds and nocturnal reptiles and amphibians were performed in areas considered higher quality habitat for such species.

Spotlighting surveys were also conducted while driving slowly over multiple parts of the study site and local area, where it was safe to do so.

Fauna species were continually observed throughout the survey period and records were frequently obtained outside of the systematic methodology of the survey. Any observations, tracks, scats or other signs of fauna were recorded with reference to the location and habitat type.

3.4.5 Targeted Techniques

Targeted survey techniques and searches were incorporated for some conservation significant species considered to potentially occur within the study area. Area searches for Squatter Pigeon *Geophaps scripta scripta* were conducted in accordance with the relevant EPBC Act threatened bird survey guidelines, with particular focus on permanent water sources and along tracks. Targeted searches for other species were based on published guidelines relevant to each species.

Nocturnal spotlighting was conducted for Koalas *Phascolarctos cinereus* and Greater Gliders *Petauroides Volans volans* within relevant habitat areas, and Koalas *P. cinereus* were targeted by searching food trees (*Myrtaceae* spp.) for signs such as scats and claw marks. Spotlighting surveys were also conducted in areas of potentially suitable habitat for the Ornamental Snake *Denisonia maculata* (low-lying areas likely to be inundated during rainfall; gilgai) and the Golden-tailed Gecko *Strophurus taenicauda* (low open to closed woodland) to increase the likelihood of detection of these species. The Yakka Skink *Egernia rugosa* was targeted by examination of log piles first at a distance with binoculars, then at close proximity by searching for 'latrines' and by overturning logs.

3.4.6 Survey Effort

The survey effort employed for each of the fauna survey techniques is outlined in **Table 6**, showing the effort employed at each systematic survey site and the total survey effort over the study periods (including effort outside the systematic surveys).

Table 6 Fauna Survey Effort

| Method | Effort per site 2018 | Effort per site 2019 | Total survey effort |
|-------------------------------|--|---|--|
| Pitfall trapping | 12 trap nights (Array of three pits × four nights) | Not undertaken | 36 trap nights |
| Funnel trapping | 24 trap nights (Array of six funnels × four nights) | Not undertaken | 72 trap nights |
| Diurnal active search | Two person hours (60-minute search × two people) | Two person hours (60-minute search × two people) | Approx. 15 person hours (Five × systematic surveys sites plus five × one-person hour survey sites) |
| Elliott trapping | 76 trap nights (19 traps × four nights) | 80 trap nights (20 traps × four nights) | 388 trap nights |
| Cage trapping | 12 trap nights (Array of three cages × four nights) | 12 trap nights (Array of three cages × four nights) | 60 trap nights |
| Diurnal bird survey | Two person hours (Six × 10-minute surveys × two people) | Two person hours (Two × 60-minute surveys × two people) | 10 person hours |
| Camera trapping | Four trap nights (One camera × four nights) | Four trap nights (One camera × four nights) | 22 trap nights (+one camera on water source for 2 nights) |
| Spotlight/ nocturnal searches | Three person hours (90-minute search × two people) | Four person hours (120-minute search × two people) | 17 person hours |
| Echolocation call detection | One detector night (One detector for one night at each site and four additional detector nights) | One detector night (One detector for one night at each site and two additional detector nights) | Eleven detector nights |

3.5 FLORA SURVEY METHODOLOGY

3.5.1 Overall Methodology

Techniques described in the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner *et al.*, 2017) were used to collect sufficient data during the field vegetation assessments to verify the RE codes of the remnant vegetation in the assessment area. The key features recorded in the field relevant to this report are:

- vegetation structure including height of each stratum and cover density;
- key species within each stratum; and
- geology, landform and other land zone characteristics.

The species composition and structure for each community were compared to the technical descriptions provided in the Regional Ecosystem Description Database (REDD; Queensland Herbarium, 2018). The land zone characteristics of each site were compared to the descriptions provided in Wilson and Taylor (2012). This information provided the basis for determining the appropriate RE code for each community. The information in these documents was also used in conjunction with site observations to determine appropriate values for the factors relating to remnant status.

Vegetation surveys were conducted in three stages: from 5 to 10 November 2018, from 14 - 19 May 2018, and from 25 February to 2 March 2019. The purpose of the surveys was to:

- Determine the appropriate RE code, extent and remnant status of vegetation communities throughout the study area.
- Determine the presence and extent of the nationally threatened ecological community: 'Natural Grassland of the Queensland Central Highlands' (Natural Grasslands TEC) using the descriptions and conditions thresholds provided in DSEWPC (2012) and the Commonwealth Listing Advice on Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (TSSC, 2009).
- Identify threatened plant species and communities. Although the study area is not within a 'High Risk Area', SLR performed targeted searches for threatened flora species identified in the local area during desktop analyses, including 'meander' searches in accordance with the *Flora Survey Guidelines – Protected Plants* (EHP, 2016).
- Compile a flora species inventory for the study area.

3.5.2 Vegetation Assessment Sites

Ground-truthing of the remnant vegetation mapping involved detailed assessments of vegetation characteristics at multiple transect locations within the study area. Assessment sites were selected where they would provide representative data for the vegetation type that was the subject of the assessment.

The location of the assessment sites and the survey techniques employed were selected to:

- Validate state published RE and regrowth mapping.
- Accurately determine the extent of each vegetation type, including threatened ecological communities.
- Determine the remnant status of vegetation.
- Target threatened flora species identified during desktop assessments and their habitat.

- Compile a species inventory for each vegetation community and the entire study area.

A total of 24 quaternary assessments were conducted throughout the survey periods, with the sites distributed over the study area to incorporate variations in community composition and structure (see **Figure 2**).

3.5.3 Survey Techniques

Quaternary Assessment Sites

Quaternary assessments were conducted to validate the vegetation community mapping and to capture any variability in the structure and composition of the community. Data collected at quaternary sites included species composition and structural information for the canopy layer. In general, focus was given to the dominant species, crown cover and median height of the ecologically dominant layer, which was used to define each community and determine the appropriate RE code and remnant status.

Table 7 Vegetation Attributes Measured in Vegetation Survey Transects

| Survey Method | Attributes Measured |
|--|---|
| Survey Plot 50 m x 10 m | Key species of each stratum Median height of each stratum Weed species and cover Complete species list Central coordinate |
| Transect 50 m | Percentage cover of each stratum |
| Quadrats (x5) 1 m x 1 m | Groundcover species and percentage of cover |
| Grassland TEC assessment plots (x43) 20 m x 50m | Tree canopy cover Presence of at least three key indicator grass species |
| Greater area encompassing the present vegetation community | Incidental species observed Additional relevant notes |

Vegetation Mapping

Mapping of vegetation communities was performed using a combination of ground traverses and aerial imagery. Using the information gained at each of the vegetation assessment sites and observations made when traversing the study area, the boundaries of vegetation communities were compared to state-mapped vegetation and amended as necessary, using a handheld GPS device. Some vegetation mapping was also refined using recent, high-resolution aerial images.

Random Meander Technique

Various parts of the study area were traversed using the random meander technique documented by Cropper (1993). This technique was applied to supplement other survey techniques to:

- locate and record any flora species not identified in the vegetation assessment transects;
- target threatened flora species;
- validate vegetation community mapping; and

- determine the presence and extent of pest species.

The meander technique is the preferred approach to identify and locate protected plants (EVNT species) according to the *Flora Survey Guidelines – Protected Plants* (EHP, 2016). The study area is not located within a 'High Risk Area' on the Flora Survey Trigger Map and, therefore, a flora survey in accordance with the Queensland guidelines is not mandatory. However, as a best-practice approach under the EPBC Act, SLR conducted random meanders as part of the study design to develop a flora species inventory and to target locally occurring EVNT species identified during the desktop assessment. A minimum of four meanders were conducted within each habitat type in the study area, with all plant species observed either identified *in-situ* or collected and preserved for later identification. This survey effort meets the requirements prescribed in the *Flora Survey Guidelines – Protected Plants* (EHP, 2016), which specifies that four meanders should be conducted in each area of habitat between 10 ha and 100 ha.

The *Flora Survey Guidelines – Protected Plants* (EHP, 2016) specifically require surveys to be undertaken when there is the highest possible chance of detecting the EVNT species. The third survey from 25 February to 2 March 2019 was timed for the mid-late wet season, to take advantage of the known times of fertile material being available for threatened species, as shown in **Table 8** below.

Table 8 Flowering and Fruiting Times for Threatened Plant Species at Meteor Downs

| Species | Fertile | Flowering | Fruiting |
|-----------------------------------|---|----------------------|----------------|
| <i>Aristida annua</i> | March, April, May, June | March, April, May | NA |
| <i>Dichanthium queenslandicum</i> | Sept, Oct, Nov, Jan, Feb, March, April, June, July, Aug | Oct, Nov, Dec | Nov, Dec, Jan |
| <i>Dichanthium setosum</i> | Sept, Oct, Jan, Feb, March, April, May, June, Aug | Feb, June | Feb, May, June |
| <i>Trioncinia retroflexa</i> | Jan, Feb, March, May | Jan, Feb, March, May | May |

Information derived from Qld Herbarium Herbreces (2019)

Threatened Ecological Communities

The third survey from 25 February to 2 March 2019 was timed for the mid-late wet season, to ensure that sufficient fertile material would be available to accurately assess the key diagnostic characteristics for Natural Grasslands TEC as provided by TSSC (2009). The key diagnostic characteristics are:

- Shrub cover (projected crown cover <50%).
- Tree cover (projected crown cover <10%).
- Dominance by perennial native grasses.
- At least three of the following indicator grass species:
 - Feather-top Wiregrass *Aristida latifolia*.
 - White Speargrass *Aristida leptopoda*.
 - Hoop Mitchell Grass *Astrebla elymoides*.
 - Curly Mitchell Grass *Astrebla lappacea*.

- Bull Mitchell Grass *Astrebla squarrosa*.
- Satin-top Grass *Bothriochloa erianthoides*.
- King Bluegrass *Dichanthium queenslandicum*.
- Queensland Bluegrass *Dichanthium sericeum*
- Cup Grass *Eriochloa crebra*.
- Native Millet *Panicum decompositum*.
- Yabila Grass *Panicum queenslandicum*.
- Shot Grass *Paspalidium globoideum*.
- Coolibah Grass *Thellungia advena*.

Locations of flora and fauna survey sites are presented in **Figure 2** and **Figure 3**.

Figure 2 Quaternary Vegetation Survey Locations



ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

QUATERNARY VEGETATION SURVEY LOCATIONS

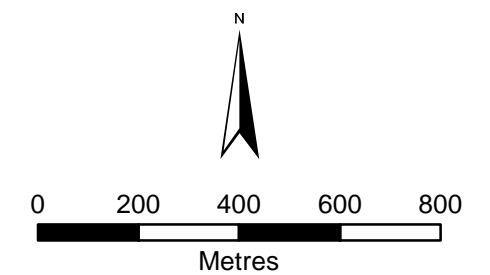
Legend

- Quaternary Survey Site
- VM Watercourse (100/250K)
- ▭ Proposed Extent of Site Disturbance

Data Sources:
VM Watercourse (100/250K) dataset: the State of Queensland (Department of Natural Resources, Mines, and Energy) 2019; Proposed Extent of Site Disturbance: client data on file (March 2019); Quaternary survey site datasets: derived from November 2018 and February 2019 field survey data on file.

Imagery Sources: © The State of Queensland, 2017. Includes material © Planet Labs Netherlands B.V. 2017, reproduced under licence from Planet and Geoplex, all rights reserved. Landsat data available from the U.S. Geological Survey. Data acquired under the Spatial Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 5/04/2019



Scale: 1:15,000 at A3



Figure 3 Fauna survey Locations



ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

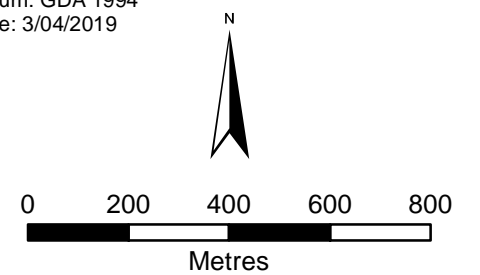
FAUNA SURVEY

Legend

- Pitfall Line
- Elliot Line
- Proposed Extent of Site Disturbance
- Fauna Site
- Fauna Survey Equipment**
 - Cage Trap
 - Funnel Trap
 - IR Camera Trap
 - Song metre
 - Bat Detector

Data Sources:
Proposed Extent of Site Disturbance: client data on file (March 2019); Fauna Survey datasets: derived from February 2019 and November 2018 field survey data.
Imagery Sources: © The State of Queensland, 2017. Includes material © Planet Labs Netherlands B.V. 2017, reproduced under licence from Planet and Geoplex, all rights reserved. Landsat data available from the U.S. Geological Survey. Data acquired under the Spatial Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:15,000 at A3



4 DESKTOP ANALYSIS RESULTS

4.1 Literature Review

Ecological assessments were undertaken at nearby Meteor Downs South Coal Project, located 2.6 km south west of the current survey area. An EPBC referral (EPBC 2013/6799) was submitted, and subsequently approved with conditions for disturbance to Threatened Ecological Communities (TECs) and species that are MNES listed in **Table 9** below.

Table 9 MNES Identified at Meteor Downs South Coal Project

| MNES | Status at Meteor Downs |
|--|--|
| Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) TEC | Represented by a patch of 2.21 ha or regrowth of RE 11.4.3 close to Naroo Dam. The area will not be disturbed. |
| Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (Natural Grasslands TEC) | Represented by an area of 424 ha of RE 11.8.11, occurring in multiple patches of varying size. The nearest mapped area is 2.11 km west of the rail loop study site. Assessments found patches were in good to best condition. The project will require clearing 98.9 ha. |
| King Blue-grass (<i>Dichanthium queenslandicum</i>) | A survey in December 2013 identified approximately 40 plants within a 25 m ² area, south of Naroo Dam, in association with RE 11.8.11. An additional survey in 2014 expanded that population to include 520 plants within an area of 1,303.6 m ² , and an additional group of 30 plants located 27 metres (m) further to the west. All individuals are associated with RE 11.8.11, and it was assumed that additional plants occur within the broader 424 ha of this community. |
| Bluegrass <i>Dichanthium setosum</i> | A survey in December 2013 identified five plants adjacent to Naroo Dam, in RE 11.8.11. Naroo Dam is located 7.23 km from the study area. Although no individuals have been found in subsequent surveys, it is assumed that additional plants occur within the broader 424 ha of RE 11.8.11 on site. . |
| Squatter Pigeon (<i>Geophaps scripta scripta</i>) | Although habitat is present (RE 11.8.5 and RE 11.8.15), the Squatter Pigeon <i>Geophaps scripta scripta</i> has not been recorded from the Project site or surrounds, with the nearest record from 4 km to the south-east of the Project site. Potential suitable habitat is mapped to the margins of the Dawson Highway, to a point approximately 600 m from the study area. A pre-clearance survey for squatter pigeons was undertaken in 2017 in accordance with the survey guidelines for EPBC listed threatened bird species (DEWHA, 2010). No birds were detected (NRC, 2017). |
| Australian Painted Snipe (<i>Rostratula australis</i>) | Two Australian Painted Snipe <i>Rostratula australis</i> were located Naroo Dam on November 2012 but have not been observed since. Naroo Dam is located 7.23 km from the study area. These ephemeral drainage lines were considered to provide potential seasonal habitat following periods of inundation. |

Source CO2 Australia (2018a)

Meteor Downs South Coal Project subsequently prepared a 'Matters of National Environmental Significance Management Plan' (CO2 Australia, 2018a), which was approved by the Commonwealth Department of Environment and Energy on 18 January 2018. In addition, an offset site was established on the nearby on the Lexington property to provide 32.25 ha of Squatter Pigeon *Geophaps scripta scripta* habitat and 13.95 ha of Natural Grasslands TEC, King Blue-grass *Dichanthium queenslandicum* and Bluegrass *D. setosum* habitat (CO2 Australia, 2018b).

Studies conducted on the nearby Rolleston Coal Mine have previously been undertaken prior to lodgement of EPBC referral 2011/5965 and subsequent variation by Glencore Coal Queensland Pty Ltd. This includes areas to the immediate west and south of the Meteor Downs South Coal project area. The referral was assessed as being a controlled action for impacts to the Natural Grasslands TEC and small areas of Brigalow TEC. Following the lodgement of the EPBC referral, an EIS was undertaken on site which identified a loss of 118 ha of the Natural Grasslands TEC and 8.6 ha of Brigalow TEC (Coordinator General 2003).

The 7,360 ha Albinia National Park is located to the south of the proposed rail siding. The park is described as having the largest and most intact representation of natural grassland TEC (RE 11.8.11) in the Brigalow Belt on QPWS estate (Department of National Parks, Recreation, Sport and Racing, 2013). Albinia is also described as containing the following threatened and near-threatened flora and fauna species:

- *Corymbia scabrida* (listed as 'Near-threatened' under the NC Act).
- *Dichanthium queenslandicum* (listed as 'Vulnerable' under the NC Act and EPBC Act).
- *Dichanthium setosum* (listed as 'Vulnerable' under the EPBC Act).
- *Digitaria porrecta* (listed as 'Near-threatened' under the NC Act and 'Endangered' under the EPBC Act).
- *Marsdenia brevifolia* (listed as 'Vulnerable' under both the NC Act and EPBC Act).
- *Trioncinia retroflexa* (listed as 'Endangered' under the NC Act).
- Squatter Pigeon *Geophaps scripta scripta* (listed as 'Vulnerable' NC Act, EPBC Act).
- Koala *Phascolarctos cinereus* (listed as 'Vulnerable' under the NC Act, EPBC Act).
- Golden-Tailed Gecko *Strophurus taenicauda* (listed as 'Near-threatened' under the NC Act).
- Australian Painted Snipe *Rostratula australis* (listed as 'Vulnerable' under the NC Act, and as 'Endangered' under the EPBC Act).

The listed conservation values of Albinia National Park also include two species that are no longer listed as threatened (DNPRSR, 2013), including:

- *Acacia pubicosta* (delisted NC Act 9 May 2014)
- Little Pied Bat *Chalinolobus picatus* (delisted NC Act 12 December 2014).

Eleven bird species listed as 'Migratory' under the EPBC Act are listed for Albinia National Park (DNPRSR, 2013), of which one species (Rainbow Bee Eater *Merops ornatus*) is no longer listed.

4.2 Database Searches

The EPBC Act Protected Matters Report (DEE, 2018a) and WO database extract (DES, 2019d) incorporating a 30 km buffer around the study area are included in **Appendix C** and **Appendix D**, respectively. The WO database extract and Protected Matters Report identified nine threatened flora species, twenty threatened fauna species and nine migratory fauna species as potentially occurring within the study area. The Vegetation Management Supporting Map (DNRME, 2018) identified two REs including one TEC as occurring within the site boundaries.

4.2.1 Threatened Ecological Communities

One of the REs identified (RE 11.8.11) in database searches equates to the EPBC-listed Natural Grasslands TEC. In total, three TECs were identified in the Protected Matters Report (DEE, 2018b) as potentially occurring within the study area or within a 30 km radius. The three endangered communities are:

- Brigalow TEC.
- Natural Grasslands TEC.
- Weeping Myall Woodlands TEC.

4.2.2 Threatened Flora Species

A total of nine EVNT flora species were identified in the database searches as potentially occurring within 30 km of the site. This included five species predicted by the EPBC Act Protected Matters Report (DEE, 2018b) (see **Appendix A**) and nine species recorded in the Queensland Government WO database extract (DES, 2019d) (**Appendix B**). The results of these searches have been combined in **Table 10** to show all EVNT flora species recorded from the database searches, their status under State and Commonwealth legislation and their likelihood of occurring within the study area.

Appendix C provides justification for the 'likelihood of occurrence' determination for each species. Of the nine threatened or near threatened flora species identified in the desktop analyses, one species was confirmed, five were considered to have a moderate to high likelihood of occurring within the study area; the remaining three species were considered to have a low likelihood of occurring. All species that were considered to have a moderate or high likelihood of occurring within the study area are discussed in further detail in the Impact Assessment and Management section (**Section 7**) of this report.

Table 10 Threatened Flora Identified from Database Searches

| NC Act Status | EPBC Act Status | Species Name | Common Name | Likelihood of Occurrence |
|-----------------|-----------------|-----------------------------------|--------------------|--------------------------|
| Endangered | - | <i>Trioncinia retroflexa</i> | - | Moderate- High |
| Vulnerable | Vulnerable | <i>Marsdenia brevifolia</i> | Shrubby Bush Pear | Low |
| Vulnerable | Vulnerable | <i>Aristida annua</i> | - | Moderate |
| Vulnerable | - | <i>Cyperus clarus</i> | - | Moderate |
| Vulnerable | - | <i>Maundia triglochoides</i> | - | Low |
| Near Threatened | - | <i>Digitaria porrecta</i> | Finger Panic Grass | Moderate |
| Vulnerable | Endangered | <i>Dichanthium queenslandicum</i> | King Blue-grass | Present |
| Least Concern | Vulnerable | <i>Dichanthium setosum</i> | Bluegrass | High |
| Vulnerable | Vulnerable | <i>Cadellia pentastylis</i> | Ooline | Low |

4.2.3 Threatened Fauna Species

A total of twenty EVNT fauna species were returned from the database searches of a 30 km radius surrounding the study area. These included seventeen from the EPBC Act Protected Matters Report (DEE, 2018b, see **Appendix A**) and three additional species from the WO database extract (DES, 2019d, see **Appendix B**). The results of these searches have been combined in **Table 11**, which also provides an interpretation on the likelihood that each of these species would occur within the study area. **Appendix C** provides justification for how the 'likelihood of occurrence' was determined for each species.

Six species were considered to have a moderate or high likelihood of occurring within the study area; the remaining fourteen species were considered to have a low likelihood of occurring. All species that were considered to have a moderate or high likelihood of occurring within the study area are discussed in further detail in the Impact Assessment and Management section (**Section 7**) of this report.

Table 11 Threatened Fauna Identified from Database Searches

| NC Act Status | EPBC Act Status | Scientific Name | Common Name | Likelihood of Occurrence |
|------------------|-------------------------------------|-------------------------------------|-------------------------------|--------------------------|
| Endangered | Vulnerable | <i>Erythrorhynchus radiatus</i> | Red Goshawk | Low |
| Vulnerable | Vulnerable | <i>Geophaps scripta scripta</i> | Squatter Pigeon (Southern) | High |
| Presumed Extinct | Extinct | <i>Psephotus pulcherrimus</i> | Paradise Parrot | Low |
| Endangered | Endangered | <i>Neochmia ruficauda ruficauda</i> | Star Finch (Southern) | Low |
| Endangered | Endangered | <i>Poephila cincta cincta</i> | Southern Black-throated Finch | Low |
| Vulnerable | Vulnerable | <i>Grantiella picta</i> | Painted Honeyeater | Low |
| Vulnerable | Endangered | <i>Rostratula australis</i> | Australian Painted Snipe | Low |
| Endangered | Critically Endangered and Migratory | <i>Calidris ferruginea</i> | Curlew Sandpiper | Low |
| Least Concern | Endangered | <i>Dasyurus hallucatus</i> | Northern Quoll | Low |
| Endangered | Vulnerable | <i>Macroderma gigas</i> | Ghost Bat | Low |
| Vulnerable | Vulnerable | <i>Phascolarctos cinereus</i> | Koala | Low-Moderate |
| Vulnerable | Vulnerable | <i>Petauroides volans volans</i> | Southern Greater Glider | Low-Moderate |
| Vulnerable | Vulnerable | <i>Nyctophilus corbeni</i> | Corben's Long-eared Bat | Low |
| Vulnerable | Vulnerable | <i>Chalinolobus dwyeri</i> | Large-eared Pied Bat | Low |
| Endangered | Critically Endangered | <i>Elseya albagula</i> | Southern Snapping Turtle | Low |
| Vulnerable | Vulnerable | <i>Rheodytes leukops</i> | Fitzroy River Turtle | Low |
| Vulnerable | Vulnerable | <i>Denisonia maculata</i> | Ornamental Snake | Moderate |
| Near Threatened | — | <i>Strophurus taenicauda</i> | Golden-tailed Gecko | Moderate |
| Vulnerable | Vulnerable | <i>Delma torquata</i> | Collared Delma | Low |
| Vulnerable | Vulnerable | <i>Egernia rugosa</i> | Yakka Skink | Moderate |

4.2.4 Migratory Species

The EPBC Protected Matters Search Report (DEE, 2018a) identified nine migratory species as potentially occurring within 30 km of the study area. The results of this search are included in **Table 12** along with interpretation on the likelihood that each of these species would occur within the study area. **Appendix C** provides justification for how the 'likelihood of occurrence' was determined for each species.

Of the nine species, two were considered to have a moderate or high likelihood of occurring on site and are discussed in further detail in the Impact Assessment and Management section (**Section 7**) of this report.

Table 12 Migratory Species from the Protected Matters Report

| NC Act Status | EPBC Act Status | Scientific Name | Common Name | Likelihood of Occurrence |
|-----------------------|-------------------------------------|-----------------------------|------------------------|--------------------------|
| Special Least Concern | Migratory | <i>Apus pacificus</i> | Fork-tailed Swift | Moderate |
| Special Least Concern | Migratory | <i>Cuculus optatus</i> | Oriental Cuckoo | Low |
| Special Least Concern | Migratory | <i>Myiagra cyanoleuca</i> | Satin Flycatcher | Low |
| Special Least Concern | Migratory | <i>Motacilla flava</i> | Yellow Wagtail | Low |
| Special Least Concern | Migratory | <i>Actitis hypoleucos</i> | Common Sandpiper | Low |
| Special Least Concern | Migratory | <i>Calidris acuminata</i> | Sharp-tailed Sandpiper | Low |
| Endangered | Critically Endangered and Migratory | <i>Calidris ferruginea</i> | Curlew Sandpiper | Low |
| Special Least Concern | Migratory | <i>Calidris melanotos</i> | Pectoral Sandpiper | High |
| Special Least Concern | Migratory | <i>Gallinago hardwickii</i> | Latham's Snipe | Low |

4.3 Regional Ecosystem Mapping and High Value Regrowth

The study area contains three polygons of remnant vegetation shown on the Vegetation Management Supporting Map (see **Figure 4**). Each polygon consists of either RE 11.3.3 or RE 11.8.11. A large area occupying most of the eastern portion of the study area is mapped as non-remnant vegetation. RE 11.3.3 is associated with ephemeral watercourses within two polygons: the first spans the northern boundary of the study area, the second crosses the southern corner. RE 11.8.11 is mapped as ubiquitous in the western half of the study area, and smaller areas are mapped in the south and the northeast.

Table 13 provides a summary of the REs mapped throughout the study area including the short descriptions provided in the Regional Ecosystem Description Database (REDD) (Queensland Herbarium, 2018).

Table 13 RE status and description for mapped remnant vegetation

| RE Code | VMA Status | Biodiversity Status | Regional Ecosystem Database Short Description |
|---------|------------|---------------------|---|
| 11.8.11 | Of Concern | Of Concern | <i>Dichanthium sericeum</i> grassland on Cainozoic igneous rocks. |
| 11.3.3 | Of Concern | Of Concern | Eucalyptus coolabah woodland on alluvial plains. |

4.4 Environmentally Sensitive Areas

ESAs are described in the Environmental Protection Regulation (2008) and DES provides an online map tool to identify mapped ESAs that are relevant to resource activities. The ESA map for the study area (DES, 2018a) shows multiple areas of Category B ESAs within the study area, in the form of REs with an 'Of Concern' biodiversity status (see **Figure 4**). A review of the remnant RE mapping revealed that the mapped Category B ESAs equate to the mapped extent of RE 11.3.3 and RE 11.8.11 (see further details in the Flora Survey Results section, **Section 5**), which each have an 'Of Concern' biodiversity status in the REDD (Queensland Herbarium, 2018). The extent of Category B ESAs has significant bearing on the development of resource activities and therefore these areas were subject to a ground-truthing survey effort during the field survey program.

4.5 Geology Mapping

Geological mapping for the region was obtained from Geoscience Australia online interactive mapping. One geology unit is shown within the study area, with a second occurring as near as 900 m to the north and east, as shown in **Table 14**. The relevant landzones as defined in Wilson and Taylor (2012) are also shown in **Table 14**.

Table 14 Geology Mapping Units within the Study Area

| Map Code | Lithology | Rock Type | Landzone |
|----------|------------------------|-----------|----------|
| Czb | Igneous mafic volcanic | Basaltic | 8 |
| Qa* | Regolith | Alluvium | 3 |

* Geology present near but not within the study area.

4.6 Essential Habitat

None of the vegetation communities mapped within the study area are mapped as essential habitat on the DNRME essential habitat layer accessed on Queensland Globe.

Figure 4 Current RE Map



ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

STATE MAPPED REGIONAL ECOSYSTEMS

Legend

— VM Watercourse (100/250K)

Proposed Extent of Site
Disturbance

Vegetation Management Regional Ecosystem Map

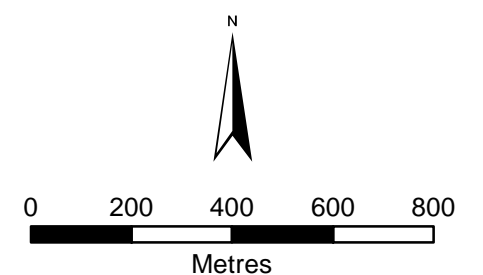
Non-remnant

Category A or B area containing of
concern regional ecosystems

Category A or B area that is least
concern regional ecosystems

Data Sources:
VM Watercourse (100/250K) and Vegetation
Management Regional Ecosystem Map datasets: the
State of Queensland (Department of Natural
Resources, Mines, and Energy) 2019; Proposed Extent
of Site Disturbance: client data on file (March 2019).
Imagery Sources: © The State of Queensland, 2017.
Includes material © Planet Labs Netherlands B.V. 2017,
reproduced under licence from Planet and Geoplex, all
rights reserved. Landsat data available from the U.S.
Geological Survey. Data acquired under the Spatial
Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:15,000 at A3



5 FLORA SURVEY RESULTS

5.1 Vegetation Communities

5.1.1 EPBC Act Threatened Ecological Communities

The EPBC Act Protected Matters Search Tool identified three TECs potentially occurring within 30 km of the study area. There are no areas of Weeping Myall Woodlands TEC or Brigalow TEC habitats present within the study area; however, RE 11.8.11 is shown on the DNRME RE mapping of the study area and this RE wholly equates to the Natural Grasslands TEC listed as 'Endangered' under the EPBC Act.

The patch of habitat identified as RE 11.8.11 occurs in the west, south and northeast of the study area. It is bordered on the north by riparian vegetation and dissected in the eastern centre of the site by a large area mapped as non-remnant vegetation. A section of habitat mapped as grassland in the western portion of the site was found to conform to RE 11.8.5 (*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks). Additionally, a small area in the centre of the site, adjacent to mapped non-remnant habitat, is utilised regularly by cattle on the site and ground cover is largely absent at this location. The remaining habitat mapped as the TEC is, however, dominated by native grasses and only minimally affected by cattle grazing and invasive flora. This area occupies approximately 202 ha (57%) of the 350 ha study area and includes upper, mid and lower slopes of the gradual undulating hills that predominate within the 'Basalt Downs' biogeographic subregion.

On lower slopes, to the north of the study area, the grassland generally supports fewer trees, and is thus more representative of the TEC. This is likely due to the cracking clay soil that, particularly in low-lying areas, is inundated during heavy rainfall and then cracks severely in dry periods, destroying tap roots (TSSC, 2009). Throughout the grassland habitat, native perennial tussock grasses dominate. These include White Speargrass *Aristida leptopoda*, Purple Wire-grass *A. personata*, Queensland Bluegrass *Dichanthium sericeum*, *Setaria* sp., Native Panic *Panicum queenslandicum* and Coolibah Grass *Thellungia advena*. Other species present include Black Speargrass *Heteropogon contortus*, which was locally dominant in some areas in the western portion of the study area, and non-native grasses Buffel Grass *Cenchrus ciliaris* and Red Natal Grass *Melinis repens*, which were most prolific along the disturbed margins of the Dawson Highway.

In order for the patch to be classed as the TEC, it must meet the following key diagnostic criteria and condition thresholds for 'Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin' as defined in the Listing Advice by the Threatened Species Scientific Committee (TSSC, 2009):

Key diagnostic criteria:

- Located within the Brigalow Belt bioregion.
- Very sparse to absent tree layer (<10% canopy cover).
- Ground layer dominated by native perennial grasses, including a minimum of three such species.

Condition thresholds:

- Minimum of 5 ha area covered by the patch of habitat.
- A minimum of 3 native perennial grasses listed in the perennial native grass indicator species list within TSSC (2009) present within the patch (good quality = 3 species, best quality = 4+ species).
- Total number of native grass tussocks greater than 200.
- Exotic perennial plants comprise less than 50% of the total vegetation cover of the patch (<50% for good quality or <30% for best quality), as assessed over a minimum sample area of a 0.5 ha in condition representative of the whole patch.

- *Perennial non-woody introduced species cover less than 30% of the patch for good quality, or 5% for best quality.*

Surveys undertaken in February-March 2019 assessed areas of grassland at 33 sites to determine whether they met the key diagnostic criteria for RE 11.8.11, and whether any of these sites met the condition thresholds for 'good' or 'best quality' examples of the listed Natural Grasslands TEC. In general, the site is located at the southern limit of the Brigalow Belt North bioregion in the 'Basalt Downs' biogeographic subregion.

The tree layer in the grassland community is very sparse, with typically <5% canopy cover throughout the patch. Grassland was noted as occurring within the area mapped as non-remnant. This area is planted with rows of the introduced fodder crop *Leucaena leucocephala*, however, the projected canopy cover of the *Leucaena L. leucocephala* was not observed to exceed 30%; therefore, these areas could not be excluded as areas of the Natural Grasslands TEC. Photographs of representative areas of *Leucaena L. leucocephala* are shown in **Photo 1** series below. A map showing the SLR ground-truthed RE mapping is presented in **Figure 5**.

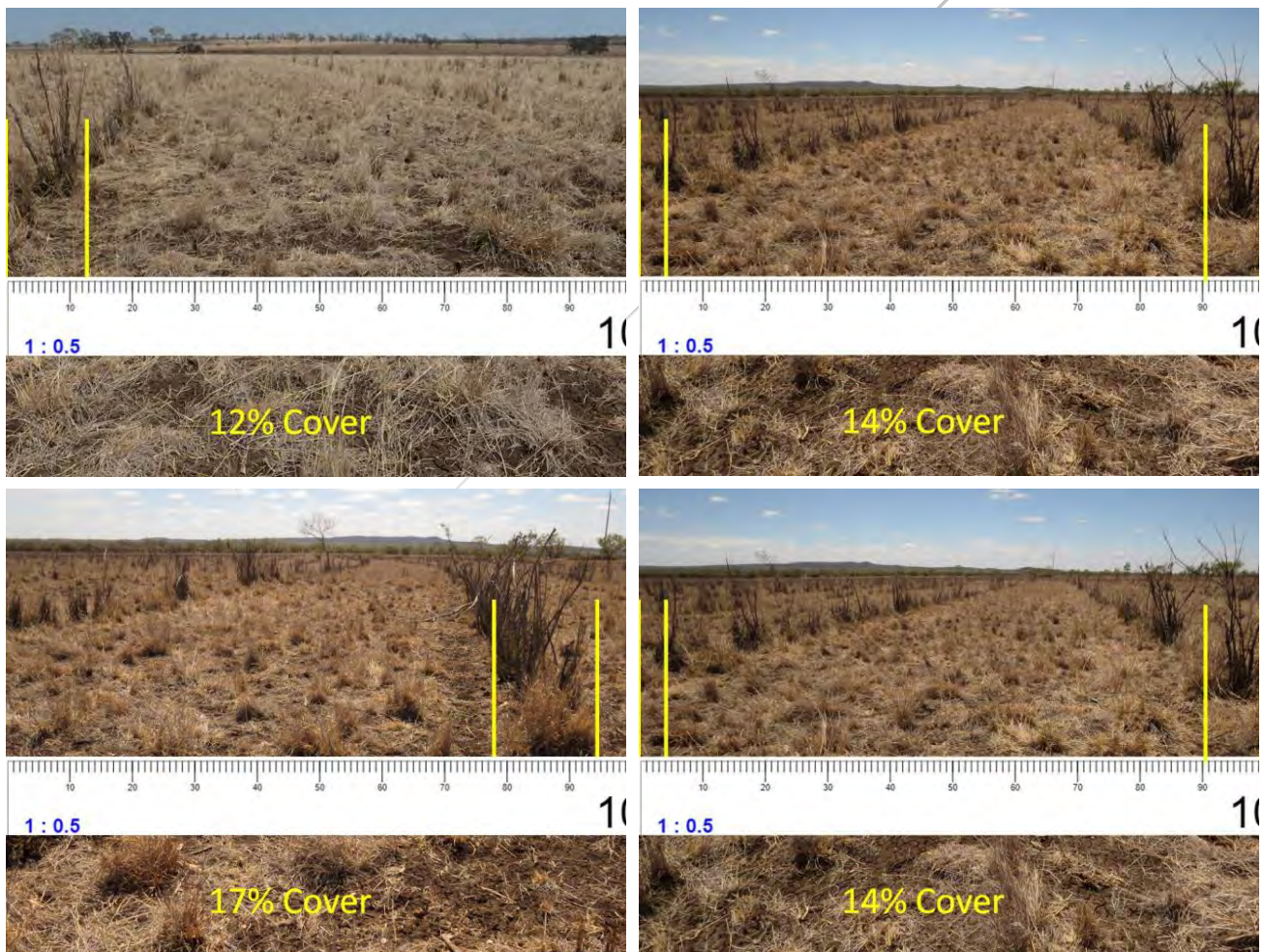


Photo 1 Representative Estimates of Projected Canopy Cover of *Leucaena*

Figure 5 Ground-truthed RE Map



ENDOCOAL

METEOR DOWNS
SOUTH RAIL LOOP

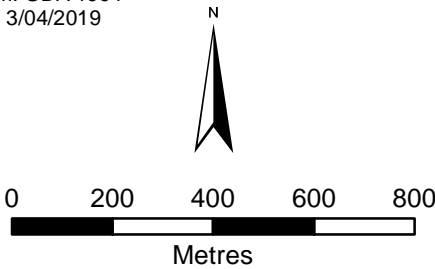
GROUND-TRUTHED
REGIONAL ECOSYSTEMS
AND TEC SURVEY SITES

Legend

- VM Watercourse (100/250K)
- Proposed Extent of Site Disturbance
- Ground-Truthed RE Description**
 - Melaleuca bracteata riparian woodland
 - Native grassland
 - Native grassland within Leucaena plantation
 - Native grassland / Open woodland
- Quadrat sites**
- Threatened Ecological Community (TEC)**
 - Best Quality TEC
 - Good Quality TEC
- Other**
 - Indeterminable
 - Not a TEC

Data Sources:
VM Watercourse (100/250K) dataset: the State of Queensland (Department of Natural Resources, Mines, and Energy) 2019; Proposed Extent of Site Disturbance: client data on file (March 2019); TEC Quadrat and Ground-Truthed RE datasets: derived from February 2019 field survey data on file.
Imagery Sources: © The State of Queensland, 2017. Includes material © Planet Labs Netherlands B.V. 2017, reproduced under licence from Planet and Geoplex, all rights reserved. Landsat data available from the U.S. Geological Survey. Data acquired under the Spatial Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:15,000 at A3



There was no evidence that these areas of grassland were derived from cleared woodland as aerial imagery from January 1959 showed the area to be grassland with a very sparse cover of eucalypts confined to narrow areas. Within areas of planted *Leucaena L. leucocephala*, the ground layer was dominated by native perennial grasses, with over 200 tussocks present within a 50 x 20m plot. Ten plots were established within the *Leucaena L. leucocephala* planted areas to determine if any of the grassland would meet the floristic key diagnostic criteria and condition thresholds for the listed Natural Grasslands TEC.

Cattle-grazing was widespread across the study area, which, combined with exceptionally dry conditions and dormant grasses, made grass identification particularly difficult. Identifiable fertile material was absent from the vast majority of grass tussocks. This was particularly pronounced in the areas planted with rows of *Leucaena L. leucocephala*, as it was obvious cattle grazing pressure was higher in these areas. Introduced perennial grasses were rare or absent and key indicator grass species were present in each of the plots. There was a high potential for the number of indicator species to be underestimated due to identification conditions. Therefore, plots that did not yield at least three indicator species were listed as 'indeterminable', rather than assessed as not meeting the thresholds for the TEC. Assessment of sites as being in 'good condition' is a minimum condition, and the potential for these plots to actually be in 'best condition' cannot be excluded.

In areas mapped as RE 11.8.11, 33 plots were established, of which 14 (42.4%) had at least three indicator species (good condition) and nine plots (27.27%) had at least four species (best condition). The minimum numbers of species were not located in nine plots (27.72%), however, they cannot be conclusively excluded as being the TEC due to a lack of identifiable material on the majority of grass tussocks.

In areas mapped as 'non remnant' with planted rows of *Leucaena L. leucocephala*, ten plots were established. Two plots (20%) had at least three indicator species (good condition), while the remaining eight plots were considered 'indeterminable' TEC as the minimum number of indicator species were not detected. It is therefore possible that the TEC occurs throughout the area mapped as non-remnant. In the absence of cattle grazing, it is possible that the *Leucaena L. leucocephala* would develop into small trees, and would exceed the allowable threshold for canopy cover by woody perennial non-native plants. Currently, the *Leucaena L. leucocephala* plants are heavily grazed, and their overall projected canopy cover is low.

Although some survey plots within the mapped extent of RE 11.8.11 resulted in indeterminable results, the presence of key indicator species was widespread across the site, and the patchy distribution of indeterminable, good and best quality TEC results is indicative of a lack of identifiable features rather than an actual variation in the presence or absence of the TEC. By applying the precautionary principle, it should be assumed that the entire area of grassland mapped on site as RE 11.8.11 represents the TEC.

The only exception was survey plot 33 which was established in an area of scattered *Corymbia erythrophloia*. The projected canopy cover at this site was approximately 35%, which exceeds the key diagnostic characteristic of <10% projected tree canopy cover. Limited areas of trees within the mapped grassland area could not be assessed as meeting the requirements for the TEC, however, these areas are generally too small to be mapped. Outside the *Leucaena L. leucocephala* plantations, projected cover of shrubs is typically less than 5%, however, the invasive Mimosa Bush *Vachellia farnesiana* is present in low densities, particularly towards the west of the site.

Perennial non-woody introduced species typically occurs at below 5% ground cover throughout the patch, however, Buffel Grass *Cenchrus ciliaris* and Red Natal Grass *Melinis repens* are present in occasional dense localised stands, particularly along the disturbed margins of the Dawson Highway. Additionally, many fauna species noted as dependent upon or indicative of grassland habitats were recorded. These included Common Planigale *Planigale maculata*, Brown Quail *Coturnix ypsilophora*, Rufous Songlark *Cincloramphus mathewsi*, Brown Songlark *C. cruralis* and Golden-headed Cisticola *Cisticola exilis*.

5.1.2 VM Act Regional Ecosystems and High Value Regrowth

The SLR vegetation community surveys largely supported the DNRME RE mapping. Thirteen quaternary surveys conducted confirmed the presence, extent, status and condition of remnant vegetation within the study area and allowed confirmation of DNRME mapping, with some minor exceptions. REs identified in the study area included RE 11.8.11 and RE 11.3.3, both of which are listed as 'Of Concern' under the VM Act and have an 'Of Concern' biodiversity status.

State-mapped remnant grassland vegetation appears as a polygon comprised solely of RE 11.8.11. Grasslands in the surrounding area often occur as heterogeneous (mixed) polygons with RE 11.8.5 ('*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks'); however, this RE is not included in mapping within the study area. Vegetation surveys undertaken in grassland and open woodland habitats throughout the site largely affirmed the state-mapped polygons, with the addition of RE 11.8.5.

An area of approximately 56 ha in the western portion of the study area conformed to RE 11.8.5 due to the presence of rocky, granitic soil and a comparatively dense tree layer dominated by Mountain Coolibah *Eucalyptus orgadophila*. The ground layer in this habitat was dominated by Black Speargrass *Heteropogon contortus* and *Aristida* spp. grasses, with other native grasses including Queensland Bluegrass *Dichanthium sericeum* and invasive grasses including Buffel Grass *Cenchrus ciliaris* and Red Natal Grass *Melinis repens*. This habitat occurred on the higher elevation of a very gradual slope, and composition shifted along the downhill slope to the east with RE 11.8.11 becoming progressively more dominant. Lower slopes were associated with vertosol (dark cracking black clay soils) throughout the site and generally contained lower tree densities. The overall site is best described as a heterogeneous polygon of RE 11.8.5 and RE 11.8.11 of varying ratios.

Another area of approximately 2.4 ha in the north east of the site was also noted as being on higher topography, with soils that had a higher proportion of stone and gravel than the surrounding area of cracking black clay soils. This area had a generally sparse canopy of Red Bloodwood *Corymbia erythrophloia*, and occasional Silver-leaved Ironbark *Eucalyptus melanophloia* subsp. *melanophloia*, both of which are noted as a common subdominant species in RE 11.8.5. Although Mountain Coolibah *E. orgadophila* was absent at this location, the structure and floristics of the site was indicative of a heterogeneous polygon of RE 11.8.11 and a variant of RE 11.8.5. A TEC determination plot was established within the site and found that the 35% projected canopy cover excluded it from being the Natural Grasslands TEC, despite the presence of at least two of the indicator grass species. These higher-elevation areas on the west (near the Dawson Highway) and north east of the study area, were the only areas containing rocky topsoil and thus the only areas within the site containing these heterogeneous polygons of RE 11.8.5 and RE 11.8.11 of varying ratios.

The north of the site was bordered by riparian vegetation classified as RE 11.3.3 in DNRME state mapping (DNRME 2018). A small (10 ha) patch of this habitat is also present in the southern corner of the site. RE 11.3.3 is described as '*Eucalyptus coolibah* open woodland'; however, Coolabah *E. coolibah* was not identified within the habitat or anywhere else on the site more broadly. The riparian vegetation was consistent with RE 11.3.3a: '*Melaleuca bracteata* woodland on alluvial plains; riverine or fringing riverine wetland'. Black Tea Tree *M. bracteata*, was the dominant tree species throughout each of the areas of riparian vegetation. Other associate species include: Sally Wattle *Acacia salicina* and occasional emergent gums including River Red Gum *Eucalyptus camaldulensis* and Moreton Bay Ash *Corymbia tessellaris*. Shrubs generally included tree species recruits and Prickly Acacia *Vachellia farnesiana*. Ground cover was typically more affected by invasive species; Buffel Grass *Cenchrus ciliaris* and Parthenium *Parthenium hysterophorus* dominated many areas.

5.1.3 Non-remnant Vegetation

Remnant woody vegetation is defined under the VM Act as vegetation in the dominant canopy layer having greater than 70% of the height and greater than 50% of the cover of vegetation of the same type as that in an undisturbed state. However, to determine whether a non-woody dominated vegetation (i.e. grassland community) is non-remnant, the following criteria for remnant status are recommended by Neldner *et al.* (2017):

- Has not been cultivated for 15 years; and
- Contains native species normally found in the regional ecosystem; and
- Is not dominated by non-native perennial species.

Aerial Raster imagery accessed via QImagery identified that the area currently mapped as non-remnant was initially cultivated prior to January 1962 (57 years before present), with evidence of Leucaena cultivation on site in June 1969, and development of swales prior to July 1983. Imagery indicating ongoing management of the Leucaena planting area until April 1993, and no further evidence of cultivation in the last 26 years was obtained. The 15-year criteria is to be applied as native species composition generally requires 15 years to return in ploughed grasslands (Neldner *et al.*, 2017).

Grass identification in the areas of Leucaena *L. leucocephala* was particularly difficult as these areas were receiving notably higher grazing pressure, presumably attracted by the Leucaena *L. leucocephala*. However, even in the absence of fertile material, Buffel Grass *Cenchrus ciliaris* is readily identifiable and was not detected within any of the ten survey plots. The grasslands within these plots were dominated by robust perennial grass tussocks, which were considered to be too robust for Red Natal Grass *Melinis repens*. As these were the most abundant non-native perennial grass species encountered in adjacent un-grazed areas, it was concluded that introduced perennial grass species did not dominate those areas. Leucaena *L. leucocephala* is not the dominant species in the site either, having been planted in rows wide enough that they don't suppress the grassland areas through shading and competition.

Each plot examined contained at least one key indicator grass species for the Natural Grasslands TEC. Six plots (60%) had two indicator species and two plots contained the minimum three species required for the plots to be classified as good condition examples of the TEC. In the absence of more fertile grass material, it was not possible to determine the extent to which the Natural Grasslands TEC occurs within the mapped extent of non-remnant. The February-March survey did, however, demonstrate that remnant grassland areas do occur to some extent within the mapped non-remnant area.

5.2 Flora Species

Despite suboptimal conditions for plant identification, a total of 59 flora species from 23 families were recorded within the study area, including 20 grass species. A full list of flora species identified during the surveys is included in **Appendix D**.

Most flora species observed throughout the study area are common and widespread throughout the region in grassland and open woodland communities, riparian habitats and improved pastures. Due to the impact of unseasonally dry conditions and cattle grazing, most plants weren't identifiable at the times of surveys, so it is highly likely that the plant species list in **Appendix D** only represents a subset of the total floristic diversity of the site, with annual plants and palatable grasses likely being poorly represented in this list.

The floristic composition is generally typical of the mapped units, with detrimental effects of cattle grazing, tree poisoning with Tordon™, *Leucaena L. leucocephala* planting and exotic weed invasion being evident in some areas. As described in **Section 5.1.3** above, the natural grassland community has re-established to a degree within the area planted with *Leucaena L. leucocephala*, as heavy grazing prevents the species from outcompeting or shading out the grasslands.

5.2.1 Threatened Flora Species

One threatened flora species was identified during the vegetation surveys; King Blue Grass *Dichanthium queenslandicum*, listed as 'Vulnerable' under the NC Act and 'Endangered' under the EPBC Act. A single individual was located in grassland plot 21 in the southern corner, as shown in **Photo 2** series below. The location was within a RE 11.8.11 grassland community between the Dawson Highway and a remnant patch of '*Melaleuca bracteata* riparian woodland' (RE 11.3.3).



Photo 2 Specimen and Habitat of King Blue Grass *Dichanthium queenslandicum*

It is likely that the species is more widespread within RE 11.8.1 than that which was detected during the surveys, as the survey conditions were unfavourable for the detection of fertile material, despite the survey times being undertaken during months when fertile material has previously been found Queensland Herbarium Herbreces). The potential for each threatened flora species identified in the desktop analysis to occur within the study area is discussed in **Appendix C**. Species with a moderate to high likelihood of occurrence, as determined through the desktop analyses, are discussed further in the Impact Assessment and Management section (**Section 7**) of this report.

5.2.2 Pest Species

Of the 59 plant species identified, 15 (25.42%) are noted in the Census of the Queensland Flora 2018 (DES 2019e) as being introduced plants.

Although a moderate diversity of pest species was recorded, some species (such as Red Natal Grass *Melinis repens**, Buffel Grass *Cenchrus ciliaris** and Parthenium *Parthenium hysterophorus** formed dense scattered populations throughout the study area.




Significant weed species recorded include Parthenium *P. hysterophorus** and Prickly Pear *Opuntia tomentosa** which are restricted invasive plants under the *Biosecurity Act 2014*. Parthenium *P. hysterophorus* and Mimosa Bush *Vachellia farnesiana** were recorded throughout the study area, with Parthenium *P. hysterophorus* most prevalent in low-lying areas and along watercourses.

Feral populations of Leucaena *Leucaena leucocephala** are listed as a restricted plant under local laws as described in the Central Highlands Regional Council Biosecurity Plan 2017-2020 (Central Highlands Regional Council, 2017). However, the Leucaena *L. leucocephala* within the study area does not seem to have expanded beyond the planted rows and would not be considered to be feral.

The Central Highlands Regional Council (2017) list Parthenium *P. hysterophorus** as having high impacts on recreational values, animal and human health, native vegetation and ecosystems, and agricultural production. However, the overall priority assigned to this species in 'Low'. This is presumably due to its widespread distribution across the region leading to a low likelihood of effective control. Although other *Opuntia* species are listed in the plan, *O. tomentosa** is not listed. It is possible this is a misidentification issue.

Table 15 Floristic Composition and Structure of REs within the Study Area

| Description, Status and Representative Image | Floristic Composition and Structure |
|---|--|
| RE 11.8.11 <ul style="list-style-type: none"> • VM Act Status: Of Concern • Biodiversity Status: Of Concern • Structural Category: Grassland | <ul style="list-style-type: none"> • T1: Very sparse 14.7–23.2 m. Generally dominated by <i>Eucalyptus orgadophila</i> or <i>Corymbia erythrophloia</i>, with occasional co-dominant <i>C. tessellaris</i>. |

| Description, Status and Representative Image | Floristic Composition and Structure |
|--|---|
|  | <ul style="list-style-type: none"> • T2: Sparse to very sparse 9.9–12.1 m. Dominated by various <i>Eucalyptus</i> spp. and <i>Corymbia</i> spp. including <i>E. orgadophila</i>, <i>C. erythrophloia</i> and <i>C. tessellaris</i>. <i>E. melanophloia</i> occasionally present, generally on lower slopes close to watercourse. • T3: Sparse to very sparse, 6.0–7.6 m. Variable mixture of above Eucalypts with low abundance of <i>Acacia salicina</i>. • S: Very sparse to absent 1–3 m. Absent or dominated by exotic <i>Vachellia farnesiana</i>* with low abundance of <i>Opuntia tomentosa</i> * and some recruiting <i>Eucalyptus</i> spp. and <i>Corymbia</i> spp. • G: Dense. Grasses dominate. Variable composition of <i>Aristida leptopoda</i>, <i>A. personata</i>, <i>Dichanthium sericeum</i>, <i>Setaria</i> sp, <i>Panicum decompositum</i>, <i>P. queenslandicum</i>, and <i>Thellungia advena</i> with low abundance of exotic <i>Cenchrus ciliaris</i>* and <i>Melinis repens</i>*. |
| <p>RE 11.3.3a</p> <ul style="list-style-type: none"> • VM Act Status: Of Concern • Biodiversity Status: Of Concern • Structural Category: Sparse  | <ul style="list-style-type: none"> • E: Very sparse to absent 18.2–24.1 m. Scattered <i>Eucalyptus camaldulensis</i> and <i>Corymbia tessellaris</i>. • T1: Mid-dense to Dense 14.0–18.1 m. Dominated by <i>Melaleuca bracteata</i>. Also <i>Acacia salicina</i>, <i>E. camaldulensis</i> and low abundance of large specimens of exotic <i>Opuntia tomentosa</i>*. • T2: Mid-dense to Dense 9.8–13.9 m. Dominated by <i>M. bracteata</i>, with <i>A. salicina</i>. • S: Sparse to very sparse 0.5–2.5 m. Primarily exotic <i>Vachellia farnesiana</i>* with occasional small native <i>M. bracteata</i>. • G: Sparse to Mid-dense. Native tussock grasses, including <i>Heteropogon contortus</i>. Exotics <i>Cenchrus ciliaris</i>* and <i>Parthenium hysterophorus</i>* dominate in dense stands. Others include exotic <i>Bidens bipinnata</i>*, with natives; <i>Boerhavia dominii</i>, <i>Lomandra longifolia</i> and <i>Polymeria longifolia</i>. |
| <p>RE 11.8.5</p> <ul style="list-style-type: none"> • VM Act Status: Least Concern • Biodiversity Status: No concern at present • Structural Category: Very sparse (usually in a heterogeneous polygon with RE 11.8.11)  | <ul style="list-style-type: none"> • T1: Very sparse 11.2–15.2 m. Dominated by <i>Eucalyptus orgadophila</i> or <i>Corymbia erythrophloia</i> with occasional <i>E. melanophloia</i>. • T2: Sparse 8.0–10.4 m. Co-dominated by <i>E. melanophloia</i> and <i>C. erythrophloia</i>, with some <i>E. orgadophila</i>. • T3: Sparse to absent 4.7–6.9 m. Smaller <i>C. erythrophloia</i>. • G: Dense. Co-dominated by <i>Heteropogon contortus</i> and <i>Aristida</i> spp., grasses with some <i>Dichanthium sericeum</i> and <i>Themeda triandra</i>, and weeds <i>Cenchrus ciliaris</i>* and <i>Melinis repens</i>*. Low abundance of <i>Vachellia farnesiana</i>* and <i>Opuntia tomentosa</i>*. |

6 FAUNA SURVEY RESULTS

6.1 General Fauna Habitat

The landscape across the site is primarily flat to slightly undulating, with an incised watercourse across the northern boundary, but no significant hills or rock outcrops. Available sheltering opportunities for small to medium-sized terrestrial fauna were restricted to vegetation, soil cracks, logs and woody debris. Habitat features varied across the study area and were influenced by vegetation community type, landform characteristics and land use practices.

Overall, habitat values for most faunal groups were low to moderate throughout the study area, and highly seasonal with regards to resource availability. The primary habitat types (grassland and fringing riverine woodland) each offered habitat values utilised by various specialist fauna in the 'Basalt Downs' biogeographic subregion.

Microhabitat features across the remnant parts of the study area included deep cracks in clay soil, piles of fallen bark around the base of eucalypts, coarse woody debris, leaf litter and rocky ground, with hollow-bearing trees and semi-permanent water sources also sparsely scattered throughout. The only permanent water on site is provided by water troughs for cattle.

The basaltic clay soils that dominate the surface geology throughout the site provides suitable refugia in the form of deep cracks and friable topsoils that are utilised by amphibians, small mammals such as the Common Planigale *Planigale maculata* and various reptiles including geckos, small snakes and fossorial skinks. Throughout the site, particularly in the centre and north, are scattered small log piles that may provide habitat for larger reptiles and mammals such as Agamid and Varanid lizards and rodents. These log piles also serve as potential but marginal habitat for the NC Act and EPBC Act-listed Yakka Skink *Egernia rugosa*.

The watercourse and associated riparian vegetation on the northern end of the study area provides substantial habitat values for fauna. While few large or hollow-bearing eucalypts are present, the density of small trees may provide important shelter from heat and other extreme weather conditions, particularly for large fauna such as macropods. The Common Brush-tailed Possum *Trichosurus vulpecula* was detected in this habitat while spotlighting during both surveys; however, it is unlikely that the habitat supports other species of arboreal mammal such as the EVNT-listed Greater Glider *Petauroides volans* or Koala *Phascolarctos cinereus* due to the low density of eucalypts (particularly of large, hollow-bearing trees).

Across the study area there was little degradation from influences of fire; however, impacts from cattle grazing and recent clearing were prevalent. Additionally, a significant proportion of mature trees were recently poisoned in grassland and woodland habitats and along the watercourse to the north. It is likely that the trees which have been poisoned will soon die and fall, which will decrease fauna habitat quality. Mass tree loss will substantially reduce habitat for arboreal species, and foraging/nesting habitat for bird species, and limit available shade for terrestrial animals. Fauna habitat in the riparian vegetation along the northern boundary is likely to be the most severely impact due to the extent of recent tree poisoning.

Mapped areas of non-remnant habitat in the study area was predominately represented by a large *Leucaena L. leucocephala* plantation and provided the lowest habitat values for faunal groups within the study area. This habitat generally consisted of open grassland interspersed with rows of *Leucaena L. leucocephala* (largely dead or re-shooting). This may provide habitat for grassland terrestrial species such as small lizards and snakes but is not likely to support populations of any vertebrate species at densities reflective of remnant habitats in the study area.

The presence of highly mobile fauna species (i.e. birds, bats and some arboreal mammals) is likely to be influenced by seasonal characteristics such as rainfall since many of these species forage when and where suitable trees are flowering or fruiting. As a result, habitat suitability may vary seasonally, causing species diversity to fluctuate as these mobile fauna groups follow available resources. Macropods are likely to be influenced by the seasonal availability of surface water for drinking. Although artificial water sources are present, during the dry periods when other water holes dry up, different groups of cattle congregate around the water trough for extended periods of time, limiting access by other fauna.

6.2 Watercourse and Wetland Habitat

There are no wetland protection areas or wetlands of high ecological significance shown on the map of referable wetlands (DES, 2018b). There are no wetlands of international significance that are relevant to the study area. There are small stock water troughs near the centre of the study area, and a semi-permanent small pool located in the far northeast of the study area. The watercourse on the site is broad but shallow, and is unlikely to hold water for more than a few weeks after a significant rain event. During the spring survey (May 2018), this watercourse was almost entirely dry, with one small pool located near trapping site 3 which dried up entirely during the course of the survey. During the summer survey (February-March 2019), no surface water was present anywhere on the site. These ephemeral water features provide minor seasonal habitat values to wetland species and a seasonal water source for other fauna.

The small wetland located in the northeast corner of the study area provides seasonal habitat for wetland birds and amphibians. Ducks, herons and egrets were recorded at this site in May 2018 and did not appear elsewhere within the study area. The water body is ephemeral in nature and appears to occur as a consequence of artificial swales in the *Leucaena L. leucocephala* plantation that directs some overland flow towards the railway line. It provides significant seasonal wetland habitat and a valuable water source for fauna in the area. It is unlikely to be large enough to support threatened or migratory waders, with the exception of immediately after significant rain when the water body is at its largest and the ephemeral creek in which it forms is dry. It is not likely to be critical to such species, however, as it dries quickly and is affected by cattle. It is also poorly vegetated, with no identifiable native wetland plants such as sedges or rushes lining the bank.

Watercourse and wetland habitat on the site is insufficient to support aquatic biodiversity values such as aquatic macrophytes, complex macroinvertebrate communities or populations of fish and turtle species. The comparative canopy density along this creek line is of value to terrestrial fauna, and the small semi-permanent wetland provides a water source for native species. The loss of the canopy cover from the watercourse will impact the quality of this habitat through loss of habitat complexity and will likely de-stabilise the creek banks resulting in increased rates of erosion and sediment input.

6.3 Fauna Species

Numerous fauna species were identified within the study area over the survey periods using a variety of different observational and trapping techniques. A combined list of all species identified during the survey period is included in **Appendix E**. The following sections provide a brief discussion of the species observed for each taxonomic group. Potential impacts to fauna are discussed in the latter sections of this report, with a focus on conservation-significant species.

6.3.1 Amphibians

Six amphibian species from three families were recorded within the study area, all of which are common and widespread in the local area. Most native amphibian observations were restricted to areas adjacent to permanent water or along the watercourse in the north of the study area. The introduced Cane Toad *Rhinella marina** was encountered under debris and near drainage lines and other water sources throughout the study area. No amphibians listed as near threatened or threatened were identified during the survey periods.

6.3.2 Reptiles

Ten reptile species from five families were observed within the study area (see **Appendix E**). All of these species are common and widespread throughout similar habitats within the broader region. No evidence of any reptiles listed as near threatened or threatened was observed within the study area.

6.3.3 Birds

A total of 60 species of bird were observed within the study area during the survey period. This species assemblage includes a number of both sedentary and nomadic species. The Spring survey (November 2018) detected 90% of the birds, in contrast to the summer survey (Feb-March 2019) when only 45% of the total bird species were observed. This is an indicator of the number of species that only utilise the site seasonally, and species reliant on surface water were entirely absent during the un-seasonally dry second survey. The majority of species observed are common in similar habitats throughout the region. No threatened or near threatened bird species were observed during the survey program. However, some locally occurring threatened bird species have the potential to occur within the study area. The likelihood of impacts to listed threatened species is discussed in the Impact Assessment and Management section (**Section 7**) of this report.

6.3.4 Mammals

A total of twenty-two mammal species were recorded within the study area over the survey periods (**Appendix E**). The assemblage recorded is typical of open woodland and grassland habitats within the region and the species recorded are generally common. Bats showed the greatest diversity of all mammal groups, with at least 13 and as many as 14 species identified from call data collected during the surveys. The Microbat Call Interpretation Reports from the November 2018 and February-March 2019 fauna survey are included in **Appendix G** and include 14 species. Results from the two surveys were very similar, with 12 species recorded in March 2019, none of which were additional to the previous survey. While some calls could not be clearly distinguished between two species, none of the species are listed as threatened or near threatened under the NC Act or EPBC Act. One of the calls is attributed to a *Nyctophilus* species. *Nyctophilus corbeni* is 'Vulnerable' under the NC Act and EPBC Act but there are no records of this species near the Springsure–Rolleston area. It is considered unlikely that *N. corbeni* is present on the site.

No mammals listed as near threatened or threatened were observed within the study area; however, evidence of the Short-beaked Echidna *Tachyglossus aculeatus aculeatus*, which is listed as 'Special Least Concern' under the NC Act, was observed in the form of quills (likely the remains of a carcass) found at systematic fauna trapping site 1 in November 2018. The potential for impacts to this species, and other threatened fauna species with potential to occur within the study area, is discussed in **Section 7** below.

6.3.5 Pest Species

Five invasive fauna species were identified during the fauna surveys, all of which commonly occur in disturbed habitats throughout Queensland. The following species were observed within the study area:

- Cane Toad *Rhinella marinus*.*
- Wild Pig *Sus scrofa*.*
- House Mouse *Mus musculus*.*
- Black Rat *Rattus rattus*.*
- Feral Cat *Felis catus*.*

Domestic Cattle *Bos x indicus** were also recorded within the study area and likely affect native fauna through competition and destruction or modification of habitat. The most intensive pressure was around the watering points in the centre of the study area. This created a visible piosphere, being a circular arrangement of zones of grazing intensities around water holes. Although gradients of ever-decreasing grazing pressure occur from 1-2 km from water, cattle will travel further during dry periods so rangelands could not be assumed to be 'ungrazed' unless they are more than 18 km from water (Landsberg *et al.* 1997).

No parts of the study area are more than 2 km from these watering points, so the entire study area can be assumed to be a regularly subjected to heavy grazing pressure. Grass identification became increasingly difficult closer to these watering points, and the ability to distinguish these areas as remnant grassland communities was therefore particularly difficult in closer proximity to the centre of the piosphere. Cattle were ubiquitous across the site, and no locations within the study area were unaffected by cattle. One trap site had to be extended to more than 400 m in length as traps could only be positioned where cattle were not likely to stand on them.

7 IMPACT ASSESSMENT and MANAGEMENT

7.1 Matters of State Environmental Significance

The following sections detail the presence of MSES, as identified in the Environmental Offsets Regulation 2014 (Qld). The potential for impacts to these matters is discussed with reference to the *Queensland Environmental Offsets Policy – Significant Residual Impact Guideline* (EHP, 2014). Further details regarding the potential occurrence of conservation significant species is provided in **Section 7.11** and **Section 7.12** below.

7.1.1 Regulated Vegetation

As described by DEHP (2014), MSES relating to regulated vegetation is a 'prescribed regional ecosystem' including:

- An 'Endangered' or 'Of Concern' RE, as defined under the VM Act.
- Remnant vegetation that intersects with a mapped watercourse or wetland shown on the vegetation management wetlands map.
- Remnant vegetation located within the defined distance from the defining banks of a watercourse identified on the vegetation management watercourse map.
- Areas of essential habitat for flora or fauna prescribed as endangered or vulnerable.
- A RE located in a connectivity area

7.1.1.1 Regional Ecosystems

Ground-truthing of the vegetation communities shown on the Vegetation Management Supporting map indicated that three REs occur within the study area, either as homogeneous or heterogeneous communities, as shown in **Table 16** below.

Table 16 RE Status and Description for Mapped Remnant Vegetation

| RE Code | Short Description | VMA Status | Biodiversity Status | Structural Category |
|---------|--|---------------|-----------------------|---------------------|
| 11.3.3 | <i>Eucalyptus coolabah</i> woodland on alluvial plains. | Of Concern | Of Concern | Sparse |
| 11.8.5 | 11.3.3a: <i>Melaleuca bracteata</i> woodland. On alluvial plains. Riverine wetland or fringing riverine wetland. | Least Concern | No Concern at Present | Very sparse |
| 11.8.11 | <i>Eucalyptus orgadophila</i> open woodland on Cainozoic igneous rocks | Of Concern | Of Concern | Grassland |

Therefore, RE 11.3.3 and RE 11.8.11 both represent MSES 'prescribed regional ecosystems'.

7.1.1.2 Remnant Vegetation Intersecting with a Mapped Watercourse or Wetland

Remnant vegetation associated with a watercourse or drainage feature shown on the *Vegetation Management Watercourse and Drainage Feature Map* (as certified under the VM Act) is classified as a MSES under the Queensland environmental offsets framework.

The study area does not contain any wetland protection areas or wetlands of high ecological significance as shown on the map of referrable wetlands (DES, 2019b). The watercourses and drainage features present within the study area are not 'high ecological value waters' as identified under the Environmental Protection (Water) Policy 2009.

There are two watercourse and drainage features within the study area that are shown on the *Vegetation Management Watercourse and Drainage Feature Map* (incorporated into **Table 17** Error! Reference source not found.). Mapped watercourses within the study area are all within remnant vegetation, mapped as RE 11.3.3.

7.2 Remnant Vegetation within the Defined Distance from a Watercourse

Under the Environmental Offsets Regulation 2014, MSES regulated vegetation includes remnant vegetation located within the defined distance from the defining banks of a watercourse as identified on the vegetation management watercourse map. The watercourse across the northern boundary is shown on the vegetation management supporting map as stream order 2, and the watercourse in the south east corner is stream order 1. The structural category for the associated riparian vegetation RE 11.3.3 is 'sparse' (REDD V.10).

The extent to which remnant vegetation associated with a watercourse is considered a protected matter is determined by the bioregional context and stream order of the watercourse or drainage feature. Buffer zones from the defined distance of the banks of the state-mapped features are noted in **Table 17**.

Table 17 Defined Distances for REs Associated with a Watercourse¹

| Watercourse Stream Order | Distance from defining bank (m) |
|--------------------------|---------------------------------|
| 1 or 2 | 25 |
| 3 or 4 | 50 |

1: Non-Coastal Bioregions. Source: Queensland Environmental Offsets Policy V1.2.

Under the Queensland Environmental Offsets Policy V1.2, the defined distance for REs associated with a stream order 1 or 2 watercourse (non-coastal bioregions) is 25 m. These riparian areas are avoided in the current proposed design and should be avoided if the project footprint is revised by maintaining the buffer zone. These buffer zones will still apply despite the recent tree poisoning that has occurred.

The significant residual impact criteria for this vegetation depends both on the type of proposed clearing (linear or non-linear) and the structural category of that vegetation community (as previously shown in Table 15). The significant residual impacts listed below apply to an 'Endangered' or 'Of Concern' RE, or for clearing of any remnant vegetation within the defined distance of a watercourse:

For clearing for linear infrastructure:

- Greater than 25 m wide in a grassland (structural category) RE.
- Greater than 20 m wide in a sparse (structural category) RE.
- Greater than 10 m wide in a dense to mid-dense (structural category) RE.

For clearing other than clearing for linear infrastructure:

- Area greater than 5 ha where in a grassland (structural category) RE.
- Area greater than 2 ha where in a sparse (structural category) RE.
- Area greater than 0.5 ha where in a dense to mid-dense (structural category) RE.

7.3 Essential Habitat

Essential habitat is defined by the VM Act as the habitat of endangered, vulnerable or near threatened (EVNT) species prescribed under the NC Act. None of the vegetation communities mapped within the study area are mapped as essential habitat on the DNRME essential habitat map. The proposed disturbance area does not include any areas shown on the flora survey trigger map as being 'High Risk'.

7.4 Connectivity Areas

Under schedule 2 of the Environmental Offsets Regulation 2014, MSES include remnant areas of a prescribed regional ecosystem, where that ecosystem contains an area required for ecosystem functioning (a connectivity area). The RE is a MSES if the connectivity area is of sufficient size or configured in a way that maintains ecosystem functioning and has the capacity to persist despite a threatening process.

Connectivity values associated with remnant vegetation at in the study area were assessed using the Landscape Fragmentation and Connectivity (LFC) tool, and the results are provided in **Figure 6**. The LFC tool is usually used to determine whether a specific action will significantly impact connectivity areas. To calculate the connectivity value of remnant vegetation within the study area, it was necessary to assume that all vegetation within the study area was cleared and the allowable 20 m buffer around the existing property fenceline (10 m either side) as per the design provided by the client in the CAD file '19.03.20 MDS-TLO-DISTURBANCE AREAS_STRINGS REV B.dwg'. The LFC outputs allow the user to determine the significance of impact on connectivity and fragmentation by assessing:

- Whether the change in the core ecosystem extent at the local scale (post impacts) is greater than a threshold determined by the level of fragmentation at the regional scale; OR
- If any core area (greater than or equal to one hectare) is lost or reduced to patch fragments (core to non-core).

If either test is shown to be true, then the overall impact on connectivity is considered to be significant (DES, 2018d).

Thresholds for changing the extent of local core scale remnant ecosystems is based on the extent of core remnant ecosystems at a regional scale and provided in the Significant Residual Impact Guidelines. Using the default regional buffer distance of 20 km and local buffer extent of 5 km, it was determined that the regional extent of core remnant areas was 33.44% and the LFC tool set a threshold of local impact as 10%. The extent of remnant vegetation within the study area was determined to comprise one core remnant area, which will persist post-clearing.

Following input of all the vegetation parameters at the study area into the LFC tool, it was determined that the connectivity values of Category B remnant vegetation within the study area (47.05 ha) is not significant, in that the post-removal impact of removal would be 1.59%, which is below the 10% threshold for fragmentation.

7.5 Protected Areas

There are no protected areas relevant to the study area.

Figure 6 Site Connectivity







ENDOCOAL








METEOR DOWNS SOUTH RAIL LOOP

LANDSCAPE FRAGMENTATION CLASSIFICATION

Legend

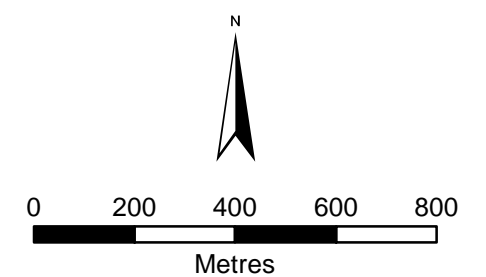
-  Impact site
-  Cleared regulated vegetation (Cat. B)
-  Impact site local buffer
-  Impact site regional buffer

Regional Fragmentation Post Impact

-  Patch
-  Edge
-  Perforated
-  Core (< 100 hectares)
-  Core (100-500 hectares)
-  Core (> 500 hectares)
-  Other

Data Sources:
Connectivity Area Impact Assessment datasets:
derived via the Environmental Offset Landscape
Connectivity Assessment Tool (v1.6) and associated
methodology, published by the the State of Queensland
(Department of Environment and Science) 2019.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:15,000 at A3

7.6 Matters of National Environmental Significance

The following sections detail the presence of MNES and potential impacts to these matters as assessed with reference to the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment, 2013). Listed threatened species and ecological communities and their potential occurrence are provided in **Section 4.2**.

7.7 Threatened Ecological Communities

Desktop surveys identified three listed TECs as potentially occurring within the local area.

- Brigalow TEC.
- Natural Grasslands TEC.
- Weeping Myall Woodlands TEC.

None of the regional ecosystems presently mapped or ground-truthed within the study area equate to the Brigalow-dominated or co-dominated ecosystems or Weeping Myall Woodland TECs. A large proportion of the study area was ground-truthed as RE 11.8.11, which is equivalent to the Natural Grasslands TEC. This is an 'Of Concern' RE dominated by native tussock grasses with very sparse tree and shrub layers (REDD V.10).

To determine whether sites met the key diagnostic criteria for remnant RE 11.8.11, and whether they met the condition thresholds for 'good' or 'best quality' examples of the listed Natural Grasslands TEC, the following condition thresholds were assessed at 45 plots measuring 50m x 20m:

- The patch occurs within any of the subregions of the Brigalow Belt North and Brigalow Belt South bioregions.
- Trees are absent or sparse such that the projective foliage cover of trees in the patch is 10% or less.
- There are at least 200 native grass tussocks in the patch.
- The patch size is at least 1 ha.
- There are at least four perennial native grass indicator species present.
- The total projective foliage cover of shrubs is less than 30%.
- Perennial non-woody introduced species make up less than 5% of the total perennial projective foliage cover.

Natural grasslands TEC is considered to be present and to be of good quality if it meets the following criteria:

- The patch occurs within any of the subregions of the Brigalow Belt North and Brigalow Belt South bioregions.
- Trees are absent or sparse such that the projective foliage cover of trees in the patch is 10% or less.
- There are at least 200 native grass tussocks in the patch.
- The patch size is at least 5 ha.
- There are at least three perennial native grass indicator species present.
- The total projective foliage cover of shrubs is less than 50%.
- Perennial non-woody introduced species make up less than 30% of the total perennial projective foliage cover.

Of the 43 TEC assessment plots, 33 were undertaken in mapped areas of RE 11.8.11, with a further 10 plots in the Leucaena *L. leucocephala* plantation area currently mapped as non-remnant. Of the 33 plots in grassland communities, 14 (42.4%) had at least three indicator species (good condition) and nine plots (27.27%) had at least four species (best condition). The minimum number of species was not located in nine plots (27.72%), however, they cannot be conclusively excluded as being the TEC due to a lack of identifiable material on the majority of grass tussocks. In areas mapped as 'non remnant' with planted rows of Leucaena *L. leucocephala*, ten plots were established. Two plots (20%) had at least three indicator species (good condition), while the remaining eight plots were considered 'indeterminable' TEC as the minimum number of indicator species were not detected.

7.8 Threatened Species

The vegetation surveys undertaken in February-March 2019 identified a single individual of King Blue Grass *Dichanthium queenslandicum*, listed as vulnerable under the NC Act and endangered under the EPBC Act.

No fauna species listed as threatened under the EPBC Act were detected within the study area during the current surveys. Permanent water is an essential resource requirement for the vulnerable Squatter Pigeon *Geophaps scripta scripta*, and the only permanent water on site is the cattle troughs. Motion sensitive cameras were deployed at one of these water troughs for several days during the very dry February-March 2019 survey period but did not detect this species, despite the requirement for this species to drink water daily.

Details regarding the potential occurrence of threatened species listed under the EPBC Act that were not observed during the survey are provided in **Appendix C**.

7.9 Listed Migratory Species

Nine migratory species were listed as potentially occurring within 30 km of the study area during desktop studies, none of which were recorded during the current study. All the listed migratory species are widespread throughout areas of Queensland, and habitats utilised by each species were poorly represented or absent within the study area.

Remnant vegetation, stock water troughs and gilgai areas throughout the study area may afford some suitable habitat for a few of these species. In particular, the small ephemeral wetland area adjacent to the rail line in the northeast corner of the site may provide seasonal habitat for Latham's Snipe *Gallinago hardwickii*, Pectoral Sandpiper *Calidris melanotos* and Sharp-tailed Sandpiper *Calidris acuminata* and other wetland species. For much of the year, however, the study area does not provide any suitable habitat.

Habitat features within the study area are common within the broader region and the study area itself does not support any unique, high-quality or important habitat values for any of the migratory species identified during desktop analyses.

The majority of migratory species are highly mobile in nature, utilise large distributions within Australia and have broad habitat requirements resulting in a low likelihood that individuals or populations will be affected by the relatively small proposed project. **Appendix C** includes a list of all migratory species that have the potential to occur within the study area and their likelihood of occurrence. Species with a high likelihood to occur onsite are discussed in **Section 7.12** below.

7.10 Wetlands of International Importance

No wetlands of international importance (Ramsar wetlands) are located within the study area or the region in general.

7.11 Conservation Significant Flora Species

Seven conservation significant flora species were initially identified in the desktop analyses as having a moderate to high likelihood of occurrence within the study area. Of these, only the King Blue-grass *Dichanthium queenslandicum* was confirmed to occur on site. Although targeted threatened flora surveys have been undertaken, conditions during the surveys were consistently sub-optimal due to un-seasonally dry conditions and heavy grazing pressure. There is a high likelihood of threatened flora species being under-represented in the flora species list (provided in **Appendix D**) due to the highly cryptic appearance of these species in the dry and desiccated grasslands.

The high number of threatened flora species assessed as likely to occur at the site is likely a function of the presence of the Natural Grasslands TEC, upon which some of these species are associated. Likelihood of occurrence was determined using criteria based on local records and habitat suitability/quality. The remaining species identified from the desktop assessment were considered to have a low likelihood of occurring within the study area and will not be discussed further here. However, the tables in **Appendix C** detail the 'likelihood of occurrence' assessment for the conservation significant species identified in the desktop assessment.

Cyperus clarus

Moderate - This species is a grassland specialist distributed in southern Queensland and northern New South Wales. It grows in grassland and open woodland on heavy clay soils derived from basalt, including grasslands dominated by *Dichanthium*, *Aristida* and *Panicum* spp. (Wilson, 2008; DES, 2019g). Records relevant to the study area includes specimens collected near Springsure on grassland with White Speargrass *Aristida leptopoda* and Yabila Grass *Panicum queenslandicum* on deep alluvial black clay, and another one collected in open/cleared open Mountain Coolibah *Eucalyptus orgadophila* woodland on basaltic soil with Queensland Bluegrass *Dichanthium sericeum* dominant herb layer (Queensland Herbarium HerbreCs 2019). There are two records of this species within 30 km of the study area. While there are no records of the species on the ALA, the presence of nearby records and suitable habitat indicate that this species is moderately likely to occur on site.

King Bluegrass *Dichanthium queenslandicum*

Present - This species is listed as 'Endangered' under the EPBC Act and as 'Vulnerable' under the NC Act. The WO database identified four records of this species within 30 km of the study area. The nearest record on ALA being a specimen collected in 2015 from 2.7 km south of the study area. Another specimen collected in January 2014 was collected 5.56 km northeast of the study area. ALA shows a number of records in the nearby region, including on Albinia National Park. Surveys at nearby Meteor Downs have identified a population of 520 plants within an area of 1,303.6 m², with a second additional group to the immediate west, all associated with RE 11.8.11 with the assumption that additional plants occur within the broader expanse of this community (CO2 Australia, 2018a).

King Bluegrass *D. queenslandicum* is found on black cracking clay soils mainly in association with other *Dichanthium* species and in natural grassland communities. Records available through the Queensland Herbarium HerbreCs primarily include specimens collected in grassland with Queensland Bluegrass *Dichanthium sericeum* on black basaltic cracking clays (including RE 11.8.11), but also records from Red Bloodwood *Corymbia erythrophloia* woodland on basalt, or Mountain Coolibah *Eucalyptus orgadophila* woodland on basalt.

During the February-March 2019 survey, a single individual was located in grassland plot 21 in the southern corner of the study area in an area of RE 11.8.11 grassland community. Additional individuals are likely to have been present but were unidentifiable due to a lack of recognisable fertile material, as a consequence of the unseasonally dry conditions and heavy cattle grazing across the site.

Bluegrass *Dichanthium setosum*

High - There are nearby records of this species. The nearest record on ALA is a specimen collected in 2018 from 1.72 km west of the study area. The species has been located in the nearby Albinia National Park (DNPRSR, 2013).

Although DES (2019h) note that it primarily occurs on heavy cracking clays or alluvium, in woodland or open woodland usually dominated by *Acacia* (Brigalow) and/or *Eucalyptus* species, surveys in 2013 on nearby Meteor Downs mine site located five plants the grassland community RE 11.8.11 (CO2 Australia, 2018a). The Queensland Herbarium HerbreCs records show a broader range of soil types and vegetation communities are tolerated. It can also be found in moderately disturbed areas such as cleared woodland, grassy roadside remnants, grazed land and highly disturbed pasture. However, heavy grazing by livestock and loss of habitat through clearing for pasture improvement and cropping are among the main threats to this species (DES 2019h).

There are nearby records and there is suitable habitat for this species across the site, however, the site has a long history of heavy grazing. The un-grazed roadside edge of the Dawson Highway also represents good habitat, despite the invasion of Buffel Grass *Cenchrus ciliaris** along the margin, which is specifically listed as a threat to Bluegrass (DES 2019h). There are no reasons to conclude that the species could not occur in some areas of the site.

Trioncinia retroflexa

Moderate / High- This species is listed as 'Endangered' under the NC Act. The WO database identified two records of this species within 30 km of the study area. These records are part of a population of the species that occurs south of Springsure, and between Springsure and Rolleston in the vicinity of the Dawson Highway. The Atlas of Living Australia (ALA) shows the nearest record was collected in 2001 from a roadside location 12.78 km northwest of the study area.

Trioncinia retroflexa is an erect perennial herb in the daisy family Asteraceae, growing to approximately 50 cm. Tall flower stems are originate from the centre of a basal rosette of trowel-shaped leaves, and the flower heads are vivid yellow (DES, 2019f). It occurs in grasslands on dark, cracking clay soils in basalt downs (DES, 2019f), and was rediscovered during field surveys in 1997, having not been recorded since its description in the mid-19th century (Fensham, 1999, Holland & Butler 2007).

It's occurrence on stock routes that are only spasmodically grazed suggests that it is sensitive to continuous grazing (Fensham *et al.* 2002), such as occurs within the study area. Considering the level of continuous grazing that historic aerial imagery shows has been dominating the study area since the late 1950s, it is unlikely that the species occurs on the grazed portions of the site. However, there are nearby records of the species from roadside habitats with similar vegetation to roadsides along the Dawson Highway next to the site, despite the invasion of Buffel Grass *Cenchrus ciliaris** along the margin. There are no reasons to conclude that the species could not occur in some areas of the site.

7.12 Conservation Significant Fauna Species

No threatened or near threatened fauna species were found within the study area during the current survey, despite conducting targeted threatened fauna surveys; however, evidence of the 'Special Least Concern' Short-beaked Echidna *Tachyglossus aculeatus* was found. Twenty conservation-significant fauna species with relevance to the study area were identified in the desktop analyses, and the likelihood of their occurrence within the study area was assessed using key criteria such as local records and habitat suitability/quality. Four species were determined to have a moderate to high likelihood of occurring within the study area and are discussed below. The remaining 16 species were considered to have a low likelihood of occurring within the study area and will not be discussed further in this section. **Appendix C** provides further details of the likelihood of occurrence assessment for the conservation significant species identified in the desktop assessment.

Squatter Pigeon (Southern) *Geophaps scripta scripta*

The southern subspecies of the Squatter Pigeon *Geophaps scripta scripta* is listed as 'Vulnerable' under both the NC Act and EPBC Act. The WO database identified eight records of this species within 30 km of the study area.

The study area is within the known distribution of this species and the habitat within the study area is suitable. The Squatter Pigeon (Southern) *G. scripta scripta* occurs mainly in grassy woodlands and sparse open woodlands and scrub with a canopy dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species (DEE, 2019a). It has also been recorded in sown grasslands with scattered remnant trees, disturbed habitats, in scrub and acacia growth, and remains common in heavily-grazed country north of the Tropic of Capricorn. It is almost always found close to bodies of water (DEE, 2019a).

This species prefers sandy areas dissected by gravel ridges, with open and short grass cover that facilitates movement on the ground. It is less commonly found on heavier soils with dense grass. It often occurs in burnt areas and is sometimes found on tracks and roadsides (TSSC, 2019a). Although the species was not observed on the study area or on the adjacent Meteor Downs site (CO2 Australia 2018a), it is known to occur on Albinia National Park (DNPRSR, 2013), and according to the ALA, there are several other records from the area. This species is considered to have a high likelihood of occurrence due to the presence of local records and suitable habitat within the study area.

The Squatter Pigeon (Southern) *G. scripta scripta* relies on access to nearby water such as dams and permanent waterholes during the wet season. The species was not identified either of the permanent water sources supplied for cattle in the centre of the study area nor for the gilgai in the northeast of the study area during regular opportunistic and targeted surveys, including placement of a motion sensitive camera. Suitable habitat on the site is of lower quality than that present in the broader region, and it is likely that any utilisation of the study area is seasonal in nature. Overall, it is unlikely that the proposed disturbance will affect individuals or populations of this species within the local or broader area. Recommendations for minimising potential impacts to this species are included below.

Greater Glider (Southern Sub-species) *Petauroides volans volans*

The Greater Glider (Southern Sub-species) *P. volans volans* is listed as 'Vulnerable' under both the NC Act and EPBC Act. The WO database has 23 records of this species within 30 km of the study area. The nearest record from the ALA (-24.365, 148.4844) is from 2001 on a location on Aldebaran Creek 2.87 km west northwest of the study area.

The Greater Glider *P. volans* is the largest gliding possum in Australia and is physically distinct from similar species. This species is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria. The historical area of occupancy of this species has decreased substantially, mostly due to land clearing since European settlement. This species is largely restricted to eucalypt forests and woodlands, and is found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. However, this distribution may be patchy even in suitable habitat. Home ranges of this species are typically small, although ranges are larger in low-productivity forests and more open woodlands (TSSC, 2016).

This species was not detected during the fauna surveys. Within the *Melaleuca bracteata* dominated riparian vegetation there were only a few large hollow-bearing River Red Gum *Eucalyptus camaldulensis* that could provide shelter habitat. While the riparian zone potentially contained marginally suitable habitat for the Greater Glider (Southern sub-species) *P. volans volans*, this habitat is outside the proposed disturbance footprint and its quality has been significantly diminished by recent tree poisoning. There are no habitat features unique to the study area on which this species would be relying; however, the riparian vegetation may present connectivity value for the species in the broader area. Any proposed development that is restricted to non-riparian habitats, particularly those previously disturbed by agriculture, is unlikely to result in:

- a long-term decrease in the size of the local population;
- a reduced extent of occurrence of the species;
- fragmentation of the existing population;
- the formation of genetically distinct populations as a result of habitat isolation; or
- disruption to ecologically significant locations for the species.

It is therefore unlikely there would be any significant impacts to the Greater Glider (Southern sub-species) *P. volans volans* as a result of the proposed development.

Koala *Phascolarctos cinereus*

The combined Queensland, New South Wales and Australian Capital Territory populations of the Koala *P. cinereus* are listed as 'Vulnerable' under both the NC Act and EPBC Act. Koala habitat can be broadly defined as any forest of woodland containing species that are known food trees. The Koala's diet is restricted mainly to foliage of Eucalyptus species but may also consume foliage of related genera, including *Corymbia*, *Angophora* and *Lophostemon*, and at times supplement its diet with other species, including species from the genera *Leptospermum* and *Melaleuca* (Martin and Handasyde 1999; Moore and Foley 2000).

The study area is within the modelled distribution for Koala *P. cinereus*. Additionally, the WO database extract returned fifteen records within a 30 km radius of the study area, and they are known to occur on the adjacent Albinia National Park (DNPRSR, 2013). However, the nearest record from the ALA (-24.4873, 148.5761) is a 1987 record from 17.66 km east southeast in a sparse woodland near Rolleston.

The study area contains habitat that supports a very limited number of Koala food trees. The Melaleuca riverine woodland along the creek in the north of the study area contains occasional emergent River Red Gum *Eucalyptus camaldulensis*, which is a preferred Koala food plant (Melzer & Plumb, 2007). Scattered trees in RE 11.8.5 included Silver-leaved Ironbark *E. melanophloia*, the leaves and buds of which are eaten by Koalas (Melzer & Plumb 2007). Moreton Bay Ash *Corymbia tessellaris* is rarely eaten by Koalas, while Red Bloodwood *C. erythrophloia* is not listed as a Koala food plant at all (Melzer & Plumb 2007). The very low density of food trees within the riparian vegetation and the sparse to very sparse structural composition of other habitats significantly limits the suitability of habitats throughout the site for Koala *P. cinereus*.

A habitat assessment was conducted in accordance with the *EPBC Act Referral Guidelines for the vulnerable Koala* (Department of the Environment, 2014). The outcome of this assessment was that, while there are no records of the Koala that are of significant relevance to the study area and the habitat values are low due to the very low density of food trees, the site contains habitat that may be important to the Koala. Key outcomes from the habitat assessment tool were:

- There is no evidence of any Koalas within 2 km of the edge of the impact area within the last 10 years.
- Emergent trees of three species that are known as Koala food trees are present.
- The Koala-relevant habitat within the study area is part of a contiguous landscape.
- The study area has some degree of vehicle threat present.
- Habitat within the study area is not considered important for achieving the interim recovery objective.

Table 18 Koala Habitat Assessment

| Attribute | Score | Habitat Assessment |
|--------------------------------------|-------|---|
| Koala occurrence | 0 | <p>Desktop studies</p> <p>The EPBC Act Protected Matters Report states that Koalas or Koala habitat is likely to occur within a 30 km radius from the centre point of the proposed disturbance area (see Appendix A). A search of the Queensland Government WO database (Appendix B) shows fifteen records of Koalas within 30 km from the centre point of the proposed disturbance area. All records were over 15 years old, with no new records in the local area.</p> <p>There are no records within 2 km of the study area within the last 10 years.</p> <p>Field studies</p> <p>Targeted searches throughout the study area revealed no evidence of Koalas inhabiting the area. Field studies included spotlighting, examining trees for signs of Koala activity and scat searches.</p> |
| Vegetation structure and composition | 2 | <p>Desktop studies</p> <p>The Queensland RE and Essential Habitat mapping reveals there is no mapped Koala essential habitat within 10 km of the study area. The RE mapping within the impact area for the proposed action shows vegetation communities that contain up to four known preferred Koala food trees in the canopy (<i>Eucalyptus orgadophila</i>, <i>E. melanophloia</i> and <i>E. crebra</i>).</p> <p>Field studies</p> <p>Vegetation surveys within the study area shows woodland communities with more than two known preferred Koala food trees in the canopy (<i>E. orgadophila</i>, <i>E. melanophloia</i>, and <i>E. camaldulensis</i>). Notably, food trees were very sparsely distributed throughout all habitats within the site.</p> |
| Habitat connectivity | 2 | <p>Desktop and field surveys indicate that the Koala habitat on the site forms part of a contiguous landscape greater than 1000 ha in size. Field surveys indicated that the contiguous habitat is primarily grassland which supports very low tree density; however, some of the trees within grassland habitats were suitable food trees.</p> <p>The Dawson Highway, located on the western boundary of the site, forms a barrier to Koalas that may be readily crossed but that experiences moderate to high volumes of traffic, including heavy vehicles. The railway located on the eastern edge of the site forms an equally penetrable but potentially and sporadically hazardous barrier.</p> <p>Following the riparian corridor to the north east, the tree canopy cover becomes increasingly sparse and non-remnant for over 2 km before connecting with higher value remnant woodland of potentially higher habitat value to the Koala. The broader landscape contains many areas of non-remnant habitat, and remnant habitat is generally very sparse in structural form.</p> |
| Key existing threats | 0 | <p>No Koala sightings have occurred in the study area or the surrounding landscape. Therefore, no records of Koala mortality from vehicle strike or dog attack exist.</p> <p>There is a threat of vehicle strike due to the highway situated to the east of the site, on which large vehicles pass frequently and at high speeds. However, there is an effective wildlife underpass at the point where the riparian corridor intersects with the Dawson Highway, <i>albeit</i> unfenced.</p> <p>Wild dogs were not recorded within the study area during the field survey program; however, personal communication with the landholder indicated that wild dogs are a semi-regular presence on the site.</p> |

| Attribute | Score | Habitat Assessment |
|----------------|-------|--|
| Recovery value | 0 | <p>The study area contains remnant riparian vegetation; however, this vegetation has been significantly impacted by tree poisoning, has only sparse River Red Gum <i>Eucalyptus camaldulensis</i> feed trees and is highly ephemeral, not holding significant soil moisture during periods of drought. Due to the paucity of food trees and the ephemeral condition of the riparian habitat, it is unlikely to provide a significant refuge for Koalas during times of drought. Further, the riparian habitat on the site is not subject to direct impact by the proposed activity.</p> <p>The grassland habitat, due to its separation from the majority of suitable habitat in the surrounding area by linear infrastructure, is not critical to the connectivity of suitable habitat in the broader area.</p> |
| Total Score | 4 | Decision: Not habitat critical to the survival of the Koala – assessment of significance not required. |

There are fifteen records of the Koala within 30 km of the study area in the WO database extract; however, none of these records occurred in the last 15 years. All remnant woodland vegetation on the study area supports habitat potentially suitable for the Koala, based upon the results of the Koala habitat assessment above. Crucially, however, the habitat present contained very sparse populations of Koala food trees, including the riparian habitat in RE 11.3.3a which was dominated by Black Teatree *Melaleuca bracteata* that had been extensively poisoned and contained very few emergent River Red Gum *Eucalyptus camaldulensis* trees, some of which had also been subject to tree poisoning. A large proportion of the proposed disturbance area is within mapped areas of non-remnant vegetation planted with *Leucaena L. leucocephala*, which contains no Koala food plants. Targeted surveys were conducted in areas supporting food trees, including searches for scats and claw marks. No scratches or evidence attributable to Koalas was observed anywhere within the study area.

Given the absence of any evidence this species occurs within the study area, it is important to consider the following characteristics for assessment of significance:

- A habitat assessment score of 4 represents low habitat value and in this case the score is based entirely on habitat suitability and connectivity, with no relevant records of the Koala in the local area.
- The amount of potential Koala habitat to be cleared for the proposed action is low, particularly when compared to the size of the overall remnant vegetation unit.
- Due to the poor effective habitat value of the remnant vegetation unit at the landscape scale, it is unlikely it supports a functional population of Koala.

The proposed action is located within cleared pasture and partially overlaps with a vegetation community supporting suitable feed trees. Habitat clearing associated with the proposed action would not occur within riparian vegetation and would not result in fragmentation or isolation of any habitats. There will be no impacts to connectivity values at any scale. The riparian habitat has been extensively modified through tree poisoning, which will further limit the potential for fauna passage.

On this basis, it is unlikely that the proposed action will result in significant impacts to any local population of the Koala *Phascolarctos cinereus* that may occur in the area.

Due to the lack of any evidence for this species during the field survey, the lack of any relevant local records, the poor quality of habitat due to the scarcity of food trees within all habitat types present and the minor loss of habitat involved in the proposed development, it is unlikely the construction and operation of the proposed action will:

- lead to a long-term decrease in the size of the population of the species (if present);
- reduce the area of occupancy of the population;
- fragment any population into multiple populations;
- adversely affect habitat critical to the survival of the species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in the proliferation or establishment of invasive species that are harmful to Koalas in Koala habitat;
- introduce disease that may cause the species to decline; or
- interfere substantially with the recovery of the species.

Overall, it is considered unlikely there will be any significant impacts to the listed population of the Koala *Phascolarctos cinereus* because of this proposed project.

Ornamental Snake *Denisonia maculata*

The Ornamental Snake *Denisonia maculata* is listed as 'Vulnerable' under both the NC Act and EPBC Act. The WO database has identified three records of this species within 30 km of the study area. The nearest record from the ALA (-24.5651,148.6428) is from 1997 on a location 28.39 km southeast of the study area.

The species is known only from the Brigalow Belt North and parts of the Brigalow Belt South biogeographical regions. The core of the species' distribution occurs within the drainage systems of the Fitzroy and Dawson Rivers. This species preys almost exclusively on amphibians and favours gilgai formations (which form on cracking clay soils) in open woodland (DEE, 2019a and references therein).

The majority of habitat within the proposed disturbance footprint is marginal for this species, being typically characterised by cleared open pasture on gentle slopes. The only habitat of high suitability occurs within areas adjacent to the creekline to the north of the proposed footprint, where the slope decreases and the flat, cracking clay soil may form gilgai during periods of heavy rainfall. Although the November 2018 and February-March 2019 surveys did not record this species, they were not conducted after significant rainfall events. Guidelines specify targeting this species using nocturnal searches from January to mid-March in and around suitable gilgai habitat 1–3 days after rainfall events when frog activity is at its peak (DEE, 2019a). Unfortunately, surveys undertaken during this time coincided with un-seasonally dry weather and no rain or surface water occurred.

There are records of this species in the local area and moderate-quality habitat was recorded on site. The project design avoids the gilgai areas.

Short-beaked Echidna *Tachyglossus aculeatus*

The Short-beaked Echidna *Tachyglossus aculeatus* is listed as 'Special Least Concern' wildlife under the NC Act. 'Special Least Concern' wildlife habitat is a MSES under the Queensland environmental offsets framework. Any action involving significant impacts to special least concern wildlife habitat may require the provision of an environmental offset under this framework.

This well-known species occurs throughout Australia in almost all terrestrial habitats except intensively managed farmland (Menkhorst & Knight, 2011). Mostly solitary, Short-beaked Echidnas *T. aculeatus* occupy large home ranges, feeding on soil invertebrates. Evidence of this species in the form of quills (likely from a decomposed carcass) was recorded at trapping site 1 in the western portion of the study area, outside the proposed disturbance footprint, in mapped remnant vegetation. This indicates that the remnant riparian habitat to the north of the proposed disturbance footprint is likely used as foraging habitat.

The study area supports very limited suitable habitat for the Short-beaked Echidna *T. aculeatus* and represents a small area within a vast expanse of similar habitat outside the proposed footprint. There are no habitat features unique to the study area on which this species would rely; however, the remnant vegetation may represent a corridor through which individuals traverse the mosaic of surrounding agricultural land. As the proposed disturbance does not interfere with this remnant habitat it is unlikely that any disturbance within the study area would result in any of the following significant impacts as prescribed under the Queensland Environmental Offsets Policy – Significant Residual Impact Guideline:

- a long-term decrease in the size of the local population;
- a reduced extent of occurrence of the species;
- fragmentation of the existing population;
- the formation of genetically distinct populations because of habitat isolation; or
- disruption to ecologically significant locations for the species.

It is therefore unlikely there would be any significant impacts to the Short-beaked Echidna *T. aculeatus* because of the proposed development.

7.13 Pest Species

The number of pest flora and fauna species observed within the study area was low to moderate, although introduced grasses (particularly Buffel Grass *Cenchrus ciliaris** and Red Natal Grass *Melinis repens**) have invaded most native habitat areas, though these were particularly prevalent along the disturbed road margins. Parthenium *P. hysterophorus* was also widespread on site, often in dense stands near watercourse and drainage features.

Significant weed species recorded include Parthenium *P. hysterophorus* and Prickly Pear *Opuntia tomentosa*, which are restricted category 2 invasive plants under the *Biosecurity Act 2014*. These species have the potential to impede upon local biodiversity values and grazing pastures. Weed management strategies should be implemented to avoid increases in the occurrence of pest flora species and the threat they represent to local biodiversity values. Parthenium *P. hysterophorus* in particular represents a weed hygiene risk and vehicle washdown will be required on site to satisfy the general biosecurity obligation requirements under the *Biosecurity Act 2014*.

Pest fauna species were observed at low frequency throughout the study area. All of the pest fauna species recorded are widespread in the surrounding region, so development within the study area is unlikely to modify the landscape in a way that would substantially increase the occurrence of these species or the threats they represent to local biodiversity values.

The Feral Cat *Felis catus* was detected on site by infrared cameras. Feral cats are considered among the greatest threats to Australia's small terrestrial species, particularly small mammals and reptiles; however, as they do not readily take baits, control of feral cats is extremely difficult (Department of Sustainability, Environment, Water, Population and Communities, 2011).

Recommendations to minimise threats from pest species are provided in the following section (**Section 8**) of this report.



8 RECOMMENDATIONS

8.1 Impact Management for Significant Values

8.1.1 MNES Vegetation

The majority of the proposed footprint area has been confirmed as the endangered ecological community 'Natural grasslands of the Queensland Central Highlands and northern Fitzroy Basin', which is a matter of national environmental significance (MNES) under the EPBC. Impacts to MNES prescribed remnant vegetation should be avoided where possible, however, as the current proposed footprint impacts directly on this listed community, the proposed project should be referred to the Commonwealth Department of Environment and Energy for referral under the EPBC Act.

Under the *Matter of national environmental significance. Significant impact guidelines 1.1.* (DoE, 2013), the following significant impact criteria apply for assessing whether impacts to an endangered TEC are considered significant:

- reduce the extent of an ecological community
- fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines
- adversely affect habitat critical to the survival of an ecological community
- modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns
- cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting
- cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
 - assisting invasive species, that are harmful to the listed ecological community, to become established, or
 - causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community,
- interfere with the recovery of an ecological community.

Significant impact assessments should be undertaken with consideration to the following documents:

- Approved Conservation Advice for Natural Grassland of the Central Highlands and North Fitzroy Basin (DEWHA 2008)
- Draft National Recovery Plan for the "bluegrass (*Dichanthium* spp.) dominant grasslands in the Brigalow Belt Bioregions (north and south)" endangered ecological community (Butler 2008b)

Since a reduction in the extent of the ecological community will be an unavoidable and obvious outcome of the proposed action, it is likely that the action will trigger the requirement for an offset as required under the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy October 2012. However, an offset can't be nominated as a mitigation measure in the referral. Instead, the referral should consider and provide details on mitigation measures to avoid, reduce, manage impacts on the endangered community. Once the combined influence of these mitigation measures are taken into consideration, then the residual impact will be assessed to determine the potential requirement for an offset. If an offset is required, the proponent would prepare an offset management plan in conjunction with the DEE that describes the proposed offset and demonstrates how it appropriately compensate for any residual impact on the TEC.

Condition surveys will need to be undertaken for both the impacted area and proposed offset area for calculation of a potential offset requirement using the EPBC offset calculator. Although mapped as non-remnant vegetation, the *Leucaena* plantation area within the study area has been demonstrated to support, at least in some areas, remnant grassland that equates to good quality example of the TEC. As the area is currently mapped as non-remnant, this area should be investigated as a potential offset area.

Meteor Downs South (MDS) have an existing management plan and offset for the natural grasslands TEC, Squatter Pigeon, Painted Snipe, *Dicanthium queenslandicum* and *Dicanthium setosum*. There is a total of 424 ha of the TEC on the MDS project site, of which 98.9 ha was assessed as requiring clearing with 325.10 ha retained (CO2 Australia, 2018a). A total of 133.2 ha of potential habitat for Squatter Pigeons was to be removed, with an additional 473.8 ha retained (CO2 Australia, 2018a). Although five suspected *Dicanthium setosum* plants and approximately 520 *Dicanthium queenslandicum* plants were found, it was assumed that both species occur throughout the 424 ha of natural grasslands TEC (CO2 Australia, 2018a).

The EPBC approval conditions for MDS also included the requirement for a Matters of National Environmental Significance Management Plan (MNESMP) for the ongoing management of impacts on the uncleared portion of MDS, and offset was provided to offset residual impacts to MNES and MSES. The Lexington Environmental Offset was established and protected under a Voluntary Declaration under section 19E and 19F of the *Vegetation Management Act 1999*. The offset site is located on Lot 10 and Lot 11 DN40126, approximately 20 km north of Springsure. An Offset Management Plan (OMP) was prepared by CO2 Australia in 2017 pursuant to conditions 5 and 6 of the EPBC Act approval and includes requirements for monitoring and management of the offset site until 31 October 2039. The OMP aims to improve the condition and connectivity of species habitat and vegetation communities for MNES and MSES within the offset area, by undertaking specified management actions and achieving a list of completion criteria specified in the OMP.

Considering the similarity of ecological attributes, impacts and likely offset requirements, there may be opportunities to expand on the existing Lexington Environmental Offset and scope of the OMP to address clearing issues associated with the study area.

8.1.2 MSES Vegetation

Under schedule 2 of the Environmental Offsets Regulation 2014, MSES include a remnant area of a prescribed RE, which in this case includes remnant areas of both RE 11.8.11 and RE 11.3.3. If clearing MSES regulated vegetation is unavoidable, then, under the Queensland Offset Policy, each MSES must be offset.

Under the Queensland Environmental Offsets Policy V1.2, the defined distance for REs associated with an order 1 or 2 watercourse (non-coastal bioregions) is 25 m. These riparian areas are avoided in the current proposed design and should be avoided if the project footprint is revised by maintaining the buffer zone. These buffer zones will still apply despite the recent tree poisoning that has occurred.

Under the Queensland Environmental Offsets Policy V1.2, the significant residual impact criteria for this vegetation depends both on the type of proposed clearing (linear or non-linear) and the structural category of that vegetation community. The significant residual impacts listed below apply to an 'Of Concern' RE such as RE 11.3.3 or RE 11.8.11, or for clearing of any remnant vegetation within the defined distance of a watercourse:

For clearing for linear infrastructure:

- Greater than 25 m wide in a grassland (structural category) RE.
- Greater than 20 m wide in a sparse (structural category) RE.
- Greater than 10 m wide in a dense to mid-dense (structural category) RE.

For clearing other than clearing for linear infrastructure:

- Area greater than 5 ha where in a grassland (structural category) RE.
- Area greater than 2 ha where in a sparse (structural category) RE.
- Area greater than 0.5 ha where in a dense to mid-dense (structural category) RE.

Assessment of the preferred location for infrastructure associated with the proposed project should be considered in light of these thresholds, with preference for placing infrastructure on mapped non-remnant areas. Remnant 'Of Concern' RE 11.3.3 along the watercourses are avoided in the current design and the application of appropriate buffer zones to each polygon should be included to avoid any potential impacts. However, any clearing of remnant vegetation within 5 m of the defining banks of the mapped watercourse and drainage features that is also more than these thresholds may be classified as a significant residual impact. The provision of an environmental offset may be required under the Queensland environmental offsets framework.

8.2 Significant Flora and Fauna Species

Threatened flora and fauna species are those species listed as endangered, vulnerable or near threatened (EVNT) under the Queensland NC Act or Commonwealth EPBC Act. One threatened flora species was identified during the vegetation surveys; King Blue Grass (*Dichanthium queenslandicum*), listed as vulnerable under the NC Act and endangered under the EPBC Act.

Under schedule 2 of the Queensland Environmental Offsets Regulation 2014, MSES includes habitat for an animal that is endangered, vulnerable or a special least concern animal under the NC Act. The grassland community 11.8.11 is recognised as habitat for this species, and this was confirmed during field surveys. There is potential for this, and other grassland dependant threatened species as described in Section 6.11, to occur throughout the natural grassland community. Species with a moderate-high likelihood of occurrence includes *Aristida annua*, *Cyperus clarus*, *Dichanthium setosum*, *Digitaria porrecta*, and *Trioncinia retroflexa*.

Although no threatened fauna were identified on site, species with a moderate-high likelihood of occurrence includes Squatter Pigeon (*Geophaps scripta scripta*) and Ornamental Snake (*Denisonia maculata*).

Under the Queensland Environmental Offsets Policy – Significant Residual Impact Guideline, a significant impact on an endangered or vulnerable wildlife species would be one likely to result in any of the following impacts:

- Lead to a long-term decrease in the size of a local population.
- Reduce the extent of occurrence of the species.
- Fragment an existing population.
- Result in genetically distinct populations forming as a result of habitat isolation.

- Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.
- Introduce disease that may cause the population to decline.
- Interfere with the recovery of the species.
- Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species.

In addition to these criteria for assessing these MSES, those species considered a MNES under the EPBC Act (critically endangered, endangered or vulnerable) would also be considered to be significantly impacted if an action:

- Adversely affects habitat critical to the survival of a species.
- Disrupts the breeding cycle of a population.
- Modifies, destroys, removes, isolates or decreases the availability or quality of habitat to the extent that the species is likely to decline (DoE, 2013).

The extent within the study area of the population of King Bluegrass and other threatened plant species with a moderate-high likelihood of occurrence is unknown and could not be determined as a consequence of the unfavourable conditions encountered during the field surveys. King Bluegrass likely to occur in any of the areas of 11.8.11 grassland, though heavy grazing pressure on the site is unlikely for the area to be significant habitat for this species. Ornamental Snakes may only be seasonally detectable, particularly after rain. However, the watercourse habitat would be the most likely suitable habitat, and the grasslands and Leucaena plantation area within the proposed project footprint is unlikely to provide important habitat. Clearing for the proposed footprint is unlikely to result in any of the significant impacts defined under the Queensland Environmental Offsets Policy – Significant Residual Impact Guideline. Squatter Pigeons are likely to visit the site during favourable seasonal conditions, however, there is no evidence that the site supports a population, or that the site would represent critical habitat. Considering the lack of permanent water on site, the value of the grasslands for foraging is diminished. Although some waterholes in the creek may persist for extended periods, this riparian area will not be impacted by the proposed development. It is unlikely that clearing within the proposed footprint would trigger any of the significant impacts.

The proposed action may need to be referred on the presumed presence of these species, and the appropriate mitigation measures adopted.

Meteor Downs have an existing management plan and offset for impacts to Squatter Pigeon habitat. A total of 133.2ha of potential habitat for Squatter Pigeons was to be removed, with an additional 473.8ha retained (CO2 Australia, 2018a).

The Squatter Pigeon has been recorded in close proximity to the study area and is considered likely to occasionally occur within the proposed disturbance footprint. Vehicle strike represents a general threat to native fauna species, but is particularly relevant to the Squatter Pigeon, a ground-dwelling species that inhabits bare ground and low grassland such as on roadsides. The following controls are recommended to minimise the likelihood of vehicle strike in general, with a focus on reducing the likelihood of death or injury to Squatter Pigeons if present:

- Site inductions or toolbox meetings should include information about sensitive aspects of the environment in which personnel are working, including the risk of injury or death to Squatter Pigeons from vehicles.

- Due to the ground dwelling nature of the species, all vehicles should remain on existing access tracks and roads wherever possible.
- Clearing works should be carried out when it's unlikely that any Squatter Pigeons will be on site and be undertaken in a sequential manner that allows fauna to escape to natural areas away from construction works.
- Speed limits should be implemented as appropriate for the condition of the roads and access tracks on site. Locations of Squatter Pigeon sightings should be recorded, and an appropriate speed limit is to be incorporated into a management plan for operations within 200m of locations where Squatter Pigeons have been regularly observed.
- Any potential introduction of new permanent water sources as part of rail loop infrastructure will influence the activities of Squatter Pigeons during the dry season. These and other birds are likely to congregate near water bodies—efforts should be made where possible to distance traffic from water sources to avoid potential mortality.

High-quality habitat for the Ornamental Snake is unlikely to be impacted by the current disturbance footprint. If the footprint changes and gilgai or vegetation around the watercourse is to be disturbed then suitable mitigation measures should be implemented to limit impacts on the species.

8.3 General Clearing and Vegetation Management

During construction activities, the following measures should be implemented to minimise disturbance impacts and the potential harm to habitat values, and flora and fauna present within the area:

- The boundary of areas to be cleared should be clearly marked to avoid unnecessary clearing.
- Clearing should occur in a sequential manner to allow any fauna present in the area to escape to areas away from construction activities.

Vegetation stockpiles will provide habitat for small ground-dwelling mammals and reptiles during the construction phase. It is important to locate these stockpiles away from high traffic areas and ensure they are not isolated from contiguous vegetation at the edge of the site. This will reduce the likelihood of fauna travelling across the construction site.

Cleared vegetation should be managed according to the following best practice principles:

- Where possible, logs and large branches with hollows should be reserved and stockpiled separately (at the edge of the site) for rehabilitation purposes.
- Any mulching should occur as near as possible to the time of clearing to prevent the establishment of stockpiles as fauna habitat.

The use of a fauna spotter-catcher during the vegetation-clearing and construction period is recommended to minimise the chances of injury to native fauna. The fauna spotter-catcher should have a current rehabilitation permit. The role of the spotter-catcher would be to advise on appropriate clearing methods to ensure animal escape paths are maintained and relocate fauna located within the disturbance area accordingly.

8.4 Other Management Measures

8.4.1 Soil Management

During construction, soil stockpiles should be managed to maximise suitability for future use in rehabilitation processes. Stockpiles should also be managed to allow passage for fauna by leaving a sufficient gap between stockpiles.

8.4.2 Pest Management

Several pest plant and animal species were identified during surveys, including species listed as restricted invasive species under the *Biosecurity Act* 2014. Soil disturbance is a major contributor to weed establishment and invasion.

The following recommendations are relevant to the construction phase as well as ongoing monitoring and management post-construction:

- Wherever possible, construction activities should work from areas with fewer weed species and smaller infestations towards areas where there is a greater abundance of weeds.
- Vehicles and machinery brought on site should be clean and free of weeds, dirt and other material that may contain weed seeds and cause exotic species to become established within the works areas.
- Weed spread should attempt to be minimised by implementing some control measures within the proposed works areas prior to construction.
- Regular observation and surveys of disturbance sites and stockpiles for incidence of weed species (particularly restricted species) should be undertaken.
- Where any weed establishment is identified, appropriate control measures should be implemented to minimise the impacts of weeds on native habitat.
- Control measures to control pest fauna species, particularly Feral Cats, should be implemented throughout construction and operational phases.

8.4.3 Dust Management

Excavation and vehicle movements produce increased levels of dust, which can have a cumulative impact on plant function. However, due to the size of the disturbance area it is unlikely that dust produced over a short period of time will significantly impact plant function. However, advisable dust suppression techniques include:

- application of water on trafficable surfaces
- limiting activities in high wind conditions
- application of water/binding agent to disturbed sites during construction.

8.4.4 Fauna Management

Excavated areas and large water bodies can pose a risk to native fauna through entrapment and exposure. Excavated areas should be checked regularly for trapped fauna, with inspection occurring at least twice daily. These areas should be checked early in the morning for fauna that has become trapped overnight, and again in the late afternoon for fauna that has become trapped over the course of the day.

Safe egress points should be included in excavations to allow fauna to escape of their own accord. Any fauna that cannot escape of its own accord should be removed by a suitably experienced and qualified person in a manner that is safe for both the animal and the animal handler. In particular, dangerous fauna species such as snakes should only be handled by suitably qualified and experienced persons, and it is advisable to have qualified snake handlers on site. Site personnel should be adequately trained in the application of snakebite first aid.



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APPENDIX A

Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 26/10/18 13:21:26

[Summary](#)

[Details](#)

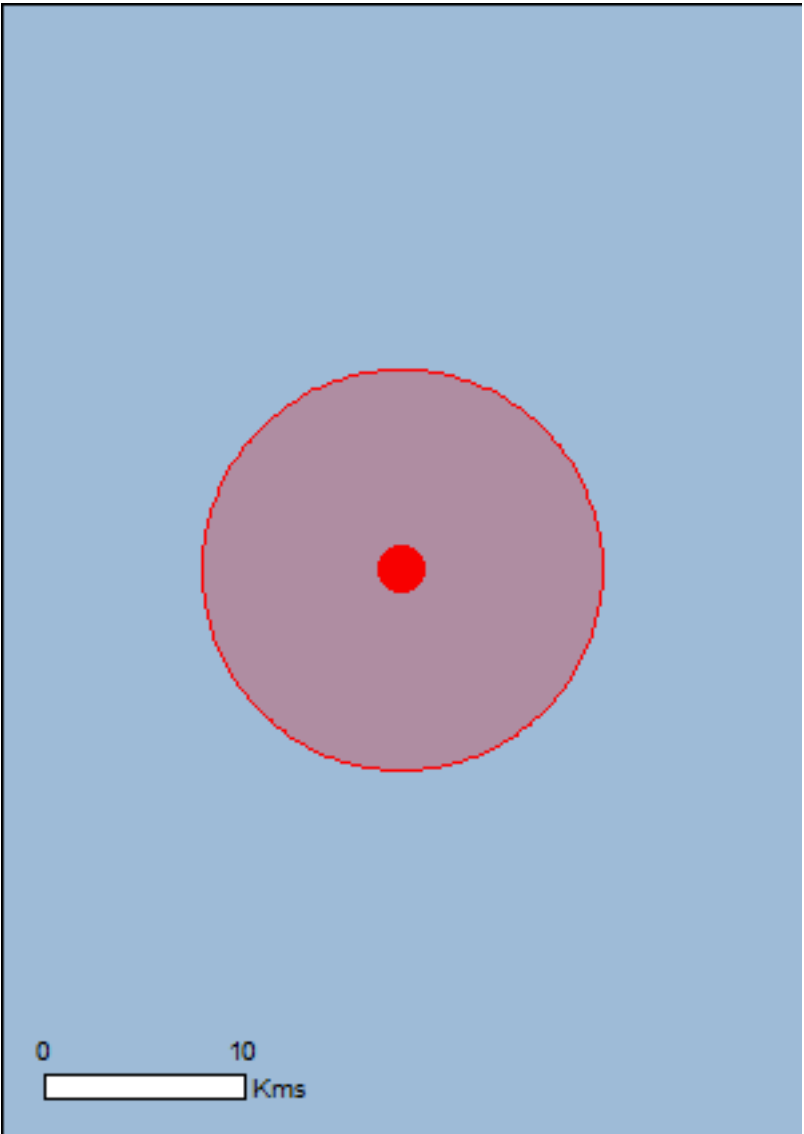
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

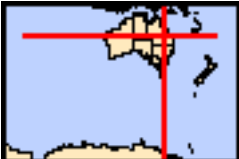
[Acknowledgements](#)



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Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

| | |
|---|------|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 3 |
| Listed Threatened Species: | 23 |
| Listed Migratory Species: | 9 |

Other Matters Protected by the EPBC Act

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

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

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

| | |
|--|------|
| Commonwealth Land: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 15 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |

Extra Information

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

| | |
|--|------|
| State and Territory Reserves: | 2 |
| Regional Forest Agreements: | None |
| Invasive Species: | 18 |
| Nationally Important Wetlands: | None |
| Key Ecological Features (Marine) | None |

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

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

| Name | Status | Type of Presence |
|---|------------|---------------------------------------|
| Brigalow (Acacia harpophylla dominant and co-dominant) | Endangered | Community known to occur within area |
| Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin | Endangered | Community likely to occur within area |
| Weeping Myall Woodlands | Endangered | Community may occur within area |

Listed Threatened Species

[Resource Information]

| Name | Status | Type of Presence |
|-------|--------|------------------|
| Birds | | |

| | | |
|---|-----------------------|--|
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Erythrotriorchis radiatus Red Goshawk [942] | Vulnerable | Species or species habitat likely to occur within area |
| Geophaps scripta scripta Squatter Pigeon (southern) [64440] | Vulnerable | Species or species habitat likely to occur within area |
| Grantiella picta Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area |
| Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027] | Endangered | Species or species habitat likely to occur within area |
| Poephila cincta cincta Southern Black-throated Finch [64447] | Endangered | Species or species habitat may occur within area |
| Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037] | Endangered | Species or species habitat may occur within area |

Fish

| | | |
|---|------------|--|
| Maccullochella peelii Murray Cod [66633] | Vulnerable | Species or species habitat may occur within area |
|---|------------|--|

Mammals

| | | |
|---|------------|--|
| Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable | Species or species habitat may occur within area |
|---|------------|--|

| Name | Status | Type of Presence |
|---|-----------------------|--|
| Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331] | Endangered | Species or species habitat may occur within area |
| Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395] | Vulnerable | Species or species habitat may occur within area |
| Petauroides volans Greater Glider [254] | Vulnerable | Species or species habitat known to occur within area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Vulnerable | Species or species habitat likely to occur within area |
| Plants | | |
| Aristida annua [17906] | Vulnerable | Species or species habitat likely to occur within area |
| Cadellia pentastylis Ooline [9828] | Vulnerable | Species or species habitat known to occur within area |
| Dichanthium queenslandicum King Blue-grass [5481] | Endangered | Species or species habitat likely to occur within area |
| Dichanthium setosum bluegrass [14159] | Vulnerable | Species or species habitat known to occur within area |
| Marsdenia brevifolia [64585] | Vulnerable | Species or species habitat likely to occur within area |
| Reptiles | | |
| Delma torquata Adorned Delma, Collared Delma [1656] | Vulnerable | Species or species habitat may occur within area |
| Denisonia maculata Ornamental Snake [1193] | Vulnerable | Species or species habitat likely to occur within area |
| Egernia rugosa Yakka Skink [1420] | Vulnerable | Species or species habitat likely to occur within area |
| Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648] | Critically Endangered | Species or species habitat likely to occur within area |
| Rheodytes leukops Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761] | Vulnerable | Species or species habitat likely to occur within area |
| Listed Migratory Species | | |
| [Resource Information] | | |
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Migratory Marine Birds | | |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Migratory Terrestrial Species | | |
| Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|--|-----------------------|---|
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat may occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat may occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |

Other Matters Protected by the EPBC Act

| Listed Marine Species | | [Resource Information] |
|--|-----------------------|--|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Birds | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat may occur within area |
| Anseranas semipalmata Magpie Goose [978] | | Species or species habitat may occur within area |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba Great Egret, White Egret [59541] | | Species or species habitat known to occur within area |
| Ardea ibis Cattle Egret [59542] | | Species or species habitat may occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat may occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|--|-------------|--|
| Chrysococcyx osculans Black-eared Cuckoo [705] | | Species or species habitat likely to occur within area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Haliaeetus leucogaster White-bellied Sea-Eagle [943] | | Species or species habitat likely to occur within area |
| Merops ornatus Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato) Painted Snipe [889] | Endangered* | Species or species habitat may occur within area |

Extra Information

| State and Territory Reserves | [Resource Information] |
|------------------------------|--------------------------|
| Name | State |
| Albinia | QLD |
| Albinia 2 | QLD |

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

| Name | Status | Type of Presence |
|--|--------|--|
| Birds | | |
| Acridotheres tristis Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Passer domesticus House Sparrow [405] | | Species or species habitat likely to occur within area |
| Frogs | | |
| Rhinella marina Cane Toad [83218] | | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|--|--------|--|
| Mammals | | |
| Bos taurus Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Felis catus Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Feral deer Feral deer species in Australia [85733] | | Species or species habitat likely to occur within area |
| Lepus capensis Brown Hare [127] | | Species or species habitat likely to occur within area |
| Mus musculus House Mouse [120] | | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Sus scrofa Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes Red Fox, Fox [18] | | Species or species habitat likely to occur within area |
| Plants | | |
| Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913] | | Species or species habitat likely to occur within area |
| Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507] | | Species or species habitat likely to occur within area |
| Opuntia spp. Prickly Pears [82753] | | Species or species habitat likely to occur within area |
| Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301] | | Species or species habitat likely to occur within area |
| Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566] | | Species or species habitat likely to occur within area |

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-24.3726 148.4396

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX B

Wildlife Online Database Extract



Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Status: All

Records: All

Date: All

Latitude: -24.3753

Longitude: 148.4303

Distance: 30

Email: larissa@northres.com.au

Date submitted: Monday 07 Jan 2019 09:40:06

Date extracted: Monday 07 Jan 2019 09:50:06

The number of records retrieved = 1135

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|------------|-----------------|------------------------------------|--------------------------|---|----|---|---------|
| animals | amphibians | Bufonidae | <i>Rhinella marina</i> | cane toad | Y | | | 17 |
| animals | amphibians | Hylidae | <i>Litoria inermis</i> | bumpy rocketfrog | | C | | 3 |
| animals | amphibians | Hylidae | <i>Litoria peronii</i> | emerald spotted treefrog | | C | | 7 |
| animals | amphibians | Hylidae | <i>Litoria rubella</i> | ruddy treefrog | | C | | 6 |
| animals | amphibians | Hylidae | <i>Litoria caerulea</i> | common green treefrog | | C | | 39 |
| animals | amphibians | Hylidae | <i>Cyclorana verrucosa</i> | rough collared frog | | C | | 2/2 |
| animals | amphibians | Hylidae | <i>Cyclorana alboguttata</i> | greenstripe frog | | C | | 12/2 |
| animals | amphibians | Hylidae | <i>Cyclorana novaehollandiae</i> | eastern snapping frog | | C | | 2 |
| animals | amphibians | Hylidae | <i>Litoria fallax</i> | eastern sedgefrog | | C | | 2 |
| animals | amphibians | Hylidae | <i>Litoria latopalmata</i> | broad palmed rocketfrog | | C | | 8 |
| animals | amphibians | Limnodynastidae | <i>Limnodynastes salmini</i> | salmon striped frog | | C | | 30/2 |
| animals | amphibians | Limnodynastidae | <i>Platyplectrum ornatum</i> | ornate burrowing frog | | C | | 11 |
| animals | amphibians | Limnodynastidae | <i>Limnodynastes tasmaniensis</i> | spotted grassfrog | | C | | 26 |
| animals | amphibians | Limnodynastidae | <i>Limnodynastes terraereginae</i> | scarlet sided pobblebonk | | C | | 11 |
| animals | birds | Acanthizidae | <i>Acanthiza pusilla</i> | brown thornbill | | C | | 2 |
| animals | birds | Acanthizidae | <i>Gerygone olivacea</i> | white-throated gerygone | | C | | 27 |
| animals | birds | Acanthizidae | <i>Acanthiza reguloides</i> | buff-rumped thornbill | | C | | 16 |
| animals | birds | Acanthizidae | <i>Sericornis frontalis</i> | white-browed scrubwren | | C | | 2 |
| animals | birds | Acanthizidae | <i>Gerygone fusca</i> | western gerygone | | C | | 1 |
| animals | birds | Acanthizidae | <i>Chthonicola sagittata</i> | speckled warbler | | C | | 4 |
| animals | birds | Acanthizidae | <i>Smicronis brevirostris</i> | weebill | | C | | 47 |
| animals | birds | Acanthizidae | <i>Acanthiza nana</i> | yellow thornbill | | C | | 6 |
| animals | birds | Acanthizidae | <i>Acanthiza chrysorrhoa</i> | yellow-rumped thornbill | | C | | 6 |
| animals | birds | Accipitridae | <i>Aquila audax</i> | wedge-tailed eagle | | C | | 18 |
| animals | birds | Accipitridae | <i>Milvus migrans</i> | black kite | | C | | 14 |
| animals | birds | Accipitridae | <i>Circus assimilis</i> | spotted harrier | | C | | 8 |
| animals | birds | Accipitridae | <i>Elanus axillaris</i> | black-shouldered kite | | C | | 13 |
| animals | birds | Accipitridae | <i>Lophoictinia isura</i> | square-tailed kite | | C | | 1 |
| animals | birds | Accipitridae | <i>Accipiter fasciatus</i> | brown goshawk | | C | | 8 |
| animals | birds | Accipitridae | <i>Aviceda subcristata</i> | Pacific baza | | C | | 2 |
| animals | birds | Accipitridae | <i>Haliastur sphenurus</i> | whistling kite | | C | | 34 |
| animals | birds | Accipitridae | <i>Haliaeetus leucogaster</i> | white-bellied sea-eagle | | C | | 2 |
| animals | birds | Accipitridae | <i>Hieraaetus morphnoides</i> | little eagle | | C | | 1 |
| animals | birds | Accipitridae | <i>Accipiter cirrocephalus</i> | collared sparrowhawk | | C | | 2 |
| animals | birds | Acrocephalidae | <i>Acrocephalus australis</i> | Australian reed-warbler | | C | | 3 |
| animals | birds | Aegotheles | <i>Aegotheles cristatus</i> | Australian owl-nightjar | | C | | 36 |
| animals | birds | Alaudidae | <i>Mirafra javanica</i> | Horsfield's bushlark | | C | | 46 |
| animals | birds | Alcedinidae | <i>Ceyx azureus</i> | azure kingfisher | | C | | 1 |
| animals | birds | Anatidae | <i>Chenonetta jubata</i> | Australian wood duck | | C | | 9 |
| animals | birds | Anatidae | <i>Dendrocygna eytoni</i> | plumed whistling-duck | | C | | 6 |
| animals | birds | Anatidae | <i>Anas superciliosa</i> | Pacific black duck | | C | | 16 |
| animals | birds | Anatidae | <i>Aythya australis</i> | hardhead | | C | | 6 |
| animals | birds | Anatidae | <i>Cygnus atratus</i> | black swan | | C | | 1 |
| animals | birds | Anatidae | <i>Anas gracilis</i> | grey teal | | C | | 6 |
| animals | birds | Anhingidae | <i>Anhinga novaehollandiae</i> | Australasian darter | | C | | 7 |
| animals | birds | Apodidae | <i>Apus pacificus</i> | fork-tailed swift | | SL | | 5 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------|---------------|---|---------------------------------------|---|----|---|---------|
| animals | birds | Apodidae | <i>Hirundapus caudacutus</i> | white-throated needletail | | SL | | 1 |
| animals | birds | Ardeidae | <i>Nycticorax caledonicus</i> | nankeen night-heron | | C | | 3 |
| animals | birds | Ardeidae | <i>Egretta novaehollandiae</i> | white-faced heron | | C | | 9 |
| animals | birds | Ardeidae | <i>Bubulcus ibis</i> | cattle egret | | C | | 1 |
| animals | birds | Ardeidae | <i>Ardea pacifica</i> | white-necked heron | | C | | 6 |
| animals | birds | Ardeidae | <i>Ardea intermedia</i> | intermediate egret | | C | | 4 |
| animals | birds | Ardeidae | <i>Egretta garzetta</i> | little egret | | C | | 1 |
| animals | birds | Ardeidae | <i>Ardea alba modesta</i> | eastern great egret | | C | | 8 |
| animals | birds | Artamidae | <i>Cracticus nigrogularis</i> | piebald butcherbird | | C | | 69 |
| animals | birds | Artamidae | <i>Strepera graculina graculina</i> | piebald currawong (eastern Australia) | | C | | 4 |
| animals | birds | Artamidae | <i>Artamus minor</i> | little woodswallow | | C | | 11 |
| animals | birds | Artamidae | <i>Artamus superciliosus</i> | white-browed woodswallow | | C | | 6 |
| animals | birds | Artamidae | <i>Artamus leucorhynchus</i> | white-breasted woodswallow | | C | | 12 |
| animals | birds | Artamidae | <i>Cracticus torquatus</i> | grey butcherbird | | C | | 38 |
| animals | birds | Artamidae | <i>Artamus cyanopterus</i> | dusky woodswallow | | C | | 4 |
| animals | birds | Artamidae | <i>Strepera graculina</i> | piebald currawong | | C | | 19 |
| animals | birds | Artamidae | <i>Artamus cinereus</i> | black-faced woodswallow | | C | | 23 |
| animals | birds | Artamidae | <i>Cracticus tibicen</i> | Australian magpie | | C | | 93 |
| animals | birds | Artamidae | <i>Artamus personatus</i> | masked woodswallow | | C | | 4 |
| animals | birds | Burhinidae | <i>Burhinus grallarius</i> | bush stone-curlew | | C | | 2 |
| animals | birds | Cacatuidae | <i>Nymphicus hollandicus</i> | cockatiel | | C | | 54 |
| animals | birds | Cacatuidae | <i>Eolophus roseicapilla</i> | galah | | C | | 42 |
| animals | birds | Cacatuidae | <i>Cacatua sanguinea</i> | little corella | | C | | 1 |
| animals | birds | Cacatuidae | <i>Cacatua galerita</i> | sulphur-crested cockatoo | | C | | 55 |
| animals | birds | Cacatuidae | <i>Calyptorhynchus funereus</i> | yellow-tailed black-cockatoo | | C | | 4 |
| animals | birds | Campephagidae | <i>Lalage tricolor</i> | white-winged triller | | C | | 4 |
| animals | birds | Campephagidae | <i>Lalage leucomela</i> | varied triller | | C | | 1 |
| animals | birds | Campephagidae | <i>Coracina novaehollandiae</i> | black-faced cuckoo-shrike | | C | | 42 |
| animals | birds | Campephagidae | <i>Coracina tenuirostris</i> | citreoline shrike | | C | | 7 |
| animals | birds | Campephagidae | <i>Coracina papuensis</i> | white-bellied cuckoo-shrike | | C | | 14 |
| animals | birds | Campephagidae | <i>Coracina maxima</i> | ground cuckoo-shrike | | C | | 1 |
| animals | birds | Caprimulgidae | <i>Caprimulgus macrurus</i> | large-tailed nightjar | | C | | 1 |
| animals | birds | Casuariidae | <i>Dromaius novaehollandiae</i> | emu | | C | | 22 |
| animals | birds | Charadriidae | <i>Vanellus miles novaehollandiae</i> | masked lapwing (southern subspecies) | | C | | 4 |
| animals | birds | Charadriidae | <i>Elseya melanops</i> | black-fronted dotterel | | C | | 1 |
| animals | birds | Charadriidae | <i>Vanellus tricolor</i> | banded lapwing | | C | | 1 |
| animals | birds | Charadriidae | <i>Vanellus miles</i> | masked lapwing | | C | | 8 |
| animals | birds | Ciconiidae | <i>Ephippiorhynchus asiaticus</i> | black-necked stork | | C | | 1 |
| animals | birds | Cisticolidae | <i>Cisticola exilis</i> | golden-headed cisticola | | C | | 48 |
| animals | birds | Climacteridae | <i>Climacteris picumnus</i> | brown treecreeper | | C | | 4 |
| animals | birds | Climacteridae | <i>Cormobates leucophaea metastasis</i> | white-throated treecreeper (southern) | | C | | 5 |
| animals | birds | Climacteridae | <i>Cormobates leucophaea</i> | white-throated treecreeper | | C | | 1 |
| animals | birds | Columbidae | <i>Geophaps scripta scripta</i> | squatter pigeon (southern subspecies) | | V | V | 8 |
| animals | birds | Columbidae | <i>Ocyphaps lophotes</i> | crested pigeon | | C | | 46 |
| animals | birds | Columbidae | <i>Geopelia striata</i> | peaceful dove | | C | | 29 |
| animals | birds | Columbidae | <i>Phaps chalcoptera</i> | common bronzewing | | C | | 6 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------|--------------|--------------------------------------|------------------------------|---|----|---|---------|
| animals | birds | Columbidae | <i>Geopelia cuneata</i> | diamond dove | | C | | 5 |
| animals | birds | Columbidae | <i>Columba livia</i> | rock dove | Y | | | 2 |
| animals | birds | Columbidae | <i>Geopelia humeralis</i> | bar-shouldered dove | | C | | 21 |
| animals | birds | Coraciidae | <i>Eurystomus orientalis</i> | dollarbird | | C | | 9 |
| animals | birds | Corcoracidae | <i>Struthidea cinerea</i> | apostlebird | | C | | 26 |
| animals | birds | Corcoracidae | <i>Corcorax melanorhamphos</i> | white-winged chough | | C | | 5 |
| animals | birds | Corvidae | <i>Corvus coronoides</i> | Australian raven | | C | | 30 |
| animals | birds | Corvidae | <i>Corvus bennetti</i> | little crow | | C | | 7 |
| animals | birds | Corvidae | <i>Corvus sp.</i> | | | | | 2 |
| animals | birds | Corvidae | <i>Corvus orru</i> | Torresian crow | | C | | 83 |
| animals | birds | Cuculidae | <i>Chalcites minutillus barnardi</i> | Eastern little bronze-cuckoo | | C | | 1 |
| animals | birds | Cuculidae | <i>Chalcites lucidus</i> | shining bronze-cuckoo | | C | | 2 |
| animals | birds | Cuculidae | <i>Cacomantis pallidus</i> | pallid cuckoo | | C | | 8 |
| animals | birds | Cuculidae | <i>Eudynamys orientalis</i> | eastern koel | | C | | 6 |
| animals | birds | Cuculidae | <i>Chalcites basalis</i> | Horsfield's bronze-cuckoo | | C | | 6 |
| animals | birds | Cuculidae | <i>Centropus phasianinus</i> | pheasant coucal | | C | | 31 |
| animals | birds | Cuculidae | <i>Cacomantis flabelliformis</i> | fan-tailed cuckoo | | C | | 1 |
| animals | birds | Cuculidae | <i>Scythrops novaehollandiae</i> | channel-billed cuckoo | | C | | 17 |
| animals | birds | Cuculidae | <i>Cacomantis variolosus</i> | brush cuckoo | | C | | 4 |
| animals | birds | Dicruridae | <i>Dicrurus bracteatus</i> | spangled drongo | | C | | 6 |
| animals | birds | Estrildidae | <i>Neochmia modesta</i> | plum-headed finch | | C | | 13 |
| animals | birds | Estrildidae | <i>Lonchura castaneothorax</i> | chestnut-breasted mannikin | | C | | 7 |
| animals | birds | Estrildidae | <i>Taeniopygia bichenovii</i> | double-barred finch | | C | | 48 |
| animals | birds | Estrildidae | <i>Taeniopygia guttata</i> | zebra finch | | C | | 6 |
| animals | birds | Falconidae | <i>Falco berigora</i> | brown falcon | | C | | 26 |
| animals | birds | Falconidae | <i>Falco longipennis</i> | Australian hobby | | C | | 7 |
| animals | birds | Falconidae | <i>Falco cenchroides</i> | nankeen kestrel | | C | | 31 |
| animals | birds | Falconidae | <i>Falco subniger</i> | black falcon | | C | | 3 |
| animals | birds | Glareolidae | <i>Stiltia isabella</i> | Australian pratincole | | C | | 1 |
| animals | birds | Gruidae | <i>Grus rubicunda</i> | brolga | | C | | 11 |
| animals | birds | Halcyonidae | <i>Dacelo leachii</i> | blue-winged kookaburra | | C | | 8 |
| animals | birds | Halcyonidae | <i>Dacelo novaeguineae</i> | laughing kookaburra | | C | | 59 |
| animals | birds | Halcyonidae | <i>Todiramphus sanctus</i> | sacred kingfisher | | C | | 13 |
| animals | birds | Halcyonidae | <i>Todiramphus macleayii</i> | forest kingfisher | | C | | 1 |
| animals | birds | Halcyonidae | <i>Todiramphus pyrrhopygius</i> | red-backed kingfisher | | C | | 3 |
| animals | birds | Hirundinidae | <i>Petrochelidon nigricans</i> | tree martin | | C | | 23 |
| animals | birds | Hirundinidae | <i>Hirundo neoxena</i> | welcome swallow | | C | | 5 |
| animals | birds | Hirundinidae | <i>Petrochelidon ariel</i> | fairy martin | | C | | 11 |
| animals | birds | Laridae | <i>Gelochelidon nilotica</i> | gull-billed tern | | SL | | 4 |
| animals | birds | Laridae | <i>Chlidonias hybrida</i> | whiskered tern | | C | | 4 |
| animals | birds | Laridae | <i>Hydroprogne caspia</i> | Caspian tern | | SL | | 3 |
| animals | birds | Maluridae | <i>Malurus cyaneus</i> | superb fairy-wren | | C | | 11 |
| animals | birds | Maluridae | <i>Malurus melanocephalus</i> | red-backed fairy-wren | | C | | 81 |
| animals | birds | Maluridae | <i>Malurus lamberti</i> | variegated fairy-wren | | C | | 12 |
| animals | birds | Megaluridae | <i>Cincloramphus cruralis</i> | brown songlark | | C | | 8 |
| animals | birds | Megaluridae | <i>Megalurus timoriensis</i> | tawny grassbird | | C | | 4 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------|-------------------|-------------------------------------|------------------------------------|---|----|---|---------|
| animals | birds | Megapodiidae | <i>Alectura lathamii</i> | Australian brush-turkey | | C | | 1 |
| animals | birds | Meliphagidae | <i>Philemon corniculatus</i> | noisy friarbird | | C | | 33 |
| animals | birds | Meliphagidae | <i>Melithreptus lunatus</i> | white-naped honeyeater | | C | | 27 |
| animals | birds | Meliphagidae | <i>Nesoptilotis leucotis</i> | white-eared honeyeater | | C | | 12 |
| animals | birds | Meliphagidae | <i>Melithreptus gularis gularis</i> | black-chinned honeyeater (eastern) | | C | | 1 |
| animals | birds | Meliphagidae | <i>Melithreptus brevirostris</i> | brown-headed honeyeater | | C | | 2 |
| animals | birds | Meliphagidae | <i>Plectorhyncha lanceolata</i> | striped honeyeater | | C | | 24 |
| animals | birds | Meliphagidae | <i>Melithreptus albogularis</i> | white-throated honeyeater | | C | | 18 |
| animals | birds | Meliphagidae | <i>Acanthagenys rufogularis</i> | spiny-cheeked honeyeater | | C | | 6 |
| animals | birds | Meliphagidae | <i>Philemon citreogularis</i> | little friarbird | | C | | 23 |
| animals | birds | Meliphagidae | <i>Myzomela sanguinolenta</i> | scarlet honeyeater | | C | | 1 |
| animals | birds | Meliphagidae | <i>Ptilotula fusca</i> | fuscous honeyeater | | C | | 8 |
| animals | birds | Meliphagidae | <i>Meliphaga lewinii</i> | Lewin's honeyeater | | C | | 4 |
| animals | birds | Meliphagidae | <i>Caligavis chrysops</i> | yellow-faced honeyeater | | C | | 3 |
| animals | birds | Meliphagidae | <i>Entomyzon cyanotis</i> | blue-faced honeyeater | | C | | 30 |
| animals | birds | Meliphagidae | <i>Manorina flavigula</i> | yellow-throated miner | | C | | 61 |
| animals | birds | Meliphagidae | <i>Gavicalis virescens</i> | singing honeyeater | | C | | 14 |
| animals | birds | Meliphagidae | <i>Epthianura albifrons</i> | white-fronted chat | | C | | 1 |
| animals | birds | Meliphagidae | <i>Lichmera indistincta</i> | brown honeyeater | | C | | 17 |
| animals | birds | Meliphagidae | <i>Melithreptus gularis</i> | black-chinned honeyeater | | C | | 3 |
| animals | birds | Meliphagidae | <i>Ptilotula penicillata</i> | white-plumed honeyeater | | C | | 12 |
| animals | birds | Meliphagidae | <i>Manorina melanocephala</i> | noisy miner | | C | | 48 |
| animals | birds | Meropidae | <i>Merops ornatus</i> | rainbow bee-eater | | C | | 18 |
| animals | birds | Monarchidae | <i>Myiagra inquieta</i> | restless flycatcher | | C | | 8 |
| animals | birds | Monarchidae | <i>Myiagra rubecula</i> | leaden flycatcher | | C | | 15 |
| animals | birds | Monarchidae | <i>Myiagra cyanoleuca</i> | satin flycatcher | | SL | | 1 |
| animals | birds | Monarchidae | <i>Grallina cyanoleuca</i> | magpie-lark | | C | | 54 |
| animals | birds | Motacillidae | <i>Anthus novaeseelandiae</i> | Australasian pipit | | C | | 15 |
| animals | birds | Nectariniidae | <i>Dicaeum hirundinaceum</i> | mistletoebird | | C | | 26 |
| animals | birds | Neosittidae | <i>Daphoenositta chrysoptera</i> | varied sittella | | C | | 9 |
| animals | birds | Oriolidae | <i>Oriolus sagittatus</i> | olive-backed oriole | | C | | 10 |
| animals | birds | Oriolidae | <i>Sphecotheres vieilloti</i> | Australasian figbird | | C | | 9 |
| animals | birds | Otididae | <i>Ardeotis australis</i> | Australian bustard | | C | | 23 |
| animals | birds | Pachycephalidae | <i>Pachycephala rufiventris</i> | rufous whistler | | C | | 47 |
| animals | birds | Pachycephalidae | <i>Falcunculus frontatus</i> | crested shrike-tit | | C | | 1 |
| animals | birds | Pachycephalidae | <i>Colluricincla harmonica</i> | grey shrike-thrush | | C | | 28 |
| animals | birds | Pachycephalidae | <i>Pachycephala pectoralis</i> | golden whistler | | C | | 2 |
| animals | birds | Pardalotidae | <i>Pardalotus rubricatus</i> | red-browed pardalote | | C | | 1 |
| animals | birds | Pardalotidae | <i>Pardalotus striatus</i> | striated pardalote | | C | | 89 |
| animals | birds | Passeridae | <i>Passer domesticus</i> | house sparrow | Y | | | 6 |
| animals | birds | Pelecanidae | <i>Pelecanus conspicillatus</i> | Australian pelican | | C | | 5 |
| animals | birds | Petroicidae | <i>Petroica goodenovii</i> | red-capped robin | | C | | 3 |
| animals | birds | Petroicidae | <i>Eopsaltria australis</i> | eastern yellow robin | | C | | 4 |
| animals | birds | Petroicidae | <i>Melanodryas cucullata</i> | hooded robin | | C | | 1 |
| animals | birds | Petroicidae | <i>Microeca fascians</i> | jacky winter | | C | | 18 |
| animals | birds | Phalacrocoracidae | <i>Microcarbo melanoleucos</i> | little pied cormorant | | C | | 8 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|---------|-------------------|--|--------------------------------|---|----|----|---------|
| animals | birds | Phalacrocoracidae | <i>Phalacrocorax sulcirostris</i> | little black cormorant | | C | | 3 |
| animals | birds | Phalacrocoracidae | <i>Phalacrocorax varius</i> | pied cormorant | | C | | 4 |
| animals | birds | Phasianidae | <i>Coturnix ypsilophora</i> | brown quail | | C | | 34 |
| animals | birds | Phasianidae | <i>Coturnix pectoralis</i> | stubble quail | | C | | 1 |
| animals | birds | Podargidae | <i>Podargus strigoides</i> | tawny frogmouth | | C | | 10 |
| animals | birds | Podicipedidae | <i>Tachybaptus novaehollandiae</i> | Australasian grebe | | C | | 6 |
| animals | birds | Pomatostomidae | <i>Pomatostomus temporalis</i> | grey-crowned babbler | | C | | 13 |
| animals | birds | Psittacidae | <i>Alisterus scapularis</i> | Australian king-parrot | | C | | 6 |
| animals | birds | Psittacidae | <i>Trichoglossus haematodus moluccanus</i> | rainbow lorikeet | | C | | 76 |
| animals | birds | Psittacidae | <i>Trichoglossus chlorolepidotus</i> | scaly-breasted lorikeet | | C | | 4 |
| animals | birds | Psittacidae | <i>Aprosmictus erythropterus</i> | red-winged parrot | | C | | 26 |
| animals | birds | Psittacidae | <i>Melopsittacus undulatus</i> | budgerigar | | C | | 10 |
| animals | birds | Psittacidae | <i>Psephotus pulcherrimus</i> | paradise parrot | | PE | EX | 1 |
| animals | birds | Psittacidae | <i>Platycercus adscitus</i> | pale-headed rosella | | C | | 60 |
| animals | birds | Psittacidae | <i>Parvipsitta pusilla</i> | little lorikeet | | C | | 6 |
| animals | birds | Ptilonorhynchidae | <i>Ptilonorhynchus maculatus</i> | spotted bowerbird | | C | | 10 |
| animals | birds | Recurvirostridae | <i>Himantopus himantopus</i> | black-winged stilt | | C | | 4 |
| animals | birds | Rhipiduridae | <i>Rhipidura leucophrys</i> | willie wagtail | | C | | 59 |
| animals | birds | Rhipiduridae | <i>Rhipidura albiscapa</i> | grey fantail | | C | | 37 |
| animals | birds | Strigidae | <i>Ninox boobook</i> | southern boobook | | C | | 14 |
| animals | birds | Strigidae | <i>Ninox connivens</i> | barking owl | | C | | 2 |
| animals | birds | Threskiornithidae | <i>Threskiornis spinicollis</i> | straw-necked ibis | | C | | 3 |
| animals | birds | Threskiornithidae | <i>Platalea regia</i> | royal spoonbill | | C | | 3 |
| animals | birds | Threskiornithidae | <i>Platalea flavipes</i> | yellow-billed spoonbill | | C | | 4 |
| animals | birds | Threskiornithidae | <i>Plegadis falcinellus</i> | glossy ibis | | SL | | 1 |
| animals | birds | Threskiornithidae | <i>Threskiornis molucca</i> | Australian white ibis | | C | | 1 |
| animals | birds | Timaliidae | <i>Zosterops lateralis</i> | silveryeye | | C | | 15 |
| animals | birds | Turnicidae | <i>Turnix pyrrhothorax</i> | red-chested button-quail | | C | | 1 |
| animals | birds | Tytonidae | <i>Tyto longimembris</i> | eastern grass owl | | C | | 5 |
| animals | birds | Tytonidae | <i>Tyto delicatula</i> | eastern barn owl | | C | | 13 |
| animals | insects | Nymphalidae | <i>Euploea corinna</i> | common crow | | | | 8 |
| animals | mammals | Bovidae | <i>Bos taurus</i> | European cattle | Y | | | 6 |
| animals | mammals | Canidae | <i>Canis sp.</i> | | Y | | | 1 |
| animals | mammals | Canidae | <i>Vulpes vulpes</i> | red fox | Y | | | 2 |
| animals | mammals | Canidae | <i>Canis lupus dingo</i> | dingo | | | | 6 |
| animals | mammals | Canidae | <i>Canis lupus familiaris</i> | dog | Y | | | 1 |
| animals | mammals | Dasyuridae | <i>Planigale tenuirostris</i> | narrow-nosed planigale | | C | | 13 |
| animals | mammals | Dasyuridae | <i>Sminthopsis macroura</i> | stripe-faced dunnart | | C | | 21 |
| animals | mammals | Dasyuridae | <i>Dasyurus hallucatus</i> | northern quoll | | C | E | 1 |
| animals | mammals | Dasyuridae | <i>Sminthopsis murina</i> | common dunnart | | C | | 4 |
| animals | mammals | Dasyuridae | <i>Planigale maculata</i> | common planigale | | C | | 4 |
| animals | mammals | Dasyuridae | <i>Planigale ingrami</i> | long-tailed planigale | | C | | 6/1 |
| animals | mammals | Emballonuridae | <i>Taphozous troughtoni</i> | Troughton's sheath-tail bat | | C | | 1 |
| animals | mammals | Emballonuridae | <i>Saccolaimus flaviventris</i> | yellow-bellied sheath-tail bat | | C | | 12 |
| animals | mammals | Felidae | <i>Felis catus</i> | cat | Y | | | 6 |
| animals | mammals | Leporidae | <i>Lepus europaeus</i> | European brown hare | Y | | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|---------|------------------|--|---|---|----|---|---------|
| animals | mammals | Leporidae | <i>Oryctolagus cuniculus</i> | rabbit | Y | | | 5 |
| animals | mammals | Macropodidae | <i>Macropus rufogriseus</i> | red-necked wallaby | | C | | 1 |
| animals | mammals | Macropodidae | <i>Lagorchestes conspicillatus</i> | spectacled hare-wallaby | | C | | 13 |
| animals | mammals | Macropodidae | <i>Macropus dorsalis</i> | black-striped wallaby | | C | | 5 |
| animals | mammals | Macropodidae | <i>Wallabia bicolor</i> | swamp wallaby | | C | | 3 |
| animals | mammals | Macropodidae | <i>Macropus giganteus</i> | eastern grey kangaroo | | C | | 31 |
| animals | mammals | Macropodidae | <i>Petrogale sp.</i> | | | C | | 1 |
| animals | mammals | Macropodidae | <i>Macropus parryi</i> | whiptail wallaby | | C | | 6 |
| animals | mammals | Megadermatidae | <i>Macroderma gigas</i> | ghost bat | | E | V | 1 |
| animals | mammals | Miniopteridae | <i>Miniopterus schreibersii oceanensis</i> | eastern bent-wing bat | | C | | 6 |
| animals | mammals | Molossidae | <i>Mormopterus sp.</i> | | | | | 3 |
| animals | mammals | Molossidae | <i>Mormopterus ridei</i> | eastern free-tailed bat | | C | | 2 |
| animals | mammals | Molossidae | <i>Mormopterus eleryi</i> | bristle-faced free-tailed bat | | C | | 1 |
| animals | mammals | Molossidae | <i>Tadarida australis</i> | white-striped freetail bat | | C | | 2 |
| animals | mammals | Molossidae | <i>Chaerephon jobensis</i> | northern freetail bat | | C | | 2 |
| animals | mammals | Molossidae | <i>Mormopterus lumsdenae</i> | northern free-tailed bat | | C | | 9 |
| animals | mammals | Muridae | <i>Rattus sp. cf. villosissimus/sordidus</i> | | | C | | 1 |
| animals | mammals | Muridae | <i>Pseudomys gracilicaudatus</i> | eastern chestnut mouse | | C | | 13 |
| animals | mammals | Muridae | <i>Pseudomys delicatulus</i> | delicate mouse | | C | | 7 |
| animals | mammals | Muridae | <i>Melomys cervinipes</i> | fawn-footed melomys | | C | | 1 |
| animals | mammals | Muridae | <i>Hydromys chrysogaster</i> | water rat | | C | | 2 |
| animals | mammals | Muridae | <i>Mus musculus</i> | house mouse | Y | | | 78/1 |
| animals | mammals | Muridae | <i>Rattus tunneyi</i> | pale field-rat | | C | | 1 |
| animals | mammals | Muridae | <i>Melomys burtoni</i> | grassland melomys | | C | | 6 |
| animals | mammals | Muridae | <i>Rattus sordidus</i> | canefield rat | | C | | 9/6 |
| animals | mammals | Muridae | <i>Leggadina forresti</i> | Forrest's mouse | | C | | 22/2 |
| animals | mammals | Peramelidae | <i>Isoodon macrourus</i> | northern brown bandicoot | | C | | 7 |
| animals | mammals | Peramelidae | <i>Isoodon peninsulae</i> | Cape York brown bandicoot | | C | | 1 |
| animals | mammals | Petauridae | <i>Petaurus breviceps</i> | sugar glider | | C | | 3 |
| animals | mammals | Petauridae | <i>Petaurus norfolcensis</i> | squirrel glider | | C | | 4 |
| animals | mammals | Petauridae | <i>Petaurus australis australis</i> | yellow-bellied glider (southern subspecies) | | C | | 3 |
| animals | mammals | Phalangeridae | <i>Trichosurus vulpecula</i> | common brushtail possum | | C | | 18 |
| animals | mammals | Phascolarctidae | <i>Phascolarctos cinereus</i> | koala | | V | V | 15 |
| animals | mammals | Potoroidae | <i>Aepyprymnus rufescens</i> | rufous bettong | | C | | 6 |
| animals | mammals | Pseudocheiridae | <i>Pseudocheirus peregrinus</i> | common ringtail possum | | C | | 1 |
| animals | mammals | Pseudocheiridae | <i>Petauroides volans volans</i> | southern greater glider | | V | V | 23 |
| animals | mammals | Pteropodidae | <i>Pteropus scapulatus</i> | little red flying-fox | | C | | 9 |
| animals | mammals | Rhinolophidae | <i>Rhinolophus megaphyllus</i> | eastern horseshoe-bat | | C | | 1 |
| animals | mammals | Suidae | <i>Sus scrofa</i> | pig | Y | | | 5 |
| animals | mammals | Tachyglossidae | <i>Tachyglossus aculeatus</i> | short-beaked echidna | | SL | | 12 |
| animals | mammals | Vespertilionidae | <i>Chalinolobus gouldii</i> | Gould's wattled bat | | C | | 8 |
| animals | mammals | Vespertilionidae | <i>Chalinolobus picatus</i> | little pied bat | | C | | 11 |
| animals | mammals | Vespertilionidae | <i>Scotorepens balstoni</i> | inland broad-nosed bat | | C | | 6 |
| animals | mammals | Vespertilionidae | <i>Nyctophilus geoffroyi</i> | lesser long-eared bat | | C | | 1 |
| animals | mammals | Vespertilionidae | <i>Chalinolobus morio</i> | chocolate wattled bat | | C | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------------------|------------------|---|--------------------------------|---|----|---|---------|
| animals | mammals | Vespertilionidae | <i>Chalinolobus nigrogriseus</i> | hoary wattled bat | | C | | 3 |
| animals | mammals | Vespertilionidae | <i>Nyctophilus sp.</i> | | | | | 1 |
| animals | mammals | Vespertilionidae | <i>Vespadelus sp.</i> | | | | | 2 |
| animals | mammals | Vespertilionidae | <i>Scotorepens greyii</i> | little broad-nosed bat | | C | | 6 |
| animals | mammals | Vespertilionidae | <i>Nyctophilus gouldi</i> | Gould's long-eared bat | | C | | 2 |
| animals | mammals | Vespertilionidae | <i>Vespadelus baverstocki</i> | inland forest bat | | C | | 1 |
| animals | ray-finned fishes | Ambassidae | <i>Ambassis agassizii</i> | Agassiz's glassfish | | | | 3/1 |
| animals | ray-finned fishes | Anguillidae | <i>Anguilla reinhardtii</i> | longfin eel | | | | 1 |
| animals | ray-finned fishes | Atherinidae | <i>Craterocephalus stercusmuscarum</i> | flyspecked hardyhead | | | | 2/1 |
| animals | ray-finned fishes | Clupeidae | <i>Nematalosa erebi</i> | bony bream | | | | 2 |
| animals | ray-finned fishes | Eleotridae | <i>Hypseleotris klunzingeri</i> | western carp gudgeon | | | | 2 |
| animals | ray-finned fishes | Eleotridae | <i>Philypnodon grandiceps</i> | flathead gudgeon | | | | 1 |
| animals | ray-finned fishes | Eleotridae | <i>Hypseleotris species 1</i> | Midgley's carp gudgeon | | | | 2 |
| animals | ray-finned fishes | Eleotridae | <i>Mogurnda adspersa</i> | southern purplespotted gudgeon | | | | 2 |
| animals | ray-finned fishes | Melanotaeniidae | <i>Melanotaenia splendida splendida</i> | eastern rainbowfish | | | | 3/1 |
| animals | ray-finned fishes | Percichthyidae | <i>Macquaria ambigua</i> | golden perch | | | | 1 |
| animals | ray-finned fishes | Plotosidae | <i>Tandanus tandanus</i> | freshwater catfish | | | | 1 |
| animals | ray-finned fishes | Plotosidae | <i>Neosilurus hyrtlii</i> | Hyrtl's catfish | | | | 1 |
| animals | ray-finned fishes | Terapontidae | <i>Scortum hillii</i> | leathery grunter | | | | 1 |
| animals | ray-finned fishes | Terapontidae | <i>Leiopotherapon unicolor</i> | spangled perch | | | | 7/1 |
| animals | reptiles | Agamidae | <i>Diporiphora australis</i> | tommy roundhead | | C | | 3 |
| animals | reptiles | Agamidae | <i>Pogona barbata</i> | bearded dragon | | C | | 4 |
| animals | reptiles | Agamidae | <i>Amphibolurus burnsi</i> | Burns's dragon | | C | | 6 |
| animals | reptiles | Agamidae | <i>Tympanocryptis sp.</i> | | | | | 5/5 |
| animals | reptiles | Agamidae | <i>Diporiphora nobbi</i> | nobbi | | C | | 3/1 |
| animals | reptiles | Agamidae | <i>Tympanocryptis lineata</i> | lined earless dragon | | C | | 1/1 |
| animals | reptiles | Agamidae | <i>Intellagama lesueurii</i> | eastern water dragon | | C | | 2 |
| animals | reptiles | Boidae | <i>Aspidites melanocephalus</i> | black-headed python | | C | | 4 |
| animals | reptiles | Boidae | <i>Morelia spilota</i> | carpet python | | C | | 6 |
| animals | reptiles | Boidae | <i>Antaresia maculosa</i> | spotted python | | C | | 5 |
| animals | reptiles | Boidae | <i>Morelia sp.</i> | | | | | 1 |
| animals | reptiles | Carphodactylidae | <i>Nephrurus asper</i> | spiny knob-tailed gecko | | C | | 1 |
| animals | reptiles | Chelidae | <i>Chelodina longicollis</i> | eastern snake-necked turtle | | C | | 3 |
| animals | reptiles | Chelidae | <i>Wollumbinia latisternum</i> | saw-shelled turtle | | C | | 1 |
| animals | reptiles | Chelidae | <i>Emydura macquarii krefftii</i> | Krefft's river turtle | | C | | 2 |
| animals | reptiles | Colubridae | <i>Dendrelaphis punctulatus</i> | green tree snake | | C | | 4 |
| animals | reptiles | Colubridae | <i>Boiga irregularis</i> | brown tree snake | | C | | 1 |
| animals | reptiles | Colubridae | <i>Tropidonophis mairii</i> | freshwater snake | | C | | 2 |
| animals | reptiles | Diplodactylidae | <i>Diplodactylus vittatus</i> | wood gecko | | C | | 2 |
| animals | reptiles | Diplodactylidae | <i>Strophurus taenicauda</i> | golden-tailed gecko | | NT | | 1 |
| animals | reptiles | Diplodactylidae | <i>Strophurus williamsi</i> | soft-spined gecko | | C | | 4 |
| animals | reptiles | Diplodactylidae | <i>Oedura monillis</i> | ocellated velvet gecko | | C | | 3 |
| animals | reptiles | Diplodactylidae | <i>Oedura tryoni</i> | southern spotted velvet gecko | | C | | 1 |
| animals | reptiles | Diplodactylidae | <i>Lucasium steindachneri</i> | Steindachner's gecko | | C | | 2 |
| animals | reptiles | Elapidae | <i>Hoplocephalus bitorquatus</i> | pale-headed snake | | C | | 2 |
| animals | reptiles | Elapidae | <i>Brachyuropsis australis</i> | coral snake | | C | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-----------------|--------------|--|---------------------------------|---|---|---|---------|
| animals | reptiles | Elapidae | <i>Cryptophis nigrescens</i> | eastern small-eyed snake | | C | | 1 |
| animals | reptiles | Elapidae | <i>Vermicella annulata</i> | bandy-bandy | | C | | 1 |
| animals | reptiles | Elapidae | <i>Pseudonaja textilis</i> | eastern brown snake | | C | | 6/1 |
| animals | reptiles | Elapidae | <i>Demansia psammophis</i> | yellow-faced whipsnake | | C | | 3 |
| animals | reptiles | Elapidae | <i>Cryptophis boschmai</i> | Carpentaria whip snake | | C | | 4/1 |
| animals | reptiles | Elapidae | <i>Pseudonaja nuchalis sensu lato</i> | western brown snake | | C | | 1 |
| animals | reptiles | Elapidae | <i>Suta suta</i> | myall snake | | C | | 2 |
| animals | reptiles | Elapidae | <i>Denisonia maculata</i> | ornamental snake | | V | V | 3 |
| animals | reptiles | Gekkonidae | <i>Gehyra dubia</i> | dubious dtella | | C | | 15 |
| animals | reptiles | Gekkonidae | <i>Gehyra catenata</i> | chain-backed dtella | | C | | 4/1 |
| animals | reptiles | Gekkonidae | <i>Gehyra versicolor</i> | | | C | | 3 |
| animals | reptiles | Gekkonidae | <i>Heteronotia binoei</i> | Bynoe's gecko | | C | | 20/1 |
| animals | reptiles | Pygopodidae | <i>Paradelma orientalis</i> | brigalow scaly-foot | | C | | 3 |
| animals | reptiles | Pygopodidae | <i>Delma tincta</i> | excitable delma | | C | | 4 |
| animals | reptiles | Pygopodidae | <i>Lialis burtonis</i> | Burton's legless lizard | | C | | 2 |
| animals | reptiles | Scincidae | <i>Tiliqua scincoides</i> | eastern blue-tongued lizard | | C | | 2 |
| animals | reptiles | Scincidae | <i>Cryptoblepharus sp.</i> | | | | | 1 |
| animals | reptiles | Scincidae | <i>Lygisaurus foliorum</i> | tree-base litter-skink | | C | | 32/1 |
| animals | reptiles | Scincidae | <i>Morethia boulengeri</i> | south-eastern morethia skink | | C | | 1 |
| animals | reptiles | Scincidae | <i>Ctenotus taeniolatus</i> | copper-tailed skink | | C | | 13 |
| animals | reptiles | Scincidae | <i>Anomalopus verreauxii</i> | three-clawed worm-skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Lampropholis delicata</i> | dark-flecked garden sunskink | | C | | 1 |
| animals | reptiles | Scincidae | <i>Morethia taeniopleura</i> | fire-tailed skink | | C | | 5 |
| animals | reptiles | Scincidae | <i>Pygmaeascincus timlowi</i> | dwarf litter-skink | | C | | 5 |
| animals | reptiles | Scincidae | <i>Lerista punctatovittata</i> | eastern robust slider | | C | | 1 |
| animals | reptiles | Scincidae | <i>Cryptoblepharus pannosus</i> | ragged snake-eyed skink | | C | | 4 |
| animals | reptiles | Scincidae | <i>Glaphyromorphus punctulatus</i> | fine-spotted mulch-skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Carlia pectoralis sensu lato</i> | | | C | | 27 |
| animals | reptiles | Scincidae | <i>Cryptoblepharus pulcher pulcher</i> | elegant snake-eyed skink | | C | | 19 |
| animals | reptiles | Scincidae | <i>Cryptoblepharus plagiocephalus sensu lato</i> | | | C | | 2 |
| animals | reptiles | Scincidae | <i>Carlia munda</i> | shaded-litter rainbow-skink | | C | | 6/1 |
| animals | reptiles | Scincidae | <i>Carlia vivax</i> | tussock rainbow-skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Eulamprus sp.</i> | | | | | 1 |
| animals | reptiles | Scincidae | <i>Egernia rugosa</i> | yakka skink | | V | V | 1 |
| animals | reptiles | Scincidae | <i>Menetia greyii</i> | common dwarf skink | | C | | 17 |
| animals | reptiles | Scincidae | <i>Ctenotus ingrami</i> | unspotted yellow-sided ctenotus | | C | | 1 |
| animals | reptiles | Scincidae | <i>Lerista fragilis</i> | eastern mulch slider | | C | | 8 |
| animals | reptiles | Scincidae | <i>Carlia pectoralis</i> | open-litter rainbow skink | | C | | 1 |
| animals | reptiles | Scincidae | <i>Bellatorias frerei</i> | major skink | | C | | 1 |
| animals | reptiles | Scincidae | <i>Ctenotus spaldingi</i> | straight-browed ctenotus | | C | | 14 |
| animals | reptiles | Typhlopidae | <i>Anilius ligatus</i> | robust blind snake | | C | | 1 |
| animals | reptiles | Varanidae | <i>Varanus varius</i> | lace monitor | | C | | 1 |
| animals | reptiles | Varanidae | <i>Varanus tristis</i> | black-tailed monitor | | C | | 4 |
| fungi | lecanoromycetes | Lecanoraceae | <i>Lecidella</i> | | | C | | 1/1 |
| plants | conifers | Cupressaceae | <i>Callitris endlicheri</i> | black cypress pine | | C | | 2 |
| plants | conifers | Cupressaceae | <i>Callitris glaucophylla</i> | white cypress pine | | C | | 5/1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|---------------|---------------|---|---------------------|---|---|---|---------|
| plants | cycads | Zamiaceae | <i>Macrozamia moorei</i> | | | C | | 15/8 |
| plants | ferns | Marsileaceae | <i>Marsilea hirsuta</i> | hairy nardoo | | C | | 2/1 |
| plants | ferns | Marsileaceae | <i>Marsilea drummondii</i> | common nardoo | | C | | 2 |
| plants | ferns | Pteridaceae | <i>Cheilanthes sieberi subsp. sieberi</i> | | | C | | 1/1 |
| plants | ferns | Pteridaceae | <i>Cheilanthes distans</i> | bristly cloak fern | | C | | 1 |
| plants | ferns | Salvinaceae | <i>Azolla</i> | | | | | 1 |
| plants | higher dicots | Acanthaceae | <i>Hypoestes floribunda</i> | | | C | | 1 |
| plants | higher dicots | Acanthaceae | <i>Brunoniella australis</i> | blue trumpet | | C | | 8 |
| plants | higher dicots | Acanthaceae | <i>Rostellularia adscendens</i> | | | C | | 10 |
| plants | higher dicots | Acanthaceae | <i>Pseuderanthemum variabile</i> | pastel flower | | C | | 6/1 |
| plants | higher dicots | Acanthaceae | <i>Dipteracanthus australasicus</i> | | | C | | 2 |
| plants | higher dicots | Aizoaceae | <i>Zaleya galericulata subsp. galericulata</i> | | | C | | 1/1 |
| plants | higher dicots | Aizoaceae | <i>Trianthema portulacastrum</i> | black pigweed | Y | | | 3 |
| plants | higher dicots | Aizoaceae | <i>Tetragonia tetragonoides</i> | New Zealand spinach | | C | | 1 |
| plants | higher dicots | Aizoaceae | <i>Trianthema triquetra</i> | red spinach | | C | | 3 |
| plants | higher dicots | Aizoaceae | <i>Zaleya galericulata</i> | | | C | | 2/2 |
| plants | higher dicots | Amaranthaceae | <i>Alternanthera denticulata var. denticulata</i> | | | C | | 1/1 |
| plants | higher dicots | Amaranthaceae | <i>Nyssanthes erecta</i> | | | C | | 2/1 |
| plants | higher dicots | Amaranthaceae | <i>Achyranthes aspera</i> | | | C | | 10/1 |
| plants | higher dicots | Amaranthaceae | <i>Alternanthera nana</i> | hairy joyweed | | C | | 2/1 |
| plants | higher dicots | Amaranthaceae | <i>Nyssanthes diffusa</i> | barbed-wire weed | | C | | 2 |
| plants | higher dicots | Amaranthaceae | <i>Alternanthera pungens</i> | khaki weed | Y | | | 1/1 |
| plants | higher dicots | Amaranthaceae | <i>Alternanthera denticulata</i> | lesser joyweed | | C | | 4/3 |
| plants | higher dicots | Amaranthaceae | <i>Alternanthera nodiflora</i> | joyweed | | C | | 5 |
| plants | higher dicots | Amaranthaceae | <i>Amaranthus interruptus</i> | | | C | | 1 |
| plants | higher dicots | Amaranthaceae | <i>Gomphrena celosioides</i> | gomphrena weed | Y | | | 3/2 |
| plants | higher dicots | Apiaceae | <i>Cyclospermum leptophyllum</i> | | Y | | | 2 |
| plants | higher dicots | Asteraceae | <i>Sphaeromorphaea subintegra</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Apowollastonia spilanthes</i> | | | C | | 2/1 |
| plants | higher dicots | Asteraceae | <i>Lactuca serriola forma serriola</i> | | Y | | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Vittadinia dissecta var. dissecta</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Peripleura hispidula var. hispidula</i> | | | C | | 2/1 |
| plants | higher dicots | Asteraceae | <i>Acmella grandiflora var. brachyglossa</i> | | | C | | 4/3 |
| plants | higher dicots | Asteraceae | <i>Pterocaulon serrulatum var. serrulatum</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Verbesina encelioides var. encelioides</i> | | Y | | | 5/5 |
| plants | higher dicots | Asteraceae | <i>Brachyscome microcarpa subsp. microcarpa</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Pterocaulon ciliosum</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Pterocaulon redolens</i> | | | C | | 2 |
| plants | higher dicots | Asteraceae | <i>Vittadinia pustulata</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Xanthium occidentale</i> | | Y | | | 5 |
| plants | higher dicots | Asteraceae | <i>Brachyscome basaltica</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Cyanthillium cinereum</i> | | | C | | 15/3 |
| plants | higher dicots | Asteraceae | <i>Trioncinia retroflexa</i> | | | E | | 2/2 |
| plants | higher dicots | Asteraceae | <i>Verbesina encelioides</i> | crownbeard | Y | | | 10 |
| plants | higher dicots | Asteraceae | <i>Sigesbeckia orientalis</i> | Indian weed | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Calotis</i> | | | C | | 3 |

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| plants | higher dicots | Asteraceae | <i>Cassinia</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Coreopsis</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Vittadinia</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Brachyscome</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Bidens pilosa</i> | | Y | | | 8/1 |
| plants | higher dicots | Asteraceae | <i>Calotis dentex</i> | white burr daisy | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Calotis cuneata</i> | | | C | | 9/4 |
| plants | higher dicots | Asteraceae | <i>Cassinia laevis</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Cirsium vulgare</i> | spear thistle | Y | | | 2 |
| plants | higher dicots | Asteraceae | <i>Centipeda minima</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Zinnia peruviana</i> | wild zinnia | Y | | | 2 |
| plants | higher dicots | Asteraceae | <i>Calotis hispidula</i> | bogan flea | | C | | 2 |
| plants | higher dicots | Asteraceae | <i>Camptacra barbata</i> | | | C | | 5/2 |
| plants | higher dicots | Asteraceae | <i>Helianthus annuus</i> | | Y | | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Sigesbeckia fugax</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Sonchus oleraceus</i> | common sowthistle | Y | | | 9/3 |
| plants | higher dicots | Asteraceae | <i>Tridax procumbens</i> | tridax daisy | Y | | | 2/1 |
| plants | higher dicots | Asteraceae | <i>Xanthium spinosum</i> | Bathurst burr | Y | | | 2/2 |
| plants | higher dicots | Asteraceae | <i>Calotis cuneifolia</i> | burr daisy | | C | | 2/1 |
| plants | higher dicots | Asteraceae | <i>Calotis lappulacea</i> | yellow burr daisy | | C | | 3/2 |
| plants | higher dicots | Asteraceae | <i>Hemisteptia lyrata</i> | | | C | | 3/2 |
| plants | higher dicots | Asteraceae | <i>Peripleura bicolor</i> | | | C | | 1/1 |
| plants | higher dicots | Asteraceae | <i>Peripleura diffusa</i> | | | C | | 2/2 |
| plants | higher dicots | Asteraceae | <i>Vittadinia sulcata</i> | native daisy | | C | | 4/2 |
| plants | higher dicots | Asteraceae | <i>Acmella grandiflora</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Euchiton sphaericus</i> | | | C | | 3/2 |
| plants | higher dicots | Asteraceae | <i>Glossocardia bidens</i> | native cobbler's pegs | | C | | 2/1 |
| plants | higher dicots | Asteraceae | <i>Minuria integerrima</i> | smooth minuria | | C | | 3 |
| plants | higher dicots | Asteraceae | <i>Craspedia variabilis</i> | | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Erigeron bonariensis</i> | | Y | | | 5/2 |
| plants | higher dicots | Asteraceae | <i>Pterocaulon sphacelatum</i> | applebush | | C | | 1 |
| plants | higher dicots | Asteraceae | <i>Parthenium hysterophorus</i> | parthenium weed | Y | | | 23/4 |
| plants | higher dicots | Asteraceae | <i>Symphyotrichum subulatum</i> | | Y | | | 1 |
| plants | higher dicots | Asteraceae | <i>Chrysocephalum apiculatum</i> | yellow buttons | | C | | 3 |
| plants | higher dicots | Asteraceae | <i>Lagenophora queenslandica</i> | | | C | | 1/1 |
| plants | higher dicots | Bignoniaceae | <i>Pandorea pandorana</i> | wonga vine | | C | | 5 |
| plants | higher dicots | Brassicaceae | <i>Lepidium</i> | | | C | | 1 |
| plants | higher dicots | Brassicaceae | <i>Sisymbrium irio</i> | london rocket | Y | | | 1 |
| plants | higher dicots | Brassicaceae | <i>Rorippa</i> | | | C | | 1/1 |
| plants | higher dicots | Brassicaceae | <i>Lepidium africanum</i> | common peppercress | Y | | | 1/1 |
| plants | higher dicots | Brassicaceae | <i>Sisymbrium thellungii</i> | African turnip-weed | Y | | | 1/1 |
| plants | higher dicots | Brassicaceae | <i>Lepidium bonariense</i> | Argentine peppercress | Y | | | 3/1 |
| plants | higher dicots | Byttneriaceae | <i>Waltheria indica</i> | | | C | | 1/1 |
| plants | higher dicots | Byttneriaceae | <i>Seringia corollata</i> | | | C | | 2/1 |
| plants | higher dicots | Cactaceae | <i>Opuntia</i> | | Y | | | 1 |
| plants | higher dicots | Cactaceae | <i>Opuntia stricta</i> | | Y | | | 5 |

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| plants | higher dicots | Cactaceae | <i>Opuntia tomentosa</i> | velvety tree pear | Y | | | 11 |
| plants | higher dicots | Caesalpiniaceae | <i>Chamaecrista rotundifolia</i> var. <i>rotundifolia</i> | | Y | | | 1/1 |
| plants | higher dicots | Caesalpiniaceae | <i>Chamaecrista absus</i> var. <i>absus</i> | | | C | | 1 |
| plants | higher dicots | Caesalpiniaceae | <i>Senna</i> | | | C | | 1 |
| plants | higher dicots | Caesalpiniaceae | <i>Lysiphyllum carronii</i> | ebony tree | | C | | 2 |
| plants | higher dicots | Caesalpiniaceae | <i>Senna barclayana</i> | | | C | | 6/2 |
| plants | higher dicots | Caesalpiniaceae | <i>Parkinsonia aculeata</i> | parkinsonia | Y | | | 2 |
| plants | higher dicots | Caesalpiniaceae | <i>Haematoxylum campechianum</i> | logwood tree | Y | | | 2/2 |
| plants | higher dicots | Caesalpiniaceae | <i>Senna artemisioides</i> | | | C | | 2 |
| plants | higher dicots | Caesalpiniaceae | <i>Lysiphyllum hookeri</i> | Queensland ebony | | C | | 7 |
| plants | higher dicots | Caesalpiniaceae | <i>Cassia brewsteri</i> | | | C | | 3/1 |
| plants | higher dicots | Campanulaceae | <i>Wahlenbergia</i> | | | C | | 1 |
| plants | higher dicots | Campanulaceae | <i>Isotoma axillaris</i> | australian harebell | | C | | 3/3 |
| plants | higher dicots | Campanulaceae | <i>Wahlenbergia gracilis</i> | sprawling bluebell | | C | | 2/2 |
| plants | higher dicots | Campanulaceae | <i>Wahlenbergia capillaris</i> | | | C | | 4/1 |
| plants | higher dicots | Campanulaceae | <i>Wahlenbergia queenslandica</i> | | | C | | 1 |
| plants | higher dicots | Campanulaceae | <i>Lobelia concolor</i> | | | C | | 1/1 |
| plants | higher dicots | Capparaceae | <i>Capparis arborea</i> | brush caper berry | | C | | 1 |
| plants | higher dicots | Capparaceae | <i>Capparis canescens</i> | | | C | | 2 |
| plants | higher dicots | Capparaceae | <i>Capparis lasiantha</i> | nipan | | C | | 5 |
| plants | higher dicots | Capparaceae | <i>Apophyllum anomalum</i> | broom bush | | C | | 1 |
| plants | higher dicots | Capparaceae | <i>Capparis mitchellii</i> | | | C | | 2 |
| plants | higher dicots | Capparaceae | <i>Capparis loranthifolia</i> | | | C | | 4 |
| plants | higher dicots | Casuarinaceae | <i>Casuarina cristata</i> | belah | | C | | 4 |
| plants | higher dicots | Casuarinaceae | <i>Casuarina cunninghamiana</i> | | | C | | 4 |
| plants | higher dicots | Celastraceae | <i>Denhamia cunninghamii</i> | | | C | | 3 |
| plants | higher dicots | Celastraceae | <i>Elaeodendron australe</i> var. <i>australe</i> | | | C | | 1/1 |
| plants | higher dicots | Celastraceae | <i>Elaeodendron australe</i> | | | C | | 1 |
| plants | higher dicots | Celastraceae | <i>Denhamia oleaster</i> | | | C | | 9 |
| plants | higher dicots | Chenopodiaceae | <i>Dysphania pumilio</i> | | | C | | 2/1 |
| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena muricata</i> var. <i>muricata</i> | | | C | | 1/1 |
| plants | higher dicots | Chenopodiaceae | <i>Atriplex muelleri</i> | lagoon saltbush | | C | | 1 |
| plants | higher dicots | Chenopodiaceae | <i>Einadia hastata</i> | | | C | | 2 |
| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena anisacanthoides</i> | yellow burr | | C | | 1/1 |
| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena muricata</i> var. <i>villosa</i> | | | C | | 1/1 |
| plants | higher dicots | Chenopodiaceae | <i>Einadia nutans</i> subsp. <i>linifolia</i> | | | C | | 3/3 |
| plants | higher dicots | Chenopodiaceae | <i>Einadia nutans</i> subsp. <i>nutans</i> | | | C | | 2/1 |
| plants | higher dicots | Chenopodiaceae | <i>Salsola australis</i> | | | C | | 8 |
| plants | higher dicots | Chenopodiaceae | <i>Dysphania carinata</i> | | | C | | 2/2 |
| plants | higher dicots | Chenopodiaceae | <i>Einadia nutans</i> | | | C | | 5 |
| plants | higher dicots | Chenopodiaceae | <i>Maireana</i> | | | C | | 1 |
| plants | higher dicots | Chenopodiaceae | <i>Atriplex</i> | | | C | | 1 |
| plants | higher dicots | Chenopodiaceae | <i>Rhagodia parabolica</i> | | | C | | 1/1 |
| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena birchii</i> | galvanised burr | | C | | 1 |
| plants | higher dicots | Chenopodiaceae | <i>Chenopodium auricomiforme</i> | | | C | | 1/1 |
| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena lanicuspis</i> | | | C | | 1 |

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| plants | higher dicots | Chenopodiaceae | <i>Sclerolaena muricata</i> | | | C | | 4/1 |
| plants | higher dicots | Chenopodiaceae | <i>Maireana microphylla</i> | | | C | | 5/2 |
| plants | higher dicots | Chenopodiaceae | <i>Enchylaena tomentosa</i> | | | C | | 3 |
| plants | higher dicots | Chenopodiaceae | <i>Atriplex semibaccata</i> | creeping saltbush | | C | | 1 |
| plants | higher dicots | Cleomaceae | <i>Cleome tetrandra</i> | | | C | | 1 |
| plants | higher dicots | Cleomaceae | <i>Cleome viscosa</i> | tick-weed | | C | | 1 |
| plants | higher dicots | Combretaceae | <i>Terminalia oblongata</i> subsp. <i>oblongata</i> | | | C | | 3/3 |
| plants | higher dicots | Combretaceae | <i>Terminalia oblongata</i> | | | C | | 7 |
| plants | higher dicots | Combretaceae | <i>Macropteranthus leichhardtii</i> | bonewood | | C | | 3/2 |
| plants | higher dicots | Crassulaceae | <i>Bryophyllum delagoense</i> | | Y | | | 1 |
| plants | higher dicots | Crassulaceae | <i>Crassula tetramera</i> | | | C | | 1/1 |
| plants | higher dicots | Cucurbitaceae | <i>Diplocyclos palmatus</i> | | | C | | 1 |
| plants | higher dicots | Cucurbitaceae | <i>Cucurbitaceae</i> | | | C | | 1 |
| plants | higher dicots | Cucurbitaceae | <i>Cucumis myriocarpus</i> subsp. <i>myriocarpus</i> | prickly pademelon | Y | | | 1 |
| plants | higher dicots | Cucurbitaceae | <i>Cucumis melo</i> | | | C | | 1 |
| plants | higher dicots | Dilleniaceae | <i>Hibbertia cistoidea</i> | | | C | | 1/1 |
| plants | higher dicots | Dilleniaceae | <i>Hibbertia linearis</i> var. <i>obtusifolia</i> | | | C | | 1 |
| plants | higher dicots | Dilleniaceae | <i>Hibbertia oligodonta</i> | | | C | | 1/1 |
| plants | higher dicots | Dilleniaceae | <i>Hibbertia acicularis</i> | | | C | | 1/1 |
| plants | higher dicots | Ebenaceae | <i>Diospyros humilis</i> | small-leaved ebony | | C | | 2/1 |
| plants | higher dicots | Erythroxylaceae | <i>Erythroxylum australe</i> | cocaine tree | | C | | 5 |
| plants | higher dicots | Euphorbiaceae | <i>Acalypha eremorum</i> | soft acalypha | | C | | 2 |
| plants | higher dicots | Euphorbiaceae | <i>Croton pheballoides</i> | narrow-leaved croton | | C | | 2/1 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia coghlanii</i> | | | C | | 2/2 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia papillifolia</i> var. <i>papillifolia</i> | | | C | | 3/3 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia laciniloba</i> | | | C | | 1/1 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia dallachyana</i> | | | C | | 1/1 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia hyssopifolia</i> | | Y | | | 1/1 |
| plants | higher dicots | Euphorbiaceae | <i>Ricinocarpos linearifolius</i> | | | C | | 1/1 |
| plants | higher dicots | Euphorbiaceae | <i>Adriana tomentosa</i> var. <i>tomentosa</i> | | | C | | 2/2 |
| plants | higher dicots | Euphorbiaceae | <i>Bertya lapicola</i> subsp. <i>brevifolia</i> | | | C | | 3/3 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia tannensis</i> subsp. <i>eremophila</i> | | | C | | 3/1 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia hirta</i> | | Y | | | 2/2 |
| plants | higher dicots | Euphorbiaceae | <i>Acalypha</i> | | | C | | 1 |
| plants | higher dicots | Euphorbiaceae | <i>Euphorbia drummondii</i> | | | C | | 4/1 |
| plants | higher dicots | Fabaceae | <i>Glycine</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Fabaceae</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Cullen tenax</i> | emu-foot | | C | | 3/3 |
| plants | higher dicots | Fabaceae | <i>Hovea lorata</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Vigna radiata</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Hovea longipes</i> | brush hovea | | C | | 2/1 |
| plants | higher dicots | Fabaceae | <i>Glycine falcata</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Lotus australis</i> | Australian trefoil | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Vigna suberecta</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Glycine tabacina</i> | glycine pea | | C | | 6 |

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| plants | higher dicots | Fabaceae | <i>Hovea parvicalyx</i> | | | C | | 3/3 |
| plants | higher dicots | Fabaceae | <i>Hovea planifolia</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Lablab purpureus</i> | lablab | Y | | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia juncea</i> | | | C | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Vigna lanceolata</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Clitoria ternatea</i> | butterfly pea | Y | | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Crotalaria incana</i> | | Y | | | 3 |
| plants | higher dicots | Fabaceae | <i>Crotalaria juncea</i> | sunhemp | Y | | | 5/2 |
| plants | higher dicots | Fabaceae | <i>Desmodium varians</i> | slender tick trefoil | | C | | 2/1 |
| plants | higher dicots | Fabaceae | <i>Glycine latifolia</i> | | | C | | 5/2 |
| plants | higher dicots | Fabaceae | <i>Hovea tholiformis</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Rhynchosia minima</i> | | | C | | 10 |
| plants | higher dicots | Fabaceae | <i>Crotalaria pallida</i> | | Y | | | 1 |
| plants | higher dicots | Fabaceae | <i>Glycine tomentella</i> | woolly glycine | | C | | 6/2 |
| plants | higher dicots | Fabaceae | <i>Indigofera colutea</i> | sticky indigo | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Indigofera hirsuta</i> | hairy indigo | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Indigofera linnaei</i> | Birdsville indigo | | C | | 7/2 |
| plants | higher dicots | Fabaceae | <i>Jacksonia scoparia</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Sesbania cannabina</i> | | | C | | 6/1 |
| plants | higher dicots | Fabaceae | <i>Zornia dyctiocarpa</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Aeschynomene indica</i> | budda pea | | C | | 3/1 |
| plants | higher dicots | Fabaceae | <i>Cajanus acutifolius</i> | | | C | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Galactia tenuiflora</i> | | | C | | 6/3 |
| plants | higher dicots | Fabaceae | <i>Leptosema chapmanii</i> | | | C | | 5/5 |
| plants | higher dicots | Fabaceae | <i>Medicago polymorpha</i> | burr medic | Y | | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Medicago scutellata</i> | snail medic | Y | | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia barbata</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Alysicarpus muelleri</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Glycine pescadrensis</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Indigofera australis</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Indigofera brevidens</i> | | | C | | 2/1 |
| plants | higher dicots | Fabaceae | <i>Indigofera ewartiana</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Indigofera linifolia</i> | | | C | | 3 |
| plants | higher dicots | Fabaceae | <i>Indigofera pratensis</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Pultenaea petiolaris</i> | | | C | | 2/1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia brachyodon</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Crotalaria mitchellii</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Desmodium brachypodium</i> | large ticktrefoil | | C | | 6/1 |
| plants | higher dicots | Fabaceae | <i>Desmodium macrocarpum</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Erythrina vespertilio</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Hardenbergia violacea</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Indigofera glandulosa</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Swainsona galegifolia</i> | smooth Darling pea | | C | | 3/1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia dietrichiae</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Cajanus confertiflorus</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Aeschynomene brevifolia</i> | | | C | | 1/1 |

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| plants | higher dicots | Fabaceae | <i>Crotalaria dissitiflora</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Desmodium campylocaulon</i> | | | C | | 5/4 |
| plants | higher dicots | Fabaceae | <i>Tephrosia astragaloides</i> | | | C | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Tephrosia gaudium-solis</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Desmodium rhytidophyllum</i> | | | C | | 3/1 |
| plants | higher dicots | Fabaceae | <i>Macroptilium lathyroides</i> | | Y | | | 2 |
| plants | higher dicots | Fabaceae | <i>Macroptilium atropurpureum</i> | siratro | Y | | | 1 |
| plants | higher dicots | Fabaceae | <i>Vigna radiata</i> var. <i>sublobata</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Rhynchosia minima</i> var. <i>minima</i> | | | C | | 4/4 |
| plants | higher dicots | Fabaceae | <i>Daviesia filipes</i> subsp. <i>filipes</i> | | | C | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Galactia tenuiflora</i> var. <i>lucida</i> | | | C | | 2/2 |
| plants | higher dicots | Fabaceae | <i>Lespedeza juncea</i> subsp. <i>sericea</i> | perennial lespedeza | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Vigna lanceolata</i> var. <i>lanceolata</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Sesbania cannabina</i> var. <i>cannabina</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Zornia dyctiocarpa</i> var. <i>filifolia</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Zornia muriculata</i> subsp. <i>muriculata</i> | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Glycine</i> sp. (Mackay S.B.Andrews+ 43) | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Daviesia ulicifolia</i> subsp. <i>ulicifolia</i> | | | C | | 2 |
| plants | higher dicots | Fabaceae | <i>Zornia muelleriana</i> subsp. <i>muelleriana</i> | | | C | | 1 |
| plants | higher dicots | Fabaceae | <i>Crotalaria dissitiflora</i> subsp. <i>dissitiflora</i> | | | C | | 2/1 |
| plants | higher dicots | Fabaceae | <i>Desmodium</i> sp. (Mt Pleasant E.R.Anderson 3953) | | | C | | 1/1 |
| plants | higher dicots | Fabaceae | <i>Tephrosia filipes</i> var. (Mt Blackjack A.R.Bean+ 7332) | | | C | | 2/2 |
| plants | higher dicots | Goodeniaceae | <i>Scaevola humilis</i> | | | C | | 4/4 |
| plants | higher dicots | Goodeniaceae | <i>Goodenia glabra</i> | | | C | | 2/2 |
| plants | higher dicots | Goodeniaceae | <i>Goodenia rotundifolia</i> | | | C | | 3/1 |
| plants | higher dicots | Goodeniaceae | <i>Brunonia australis</i> | blue pincushion | | C | | 3 |
| plants | higher dicots | Goodeniaceae | <i>Goodenia grandiflora</i> | | | C | | 3/3 |
| plants | higher dicots | Gyrostemonaceae | <i>Codonocarpus attenuatus</i> | | | C | | 1/1 |
| plants | higher dicots | Haloragaceae | <i>Haloragis aspera</i> | raspweed | | C | | 5/4 |
| plants | higher dicots | Haloragaceae | <i>Haloragis glauca</i> | | | C | | 1 |
| plants | higher dicots | Haloragaceae | <i>Haloragis glauca</i> forma <i>glauca</i> | | | C | | 2/2 |
| plants | higher dicots | Haloragaceae | <i>Haloragis heterophylla</i> | rough raspweed | | C | | 3/2 |
| plants | higher dicots | Haloragaceae | <i>Haloragis stricta</i> | | | C | | 3/1 |
| plants | higher dicots | Loranthaceae | <i>Lysiana</i> | | | C | | 1 |
| plants | higher dicots | Loranthaceae | <i>Amyema miquelii</i> | | | C | | 2/2 |
| plants | higher dicots | Loranthaceae | <i>Amyema quandang</i> | | | C | | 2 |
| plants | higher dicots | Loranthaceae | <i>Amyema congener</i> subsp. <i>rotundifolia</i> | | | C | | 1/1 |
| plants | higher dicots | Loranthaceae | <i>Lysiana linearifolia</i> | | | C | | 1 |
| plants | higher dicots | Loranthaceae | <i>Dendrophthoe glabrescens</i> | | | C | | 1/1 |
| plants | higher dicots | Loranthaceae | <i>Amyema pendula</i> subsp. <i>longifolia</i> | | | C | | 1 |
| plants | higher dicots | Loranthaceae | <i>Lysiana subfalcata</i> | | | C | | 3/2 |
| plants | higher dicots | Malvaceae | <i>Malva</i> | | | C | | 1 |
| plants | higher dicots | Malvaceae | <i>Hibiscus</i> sp. (Emerald S.L.Everist 2124) | | | C | | 1/1 |
| plants | higher dicots | Malvaceae | <i>Malvaceae</i> | | | C | | 1 |
| plants | higher dicots | Malvaceae | <i>Sida laevis</i> | | | C | | 2/2 |

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| plants | higher dicots | Malvaceae | <i>Sida spinosa</i> | spiny sida | Y | | | 3/2 |
| plants | higher dicots | Malvaceae | <i>Sida rohlenae</i> | | | C | | 2 |
| plants | higher dicots | Malvaceae | <i>Sida corrugata</i> | | | C | | 2 |
| plants | higher dicots | Malvaceae | <i>Sida pleiantha</i> | | | C | | 2/2 |
| plants | higher dicots | Malvaceae | <i>Sida cordifolia</i> | | Y | | | 4 |
| plants | higher dicots | Malvaceae | <i>Sida fibulifera</i> | | | C | | 2/1 |
| plants | higher dicots | Malvaceae | <i>Sida platycalyx</i> | lifesaver burr | | C | | 2 |
| plants | higher dicots | Malvaceae | <i>Sida trichopoda</i> | | | C | | 2 |
| plants | higher dicots | Malvaceae | <i>Hibiscus sturtii</i> | | | C | | 4 |
| plants | higher dicots | Malvaceae | <i>Sida atherophora</i> | | | C | | 7/1 |
| plants | higher dicots | Malvaceae | <i>Sida hackettiana</i> | | | C | | 9/1 |
| plants | higher dicots | Malvaceae | <i>Sida rhombifolia</i> | | Y | | | 10 |
| plants | higher dicots | Malvaceae | <i>Abutilon oxycarpum</i> | | | C | | 4 |
| plants | higher dicots | Malvaceae | <i>Hibiscus verdcourtii</i> | | | C | | 3/3 |
| plants | higher dicots | Malvaceae | <i>Abelmoschus ficulneus</i> | native rosella | | C | | 2/2 |
| plants | higher dicots | Malvaceae | <i>Abutilon calliphyllum</i> | velvet lanternflower | | C | | 1/1 |
| plants | higher dicots | Malvaceae | <i>Malvastrum americanum</i> | | Y | | | 9 |
| plants | higher dicots | Malvaceae | <i>Hibiscus tridactylites</i> | | | C | | 3 |
| plants | higher dicots | Malvaceae | <i>Sida rohlenae</i> subsp. <i>rohlenae</i> | | | C | | 1/1 |
| plants | higher dicots | Malvaceae | <i>Abutilon oxycarpum</i> var. <i>incanum</i> | | | C | | 2/2 |
| plants | higher dicots | Malvaceae | <i>Malvastrum americanum</i> var. <i>stellatum</i> | | | C | | 1/1 |
| plants | higher dicots | Malvaceae | <i>Malvastrum americanum</i> var. <i>americanum</i> | | Y | | | 8/1 |
| plants | higher dicots | Malvaceae | <i>Sida</i> | | | C | | 2 |
| plants | higher dicots | Meliaceae | <i>Owenia acidula</i> | emu apple | | C | | 1 |
| plants | higher dicots | Meliaceae | <i>Owenia venosa</i> | crow's apple | | C | | 3 |
| plants | higher dicots | Meliaceae | <i>Melia azedarach</i> | white cedar | | C | | 2 |
| plants | higher dicots | Meliaceae | <i>Turraea pubescens</i> | native honeysuckle | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia crassa</i> subsp. <i>crassa</i> | | | C | | 10/1 |
| plants | higher dicots | Mimosaceae | <i>Prosopis pallida</i> | | Y | | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia leiocalyx</i> | | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia juncifolia</i> | | | C | | 2/2 |
| plants | higher dicots | Mimosaceae | <i>Acacia neriifolia</i> | pechey wattle | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia glaucocarpa</i> | hickory wattle | | C | | 2 |
| plants | higher dicots | Mimosaceae | <i>Acacia harpophylla</i> | brigalow | | C | | 7 |
| plants | higher dicots | Mimosaceae | <i>Acacia melanoxylon</i> | blackwood | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia dietrichiana</i> | | | C | | 2/2 |
| plants | higher dicots | Mimosaceae | <i>Acacia leptostachya</i> | Townsville wattle | | C | | 1/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia longispicata</i> | | | C | | 3/1 |
| plants | higher dicots | Mimosaceae | <i>Vachellia bidwillii</i> | | | C | | 1/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia bancroftiorum</i> | | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Vachellia farnesiana</i> | | Y | | | 4/1 |
| plants | higher dicots | Mimosaceae | <i>Archidendropsis basaltica</i> | red lancewood | | C | | 2 |
| plants | higher dicots | Mimosaceae | <i>Acacia complanata</i> | flatstem wattle | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Neptunia gracilis</i> forma <i>gracilis</i> | | | C | | 7/3 |
| plants | higher dicots | Mimosaceae | <i>Acacia leiocalyx</i> subsp. <i>leiocalyx</i> | | | C | | 1/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia crassa</i> | | | C | | 4 |

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| plants | higher dicots | Mimosaceae | <i>Acacia decora</i> | pretty wattle | | C | | 4/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia angusta</i> | | | C | | 1/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia pendula</i> | myall | | C | | 1/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia conferta</i> | | | C | | 2 |
| plants | higher dicots | Mimosaceae | <i>Acacia oswaldii</i> | miljee | | C | | 1 |
| plants | higher dicots | Mimosaceae | <i>Acacia salicina</i> | doolan | | C | | 13/1 |
| plants | higher dicots | Mimosaceae | <i>Acacia amblygona</i> | fan-leaf wattle | | C | | 2/2 |
| plants | higher dicots | Moraceae | <i>Ficus opposita</i> | | | C | | 1 |
| plants | higher dicots | Moraceae | <i>Ficus coronata</i> | creek sandpaper fig | | C | | 2 |
| plants | higher dicots | Myrsinaceae | <i>Myrsine variabilis</i> | | | C | | 2/2 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus bakeri</i> | Baker's mallee | | C | | 2/2 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus crebra</i> | narrow-leaved red ironbark | | C | | 3/2 |
| plants | higher dicots | Myrtaceae | <i>Corymbia bloxsomei</i> | | | C | | 1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus exserta</i> | Queensland peppermint | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia intermedia</i> | pink bloodwood | | C | | 2 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus coolabah</i> | coolabah | | C | | 13/1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus populnea</i> | poplar box | | C | | 4 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus tenuipes</i> | narrow-leaved white mahogany | | C | | 4/2 |
| plants | higher dicots | Myrtaceae | <i>Melaleuca bracteata</i> | | | C | | 11/2 |
| plants | higher dicots | Myrtaceae | <i>Melaleuca viminalis</i> | | | C | | 3/1 |
| plants | higher dicots | Myrtaceae | <i>Angophora floribunda</i> | rough-barked apple | | C | | 6 |
| plants | higher dicots | Myrtaceae | <i>Corymbia dallachiana</i> | | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia hendersonii</i> | | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia tessellaris</i> | Moreton Bay ash | | C | | 24 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus cloeziana</i> | Gympie messmate | | C | | 6/1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus granitica</i> | granite ironbark | | C | | 1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia clarksoniana</i> | | | C | | 18/2 |
| plants | higher dicots | Myrtaceae | <i>Corymbia leichhardtii</i> | rustyjacket | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus cambageana</i> | Dawson gum | | C | | 4 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus suffulgens</i> | | | C | | 3/2 |
| plants | higher dicots | Myrtaceae | <i>Corymbia erythrophloia</i> | variable-barked bloodwood | | C | | 22/3 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus chloroclada</i> | Baradine red gum | | C | | 3 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus decorticans</i> | | | C | | 10 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus orgadophila</i> | mountain coolibah | | C | | 8/3 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus tholiformis</i> | | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Lophostemon suaveolens</i> | swamp box | | C | | 5 |
| plants | higher dicots | Myrtaceae | <i>Melaleuca linariifolia</i> | snow-in summer | | C | | 3 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus melanophloia</i> | | | C | | 158 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus tereticornis</i> | | | C | | 8 |
| plants | higher dicots | Myrtaceae | <i>Leptospermum lamellatum</i> | | | C | | 18/1 |
| plants | higher dicots | Myrtaceae | <i>Melaleuca trichostachya</i> | | | C | | 2/2 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus camaldulensis</i> | | | C | | 1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus drepanophylla</i> | | | C | | 1 |
| plants | higher dicots | Myrtaceae | <i>Lysicarpus angustifolius</i> | budgeroo | | C | | 40/1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus cloeziana</i> x <i>E.portuensis</i> | | | C | | 1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia citriodora</i> subsp. <i>variegata</i> | | | C | | 11 |

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| plants | higher dicots | Myrtaceae | <i>Corymbia watsoniana</i> subsp. <i>capillata</i> | | | C | | 6/4 |
| plants | higher dicots | Myrtaceae | <i>Corymbia citriodora</i> subsp. <i>citriodora</i> | | | C | | 172 |
| plants | higher dicots | Myrtaceae | <i>Corymbia watsoniana</i> subsp. <i>watsoniana</i> | | | C | | 16 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus camaldulensis</i> subsp. <i>acuta</i> | | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Corymbia</i> sp. (<i>Springsure M.I.Brooker 9786</i>) | | | C | | 1/1 |
| plants | higher dicots | Myrtaceae | <i>Eucalyptus tereticornis</i> subsp. <i>tereticornis</i> | | | C | | 25/1 |
| plants | higher dicots | Nyctaginaceae | <i>Boerhavia dominii</i> | | | C | | 7 |
| plants | higher dicots | Nyctaginaceae | <i>Boerhavia</i> | | | C | | 5/1 |
| plants | higher dicots | Oleaceae | <i>Jasminum didymum</i> | | | C | | 4 |
| plants | higher dicots | Oleaceae | <i>Notelaea microcarpa</i> | | | C | | 2 |
| plants | higher dicots | Oleaceae | <i>Jasminum simplicifolium</i> | | | C | | 4 |
| plants | higher dicots | Oleaceae | <i>Jasminum didymum</i> subsp. <i>lineare</i> | | | C | | 3 |
| plants | higher dicots | Oleaceae | <i>Notelaea</i> sp. (<i>Barakula A.R.Bean 7553</i>) | | | C | | 3/2 |
| plants | higher dicots | Oleaceae | <i>Jasminum simplicifolium</i> subsp. <i>australiense</i> | | | C | | 2/2 |
| plants | higher dicots | Onagraceae | <i>Ludwigia octovalvis</i> | willow primrose | | C | | 1 |
| plants | higher dicots | Oxalidaceae | <i>Oxalis exilis</i> | | | C | | 1/1 |
| plants | higher dicots | Oxalidaceae | <i>Oxalis perennans</i> | | | C | | 1/1 |
| plants | higher dicots | Oxalidaceae | <i>Oxalis corniculata</i> | | Y | | | 7/1 |
| plants | higher dicots | Passifloraceae | <i>Passiflora aurantia</i> | | | C | | 1 |
| plants | higher dicots | Pedaliaceae | <i>Josephinia eugeniae</i> | josephinia burr | | C | | 1/1 |
| plants | higher dicots | Pentapetaceae | <i>Melhania oblongifolia</i> | | | C | | 3 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus simplex</i> | | | C | | 1/1 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus</i> sp. (<i>Pentland R.J.Cumming 9742</i>) | | | C | | 1/1 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus maderaspatensis</i> | | | C | | 4/1 |
| plants | higher dicots | Phyllanthaceae | <i>Poranthera microphylla</i> | small poranthera | | C | | 1/1 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus</i> | | | C | | 3 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus gunnii</i> | | | C | | 1 |
| plants | higher dicots | Phyllanthaceae | <i>Breynia oblongifolia</i> | | | C | | 6 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus virgatus</i> | | | C | | 8/3 |
| plants | higher dicots | Phyllanthaceae | <i>Bridelia leichhardtii</i> | | | C | | 1 |
| plants | higher dicots | Phyllanthaceae | <i>Sauropus ramosissimus</i> | | | C | | 1/1 |
| plants | higher dicots | Phyllanthaceae | <i>Phyllanthus lacunarius</i> | | | C | | 2/1 |
| plants | higher dicots | Picrodendraceae | <i>Petalostigma pubescens</i> | quinine tree | | C | | 17 |
| plants | higher dicots | Pittosporaceae | <i>Bursaria incana</i> | | | C | | 1 |
| plants | higher dicots | Pittosporaceae | <i>Pittosporum angustifolium</i> | | | C | | 2/1 |
| plants | higher dicots | Pittosporaceae | <i>Pittosporum spinescens</i> | | | C | | 3 |
| plants | higher dicots | Plantaginaceae | <i>Callitriche sonderi</i> | | | C | | 1/1 |
| plants | higher dicots | Plantaginaceae | <i>Stemodia florulenta</i> | | | C | | 1 |
| plants | higher dicots | Plantaginaceae | <i>Scoparia dulcis</i> | scoparia | Y | | | 1 |
| plants | higher dicots | Plumbaginaceae | <i>Plumbago zeylanica</i> | native plumbago | | C | | 1 |
| plants | higher dicots | Polygalaceae | <i>Polygala triflora</i> | | | C | | 2/2 |
| plants | higher dicots | Polygonaceae | <i>Rumex brownii</i> | swamp dock | | C | | 1/1 |
| plants | higher dicots | Polygonaceae | <i>Duma florulenta</i> | | | C | | 6/2 |
| plants | higher dicots | Portulacaceae | <i>Portulaca australis</i> | | | C | | 1/1 |
| plants | higher dicots | Portulacaceae | <i>Portulaca pilosa</i> | | Y | | | 1 |
| plants | higher dicots | Portulacaceae | <i>Portulaca oleracea</i> | pigweed | Y | | | 4 |

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| plants | higher dicots | Portulacaceae | <i>Calandrinia pickeringii</i> | | | C | | 1 |
| plants | higher dicots | Proteaceae | <i>Grevillea floribunda</i> subsp. <i>floribunda</i> | | | C | | 2/1 |
| plants | higher dicots | Proteaceae | <i>Grevillea cyranostigma</i> | | | C | | 1/1 |
| plants | higher dicots | Proteaceae | <i>Grevillea longistyla</i> | | | C | | 1/1 |
| plants | higher dicots | Proteaceae | <i>Grevillea parallela</i> | | | C | | 1/1 |
| plants | higher dicots | Proteaceae | <i>Grevillea striata</i> | beefwood | | C | | 2 |
| plants | higher dicots | Proteaceae | <i>Hakea lorea</i> subsp. <i>lorea</i> | | | C | | 3/1 |
| plants | higher dicots | Rhamnaceae | <i>Ventilago viminalis</i> | supplejack | | C | | 3/1 |
| plants | higher dicots | Rhamnaceae | <i>Alphitonia excelsa</i> | soap tree | | C | | 13 |
| plants | higher dicots | Rubiaceae | <i>Psydrax odorata</i> | | | C | | 2 |
| plants | higher dicots | Rubiaceae | <i>Psydrax odorata</i> forma <i>subnitida</i> | | | C | | 2/2 |
| plants | higher dicots | Rubiaceae | <i>Oldenlandia coerulescens</i> | | | C | | 2/2 |
| plants | higher dicots | Rubiaceae | <i>Everistia vacciniifolia</i> | | | C | | 2 |
| plants | higher dicots | Rubiaceae | <i>Spermacoce multicaulis</i> | | | C | | 3/1 |
| plants | higher dicots | Rubiaceae | <i>Spermacoce brachystema</i> | | | C | | 2/2 |
| plants | higher dicots | Rubiaceae | <i>Richardia brasiliensis</i> | white eye | Y | | | 2/1 |
| plants | higher dicots | Rubiaceae | <i>Opercularia diphylla</i> | | | C | | 1 |
| plants | higher dicots | Rubiaceae | <i>Spermacoce</i> | | | C | | 2 |
| plants | higher dicots | Rubiaceae | <i>Spermacoce</i> sp. (Dislyn A.R.Bean 14098) | | | C | | 2/2 |
| plants | higher dicots | Rubiaceae | <i>Asperula conferta</i> | | | C | | 1/1 |
| plants | higher dicots | Rubiaceae | <i>Psydrax johnsonii</i> | | | C | | 2 |
| plants | higher dicots | Rubiaceae | <i>Psydrax oleifolia</i> | | | C | | 1 |
| plants | higher dicots | Rutaceae | <i>Zieria aspalathoides</i> subsp. <i>aspalathoides</i> | | | C | | 2/1 |
| plants | higher dicots | Rutaceae | <i>Citrus glauca</i> | | | C | | 4 |
| plants | higher dicots | Rutaceae | <i>Flindersia dissosperma</i> | | | C | | 3/1 |
| plants | higher dicots | Rutaceae | <i>Geijera salicifolia</i> | brush wilga | | C | | 1 |
| plants | higher dicots | Rutaceae | <i>Geijera parviflora</i> | wilga | | C | | 13 |
| plants | higher dicots | Rutaceae | <i>Boronia duiganiae</i> | | | C | | 14/13 |
| plants | higher dicots | Rutaceae | <i>Phebalium nottii</i> | pink phebalium | | C | | 2/2 |
| plants | higher dicots | Rutaceae | <i>Boronia obovata</i> | | | C | | 2/2 |
| plants | higher dicots | Santalaceae | <i>Santalum acuminatum</i> | sweet quandong | | C | | 2 |
| plants | higher dicots | Santalaceae | <i>Exocarpos latifolius</i> | | | C | | 1 |
| plants | higher dicots | Santalaceae | <i>Santalum lanceolatum</i> | | | C | | 5/1 |
| plants | higher dicots | Sapindaceae | <i>Atalaya hemiglauca</i> | | | C | | 6 |
| plants | higher dicots | Sapindaceae | <i>Dodonaea viscosa</i> subsp. <i>spatulata</i> | | | C | | 1 |
| plants | higher dicots | Sapindaceae | <i>Cardiospermum halicacabum</i> | | Y | | | 1 |
| plants | higher dicots | Sapindaceae | <i>Dodonaea stenophylla</i> | | | C | | 2/1 |
| plants | higher dicots | Sapindaceae | <i>Dodonaea viscosa</i> | | | C | | 4 |
| plants | higher dicots | Sapindaceae | <i>Alectryon diversifolius</i> | scrub boonaree | | C | | 7 |
| plants | higher dicots | Sapindaceae | <i>Dodonaea triangularis</i> | | | C | | 3 |
| plants | higher dicots | Sapindaceae | <i>Dodonaea vestita</i> | | | C | | 1 |
| plants | higher dicots | Sapotaceae | <i>Planchonella cotinifolia</i> | | | C | | 2 |
| plants | higher dicots | Scrophulariaceae | <i>Eremophila debilis</i> | winter apple | | C | | 6 |
| plants | higher dicots | Scrophulariaceae | <i>Eremophila longifolia</i> | berrigan | | C | | 1 |
| plants | higher dicots | Scrophulariaceae | <i>Eremophila mitchellii</i> | | | C | | 6 |
| plants | higher dicots | Scrophulariaceae | <i>Myoporum</i> | | | C | | 1 |

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| plants | higher dicots | Scrophulariaceae | <i>Eremophila deserti</i> | | | C | | 1 |
| plants | higher dicots | Scrophulariaceae | <i>Eremophila maculata</i> | | | C | | 4 |
| plants | higher dicots | Sparrmanniaceae | <i>Grewia latifolia</i> | dysentery plant | | C | | 14 |
| plants | higher dicots | Sparrmanniaceae | <i>Corchorus tomentellus</i> | | | C | | 1/1 |
| plants | higher dicots | Sparrmanniaceae | <i>Corchorus trilocularis</i> | | | C | | 6/4 |
| plants | higher dicots | Sterculiaceae | <i>Brachychiton rupestris</i> | | | C | | 3 |
| plants | higher dicots | Sterculiaceae | <i>Brachychiton populneus</i> | | | C | | 6 |
| plants | higher dicots | Sterculiaceae | <i>Brachychiton bidwillii</i> | little kurrajong | | C | | 1 |
| plants | higher dicots | Sterculiaceae | <i>Brachychiton australis</i> | broad-leaved bottle tree | | C | | 4 |
| plants | higher dicots | Sterculiaceae | <i>Sterculia quadrifida</i> | peanut tree | | C | | 1 |
| plants | higher dicots | Stylidiaceae | <i>Stylidium eglandulosum</i> | | | C | | 1/1 |
| plants | higher dicots | Stylidiaceae | <i>Stylidium eriorhizum</i> | | | C | | 1/1 |
| plants | higher dicots | Surianaceae | <i>Cadellia pentastylis</i> | ooline | | V | V | 1/1 |
| plants | higher dicots | Thymelaeaceae | <i>Pimelea decora</i> | | | C | | 2 |
| plants | higher dicots | Thymelaeaceae | <i>Pimelea haematostachya</i> | | | C | | 5/3 |
| plants | higher dicots | Thymelaeaceae | <i>Pimelea linifolia</i> | | | C | | 1/1 |
| plants | higher dicots | Thymelaeaceae | <i>Pimelea strigosa</i> | | | C | | 1/1 |
| plants | higher dicots | Ulmaceae | <i>Celtis sinensis</i> | Chinese elm | Y | | | 1 |
| plants | higher dicots | Violaceae | <i>Afrohybanthus enneaspermus</i> | | | C | | 3/2 |
| plants | higher dicots | Violaceae | <i>Afrohybanthus stellarioides</i> | | | C | | 1 |
| plants | higher dicots | Viscaceae | <i>Viscum articulatum</i> | flat mistletoe | | C | | 1/1 |
| plants | higher dicots | Viscaceae | <i>Notothixos incanus</i> | | | C | | 2/2 |
| plants | higher dicots | Vitaceae | <i>Clematicissus opaca</i> | | | C | | 3 |
| plants | higher dicots | Vitaceae | <i>Cissus oblonga</i> | | | C | | 1/1 |
| plants | higher dicots | Zygophyllaceae | <i>Tribulus micrococcus</i> | yellow vine | | C | | 2/2 |
| plants | higher dicots | Zygophyllaceae | <i>Tribulus terrestris</i> | caltrop | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Parsonsia</i> | | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Carissa ovata</i> | currantbush | | C | | 7 |
| plants | lower dicots | Apocynaceae | <i>Tylophora erecta</i> | | | C | | 1/1 |
| plants | lower dicots | Apocynaceae | <i>Secamone elliptica</i> | | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Alstonia constricta</i> | bitterbark | | C | | 10/1 |
| plants | lower dicots | Apocynaceae | <i>Parsonsia straminea</i> | monkey rope | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Cynanchum viminale subsp. brunonianum</i> | | | C | | 1/1 |
| plants | lower dicots | Apocynaceae | <i>Marsdenia microlepis</i> | | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Parsonsia lanceolata</i> | northern silkpod | | C | | 2 |
| plants | lower dicots | Apocynaceae | <i>Cynanchum floribundum</i> | | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Marsdenia viridiflora</i> | | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Cryptostegia grandiflora</i> | rubber vine | Y | | | 1/1 |
| plants | lower dicots | Apocynaceae | <i>Parsonsia eucalyptophylla</i> | gargaloo | | C | | 1 |
| plants | lower dicots | Apocynaceae | <i>Marsdenia brevifolia</i> | | | V | V | 3/3 |
| plants | lower dicots | Aristolochiaceae | <i>Aristolochia meridionalis subsp. centralis</i> | | | C | | 1/1 |
| plants | lower dicots | Boraginaceae | <i>Ehretia membranifolia</i> | weeping koda | | C | | 5 |
| plants | lower dicots | Boraginaceae | <i>Trichodesma zeylanicum</i> | | | C | | 2 |
| plants | lower dicots | Boraginaceae | <i>Heliotropium brachygyne</i> | | | C | | 2/1 |
| plants | lower dicots | Boraginaceae | <i>Heliotropium amplexicaule</i> | blue heliotrope | Y | | | 1/1 |
| plants | lower dicots | Boraginaceae | <i>Trichodesma zeylanicum var. zeylanicum</i> | | | C | | 5/5 |

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| plants | lower dicots | Convolvulaceae | <i>Ipomoea polymorpha</i> | | | C | | 1 |
| plants | lower dicots | Convolvulaceae | <i>Polymeria</i> | | | C | | 1/1 |
| plants | lower dicots | Convolvulaceae | <i>Ipomoea plebeia</i> | bellvine | | C | | 2/1 |
| plants | lower dicots | Convolvulaceae | <i>Polymeria pusilla</i> | | | C | | 3 |
| plants | lower dicots | Convolvulaceae | <i>Polymeria calycina</i> | pink bindweed | | C | | 1 |
| plants | lower dicots | Convolvulaceae | <i>Evolvulus alsinoides</i> var. <i>decumbens</i> | | | C | | 1/1 |
| plants | lower dicots | Convolvulaceae | <i>Convolvulus graminetinus</i> | | | C | | 3/3 |
| plants | lower dicots | Convolvulaceae | <i>Convolvulus erubescens</i> | Australian bindweed | | C | | 5 |
| plants | lower dicots | Convolvulaceae | <i>Polymeria longifolia</i> | polymeria | | C | | 1/1 |
| plants | lower dicots | Convolvulaceae | <i>Ipomoea lonchophylla</i> | | | C | | 5/2 |
| plants | lower dicots | Convolvulaceae | <i>Evolvulus alsinoides</i> | | | C | | 6 |
| plants | lower dicots | Convolvulaceae | <i>Polymeria marginata</i> | | | C | | 1/1 |
| plants | lower dicots | Convolvulaceae | <i>Ipomoea argillicola</i> | | | C | | 1 |
| plants | lower dicots | Gentianaceae | <i>Schenkia australis</i> | | | C | | 1/1 |
| plants | lower dicots | Lamiaceae | <i>Prostanthera cryptandroides</i> subsp. <i>euphrasioides</i> | | | C | | 1/1 |
| plants | lower dicots | Lamiaceae | <i>Plectranthus parviflorus</i> | | | C | | 3/2 |
| plants | lower dicots | Lamiaceae | <i>Clerodendrum floribundum</i> | | | C | | 3 |
| plants | lower dicots | Lamiaceae | <i>Teucrium integrifolium</i> | | | C | | 3/1 |
| plants | lower dicots | Lamiaceae | <i>Basilicum polystachyon</i> | | | C | | 7/3 |
| plants | lower dicots | Lamiaceae | <i>Chloanthes parviflora</i> | | | C | | 2/2 |
| plants | lower dicots | Lamiaceae | <i>Teucrium daucoides</i> | | | C | | 1 |
| plants | lower dicots | Lamiaceae | <i>Teucrium junceum</i> | | | C | | 2 |
| plants | lower dicots | Lamiaceae | <i>Ajuga australis</i> | Australian bugle | | C | | 5/4 |
| plants | lower dicots | Lamiaceae | <i>Plectranthus</i> | | | C | | 1 |
| plants | lower dicots | Lamiaceae | <i>Salvia reflexa</i> | | Y | | | 1/1 |
| plants | lower dicots | Linderniaceae | <i>Lindernia</i> | | | C | | 1/1 |
| plants | lower dicots | Papaveraceae | <i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i> | Mexican poppy | Y | | | 3 |
| plants | lower dicots | Papaveraceae | <i>Argemone ochroleuca</i> | | Y | | | 1 |
| plants | lower dicots | Phrymaceae | <i>Glossostigma diandrum</i> | | | C | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Solanum seafortianum</i> | Brazilian nightshade | Y | | | 1 |
| plants | lower dicots | Solanaceae | <i>Solanum</i> | | | C | | 1 |
| plants | lower dicots | Solanaceae | <i>Solanum esuriale</i> | quena | | C | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Physalis angulata</i> | | Y | | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Physalis peruviana</i> | | Y | | | 1 |
| plants | lower dicots | Solanaceae | <i>Nicotiana megalosiphon</i> subsp. <i>megalosiphon</i> | | | C | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Nicotiana megalosiphon</i> | | | C | | 1 |
| plants | lower dicots | Solanaceae | <i>Solanum mitchellianum</i> | | | C | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Physalis lanceifolia</i> | | Y | | | 4/4 |
| plants | lower dicots | Solanaceae | <i>Datura leichhardtii</i> | native thornapple | Y | | | 1/1 |
| plants | lower dicots | Solanaceae | <i>Solanum ellipticum</i> | potato bush | | C | | 5/2 |
| plants | lower dicots | Verbenaceae | <i>Verbena macrostachya</i> | | | C | | 1/1 |
| plants | lower dicots | Verbenaceae | <i>Glandularia aristigera</i> | | Y | | | 2 |
| plants | lower dicots | Verbenaceae | <i>Verbena gaudichaudii</i> | | | C | | 1/1 |
| plants | lower dicots | Verbenaceae | <i>Verbena bonariensis</i> | purpletop | Y | | | 3 |
| plants | lower dicots | Verbenaceae | <i>Verbena africana</i> | | | C | | 5/5 |
| plants | monocots | Agavaceae | <i>Agave vivipara</i> var. <i>vivipara</i> | | Y | | | 1/1 |

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| plants | monocots | Amaryllidaceae | <i>Crinum flaccidum</i> | Murray lily | | C | | 2 |
| plants | monocots | Amaryllidaceae | <i>Crinum</i> | | | C | | 2 |
| plants | monocots | Asphodelaceae | <i>Bulbine bulbosa</i> | golden lily | | C | | 1/1 |
| plants | monocots | Commelinaceae | <i>Commelina lanceolata</i> | | | C | | 2/2 |
| plants | monocots | Commelinaceae | <i>Commelina diffusa</i> | wandering jew | | C | | 3 |
| plants | monocots | Commelinaceae | <i>Commelina ensifolia</i> | scurvy grass | | C | | 3/1 |
| plants | monocots | Cyperaceae | <i>Cyperus exaltatus</i> | tall flatsedge | | C | | 2/1 |
| plants | monocots | Cyperaceae | <i>Cyperus rotundus</i> | nutgrass | Y | | | 5 |
| plants | monocots | Cyperaceae | <i>Eleocharis plana</i> | ribbed spikerush | | C | | 2/2 |
| plants | monocots | Cyperaceae | <i>Cyperus betchei subsp. betchei</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Cyperus dactylotes</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Cyperus esculentus</i> | yellow nutgrass | Y | | | 1 |
| plants | monocots | Cyperaceae | <i>Cyperus squarrosus</i> | bearded flatsedge | | C | | 1 |
| plants | monocots | Cyperaceae | <i>Eleocharis atricha</i> | tuber spikerush | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Eleocharis pallens</i> | pale spikerush | | C | | 2/2 |
| plants | monocots | Cyperaceae | <i>Scleria sphacelata</i> | | | C | | 5 |
| plants | monocots | Cyperaceae | <i>Cyperus victoriensis</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Scleria mackaviensis</i> | | | C | | 2 |
| plants | monocots | Cyperaceae | <i>Eleocharis equisetina</i> | | | C | | 1 |
| plants | monocots | Cyperaceae | <i>Eleocharis sphacelata</i> | tall spikerush | | C | | 2/1 |
| plants | monocots | Cyperaceae | <i>Eleocharis tetraquetra</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Fimbristylis dichotoma</i> | common fringe-rush | | C | | 5/1 |
| plants | monocots | Cyperaceae | <i>Fimbristylis microcarya</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Eleocharis cylindrostachys</i> | | | C | | 1 |
| plants | monocots | Cyperaceae | <i>Eleocharis dulcis</i> | | | C | | 3/1 |
| plants | monocots | Cyperaceae | <i>Cyperus javanicus</i> | | | C | | 1/1 |
| plants | monocots | Cyperaceae | <i>Cyperus</i> | | | C | | 2 |
| plants | monocots | Cyperaceae | <i>Eleocharis</i> | | | C | | 1 |
| plants | monocots | Cyperaceae | <i>Carex inversa</i> | knob sedge | | C | | 2/1 |
| plants | monocots | Cyperaceae | <i>Cyperus bifax</i> | western nutgrass | | C | | 7/6 |
| plants | monocots | Cyperaceae | <i>Cyperus clarus</i> | | | V | | 2/2 |
| plants | monocots | Cyperaceae | <i>Cyperus fulvus</i> | | | C | | 6/1 |
| plants | monocots | Cyperaceae | <i>Cyperus gilesii</i> | | | C | | 3/1 |
| plants | monocots | Cyperaceae | <i>Cyperus flavidus</i> | | | C | | 1 |
| plants | monocots | Cyperaceae | <i>Cyperus gracilis</i> | | | C | | 13/2 |
| plants | monocots | Cyperaceae | <i>Cyperus difformis</i> | rice sedge | | C | | 3/2 |
| plants | monocots | Hemerocallidaceae | <i>Dianella brevipedunculata</i> | | | C | | 2 |
| plants | monocots | Hemerocallidaceae | <i>Dianella longifolia</i> | | | C | | 5/2 |
| plants | monocots | Hemerocallidaceae | <i>Dianella caerulea</i> | | | C | | 3/2 |
| plants | monocots | Hemerocallidaceae | <i>Dianella revoluta</i> | | | C | | 1/1 |
| plants | monocots | Hemerocallidaceae | <i>Dianella</i> | | | C | | 1 |
| plants | monocots | Hydrocharitaceae | <i>Vallisneria nana</i> | | | C | | 1/1 |
| plants | monocots | Hypoxidaceae | <i>Hypoxis arillacea</i> | | | C | | 3/2 |
| plants | monocots | Johnsoniaceae | <i>Caesia parviflora</i> | | | C | | 1/1 |
| plants | monocots | Johnsoniaceae | <i>Tricoryne elatior</i> | yellow autumn lily | | C | | 1 |
| plants | monocots | Juncaceae | <i>Juncus flavidus</i> | | | C | | 1 |

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| plants | monocots | Juncaceae | <i>Juncus usitatus</i> | | | C | | 1/1 |
| plants | monocots | Juncaginaceae | <i>Cycnogeton procerus</i> | | | C | | 1/1 |
| plants | monocots | Juncaginaceae | <i>Cycnogeton dubius</i> | | | C | | 1/1 |
| plants | monocots | Laxmanniaceae | <i>Lomandra multiflora subsp. multiflora</i> | | | C | | 6/1 |
| plants | monocots | Laxmanniaceae | <i>Lomandra leucocephala</i> | | | C | | 3 |
| plants | monocots | Laxmanniaceae | <i>Lomandra confertifolia subsp. pallida</i> | | | C | | 3 |
| plants | monocots | Laxmanniaceae | <i>Lomandra filiformis subsp. filiformis</i> | | | C | | 1/1 |
| plants | monocots | Laxmanniaceae | <i>Eustrephus latifolius</i> | wombat berry | | C | | 3 |
| plants | monocots | Laxmanniaceae | <i>Lomandra</i> | | | C | | 1 |
| plants | monocots | Laxmanniaceae | <i>Lomandra glauca</i> | pale matrush | | C | | 1/1 |
| plants | monocots | Laxmanniaceae | <i>Laxmannia gracilis</i> | slender wire lily | | C | | 2/2 |
| plants | monocots | Laxmanniaceae | <i>Lomandra filiformis</i> | | | C | | 2 |
| plants | monocots | Laxmanniaceae | <i>Lomandra longifolia</i> | | | C | | 6 |
| plants | monocots | Laxmanniaceae | <i>Lomandra multiflora</i> | | | C | | 4 |
| plants | monocots | Maundiaceae | <i>Maundia triglochinoides</i> | | | V | | 2 |
| plants | monocots | Orchidaceae | <i>Cymbidium canaliculatum</i> | | | C | | 4 |
| plants | monocots | Poaceae | <i>Capillipedium spicigerum</i> | spicytop | | C | | 2 |
| plants | monocots | Poaceae | <i>Sporobolus australasicus</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Bothriochloa erianthoides</i> | satintop grass | | C | | 11/5 |
| plants | monocots | Poaceae | <i>Digitaria divaricatissima</i> | spreading umbrella grass | | C | | 10/5 |
| plants | monocots | Poaceae | <i>Dichanthium queenslandicum</i> | | | V | E | 13/12 |
| plants | monocots | Poaceae | <i>Eriochloa pseudoacrotricha</i> | | | C | | 11/4 |
| plants | monocots | Poaceae | <i>Hyparrhenia rufa subsp. rufa</i> | | Y | | | 1/1 |
| plants | monocots | Poaceae | <i>Cynodon dactylon var. dactylon</i> | | Y | | | 1/1 |
| plants | monocots | Poaceae | <i>Aristida calycina var. calycina</i> | | | C | | 3 |
| plants | monocots | Poaceae | <i>Dinebra decipiens var. asthenes</i> | | | C | | 4/3 |
| plants | monocots | Poaceae | <i>Aristida holathera var. holathera</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Chloris divaricata var. divaricata</i> | slender chloris | | C | | 14/4 |
| plants | monocots | Poaceae | <i>Bothriochloa bladhii subsp. bladhii</i> | | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Megathyrsus maximus var. pubiglumis</i> | | Y | | | 1 |
| plants | monocots | Poaceae | <i>Urochloa panicoides var. panicoides</i> | | Y | | | 3/3 |
| plants | monocots | Poaceae | <i>Dichanthium sericeum subsp. humilium</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Dichanthium sericeum subsp. sericeum</i> | | | C | | 11/5 |
| plants | monocots | Poaceae | <i>Bothriochloa decipiens var. decipiens</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Aristida queenslandica var. dissimilis</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Panicum decompositum var. decompositum</i> | | | C | | 8/3 |
| plants | monocots | Poaceae | <i>Panicum queenslandicum var. acuminatum</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Aristida jerichoensis var. jerichoensis</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Aristida queenslandica var. queenslandica</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Panicum queenslandicum var. queenslandicum</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Digitaria divaricatissima var. divaricatissima</i> | | | C | | 5/5 |
| plants | monocots | Poaceae | <i>Enneapogon gracilis</i> | slender nineawn | | C | | 4 |
| plants | monocots | Poaceae | <i>Enteropogon minutus</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Enteropogon ramosus</i> | | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Eragrostis elongata</i> | | | C | | 3 |
| plants | monocots | Poaceae | <i>Eriochloa fatmensis</i> | | | C | | 2/1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|----------|---------|-------------------------------|----------------------|---|---|---|---------|
| plants | monocots | Poaceae | <i>Imperata cylindrica</i> | blady grass | | C | | 2 |
| plants | monocots | Poaceae | <i>Leptochloa digitata</i> | | | C | | 9/5 |
| plants | monocots | Poaceae | <i>Megathyrsus maximus</i> | | Y | | | 7 |
| plants | monocots | Poaceae | <i>Panicum larcomianum</i> | | | C | | 2/1 |
| plants | monocots | Poaceae | <i>Paspalidium distans</i> | shotgrass | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Paspalidium gracile</i> | slender panic | | C | | 6 |
| plants | monocots | Poaceae | <i>Tragus australianus</i> | small burr grass | | C | | 7/1 |
| plants | monocots | Poaceae | <i>Urochloa panicoides</i> | | Y | | | 1 |
| plants | monocots | Poaceae | <i>Bothriochloa bladhii</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Brachyachne ciliaris</i> | hairy native couch | | C | | 5 |
| plants | monocots | Poaceae | <i>Cymbopogon refractus</i> | barbed-wire grass | | C | | 14/1 |
| plants | monocots | Poaceae | <i>Dichanthium fecundum</i> | curly bluegrass | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Dichanthium sericeum</i> | | | C | | 3 |
| plants | monocots | Poaceae | <i>Enneapogon truncatus</i> | | | C | | 4/1 |
| plants | monocots | Poaceae | <i>Eragrostis lacunaria</i> | purple lovegrass | | C | | 1 |
| plants | monocots | Poaceae | <i>Iseilema macratherum</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Sporobolus elongatus</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Sporobolus scabridus</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Themeda quadrivalvis</i> | grader grass | Y | | | 1 |
| plants | monocots | Poaceae | <i>Tripogon loliiformis</i> | five minute grass | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Alloteropsis cimicina</i> | | | C | | 2/1 |
| plants | monocots | Poaceae | <i>Cymbopogon bombycinus</i> | silky oilgrass | | C | | 2/1 |
| plants | monocots | Poaceae | <i>Dichanthium annulatum</i> | sheda grass | Y | | | 2/1 |
| plants | monocots | Poaceae | <i>Dichanthium aristatum</i> | angleton grass | Y | | | 3/2 |
| plants | monocots | Poaceae | <i>Digitaria breviglumis</i> | | | C | | 3 |
| plants | monocots | Poaceae | <i>Eragrostis leptocarpa</i> | drooping lovegrass | | C | | 1 |
| plants | monocots | Poaceae | <i>Eragrostis parviflora</i> | weeping lovegrass | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Eremochloa bimaculata</i> | poverty grass | | C | | 2 |
| plants | monocots | Poaceae | <i>Heteropogon contortus</i> | black speargrass | | C | | 27/2 |
| plants | monocots | Poaceae | <i>Iseilema membranaceum</i> | small flinders grass | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Iseilema vaginiflorum</i> | red flinders grass | | C | | 10/1 |
| plants | monocots | Poaceae | <i>Setaria australiensis</i> | scrub pigeon grass | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Sporobolus mitchellii</i> | rat's tail couch | | C | | 6/2 |
| plants | monocots | Poaceae | <i>Aristida caput-medusae</i> | | | C | | 4 |
| plants | monocots | Poaceae | <i>Aristida queenslandica</i> | | | C | | 3 |
| plants | monocots | Poaceae | <i>Arundinella nepalensis</i> | reedgrass | | C | | 5 |
| plants | monocots | Poaceae | <i>Bothriochloa decipiens</i> | | | C | | 4 |
| plants | monocots | Poaceae | <i>Bothriochloa ewartiana</i> | desert bluegrass | | C | | 4/2 |
| plants | monocots | Poaceae | <i>Brachyachne convergens</i> | common native couch | | C | | 3/2 |
| plants | monocots | Poaceae | <i>Cleistochloa subjuncea</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Enneapogon cylindricus</i> | jointed nineawn | | C | | 4 |
| plants | monocots | Poaceae | <i>Enneapogon lindleyanus</i> | | | C | | 7/1 |
| plants | monocots | Poaceae | <i>Enneapogon polyphyllus</i> | leafy nineawn | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Enteropogon acicularis</i> | curly windmill grass | | C | | 3 |
| plants | monocots | Poaceae | <i>Enteropogon unispiceus</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Eragrostis cilianensis</i> | | Y | | | 5/1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|----------|---------|---------------------------------|-------------------------|---|---|---|---------|
| plants | monocots | Poaceae | <i>Eragrostis trichophora</i> | | Y | | | 2/2 |
| plants | monocots | Poaceae | <i>Moorochloa eruciformis</i> | | Y | | | 4/4 |
| plants | monocots | Poaceae | <i>Panicum queenslandicum</i> | | | C | | 7 |
| plants | monocots | Poaceae | <i>Paspalidium criniforme</i> | | | C | | 6/5 |
| plants | monocots | Poaceae | <i>Paspalidium globoideum</i> | sago grass | | C | | 9/1 |
| plants | monocots | Poaceae | <i>Paspalidium jubiflorum</i> | warrego grass | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Anthosachne plurinervis</i> | | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Dactyloctenium australe</i> | sweet smother grass | Y | | | 1 |
| plants | monocots | Poaceae | <i>Dactyloctenium radulans</i> | button grass | | C | | 2 |
| plants | monocots | Poaceae | <i>Enneapogon purpurascens</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Eragrostis leptostachya</i> | | | C | | 5/1 |
| plants | monocots | Poaceae | <i>Paspalidium caespitosum</i> | brigalow grass | | C | | 3 |
| plants | monocots | Poaceae | <i>Austrostipa verticillata</i> | slender bamboo grass | | C | | 1 |
| plants | monocots | Poaceae | <i>Panicum decompositum</i> | | | C | | 4 |
| plants | monocots | Poaceae | <i>Aristida</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Paspalum</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Eriochloa</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Paspalidium</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Bothriochloa</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Perotis rara</i> | comet grass | | C | | 4/1 |
| plants | monocots | Poaceae | <i>Eriachne rara</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Eulalia aurea</i> | silky browntop | | C | | 10/1 |
| plants | monocots | Poaceae | <i>Aristida annua</i> | | | V | V | 1/1 |
| plants | monocots | Poaceae | <i>Melinis repens</i> | red natal grass | Y | | | 14/1 |
| plants | monocots | Poaceae | <i>Aristida ramosa</i> | purple wiregrass | | C | | 7/1 |
| plants | monocots | Poaceae | <i>Aristida vagans</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Chloris inflata</i> | purpletop chloris | Y | | | 1 |
| plants | monocots | Poaceae | <i>Chloris virgata</i> | feathertop rhodes grass | Y | | | 2/1 |
| plants | monocots | Poaceae | <i>Panicum effusum</i> | | | C | | 8 |
| plants | monocots | Poaceae | <i>Setaria surgens</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Sorghum bicolor</i> | forage sorghum | Y | | | 2/1 |
| plants | monocots | Poaceae | <i>Sorghum nitidum</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Sorghum x alnum</i> | | Y | | | 2/2 |
| plants | monocots | Poaceae | <i>Cynodon dactylon</i> | | Y | | | 6 |
| plants | monocots | Poaceae | <i>Eriochloa crebra</i> | spring grass | | C | | 5/3 |
| plants | monocots | Poaceae | <i>Sarga leiocladum</i> | | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Themeda avenacea</i> | | | C | | 2/1 |
| plants | monocots | Poaceae | <i>Themeda triandra</i> | kangaroo grass | | C | | 4 |
| plants | monocots | Poaceae | <i>Urochloa gilesii</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Aristida contorta</i> | bunched kerosene grass | | C | | 2 |
| plants | monocots | Poaceae | <i>Aristida echinata</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Cenchrus ciliaris</i> | | Y | | | 15/1 |
| plants | monocots | Poaceae | <i>Dichanthium tenue</i> | small bluegrass | | C | | 1 |
| plants | monocots | Poaceae | <i>Digitaria brownii</i> | | | C | | 3/1 |
| plants | monocots | Poaceae | <i>Digitaria diffusa</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Dinebra decipiens</i> | | | C | | 4 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|----------|------------------|-------------------------------|------------------------|---|---|----|---------|
| plants | monocots | Poaceae | <i>Eriochloa procera</i> | slender cupgrass | | C | | 4/3 |
| plants | monocots | Poaceae | <i>Sorghum halepense</i> | Johnson grass | Y | | | 4/1 |
| plants | monocots | Poaceae | <i>Sporobolus caroli</i> | fairy grass | | C | | 6 |
| plants | monocots | Poaceae | <i>Sporobolus creber</i> | | | C | | 8/3 |
| plants | monocots | Poaceae | <i>Thellungia advena</i> | coolibah grass | | C | | 6/3 |
| plants | monocots | Poaceae | <i>Urochloa piligera</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Aristida latifolia</i> | feathertop wiregrass | | C | | 12/3 |
| plants | monocots | Poaceae | <i>Aristida lazaridis</i> | | | C | | 2/2 |
| plants | monocots | Poaceae | <i>Aristida leptopoda</i> | white speargrass | | C | | 11/3 |
| plants | monocots | Poaceae | <i>Aristida personata</i> | | | C | | 6/2 |
| plants | monocots | Poaceae | <i>Astrebula squarrosa</i> | bull mitchell grass | | C | | 2/1 |
| plants | monocots | Poaceae | <i>Cenchrus echinatus</i> | Mossman River grass | Y | | | 1 |
| plants | monocots | Poaceae | <i>Chloris ventricosa</i> | tall chloris | | C | | 6/1 |
| plants | monocots | Poaceae | <i>Chrysopogon fallax</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Digitaria ciliaris</i> | summer grass | Y | | | 1 |
| plants | monocots | Poaceae | <i>Digitaria eriantha</i> | | Y | | | 1/1 |
| plants | monocots | Poaceae | <i>Digitaria porrecta</i> | | | | NT | 10/10 |
| plants | monocots | Poaceae | <i>Echinochloa colona</i> | awnless barnyard grass | Y | | | 5/2 |
| plants | monocots | Poaceae | <i>Eragrostis brownii</i> | Brown's lovegrass | | C | | 9/1 |
| plants | monocots | Poaceae | <i>Eragrostis dielsii</i> | mallee lovegrass | | C | | 1 |
| plants | monocots | Poaceae | <i>Eragrostis sororia</i> | | | C | | 3/2 |
| plants | monocots | Poaceae | <i>Eriachne mucronata</i> | | | C | | 4 |
| plants | monocots | Poaceae | <i>Setaria incrassata</i> | | Y | | | 2/2 |
| plants | monocots | Poaceae | <i>Triodia mitchellii</i> | buck spinifex | | C | | 3/2 |
| plants | monocots | Poaceae | <i>Aristida gracilipes</i> | | | C | | 5 |
| plants | monocots | Poaceae | <i>Brachyachne tenella</i> | | | C | | 1/1 |
| plants | monocots | Poaceae | <i>Chrysopogon filipes</i> | | | C | | 2 |
| plants | monocots | Poaceae | <i>Cymbopogon obtectus</i> | | | C | | 1 |
| plants | monocots | Poaceae | <i>Dichanthium setosum</i> | | | C | V | 6/6 |
| plants | monocots | Poaceae | <i>Digitaria ramularis</i> | | | C | | 1 |
| plants | monocots | Pontederiaceae | <i>Monochoria cyanea</i> | | | C | | 1/1 |
| plants | monocots | Xanthorrhoeaceae | <i>Xanthorrhoea johnsonii</i> | | | C | | 1 |
| plants | mosses | Pottiaceae | <i>Barbula calycina</i> | | | C | | 1/1 |

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*. The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ().

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).

This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

APPENDIX C

Potential Occurrence of EVNT Species

Table C1 Potential of Near Threatened and Threatened Flora Identified in the Protected Matters Search Tool and Queensland Government WO Searches to Occur within the Study Area

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|-----------------------|---------------------|------------|--|
| 1 | V | V | <i>Aristida annua</i> | PM/WO | 1 | <p>Low - This species is listed as vulnerable under both the EPBC Act and NC Act. One record of the species exists within 30 km of the study area. <i>Aristida annua</i> is a small annual grass restricted to black soil woodlands in a small area in central Queensland (DEE, 2019a). It occurs in two disjunct populations: one between Clermont, Capella and Dysart, and the second between Emerald, Carnarvon National Park and Blackdown Tableland National Park. It is a known inhabitant of the Natural Grasslands TEC, which was confirmed as occurring on the site during the 2018–2019 flora/fauna assessments.</p> <p>The species flowers between March and June (Herbrechts, DEE, 2019a). Despite intensive flora surveys conducted in late February - early March 2019 the species was not recorded. However, annual plants such as this were essentially absent due to un-seasonally dry weather. The DEE SPRAT database (DEE 2019a) maps the site as an area where 'species or species habitat may occur', indicating that expert analysis identified the site as outside the core habitat/distribution of the species. As the species was not recorded on site during either survey, is not known from nearby Albinia National Park or Meteor Downs South, this species is unlikely to be affected by the proposed development.</p> |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---------------------------------------|---------------------|------------|--|
| 2 | V | V | Ooline <i>Cadellia pentastylis</i> | PM/WO | 1 | Low—There are two records of this species within 30km of the study area, the first of which is approximately 8km from the site (Atlas of Living Australia, 2019). This species occurs on the northwest slopes of New South Wales and in central and southern Queensland. In Queensland, Ooline occurs from Balcomba south to the New South Wales border and west to near Blackall. This species grows in semi-evergreen vine thickets and sclerophyll vegetation on undulating terrain of varying geology including sandstone, conglomerate and claystone (DEE, 2019c and references therein). Given the low numbers recorded near the study area and preferred habitat not recorded on site, there is a low likelihood for this species to occur within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|--|---------------------|------------|---|
| 3 | V | — | <i>Cyperus clarus</i> | WO | 2 | Moderate—This species is a grassland specialist distributed in southern Queensland and northern New South Wales. It grows in grassland and open woodland on heavy clay soils derived from basalt, including grasslands dominated by <i>Dichanthium</i> , <i>Aristida</i> and <i>Panicum</i> spp. (Wilson, 2008; DES, 2019). There are two records of this species within 30km of the study area. While there are no records of the species on the Atlas of Living Australia, and generally little information is available on the species, the presence of nearby records and suitable habitat indicate that this species is moderately likely to occur on site. |
| 4 | V | E | King Blue-grass <i>Dichanthium queenslandicum</i> | PM/WO | 13 | Present— During the February-March 2019 survey, a single individual was located in grassland plot 21 in the southern corner of the study area in an area of RE11.8.11 grassland community. There are numerous records of this species to the west of the study area, including two records approximately 5km from the study area. This species is endemic to central and southern Queensland where it occurs in three disjunct populations: 1) Hughenden district; 2) from Nebo to Monto and west to Clermont and Rolleston; and 3) Dalby district, Darling Downs (DEE, 2019c and references therein). It has been recorded to occur within the Brigalow Belt; however, its extent of occurrence has reduced significantly. The species occurs on black cracking clay in tussock grasslands, mainly in conjunction with other Bluegrass species. It is mostly confined to natural grasslands. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|---------------------|------------|--|
| 5 | LC | V | Bluegrass <i>Dichanthium setosum</i> | PM | 0 | High— There are nearby records of this species. The nearest record on Atlas of Living Australia (ALA) is a specimen collected in 2018 from 1.72km west of the study area. The species has been located on the nearby Albinia National Park (DNPRSR, 2013). The species is associated with heavy basaltic black soils and red-brown loams with clay subsoil. It is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. It is often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched. There are nearby records and there is suitable habitat for this species across the site, however, the site has a long history of heavy grazing. The ungrazed roadside edge of the Dawson Highway also represents good habitat, despite the invasion of Buffel Grass <i>Cenchrus ciliaris</i> * along the margin, which is specifically listed as a threat to Bluegrass (DES 2019h). There are no reasons to conclude that the species could not occur in some areas of the site |
| 6 | NT | — | Finger Panic Grass <i>Digitaria porrecta</i> | WO | 10 | Low - Listed as near-threatened under the NC Act, this is an erect perennial grass to 0.6 m tall, with known occurrences between Springsure and Rolleston (DES, 2014). There are known occurrences on the adjacent Albinia National Park (DNPRSR, 2013), with the nearest record on the ALA being a specimen collected in 2015 from 2.7 km south of the study area. Its preferred habitat is tussock grassland or open woodland of Poplar Box <i>Eucalyptus populnea</i> or River Red Gum <i>E. camaldulensis</i> ; invariably on heavy, cracking clays, sometimes of alluvial origin (DES, 2014). Apart from clearing and habitat fragmentation, Finger Panic Grass <i>Digitaria porrecta</i> is known to be threatened by trampling and grazing by livestock; and physical disturbance by machinery (DES, 2014). Although heavy cracking clays do occur, the preferred open woodland associations do not occur on the study area, and its sensitivity to trampling and grazing by livestock would significantly limit its potential to occur on the heavily grazed study area. |
| 7 | V | V | <i>Marsdenia brevifolia</i> | PM/WO | 3 | Low—The species has three disjunct populations: 1) Townsville district (including Magnetic Island); 2) Springsure; and 3) north of Rockhampton (DEE 2019a). In the Springsure population the habitat for this species includes a range of woodland communities, on rocky steep slopes and hillsides, on shallow ridges or along seasonal watercourses (Queensland Herbarium Herbrecks). Geology can vary from acid volcanic (basalt), serpentinite, or granite in different areas but is usually associated with large boulders and rock outcrops (Calvert <i>et al.</i> 2005). Trampling and grazing by cattle is known to kill plants (DEE 2019a). Considering the absence of known landforms, geology and preferred habitat type and vegetation associations from the study site, and the sensitivity to grazing that is a long term dominant feature of this site, there is a low likelihood of occurrence within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|------------------------------|---------------------|------------|---|
| 8 | V | – | <i>Maundia triglochinos</i> | WO | 2 | Low - this species is restricted to coastal NSW with a small extension into southern QLD and grows in swamps or shallow freshwater areas on heavy clay with no nutrients (OEH, 2019). The closest record of the species to the study area listed by The Atlas of Living Australia (2019) is 400km southeast. It is of low likelihood this species will occur in the study area due to the habitat requirements not being present. |
| 9 | E | – | <i>Trioncinia retroflexa</i> | WO | 2 | Moderate / High—There are only ten records of this species in Queensland and 40% of these are located between the study area and Springsure. There are three records within 30km from the study area, the closest being approximately 12.8km northeast (Atlas of Living Australia, 2019). It occurs in grasslands on basalt downs and on cracking clay soils (DES, 2019 and references therein), of which there are patches present within the study area. As there are local records within 30km of the study area and suitable habitat is present and adjusting for the extremely low abundance of the species, there is a moderate likelihood for this species to occur within the site. |

1. NC Act Status: LC = Least Concern, NT = Near Threatened, V = Vulnerable, E = Endangered. 2. EPBC Act Status: LC = Least Concern, NT = Near Threatened, V = Vulnerable, E = Endangered. 3. WO = Queensland Government Wildlife Online Database Extract, PM = EPBC Act Protected Matters Report.

Table C2 Potential of Near Threatened and Threatened Birds Identified in the Protected Matters Search Tool and Queensland Government WO Searches to Occur within the Study Area

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|---------------------|------------|--|
| 1 | E | V | Red Goshawk <i>Erythrotriorchis radiatus</i> | PM | 0 | Low—This species prefers forest and woodland with a mosaic of vegetation types, particularly near riverine systems and permanent water where there is an abundance of prey species (DEE, 2019c and references therein). The home range in northern Australia has been reported as up to 200km ² with indications it may be even larger (Aumann & Baker-Gabb, 1991). While this species has a large home range, suitable habitat is not present within the study area and there are no records within 30km. It has a low likelihood of occurrence. |
| 2 | V | V | Squatter Pigeon (Southern) <i>Geophaps scripta scripta</i> | PM/WO | 8 | High—There are eight local records of this species within 30km of the study area (Atlas of Living Australia, 2019). Habitats that this species occur in are generally defined as open-forests to sparse, open-woodlands and scrub that is mostly dominated in the overstorey by <i>Eucalyptus</i> , <i>Corymbia</i> , <i>Acacia</i> or <i>Callitris</i> species (DEE, 2019c and references therein). The presence of local records in combination with suitable habitat within the study area results in a high likelihood of occurrence. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|--|---------------------|------------|---|
| 3 | PE | EX | Paradise Parrot <i>Psephotus pulcherrimus</i> | WO | 1 | Low—This species is listed as extinct in the wild by the NCA and extinct by the EPBC. The record approximately 15km from the study area dates back to 1844 has a large spatial uncertainty of 54km. It is unlikely this species occurs within the study area. |
| 4 | E | E | Star Finch (Southern) <i>Neochmia ruficauda ruficauda</i> | PM | 0 | Low—This species occurs only in Central Queensland and the overall distribution of this species is very poorly known. The study area is within the suspected range of the species described in the conservation advice. This species occurs mainly in grasslands and grassy woodlands that are located close to bodies of fresh water. It also occurs in cleared or suburban areas such as along roadsides and in towns (DEE, 2019c and references therein). Due to the lack of local records and the nearest record occurring approximately 230km to the northeast (Atlas of Living Australia, 2019), it is unlikely that this species occurs within the study area. |
| 5 | E | E | Southern Black-throated Finch <i>Poephila cincta cincta</i> | PM | 0 | Low—This species occurs mainly in grassy, open woodlands and forests, typically dominated by <i>Eucalyptus</i> , <i>Corymbia</i> and <i>Melaleuca</i> , and occasionally in tussock grasslands or other habitats, often along or near watercourses, or in the vicinity of water (DEE, 2019c and references therein). The nearest record of the species is within Carnarvon National Park, over 120km away from the study area (Atlas of Living Australia, 2019). While potentially suitable habitat exists, due to the limited distribution and the lack of records of this species within the study area it has a low likelihood of occurring. |
| 6 | V | V | Painted Honeyeater <i>Grantiella picta</i> | PM | 0 | Low—This species is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory. The greatest concentrations, and almost all records of breeding, come from inland slopes of the Great Dividing Range between the Grampians, Victoria and Roma, Queensland. This species exhibits seasonal north-south movements governed principally by the fruiting of mistletoe. Many birds move after breeding to semi-arid regions such as north-eastern South Australia, central and western Queensland, and central Northern Territory (DEE, 2019c and references therein). The nearest record of this species is approximately 80km to the southeast of the study area. Due to the absence of local records and the study area fringing the edge of this species distribution it is unlikely that this species occurs within the study area. |
| 7 | V | E | Australian Painted Snipe <i>Rostratula australis</i> | PM | 0 | Low—This species has been recorded at wetland sites throughout much of Australia but is most common in the eastern States. The Australian Painted Snipe is a distinct species, but its cryptic and crepuscular behaviour can make it difficult to detect. This species typically occurs in shallow freshwater wetlands and other permanently or temporarily inundated areas, particularly where rank tussocks of grasses, sedges, rushes or reeds are present (DEE, 2019c; Morcombe, 2003). The study area is located within the known distribution for this species; however, limited suitable foraging habitat and lack of nearby records of this species results in a low likelihood of this species occurring within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|--|---------------------|------------|---|
| 8 | E | CE, M | Curlew Sandpiper <i>Calidris ferruginea</i> | PM | 0 | Low—This species typically inhabits intertidal mudflats in sheltered coastal areas; however, have also been recorded inland around ephemeral and permanent lakes, dams, waterholes and bore drains as well as around floodplains (Higgins & Davies, 1996). There are no records of this species within 30km of the study area and the nearest is at Lake Maraboon, south of Emerald (Atlas of Living Australia, 2019). It is considered that this species is unlikely to occur within the study area as there is no suitable habitat for this species within the study area and no local records. |

1. NC Act Status: V = Vulnerable, E = Endangered, PE = Extinct in the Wild. 2. EPBC Act Status: V = Vulnerable, E = Endangered, CE = Critically Endangered, EX = Extinct, M = Migratory. 3. WO = Queensland Government Wildlife Online Database Extract, PM = EPBC Act Protected Matters Report.

Table C3 Potential of Near Threatened and Threatened Mammals Identified in the Protected Matters Search Tool and Queensland Government WO Searches to Occur within the Study Area

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|--|---------------------|------------|---|
| 1 | LC | E | Northern Quoll <i>Dasyurus hallucatus</i> | PM | 0 | Low—The distribution of this species is highly fragmented in the state and surveys indicate severe reductions from the species former distribution. This species occupies a diverse range of habitats across its range, including rocky areas, forests, woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert (DEE, 2019c and references therein). The nearest record of this species is approximately 35km west of the study area (Atlas of Living Australia, 2019). While the study area falls within the species known distribution and there are scattered records in the region, the lack of records within 30km and very small, disjointed and degraded pockets of potential habitat result in a low likelihood of occurrence. |
| 2 | E | V | Ghost Bat <i>Macroderma gigas</i> | PM/WO | 1 | Low—This species has a patchy distribution in rainforest, semi-deciduous vine thicket, open woodland, spinifex, black soil and grassland habitats. It has been recorded to roost in caves, boulder piles, shallow escarpments and mines (Van Dyck <i>et al.</i> , 2013). Due to unsuitable roosting habitat within the study area, and the nearest recording by Atlas of Living Australia (2019) being approximately 200km east of the study area, it is considered unlikely that this species occurs within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|---------------------|------------|--|
| 3 | V | V | Koala <i>Phascolarctos cinereus</i> | PM/WO | 15 | Moderate—The range for this species includes the eastern half of Queensland in sclerophyll forest and woodland (Menkhorst & Knight, 2011). Although widespread, suitable feed species and leaf moisture are the primary determinants of habitat suitability (DEE, 2019c). Numerous records of this species occur within 30km of the study area; however, these records are over 30 years old (Atlas of Living Australia, 2019), and habitat for this species has been greatly disturbed and cleared. There is a moderate likelihood that this species occurs in the study area. |
| 4 | V | V | Southern Greater Glider <i>Petauroides volans volans</i> | WO | 23 | Moderate—This species occurs mainly in Queensland, ranging from Rockhampton to the New South Wales border, and inland with few records past Emerald (Atlas of Living Australia, 2019). The species is largely restricted to eucalypt forests and woodlands and distribution can be patchy even within suitable habitat (DEE, 2019c and references therein). Due to the large number of local records and lack of suitable habitat it is moderately likely the species occurs in the study area. |
| 5 | V | V | Corben's Long-eared Bat <i>Nyctophilus corbeni</i> | PM | 0 | Low—This species is found in southern central Queensland, central western New South Wales, north-western Victoria and eastern South Australia, where it is patchily distributed, with most of its range in the Murray Darling Basin. This species is uncommon within this distribution and is rarely recorded, except in some areas including the Nandewar and Brigalow Belt South bioregions in New South Wales and Queensland. It is found in a wide range of inland woodland vegetation types, but in Queensland is distinctly more common in box/ironbark/cypress pine vegetation that occurs in a north-south belt along the western slopes and plains of New South Wales and southern Queensland. This species is more abundant in extensive stands of vegetation than in smaller woodland patches, suggesting its home range is probably large (TSSC, 2015b and references therein). The study area is situated on the northern edge of this species distribution, with the nearest record being over 100km away. Because of the lack of local records, it is unlikely this species occurs within the study area. |
| 6 | V | V | Large-eared Pied Bat <i>Chalinolobus dwyeri</i> | PM | 0 | Low—This species distribution is poorly known, but records indicate that this species can be found from near Rockhampton, QLD, south to Ulladulla, NSW (DEE, 2019c). The majority of records are located within large sandstone escarpments, particularly in the Sydney basin, but have been known to occupy disused mines and adits. There are no records of this species within the local area and the closest record is 100km away (Atlas of Living Australia, 2019). As there are no local records or suitable habitat, this species has a low likelihood of occurring within the study area. |

1. NC Act Status: LC = Least Concern, V = Vulnerable, E = Endangered. 2. EPBC Act Status: V = Vulnerable, E = Endangered. 3. WO = Queensland Government Wildlife Online Database Extract, PM = EPBC Act Protected Matters Report.

Table C4 Potential of Near Threatened and Threatened Reptiles Identified in the Protected Matters Search Tool and Queensland Government WO Searches to Occur within the Study Area

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|---------------------|------------|--|
| 1 | E | CE | Southern Snapping Turtle <i>Elseya albagula</i> | PM | 2 | Low—This species is found in Queensland in the Fitzroy, Mary and Burnett Rivers, and associated smaller drainages in southeastern Queensland (TSSC, 2014). This species requires permanent water to persist, which is not present in the study area. As such, this species has a low likelihood of occurring in the study area. |
| 2 | V | V | Fitzroy River Turtle <i>Rheodytes leukops</i> | PM | 3 | Low—This species is only found in the drainage system of the Fitzroy River, Queensland. Known sites include Coolburra, Gainsford, Glenroy Crossing, Theodore, Baralba, the Mackenzie River, the Connors River, Duaringa, Marlborough Creek and Gogango. This species is found in rivers with large deep pools with rocks, gravelly or sandy substrates, connected by shallow riffles. Preferred areas have low turbidity and low water temperatures (concurrent with, and are often associated with Ribbonweed beds (DEE, 2019c and references therein). Three records of this species occur within 30km of the study area; however, the spatial uncertainty of these records is very high, with most being approximately 10km. This species requires permanent water to persist, which does not occur in the study area. As such, this species has a low likelihood of occurring in the study area. |
| 3 | NT | - | Golden-tailed Gecko <i>Strophurus taenicauda</i> | WO | 1 | Low—This species is found almost exclusively within the Brigalow Belt bioregion, generally within low Brigalow (<i>Acacia harpophylla</i>) woodlands, often in association with Cypress Pine (<i>Callitris</i> spp.), where they shelter under loose bark during the day. It is highly arboreal, sitting motionless on low branches of trees in ambush and feeding on invertebrates (DES, 2019a and references therein). The nearest record from the Atlas of Living Australia (-24.9,148.5167) is 56.5km to the south and none of the vegetation associations occur on site so there is a Low likelihood of the species occurring within the remnant vegetation of the study area. |
| 4 | V | V | Ornamental Snake <i>Denisonia maculata</i> | PM/WO | 3 | Moderate—The species is known only from the Brigalow Belt North and parts of the Brigalow Belt South biogeographical regions. The core of the species distribution occurs within the drainage system of the Fitzroy and Dawson Rivers. The preferred habitat of this species is within, or close to, habitat that is favoured by its prey – frogs. The species is known to prefer woodlands and open forests associated with moist areas, particularly gilgai mounds and depressions, but also lake margins and wetlands (DEE, 2019c and references therein). There is potential for gilaes to form in the northern part of the study area, thus providing suitable habitat. Due to local records and possibly suitable habitat occurring within the study area, there is a moderate likelihood of this species occurring within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Source ³ | Record No. | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|---------------------|------------|--|
| 5 | V | V | Collared Delma <i>Delma torquata</i> | PM | 0 | Low—This species has been recorded within the Bunya Mountains, Blackdown Tablelands, Expedition National Park, Western Creek near Millmerran, and in the Toowoomba Range. This species normally inhabits eucalypt-dominated woodlands and open-forests in Queensland (DEE, 2018c and references therein). The closest record on Atlas of Living Australia (2019) occurs near Carnarvon National Park, situated approximately 80km from the study area. Due to the lack of local records and patchy distribution of this species it is unlikely to occur within the study area. |
| 6 | V | V | Yakka Skink <i>Egernia rugosa</i> | PM/WO | 1 | <p>Low—The known distribution of this species extends from the coast to the hinterland of sub-humid to semi-arid eastern Queensland. The core habitat of this species is within the mulga lands and Brigalow Belt South bioregions where it occurs in a variety of habitat types including woodlands and open forests of Poplar Box, Brigalow, Ironbark, Cypress Pine, Mulga, Bendee, and Lancewood (DoEE, 2017b). It is more commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. This species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation. In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens (DEE, 2019c and references therein).</p> <p>There are no records of this species within 20km of the study area. The closest record is between Wandoan and Miles in Gurulmundi State Forest. Marginally suitable habitat is present in the study area in the form of root cavities and logs in the riparian forest, and small anthropogenic log piles. However, none of the vegetation associations on site match with known Yakka Skink habitat, and despite thorough examination of suitable microhabitat (a) from a distance with binoculars and (b) in close proximity to target signs of the species (e.g. burrows and excavation soil, frequented paths and basking areas, and communal latrines), no evidence of its presence was detected during the field surveys. Whilst small fragments of suitable microhabitat occur throughout the area, the broad community type suggests it has a low likelihood of occurring.</p> |

1. NC Act Status: NT = Near Threatened, V = Vulnerable, E = Endangered. 2. EPBC Act Status: V = Vulnerable, CE = Critically Endangered. 3. WO = Queensland Government Wildlife Online Database Extract, PM = EPBC Act Protected Matters Report.

Table C5 Potential for Terrestrial and Migratory Fauna Identified in the Protected Matters Search Tool and Queensland Government WO Searches to Occur within the Study Area

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|--|
| 1 | SLC | M | Fork-tailed Swift <i>Apus pacificus</i> | Moderate—This species is a non-breeding visitor to all states and territories of Australia with scattered records of this species in the Gulf Country and a few records on Cape York Peninsula (DEE, 2019c and references therein). They are also widespread but scattered in coastal areas in the south-eastern region of Queensland where they are more widespread west of the Great Divide and are commonly found west of the line joining Chinchilla and Hughenden. In Australia, they mostly occur over inland plains, cliffs and beaches, over islands and sometimes off the coast. There are five local records within 30km of the study area and records throughout the surrounding landscape are scattered. It is likely that any occurrence in this area would be a pass-over; however, due to the number of local records it is moderately likely the species will occur within the study area. |
| 2 | SLC | M | Oriental Cuckoo <i>Cuculus optatus</i> | Low—This species is widespread in the northern and eastern parts of Australia, inhabiting rainforest margins, monsoon forest, vine scrubs, riverine thickets, wetter, densely canopied eucalypt forests, paperbark swamps and mangroves (Morcombe, 2003). Due to the habitat requirements of this species not being met within the study area it is unlikely this species occurs within the study area. |
| 3 | SLC | M | Satin Flycatcher <i>Myiagra cyanoleuca</i> | Low—This species occurs across Australia and inhabits temperate forests and subtropical and tropical moist lowland forests (Morcombe, 2003). There is one record of this species within 30km of the study site; however, the habitat within the study area is unsuitable for this species. It is considered of low likelihood that this species could occur in the study area. |
| 4 | SLC | M | Yellow Wagtail <i>Motacilla flava</i> | Low—This species is a rare but regular migrant to coastal areas within Australia. It typically inhabits open habitats, often near water, and occasionally drier inland plains (Morcombe, 2003). Due to sporadic and scattered occurrences of this species and lack of suitable habitat within the study site, it is unlikely to occur. |
| 5 | SLC | M | Common Sandpiper <i>Actitis hypoleucos</i> | Low—This species has a widespread and patchy distribution along all coastlines of Australia. It is found in coastal wetlands and inland wetlands with varying levels of salinity (DEE, 2019c). Most commonly found in muddy or rocky shores of estuaries, deltas of streams, banks upstream, lakes, pools, billabongs, reservoirs, and dams. The study area does not support suitable habitat for this species and therefore, its likelihood of occurrence is low. |
| 6 | SLC | M | Sharp-tailed Sandpiper <i>Calidris acuminata</i> | Low—This species occurs around the entire coast of Australia outside its breeding season, where it occurs around a broad range of permanent or ephemeral water bodies, primarily brackish. In Queensland, it is sparsely distributed across the state during this period, with many records being fly-overs (DEE, 2019c and references therein). It is likely that any occurrence in this area would be a pass-over, and due to the lack of records occurrence is of low likelihood on the study site. |
| 7 | E | CE, M | Curlew Sandpiper <i>Calidris ferruginea</i> | Low—This species typically inhabits intertidal mudflats in sheltered coastal areas; however, it has also been recorded inland around ephemeral and permanent lakes, dams, waterholes and bore drains as well as around floodplains (Higgins & Davies, 1996). There are no records of this species within 30km of the study area and the nearest being at Lake Maraboon, south of Emerald. It is considered that this species is unlikely to occur within the study area, as there is limited suitable habitat for this species within the study area. |

| No. | NC Act Status ¹ | EPBC Act Status ² | Species | Potential to Occur in the Study Area |
|-----|----------------------------|------------------------------|---|--|
| 8 | SLC | M | Pectoral Sandpiper <i>Calidris melanotos</i> | Low—While this species has been recorded inland in Queensland around Roma and Longreach, the majority of records occur east of the Great Dividing Range between Cairns and Yeppoon. It is more particular about habitats than many of its relatives, preferring shallow wetlands (fresh to marine) and doesn't tend to utilise small or ephemeral water bodies (Pizzey & Knight, 2012). Due to the lack of nearby records and suitable habitat the likelihood of this species occurring on the study sites is low. |
| 9 | SLC | M | Latham's Snipe <i>Gallinago hardwickii</i> | Low—This species is distributed along the east coast of Australia from Cape York Peninsula south to south eastern Australia. This species occurs in permanent and ephemeral wetlands with low to dense vegetation up to 2000 m above sea-level (DEE, 2019c). This species is also known to occur close to humans and human activity. Due to the lack of local records and suitable habitat, there is a low likelihood of this species occurring within the study area. |

1. NC Act Status: LC = Special Least Concern, E = Endangered. 2. EPBC Act Status: CE = Critically Endangered, M = Migratory. All species sourced from EPBC Act Protected Matters Report.

APPENDIX D

Flora Species List

Table D1 Flora Species Recorded within the Study Area November 2018 and February-March 2019

| No | Status ¹ | Species Name | Common Name | 11.8.11 ² | 11.8.5 ² | 11.3.3. ² |
|---------------------------------|---------------------|--|------------------------|----------------------|---------------------|----------------------|
| Asteraceae | | | | | | |
| 1 | LC | <i>Apowollastonia spilanthis</i> (F.Muell.) Orchard | Native Wedelia | X | X | |
| 2 | * | <i>Bidens bipinnata</i> L. | Spanish Needles | X | | X |
| 3 | * | <i>Cirsium vulgare</i> (Savi) Ten. | Spear Thistle | | X | |
| 4 | * | <i>Erigeron bonariensis</i> L. | Fleabane | | | X |
| 5 | * | <i>Parthenium hysterophorus</i> L. | Parthenium | X | X | X |
| 6 | * | <i>Verbesina encelioides</i> (Cav.) Benth. & Hook.f. ex A.Gray | Golden Crownbeard | | X | |
| Boraginaceae | | | | | | |
| 7 | * | <i>Heliotropium amplexicaule</i> Vahl | Clasping Heliotrope | X | | |
| Brassicaceae | | | | | | |
| 8 | * | <i>Sisymbrium irio</i> L. | London Rocket | | X | |
| Cactaceae | | | | | | |
| 9 | * | <i>Opuntia tomentosa</i> Salm-Dyck | Prickly Pear | X | X | X |
| Campanulaceae | | | | | | |
| 10 | LC | <i>Wahlenbergia gracilis</i> (G.Forst.) A.DC. | Bluebell | X | | |
| Capparaceae | | | | | | |
| 11 | LC | <i>Capparis lasiantha</i> R.Br. ex DC. | Split Jack | | X | X |
| Chenopodiaceae | | | | | | |
| 12 | LC | <i>Salsola australis</i> R.Br. | Roly Poly | | | X |
| Combretaceae | | | | | | |
| 13 | LC | <i>Terminalia oblongata</i> F.Muell. subsp. <i>oblongata</i> | Yellow Wood | | X | |
| Convolvulaceae | | | | | | |
| 14 | LC | <i>Evolvulus alsinoides</i> (L.) L. | Tropical Speedwell | X | | |
| 15 | LC | <i>Polymeria longifolia</i> Lindl. | Polymeria Take-all | X | | X |
| Laxmanniaceae | | | | | | |
| 16 | LC | <i>Lomandra longifolia</i> Labill. | Mat Rush | | | X |
| Leguminosae (Fabaceae) | | | | | | |
| 17 | * | <i>Clitoria ternatea</i> L. | Blue Butterfly Pea | | X | |
| 18 | LC | <i>Sesbania cannabina</i> (Retz.) Poir. var. <i>cannabina</i> | Sesbania pea | | X | |
| 19 | LC | <i>Vigna suberecta</i> Benth. | Twining Cow Pea | X | | |
| Leguminosae (Mimosaceae) | | | | | | |
| 20 | LC | <i>Acacia salicina</i> Lindl. | Willow Wattle | | | |
| 21 | * | <i>Leucaena leucocephala</i> (Lam.) de Wit subsp. <i>leucocephala</i> | Leucaena | X | | |
| 22 | LC | <i>Neptunia gracilis</i> Benth. forma <i>gracilis</i> | Native Sensitive Plant | X | | |
| 23 | * | <i>Vachellia farnesiana</i> (L.) Wight & Arn. | Mimosa Bush | X | X | X |
| Myrtaceae | | | | | | |
| 24 | LC | <i>Corymbia erythrophloia</i> (Blakely) K.D.Hill & L.A.S.Johnson | Red Bloodwood | X | | |
| 25 | LC | <i>Corymbia tessellaris</i> (F.Muell.) K.D.Hill & L.A.S.Johnson | Moreton Bay Ash | X | | X |
| 26 | LC | <i>Eucalyptus camaldulensis</i> subsp. <i>acuta</i> Brooker & M.W.McDonald | River Red Gum | | X | |
| 27 | LC | <i>Eucalyptus melanophloia</i> F.Muell. subsp. <i>melanophloia</i> | Silver-leaved Ironbark | X | | |
| 28 | LC | <i>Eucalyptus orgadophila</i> Maiden & Blakely | Mountain Coolibah | X | | |
| 29 | LC | <i>Melaleuca bracteata</i> F.Muell. | Black Teatree | | X | |
| Nyctaginaceae | | | | | | |

| No | Status ¹ | Species Name | Common Name | 11.8.11 ² | 11.8.5 ² | 11.3.3. ² |
|-----------------------|---------------------|--|-------------------------|----------------------|---------------------|----------------------|
| 30 | LC | <i>Boerhavia dominii</i> Meikle & Hewson | Tar Vine | X | | X |
| Orchidaceae | | | | | | |
| 31 | LC | <i>Cymbidium canaliculatum</i> R.Br. | Black Orchid | | X | |
| Orobanchaceae | | | | | | |
| 32 | LC | <i>Buchnera gracilis</i> R.Br. | Blackrod | X | | |
| Pentapetaceae | | | | | | |
| 33 | LC | <i>Melhania oblongifolia</i> F.Muell. | Velvet Hibiscus | X | | |
| Poaceae | | | | | | |
| 34 | LC | <i>Aristida leptopoda</i> Benth. | White Speargrass | X | | |
| 35 | LC | <i>Aristida personata</i> Henrard | Purple Wire-grass | X | | |
| 36 | LC | <i>Astrebula elymoides</i> F.Muell. ex F.M.Bailey | Hoop Mitchell Grass | X | | |
| 37 | * | <i>Bothriochloa pertusa</i> (L.) A.Camus | Indian Couch | X | | X |
| 38 | * | <i>Cenchrus ciliaris</i> L. | Buffel Grass | X | | X |
| 39 | LC | <i>Cymbopogon bombycinus</i> (R.Br.) Domin | Native Lemon Grass | X | | |
| 40 | V | <i>Dichanthium queenslandicum</i> B.K.Simon | King Blue Grass | X | | |
| 41 | LC | <i>Dichanthium sericeum</i> (R.Br.) A.Camus subsp. <i>sericeum</i> | Queensland Bluegrass | X | | |
| 42 | LC | <i>Enneapogon polyphyllus</i> (Domin) N.T.Burb. | Woolly Oat Grass | X | | |
| 43 | LC | <i>Enteropogon ramosus</i> B.K.Simon | Creek Windmill Grass | X | | |
| 44 | LC | <i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult. | Black Speargrass | X | | |
| 45 | * | <i>Melinis repens</i> (Willd.) Zizka | Red Natal Grass | X | X | X |
| 46 | * | <i>Panicum coloratum</i> L. | Kleingrass | | X | |
| 47 | LC | <i>Panicum decompositum</i> R.Br. var. <i>decompositum</i> | Native Millet | X | X | |
| 48 | LC | <i>Panicum laevinode</i> Hughes | Pepper Grass | X | | |
| 49 | LC | <i>Panicum queenslandicum</i> Domin var. <i>queenslandicum</i> | Native Panic | X | | |
| 50 | LC | <i>Paspalidium globoideum</i> (Domin) Hughes | Watercrown Grass | X | | |
| 51 | LC | <i>Setaria</i> sp. | Setaria | X | | |
| 52 | LC | <i>Thellungia advena</i> Stapf ex Probst | Coolibah Grass | X | X | |
| 53 | LC | <i>Themeda triandra</i> Forssk. | Kangaroo Grass | X | | |
| Rutaceae | | | | | | |
| 54 | LC | <i>Geijera parviflora</i> Lindl. | Scrub Wilga | | X | |
| Sapindaceae | | | | | | |
| 55 | LC | <i>Alectryon diversifolius</i> (F.Muell.) S.T.Reynolds | Scrub Boonaree | | X | |
| 56 | LC | <i>Atalaya hemiglaúca</i> (F.Muell.) F.Muell. ex Benth. | Whitewood | | X | |
| Sterculiaceae | | | | | | |
| 57 | LC | <i>Brachychiton rupestris</i> (T.Mitch. ex Lindl.) K.Schum. | Queensland Bottle Tree | X | | |
| Thymelaeaceae | | | | | | |
| 58 | LC | <i>Pimelea haematostachya</i> F.Muell. | Pimelea Poppy | X | | |
| Zygophyllaceae | | | | | | |
| 59 | LC | <i>Zygophyllum apiculatum</i> F.Muell. | Pointed-fruit Twinleaf. | X | | |

1. Status: LC = Least Concern. V = Vulnerable under the NC Act. * = Species not native to Australia. 2. RE Habitat of species.

APPENDIX E

Fauna Species List

Table E1 Fauna Species Recorded within the Study Area November 2018 and February-March 2019

| No | Status ¹ | Species Name | Common Name | 2018 ² | 2019 ³ |
|------------------------|---------------------|-----------------------------------|----------------------------|-------------------|-------------------|
| AMPHIBIANS | | | | | |
| Bufonidae | | | | | |
| 1 | * | <i>Rhinella marina</i> | Cane Toad | X | X |
| Hylidae | | | | | |
| 2 | LC | <i>Litoria caerulea</i> | Green Tree Frog | X | X |
| 3 | LC | <i>Litoria inermis</i> | Bumpy Rocketfrog | X | |
| 4 | LC | <i>Litoria latopalmata</i> | Broad-palmed Frog | X | |
| Limnodynastidae | | | | | |
| 5 | LC | <i>Limnodynastes tasmaniensis</i> | Spotted Grass Frog | X | |
| 6 | LC | <i>Platyplectrum ornatum</i> | Ornate Burrowing Frog | X | |
| REPTILES | | | | | |
| Agamidae | | | | | |
| 7 | LC | <i>Pogona barbata</i> | Eastern Bearded Dragon | X | |
| Diplodactylidae | | | | | |
| 8 | LC | <i>Strophurus williamsi</i> | Eastern Spiny-tailed Gecko | X | |
| Elapidae | | | | | |
| 9 | LC | <i>Cryptophis boschmai</i> | Carpentaria Snake | X | |
| 10 | LC | <i>Demansia psammophis</i> | Yellow-faced Whip Snake | X | |
| 11 | LC | <i>Pseudonaja textilis</i> | Eastern Brown Snake | X | |
| Gekkonidae | | | | | |
| 12 | LC | <i>Gehyra dubia</i> | Dubious Dtella | X | |
| 13 | LC | <i>Heteronotia binoei</i> | Bynoe's Gecko | X | X |
| Scincidae | | | | | |
| 14 | LC | <i>Carlia munda</i> | Striped Rainbow Skink | X | X |
| 15 | LC | <i>Cryptoblepharus virgatus</i> | striped snake-eyed skink | X | |
| 16 | LC | <i>Ctenotus</i> sp. | - | | |
| 17 | LC | <i>Lerista</i> sp. | - | | |
| 18 | LC | <i>Lygisaurus foliorum</i> | Iridescent Litter-skink | X | |
| AVES | | | | | |
| Acanthizidae | | | | | |
| 19 | LC | <i>Gerygone albugularis</i> | White-throated Gerygone | X | |
| 20 | LC | <i>Gerygone fusca</i> | Western Gerygone | X | X |
| 21 | LC | <i>Smicrornis brevirostris</i> | Weebill | | X |
| Accipitridae | | | | | |
| 22 | LC | <i>Aquila audax</i> | Wedge-tailed Eagle | X | X |
| 23 | LC | <i>Elanus axillaris</i> | Black-shouldered Kite | X | |
| Aegothelidae | | | | | |
| 24 | LC | <i>Aegotheles cristatus</i> | Owlet Nightjar | X | |
| Alcedinidae | | | | | |
| 25 | LC | <i>Dacelo leachii</i> | Blue-winged Kookaburra | X | |
| 26 | LC | <i>Dacelo novaeguineae</i> | Laughing Kookaburra | X | |
| 27 | LC | <i>Todiramphus canctus</i> | Sacred Kingfisher | X | X |
| 28 | LC | <i>Todiramphus pyrrhopygius</i> | Red-backed Kingfisher | X | |
| Anatidae | | | | | |
| 29 | LC | <i>Anas superciliosa</i> | Pacific Black Duck | X | |
| Ardeidae | | | | | |
| 30 | LC | <i>Ardea pacifica</i> | White-necked Heron | X | |

| No | Status ¹ | Species Name | Common Name | 2018 ² | 2019 ³ |
|----------------------|---------------------|----------------------------------|----------------------------|-------------------|-------------------|
| 31 | LC | <i>Egretta novaehollandiae</i> | White-faced Heron | X | |
| Artamidae | | | | | |
| 32 | LC | <i>Artamus cinereus</i> | Black-faced Woodswallow | X | |
| 33 | LC | <i>Artamus leucorhynchus</i> | White-breasted Woodswallow | X | |
| 34 | LC | <i>Artamus minow</i> | Little Woodswallow | X | |
| 35 | LC | <i>Cracticus nigrogularis</i> | Pied Butcherbird | X | X |
| 36 | LC | <i>Gymnorhina tibicen</i> | Australian Magpie | X | X |
| Cacatuidae | | | | | |
| 37 | LC | <i>Eolophus roseicapilla</i> | Galah | X | X |
| Campephagidae | | | | | |
| 38 | LC | <i>Lalage sueurli</i> | White-winged Triller | X | |
| Columbidae | | | | | |
| 39 | LC | <i>Geopelia cuneata</i> | Diamond Dove | X | |
| 40 | LC | <i>Geopelia striata</i> | Peaceful Dove | X | X |
| 41 | LC | <i>Phaps chalcoptera</i> | Common Bronzewing | X | |
| Coraciidae | | | | | |
| 42 | LC | <i>Eurystomus oreintalis</i> | Dollarbird | X | |
| Corvidae | | | | | |
| 43 | LC | <i>Corvus coronoides</i> | Australian raven | X | |
| 44 | LC | <i>Corvus orru</i> | Torresian Crow | X | X |
| Cuculidae | | | | | |
| 45 | LC | <i>Cacomantis pallidus</i> | Pallid Cuckoo | X | |
| 46 | LC | <i>Scythrops novaehollandiae</i> | Channel-billed Cuckoo | X | |
| Dromaiidae | | | | | |
| 47 | LC | <i>Dromaius novaehollandiae</i> | Emu | X | |
| Estrildidae | | | | | |
| 48 | LC | <i>Aidemosyne modesta</i> | Plum-headed Finch | X | |
| 49 | LC | <i>Taeniopygia bichenovii</i> | Double-barred Finch | X | |
| 50 | LC | <i>Taeniopygia guttata</i> | Zebra Finch | X | X |
| Falconidae | | | | | |
| 51 | LC | <i>Falco berigora</i> | Brown Falcon | X | X |
| 52 | LC | <i>Falco cenchroides</i> | Nankeen Kestrel | X | X |
| Hirundinidae | | | | | |
| 53 | LC | <i>Hirundo neoxena</i> | Welcome Swallow | X | |
| 54 | LC | <i>Petrochelidon ariel</i> | Fairy Martin | X | X |
| 55 | LC | <i>Petrochelidon nigricans</i> | Tree Martin | X | |
| Maluridae | | | | | |
| 56 | LC | <i>Malurus melanocephalus</i> | Red-backed Fairywren | X | X |
| Megaluridae | | | | | |
| 57 | LC | <i>Megalurus curalis</i> | Brown Songlark | X | |
| 58 | LC | <i>Megalurus mathewsi</i> | Rufous Songlark | X | |
| Megapodiidae | | | | | |
| 59 | LC | <i>Alectura lathami</i> | Australian Brush Turkey | X | X |
| Meliphagidae | | | | | |
| 60 | LC | <i>Lichmera indistincta</i> | Brown Honeyeater | X | |
| 61 | LC | <i>Melithreptus albogularis</i> | White-throated Honeyeater | X | X |
| 62 | LC | <i>Manorina flavigula</i> | Yellow-throated Miner | X | X |
| 63 | LC | <i>Philemon corniculatus</i> | Noisy Friarbird | X | X |
| 64 | LC | <i>Plectorhyncha lanceolata</i> | Striped Honeyeater | X | X |
| Monarchidae | | | | | |

| No | Status ¹ | Species Name | Common Name | 2018 ² | 2019 ³ |
|------------------------|---------------------|----------------------------------|--------------------------------|-------------------|-------------------|
| 65 | LC | <i>Grallina cyanoleuca</i> | Maggie-lark | X | |
| 66 | LC | <i>Muyiagra rubecula</i> | Leaden Flycatcher | X | |
| Motacillidae | | | | | |
| 67 | LC | <i>Anthus novaeseelandiae</i> | Australasian Pipit | X | |
| Pachycephalidae | | | | | |
| 68 | LC | <i>Pachycephala rufiventris</i> | Rufous Whistler | X | X |
| 69 | LC | <i>Colluricincla harmonica</i> | Grey Shrikethrush | X | |
| Petroicidae | | | | | |
| 70 | LC | <i>Microeca flavigaster</i> | Lemon-bellied Flycatcher | X | X |
| Phasianidae | | | | | |
| 71 | LC | <i>Coturnix ypsilophora</i> | Brown Quail | X | |
| Podargidae | | | | | |
| 72 | LC | <i>Podargus strigoides</i> | Tawny Frogmouth | X | X |
| Psittacidae | | | | | |
| 73 | LC | <i>Aprosmictus erythropterus</i> | Red-winged Parrot | X | |
| 74 | LC | <i>Nymphicus hollandicus</i> | Cockatiel | X | |
| 75 | LC | <i>Platycercus adscitus</i> | Pale-headed Rosella | X | X |
| 76 | LC | <i>Trichoglossus haematodus</i> | Rainbow Lorikeet | X | X |
| Rhipiduridae | | | | | |
| 77 | LC | <i>Rhipidura leucophrys</i> | Willie Wagtail | X | X |
| Strigidae | | | | | |
| 78 | LC | <i>Ninox connivens</i> | Barking Owl | X | X |
| MAMMALS | | | | | |
| Bovidae | | | | | |
| 79 | * | <i>Bos x indicus</i> | Domestic Cattle | X | X |
| Dasyuridae | | | | | |
| 80 | LC | <i>Planigale maculata</i> | Common Planigale | X | |
| Emballonuridae | | | | | |
| 81 | LC | <i>Saccolaimus flaviventris</i> | Yellow-bellied Sheath-tail Bat | X | X |
| Felidae | | | | | |
| 82 | * | <i>Felis catus</i> | Feral Cat | X | X |
| Leporidae | | | | | |
| 83 | * | <i>Oryctolagus cuniculus</i> | Rabbit | X | X |
| Macropodidae | | | | | |
| 84 | LC | <i>Macropus giganteus</i> | Eastern Grey Kangaroo | X | X |
| Miniopteridae | | | | | |
| 85 | LC | <i>Miniopterus orianae</i> | Large Bent-winged Bat | X | X |
| Molossidae | | | | | |
| 86 | LC | <i>Austronomus australis</i> | White-striped Free-tailed Bat | X | |
| 87 | LC | <i>Chaerophon jobensis</i> | Northern Free-tailed Bat | X | X |
| 88 | LC | <i>Ozimops lumsdenae</i> | Northern Free-tailed Bat | X | X |
| 89 | LC | <i>Ozimops ridei/O. petersi</i> | Ride's/Inland Free-tailed Bat | X | X |
| 90 | LC | <i>Setirostris eleryi</i> | Bristle-faced Free-tailed Bat | X | |
| Muridae | | | | | |
| 91 | * | <i>Mus musculus</i> | House Mouse | X | |
| 92 | * | <i>Rattus rattus</i> | Black Rat | X | |
| Phalangeridae | | | | | |
| 93 | LC | <i>Trichosurus vulpecula</i> | Common Brushtail Possum | X | X |
| Suidae | | | | | |

| No | Status ¹ | Species Name | Common Name | 2018 ² | 2019 ³ |
|-------------------------|---------------------|-------------------------------|-------------------------|-------------------|-------------------|
| 94 | * | <i>Sus scrofa</i> * | Wild Pig | X | X |
| Tachyglossidae | | | | | |
| 95 | LC | <i>Tachyglossus aculeatus</i> | Short-beaked Echidna | X | |
| Vespertilionidae | | | | | |
| 96 | LC | <i>Chalinobus gouldii</i> | Gould's Wattled Bat | X | X |
| 97 | LC | <i>Chalinobus morio</i> | Chocolate Wattled Bat | X | X |
| 98 | LC | <i>Chalinobus picatus</i> | Pied Wattled Bat | X | X |
| 99 | – | <i>Nyctophilus sp.</i> | Long-eared Bat | X | X |
| 100 | LC | <i>Scotorepens greyii</i> | Little Broad-nosed Bat | X | X |
| 101 | LC | <i>Scotorepens balstoni</i> | Western Broad-nosed Bat | X | X |
| 102 | LC | <i>Vespadelus troughtoni</i> | Troughton's Forest Bat | X | X |




1. Status: LC = Least Concern. V = Vulnerable under the NC Act. * = Species not native to Australia. 2. Species recorded November 2018.. X = Species record. 3. Species recorded February-March 2019. X = Species record.




APPENDIX F




Threatened Ecological Community Assessment Sites




Table F1 Threatened Ecological Community Assessment Site Data




| No. | Quadrat Data | |
|-----|---|--|
| 1 | <p>Quadrat #: 1</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Astrebla lappacea</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 2 | <p>Quadrat #: 2</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 3 | <p>Quadrat #: 3</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Astrebla elymoides</i>, <i>Dichanthium sericeum</i>,</p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable (particularly heavily grazed)</p> |  |




| No. | Quadrat Data | |
|-----|---|--|
| 4 | <p>Quadrat #: 4</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <30%</p> <p>TEC determination: TEC, best quality (particularly heavily grazed)</p> |  |
| 5 | <p>Quadrat #: 5</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <5%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 6 | <p>Quadrat #: 6</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <5%</p> <p>Cover of non-woody introduced species: <30%</p> <p>TEC determination: Indeterminable (very dry & desiccated)</p> |  |

| No. | Quadrat Data | |
|-----|---|--|
| 7 | <p>Quadrat #: 7</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 8 | <p>Quadrat #: 8</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 9 | <p>Quadrat #: 9</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |




| No. | Quadrat Data | |
|-----|---|--|
| 10 | <p>Quadrat #: 10</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 11 | <p>Quadrat #: 11</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best quality</p> |  |
| 12 | <p>Quadrat #: 12</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |

| No. | Quadrat Data | |
|-----|---|--|
| 13 | <p>Quadrat #: 13</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Paspalidium globoideum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 14 | <p>Quadrat #: 14</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 15 | <p>Quadrat #: 15</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <30%</p> <p>TEC determination: Indeterminable</p> |  |




| No. | Quadrat Data | |
|-----|---|--|
| 16 | <p>Quadrat #: 16</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 17 | <p>Quadrat #: 17</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 18 | <p>Quadrat #: 18</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |




| No. | Quadrat Data | |
|-----|--|--|
| 19 | <p>Quadrat #: 19</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Paspalidium globoideum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best quality</p> |  |
| 20 | <p>Quadrat #: 20</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best quality</p> |  |
| 21 | <p>Quadrat #: 21</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium queenslandicum</i>, <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best quality</p> |  |




| No. | Quadrat Data | |
|-----|---|--|
| 22 | <p>Quadrat #: 22</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable (heavily grazed)</p> |  |
| 23 | <p>Quadrat #: 23</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <30%</p> <p>TEC determination: TEC, best quality</p> |  |
| 24 | <p>Quadrat #: 24</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable (very heavily grazed)</p> |  |




| No. | Quadrat Data | |
|-----|---|--|
| 25 | <p>Quadrat #: 25</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 26 | <p>Quadrat #: 26</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 27 | <p>Quadrat #: 27</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best quality</p> |  |


| No. | Quadrat Data | |
|-----|---|--|
| 28 | <p>Quadrat #: 28</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good quality</p> |  |
| 29 | <p>Quadrat #: 29</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 30 | <p>Quadrat #: 30</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |

| No. | Quadrat Data | |
|-----|--|--|
| 31 | <p>Quadrat #: 31</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |
| 32 | <p>Quadrat #: 32</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |
| 33 | <p>Quadrat #: 33</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Tree Cover: approx. 35% (<i>Corymbia erythrophloia</i>)</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Not TEC</p> |  |

| No. | Quadrat Data | |
|-----|--|--|
| 34 | <p>Quadrat #: 34</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |
| 35 | <p>Quadrat #: 35</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable</p> |  |
| 36 | <p>Quadrat #: 36</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |

| No. | Quadrat Data | |
|-----|---|--|
| 37 | <p>Quadrat #: 37</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |
| 38 | <p>Quadrat #: 38</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: Indeterminable (very heavily grazed, bare ground common)</p> |  |
| 39 | <p>Quadrat #: 39</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best condition (heavily grazed)</p> |  |

| No. | Quadrat Data | |
|-----|---|--|
| 40 | <p>Quadrat #: 40</p> <p>Mapped regional ecosystem: Non remnant, between Leucaena rows</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, good condition</p> |  |
| 41 | <p>Quadrat #: 41</p> <p>Mapped regional ecosystem:</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Aristida leptopoda</i>, <i>Astrelba elymoides</i>, <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <5%</p> <p>TEC determination: TEC, best condition</p> |  |
| 42 | <p>Quadrat #: 42</p> <p>Mapped regional ecosystem: (roadside reserve)</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <30% (~10% <i>Melinis repens</i>)</p> <p>TEC determination: TEC, good condition</p> |  |

| No. | Quadrat Data | |
|-----|---|--|
| 43 | <p>Quadrat #: 43</p> <p>Mapped regional ecosystem: (roadside reserve)</p> <p>Patch size: At least 5 ha</p> <p>Presence of indicator grass species: <i>Dichanthium sericeum</i>, <i>Panicum decompositum</i>, <i>Panicum queenslandicum</i>, <i>Thellungia advena</i></p> <p>Tussock Cover: At least 200 native tussocks</p> <p>Cover of woody introduced species: <30%</p> <p>Cover of non-woody introduced species: <30% (~10% <i>Melinis repens</i> & <i>Cenchrus ciliaris</i>)</p> <p>TEC determination: TEC, good condition</p> |  |

APPENDIX G

Microbat Call Interpretation Reports



Microbat Call Identification Report

| | |
|--------------------------------------|-------------------------------|
| Prepared for ("Client"): | Northern Resource Consultants |
| Survey location/project name: | Springsure-Rolleston area |
| Survey dates: | 6-9 November 2018 |
| Client project reference: | |
| Job no.: | NRC-1901 |
| Report date: | 15 January 2019 |

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Methods

Data received

Balance! Environmental received 1400 full-spectrum (WAV format) audio files, recorded on two Song Meter detectors over four consecutive nights (6-9 November 2018).

Call identification

All data were analysed manually in *Kaleidoscope Pro* (Wildlife Acoustics, Maynard MA, USA), with species identification achieved by comparing calls observed in each WAV file spectrogram to those of reference calls from central and northern Queensland and/or with published call descriptions (e.g. Reinhold et al. 2001; Milne 2002). Consideration was also given to the probability of species' occurrence based on published distribution information (e.g. Churchill 2008; van Dyck *et al.* 2013) and on-line database records (e.g. <http://www.ala.org.au>).

Species identification was based largely on sequences of more than four search-phase pulses; however, where good-quality foraging sequences were available (*i.e.* a call sequence with contiguous search-phase, attack-phase and feeding-buzz components), those calls were used to provide additional evidence of some species' presence. The feeding buzzes of *Miniopterus* species (bent-winged bats) and some Molossids (free-tailed bats) are quite distinctive, compared with those of Vespertilionids (vesper bats) with which they often share search-phase characteristics (Corben 2010).

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at <http://www.ausbats.org.au/>.

Species nomenclature follows Jackson & Groves (2015), which uses several new genus/species names compared with widely-used field guides (e.g. Churchill 2008; Van Dyck *et al.* 2013). New names used in this report include:

- *Ozimops lumsdenae* (Northern Free-tailed Bat) – formerly *Mormopterus beccarii*;
- *Ozimops ridei* (Ride's Free-tailed Bat) – formerly *M. ridei* and *M.* 'species 2';
- *Ozimops petersi* (Inland Free-tailed Bat) – formerly *M.* 'species 3';
- *Setirostris eleryi* (Bristle-faced Free-tailed Bat) – formerly *Mormopterus eleryi* and *M.* 'species 6';
and
- *Miniopterus orianae* (Large bent-winged Bat) – formerly *Miniopterus schreibersii*.

Results & Discussion

The dataset contained 1456 identifiable bat-calls, 86% of which (1255 calls) were reliably attributable to 12 distinct species and two indistinguishable co-generic species pairs (*Nyctophilus geoffroyi/gouldi* and *Ozimops ridei/petersi*). The other 201 calls had characteristics attributable to two or more unrelated species and were allocated to one of four combined species groups (“unresolved calls”). Species'/group presence at each site is summarised below at **Table 1**. A full account of calls attributed to each species or unresolved group is provided at **Appendix 1**.

More than half (638) of the positively-identified calls were attributed to just two species: Gould's Wattled Bat (*Chalinolobus gouldii*) and Northern Free-tailed Bat (*Chaerephon jobensis*). Three (perhaps four) other species – Large Bent-winged Bat (*Miniopterus orianae*), Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*) and the Inland and/or Eastern Free-tailed Bat (*O. ridei/O. petersi*) – contributed a further 32% of the reliably-identified calls.

The unresolved call groups all represented species that were positively identified from more typical calls, so no additional species are expected to be represented in this portion of the data. Indeed, of the 201 unresolved calls, only four (3 at Highway South and 1 at Site 1) potentially represented a species (Bristle-faced Free-tailed Bat *Setirostris eleryi*) that was not otherwise reliably identified for the site.

Sample spectrograms of all identified call types are shown at **Appendix 2**.

References

- Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.
- Corben, C. (2010). Feeding Buzzes. *Australasian Bat Society Newsletter* **35**, 40-44.
- Jackson, S. and Groves, C. (2015). *Taxonomy of Australian Mammals*. CSIRO Publishing, Melbourne.
- Milne, D.J. (2002). *Key to the bat calls of the Top End of the Northern Territory*. Technical Report No. 71; Parks and Wildlife Commission of the Northern Territory, Darwin.
- Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.
- Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.
- Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.
- van Dyck, S., Gynther, I. and Baker, A. (ed.) (2013). *Field Companion to the Mammals of Australia*. New Holland; Sydney.

Table 1. Bats recorded during the NRC survey in the Springsure-Rolleston area, 6-9 November 2018.

- ◆ = 'definite' - at least one call was attributed unequivocally to the species
□ = 'possible' - calls like those of the species were recorded, but were not reliably identified

| Detector: | SM2 | | | | SM4 | | | |
|---------------------------------|---------------|-------------------|------------------|-----------|---------------|-----------|-----------|-----------|
| Site: | Highway North | Railway Waterhole | Railway | Site 3 | Highway South | Paddock | Site 1 | Site 2 |
| Date: | 9/11/2018 | 8/11/2018 | 7/11/18 | 6/11/2018 | 9/11/2018 | 8/11/2018 | 6/11/2018 | 7/11/2018 |
| <i>Chalinolobus gouldii</i> | ◆ | ◆ | No data recorded | ◆ | ◆ | ◆ | ◆ | ◆ |
| <i>Chalinolobus morio</i> | | | | | ◆ | | | |
| <i>Chalinolobus picatus</i> | | ◆ | | ◆ | | | | |
| <i>Nyctophilus sp.</i> | | | | | | | ◆ | |
| <i>Scotorepens balstoni</i> | | ◆ | | ◆ | ◆ | ◆ | ◆ | ◆ |
| <i>Scotorepens greyii</i> | ◆ | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| <i>Vespadelus troughtoni</i> | | | | | | | ◆ | |
| <i>Miniopterus orianae</i> | ◆ | ◆ | | ◆ | ◆ | ◆ | ◆ | ◆ |
| <i>Austronomus australis</i> | | | | | | ◆ | | |
| <i>Chaerephon jobensis</i> | ◆ | ◆ | | ◆ | ◆ | ◆ | ◆ | ◆ |
| <i>Ozimops lumsdenae</i> | | | | ◆ | ◆ | | ◆ | |
| <i>Ozimops ridei/O. petersi</i> | ◆ | ◆ | | ◆ | ◆ | | ◆ | ◆ |
| <i>Setirostris eleryi</i> | ◆ | | | ◆ | □ | | □ | |
| <i>Saccolaimus flaviventris</i> | ◆ | ◆ | | ◆ | ◆ | ◆ | ◆ | |

Glossary

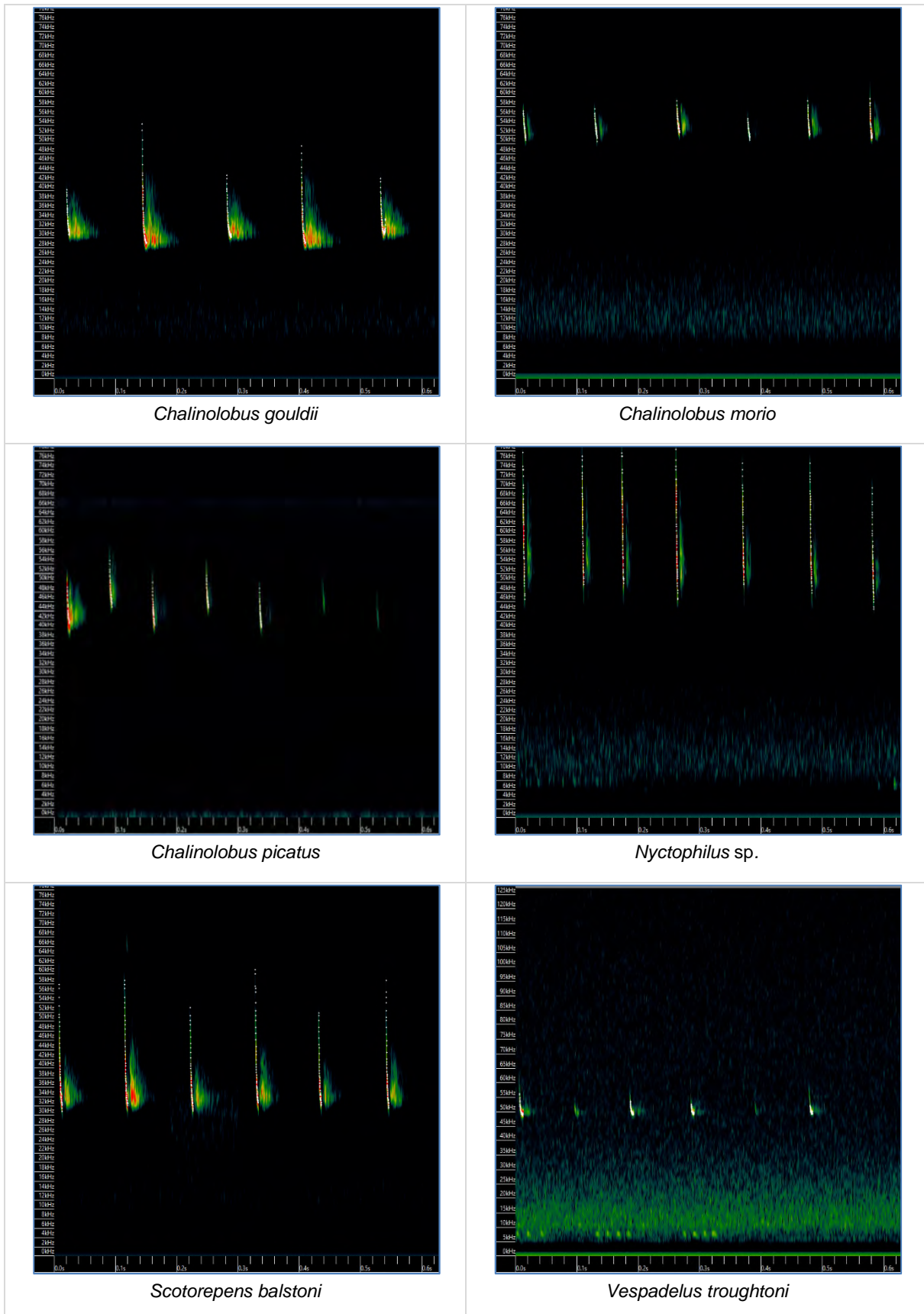
Technical terms used in this report are described in the following table.

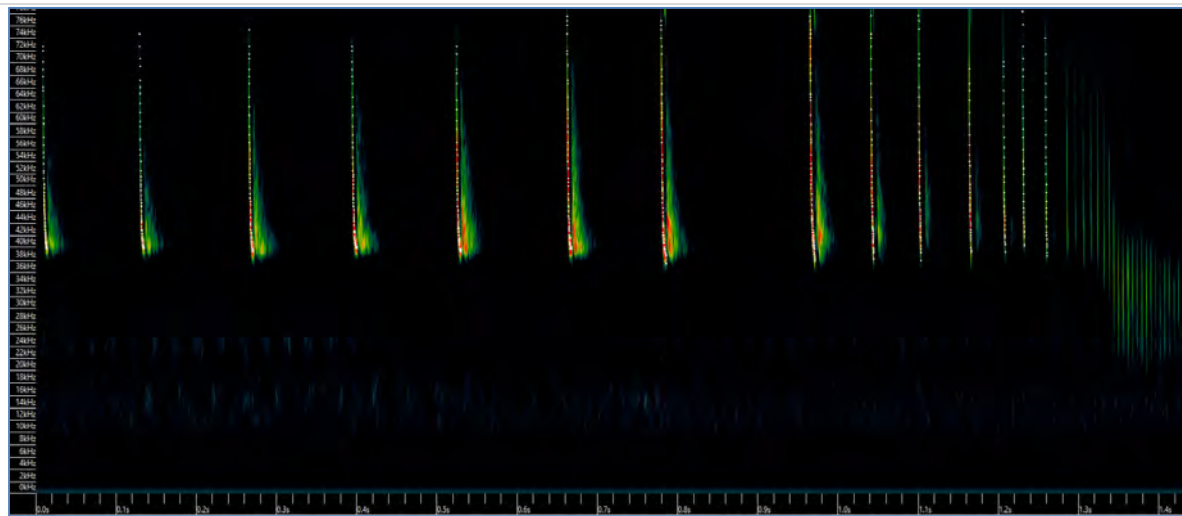
| | |
|---------------------------------|--|
| Approach phase | The part of a bat <i>call</i> emitted as the bat starts to home in on a detected prey item; a transitional series of <i>pulses</i> between the <i>search phase</i> and <i>feeding buzz</i> , that become progressively steeper and shorter in duration. |
| Call | Refers to a single bat call, made up of a series of individual sound <i>pulses</i> in one or more <i>phases</i> (<i>search, approach, feeding buzz</i>). |
| CF (=Constant Frequency) | A type of <i>pulse</i> in which the dominant component consists of a more-or-less 'pure tone' of sound at a Constant Frequency; with <i>shape</i> appearing flat on the sonogram. Often also contains a brief <i>FM</i> component at the beginning and/or end of the CF component (<i>viz.</i> FM-CF-FM). |
| Characteristic frequency (Fc) | The frequency of the flattest part of a <i>pulse</i> ; usually the lowest frequency reached in the <i>qCF</i> component of a pulse. This is often the primary diagnostic feature for species identification. |
| Duration | The time period from the beginning of a <i>pulse</i> to the end of the pulse. |
| Feeding buzz | The terminal part of a <i>call</i> , following the <i>approach phase</i> , emitted as the bat catches a prey item; a distinctive, rapid series of very steep, very short-duration pulses. |
| FM (=Frequency Modulated) | A type of <i>pulse</i> in which there is substantial change in frequency from beginning to end; <i>shape</i> ranges from almost vertical and linear through varying degrees of curvature. |
| FC range | Refers to the range of frequencies occupied by the <i>characteristic frequency</i> section of <i>pulses</i> within a call or set of calls. |
| Frequency sweep or "band-width" | The range of frequencies through which a <i>pulse</i> sweeps from beginning to end; Maximum frequency (Fmax) – minimum frequency (Fmin). |
| Knee | The transitional part of a <i>pulse</i> between the initial (usually steeper) frequency sweep and the <i>characteristic frequency</i> section (usually flatter); time to knee (Tk) and frequency of knee (Fk) can be diagnostic for some species. |
| Pulse | An individual pulse of sound within a bat <i>call</i> ; the <i>shape, duration</i> and <i>characteristic frequency</i> of a pulse are the key diagnostic features used to differentiate species. |
| Pulse body | The part of the <i>pulse</i> between the <i>knee</i> and <i>tail</i> and containing the <i>characteristic frequency</i> section. |
| Pulse shape | The general appearance of a <i>pulse</i> on the sonogram, described using relative terms related to features such as slope and degree of curvature. See also <i>CF, qCF</i> and <i>FM</i> . |
| qCF (=quasi Constant Frequency) | A type of <i>pulse</i> in which there is very little change in frequency from beginning to end; <i>shape</i> appears to be almost flat. Some pulses also contain an <i>FM</i> component at the beginning and/or end of the qCF component (<i>viz.</i> FM-qCF). |
| Search phase | The part of a bat <i>call</i> generally required for reliable species diagnosis. A consistent series of <i>pulses</i> emitted by a bat that is searching for prey or and/or navigating through its habitat. Search phase pulses generally have longer duration, flatter slope and more consistent shape than <i>approach phase</i> and <i>feeding buzz</i> pulses. |
| Sequence | Literally, a sequence of <i>pulses</i> that may be from one or more bats; but generally refers to a <i>call</i> or part (e.g. <i>phase</i>) of a call. |
| Tail | The final component of a <i>pulse</i> , following the <i>characteristic frequency</i> section; may consist of a short or long sweep of frequencies either upward or downward from the Fc; or may be absent. |

Appendix 1 Number of bat calls recorded per detector-night during the Springsure-Rolleston survey, 6-9 November 2018.

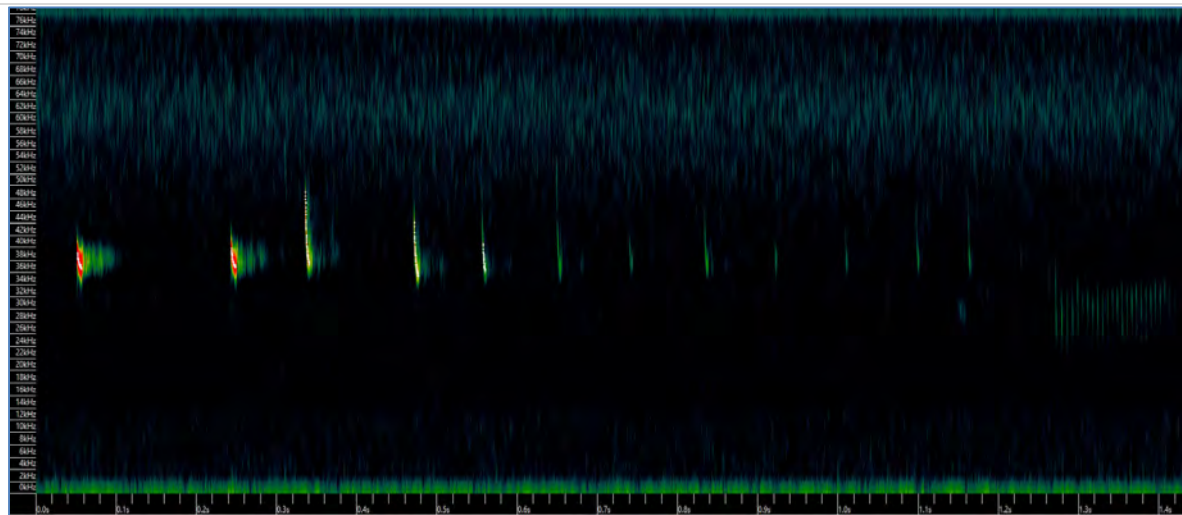
| Detector: | SM2 | | | | SM4 | | | | Species Total |
|---|------------------|----------------------|---------|-----------|------------------|-----------|-----------|-----------|------------------|
| Site: | Highway North | Railway Waterhole | Railway | Site 3 | Highway South | Paddock | Site 1 | Site 2 | |
| Date: | 9/11/2018 | 8/11/2018 | 7/11/18 | 6/11/2018 | 9/11/2018 | 8/11/2018 | 6/11/2018 | 7/11/2018 | |
| Positively identified calls | | | | | | | | | |
| <i>Chalinolobus gouldii</i> | 22 | 3 | | 224 | 4 | 23 | 7 | 18 | 301 |
| <i>Chalinolobus morio</i> | | | | | 1 | | | | 1 |
| <i>Chalinolobus picatus</i> | | 1 | | 2 | | | | | 3 |
| <i>Nyctophilus sp.</i> | | | | | | | 18 | | 18 |
| <i>Scotorepens balstoni</i> | | 4 | | 26 | 1 | 27 | 4 | 1 | 63 |
| <i>Scotorepens greyii</i> | 15 | | | 32 | 6 | 35 | 8 | 5 | 101 |
| <i>Vespadelus troughtoni</i> | | | | | | | 2 | | 2 |
| <i>Miniopterus orianae</i> | 47 | 11 | | 13 | 31 | 16 | 37 | 1 | 156 |
| <i>Austronomus australis</i> | | | | | | 1 | | | 1 |
| <i>Chaerephon jobensis</i> | 91 | 17 | | 7 | 77 | 20 | 111 | 16 | 339 |
| <i>Ozimops lumsdenae</i> | | | | 2 | 1 | | 5 | | 8 |
| <i>Ozimops ridei</i> /O. <i>petersi</i> | 43 | 1 | | 62 | 1 | | 10 | 2 | 119 |
| <i>Setirostris eleryi</i> | 6 | | | 7 | | | | | 13 |
| <i>Saccolaimus flaviventris</i> | 1 | 4 | | 81 | 1 | 1 | 42 | | 130 |
| Unresolved calls | | | | | | | | | |
| A. <i>australis</i> or C. <i>jobensis</i> | 1 | | | | | | | | 1 |
| C. <i>gouldii</i> or Ozimops spp. | 19 | 1 | | 128 | | | 16 | 1 | 165 |
| C. <i>gouldii</i> or S. <i>balstoni</i> | | 3 | | 9 | | 16 | | | 28 |
| S. <i>greyii</i> or S. <i>eleryi</i> | | | | 3 | 3 | | 1 | | 7 |
| Site Total | 245 | 45 | | 596 | 126 | 139 | 261 | 44 | 1456 |

Appendix 2 Representative call sequences from the Springsure-Rolleston survey.
Kaleidoscope spectrograms: x-axis 0.02 seconds per tick-mark

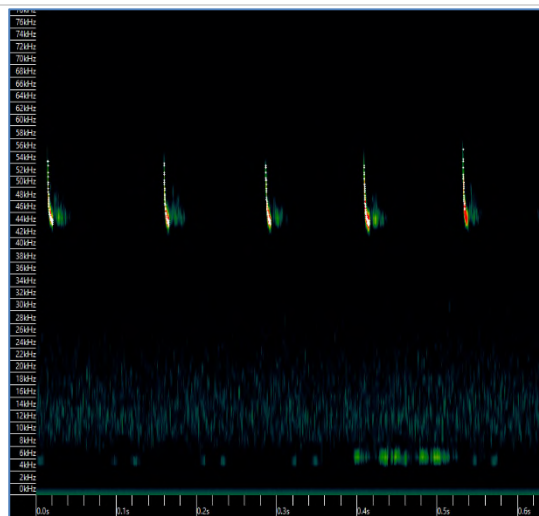




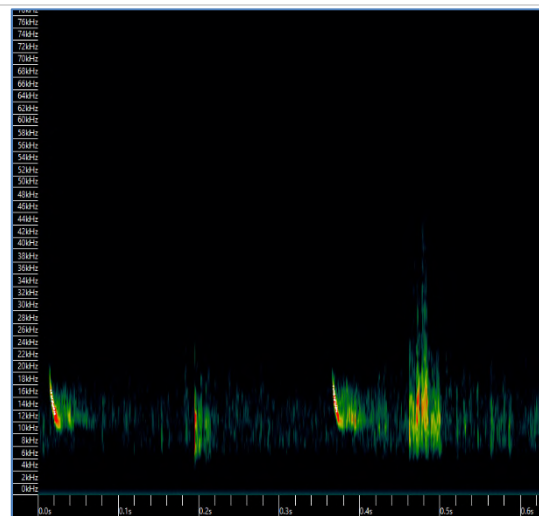
Scotorepens greyii (with feeding buzz *cf* below call of *S. eleryi*)



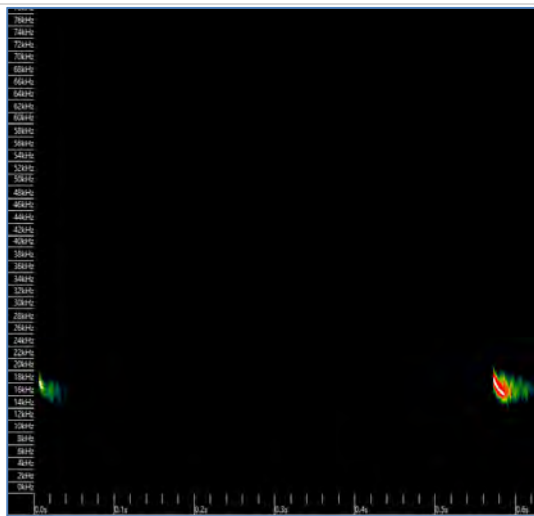
Setirostris eleryi (with feeding buzz *cf* above call of *S. greyii*)



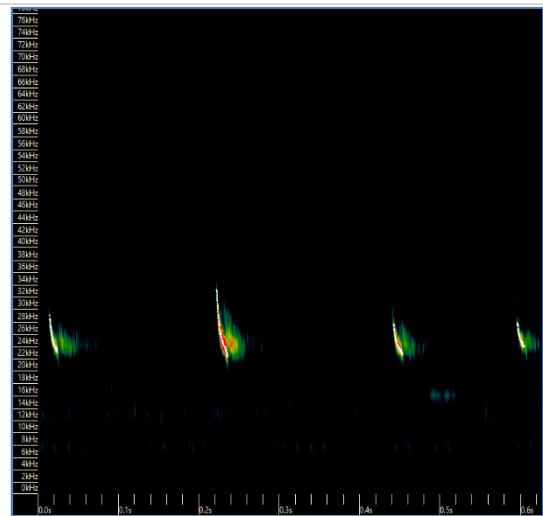
Miniopterus orianae



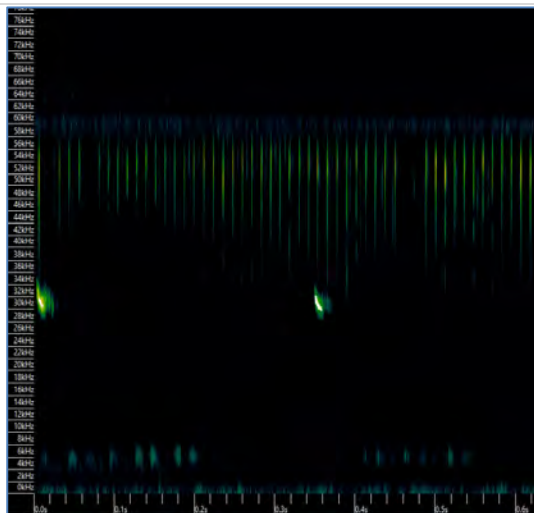
Austronomus australis



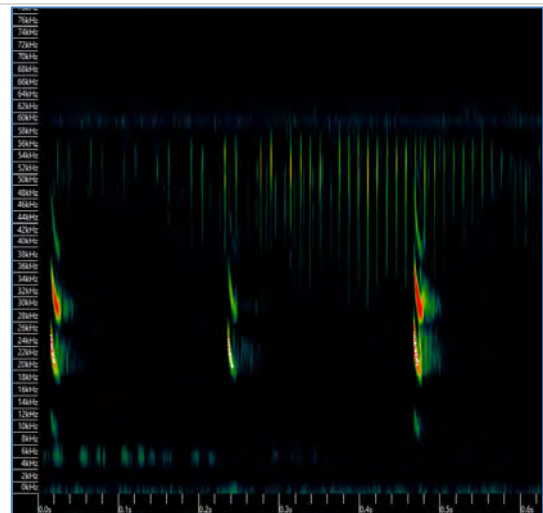
Chaerephon jobensis



Ozimops lumsdenae



Ozimops ridei/O. petersi



Saccolaimus flaviventris



Microbat Call Identification Report

| | |
|--------------------------------------|---------------------------|
| Prepared for (“Client”): | SLR Consultants |
| Survey location/project name: | Springsure-Rolleston area |
| Survey dates: | 26-28 February 2019 |
| Client project reference: | MDS-Rail |
| Job no.: | SLR-1901 |
| Report date: | 5 April 2019 |

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Methods

Data received

Balance! Environmental received 932 full-spectrum (WAV format) audio files, recorded on a Song Meter detector over three consecutive nights (26-28 February 2019).

Call identification

Analysis was performed in *Kaleidoscope Pro* (Version 5.1.8; Wildlife Acoustics, Maynard MA, USA), with the Cluster Analysis function used to scan all WAV files and group detected bat calls according to similarities in zero-crossing parameters. Species identities were then assigned to each cluster by manually reviewing spectrograms and comparing the calls to reference calls from central and southern Queensland and/or with published call descriptions (e.g. Reinhold et al. 2001). Consideration was also given to the probability of species' occurrence based on published distribution information (e.g. Churchill 2008; van Dyck et al. 2013) and on-line database records (e.g. <http://www.ala.org.au>).

Species identification was based largely on sequences of more than four search-phase pulses; however, where good-quality foraging sequences were available (*i.e.* a call sequence with contiguous search-phase, attack-phase and feeding-buzz components), those calls were used to provide additional evidence of some species' presence. The feeding buzzes of *Miniopterus* species (bent-winged bats) and some Molossids (free-tailed bats) are quite distinctive, compared with those of Vespertilionids (vesper bats) with which they often share search-phase characteristics (Corben 2010).

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at <http://www.ausbats.org.au/>.

Species nomenclature follows Jackson & Groves (2015), which uses several new genus/species names compared with widely-used field guides (*e.g.* Churchill 2008; Van Dyck et al. 2013). New names used in this report include:

- *Ozimops lumsdenae* (Northern Free-tailed Bat) – formerly *Mormopterus beccarii*;
- *Ozimops ridei* (Ride's Free-tailed Bat) – formerly *M. ridei* and *M.* 'species 2';
- *Ozimops petersi* (Inland Free-tailed Bat) – formerly *M.* 'species 3';
- *Setirostris eleryi* (Bristle-faced Free-tailed Bat) – formerly *Mormopterus eleryi* and *M.* 'species 6';
and
- *Miniopterus orianae* (Large bent-winged Bat) – formerly *Miniopterus schreibersii*.

Results & Discussion

The dataset contained 491 identifiable bat-calls, 88% of which (431 calls) were reliably attributable to 11 distinct species and two indistinguishable co-generic species pairs (*Nyctophilus geoffroyi/gouldi* and *Ozimops ridei/petersi*). The other 60 calls had characteristics attributable to two or more species and were allocated to one of three combined species groups ("unresolved calls"); however, all groups represented species that were also positively identified from more typical calls.

Species presence at each site is summarised below at **Table 1**, while a full account of calls attributed to each species or unresolved group is provided at **Appendix 1**. Sample spectrograms of all identified call types are shown at **Appendix 2**.

Table 1. Bats recorded during the MDS-Rail survey (Springsure), 26-28 February 2019.

- ◆ = 'definite' - at least one call was attributed unequivocally to the species
□ = 'possible' - calls like those of the species were recorded, but were not reliably identified

| Survey night: | 26/02/2019 | 27/02/2019 | 28/02/2019 |
|--|------------|------------|------------|
| <i>Chalinolobus gouldii</i> | ◆ | | ◆ |
| <i>Chalinolobus morio</i> | ◆ | ◆ | |
| <i>Chalinolobus picatus</i> | ◆ | ◆ | ◆ |
| <i>Nyctophilus sp.</i> | ◆ | ◆ | ◆ |
| <i>Scotorepens balstoni</i> | ◆ | ◆ | ◆ |
| <i>Scotorepens greyii</i> | ◆ | ◆ | ◆ |
| <i>Vespadelus troughtoni</i> | ◆ | ◆ | |
| <i>Miniopterus orianae</i> | ◆ | ◆ | ◆ |
| <i>Chaerephon jobensis</i> | ◆ | ◆ | ◆ |
| <i>Ozimops lumsdenae</i> | ◆ | ◆ | ◆ |
| <i>Ozimops ridei</i> / <i>O. petersi</i> | ◆ | ◆ | ◆ |
| <i>Saccolaimus flaviventris</i> | ◆ | ◆ | ◆ |
| <i>Taphozous troughtoni</i> | ◆ | ◆ | |

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- Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.
- Corben, C. (2010). Feeding Buzzes. *Australasian Bat Society Newsletter* **35**, 40-44.
- Jackson, S. and Groves, C. (2015). *Taxonomy of Australian Mammals*. CSIRO Publishing, Melbourne.
- Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.
- Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.
- van Dyck, S., Gynther, I. and Baker, A. (ed.) (2013). *Field Companion to the Mammals of Australia*. New Holland; Sydney.

Glossary

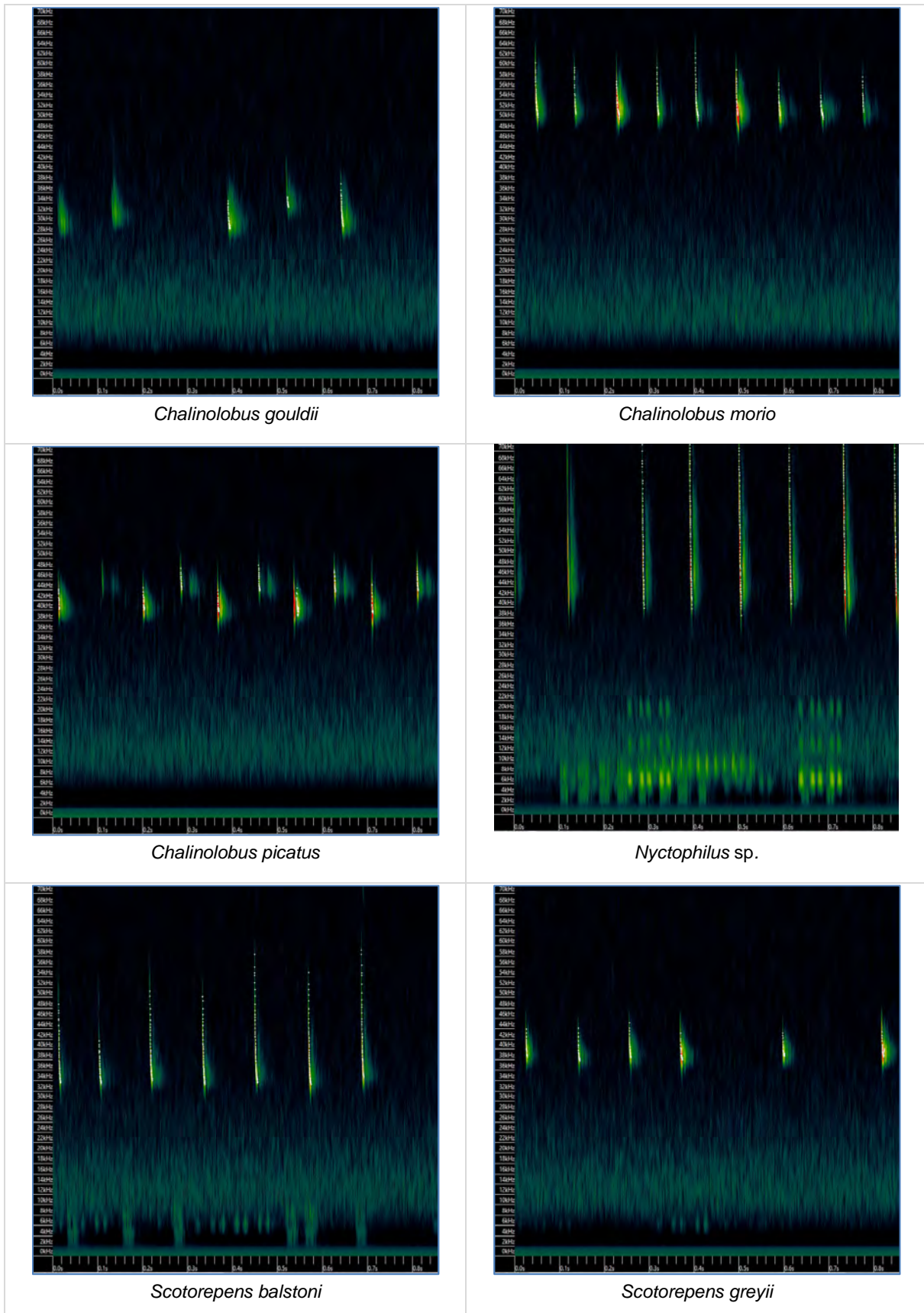
Technical terms used in this report are described in the following table.

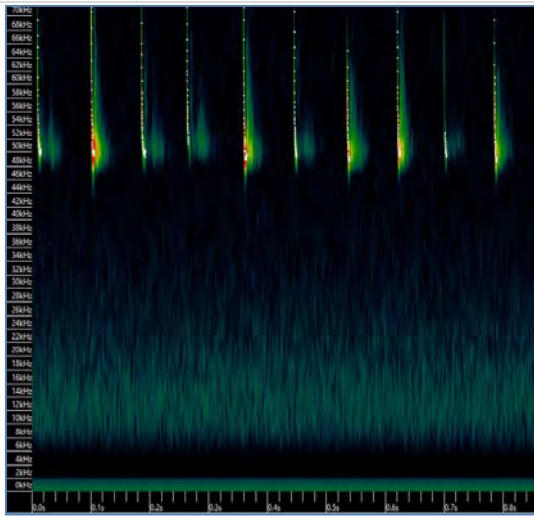
| | |
|---------------------------------|--|
| Approach phase | The part of a bat <i>call</i> emitted as the bat starts to home in on a detected prey item; a transitional series of <i>pulses</i> between the <i>search phase</i> and <i>feeding buzz</i> , that become progressively steeper and shorter in duration. |
| Call | Refers to a single bat call, made up of a series of individual sound <i>pulses</i> in one or more <i>phases</i> (<i>search, approach, feeding buzz</i>). |
| CF (=Constant Frequency) | A type of <i>pulse</i> in which the dominant component consists of a more-or-less 'pure tone' of sound at a Constant Frequency; with <i>shape</i> appearing flat on the sonogram. Often also contains a brief <i>FM</i> component at the beginning and/or end of the CF component (<i>viz.</i> FM-CF-FM). |
| Characteristic frequency (Fc) | The frequency of the flattest part of a <i>pulse</i> ; usually the lowest frequency reached in the <i>qCF</i> component of a pulse. This is often the primary diagnostic feature for species identification. |
| Duration | The time period from the beginning of a <i>pulse</i> to the end of the pulse. |
| Feeding buzz | The terminal part of a <i>call</i> , following the <i>approach phase</i> , emitted as the bat catches a prey item; a distinctive, rapid series of very steep, very short-duration pulses. |
| FM (=Frequency Modulated) | A type of <i>pulse</i> in which there is substantial change in frequency from beginning to end; <i>shape</i> ranges from almost vertical and linear through varying degrees of curvature. |
| FC range | Refers to the range of frequencies occupied by the <i>characteristic frequency</i> section of <i>pulses</i> within a call or set of calls. |
| Frequency sweep or "band-width" | The range of frequencies through which a <i>pulse</i> sweeps from beginning to end; Maximum frequency (Fmax) – minimum frequency (Fmin). |
| Knee | The transitional part of a <i>pulse</i> between the initial (usually steeper) frequency sweep and the <i>characteristic frequency</i> section (usually flatter); time to knee (Tk) and frequency of knee (Fk) can be diagnostic for some species. |
| Pulse | An individual pulse of sound within a bat <i>call</i> ; the <i>shape, duration</i> and <i>characteristic frequency</i> of a pulse are the key diagnostic features used to differentiate species. |
| Pulse body | The part of the <i>pulse</i> between the <i>knee</i> and <i>tail</i> and containing the <i>characteristic frequency</i> section. |
| Pulse shape | The general appearance of a <i>pulse</i> on the sonogram, described using relative terms related to features such as slope and degree of curvature. See also <i>CF, qCF</i> and <i>FM</i> . |
| qCF (=quasi Constant Frequency) | A type of <i>pulse</i> in which there is very little change in frequency from beginning to end; <i>shape</i> appears to be almost flat. Some pulses also contain an <i>FM</i> component at the beginning and/or end of the qCF component (<i>viz.</i> FM-qCF). |
| Search phase | The part of a bat <i>call</i> generally required for reliable species diagnosis. A consistent series of <i>pulses</i> emitted by a bat that is searching for prey or and/or navigating through its habitat. Search phase pulses generally have longer duration, flatter slope and more consistent shape than <i>approach phase</i> and <i>feeding buzz</i> pulses. |
| Sequence | Literally, a sequence of <i>pulses</i> that may be from one or more bats; but generally refers to a <i>call</i> or part (e.g. <i>phase</i>) of a call. |
| Tail | The final component of a <i>pulse</i> , following the <i>characteristic frequency</i> section; may consist of a short or long sweep of frequencies either upward or downward from the Fc; or may be absent. |

Appendix 1 Number of bat calls recorded per detector-night during the Springsure-Rolleston survey, 26-28 February 2019.

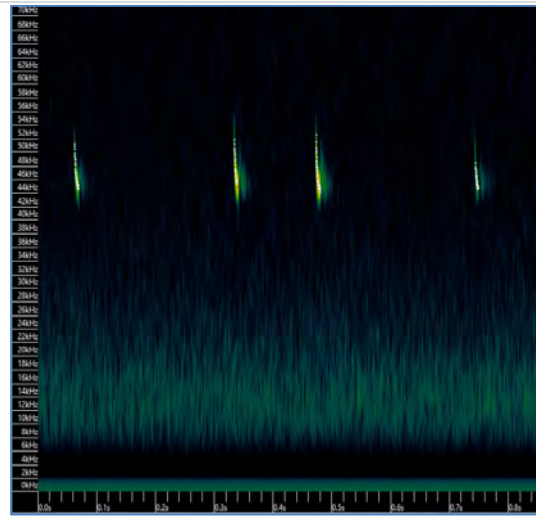
| Detector night: | 26/02/2019 | 27/02/2019 | 28/02/2019 | Species Total |
|--|------------|------------|------------|---------------|
| Positively identified calls | | | | |
| <i>Chalinolobus gouldii</i> | 2 | | 2 | 4 |
| <i>Chalinolobus morio</i> | 5 | 33 | | 38 |
| <i>Chalinolobus picatus</i> | 19 | 10 | 10 | 39 |
| <i>Nyctophilus sp.</i> | 1 | 2 | 1 | 4 |
| <i>Scotorepens balstoni</i> | 10 | 8 | 1 | 19 |
| <i>Scotorepens greyii</i> | 3 | 4 | 38 | 45 |
| <i>Vespadelus troughtoni</i> | 18 | 18 | | 36 |
| <i>Miniopterus orianae</i> | 27 | 24 | 28 | 79 |
| <i>Chaerephon jobensis</i> | 31 | 42 | 21 | 94 |
| <i>Ozimops lumsdenae</i> | 7 | 1 | 6 | 14 |
| <i>Ozimops ridei</i> / <i>O. petersi</i> | 2 | 4 | 13 | 19 |
| <i>Saccolaimus flaviventris</i> | 28 | 7 | 1 | 36 |
| <i>Taphozous troughtoni</i> | 1 | 3 | | 4 |
| Unresolved calls | | | | |
| <i>C. gouldii</i> / <i>O. ridei</i> | 2 | | | 2 |
| <i>C. morio</i> / <i>V. troughtoni</i> | 16 | 27 | | 43 |
| <i>S. balstoni</i> / <i>O. ridei</i> | 3 | 5 | 7 | 15 |
| Detector-night Total | 175 | 188 | 128 | 491 |

Appendix 2 Representative call sequences from the Springsure-Rolleston survey. February 2019.
Kaleidoscope spectrograms: x-axis 0.02 seconds per tick-mark

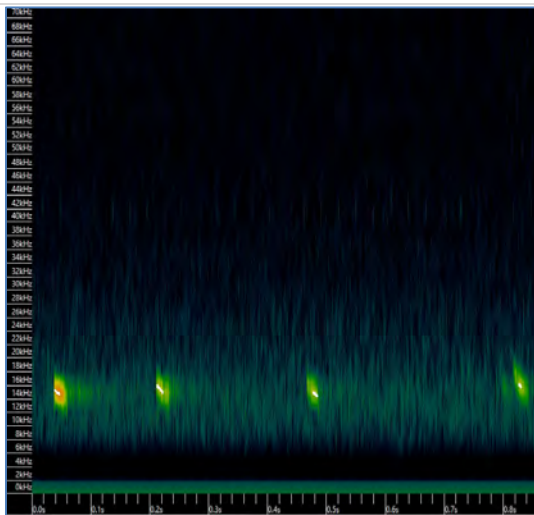




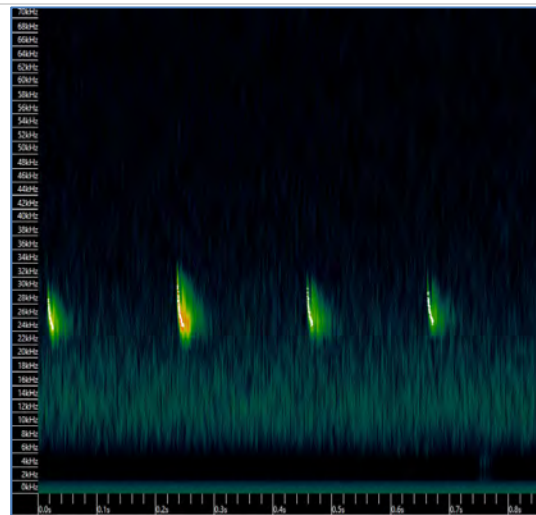
Vespadelus trougtoni



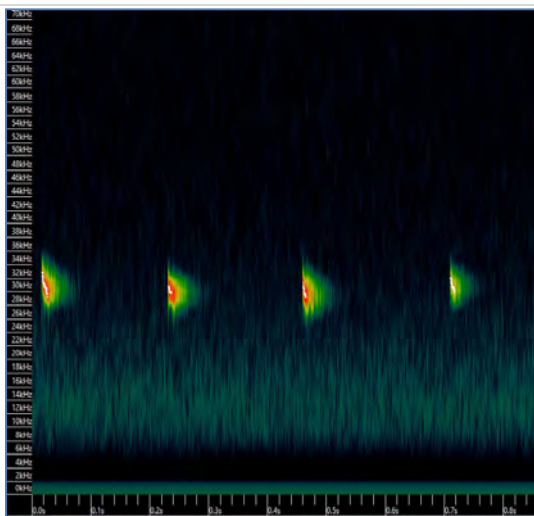
Miniopterus orianae



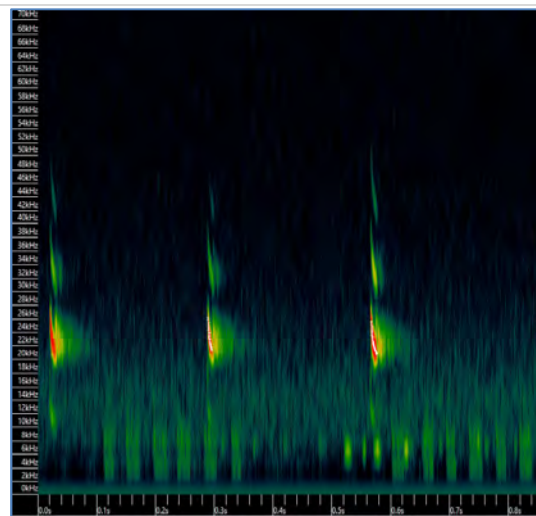
Chaerephon jobensis



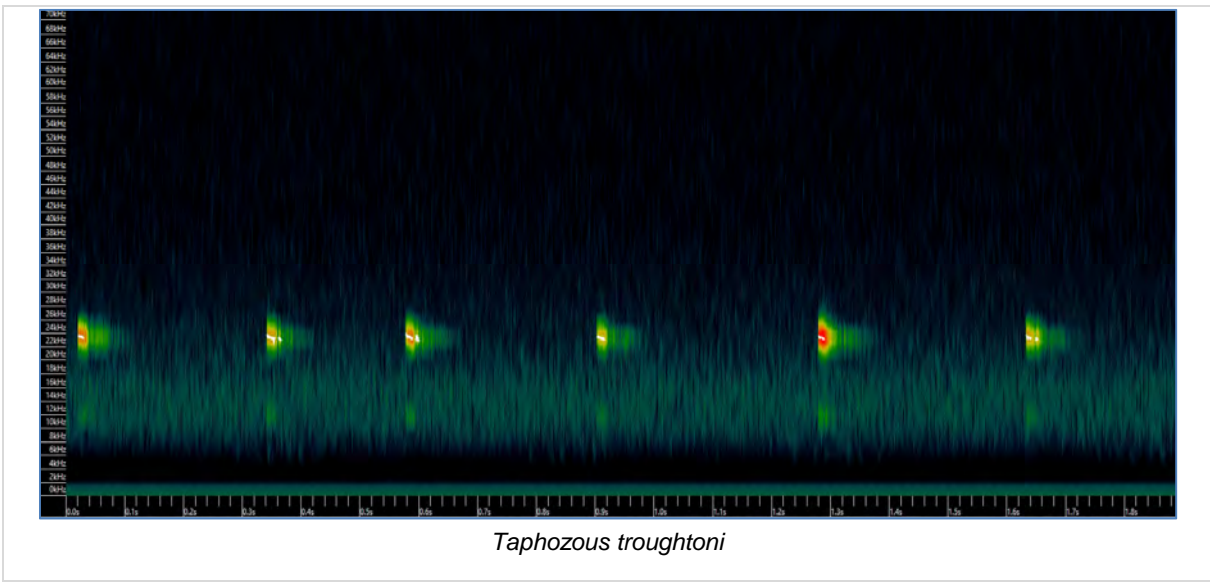
Ozimops lumsdenae



Ozimops ridei/O. *petersi*



Saccolaimus flaviventris



ASIA PACIFIC OFFICES

BRISBANE

Level 2, 15 Astor Terrace
Spring Hill QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

MACKAY

21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

SYDNEY

2 Lincoln Street
Lane Cove NSW 2066
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

AUCKLAND

68 Beach Road
Auckland 1010
New Zealand
T: +64 27 441 7849

CANBERRA

GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

MELBOURNE

Suite 2, 2 Domville Avenue
Hawthorn VIC 3122
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

TOWNSVILLE

Level 1, 514 Sturt Street
Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

NELSON

6/A Cambridge Street
Richmond, Nelson 7020
New Zealand
T: +64 274 898 628

DARWIN

5 Foelsche Street
Darwin NT 0800
Australia
T: +61 8 8998 0100
F: +61 2 9427 8200

NEWCASTLE

10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

GOLD COAST

Ground Floor, 194 Varsity Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

PERTH

Ground Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

APPENDIX A

ADDITIONAL INFORMATION

EPBC Act Referral

Meteor Downs South Rail Loop

02/07/2019



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Section 1.3 What is the extent and location of your proposed action?

The property on which the project will be located is freehold title Lot 56 on DSN808 (**Table 1** and **Figure 6**). A Development Application has been lodged with the Central Highlands Regional Council (CHRC) in Emerald for the project. The Development Application includes a Material Change of Use (MCU) and Reconfiguration of a Lot (RoL) excising the project area from the current title, with the RoL expected to create a lot comprising 386 hectares (ha). The application included Environmentally Relevant Activity (ERA) 50(1) - loading or unloading 100 t or more of minerals in a day or stockpiling 50,000 t or more of minerals (a) within 5 km of the highest astronomical tide or 1 km of a watercourse.

Table 1 Underlying and Surrounding Lot and Plan Details (Surface)

| Underlying Tenure | | | | |
|---------------------------|---|-------------|----------------------|--------------------------------------|
| Real Property Description | Location Relative to the Project | Tenure Type | Current Land Use | Total Property Area (ha) |
| 56DSN808 | Project located in the south of the Lot. | Freehold | Agriculture (cattle) | 3,022 (Existing) 2,636 (Post RoL) |
| Surrounding Tenure | | | | |
| Road Parcel | Dawson Highway adjoining the southwest boundary of the Project. | Road Parcel | Road | Not Specified |
| 2SP187944 | Rail Corridor bounding the south south-eastern boundary of the Project. | Lands Lease | Rail | 20.37 |
| 2SP187945 | Rail Corridor bounding the north south-eastern boundary of the Project. | Lands Lease | Rail | 57.89 |
| 1SP187949 | Partially within Dawson Highway easement south of Project boundary. | Lands Lease | Rail | 0.75 |

There is existing mining tenure within the area of the Project, being Exploration Permits Coal (EPC). The EPCs underlying the Project site are shown (**Table 2** and **Figure 6 - Tenure**).

Table 2 Mining Tenure Underlying the Project

| Underlying EPC | Holder |
|----------------|--------------------------------------|
| 595 | Glencore Coal Queensland Pty Limited |
| 737 | Glencore Coal Queensland Pty Limited |
| 1517 | Endocoal Limited |

The area surrounding the project site is zoned as Rural under the CHRC Planning Scheme. The aesthetic value of the area is subsequently characterised by clear open spaces and agricultural activities intersected by watercourses (Aldebaran Creek and Meteor Creek) and isolated areas of remnant vegetation typically associated with watercourses throughout the landscape.

Section 1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance (if relevant)?

The total estimated disturbed area is 77.0 ha. The area of disturbance from the development within the Project boundary will be approximately 74.3 ha (**Table 3** and **Figure 5**). Disturbance within the material borrow area is not likely to disturb the entire area but has been included in the total calculation in case unsuitable borrow material is encountered.

Additional to the disturbance within the Project boundary, minor disturbance within the road and rail corridors outside the Project boundary will also be required to construct the Dawson Highway access road intersection and the rail offtake for the balloon loop. Approximately 2.7 ha of disturbance will occur outside the project boundary (**Table 3** and **Figure 5**).

Table 3 Project Disturbance

| Disturbance type | Area (ha) |
|----------------------------------|-------------|
| Within Project Boundary | |
| Project infrastructure | 31.5 |
| Material Borrow area | 42.8 |
| Sub- Total | 74.3 |
| Outside Project Boundary | |
| Intersection with Dawson Highway | 1.3 |
| Rail Spur | 1.4 |
| Sub- Total | 2.7 |
| Total | 77.0 |

Section 1.10 Is the proposed action subject to local government planning approval?

Yes ☒ No ☐

A Development Application has been lodged with the Central Highlands Regional Council (CHRC) in Emerald for the project. The Development Application includes a Material Change of Use (MCU) and Reconfiguration of a Lot (RoL) excising the project area from the current title, with the RoL expected to create a lot comprising 386 hectares (ha).

Section 1.11 Provide an estimated start and estimated end date for the proposed action.

Start date: 01/11/2019

End date: 01/11/2040

The above end date is estimate based on the 10 year life of the MDS Project and the potential to transfer the train loadout facility to another party or project post MDS completion.

Section 1.15 Is this action part of a staged development (or a component of a larger project)?

The proposed action is related to the approved Meteor Downs South Coal Project, Qld proposed action (EPBC 2013/6799). The proposed development will load coal from the Meteor Downs South Coal Project to the railway line for transportation to port and market. The proposed development is however on a separate Lot and DP, not on the MDS mining lease and is being approved as a DA by CHRC by delegation to SARA (i.e. as a separate application).

Section 2.9 Will there be any impact on a water resource related to coal / gas / mining?

Yes ☐ No ☒

Raw water will be sourced from MDS. MDS was assessed under the EPBC Act and Approval EPBC 2013/6799 was issued on the 25th of November 2014 (has effect until 31st of October 2039). The Approval includes Controlling Provision - A water resource, in relation to coal seam gas development and large coal mining development (section 24D & 24E). Other than piping water to the Rail Loadout there will be no change relative to MDS allocations or water management practices.

Section 3.2 Describe the hydrology relevant to the project Area (including water flows).

A flood study and stormwater management plan has been undertaken for the proposed development.

An assessment of the pre-development scenario indicates that there are three main flow paths which traverse the allotment which the development is located. Aldebaran Creek is located to the north of the proposed development whilst tributaries of Meteor Creek traverse to the south. The Aldebaran Creek catchment which is 404 km² was modelled to represent the tail water conditions during coincident flows from the two creeks.

The assessment has determined that the proposed development has small localised impacts on flood levels for the surrounding locality, with very limited impact propagating past the property boundary. The 1 % AEP flood extent associated with these creeks do not impact the development area.

Surface water runoff from the proposed development is proposed to be captured in two sedimentation basins (A and B), to prevent any increase in discharge and to manage water quality leaving the site. The basin capacities are sufficient to capture the 1 % 24 hr AEP flood event without overtopping.

Specific advice relating the hydraulic nature of the development is provided below:

- The proposed development has limited interference with overland flow. The proposed Sedimentation Basin A has a capacity of 32 ML and Sedimentation Basin B a capacity of 20 ML (**Figure 11**); and
- The Flood Impact Assessment and Stormwater Management Plan both showed no impact, actionable nuisance, or worsening of stormwater, flooding or drainage to the state-controlled road (Dawson Highway), railway corridor and/or conveyance through existing drainage lines (**Figure 12**).

Storm water management throughout all phases of the Project will generally focus on two classes of water, being:

- Clean runoff from undisturbed or stabilised areas; and
- Potentially sediment laden runoff from disturbed and operational areas.

3.2.1 Potentially Sediment Laden Runoff – Construction Phase

Construction phase runoff will be managed in accordance with an Erosion and Sediment Control Plan (ESCP) which is expected to include temporary erosion control measures. The ESCP is being developed in accordance with international best practice (IECA 2008).

Runoff generated from disturbed areas within the operational zone during rainfall has the potential to contain sediment. Such areas include the bulk of the IA, coal stockpile and loadout pad and the adjacent weighbridge and veneering pad. As shown (**Figure 11**), runoff from these areas will be directed to the Sediment Dams for containment and treatment prior to discharge.

3.2.2 Groundwater

There are no registered bores located within the Project area however there are four within 2 km of the Project boundary **Table 4**. The bore reports for each bore were accessed through Queensland Globe links (01 April 2019 - <http://resources.information.qld.gov.au/groundwater/reports/>). No publicly available detailed water quality information was located for any of the bores, however there is reference to quality in two of the bore reports (**Table 4**).

Table 4 Registered bores within 2 km of the Project Boundary.

| Registered Bore # | Easting (m MGA94 Zone 55) | Northing (m MGA94 Zone 55) | Status | Depth (m below ground level (mbgl)) | Formation Name | Use / Quality |
|-------------------|---------------------------|----------------------------|-------------------------|-------------------------------------|------------------|---------------|
| 132929 | 644436 | 7304645 | Existing | 48.5 | Basalt | Potable |
| 89120 | 644165 | 7302215 | Existing | 25 | Tertiary Basalts | Not stated |
| 24257 | 645143 | 7301421 | Abandoned and Destroyed | 98.1 | Not stated | Not stated |
| 103654 | 647501 | 7301713 | Existing | 37.5 | Basalt | Potable |

Potential impacts to groundwater resulting from the Project may include:

- Release of hydrocarbons and chemicals to land and subsequent infiltration into underlying groundwaters; and
- Depletion of groundwater resources for raw water supply.

The Project will not involve significant excavation depth (generally less than 5 m) that would intersect groundwater resources. Groundwater extraction bores are not required for the project as operations water will be sourced from the MDS Mine and potable water delivered by commercial operators.

ASIA PACIFIC OFFICES

BRISBANE

Level 2, 15 Astor Terrace
Spring Hill QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

MACKAY

21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

ROCKHAMPTON

rockhampton@slrconsulting.com
M: +61 407 810 417

AUCKLAND

68 Beach Road
Auckland 1010
New Zealand
T: +64 27 441 7849

CANBERRA

GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

MELBOURNE

Suite 2, 2 Domville Avenue
Hawthorn VIC 3122
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

SYDNEY

2 Lincoln Street
Lane Cove NSW 2066
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

NELSON

5 Duncan Street
Port Nelson 7010
New Zealand
T: +64 274 898 628

DARWIN

5 Foelsche Street
Darwin NT 0800
Australia
T: +61 8 8998 0100
F: +61 2 9427 8200

NEWCASTLE

10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

TAMWORTH

PO Box 11034
Tamworth NSW 2340
Australia
M: +61 408 474 248
F: +61 2 9427 8200

NEW PLYMOUTH

Level 2, 10 Devon Street East
New Plymouth 4310
New Zealand
T: +64 0800 757 695

GOLD COAST

Ground Floor, 194 Varsity
Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

PERTH

Ground Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

TOWNSVILLE

Level 1, 514 Sturt Street
Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

Environmental Policy

Sojitz undertakes environmental preservation activities in accordance with the following Environmental Policy.

Sojitz Group Environmental Policy

As a global company, Sojitz Group considers environmental issues a crucial topic to be addressed in management. Striving for a sustainable society, we will work to preserve the environment and prevent pollution in our business activities, while creating businesses that are both highly competitive and environmentally friendly.

1. Comply with environmental laws and regulations

In the course of our business operations, we will comply with laws and regulations concerning the environment, international treaties, and agreements to which we subscribe.

2. Continuously improve our environmental management system

Under our environmental management system, we will establish and periodically review environmental objectives and aim for constant improvement, in order to enhance our environmental performance.

3. Minimize environmental burden

Through reducing greenhouse gases such as CO₂ to prevent climate change and preserving biodiversity, we will strive to minimize the environmental burden of our businesses.

4. Conserve resources and reduce/recycle waste

We will engage in curbing the use of natural resources such as energy and water, and the reducing and recycling of waste.

5. Consider the environment in new businesses

When starting new businesses and expanding or further developing existing businesses, we will work to reduce the burden on the environment and prevent pollution.

6. Pursue sustainable resources

We will promote initiatives for the stable supply of resources and realization of a suitable energy mix.

7. Educate and promote awareness on the environment

In addition to ensuring that all of our officers and employees are notified of this policy, we will implement educational activities to ensure widespread awareness.

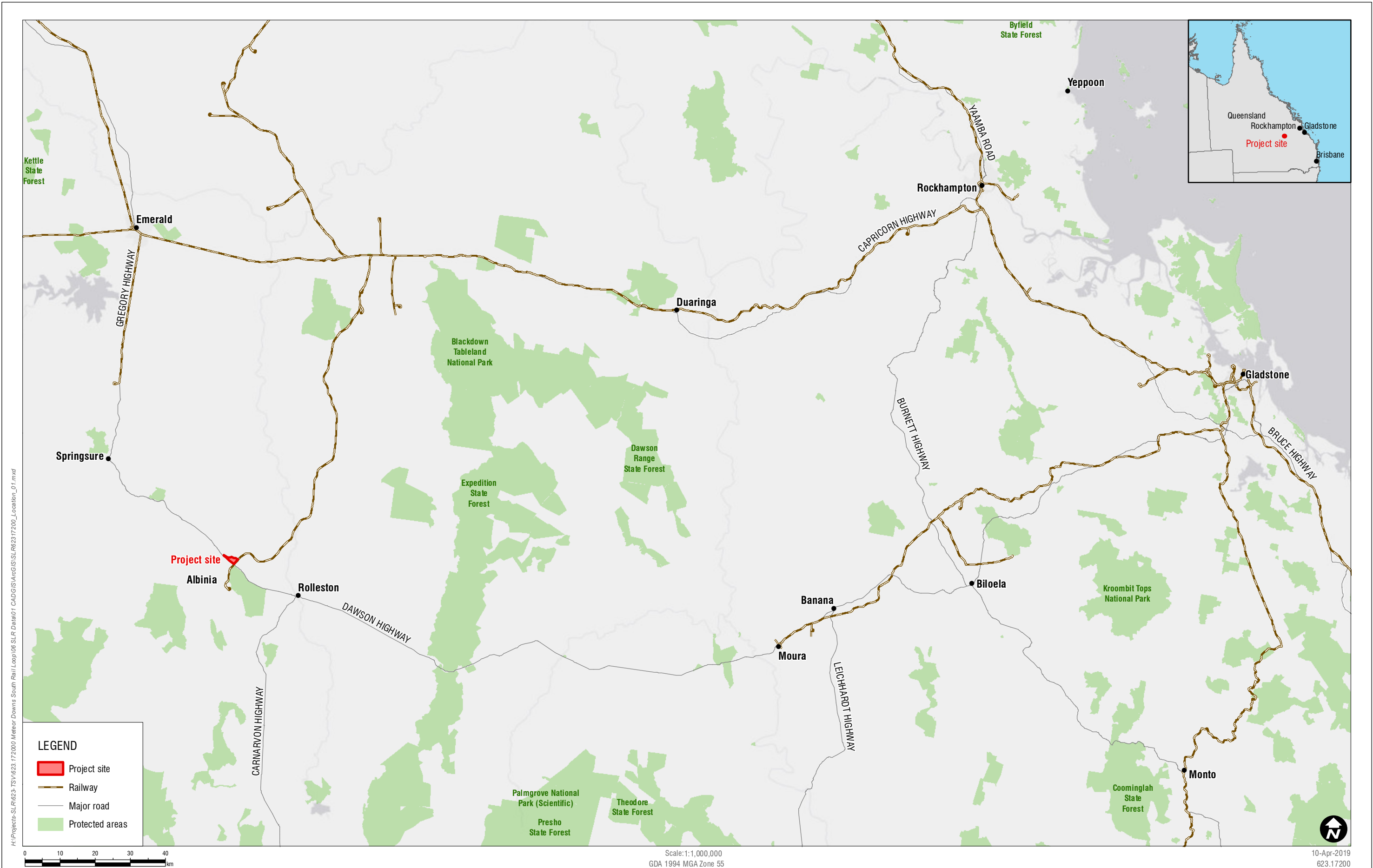
Adopted April 1st, 2004

Revised July 2nd, 2007

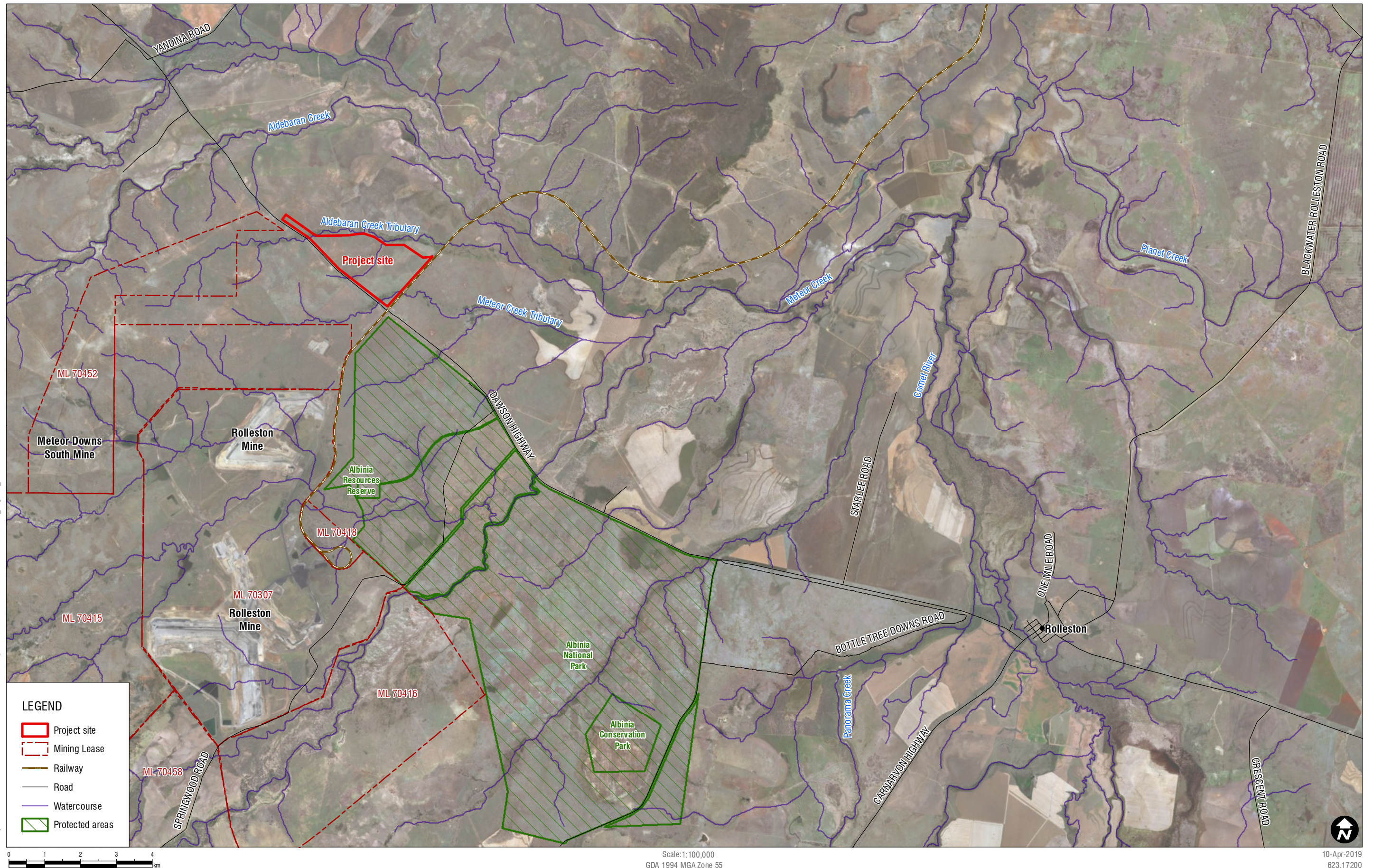
Revised August 6th, 2013

Revised January 1st, 2017

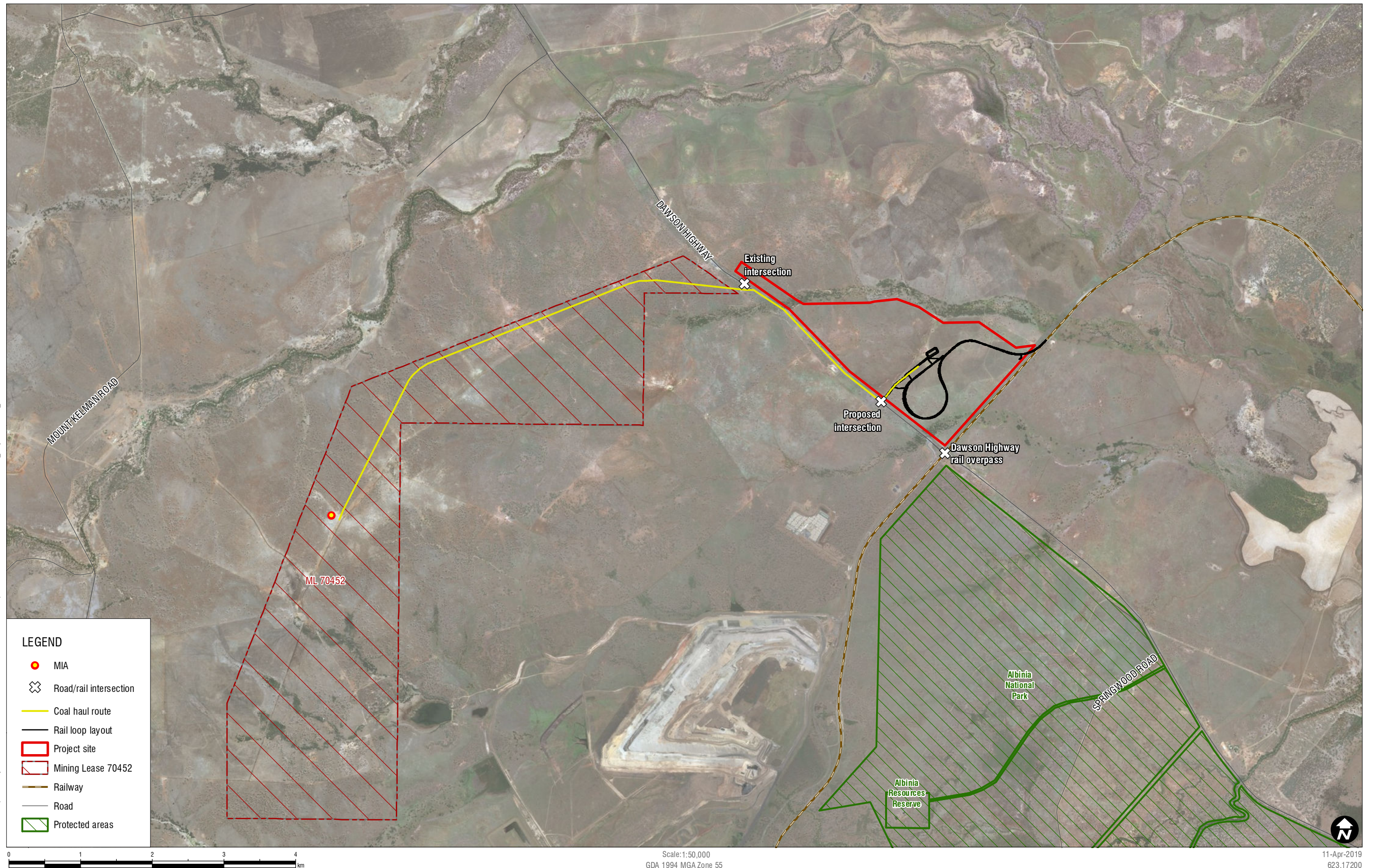
Revised May 9th, 2018



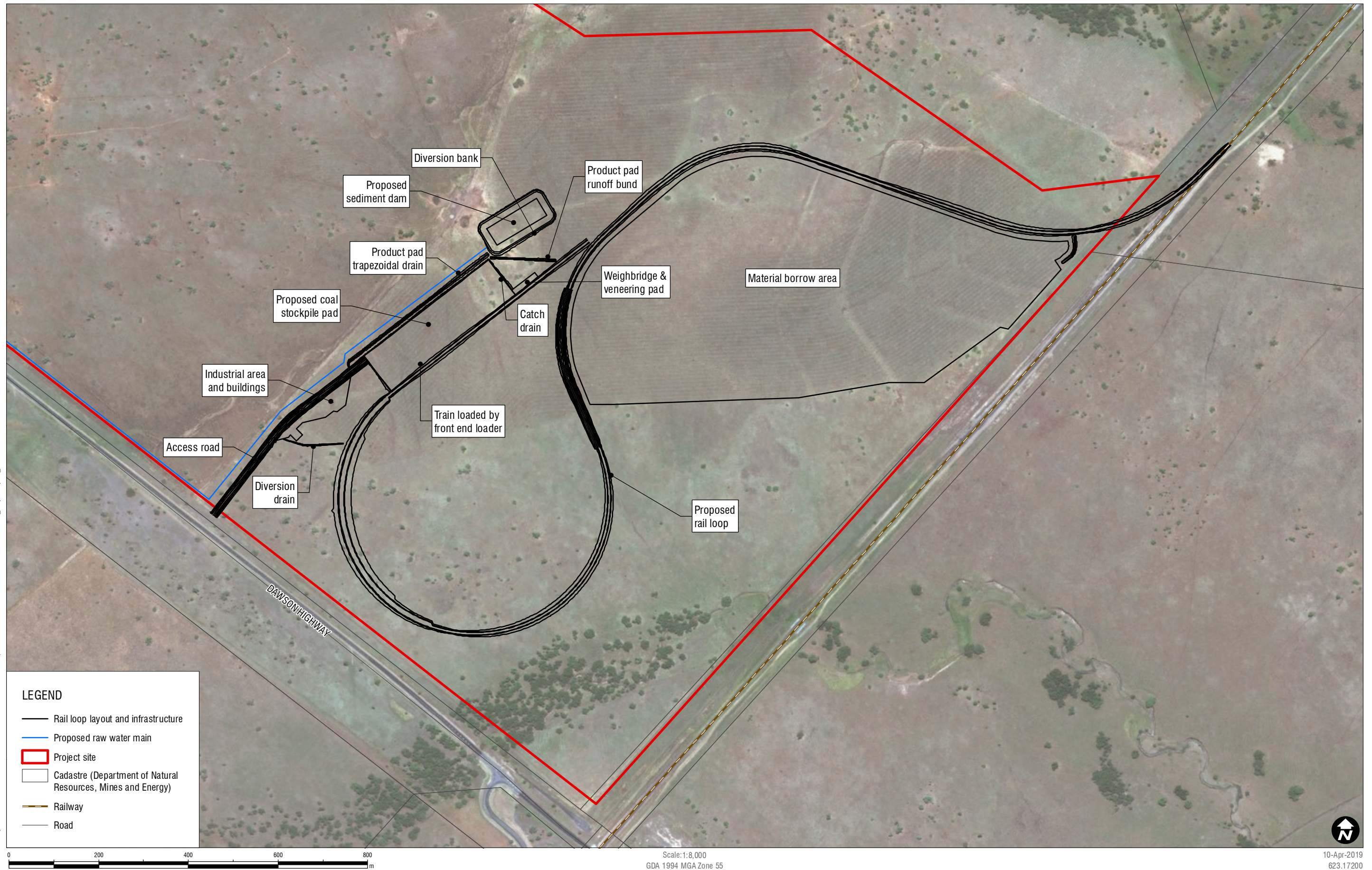
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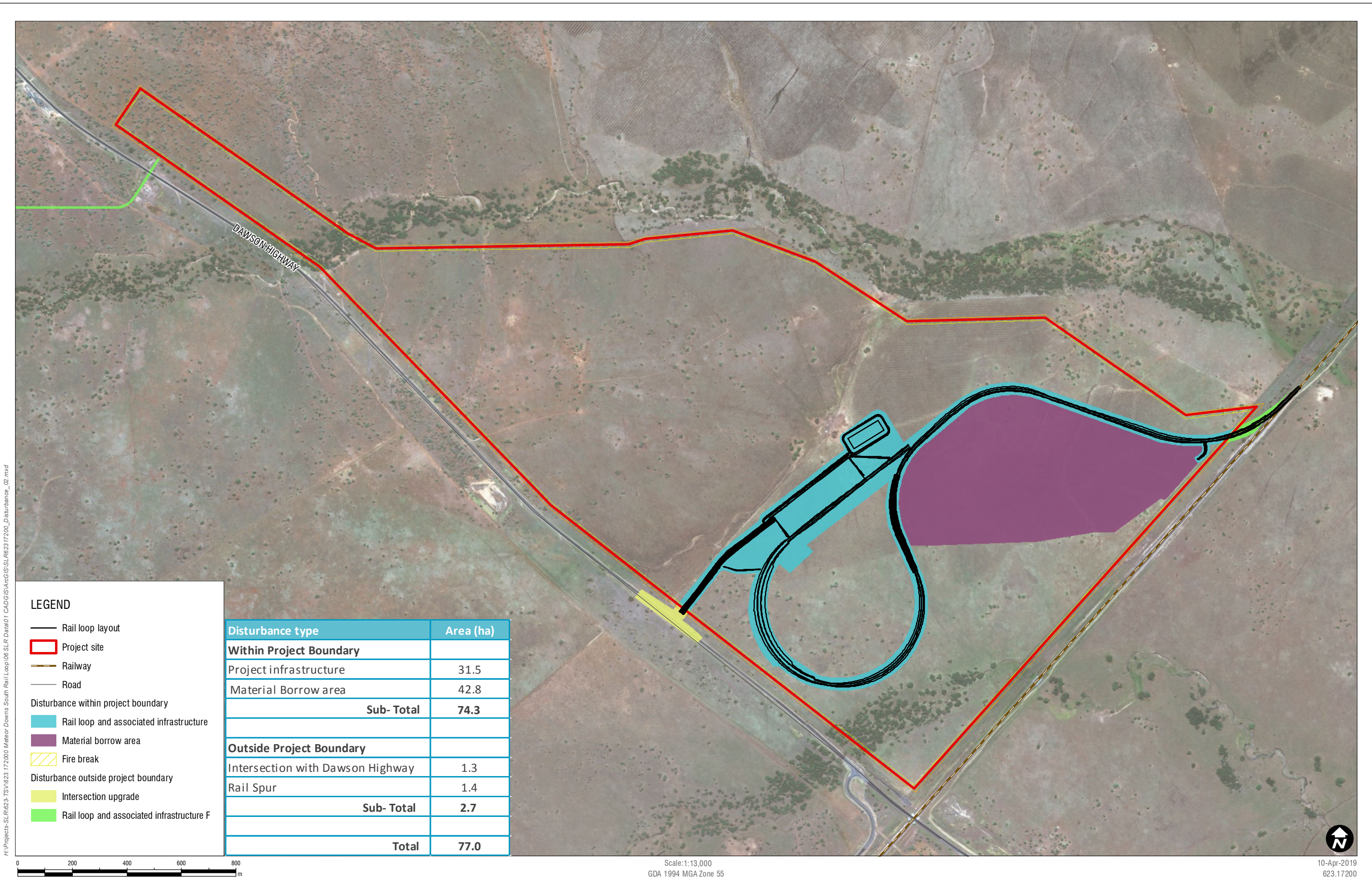


\\au.slr.local\Corporate\Projects-SLR\623-TSV\623-17200 Meteor Downs South Rail Loop\06 SLR Detail\01 CAD\GIS\SLR\G\SLR\62317200_ProjectOverview_02.mxd



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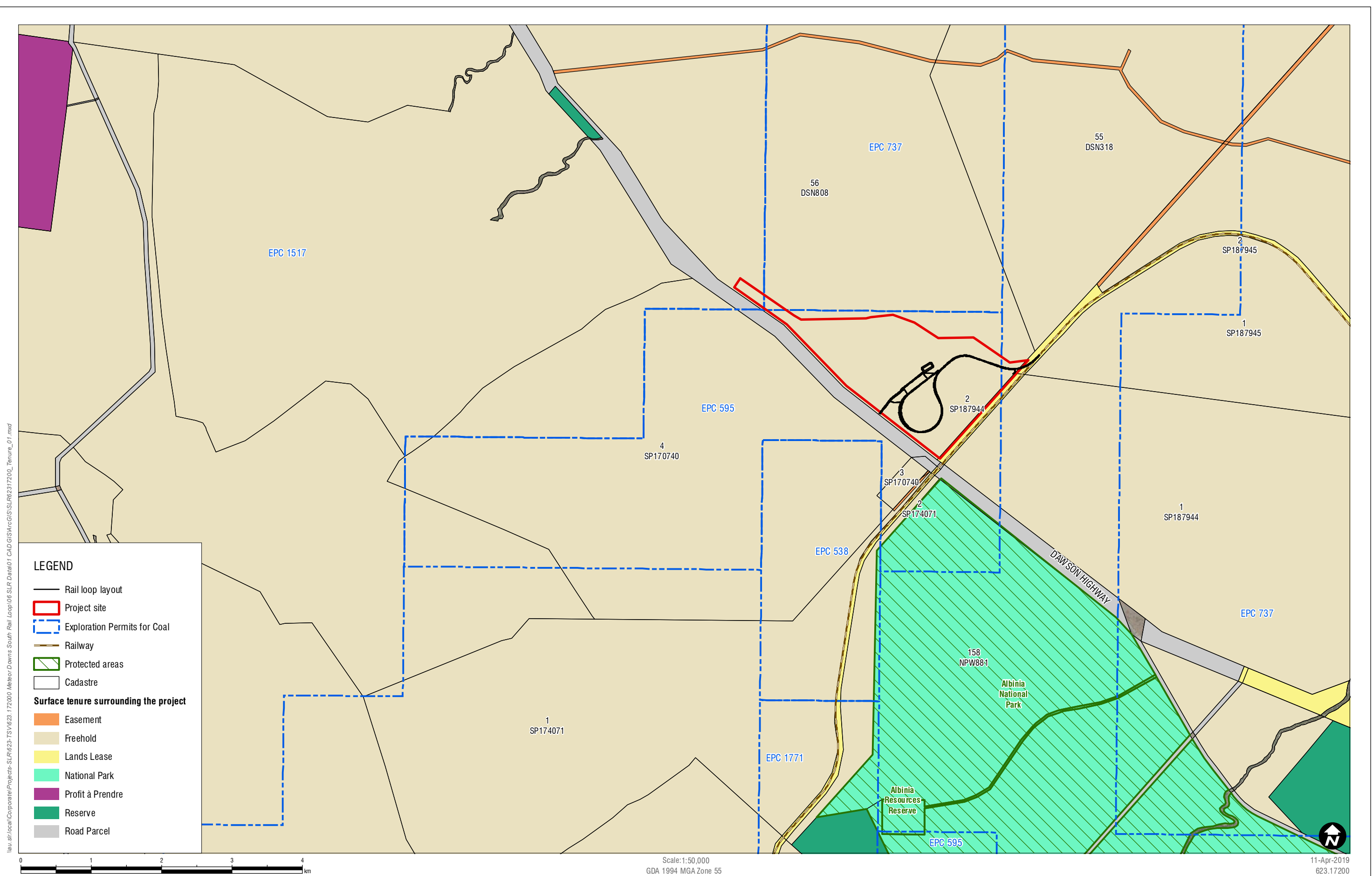


FIGURE 7

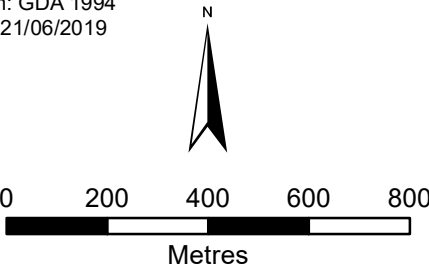
ENDOCOAL
METEOR DOWNS
SOUTH RAIL LOOP

NATURAL GRASSLANDS OF
THE QUEENSLAND
CENTRAL HIGHLANDS AND
NORTHERN FITZROY BASIN
THREATENED ECOLOGICAL
COMMUNITY ASSESSMENT

Legend

- Proposed Site Disturbance
- Projected Best Quality TEC
Habitat within Proposed Site
Disturbance Area
- Base Cadastre
- Threatened Ecological
Community Assessment Site
 - Best Quality
 - Good Quality
 - Not a TEC

Data Sources:
Digital Cadastral Database (extracted 27 May 2019)
dataset: © State of Queensland (Department of Natural
Resources, Mines, and Energy) 2019; Proposed Site
Disturbance dataset: supplied by client (May 2019);
TEC Assessment Site dataset: SLR Consulting (June
2019).
Imagery Sources: 2014 Surat Basin North 25cm
resolution SISP PeriUrban Orthophoto Imagery Web
Service: © State of Queensland (Department of Natural
Resources, Mines, and Energy) 2019.
Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 21/06/2019



Scale: 1:15,000 at A3








FIGURE 8

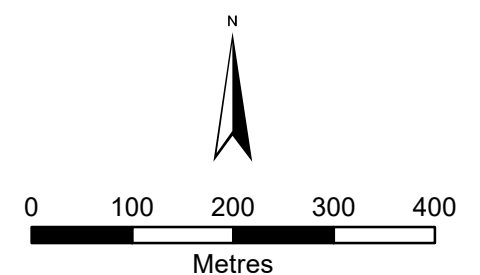
ENDOCOAL METEOR DOWNS SOUTH RAIL LOOP

DICHANTHIUM QUEENSLANDICUM OBSERVATIONS

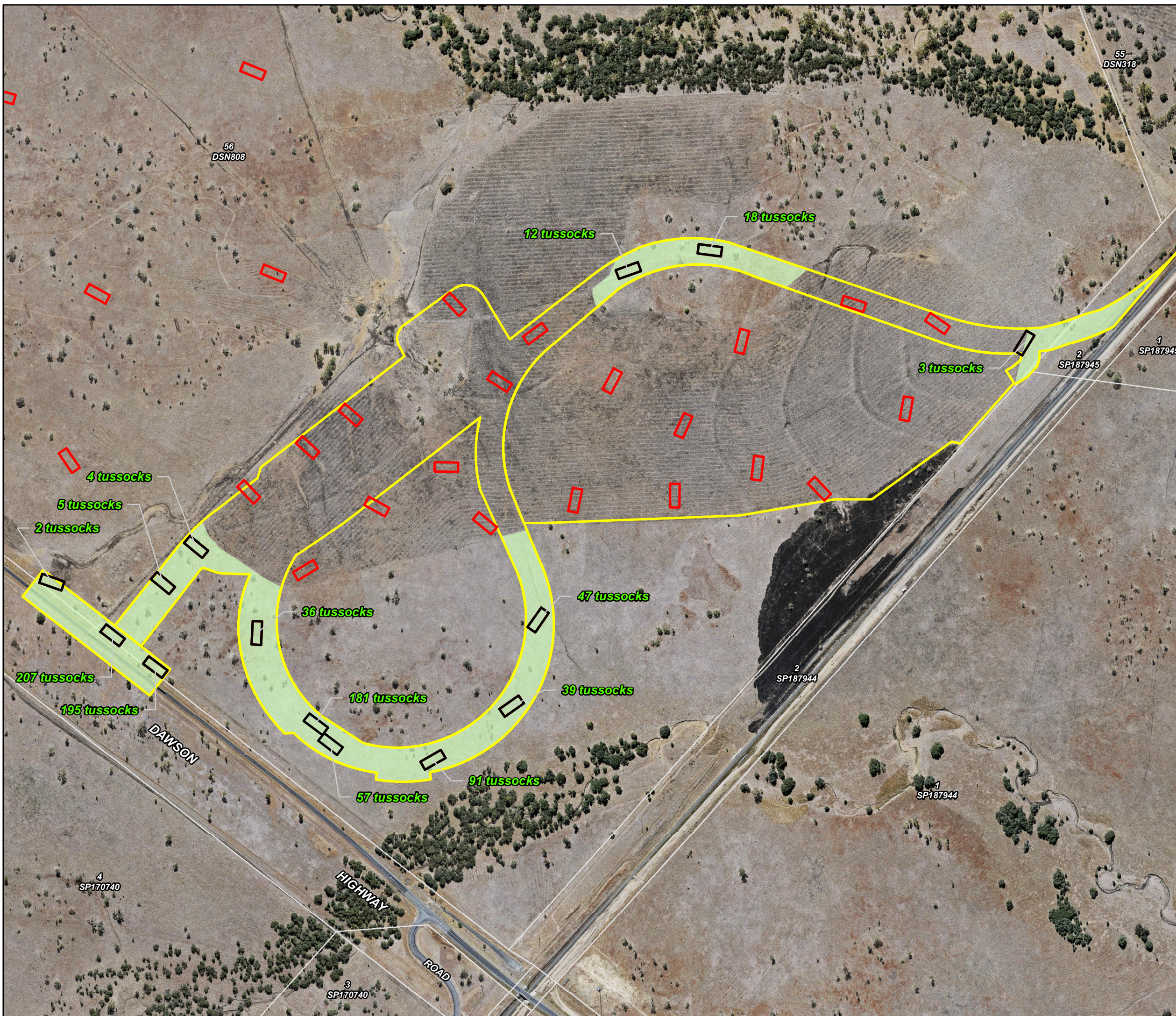
Legend

-  Survey Plot with *Dichanthium queenslandicum* Observations
-  Survey Plot with no *Dichanthium queenslandicum* Observations
-  Ground-Truthed *Dichanthium queenslandicum* habitat
-  Proposed Site Disturbance
-  Base Cadastre

Data Sources:
 Digital Cadastral Database (extracted 27 May 2019)
 dataset: © State of Queensland (Department of Natural Resources, Mines, and Energy) 2019; Proposed Site Disturbance dataset: supplied by client (May 2019); Survey Plot with Threatened Flora Observation dataset: SLR Consulting (June 2019).
 Imagery Sources: 2014 Surat Basin North 25cm resolution SISP PeriUrban Orthophoto Imagery Web Service: © State of Queensland (Department of Natural Resources, Mines, and Energy) 2019.
 Coordinate System: GDA 1994 MGA Zone 55
 Projection: Transverse Mercator
 Datum: GDA 1994
 Date: 21/06/2019



Scale: 1:7,500 at A3



ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

QUATERNARY VEGETATION SURVEY LOCATIONS

FIGURE 9

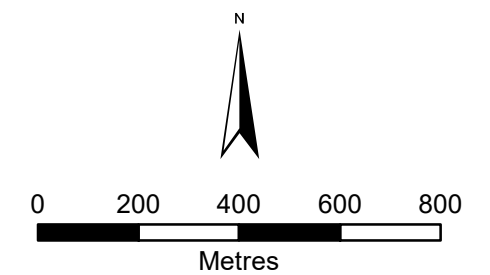
Legend

- Quaternary Survey Site
- VM Watercourse (100/250K)
- ▭ Proposed Extent of Site Disturbance

Data Sources:
VM Watercourse (100/250K) dataset: the State of Queensland (Department of Natural Resources, Mines, and Energy) 2019; Proposed Extent of Site Disturbance: client data on file (March 2019); Quaternary survey site datasets: derived from November 2018 and February 2019 field survey data on file.

Imagery Sources: © The State of Queensland, 2017. Includes material © Planet Labs Netherlands B.V. 2017, reproduced under licence from Planet and Geoplex, all rights reserved. Landsat data available from the U.S. Geological Survey. Data acquired under the Spatial Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 5/04/2019



Scale: 1:15,000 at A3

ENDOCOAL

METEOR DOWNS SOUTH RAIL LOOP

FAUNA SURVEY LOCATIONS

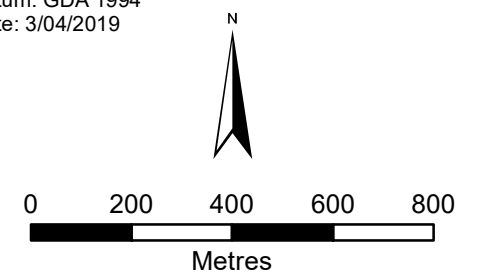
FIGURE 10

Legend

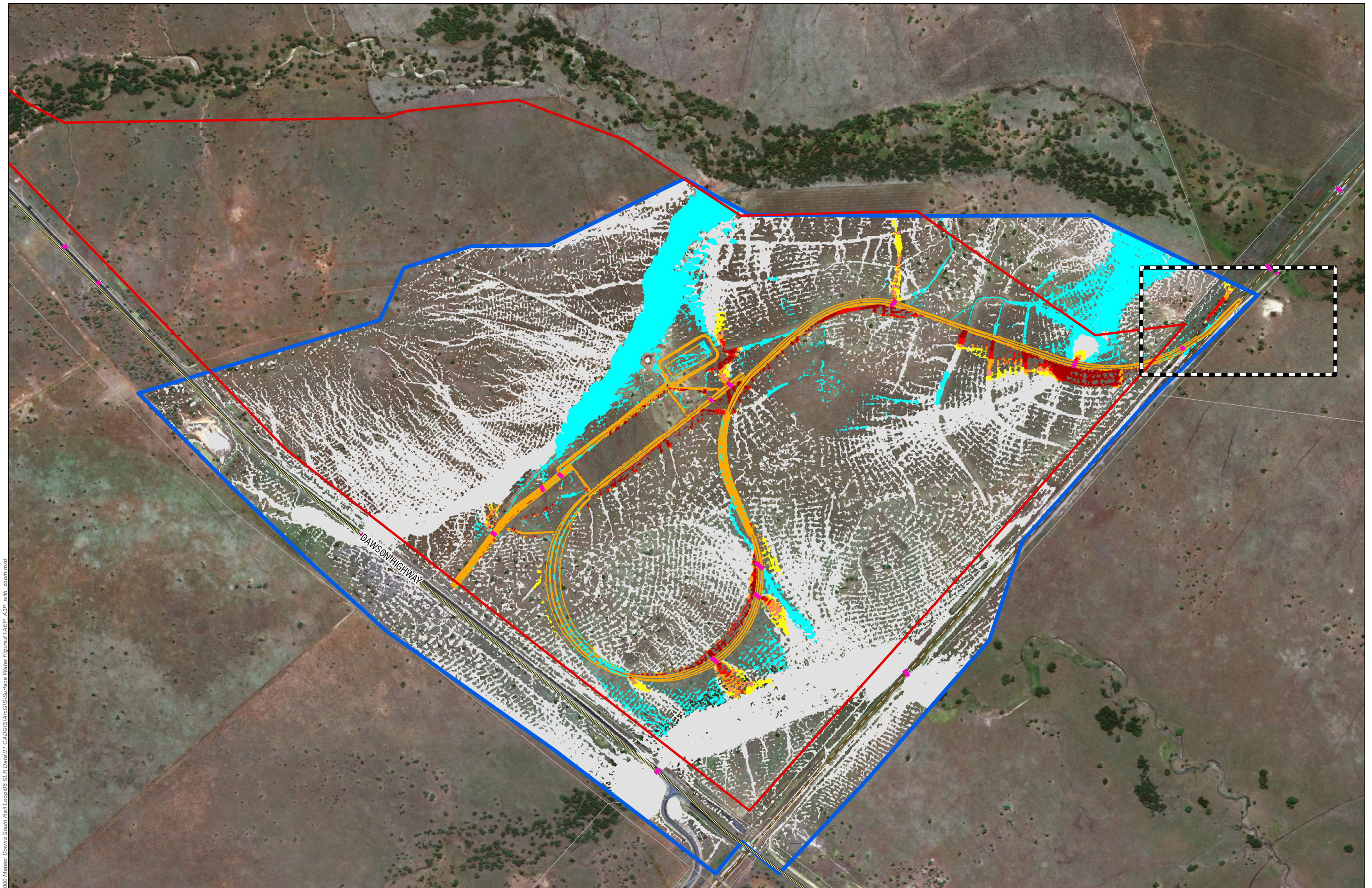
- Pitfall Line
- Elliot Line
- Proposed Extent of Site Disturbance
- Fauna Site
- Fauna Survey Equipment**
 - Cage Trap
 - Funnel Trap
 - IR Camera Trap
 - Song metre
 - Bat Detector

Data Sources:
Proposed Extent of Site Disturbance: client data on file (March 2019); Fauna Survey datasets: derived from February 2019 and November 2018 field survey data.
Imagery Sources: © The State of Queensland, 2017. Includes material © Planet Labs Netherlands B.V. 2017, reproduced under licence from Planet and Geoplex, all rights reserved. Landsat data available from the U.S. Geological Survey. Data acquired under the Spatial Imagery Subscription Plan (SISP) and QSat initiative.

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
Date: 3/04/2019



Scale: 1:15,000 at A3



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0 250 500 750 Meters

22-May-2019 Scale: 1:10,000

Sheet Size : A3 GDA 1994 MGA Zone 55

Legend

Cadastre
 Model Boundary
 Project site

— Railway
— Road
— Rail loop layout

— Culvert
 Zoom 1

Afflux (mm)

| | | |
|---|---|---|
| Less than -10 | 25 to 35 | More than 100 |
| -10 to 10 | 35 to 50 | |
| 10 to 25 | 50 to 100 | |

Meteor Downs South Mine Rail Loop Project
 Storm Water Management Plan
Post-Development Scenario
Peak Flood Level Impacts- 1% AEP

FIGURE 12



ENVIRONMENT AND COMMUNITY POLICY



Our Aim

U&D Mining's vision is to be an industry-leading Coal Explorer and Emerging Producer, where we as a company create sustainable value from our resources and relationships in a way that is safe, environmentally responsible and respectful of all stakeholders. Our belief is that if we all hold Safety as a Value then together we achieve Zero Harm to ourselves, to others we interact with, to the Environment and to the Community.

We require your support to achieve these goals!

Environment and Community Objectives

To achieve this aim we will:

- Minimise the impact of our operations by effectively preventing pollution, damage or other harm to the environment by mitigating harmful risks.
- Respect and work with the current occupiers of any land impacted by our exploration or mine development activities.
- Take all reasonable steps to prevent or recover any incident that may or has breached environmental legislation, license requirements, tenure conditions, or any specific U&D Mining requirements.
- Work to build long-term partnerships with communities, governments, business partners and other stakeholders.
- Accept that everyone is personally accountable for operating in an environmentally responsible manner, as well as are those who they work with, manage and supervise.
- Honour, respect and work cooperatively with the Traditional Owners of the land impacted by our activities, as well as ensure we work within any Native Title or Cultural Heritage legislation, licenses, or any specific U&D Mining requirements.

U&D Mining Commits to:

- Educating all employees and contractors in defining an acceptable level of risk for the task at hand and in implementing risk management practices to achieve safe operations.
- Training and coaching managers, employees and contractors on Environment and Community requirements and then holding them accountable for compliance.
- Ensuring compliance with applicable laws, U&D Mining's standards, and any other stated requirements as a minimum foundation for the delivery of acceptable HSEC performance.
- Promoting with employees, contractors and the community awareness of Environmental issues through ongoing training, communication and reporting.
- Implementing and maintain integrated management systems and programs, including measurable objectives and targets, to ensure effective implementation of this Environment and Community Policy.
- Regularly reviewing this Policy to ensure it remains appropriate to U&D Mining's objectives and applicable legislation.

Yinan Zhang
Vice Chairman

Hao Liu
CEO

This policy applies to employees, management and contractors within U&D Mining and requires full cooperation and assistance of all personnel.